Enel and stranded assets

Anyone want a power station?

Italy's largest power company faces up to the "stranded assets" problem

"IT'S not a funeral, it's a transformation." That is the positive spin Francesco Starace, the Tesla-driving boss of Enel, one of Europe's biggest electricity companies, puts on a tough issue looming over the energy industry: stranded assets. He knows of what he speaks. Whereas executives at coal, oil and gas firms shudder at the thought that many of their vast reserves will be stranded if the world turns against fossil fuels, Enel is decommissioning old power plants as if its future depended on it.

Enel has announced that 23 power stations in Italy with a capacity of 13 gigawatts—enough to power a small country—are to be scrapped within five years. The first to be sold, on November 2nd, was the Giuseppe Volpi coal-fired station near Venice (pictured), which will become an industrial and logistics plant. For a lucky few the future could be more illustrious. Enel hopes some will be turned into galleries and museums, using the conversion of the Bankside power station on London's South Bank as a model. It became the Tate Modern.

Mr Starace is unsentimental about shedding bits of Italy's industrial history. "The best thing to do is realise they are stranded and don't wait for the tide to come back in…the faster you get there, the better." As renewable energy, such as hydroelectricity and wind, account for an increasing share of Europe's power generation, he believes such write-offs will spread across the European Union.

Eon, Germany's biggest utility, gave a taste of that on November 11th. A record third-quarter loss was driven mostly by €8.3 billion ($8.8 billion) of impairment charges, particularly on fossil-fuel plants that are struggling

because subsidised renewables are clobbering electricity prices. Next year it will split itself in two: a conventional power-plant business, and one dominated by greener energy.

Many other European utilities are struggling with overcapacity and low wholesale power prices. Mr Starace says that, collectively, their conventional power plants suffered a cumulative hit to operating profits of €36 billion between 2008 and 2013. They will have to reinvent themselves in the coming years. "We are a herd. We do the same things if you give us enough time....the essence is to get out of this stranded world."

It is not surprising that Europe's utilities are moving faster than its oil companies to lower their carbon footprint. There is carbon-free electricity. There is not carbon-free oil. What is more, Europe's electricity usage appears to be in long-term stagnation, set to grow more slowly over the next 25 years than anywhere except Japan.

Mr Starace hopes that the growth of renewables can be tied in with Italy's relatively modern smart-grid system to modernise the domestic electricity market even if it shrinks. But Enel is also betting big on Latin America, where demand for electricity continues to surge. Less risk of stranded assets there. ■

意大利国家电力公司和闲置资产

谁想要一座电站？

意大利最大的电力公司要直面“闲置资产”的问题

“这不是一场葬礼，而是一次转型。”针对闲置资产这一能源产业面临的棘手问题，欧洲最大的电力公司之一意大利国家电力公司（Enel）的老板、开着特斯拉的弗朗西斯科·斯塔拉切（Francesco Starace）言辞积极。他并非信口胡言。煤炭、石油和天然气公司的高管们想到一件事都胆战心惊：如果世界抛弃化石燃料，他们的巨大储备中有很多将被闲置。但是，Enel正在主动让老电站退役，仿佛它的未来有赖于此。

Enel已经宣布，意大利的23座电站将在五年内报废。这些电站的总装机容量达13吉瓦，足以为一个小国家供电。第一座于11月2日出售的电站是威尼斯附近的朱塞佩·沃尔皮燃煤电站（Giuseppe Volpi，见图），它将变成一座工业和物流工厂。对于少数幸运的电站而言，未来可能更加光彩夺目。Enel希望它们被改造成美术馆和博物馆，就像伦敦泰晤士河南岸的河岸发电站被改造成泰特现代美术馆（Tate Modern）那样。

对于抛弃意大利工业历史的一部分，斯塔拉切并不感伤。“最好的做法就是意识到它们已经搁浅，别等着潮水回来……越快放弃越好。”随着水力发电和风力发电等可再生能源在欧洲发电中的占比日益增加，他相信这类资产冲销将在整个欧盟蔓延。

德国最大的电力公司意昂集团（Eon）11月11日发布第三季度财报，让人得以一窥这一前景。该集团亏损达历史新高，主要是受83亿欧元（88亿美元）资产减值的拖累，这尤其是因为受到补助的可再生能源正在大力冲击电价，导致化石燃料电厂苦苦挣扎。明年，该集团将一分为二：传统电站业务和由绿色能源主导的业务。

欧洲许多其他的电力公司正疲于应付产能过剩和批发电价过低的问题。斯塔拉切说，2008年至2013年，欧洲传统电站的经营利润总共下滑了360亿

欧元，未来几年它们将不得不彻底改造。“我们在同一条船上。如果给我们足够的时间，我们会做同样的事……关键就是脱离这个被滞留的世界。”

在减少碳排放方面，欧洲的电力公司比石油企业行动更快，这并不奇怪。那里有无碳发电，但没有无碳石油。此外，欧洲的用电情况看来陷入了长期滞涨，未来25年里其增长速度将比除日本以外的所有其他地区都更缓慢。

斯塔拉切希望，可再生能源的增长能够和意大利相对现代的智能电网系统捆绑在一起，让国内的电力市场实现现代化，即便它可能萎缩。但Enel也在大力押注拉美市场，那里的用电需求持续飙升，资产被闲置的风险更小。■

Corporate transparency

The openness revolution

As multinationals are forced to reveal more about themselves, where should the limits of transparency lie?

HOWARD SCHULTZ, the head of Starbucks, once said that "the currency of leadership is transparency." If so, bosses should be feeling ever more qualified to command their troops. Business is being forced to open up in a host of reporting areas, from tax and government contracts to anti-corruption and sustainability programmes. Campaigners are cock-a-hoop, but continue to demand more. Executives are starting to ask whether the revolution is in danger of going too far.

Three forces are driving change. First, governments are demanding greater corporate accountability in the wake of the global financial crisis. No longer is ending corporate secrecy—the sharp end of which is money-laundering shell companies—an agenda pushed merely by Norway and a few others; it has become a priority for the G20. Second, investigative journalists have piled in. A recent example is the exposure by the International Consortium of Investigative Journalists of sweetheart tax deals for multinationals in Luxembourg. The third factor is the growing sophistication of NGOs in this sphere, such as Transparency International (TI) and Global Witness. "Twenty years ago our work seemed an impossible dream. Now it's coming true," says Ben Elers of TI.

TI recently published its latest study on corporate reporting, which evaluated 124 big publicly listed companies, based on the clarity of their anti-corruption programmes, their corporate holdings and their financial reporting. Four-fifths of them scored less than five out of ten overall, but there were big regional disparities: seven of the ten most open firms were European; eight of the ten most clammed-up were Asian (see table).

One measure on which the firms were judged was country-by-country reporting of profits, taxes paid and the like. Clearer reporting by jurisdiction would help outsiders spot offshore tax shenanigans and graft. It is seen as the "holy grail" by NGOs, says Raymond Baker of Global Financial Integrity, one of them. Currently most companies aggregate their accounts in a way that makes it hard to see what assets and revenues they have in any given country. But change is coming: country-by-country reporting is on the OECD's "Base Erosion and Profit Shifting" reform agenda, which is aimed at curbing tax avoidance.

The biggest push for greater openness has come in extractive industries. That is not surprising as these (as well as defence) have historically been pits of corruption. Progress has come at the regional level: EU states have begun to pass into law a new directive requiring country-by-country, and in some cases project-by-project, reporting of extractive groups' payments to governments. America should have introduced similar regulations by now, but these, mandated by the Dodd Frank act of 2010, are still on the drawing board.

Publish What You Pay, a campaigning group, reckons these rules would cover two-thirds of the global extractives business by value—not only Western groups, but Chinese, Russian and other firms that are caught in the net by virtue of having securities listed in the West. But there would still be bumps in the playing field: some state-owned producers from the Middle East, for instance, would not be covered.

Hence the push for global standards. One may be emerging from the Extractive Industries Transparency Initiative, whose Oslo-based secretariat oversees the development of multilateral standards shaped by a coalition of governments, companies and civil society. The EITI is voluntary, but if a country signs up, all firms operating there must comply with its reporting guidelines. Almost 50 countries (including Iraq and Nigeria) have joined.

The EITI has backing from 90 firms, among them Norway's Statoil. Its head of sustainability, Hege Marie Norheim, argues that while not disclosing project payments might be better for short-term competitiveness, disclosing them is "better for the company's long-term stability".

The costs of opacity

Commodity traders, usually a secretive bunch, are opening up to this way of thinking. Trafigura, a Swiss trading giant, recently said it will disclose oil-related payments in all EITI countries. Its reasons for doing so: change is coming anyway, and early movers will be better placed to help shape the standards. There is a financial motivation, too: banks have reduced funding for opaque trading firms after being hit with fines for sanctions violations.

Oil producers, meanwhile, are starting to publish more details of production-sharing contracts with governments. This is "good for companies because it will show how [the contracts] are weighted, which contrary to common perception is usually in the government's favour," says George Cazenove of Tullow Oil. "That's why it's more often the governments than the companies that want the terms kept quiet."

Indeed, though campaigners make much noise about holding multinationals to account, most admit the bigger impact could be on the states they deal with. Publication of what governments receive will increase pressure on them to show how money is spent. They could be held even more accountable if firms were forced to disclose which of their payments go to central governments, which to regional ones and which to local administrations.

Another area of the NGOs' focus is organisational structure. The more tangled a group's web of subsidiaries, the harder it is for outsiders to follow the money, including intra-group transfers that might be used to funnel profits to tax havens.

Here, the picture is mixed. While some firms reveal more, others shuffle into the shadows. Jeffrey Gramlich of the Hoops Institute at Washington State University and Janie Whiteaker-Poe of Baylor University have identified a phenomenon they call "the disappearing subsidiary". Crunching data at *The Economist*'s request, they found a sharp increase since 2010 in the number of American firms dramatically reducing the number of tax-haven subsidiaries they disclosed (see chart). In one extreme case Google reported more than 100 divisions in 2009, but just two (both in Ireland) in 2012. "Google wants to know everything about you, but it doesn't want you to know everything about it," says Chris McTaggart of OpenCorporates, which collects and crunches data on companies.

What's going on? Use of tax havens may have fallen a bit, but that doesn't explain such a sharp decline. What does, says Mr Gramlich, is a mass redefinition of subsidiaries as not "significant". Only material holdings have to be disclosed in America (whereas in, say, Germany all have to be reported). The firms would never admit it, but the likely reason for this redefinition is increased scrutiny of their tax affairs. Their move into the dark coincided with a surge in investigative articles about profit-shifting by multinationals. Not all the redefining is likely to be legal, but the companies are willing to take the risk: the most they can be fined for de-disclosing significant subsidiaries is $100 a day.

Companies have wider gripes about the disclosure revolution. Some contend that transparency has natural limits. The argument has three planks. The first is that it can be unfair on those forced to disclose because it hands a competitive advantage to non-Western rivals that aren't held to the same standards. Simon Henry, Shell's chief financial officer, argues that EU transparency rules could undermine the EITI because they don't cover unlisted foreign firms or require governments to account for all payments received. Next, some firms complain that new transparency rules wedge them between a rock and a hard place: abiding by an EU requirement to be

open, for instance, could mean breaking the law in a country of operation that forbids disclosure. The first argument underlines the need for global standards. The second is thin: when pressed, whingers struggle to identify countries that lock up executives for complying with Western disclosure requirements.

The third argument is stronger: that those trying to make sense of it will be better informed but none the wiser. Debra Valentine of Rio Tinto likens it to the long but unenlightening lists of side-effects that come with medicines. Can country-by-country reporting capture what is really going on in a group that produces in Australia and Canada, markets through Singapore and sells in China, she asks? A firm's tax payments might be unusually low, not because it is dodging tax, but because of high upfront investments and all manner of reliefs and allowances. Financial restructuring can render the numbers even harder to parse, says John Connors of Vodafone (the only firm to score half-marks or better in all categories in the TI report).

Some transparency campaigners acknowledge a risk of drowning in data or of comparing apples with oranges. Britain, for instance, now requires its companies to disclose all foreign payments to governments of more than £86,000 ($135,000)—the equivalent of an individual spending pennies. "Ludicrously granular," grumbles another oilman.

Michael Meehan of the Global Reporting Initiative, which sets standards for corporate reporting on sustainability issues, says he can see why large companies have "data fatigue". Their being forced to report every single data point would lead to less transparency, not more, he says. "Responsibility is coming back to civil society and the media to make good use of information they already have, rather than calling for more," says Jonas Moberg of the EITI.

Private transparency initiatives can help in this regard. OpenCorporates

uses data-scraping and other technologies to collate information from national corporate registers and other sources, clean it up and join the dots, so that relationships within and between corporate families become clearer. It now has 80m companies from 100 countries in its database. It sometimes receives threats of violence from those who want their law-breaking firms to remain hidden, says Mr McTaggart.

Governments, too, have a role to play. The G20 has thrown its weight behind the idea of central registers, with better policing of information on corporate owners. The most ambitious countries, like Britain and Denmark, plan to make their registers publicly accessible. Some are embracing open-data standards. Britain, already a world leader in accessibility of corporate-registration information, such as financial accounts and shareholder information, made all that data available free of charge this year.

Let it flow, or suffer a leak

As openness spreads, it would be easy to get carried away. Multinationals will continue to do dodgy deals, and to bury inconvenient financial information in the footnotes of annual reports. Some extractives giants pay lip service to the EITI while dragging their feet. The world is still full of murky shell companies.

But the direction of travel is clear. In tax and contract transparency, there is general acceptance that change is coming, like it or not. And many boards no longer fear that openness is bad for business. In some areas, such as corporate social responsibility, there is evidence that it boosts the share price by signalling that management is tackling hidden risks, says George Serafeim of Harvard Business School. Investors increasingly appreciate the reputational benefits of openness, and employees want to work for firms that are leaders in disclosure—and, just as importantly, ever more of them appear to see it as their civic duty to leak information if their employer is shady and secretive. ■

企业透明度

信息公开革命

跨国公司被迫披露更多内部信息，然而透明度界限何在？

星巴克总裁霍华德•舒尔茨（Howard Schultz）曾经说过“领导力的通行货币是透明度”。倘若如此，上司应该感觉更有资格对部下发号施令了。企业正被迫公开一系列领域的资料，披露从税务到政府合同乃至反腐败及可持续发展方案等诸多信息。透明度倡议者在得意之际，仍不忘追加诉求。高管们开始质疑这场革命是否有过火之虞。

三方面力量驱动着改变。首先，全球金融危机过后，政府对企业责任要求更高了。阻止企业秘密行事不再只是挪威和其他几个国家推动的议题，二十国集团也视为当前要务。这种秘密行事最突出的表现是空壳公司洗钱。其次，调查记者蜂拥介入。最近一例是国际调查记者同盟（International Consortium of Investigative Journalists）曝光卢森堡与跨国公司私相授受的税务优惠协议。第三方面是诸如透明国际（Transparency International）及全球见证（Global Witness）这类非政府组织在该领域的力量日益壮大。“20年前，我们的工作犹如白日作梦，而如今正步步成真。”透明国际的本•埃勒斯（Ben Elers）说道。

透明国际近日公布了关于企业信息披露的最新研究，就反腐败方案、公司股权架构及财务报告的清晰度对124家大型上市公司作出评估。按十分为满分计算，其中80%的公司整体得分低于五分，但结果存在较大的地区性差异：十家最公开的公司中七家为欧洲公司；十家最隐秘的公司中八家来自亚洲（见下表）。

衡量公司透明度的一个方式是看其是否按国别就利润、上缴税金等信息进行披露。按管辖区更清晰地披露数据有助外人洞悉离岸避税花招和贪腐行径。这被视为众多NGO眼中的“圣杯”，NGO之一全球金融诚信（Global Financial Integrity）的雷蒙德•贝克（Raymond Baker）如是说道。目前，多数公司的账目汇总方式让人难以了解其在任一国家拥有的资产及收入情

况。但改变即将发生：按国别披露制度已登上经合组织的“税基侵蚀及利润转移”改革议程，目标即是为了遏制避税行为。

对信息公开的最大推力来自采矿业。这并不稀奇，毕竟采矿业（及国防工业）一直是传统贪腐的温床。进展来自地区层面：欧盟国家即将通过一道新法案，要求采矿集团按国别披露其向各地政府的付款，某些情况下需按项目逐一披露。美国本应已推行2010年《多德 - 弗兰克法案》授权的类似法规，但时至今日却仍停留在纸上谈兵阶段。

倡廉组织“公开你的付款情况”（Publish What You Pay）认为这些条例将影响到以价值计全球三分之二的采矿业务——不止西方企业集团，中国、俄罗斯及其他地区的公司也因在西方资本市场上市而被网罗其中。但游戏规则却并非一视同仁：某些中东国有企业就不受这些法规的制约。

因而大家力主建立全球统一准则。动力一方面来自《采矿业透明度行动计划》（Extractive Industries Transparency Initiative，以下简称EITI），其秘书处位于奥斯陆，负责监督政府、企业及民间团体联盟倡议的多边准则制定。EITI属自愿性质，但若某一国家签署参与计划，所有在该国运营的公司都必须遵循其披露准则。约有50个国家（包括伊拉克与尼日利亚）已签署加入。

EITI获得90家公司的支持，挪威国家石油公司是其中一家。其可持续发展主管赫格•玛丽•诺赖姆（Hege Marie Norheim）认为不公开工程的付款账目也许有利增强短期竞争力，但披露该信息“更利于公司的长远稳定发展”。

不透明的代价

通常行事秘密的大宗商品交易商也开始接受这一新思维。瑞士贸易巨头托克（Trafigura）近日表示将披露公司在所有EITI国家内石油相关业务的付款信息。此行动的理由在于：无论如何变革都将到来，先行者可以占据有利地位以影响标准的制定。此中还包含财务动机：经受过违规罚款的打击后，银行已降低对交易不透明公司的融资。

同时，石油生产商们开始公布与各地政府签署产量分成合同的更多详情。这“对企业来说有好处，因为能显示[合约的]利益分配，与一般印象相反，政府往往才是获利更多的一方，”塔洛石油（Tullow Oil）的发言人乔治•嘉诚（George Cazenove）表示，“所以希望条款保密的往往也是政府而非企业。”

的确，虽然倡议者高呼要求跨国公司承担责任，但许多人承认，受更大冲击的可能是与这些公司交易的政府。公布政府收入将增大其公开支出账目的压力。假若公司被迫披露支付中央政府、地区政府及地方行政机构的款项细节，政府的问责压力则将更大。

NGO着力的另一领域是组织架构。集团的子公司网络越是错综复杂，外人就越难追踪金钱去向，包括可能通过集团内部转移支付往避税地输送利润的现象。

这方面，情况不一。有些公司进一步公开信息，另一些则挪入暗影之中。美国华盛顿州立大学霍普斯学院（Hoops Institute at Washington State University）的杰弗里•格拉姆利克（Jeffrey Gramlich）和贝勒大学（Baylor University）的珍妮•惠特克-坡（Janie Whiteaker-Poe）发现了他们称之为“消失的子公司”的现象。受《经济学人》杂志委托，他们分析数据后发现，2010年以来，披露避税地子公司数目大幅减少的美国公司数量骤增（见下图）。一个极端的例子显示，谷歌在2009年披露拥有100家分支机构，但2012年仅为两家（均位于爱尔兰）。“谷歌要知悉你的所有信息，却不希望你知晓它的一切。”收集并分析企业数据的网站“公开企业”（OpenCorpoartes）的克里斯•塔格特（Chris Taggart）如是说。

这是什么缘故？利用避税天堂的例子或稍有减少，但无法解释如此急剧下降的数字。格拉姆利克认为真正的原因在于子公司被集体重新定义为非“重大”资产。在美国，公司只须披露重大资产信息（但像在德国，公司需要呈报一切资产信息）。虽然这些公司不会承认，但可能正是税务审查力度加大导致了此类重新定义。其弃明投暗正是发生在调查跨国公司利润转移的报道激增之际。这些再定义不大可能全部合法，但企业愿意冒险一

试：企业不披露重大子公司，罚款上限是100美元一天。

对这场信息披露革命，企业还有更广泛的怨言。一些公司指出，透明度具有自身的局限。此论调有三个支点。首先，对被迫披露信息的公司未必公平，因为无须受同样准则制约的非西方对手会因此平添竞争优势。壳牌公司首席财务官西蒙•亨利（Simon Henry）认为欧盟的透明度准则可能破坏EITI的实行，因为这些准则既没将非上市外资公司纳入规管范围，也未要求政府披露所有收入款项的信息。再有，一些公司抱怨新的透明度准则令其左右为难：比如说，遵循欧盟的信息公开要求有可能意味着要违反特定业务运营所在国关于禁止信息披露的法律。上述第一点突显了建立全球性准则的必要性。第二点理据薄弱：追问起来，那些诉苦不迭的人还真难说出有哪些国家会因为某公司遵循西方的信息披露法规而将其高管送进监牢。

第三个论据则较为有力：努力想搞清这些准则的公司虽然听闻再三，却还是懵懵懂懂。力拓矿业集团（Rio Tinto）的黛布拉•华伦泰（Debra Valentine）说，那就像是让人无从领悟的一长串药物副作用警示。她质疑，假若某集团的产品在澳洲及加拿大生产，通过新加坡营销，在中国出售，按国别信息披露真能反映其真正的运作情况吗？可能某家公司缴付的税金特别低，不是因为避税，而是因为前期投资较高，加上各种形式的减免及津贴优惠。透明国际的调查报告中，沃达丰（Vodafone）是唯一一家在所有类别得分都达到半数或以上的公司，其税务总监约翰•康纳斯（John Connors）表示，财务重组可能令数据更难以分析。

部分透明度倡议者承认，迷失于海量数据或错误比较信息的风险是存在的。例如，目前英国要求企业凡是向国外政府支付金额超过8.6万英镑（13.5万美元），其款项信息须作呈报，但这一金额对于企业来说就等于普通人手上的几个零钱。“琐碎得荒谬可笑。”另一石油商抱怨道。

全球报告倡议组织（Global Reporting Initiative）是围绕可持续发展问题制订企业信息披露标准的国际组织，其总裁迈克尔•米汉（Michael Meehan）表示理解为何大型企业会感觉“数据疲劳”。他说道，硬性要求

他们逐一披露所有数据点只会令透明度更低，而非更高。EITI的乔纳斯•莫伯格（Jonas Moberg）则指出：“责任应回到民间团体及媒体身上，好好利用已掌握的信息，而非要求获取更多。”

在这方面，私人机构发起的透明度项目会有所帮助。“公开企业”网站利用数据抓取及其他技术手段整理国家的公司注册档案及其他来源的信息，去芜存菁，整合贯通，让企业家族内部及相互间的关系更为一目了然。该网站数据库现存有100个国家共八千万家公司的资料。塔格特说，网站不时收到一些有违法行为的公司的暴力恐吓，要求网站不披露他们的信息。

政府也须参与其中。二十国集团已表示鼎力支持建立中央数据库，更好地监管企业所有者信息。像英国和丹麦这样最雄心勃勃的国家已计划向民众完全开放国内的公司注册资料。另一些国家也开始接受开放数据标准。在财务账目及股东信息这类公司注册资料的公开度方面，英国早已领先全球，而今年起所有这些信息在英国都可供免费查阅。

> *听其明流，否则暗漏*

公开度不断发展，很容易令人得意忘形。但跨国公司还是会继续从事可疑的交易，将不便示人的财务信息埋没在年报脚注里。一些采矿业巨头对EITI是口惠而实不至。来历不明的空壳公司依然遍布全球。

然而方向还是清晰的。税务及合同透明度方面，无论赞成与否，大家普遍认为改变即将发生。而且许多公司董事会也不再忧心公开信息会不利于业务。在某些领域，例如企业社会责任上，有证据表明公开信息能刺激股价上升，因为这显示出管理层在应对隐藏风险，哈佛商学院的乔治•萨拿芬（George Serafeim）说道。投资者愈加感觉信息公开有益于公司声誉，员工也希望在透明度高的公司工作——而且，同样重要的是，当中越来越多人认为，如果雇主有见不得人的鬼祟行径，透露举报此等信息是其作为公民的责任所在。■

Drug companies and research

Billion-dollar babies

The high cost of R&D is used to explain why drugs giants merge, and why they must charge high prices. The reality is somewhat different

AS THEY announced the proposed merger of Pfizer and Allergan to create the world's biggest drugmaker, on November 23rd, the two firms' bosses stressed the scale that is needed to keep inventing blockbuster treatments. As Ian Read, Pfizer's boss, put it, the merger will create "a leading global pharmaceutical company with the strength to research, discover and deliver more medicines and therapies to more people around the world."

A more convincing explanation for the deal is that, by shifting Pfizer's tax domicile from America to Ireland, where Allergan is domiciled, the combined group's tax rate will fall from about 25% to 17-18%. But even leaving that aside, the common suggestion that size is needed to create a research-driven powerhouse does not stack up. The figure of $2.6 billion cited by PhRMA, the American drugmakers' lobby, for the cost of developing a new drug, is questionable. And the industry is in any case moving away from a model in which giant firms throw huge sums at in-house research in a quest for ground-breaking new treatments.

Start with the $2.6 billion figure. Two years ago, when the number being bandied about was just $1 billion, even the boss of GSK, one of Pfizer's biggest rivals, described it as a myth. Médecins Sans Frontières, a charity, claims that new drugs can be developed for as little as $50m and no more than $190m, even taking into account the cost of those that fail during clinical trials. Some of the assumptions used to arrive at the $2.6 billion figure are easy to pick apart. One example is the padded estimate for the drug firms' cost of capital. But at least as important is that the figure is based on data from between 1995 and 2007. It says more about the failures

and inefficiencies of the drug giants' in-house laboratories back then than it does about how much it should cost to bring a new treatment to market now. That matters because the industry has been moving towards a new model.

The main element of this model is that, rather than spending heavily in many different areas of cutting-edge research, the largest firms are increasingly buying in drugs that are already in the course of development. In some cases they do so by buying other established firms. For example, Pfizer acquired Lipitor, its blockbuster cholesterol-lowering pill, as part of its takeover of Warner-Lambert. Likewise, when Gilead bought Pharmasset, one of the assets it acquired was Sovaldi, a hepatitis-C treatment which is now one of Gilead's biggest sellers.

Increasingly, the drugs giants are buying smaller, younger biotechnology firms which focus on a single-treatment approach—such as last year's purchase by Merck, an American firm, of Idenix, which is pursuing a different route to inhibiting the hepatitis C virus from Sovaldi's. Whether the target firm is big or small, buying in promising potential drugs is a good strategy. A study by Bain, a consulting firm, found that in the past 20 years those drug companies that consistently did well in various therapeutic areas were earning more than 70% of their sales from products developed elsewhere.

As the biggest firms have increasingly outsourced the early stages of drug discovery, they have cut back their in-house spending in those areas of research in which they are weak. But they have continued to spend heavily on what are more like beauty products than life-saving cures—think of Allergan's Botox anti-wrinkle jabs, or Latisse, its lotion for thickening eyelashes. They have also continued to pump money into making incremental changes to their existing drugs, so as to claim some small advantage—and big price differential—over rival treatments.

Overall, the new approach seems to be helping to improve the industry's efficiency. Tim Gamble, a consultant at Data Monitor Healthcare, says drugs in development are not failing at the rate they used to. Last year a record number of new medicines gained approval. Rising efficiency may also be the result of the way the study of the human genome is leading to a deeper understanding of diseases. James Bianco of CTI Biopharma, a small drugmaker, argues that the genomics revolution is making it faster and less risky to develop a new treatment approach, thus cutting the cost of basic research, whether at startups or global pharma giants.

> *But what about the price?*

Promising as all this sounds, there is little sign yet of any improvement in the efficiency of drug research translating into cheaper medicines. The shareholders of a drugmaker expect it to charge as much as it can get away with; and since many drugs, for as long as their patent is in force, have no close competitors, the health systems and insurers they sell to may have little choice but to pay whatever they are asked for. Sometimes a drug's new owner makes more from it than the old owner, simply by being more demanding on price. Pharmasset had been thinking of selling Sovaldi at between $36,000 and $72,000 for a course of treatment. But Gilead, having bid highly to win control of Pharmasset, put the drug on the market for $84,000.

Some drug firms are also buying makers of long-established, out-of-patent treatments, realising that even these could bear higher prices if no other firm is supplying a "generic" copy of them. Turing Pharmaceuticals and Valeant have became notorious for buying the rights to some such medicines, and jacking up their prices.

Ensuring that the benefits of greater research efficiency are fully passed on to governments and health insurers would require drastic changes, such as, say, abolishing the patent system and finding some other way to incentivise

basic research. Among the more imaginative ideas in this vein, the open-source pharmaceuticals movement is experimenting with using prizes as an incentive for teams of volunteer scientists to work on new treatment approaches. Once invented and tested, the drugs would be free for any firm to make.

Realistically, though, the chances that new approaches to research will dramatically cut the cost of medicines look slender. That leaves more administrative approaches. It could be made easier to import cheap copies of unpatented drugs made in other countries. Buyers of medicines could share more information about the different prices they are being charged for the same pills. They might be firmer in refusing to pay over the odds for new treatments that offer marginal gains. Medicare, America's health system for the elderly, could be allowed to try to negotiate with the drugmakers, something it is banned from doing now. If the producers are becoming more efficient, the buyers should respond. ■

制药公司与科研

十亿美元宝贝

高昂的研发成本被拿来解释为何制药巨头会合以及药价高企，但实情不尽如此

11月23日，辉瑞（Pfizer）和艾尔建（Allergan）宣布将合并成全球最大的制药公司，两家公司的老板强调，需要打造规模以继续研发出轰动性的治疗方法。辉瑞的老板伊恩·瑞德（Ian Read）是这样说的：这次合并将创造“一家领先的全球性制药公司，拥有强大的研发实力，发现更多药物和疗法，带给世界各地更多的人”。

对于这宗交易，更令人信服的解释是，合并后，辉瑞的税务注册地将从美国转移到艾尔建所在的爱尔兰，集团的税率将从约25%下降到17%至18%。但即使撇开这不谈，“需要形成规模来打造科研驱动型制药巨头”这一惯常的论调也说不通。美国制药商游说团体PhRMA指出研发一种新药需要26亿美元，这一数字值得怀疑。另外，大型制药企业曾经的模式是向内部研究部门投入巨资研发突破性的新疗法，但如今无论从哪方面看，整个行业也正与这一模式渐行渐远。

先看26亿美元的数字。两年前，传言的数字还只是10亿美元时，连辉瑞的劲敌之一葛兰素史克（GSK）的老板也说那并不靠谱。慈善机构无国界医生组织（Médecins Sans Frontières）称新药研发少则只需5000万美元，最高也不过1.9亿美元，而且这已包括临床试验失败的药物成本。对于用来得出26亿美元这一数字的部分假设，要挑刺并不难。例如，对制药公司资本成本的估计被夸大。而至少同样重要的一点是，数字是基于1995年至2007年的数据估算的。它反映的更多是这些制药巨头内部研发实验室在那些年间的失败和低效，而非目前研发新药推出市场所应花费的成本。这很重要，因为制药业已经迈向新模式。

新模式的主要部分是，最大型的药企不再投入巨资从事众多不同领域的尖端研究，而是更倾向购入已经处于研发阶段的药物。某些情况下，他们通过收购其他既有制药公司来达成这一目的。比如，辉瑞收购华纳兰伯特

（Warner-Lambert），把其降胆固醇的明星药物“立普妥”（Lipitor）一并收归囊中。同样地，吉利德（Gilead）收购法玛赛特（Pharmasset）后，所获资产包括其丙型肝炎药物“索菲布韦”（Sovaldi），如今已成为吉利德的畅销药之一。

制药巨头们越来越倾向于收购专注研发单一疗法的小型新进生物科技公司。比如，去年美国药企默克（Merck）收购了Idenix，这家公司正在研发的抑制丙肝病毒的药物有别于“索菲布韦”。无论目标企业是大是小，收购颇具潜力的药物是上佳策略。贝恩咨询公司的一项研究发现，过去20年，在各个治疗领域持续表现优异的制药公司有超过70%的销售额来自外部研发的产品。

最大的药企日渐把药物的早期研发外包，以此减少自身在薄弱领域的研发支出。但它们仍在花重金研发更像是美容产品的东西，而非治病救人的药物——想想艾尔建的肉毒杆菌抗皱针和Latisse的睫毛增厚液。它们也继续注入资金逐步改进自己现有的药物，凭借些许优势，拉大与竞争药品的价差。

总的来说，这一新模式似乎有助提升制药业的效率。分析公司Datamonitor Healthcare的顾问蒂姆·甘布尔（Tim Gamble）表示，药物研发的失败率不像过去那么高了。去年，获批上市的新药数量创下纪录。效率提升也可能是由于人体基因组方面的研究加深了科研人员对疾病的了解。小型制药厂“CTI生物制药”（CTI Biopharma）的詹姆斯·比安科（James Bianco）认为，无论是对制药创业公司还是全球制药巨头，基因组学的革命让研发新疗法的进程更快，风险更低，从而减少了基础研究的费用。

但价格又怎样？

这一切听起来光明，但并没有迹象表明研发效率的任何改善已转化为药价降低。制药公司的股东们期望药价能卖多高就卖多高；而只要仍在专利保护期内，许多药物并无同级竞争对手，为药品买单的医疗系统及保险公司别无他选，只能听任其漫天要价。有时，一种药物被收购后，新东家纯粹

只靠提价就比前所有者赚取更大的利润。法玛赛特原来打算把一个疗程的“索菲布韦”定价在3.6万至7.2万美元之间，但吉利德在高价收购法玛赛特后，以8.4万美元的定价将“索菲布韦”推出市场。

部分制药公司意识到就连一些专利期已过的旧有药品也可提价出售，只要没有别家公司提供其“仿制药”，因此它们也在收购此类药品的生产商。图灵制药（Turing Pharmaceuticals）及凡利亚（Valeant）因购入这样的药品并抬高售价而声名狼藉。

要确保更高研发效率的益处能完全传递到政府及医疗保险公司，需要彻底的改变，比如废除专利制度及为基础研究寻找新的激励机制。按这一思路，较有创意的点子包括“开源制药运动”，目前这一运动正尝试提供奖赏来激励科学家志愿者组队研发新疗法。药物一旦被发明出来并通过测试，将免费供任何制药公司生产。

而从现实来说，新的研发模式大幅削减药物成本的可能性看来渺茫。以行政手段求变的空间更大。政府可以为进口其他国家生产的非专利药品的廉价仿制药提供便利。药品买家可就同一药物被收取的不同价格分享更多信息。对于改善不大的新药，他们可以更坚决地拒绝支付过高的价格。美国的老年人医疗系统“医疗照顾”（Medicare）应获允与制药公司议价，这在目前是被禁止的。如果制药公司变得更有效率，购买方也该响应。■

Disney

Star Wars, Disney and myth-making

How one company came to master the business of storytelling

FROM a galaxy far, far away to a cinema just down the road: "The Force Awakens", the newest instalment of the Star Wars saga, is inescapable this Christmas. The first Star Wars title since Lucasfilm, the owner of the franchise, was acquired by Disney in 2012 for $4.1 billion, it represents more than just the revival of a beloved science-fiction series. It is the latest example of the way Disney has prospered over the past decade from a series of shrewd acquisitions. Having bought Pixar, Marvel and Lucasfilm, Disney has skilfully capitalised on their intellectual property—and in so doing, cemented its position as the market leader in the industrialisation of mythology. Its success rests on its mastery of the three elements of modern myth-making: tropes, technology and toys.

From Homer to Han Solo

Start with the tropes. Disney properties, which include everything from "Thor" to "Toy Story", draw on well-worn devices of mythic structure to give their stories cultural resonance. Walt Disney himself had an intuitive grasp of the power of fables. George Lucas, the creator of Star Wars, is an avid student of the work of Joseph Campbell, an American comparative mythologist who outlined the "monomyth" structure in which a hero answers a call, is assisted by a mentor figure, voyages to another world, survives various trials and emerges triumphant. Both film-makers merrily plundered ancient mythology and folklore. The Marvel universe goes even further, directly appropriating chunks of Greco-Roman and Norse mythology. (This makes Disney's enthusiasm for fierce enforcement of intellectual-property laws, and the seemingly perpetual extension of copyright, somewhat ironic.)

The internal mechanics of myths may not have changed much over the ages, but the technology used to impart them certainly has. That highlights Disney's second area of expertise. In Homer's day, legends were passed on in the form of dactylic hexameters; modern myth-makers prefer computer graphics, special effects, 3D projection, surround sound and internet video distribution, among other things. When Disney bought Lucasfilm it did not just acquire the Star Wars franchise; it also gained Industrial Light & Magic, one of the best special-effects houses in the business, whose high-tech wizardry is as vital to Marvel's Avengers films as it is to the Star Wars epics. And when Disney was left behind by the shift to digital animation, it cannily revitalised its own film-making brand by buying Pixar, a firm as pioneering in its field as Walt Disney had been in hand-drawn animation. Moreover, modern myths come in multiple media formats. The Marvel and Star Wars fantasy universes are chronicled in interlocking films, television series, books, graphic novels and video games. Marvel's plans are mapped out until the mid-2020s.

But these days myths are also expected to take physical form as toys, merchandise and theme-park rides. This is the third myth-making ingredient. Again, Walt Disney led the way, licensing Mickey Mouse and other characters starting in the 1930s, and opening the original Disneyland park in 1955. Mr Lucas took cinema-related merchandise into a new dimension, accepting a pay cut as director in return for all the merchandising rights to Star Wars—a deal that was to earn him billions. Those rights now belong to Disney, and it is making the most of them: sales of "The Force Awakens" merchandise, from toys to clothing, are expected to be worth up to $5 billion alone in the coming year. In all, more than $32 billion-worth of Star Wars merchandise has been sold since 1977, according to NPD Group, a market-research firm. Even Harry Potter and James Bond are scruffy-looking nerf-herders by comparison.

Those other franchises are reminders that Disney's approach is not unique.

Other studios are doing their best to imitate its approach. But Disney has some of the most valuable properties and exploits them to their fullest potential. It is particularly good at refreshing and repackaging its franchises to encourage adults to revisit their childhood favourites and, in the process, to introduce them to their own children. This was one reason why Pixar, whose films are known for their cross-generational appeal, was such a natural fit. Now the next generation is being introduced to Star Wars by their nostalgic parents. At the same time, Disney has extended its franchises by adding sub-brands that appeal to particular age groups: children's television series spun off from Star Wars, for example, or darker, more adult tales from the Marvel universe, such as the "Daredevil" and "Jessica Jones" series on Netflix.

> *Do, or do not—there is no try*

What explains the power of all this modern-day mythology? There is more to it than archetypal storytelling, clever technology and powerful marketing. In part, it may fill a void left by the decline of religion in a more secular world. But it also provides an expression for today's fears. The original "Star Wars" film, in which a band of plucky rebels defeat a technological superpower, was a none-too-subtle inversion of the Vietnam war. The Marvel universe, originally a product of the cold-war era, has adapted well on screen to a post-9/11 world of surveillance and the conspiratorial mistrust of governments, large corporations and the power of technology. In uncertain times, when governments and military might seem unable to keep people safe or stay honest, audiences take comfort in the idea of superheroes who ride to the rescue. Modern myths also have the power to unify people across generations, social groups and cultures, creating frameworks of shared references even as other forms of media consumption become ever more fragmented.

Ultimately, however, these modern myths are so compelling because they

tap primordial human urges—for refuge, redemption and harmony. In this respect they are like social-media platforms, which use technology to industrialise social interaction. Similarly, modern myth-making, reliant though it is on new tools and techniques, is really just pushing the same old buttons in stone-age brains. That is something that Walt Disney understood instinctively—and that the company he founded is now exploiting so proficiently. ■

迪士尼

星球大战、迪士尼和神话制造

一家公司如何掌握了讲故事这门生意的技巧

从遥远的星系来到路旁的电影院，《星球大战》系列的最新一集《原力觉醒》是这个圣诞必看的故事。这是迪士尼在2012年以41亿美元收购了出品《星球大战》的卢卡斯电影公司（Lucasfilm）后推出的第一部该系列电影。这不仅仅是一部深受人们喜爱的科幻系列电影的重新上映，还是迪士尼过去十年中借助一系列精明的收购得以繁荣发展的最新例证。在收购了皮克斯（Pixar）、漫威（Marvel）和卢卡斯电影公司之后，迪士尼巧妙地从它们的知识产权中获利，进而巩固了自己在神话产业化市场中的领袖地位。它的成功源于它掌握了现代神话创作的三个元素：隐喻、技术和玩具。

从荷马到汉·索罗

先从隐喻讲起。从《雷神》到《玩具总动员》的迪士尼电影都借用神话结构的老套手段来使它们的故事产生文化共鸣。华特·迪士尼（Walt Disney）本人对寓言的力量有敏锐的直觉。创作《星球大战》的乔治·卢卡斯（George Lucas）热衷于研究约瑟夫·坎贝尔（Joseph Campbell）的著作。坎贝尔是美国的比较神话学家，他概括出了“英雄之旅”结构（monomyth）：英雄响应召唤，在良师的辅助下前往另一个世界探险，历经各种磨难后取得胜利。迪士尼和卢卡斯都从古代神话和民间传说中乐此不疲地大肆窃取素材。漫威描写的那个宇宙则更进一步，直接盗用大量古希腊罗马与北欧神话。（迪士尼公司热衷于强力执行知识产权法律，还似乎想要无休止地延长版权保护期，这多少有些讽刺。）

历经各个时代，神话的内在机制可能没有太大的变化，但用来讲述它们的技术却已经改变。这突显了迪士尼的第二个专长。在荷马时代，传奇故事以长短格六步格诗的形式传承下来，现代的神话创作者则更喜欢使用计算机图形、特效、3D投影、环绕立体声和互联网视频发布等手段。收购卢卡

斯电影公司时，迪士尼不仅获得了《星球大战》系列的所有权，还一并拥有了业界最好的特效公司之一工业光魔（Industrial Light & Magic）。该公司的高科技特效对于漫威的《复仇者联盟》以及《星球大战》这两大电影系列同样至关重要。而当迪士尼在向数字动画转移的过程中落后于人之时，它通过收购皮克斯巧妙地重振了自身的电影制作品牌。皮克斯在数字动画领域里的先锋地位恰如迪士尼过去在手绘动画领域里的角色。此外，现代神话在多种媒体平台上展示。漫威和《星球大战》的奇幻宇宙被记载在环环相扣的电影、电视剧、书籍、连环画和视频游戏里。漫威的计划已制定到本世纪20年代中期。

但如今，神话也将以玩具、商品和主题公园游乐设施等实物形式存在。这是神话创作的第三个元素。迪士尼再次领跑，从20世纪30年代起就对米老鼠和其他动画人物进行授权经营，并于1955年开办了最初的迪士尼乐园。卢卡斯把电影周边商品带进了一个新的维度，他愿意减少担任导演的报酬来换取《星球大战》的所有商品化权，这笔交易为他赚取了数十亿美元。迪士尼现在拥有这些权利，而且正物尽其用：未来一年里，从玩具到衣服，仅《原力觉醒》一片的商品销售就预计高达50亿美元。根据市场研究公司NPD集团的数据，1977年以来，《星球大战》周边商品的销售额累计已超过320亿美元。相比之下，连《哈利·波特》和《007》都变成了“邋遢的牧人”。

那些其他的故事系列表明迪士尼的做法并非独一无二，别的制片公司也正竭尽全力模仿其做法。但迪士尼有一些最有价值的电影故事，并将其潜力发挥到极致。它特别擅长更新与重新包装自己的故事系列，鼓励成年人重温童年时最爱的故事，并在此过程中把它们介绍给自己的孩子。皮克斯的电影以跨代吸引力而著称，它与迪士尼能自然契合，这是原因之一。现在，下一代人通过他们怀旧的父母而认识了《星球大战》。同时，迪士尼也已增加了吸引特定年龄段人群的子品牌来扩展故事系列：从《星球大战》衍生而来的儿童电视连续剧，或者是源于漫威宇宙的更黑暗、更成人化的故事，例如在Netflix上播出的连续剧《超胆侠》（Daredevil）和《杰茜卡·琼斯》（Jessica Jones）。

> *要么做，要么不做，没有试试看*

所有这些现代神话的力量从何而来？答案不仅仅是按典型方式讲故事、巧妙的技术和强大的营销。原因之一是在如今更世俗的世界中，它可能填补了宗教衰退而留下的空白。但它同时也为今天的恐惧提供了一种表达方式。最初的《星球大战》电影讲述的是一群勇敢的叛军打败了一个科技超级强权，这明显是越南战争的颠倒版本。漫威描写的那个宇宙最初是冷战时代的产物，在屏幕上所展现的很贴合911之后的世界，这个世界充斥着监视以及对政府、大企业和科技力量阴谋论般的不信任感。在动荡的年代里，当政府和军事力量似乎无法保护人们的安全而且不再可靠之时，超级英雄驰援相救的想法给观众带来了安慰。甚至在其他形式的媒体消费变得越来越碎片化之时，现代神话也有能力把不同世代、社会阶层和文化背景的人们团结起来，建立起共享的参照物系统。

然而归根结底，这些现代神话之所以如此令人信服，是因为它们利用了人类寻求庇护、救赎以及和谐的原始欲望。在这个方面，它们就和利用技术使社交产业化的社交媒体平台一样。类似地，尽管依靠新工具和技术，现代神话的创作其实也只是在拨动石器时代的人脑中已有的那根神经。这是华特·迪士尼凭直觉就理解到的，也是他创立的公司正在娴熟利用的东西。■

Commercial drones

Airborne innovation

The most successful drone firms could be those that do not make them

A LOT of flying toys will appear first under, then over, Christmas trees later this month. Most drones sold today are for fun, and produced by the likes of DJI (a Chinese firm), 3D Robotics (American) or Parrot (French). Niche firms such as AirDog (of Latvia) offer outdoor narcissists ones that will follow and film them as they surf, ski or cycle. In Christmases to come, some of them may be brought not by Santa but by a delivery drone like Amazon's latest prototype, which it demonstrated in a video on November 29th.

A second, more grown-up set of civilian-drone companies is also rising. These supply services to industry, agriculture and governments, and deploy both off-the-shelf flying machines (in essence, toy drones with extra sensors or cameras attached) or specialist-made ones. New technology, often adapted from smartphones, makes their use remarkably easy.

There is a proliferation of such startups in Europe, where regulations on the use of drones in public places have been passed in many countries—thereby providing legal certainty for operators—and are mostly more permissive than those in America, for example. Andrew Charlton, of the Small UAV Coalition, a lobby group for the industry, argues that this is a big reason why "over 50% of the world's drone activity, its new systems, is happening in Europe—big business is emerging."

Take Delair-Tech, a French outfit with 50 staff, part-owned by Parrot. It builds long-range (50km or more) unpiloted craft in Toulouse. "We think of drones as DIY satellites, and of ourselves as closer to the space industry," says Benjamin Benharrosh, one of its founders. French regulation limits

such drones to 2kg (4.4 pounds) if flown out of sight of an operator. So far it is the only firm in France that is certified to fly such craft commercially.

Mr Benharrosh says annual turnover is €3m ($3.2m), but growing "by 200%", after four years in business. Clients are varied. An American miner hired the firm to record the topography of a copper mine in Congo. France's state rail company, SNCF, uses it to check its lines, for example to keep them clear of overhanging branches. Total, an energy firm, uses its drones to sniff for leaks along its gas pipelines. Rémy Martin, a cognac producer (and another investor in Delair-Tech), relies on its devices to check when its vineyards need watering.

"Agriculture, we think, will be the biggest market," says Mr Benharrosh. The firm is researching how to use drones to monitor crops for disease, assess yields and identify where fertiliser is needed. It charges farmers 15 euros a hectare, but they can save five times as much, he says.

Willem Jan Boer of a Dutch firm, OmniworkX, says all sorts of industrial firms are learning that drones can save them money. Some of its 28 staff were recently hired by Tata Steel to send drones to look inside massive ovens. They have also been flown into oil tanks to look for rust or cracks, and up to the "flame tips" of oil rigs, where gas is flared, reducing inspection times from days to hours. Drones can be used in polluted indoor areas—with asbestos, or radioactive spots—too risky for humans.

The Rotterdam-based firm is expanding to Britain, Ireland, Germany and Malaysia and aspires to be a world leader in inspection and monitoring. But flying the drones is only "20% to 30% of the business", says Mr Boer. Storing and analysing the huge quantities of data that are gathered during inspections is the bigger opportunity. Mr Benharrosh concurs: Delair-Tech records and processes billions of images, and "we realise the value might be in this in future." A harvest of data, collected over years from the same field,

enables the most efficient "machine learning", he says, to maximise the benefit gained by the farmer.

Indeed, some firms are keeping out of the businesses of building and flying drones altogether, concentrating on data services or acting as intermediaries. Altitude Angels, a firm based in Britain, offers information services to the country's 1,000-plus registered civil-drone pilots, on such things as regulations, terrain, and the locations of hazards, both fixed (cranes, say) or mobile (other aircraft).

The firm's aim is to help customers to make their drone use safer by acting as a sort of air-traffic control, allowing the aircraft to keep updating their trajectories as they fly. But it is also seeking other buyers for the masses of data it collects, such as insurers, who as yet have little idea how to judge the risks of drone use, and thus how to price cover.

How fast the industry will grow depends on how fast regulators keep up with it. Britain is unusually permissive, but most European Union countries allow some public, commercial flying of drones. A problem is that national differences—on maximum weights, certificates for operators and so on—risk fragmenting what could be a single, EU-wide market. So, European firms are also looking farther afield. Delair-Tech's Mr Benharrosh calls France "a wonderful experiment field", but says scaling up requires bigger markets, and raising capital in America. Already three-quarters of his firm's turnover is from outside Europe, and it is opening offices in Mexico, Congo, China and America. ■

商用无人机

空中创新

最成功的无人机企业可能并不生产无人机

本月末，许多飞行玩具将首先出现在圣诞树下，然后一飞冲天。目前，大多数售出的无人机都用于消遣，制造商包括大疆创新（中国）、“3D机器人”（3D Robotics，美国）以及派诺特（Parrot，法国）等。“气狗”（AirDog，拉脱维亚）等利基型企业的无人机为户外运动自恋者提供冲浪、滑雪或骑行时的跟踪拍摄。在今后的圣诞节里，一些无人机礼物可能不是由圣诞老人带来，而是由送货无人机运达，比如亚马逊最新的原型机。该公司在11月29日的一段视频中展示了这款无人机。

第二批更成熟的民用无人机企业也在崛起。这些企业向工业、农业和政府提供服务，并部署现成的飞行器（实质上就是加装了传感器或摄像头的玩具无人机）和特制的无人机。通常改良自智能手机的新技术让无人机的使用非常简便。

这类创业企业在欧洲呈激增之势，许多欧洲国家都通过了在公共场所使用无人机的法规（从而为运营商提供了法律确定性），并且大多数法规比美国等其他地方更为宽松。行业游说团体“小型无人机联盟”（Small UAV Coalition）的安德鲁·查尔顿（Andrew Charlton）认为，“目前世界上超过50%的无人机活动，以及围绕无人机形成的新系统，都发生在欧洲——大生意正在涌现”，立法宽松正是一大原因。

以拥有50名员工、由派诺特部分所有的法国企业“德莱尔科技”（Delair-Tech）为例，它在图卢兹生产远距离（50公里或以上）无人机。创始人之一的本杰明·本哈罗施（Benjamin Benharrosh）说：“在我们眼里，无人机就是DIY卫星，我们的事业更接近航天工业。”法国的法律规定，这种会飞离操作者视线的无人机的重量上限为2公斤（4.4磅）。到目前为止，它是法国唯一一家获得认证而可以对此类飞机做商业飞行的公司。

本哈罗施表示，公司经过四年的经营，年营业额为300万欧元（320万美元），但增长率达“200%”。客户各式各样。一家美国矿业公司雇请该公司记录刚果一处铜矿的地形。法国国家铁路公司（SNCF）聘用该公司检查铁路，比如清理掉悬垂在铁轨上方的树枝。能源公司道达尔利用其无人机沿天然气管道寻找泄漏点。干邑生产商人头马（Rémy Martin）（也是德莱尔技术的另一投资者）依靠其无人机来检查葡萄园何时需要灌溉。

本哈罗施说：“我们认为农业将是最大的市场。”该公司正在研究如何运用无人机来监测作物病虫害、评估产量并确定何处需要施肥。他说，公司对农民的收费是每公顷15欧元，但农民能节省五倍于此的费用。

荷兰公司OmniworkX的维伦·简·博尔（Willem Jan Boer）表示，各种各样的工业企业都意识到无人机能帮它们省钱。该公司28名员工中的一些人最近受雇于塔塔钢铁公司（Tata Steel），负责把无人机送进巨型熔炉里进行探测。无人机还飞进油罐内寻找锈蚀和裂缝，并飞上石油钻井平台燃烧气体的“火炬”，把检查时间从几天减少到几小时。无人机能用于对人体过于危险的受污染的室内环境，比如有石棉或放射性物质的地方。

这家总部位于鹿特丹的公司正拓展到英国、爱尔兰、德国和马来西亚，并有志于成为检验和监测领域的全球领先企业。但是博尔表示，飞行无人机只占“业务的20%到30%”。储存和分析检查过程中收集到的海量数据才是更大的商机。本哈罗施也同意这个观点：德莱尔科技记录和处理着数十亿幅图像，“我们意识到，今后的价值可能来源于此。”他说，多年收集自同一领域的大量数据能实现最有效的“机器学习”，让农民的获利最大化。

的确，有一些公司正在远离生产和飞行无人机的业务，而集中精力于数据服务或者充当中介。总部位于英国的“高度天使”公司（Altitude Angels）向国内1000多名民用无人机注册驾驶员提供信息服务，范围包括法规、地形以及存在危险的地点，包括固定的危险（比如起重机）或移动的危险（比如其他飞机）。

该公司通过充当某种空中交通管制的角色，让飞机在飞行时可以不断更新

其轨迹，以帮助客户更安全地使用无人机。但它也正在为自己收集的海量数据寻找其他买家，例如保险公司。保险公司还不知道如何判断无人机的使用风险，因而不知道如何为无人机的保险定价。

该行业的增长速度将取决于监管机构跟进的速度。英国在这方面异乎寻常地宽松，不过欧盟大多数国家也都允许无人机在某些公共场所进行商业飞行。一个问题就是，欧盟原本可以形成一个单一市场，但各国在最大重量、操作师证书等方面的差异有分裂这一市场的危险。因此，欧洲企业也把目光投向更远的地方。德莱尔科技的本哈罗施称法国是“一个绝妙的实验场”，但他表示，公司壮大需要更大的市场以及在美国融资。该公司已有四分之三的营业额来自欧洲以外的地区，并且正在墨西哥、刚果、中国和美国设立分支机构。■

Spooks v tech firms

Crypto wars 2.0

Intelligence agencies and tech firms have little choice but to compromise

THOSE who forget the past are doomed to repeat it, the saying goes. This seems to be particularly true in the digital world. Two decades ago America's National Security Agency developed a special encryption chip for mobile phones, called Clipper, that came with a digital backdoor so spooks and police could listen in. It was meant as a compromise, but abandoned as the NSA and the FBI, at least outwardly, lost the "crypto wars" against a powerful coalition of internet activists and technology companies.

Since the underlying conflict—the need to protect online privacy with strong encryption versus the authorities' need to eavesdrop occasionally—was not resolved, it is now coming back with a vengeance. On November 3rd Robert Hannigan, the new director of GCHQ, Britain's surveillance agency, accused social networks and other online services of becoming "the command-and-control networks of choice for terrorists and criminals". The same day Michael Rogers, the NSA's new head, raised these questions in a speech in Silicon Valley, albeit in a less strident tone.

The statements are a reaction to technology firms reinforcing their products and services with strong cryptography to keep or attract privacy-conscious customers. Most prominently, data on Apple's iPhones are now encrypted, with the owner holding the key, so that the firm will no longer be able to unlock the devices even if ordered to do so by a court. Such innovations were in turn partly a reaction to the revelations by Edward Snowden, a former NSA contractor, which showed that the NSA and GCHQ had resorted to widespread digital surveillance.

Both sides have a point—but also weaknesses in their arguments.

Intelligence services and law enforcers certainly need access to communications and content in some cases, particularly to fight terrorism. But it would be a surprise if the NSA had not already found a way to tap, say, WhatsApp, a highly popular messaging service. What is more, the backdoors that agencies would like to see installed could also let malicious hackers get in too, not least those based in China.

As for America's technology companies, they worry that they will lose custom, in particular abroad. A growing number of foreign firms are already avoiding American providers of cloud computing because they are worried that their data may be siphoned off by the NSA without them knowing about it. At the same time, firms like Google and Facebook are not in the best position to criticise intelligence agencies for being data hungry: their business is mostly built on sucking up as much information about their customers as possible.

Although the shrill rhetoric on both sides suggests the opposite, it seems mostly a negotiating tactic. Mr Rogers's speech in Silicon Valley was essentially an offer to talk. "I'm not one who jumps up and down and says either side is fundamentally wrong," he said. "We have no choice but to come to an agreement," says the boss of an American technology giant. A deal would be welcome, but only if the rules are transparent, enforceable—and apply not just to American agencies, but to the other members of the "Five Eyes", the intelligence alliance which also includes Australia, Britain, Canada and New Zealand.

Will it happen? More likely, there will be muddling through—just like after the Clipper chip. Technology companies will negotiate some arrangement to satisfy information requests by governments. And intelligence services will try to exploit vulnerabilities in encryption technologies or create backdoors surreptitiously. Until, perhaps, another Snowden comes along. ■

情报部门对抗科技公司

加密战2.0

情报机构和科技公司除了互相妥协几乎别无选择

常言道，忘记过去的人必将重蹈覆辙。在数字世界里似乎尤为如此。二十年前美国国家安全局（National Security Agency）为移动电话开发了一款名为Clipper的特殊加密芯片，该芯片带有方便情报部门和警察监听的数字后门。这意味着一种妥协，但是面对互联网活跃分子和科技公司的强大联盟，国安局和FBI输掉了这场“加密战”，至少表面如此，该芯片也被抛弃了。

由于潜在的冲突——用高强度加密保护网络隐私的需求与当局偶尔要窃听的需求——并未解决，如今它又咆哮而归。11月3日，英国监听机构政府通讯总部（GCHQ）的新主任罗伯特•汉尼根(Robert Hannigan)指责社交网络和其他网络服务正成为“恐怖分子和罪犯首选的指挥和控制网络”。同一天美国国安局的新局长迈克尔•罗杰斯（Michael Rogers）也在硅谷的一次演讲中提出了同样的问题，只是措辞更平和。

当局之所以有这样的表态，是因为科技公司正使用高强度的加密技术增强自己的产品和服务，以挽留或吸引注重隐私的用户。最显著的是，苹果公司iPhone上的数据现已加密，由用户掌握密钥，所以即使收到法院的命令，该公司也无法解锁设备。这类创新一定程度上是对美国国安局承包商前雇员斯诺登所做披露的回应。斯诺登的披露显示美国国安局和英国政府通讯总部已开展广泛的数字监控。

双方都有道理，但辩辞各有漏洞。情报部门和执法机构在某些情况下的确需要获取通讯信息和用户数据，尤其是在打击恐怖主义时。但如果说美国国安局至今还没有找到一种方式监控如WhatsApp这种热门消息服务，那就太让人吃惊了。另外，情报机构喜闻乐见的后门也有可能被黑客利用，特别是来自中国的黑客。

就美国科技公司而言，他们担心会流失客户，尤其是海外客户。越来越多的外国公司已经避开美国的云计算提供商，因为他们担心自己的数据会在毫不知情的情况下被美国国安局截取。与此同时，谷歌和Facebook等公司在批评情报机构对数据过于贪婪时也显得底气不足：他们的业务主要建立在汲取尽可能多的用户信息之上。

虽然双方言辞尖锐，但其实不然，这看起来更像是一种谈判策略。罗杰斯在硅谷的那番讲话本质上就在提供一个对话的契机。他说：“我不会上蹿下跳地指责哪一方在根本上是错的。”而一家美国科技巨头的老板则指出：“我们别无选择，只能达成协议。”人们乐见协议达成，但规则必须透明，而且要具有强制性——不仅适用于美国的情报机构，还应适用于“五只眼”的其他成员国。“五只眼”是一个情报联盟，除美国之外还包括澳大利亚、英国、加拿大和新西兰。

这一设想能否实现？很可能会是蒙混过关——就像当年的Clipper芯片事件曝光后的情况一样。科技公司可能会通过谈判达成一些协议，以满足政府的情报需求。而情报机构则会设法利用加密技术的漏洞或者偷偷摸摸地植入后门。直到，说不定，另一个斯诺登的出现。■

Emerging-market banks

Stressful times

The problems of banks in the developing world are more chronic than acute

IN FINANCE, things that grow very fast have an irksome tendency to blow up. American subprime mortgages prior to 2008, southern European sovereign debt in the run-up to 2010 and Japanese banks in the 1980s are but recent examples. So it is worrying that bank lending in emerging markets has ballooned in recent years, from about 77% of GDP in 2007 to 128% at the beginning of this year, according to JPMorgan Chase, a rich-world bank (see chart). That 51-percentage-point jump dwarfs the mere 20-point rise in credit in the rich world in 2002-07.

Now that the economic prospects of emerging markets have dimmed, banks from Shanghai to São Paulo are in the spotlight. Trouble in such places would once barely have registered in global financial circles. In 1990 only three of the world's 100 biggest lenders by assets were in developing countries. Now the world's four biggest banks are in China, and the fifth-biggest, HSBC, does much of its business from Hong Kong. More than a third of the world's biggest banks have their headquarters in emerging markets, and plenty of rich-country firms (such as Standard Chartered, based in London, or BBVA, a Spanish bank) operate there.

Banks that have expanded at such a rapid clip in the past have typically issued more than a few dud loans along the way, and stretched their balance-sheets beyond comfort. Happily, regulators have learned the lessons of past crises in most emerging markets, so systemic turmoil is unlikely. It is the banks' ability to finance a return to rapid economic growth that is in doubt.

The Institute of International Finance, a trade group, predicts that 2015 will

be the first year of net capital outflows from emerging markets since 1988. The good news is that emerging-market banks have little trouble funding themselves. Many emerging economies, especially in Asia, have high savings rates. That leaves most lenders with more deposits than loans, even though loans have been growing faster of late. Rich-country banks, in contrast, have to make up for a shortage of deposits by tapping fickle wholesale markets, leaving them more vulnerable to sudden changes in sentiment.

If liquidity is not an issue, solvency may be. Banks in emerging markets tend to be profitable: the listed ones generated net income of $563 billion last year, up from $94 billion a decade ago. Unlike their Western peers, few have investment-banking arms, which have attracted profit-sapping regulation and fines from watchdogs.

But profits can also be wiped out by dud loans, which must eventually be written off. Though lending to consumers is growing, emerging-market banks lend mainly to companies. Unfortunately, troubled industries such as property (a Chinese speciality), infrastructure development (India) and commodities (Brazil, Chile and Nigeria, among others) feature prominently in loan books. In India non-performing or restructured loans now account for more than 14% of the assets of public banks, which control three-quarters of the market. In China they are low but growing fast.

Currency mismatches are another concern. The prospect of higher interest rates in America, plus declining commodity prices tied to a slowdown in the Chinese economy, has pushed most emerging-market currencies down relative to the dollar. Collectively, they have fallen by around 30% against the greenback since early 2013.

That can affect banks directly, if they have borrowed dollars to finance loans in local currencies—a trick that is very profitable when currencies are

steady. Regulators in Asia, whose banks were caught in this trap in 1997, now monitor banks' exposure to currency movements. But their counterparts in Nigeria and Turkey, in particular, have not been so exacting.

Even if banks have avoided currency mismatches, their customers are not always so prudent. Low interest rates in America have sent some developing countries on a dollar-denominated borrowing spree: external corporate debt in emerging markets amounts to $1.3 trillion, according to the Bank for International Settlements. Dollar-denominated loans make up 25% of corporate lending in Russia, perhaps 30% in Turkey and probably even more in Nigeria (the data are fuzzy). Firms will struggle to repay those dollars with devalued roubles or naira. Commodity producers would normally be immune to this problem, since their income is in dollars, but the plunge in commodity prices has ensnared them, too.

Inflation, which has been stoked by devaluations in several emerging markets, will also cause problems. Rising prices sap consumers' purchasing power and prompt rises in interest rates (they are in double digits in Brazil and Russia). That can make it hard for borrowers to service their debts. The share of household income going to debt service seems to be rising in Brazil, China and Turkey, among other places.

There is little sign yet that bad debts will reach catastrophic levels. But unless banks face up to them, their long-term consequences could nonetheless be grim. Lenders often try to sweep their problems under the carpet. One common strategy is to "extend and pretend"—giving companies with little prospect of paying back a loan years of forbearance. This ties up scarce capital in zombie firms, which can lead to years or even decades—in the case of Japan—of subpar growth.

There are signs that emerging-market banks are hiding losses in this way.

Chinese ones, for example, put non-performing-loans at just 1.6% of assets, less than half the global average. Investors plainly don't believe them: their share prices imply dud loans of more than 8%, according to Barclays. By the same token, international banks that do business across emerging markets often disclose far higher levels of distressed loans than local banks.

Emerging-market banks are no longer the undersized tiddlers of global finance. The way they are run matters more than ever. Their balance-sheets are healthy enough to weather the aftermath of the credit bender they initiated. But whether they bounce back or limp along depends on how quickly they admit their failings. ■

新兴市场中的银行

紧迫时刻

发展中国家银行的问题并非急性发作，而是经久累积

在金融界，迅猛的增长往往容易引致破灭，令人困恼。2008年前美国次贷激增，2010年前南欧主权债务高企，上世纪80年代日本银行业泡沫，都是近期的例子。因此，近年来新兴市场银行贷款的膨胀令人忧心，据发达国家银行摩根大通的数据（见图表），新兴市场银行贷款占GDP比率从2007年的约77%上升至今年初的128%。与这51个百分点的跃升比起来，发达国家从2002至2007年间那仅仅20个百分点的贷款升幅相形见绌。

新兴市场的经济前景如今变得黯淡，上海到圣保罗等地的银行成为焦点。曾经，这些地方的问题对全球金融圈的影响微乎其微。1990年，世界资产规模最大的100家银行只有三家在发展中国家。如今世界前四大银行都在中国，而第五大银行汇丰在香港的业务也非常大。全球最大的银行中有超过三分之一总部设在新兴市场，还有大批发达国家的银行在那里经营业务，如总部在伦敦的渣打银行和西班牙对外银行（BBVA）。

在过去经历如此高速发展的银行通常都发放了不少不良贷款，资产负债规模的膨胀存在质量隐患。幸而，大部分新兴市场的监管机构已从过往的危机中汲取教训，因此不太可能爆发系统性崩溃。令人质疑的倒是这些银行能否支持经济重回快速增长。

行业团体“国际金融研究院”（The Institute of International Finance）预测，2015年将是新兴市场自1988年以来出现资本净流出的第一年。所幸的是新兴市场银行融资不成问题。许多新兴经济体储蓄率高，尤其在亚洲。这使得大部分银行的存款高于贷款，尽管近来贷款一直增长更快。相比之下，发达国家银行由于存款短缺，须由变幻莫测的批发业务市场弥补，因而更受制于市场气氛的突变。

即便流动性不成问题，偿债能力也可能是道坎。新兴市场银行往往有所盈

利：其中的上市银行去年的净收益为5630亿美元，十年前为940亿美元。有别于西方银行的是，它们很少有投资银行部门，因此不会惹来监管机构的监管和罚款而有损利润。

但不良贷款也可能抹杀利润，毕竟那最终需要冲销。虽然消费者信贷在增长，新兴市场银行的贷款主要还是面向企业。不幸的是，有问题的行业在贷款组合中占比显著，如中国的房地产行业、印度的基建，以及巴西、智利和尼日利亚的大宗商品。在印度，不良或重组贷款如今占上市银行总资产14%以上，而这些银行控制了四分之三的市场份额。在中国，该比例较低，但正在快速上升。

货币错配是另一问题。此前对美国加息的预期，加上中国经济放缓造成大宗商品价格下跌，已令大多数新兴市场货币兑美元价格走低。自2013年初以来，这些货币兑美元的总体跌幅约为30%。

假如银行曾借入美元并以当地货币放贷（在汇率稳定时是盈利高招），上述问题可能对其造成直接影响。亚洲的银行在1997年经历过货币错配之劫，监管机构如今会监控银行受汇率波动影响的风险。但其他新兴市场的金融监管机构则不那么严格，尤其是尼日利亚和土耳其。

即使银行躲过货币错配，其客户也未必一贯审慎。美国的低息令部分发展中国家掀起了以美元计价的借贷狂潮：据国际清算银行的数据，新兴市场的外部企业债务总共达1.3万亿美元。在俄罗斯，美元计价贷款占企业贷款的25%，土耳其的数字约为30%，尼日利亚的比率甚至可能更高（数据未明）。卢布或奈拉贬值，这些国家的企业将难以偿还美元债务。大宗商品生产商通常不受这一问题困扰，因为其收入以美元计价，但大宗商品价格暴跌也使它们同样陷入困境。

在多个新兴市场，由货币贬值引发的通货膨胀也将造成问题。价格上涨有损消费者的购买力，并促使利率上升，巴西和俄罗斯的利率已达两位数，这会令借款人难以偿债。在巴西、中国及土耳其等国，家庭收入用以偿债的份额似乎正在上升。

至今，未有迹象显示坏账将达到灾难性水平。但银行必须正视问题，否则长期后果必定非常严峻。银行经常试图掩盖问题。常用策略之一是“宽延与假装”——多年容忍宽限偿债可能性极低的公司。稀缺的资本因而被套牢在僵尸企业上，这可能导致经济数年甚至数十年增长滞缓，日本便是例子。

有迹象表明，新兴市场的银行正以这一方法掩盖亏损。例如，中国的银行数据显示不良贷款仅占总资产的1.6%，不到全球平均水平的一半。巴克莱银行的分析认为，投资者对此根本不相信，这些银行的股价意味着其不良贷款比例超过8%。同样道理，业务涵盖各新兴市场的国际性银行公布的不良贷款率往往远高于本地银行。

新兴市场银行已不再是全球金融圈内的小矮人，其营运管理的方式比以往任何时候都更为举足轻重。目前，它们良好的财务状况足以应付自己引发的信贷狂潮。然而，前路是绝地反弹还是蹒跚前行，就看它们能否迅速承认自身的问题。■

Monetary policy

After lift-off

The Federal Reserve is set to raise interest rates for the first time since 2006. Its next step matters more

THERE was a time when a nudge up or down in interest rates was seen not just as normal, but testament to central bankers' ability to fine-tune the economy. Not now. The Federal Reserve is widely expected to raise its benchmark interest rate, currently close to zero, by a quarter of a percentage-point on December 16th. That would be its first increase since June 2006. Unfortunately, the Fed's reasons for moving this month reflect its fear of losing credibility with the markets as much as its mastery of the economy.

Having talked endlessly about an imminent move, the central bankers now feel bound to keep their word. That is a poor rationale for making monetary policy. One small, widely heralded rate rise is unlikely to fell America's economy. The important question is when the next ones will follow. That is where the Fed must signal now that it will be cautious.

Data-dependent, not date-dependent

This newspaper would not raise interest rates yet. America's jobless rate, at 5%, is close to what economists consider to be full employment. And there are tentative signs that wage growth is finally picking up. Since monetary policy operates with a lag, central bankers must be forward-looking. But inflation on the price index for personal-consumption expenditure, the Fed's preferred measure, is just 0.2%. The core measure, which excludes food and energy prices, is 1.3%. Although the headline rate will jump in the coming months, as the sharp fall in energy prices at the turn of 2014 drops out of the annual rate, there is little sign that underlying inflation is about to accelerate sharply, or exceed the 2% target.

The risks of tightening too much too soon still seem greater. Despite a combined stimulus from zero interest rates and $3.8 trillion of asset purchases by the Fed, GDP in America has risen at an annual average rate of around 2% since 2010. The strong dollar and weakness in emerging markets will weigh on America's economy—and the divergence between the Fed's tightening and looser monetary policy elsewhere, especially in the euro area, Japan and China, means that the dollar is likely to strengthen further. Because its starting-point is near-zero interest rates, the Fed has more scope to deal with an unexpected surge in inflation by shoving rates upward, than it has to address any threat of recession by bringing them down again.

Even if the risks that the Fed faces are stubbornly lopsided, the consequences of one premature quarter-point rate rise are unlikely to be disastrous. A series of premature increases would be another matter. And that is where the Fed's apparent plans are worrying. The central bank's forecasts suggest that interest rates will rise by a quarter-point roughly every three months in 2016. Such a schedule of increases would unsettle the bond markets (which have priced in a slower pace of tightening) and drive up the dollar yet further.

A rapid tightening cycle would also ratchet up pressure abroad. There is a sense that many emerging markets are in so deep a funk that the Fed cannot make things much worse. Capital has flowed out of emerging-market shares and bonds in four of the past five months, according to the Institute of International Finance. The currencies of commodity exporters, hurt by China's waning appetite for raw materials, have already fallen. But sharply higher American interest rates would put more pressure on countries that rely on foreign capital to plug their trade gaps. Central banks in Chile, Colombia, Peru and South Africa have recently raised interest rates in anticipation of the Fed, at some cost to economic growth. The Fed's concern is the American economy, of course, but sluggish demand abroad

and a strong dollar have effects on exporters.

The recent experience of other central banks offers salutary lessons in the dangers of moving too fast to get off the interest-rate floor. In 2011 the European Central Bank twice raised its main interest rate, but was swiftly forced to reverse course and has since cut even more deeply. On December 3rd it cut the rate it pays on commercial-bank deposits to minus 0.3%. Interest rates in Sweden were increased from 0.25% to 2% before the Riksbank had to march them back down again (its main lending rate is now negative). Central banks in Canada and Israel have suffered similar reversals.

The Fed's apparent determination to get going on monetary tightening is a worrying signal of how fast it plans to move thereafter. Before attempting a second rise, America's central bank should give itself time to assess the impact of the first. ■

货币政策

加息之后

2006年以来美联储将首次加息。它的下一步更为重要

曾几何时，加息降息不仅被认为很正常，而且还证明了各国央行调控经济的能力。现在不再是这样了。市场普遍预期美联储将于12月16日把目前接近于零的基准利率调高0.25个百分点。这将是2006年6月以来的首次加息。不幸的是，美联储本月加息的原因反映出它担心失去市场的信任和对经济的掌控。

在没完没了地谈论即将加息之后，现在美联储的官员们觉得必须信守承诺。就制定货币政策而言，这是一个很糟糕的理由。一次广为预告的小幅加息不可能击垮美国经济。重要的问题是，接下来的加息何时进行。这才是美联储目前必须发出的信号：会谨慎处理未来的加息。

> *依赖数据，而非日期*

本刊不主张现在就加息。美国5%的失业率接近经济学家认为的充分就业水平。初步迹象表明，工资增长终于有了起色。由于货币政策的起效有滞后性，央行必须具有前瞻性。但是，美联储的首选指标个人消费支出价格指数仅上涨了0.2%。不包括食品和能源价格的核心通胀率为1.3%。由于2014年底能源价格大幅下跌，低于全年下降比率，因此未来几个月内整体通胀率将有跃升，但尽管如此，没有迹象表明基础通胀率会大幅上升或超过2%的目标。

货币政策过早过多收紧的风险似乎更大。尽管有零利率以及美联储购入3.8万亿美元资产的共同刺激，但是2010年以来美国GDP的年均增长率仅为2%左右。强劲的美元和疲软的新兴市场将会拖累美国经济。更有甚者，美联储的紧缩政策与其他地区（尤其是欧元区、日本和中国）宽松的货币政策之间的分歧，意味着美元有可能进一步走强。因为利率已接近于零，相比压低利率来应对经济衰退的威胁，美联储在上调利率来应对通胀的意外飙升方面有更大的余地。

即使美联储面临的风险一直是单边的，过早加息0.25个百分点的后果也不可能是灾难性的。但一系列连续的过早加息就是另一回事了，而这正是美联储看上去将要实施的计划令人担忧的地方。美联储的预测显示，2016年内，基本上每3个月将加息0.25个百分点。这种加息的安排会扰乱债券市场（债市之前一直按照较慢的货币政策紧缩节奏在定价），还会进一步推高美元。

快速的紧缩周期也会增加对海外市场的压力。有种观点认为，许多新兴市场已经深陷低迷，美联储的做法并不会使事情变得更糟。根据"美国国际金融研究所"（Institute of International Finance）的研究，过去五个月里有四个月，资本从新兴市场的股票和债券中流出。大宗商品出口国受到中国对原材料需求减弱的影响，其货币已经贬值。但是，美国利率大幅上升将对那些依赖外国资本填补贸易逆差的国家施加更大压力。由于预期到美联储加息的行动，智利、哥伦比亚、秘鲁和南非的央行最近都选择了加息，尽管这么做会牺牲一些经济增长。美联储担忧的当然是美国经济，但国外需求疲软和强势的美元都会影响到出口。

其他央行近期的经验提供了前车之鉴，说明太快地摆脱利率下限十分危险。2011年欧洲央行曾两次提高主要利率，但很快就被迫逆转方向，之后降息的幅度甚至更大。12月3日，它把付给商业银行存款的利率降至-0.3%。瑞典曾把利率从0.25%提高到2%，其后，瑞典央行不得不再次降息（其主要贷款利率目前为负）。加拿大和以色列的央行也都经历了类似的逆转。

美联储推进货币紧缩政策的决心显而易见，这释放出一个令人担忧的信号：之后的调整动作会有多快？在试图第二次加息前，美国央行应该给自己留些时间来评估首次加息的影响。■

Free exchange

The Japanese solution

Despite Shinzo Abe's best efforts, Japan's economic future will be a leap into the unknown

THERE are four kinds of countries in the world, the Nobel-prize-winning economist Simon Kuznets supposedly said: developed, undeveloped, Argentina and Japan. Yet much of the rich world now looks remarkably Japanese, with chronically low interest rates and inflation, and eye-watering levels of sovereign debt. Many governments are therefore watching keenly as Shinzo Abe, the prime minister elected in 2012 on a platform of economic rejuvenation, takes on Japan's economic mess. His task is harder than many appreciate. What is needed is not simply growth, but growth fast enough to allow Japan to come to grips with its massive public debt.

Mr Abe promised three expansion-boosting "arrows"—fiscal, monetary and structural—to deliver a much more powerful stimulus than the half-measures taken by previous governments. In September of this year he gave a clearer sense of the end-goal: a 20% rise in Japan's nominal GDP (NGDP), to ¥600 trillion ($5 trillion) from the current ¥500 trillion, where it has stood for the past 20 years, more or less.

Mr Abe's archery has moved the economy in the right direction. NGDP, which measures growth without adjusting for inflation, is up by about 6% since the end of 2012. Higher prices account for about half of the increase. The unemployment rate has also fallen, from 4.3% to 3.4%. Yet this progress is still woefully inadequate. The recovery has been halting: growth slumped in the second quarter. Prices are falling again, and even the "new core" inflation index cooked up by the Bank of Japan (BoJ) over the summer remains short of its 2% inflation target. A return to monetary-policy

normality looks as distant as ever. The BoJ disappointed markets on October 30th by failing to increase the pace of its asset purchases, but it is still buying ¥80 trillion in government bonds a year, and may add to that if inflation stays weak.

Meanwhile, Japanese sovereign debt, at more than 240% of GDP, is easily the highest in the world and still growing. Bond markets have been remarkably tolerant of this: the yield on Japan's 30-year bonds is just 1.36%. That is partly because the Japanese, prodigious savers, own so many bonds. The central bank owns most of the rest. Yet few economists reckon the borrowing spree can continue for ever. As more Japanese workers retire, domestic saving is falling and spending on the old soaring. Even a modest rise in borrowing costs could bring insolvency.

Mr Abe had hoped that a quick return to rapid growth would allow for an eventual turn to austerity, but the pivot to parsimony is proving tricky. Japan will run a structural budget deficit of more than 5% of GDP this year. After a rise in the country's consumption tax in April of 2014, from 5% to 8%, both household spending and GDP tumbled, leading the government to postpone a second rise to 10% that had originally been scheduled for October of this year. That experience is especially worrying given the modesty of the rises. An analysis published in 2013 estimated that stabilising Japan's debt would require tax revenues of between 30% and 40% of total consumption, equivalent to a consumption tax rate of about 60%. Other studies are less dire, but nonetheless suggest that far bolder measures than anything under consideration will be needed to stabilise the debt.

At current growth rates, any big tax rises or spending cuts would tip Japan straight back into recession. Yet generating faster growth is a tall order. Supply-side reforms could be more vigorous: Japan remains far too willing to protect favoured sectors, like agriculture and cars, despite some recent

concessions in trade negotiations. Yet the scope to improve productivity in Japan is smaller than might be imagined. Real output per worker is similar to that in Germany and the Netherlands. A more welcoming attitude to immigrants would help: recent growth in output per person has been offset by Japan's shrinking population. In 2012 net migration to Japan was equivalent to just 0.3% of the existing population, compared with 1.6% in America. Yet Mr Abe has shown little interest in admitting a rush of new workers.

The price is wrong

The only way out is higher inflation. Had NGDP grown at even 2% a year since 1992, its debt-to-GDP ratio would be just 82%—close to America's. Yet pushing up wages and prices has proved devilishly hard. In the past year alone the BoJ's asset purchases lifted the share of Japanese government debt that it owns from 23% to 32%. Despite low unemployment, a tumbling yen and soaring stock prices, inflation has barely poked its head above zero at any point in the Abenomics era. A more ambitious inflation target, of 4% perhaps, would help if markets believed it. But having failed to hit the 2% mark it adopted in January of last year, the BoJ lacks the credibility to make bolder promises without further action to prove its resolve.

Japan is not without options, however. At the current pace of purchases, the share of government bonds held by the central bank will rise to two-thirds by 2020. Were purchases to rise to ¥100 trillion a year, the BoJ would own nearly all of the government's outstanding debt by 2026. The government would in effect owe the money to itself; debt payments made to the BoJ would be returned to the government as seigniorage.

A plan to monetise the debt meets any standard definition of economic insanity. Orthodox economics suggests it must inevitably generate rapid inflation. Yet given that faster inflation is what Japan has sought in vain for two decades, and that the only alternative seems to be waiting patiently for

a debt crisis, monetary madness does not look so bad. It has the further advantage of following the path of least resistance.

Other governments would understandably recoil should Japan take this route or stumble into it inadvertently. Monetisation would open a Pandora's box of economic risks. Yet recent experience suggests that where Japan leads, other economies may eventually follow. ■

自由交流

日式解决方案

安倍晋三招数再高，日本经济依然前景未卜

世界上有四类国家：发达国家、不发达国家、阿根廷和日本，据说诺贝尔奖得主、经济学家西蒙·库兹涅茨（Simon Kuznets）曾如此描述。而现在，大部分富裕国家看来与日本十分相似：利率及通胀长期低迷，主权债务深重。多国政府因而密切关注安倍晋三（2012年以振兴经济为政纲当选首相）如何应对日本的经济困局。其任务比许多人意识到的更为艰巨。所需的并不仅仅是增长，而是足够快的增长以让日本解决其庞大的公共债务问题。

安倍承诺用"三支箭"促进增长——财政、货币和结构调整——以实现比往届政府那些权宜之计更强有力的刺激。今年9月，他定出更清晰的最终目标：日本的名义GDP增长20%，从目前的500万亿日元上升至600万亿日元（5万亿美元）。过去20年里，名义GDP基本维持在500万亿日元。

安倍的箭术已令日本经济瞄准正确的方向。衡量未扣除通胀因素增长水平的名义GDP自2012年底以来已提高约6%。其中约一半涨幅源于物价上升。失业率也从4.3%降至3.4%。但进展仍远远不够。复苏已经停顿：第二季度经济增长下滑。物价再次下跌，就连日本央行今夏出炉的"新核心"通胀指数也低于2%的通胀目标。回归货币政策常态似乎再度遥遥无期。日本央行在10月30日公布的措施未能加快资产购入的步伐，令市场感到失望，但央行仍每年购入80万亿日元的政府债券，而且如果通胀持续疲软，可能还会加大债券购入量。

同时，日本的主权债务占GDP比例超过240%，稳居全球最高，而且还在上升。债券市场对此却一直相当包容：日本30年期债券收益率只有1.36%。部分原因是日本人热衷储蓄，持有非常多债券。剩下的债券大多由日本央行持有。但少有经济学家认为这股贷款热潮能永远持续。随着越来越多日本劳动人口退休，国内储蓄正在下降，用于养老的开支飙升。借

贷成本稍有上升都可能导致无力偿债的情况。

安倍本来希望通过在短时间内恢复迅猛增长而最终转向紧缩，但要找到支点转向紧缩谈何容易。日本今年的结构性预算赤字占GDP比率将超过5%。日本在2014年4月把消费税率从5%上调至8%后，家庭支出及GDP均大幅下跌，政府原本计划在今年10月再次上调消费税至10%，如今不得不推后实施。这尤其令人忧虑，毕竟税率上调程度相当轻微。2013年发表的一项分析估计，要稳定日本的债务情况，需要将税收提升至总消费的30%到40%，相当于消费税为约60%。其他研究得出的数字没有这么严峻，但也显示，要稳定债务，政府要采取的举措需要远比目前正在考虑中的任何一项措施更大胆激进。

按目前的增长速度，任何大幅度的税率上调或削减支出都会令日本直接重陷衰退。而推动更快增长是个艰巨的任务。供给方面的改革可以更强劲：日本仍然过于保护受优待的行业，如农业和汽车产业，尽管在最近的贸易谈判中有一些让步。然而，在日本，生产力可提高的空间其实比想象的要小。其人均实际产出与德国及荷兰的数字相近。而日本人口的萎缩抵消了最近人均产出的增长，因此对外来移民采取更欢迎的态度也许会有帮助。2012年，到日本的净移民人数仅为其现有人口的0.3%，而在美国，该数字为1.6%。但安倍似乎无意接纳大量新的移民劳动力。

通胀难企

唯一的出路是提高通胀。如果1992年以来日本的名义GDP能以即便2%的速度增长，其债务占GDP比率也将不过是82%，接近美国的数字。但事实证明，推高工资和物价水平难比登天。单单过去一年，日本央行的资产购入行动已令其持有的日本政府债务份额从23%上升到32%。在安倍经济学推行时期，尽管失业率低、日元下挫、股价飙升，日本的通胀率却一直只能勉强保持在零以上。定下像4%这样更具野心的通胀目标会有帮助，但前提是市场对此抱有信心。可是日本央行去年1月定下的2%通胀目标最终落空，若无进一步行动以证明其决心，很难再做出令人信服的大胆承诺。

然而日本也并非毫无选择。按目前的资产购入速度，到2020年，日本央行

持有政府债券的比例将上升至三分之二。假如每年购入的金额上升至100万亿日元，日本央行将在2026年前几乎拥有政府的所有未偿债务。结果是政府自己欠自己钱；流向央行的债务还款将以货币税的形式回归到政府手上。

把债务货币化的计划正是标准意义上的疯狂经济举措。正统经济学认为，这必然会引起快速通胀。但鉴于日本过去20年苦求通胀加速而不果，而且除此之外似乎就只能静待债务危机来袭，那么债务货币化的疯狂行径看起来也就不那么糟糕了。而且这么做的优点还在于这是阻力最少的一条路。

假如日本选择了或者不慎跌进了这条道路，其他国家政府难免会退缩，这可以理解。货币化将打开经济风险的潘多拉盒子。然而，最近的经验表明，只要日本带头，其他经济体或许会最终跟随其后。■

Technology companies

The rise and fall of the unicorns

Some private technology firms are having trouble justifying their lofty valuations

WORKERS from technology firms recently gathered at a cinema in downtown San Francisco to watch a preview of "The Big Short", based on the bestselling book by Michael Lewis. The film, which will be released in December, profiles several outsiders who successfully bet against the housing market when everyone else believed it would continue to rise, as it always had. You already know the ending.

Some viewers in the audience must have seen it as a disturbing reminder of how dramatically momentum can shift. Technology companies are unlikely to experience a meltdown as severe as the housing crisis, but an industry that only yesterday was all promise and optimism is showing signs of cooling.

Valuations for private technology firms are rising at a slower clip than they were six months ago. On November 24th Jet, an e-commerce competitor to Amazon, announced that it had raised $350m (valuing the firm at $1.5 billion), a big sum for a loss-making startup, but a lower one than it had first hoped for. Recently Airbnb, a fast-growing room-rental firm, raised $100m, but reportedly stayed at its recent valuation of $25 billion, instead of rising further. Fred Giuffrida of Horsley Bridge, a firm that invests in private-equity funds, reckons that the valuations in late-stage rounds of financing have declined by around 25% in the past six to eight months. These rounds are also taking slightly longer to complete.

In the last quarter several mutual funds, including Fidelity, have marked down the value of some of their holdings in unlisted tech firms. Fidelity wrote down Dropbox, a cloud-storage firm, by 20%; Snapchat, a messaging

app, by 25%; and Zenefits (software) and MongoDB (databases) by around 50% each. All are "unicorns", that is, tech firms which have yet to come to the stockmarket but are valued at $1 billion-plus. These are seen as having the brightest of prospects among startups of all kinds. Zenefits, for example, had raised money at a $4.5 billion valuation in May.

Mutual funds do not comment on the rationale for such markdowns, but it is believed that these unicorns have not met their growth targets. Stockmarket volatility may be another reason: investors value unlisted firms by comparing them with similar listed ones. That can work in private firms' favour at times, but undermines them when stockmarket valuations fall, says Jeremy Philips, a partner at Spark Capital, a venture-capital firm.

It has become clearer that the high valuations firms achieve in private are not always maintained when they go public. Last month's listing of Square, a payments company, valued the firm at around $4 billion, around a third less than in its most recent private round. Other firms have also suffered "down rounds", or devaluations, too (see table). An especially poor performer is Etsy, an online marketplace for handmade goods, which is 70% below where its shares traded when it went public in April.

Many investors in unicorns had bet that a new generation of technology firms would unsettle the old guard, but that has not happened as quickly as they had predicted. Tech giants like Amazon, Google and Facebook have continued to grow impressively, especially considering their already large size; and they have been adept at entering new markets that startups might otherwise have claimed. For example, Facebook has bought and built messaging apps that compete with Snapchat, and Dropbox has a rival in Amazon, whose cloud-storage business is large and growing quickly. Compared with most profitless startups, the big firms are not outrageously valued. It may become clearer to investors that they not only overestimated the unicorns but underestimated the incumbent firms' growth prospects.

The mood among some backers of startups has become more cautious. Fewer specialist technology investors are taking part in new financing rounds. General investors such as hedge funds, asset-management firms, oligarchs, princes and sovereign-wealth funds are filling the gap. Fidelity led the most recent round for Jet, which some specialist tech investors see as a lemon of a business, as it bleeds money trying to undercut Amazon. In September Baillie Gifford, a Scottish wealth-management firm few in Silicon Valley have heard of, led a round of funding for Thumbtack, which helps skilled workers find jobs, valuing the startup at $1.25 billion.

With investors, until recently, throwing money at them, the unicorns have got into the habit of burning through their cash in an attempt to buy market share. Lyft, a taxi-hailing firm that is a rival of Uber, reportedly suffered losses of nearly $130m in the first half of this year, on less than $50m in revenue. Instacart, a food-delivery firm, is rumoured to lose around $10 on each order it fulfils. Such practices are only likely to stop when the funding for these firms dries up, or investors whip them into shape.

Another ill-advised but common practice among the unicorns is their habit of pumping up their valuations and giving outsiders a misleading picture of what they are "worth". In an effort to make their supposed valuation go up each time they raise funds—so as to suggest that they are making good progress—many firms are agreeing to investors' demands to attach special privileges to the shares being sold. In theory, if an investor pays $100m for a 10% stake in a firm, that implies a valuation of $1 billion; but if the investor attaches conditions to the purchase that guarantee him a return or will give him his money back first, it means the effective valuation being put on the company might no longer really be $1 billion. An investor might be happy for the company to talk as if it has achieved the $1 billion valuation as long as he has his extra guarantees.

To participate in late-stage financing rounds, many investors are asking for

favourable terms such as "liquidation preferences", in which it is promised that they will get at least their money back and sometimes a guaranteed return on top. In other cases, investors are offered "ratchets", in which they will receive extra shares in compensation if the firm's valuation is reduced when it lists on the stockmarket. Late-stage investors in Square were protected with ratchets, so they are likely to have made a good return even though it went public at a reduced valuation.

The unicorns' employees, whose holdings of common stock are diluted by these protections, are among the main losers from all this. Firms do their employees "a disservice with their high valuations," says James Park, the boss of Fitbit, a maker of fitness-tracking devices that went public in June. "I don't think a lot of people realise that once preferred stock and liquidation preferences come in, their common stock isn't worth much." He also says private firms are much more "cavalier" in claiming that they will grow to become $20 billion-30 billion firms. This helps attract employees, but may mislead them.

The tech industry's herd of unicorns contains many beasts that look awfully similar to each other, or to longer-established firms. Yet many are being valued—in as much as the valuations are believable—as if they were guaranteed to be among the long-term winners in their line of business. In fact, not all can survive. Weaker firms have been able to keep going because money has been so easy to raise. And their spendthrift ways have made it harder for stronger rivals to control their own costs and make a decent profit. If investors are now becoming more cautious, that should lead to a healthier climate in the tech industry.

Firms that are still perceived as winners, such as Uber, will not have any trouble raising new money, no matter how severe the contraction in funding. The pain of a slowdown will be felt most by firms that have lots of other tech firms as clients. Food-delivery, catering and taxi-hailing firms

get lots of business in San Francisco and Silicon Valley from tech firms that subsidise meals and rides for their employees. Firms that offer online monitoring tools or recruiting services also depend highly on tech companies for business. So do bigger firms like Twitter and Facebook that have benefited from the boom in tech firms' advertising, says Gil Penchina, an investor, who says he has been trying to avoid exposure to this breed of firm.

In past downturns healthy and well-capitalised firms have benefited, says Sander Daniels, a founder of Thumbtack, who points out that Google had its "pick of the litter" of top engineers after the dotcom bust over a decade ago. Those firms that loaded up with cash in good time for the downturn will also do well. Airbnb, for example, has around $2 billion in cash, and a burn rate of around $100m a year. If the housing boom-and-bust taught any lessons to Silicon Valley, it is that the rich tend to bounce back most quickly. This will be true of the tech industry as well. ■

科技公司

独角兽之兴衰

部分非上市科技企业估值过高，其实难副

近日，一些科技公司的员工聚首旧金山市中心的一家电影院，观看电影《大卖空》（The Big Short）的试映。该电影改编自迈克尔·刘易斯（Michael Lewis）的同名畅销书，将于今年12月上映，讲述的是在人人深信楼市将继续上涨之际，几名外围炒家却看淡卖空并成功获利。所以，你已经知道电影的结局了。

在观众席中的部分人看来，这一定是逆耳忠言，提醒他们时势变幻之剧烈。高科技公司虽然不太可能经历上次楼市危机那样严重的崩溃，但这一在昨日还是前途大好、乐观喜人的行业如今已显现降温的迹象。

比起半年前，非上市科技公司估值的上涨速度已经减慢。11月24日，亚马逊的对手、电商公司Jet宣布已融资3.5亿美元（令公司估值达15亿美元）。对于一家亏损的创业企业而言，这是一笔庞大的金额，但低于其原定目标。扩展迅速的房屋租赁服务公司Airbnb最近融资一亿美元，但据称其估值仍为近期的250亿美元，并没有继续上涨。投资私募股权基金的霍斯利-布里奇合伙公司（Horsley Bridge）的弗雷德·朱弗里达（Fred Giuffrida）估计，过去六至八个月间，这类公司在后期融资轮次中的估值下降约25%，而且完成融资的耗时略增。

在上一季度，包括富达（Fidelity）在内的多家共同基金公司均调低了所持部分非上市科技公司的估值。富达对云储存公司Dropbox的估值调低20%；即时聊天应用Snapchat被下调25%；软件公司Zenefits及数据库公司MongoDB则各被下调约50%。所有这些均为“独角兽”企业，即还未上市但估值超过10亿美元的科技公司。它们被视为各类创业企业中前景最光明者。比如Zenefits在5月份融资时的估值便达到45亿美元。

共同基金公司没有解释下调估值的原因，但一般认为是因为这些独角兽企

业没有达到增长目标。股市波动可能是另一个原因：投资者会把非上市公司的估值与类似的上市公司相比较。对非上市公司而言，这有时有好处，但股市下跌时则反而会带来损害，风投公司“星火资本”（Spark Capital）的合伙人杰里米·菲利普（Jeremy Philips）说。

变得愈加明显的是，企业上市前的高估值不一定能保持到上市后。支付公司Square上月上市时估值为40亿美元，比最近一轮私募时的估值少约三分之一。其他公司也纷纷遭遇“降价融资”，即估值下跌（见图表）。表现尤其差劲的是手工艺品在线销售平台Etsy，自今年4月上市以来其市值已下跌70%。

许多下注独角兽企业的投资者以为新一代科技公司将会动摇旧有势力，但这并没有像他们预期的那般迅速发生。亚马逊、谷歌及Facebook这类科技巨头尽管规模已经很庞大，但仍保持着惊人的增长，而且它们善于打入创业企业原本可占领的新市场。例如，Facebook已收购并打造出能与Snapchat抗衡的通讯应用，而亚马逊的云储存业务规模庞大，增长迅速，是Dropbox的一大对手。与大多数并不盈利的创业公司不同，这些大企业并无离谱的估值。也许投资者会渐渐意识到，他们不但高估了独角兽创业公司的价值，还低估了老牌企业的增长前景。

创业公司的部分投资者态度变得更为审慎。参与新轮融资的专业科技投资者更少了，填补这一空缺的是对冲基金、资产管理公司、寡头、王子以及主权财富基金这类一般投资者。Jet最新一轮的融资由富达基金领投，而Jet为和亚马逊竞争不停烧钱，被许多专业科技投资者视为鸡肋。9月，帮助技术工人求职的创业企业Thumbtack的一轮融资则由硅谷少有听闻的一家苏格兰财富管理公司贝利吉福德（Baillie Gifford）领投，并将其估值为12.5亿美元。

直至不久前，投资者仍不断向众多独角兽公司撒钱，这些企业已经习惯烧钱来买市场份额。优步的对手、打车服务公司Lyft据称在今年上半年便亏损近1.3亿美元，收入不到5000万美元。食品配送公司Instacart据传每个订单亏损约10美元。只有融资源头枯竭或投资者督促改变，才可能抑制这类

做法。

独角兽企业的另一不明智但普遍的做法是它们惯于吹高估值，以公司“身价”误导外人。为使估值在每轮融资时有所上升（以显示公司发展良好），许多公司会答应投资者的要求，为出售给他们的股权附加特权。理论上，假如投资者付出一亿美元购入公司10%的股份，这意味着公司的估值为10亿美元；但如果投资者在购入股份时附加了保证回报或优先返还其资金的条件，这意味着公司的实际估值也许不再真正有10亿美元。但只要拥有额外保障，投资者也许还乐于这些公司以10亿美元的估值自居。

在参与后期融资轮次时，许多投资者要求得到“清算优先权”这类优待条件，藉此，他们至少能确保收回投资，有时还可保证回报。另一些情形是向投资者提供“棘轮条款”：假如公司在上市时估值降低，投资者将获得额外股份作为补偿。Square的后期投资者就有“棘轮条款”的保障，所以尽管公司上市时估值下跌，投资者仍可能获得了可观的回报。

由于这些保护条款的存在，独角兽企业员工所持的普通股价值被稀释，令他们成为这一切的主要输家之一。“企业高估值反而损害”员工，6月上市的健康追踪设备厂商Fitbit的老板詹姆斯·朴（James Park）说道。“我觉得没有太多人意识到，一旦有优先股和清算优先权参与进来，他们手中的普通股其实就不值多少钱了。”他还表示，非上市公司如今动辄宣称自己将成长为市值200亿至300亿美元的企业。这有助于吸引员工，但也许会误导他们。

科技行业的这群独角兽里包括许多同质化或与较成熟企业非常相像的“野兽”。但是，许多公司的估值之高——只要还能让人相信就越高越好——仿佛它们必定会跻身所在领域的长期赢家之列。实际上，这些企业并非都能存活下来。实力较弱的公司能维持下来是因为一直以来融资太过容易。而挥金如土的作风则令较强大的对手企业更难控制成本以获取可观的利润。假如投资者现在谨慎起来，将有助高科技产业形成更健康的环境。

仍被视为业界赢家的企业，如优步，无论融资萎缩有多严重，也不难筹集

到新的资金。对经济放缓感受最强烈的是以大量其他科技公司为客户的企业。食品配送、餐饮服务及打车服务公司从旧金山和硅谷那些为员工提供餐饮及交通补贴的高科技公司得到大量业务。提供网络监控工具或招聘服务的公司在业务上也高度依赖高科技公司。推特和Facebook这类大型企业也得益于科技公司的广告大潮，投资人吉尔·佩奇那（Gil Penchina）说道，他表示自己一直避免投资这类公司。

在过去的低迷时期，稳健、资本充足的企业是赢家，Thumbtack的创始人桑德·丹尼尔斯（Sander Daniels）说道。他指出谷歌在十年前互联网泡沫破裂后得以在大量顶尖工程师中“优中选优”。在经济形势较好时筹足资金以防衰退的公司也将安然发展，比如拥有约20亿美元现金的Airbnb，其资金消耗速度约为每年一亿美元。假如说美国楼市泡沫爆破给硅谷带来什么教训的话，那就是有钱人往往翻盘最快。在高科技行业也将同样如此。

China's bond market

Pricing risk

Debt issuance booms despite a wave of defaults

CHINA'S domestic bond market has never been riskier. It was only last year that it suffered its first default. This year at least six companies have defaulted. The miscreants are a diverse lot, including a beverage bottler, a solar-panel maker and a cement company. As economic growth grinds lower, defaults will inevitably rise.

A gloomy outlook of this kind would normally lead investors to demand a premium before buying bonds. Instead, they have lapped them up, making it cheaper for China's companies to borrow. Bond issuance has boomed this year, reaching almost 12 trillion yuan ($1.9 trillion) so far, up from the record 7.7 trillion sold in all of 2014, according to Wind Information, a data provider. This has prompted warnings that, much like the stockmarket earlier this year, China's bond market is swelling into a bubble.

Banks accounted for almost all lending in China until a decade ago. Today, for every five yuan of loans companies take out, they also finance themselves with one yuan of bonds. That has made China the world's third-biggest bond market, behind America and Japan—a development that should help shield the economy from the expensive busts to which banks are prone.

At the moment, though, the bond market seems to be stoking risk. For most of the past five years, yields on highly rated corporate bonds were two or three percentage points higher than on government bonds of the same maturity. This year the spread has narrowed, hitting a low in early November of just 1.3 percentage points (see chart). This implies that investors think corporate bonds have become less risky, despite the

proliferation of defaults.

Look at individual bonds, and signs of excess are even more obvious. Vanke is China's biggest listed property developer and, by most accounts, a well-managed company. But the Chinese property business is going through a painful retrenchment after years of overbuilding, which suggests Vanke's bonds are not without their risks. Yet in late September they were treated as just as safe as official issuers. Vanke sold five-year bonds at a yield of 3.5%, the same as the bonds of some provincial governments at the time.

Despite these ominous portents, many Chinese bond analysts take a sanguine view. The increase in issuance has been exaggerated by a debt swap: local governments are on track this year to replace about 3 trillion yuan of expensive loans with cheaper bonds. The average interest rate paid on outstanding debt in China has fallen from nearly 7% last year to just over 6% this year, according to Hua Chuang Securities, making it easier for borrowers to keep up with payments.

Besides, with growth sluggish, the central bank will probably keep interest rates low. Shi Lei, head of fixed-income research at Ping An Securities, expects yields to come down by as much as half a percentage point over the next year. Spreads between interest rates on corporate bonds and government ones are also starting to widen again. Their compression had been spurred by the stockmarket crash in July, when much of the money that fled stocks ended up in bonds of all ratings. Chen Kang of SWS Research believes that now the stockmarket has rebounded, investors are starting to differentiate again between private and government-backed issuers.

Whether those government-backed issuers deserve their low yields is another question. The handful of defaults to date shows that China is willing to let some companies fail, but so far no big firms in which the

central government retains a sizeable shareholding have met that fate. Instead, those that have got into trouble have been rescued, leading investors to treat their bonds as virtually risk-free. SinoSteel, a struggling miner and steel trader, is the latest test of this implicit guarantee. It had been due to repay bondholders some 2 billion yuan in October, but pushed the date back to December 16th. A default would shake investors' faith in government-backed bonds—bringing some sobriety to a market that sorely needs it. ■

中国的债券市场

定价风险

尽管出现了一波违约，发债量仍然大增

中国国内债券市场风险空前。去年它才出现第一例违约，今年到目前为止已有至少六家公司违约。这些失信企业形形色色，包括一个饮料装瓶商、一家太阳能板制造商和一家水泥商。随着中国经济增长放缓，违约将无可避免地增多。

正常情况下，这种阴暗的前景会令投资者在购买债券前要求获得风险溢价。然而，他们却欣然接受了现状，使得中国企业的借贷成本变低。今年发债量大增，据数据服务公司Wind资讯，截至目前已达到近12万亿元（1.9万亿美元），超出2014年全年7.7万亿元的记录。这值得警醒：与今年稍早时的股市相似，中国的债券市场正膨胀形成泡沫。

直至十年前，中国的借贷几乎全部由银行提供。今天，企业每向银行借五元贷款，就会发行一元的债券来融资。这使得中国成为仅次于美国和日本的世界第三大债券市场。这应当有助中国经济降低银行发生破产的几率。银行易于发生的破产代价高昂。

不过，债券市场目前似乎正在引致风险。过去五年的大部分时间里，高评级企业债券的收益率比相同期限政府债券的收益率高出两三个百分点。今年这一利差已经缩小，在11月初达到仅1.3个百分点的低点（见图表）。这暗示了尽管违约大增，投资者却认为企业债券的风险变得不那么大了。

看看单个企业的债券，泡沫的迹象甚至更为明显。万科集团是中国最大的上市房地产开发商，在多数人看来这是一家管理有方的公司。但是，中国的房地产业务在多年的过度建设后正经历痛苦的收缩期，这意味着万科的债券并非全无风险。然而，9月下旬万科发行的债券却被视为和政府债券一样安全。其出售的五年期债券利率为3.5%，和同时期发行的一些省政府债券的收益率相同。

尽管有这些不祥之兆，许多中国债券的分析师却仍旧乐观。发债量的增加是因为债务互换而被夸大：今年地方政府将用成本更低廉的债券取代约三万亿元昂贵的贷款。根据华创证券的数据，中国未偿还债务支付的平均利率从去年的近7%下跌至今年的略超过6%，这让借款人更容易继续偿债。

此外，由于增长放缓，中国央行可能会将利率保持在低位。平安证券固定收益研究主管石磊预测，明年收益率将下行至多0.5个百分点。企业债券和政府债券之间的利差也开始再度扩大。此前差距缩小是受到7月股市崩盘的刺激，当时大部分从股市逃离的资金最后转移到了各类评级的债券上。上海申银万国证券研究所的陈康相信，如今股市已经反弹，投资者开始再度区别对待私营企业发债人和受政府支持的发债人。

那些受政府支持的发债人是否应当享有它们所享有的低利率，则是另一个问题。至今发生的一批违约案例显示中国愿意让一些企业违约，但目前为止，那些中央政府保留了相当股权的大公司无一遭遇这样的命运。相反，陷入困境的企业都被拯救，这使得在投资者眼中，这些企业的债券实际上风险为零。中钢集团公司这家挣扎中的矿产开发和钢铁贸易商就是对这种隐性担保的最新验证。该公司原本应在10月偿付债券持有者约20亿元，但把该日期推后到了12月16日。一次违约将动摇投资者对政府支持债券的信心——给这个亟需冷静的市场带来一些清醒。■

The yuan joins the SDR

Maiden voyage

Reserve-currency status might make for a weaker yuan

PASSING through the Suez Canal became easier earlier this year, thanks to an expansion completed in August. Now it is about to become a little bit more complicated. Transit fees for the canal are denominated in Special Drawing Rights, a basket of currencies used by the International Monetary Fund (IMF) as its unit of account. This week the IMF decided to include the yuan in the basket from next year, joining the dollar, the euro, the pound and the yen.

If lots of things were priced in SDRs, the IMF's decision would have forced companies around the world to buy yuan-denominated assets as soon as possible, to hedge their exposure. That would have prompted China's currency to strengthen dramatically. But few goods or services are priced in SDRs. Instead, admission to the currency club is significant mainly for its symbolism: the IMF is lending its imprimatur to the yuan as a reserve currency—a safe, liquid asset in which governments can park their wealth. Indeed, far from setting off a groundswell of demand for the yuan, the IMF's decision may pave the way for its depreciation.

The reason is that the People's Bank of China (PBOC) will now find itself under more pressure to manage the yuan as central banks in most rich economies do their currencies—by letting market forces determine their value. In bringing the yuan into the SDR, the IMF had to determine that it is "freely usable". Before coming to this decision, the IMF asked China to make changes to its currency regime.

Most importantly, China has now tied the yuan's exchange rate at the start of daily trading to the previous day's close; in the past the starting quote

was in effect set at the whim of the PBOC, often creating a big gap with the value at which it last traded. It was the elimination of this gap that lay behind the yuan's 2% devaluation in August, a move that rattled global markets. Though the yuan is still far from being a free-floating currency—the central bank has intervened since August to prop it up—the cost of such intervention is now higher. The PBOC must spend real money during the trading day to guide the yuan to its desired level.

Inclusion in the SDR will only deepen the expectations that China will let market forces decide the yuan's exchange rate. The point of the SDR is to weave disparate currencies together into a single, diversified unit; some have suggested, for example, that commodities be quoted in SDRs to reduce the volatility of pricing them in dollars. But if China maintains its de facto peg to the dollar, the result of adding the yuan to the SDR will be to boost the dollar's weight in the basket, defeating the point.

What would happen if China really did give the market the last word on the yuan? For some time it has been under downward pressure. The simplest yardstick is the decline in China's foreign-exchange reserves, from a peak of nearly $4 trillion last year to just over $3.5 trillion now—a reflection, in part, of the PBOC's selling of dollars to support the yuan. Were it not for tighter capital controls since the summer, outflows might have been even bigger.

And the yuan does look overvalued. Despite China's slowing economy, its continued link to the surging dollar has put it near an all-time high in trade-weighted terms, up by more than 13% in the past 18 months (see chart). With the Federal Reserve gearing up to start raising interest rates at the same time as China is loosening its monetary policy, the yuan looks likely to come under more downward pressure, at least against the dollar.

It would be foolhardy to predict that China will suddenly give the market

free rein. That would go against its deep-seated preference for gradual reform. But while basking in the glow of its SDR status, China must also be aware of the responsibility to minimise intervention that comes with it. A weaker yuan may well be the result. ■

人民币加入SDR

处女秀

储备货币的地位可能会导致人民币贬值

今年八月苏伊士运河完成扩建后，通过该运河变得更容易了，但现在事情即将变得更复杂一点。该运河的过河费以特别提款权（SDR）计价，SDR是国际货币基金组织（IMF）用作记账单位的一篮子货币。上周IMF决定自明年起将人民币纳入这个已包含美元、欧元、英镑和日元的货币篮子。

如果大量事物以SDR计价，那么IMF的这一决定会迫使世界各地的企业尽快购入人民币计价资产以对冲风险。这会促使人民币大幅走强。但是，很少有商品或服务是以SDR标价。相反，拿到这一货币俱乐部门票的重要性主要在其象征意义：IMF批准人民币成为一种储备货币，即一种各国政府可用来储存其财富的安全的流动资产。实际上，IMF的这一决定远不会触发对人民币的需求大涨，倒可能为其贬值铺路。

其中原因是中国人民银行将发现它有更大的压力要像大部分富裕经济体的央行管理其货币那样来管理人民币，即让市场力量决定货币价值。为把人民币纳入SDR，IMF必须认定它“可自由使用”。在做出这一决定之前，IMF要求中国对其货币机制做出改变。

最重要的是，中国如今已将每日银行间外汇市场开盘时的人民币汇率和上一个交易日的收盘汇率相关联。过去，开盘汇率实际上由中国人民银行设定，常造成与最近一次交易价之间的巨大差异。这种差异的消除是8月人民币贬值2%背后的原因，这一变化让全球市场人心惶惶。虽然人民币还远非自由浮动的货币——中国人民银行自8月以来做出干预以提振人民币——这类干预的代价如今更高了。央行必须在交易日中花真金白银把人民币引导到它想要达到的水平。

纳入SDR只会让人们愈发期待中国让市场力量决定人民币汇率。SDR机制的目的是把各不相同的货币汇编成一个单一又多元的单位，比如，一些人

提出让商品以SDR计价以减少以美元计价的波动性。但如果中国维持人民币汇率事实上和美元的挂钩，将人民币纳入SDR的结果将提升美元在这个篮子里的权重，从而和SDR的目的相左。

如果中国真的让市场来决定人民币汇率会发生什么？人民币承受下行压力已有一段时日。最简单的标尺是中国外汇储备的减少——从去年近 4 万亿美元的峰值减至目前的略超过 3 .5 万亿美元——在某种程度上反应出中国人民银行想通过卖出美元来提振人民币。如果不是因为自今夏以来中国加强了对资本的管控，资本外流的情况可能会更严重。

而人民币看起来确实被高估了。尽管中国经济放缓，但它继续和上涨的美元挂钩，这让它以贸易加权计的汇率接近历史新高，在过去18个月内上涨逾13%（见图表）。随着美联储加紧准备加息而同时中国放宽货币政策，人民币看起来很可能会承受更多的下行压力，至少兑美元是如此。

认为中国会突然让市场放任自流的预期是愚蠢的，因为这有违它根深蒂固的渐进式改革倾向。但是，当中国沐浴在SDR地位的光环之中时，它也必须意识到由此而来的责任，需要将干预减到最小。那么结果很可能是人民币贬值。■

Schumpeter

Smart products, smart makers

The internet of things will strengthen manufacturers' hands in the battle for customer loyalty

IN "CAPITAL", Karl Marx presented some striking thoughts about the nature of everyday products, which he called commodities. A commodity ought to be "a very trivial thing", he argued, and "easily understood". But in fact it is the opposite: "a very queer thing, abounding in metaphysical subtleties and theological niceties." In primitive societies people fetishise religious objects, imagining that they are living beings that can enter into relations with each other and with human beings. In capitalist societies they do the same thing with commodities.

Today the queerness of many products is material rather than metaphysical. Stuffed with sensors and microchips, ever more of them really can communicate, via the "internet of things", with each other and with human beings. Even such mundane things as fizzy drinks and washing powder are set to become "smart", as their makers attach sensors to their packaging that can detect when the product is being used, and that can communicate with smartphones when scanned. Gartner, a research firm, predicts that the number of wirelessly connected products in existence (not including smartphones or computers) will increase from perhaps 5 billion today to 21 billion by 2020.

The power of connecting up previously dumb objects is most obvious in stock-keeping and supply-chain management. Andy Hobsbawm, the founder of Evrythng, a provider of technology for connected objects, notes that businesses will be able to follow the progress of their products from factory to shop to end-consumer—and the products will be able to "speak" to whoever handles them. Designer handbags will be able to vouch for their

own authenticity via embedded codes. Machines will be able to tell their owners how best to dispose of them at the end of their lives.

However, Mr Hobsbawm argues, the biggest revolution will come in customer relations. Manufacturers are realising that the best way to sell their products is to forge personal relations with customers rather than to spend large sums on broad-brush marketing. So far, manufacturers have lost out to others in this new world. Retailers have made inroads through loyalty cards, which allow them to gather data on their customers in return for discounts or rewards. Amazon's business model has been built around understanding shoppers' interests and suggesting things they might want to buy. Google is exploiting its expertise in integrating user data into its products to move into new areas such as home maintenance (witness its Nest smart thermostats).

As it becomes cheaper to add sensors and microchips to products, and to connect them to the internet, their manufacturers will know lots more about how end-consumers are using them. This will help them develop their products more rapidly, fix any faults more quickly and tailor products more snugly to an individual buyer's needs. General Electric uses sensors to monitor how its jet engines are performing in the air, and to diagnose emerging problems. Diebold likewise monitors its cash machines for signs of trouble, either fixing problems remotely by means of a software patch or, if that does not work, dispatching a technician.

The same approach is now being seen in consumer products. When Tesla found that some of its cars had a problem with uphill starts, for example, it fixed it by transmitting a software update. Sonos, a maker of music systems, has just sent out an update that gives its loudspeakers the ability to tune themselves to the acoustic qualities of the room they are placed in. The old form of capitalism based on built-in obsolescence is giving way to a new one in which products get better after they are bought. This robs firms

of the ability to make a quick profit by selling new models, but may bind them much closer to their customers.

Michael Porter of Harvard Business School predicts that the rise of wirelessly connected products, and the resulting entry of manufacturers into the battle for customer loyalty, will bring a "new era of competition". Makers of products will gain an equal footing with retailers and the owners of technology "platforms", such as Google, as all three vie for the consumer's affections. Manufacturers will also be able to expand into providing services. Babolat, which makes tennis racquets, is getting into the business of coaching: its racquets contain sensors that feed data to your smartphone, to advise you on how to improve your serve. Gooee, a lighting firm, is moving into the security business by giving its lamps the power to activate alarms in the event of a fire or a break-in. John Deere, a maker of agricultural equipment, is helping farmers get the most out of their land by building machines that can receive data on weather and soil conditions, enabling better decisions on when and where to sow and plough.

Culture clash

Taking full advantage of smart products will require a revolution on the part of incumbent manufacturers. They will need to hire more information-technology specialists, who may not fit easily into a culture dominated by mechanical and electrical engineers. They will have to rethink their core competences: for example, instead of outsourcing their data management to IT firms, they may find that the ability to crunch data about their products in-house is as valuable as making the products themselves.

They will also have to grapple with such unfamiliar issues as privacy and cyber-security. A recent survey of 561 executives worldwide by our sister company, The Economist Intelligence Unit, suggested just how far the average business is from understanding any of this. Only 19% were

planning radical changes to harness the potential of smart things; and only 39% had introduced training in digital skills. The rapid rise of Uber and Airbnb suggests that it is foolish to underestimate the speed of the digital revolution. If they dawdle, manufacturers will be left behind as other types of business draw ever closer to customers. But if they embrace the smart revolution, they may create products—and indeed services—that really are worthy of being fetishised. ■

熊彼特

智能产品，精明厂商

物联网将提高制造商争夺客户忠诚度的能力

在《资本论》中，马克思对他称之为商品的日常产品的性质提出了一些惊人的想法。他说，商品应该“很琐碎”，而且“容易理解”，但事实上却相反：它“非常古怪，充斥着形而上学的微妙和神学的细致”。原始社会里，人们盲目崇拜宗教器物，把它们想象为活物，相互之间能够建立联系，还能与人类沟通。资本主义社会里，人们也以同样的方式对待商品。

如今，许多产品的古怪之处是物质的而非形而上的。越来越多的商品被塞满传感器和微芯片，通过“物联网”，它们的确能够相互交流，并与人类沟通。即使是平常如汽水和洗衣粉之类的商品也在变得“智能化”，因为制造商在包装上装了传感器，能检测出产品何时被使用，并可以在智能手机扫码后传递信息。研究公司高德纳（Gartner）预测，现有无线互联产品（不包括智能手机和电脑）的数量将从目前的约50亿件增加到2020年的210亿件。

把之前不会说话的物体连接起会产生巨大的力量，这在库存及供应链管理上表现得最为明显。物联网技术供应商 Evrythng公司的创始人安迪•霍博本（Andy Hobsbawm）指出，企业将能追踪产品从工厂车间到商店再到终端消费者的全过程，而且，产品将能对任何经手人“说话”。设计师品牌手提包将能用嵌入的编码来证明是正品。机器在报废前将能告诉主人如何最好地处置自己。

然而，霍博本认为，最大的变革会出现在客户关系上。制造商正意识到销售产品的最好办法是与客户建立个人关系，而不是花大钱进行粗放式营销。到目前为止，在这个新世界里，制造商已经输给了其他人。零售商靠积分卡取得了进展，他们用折扣或奖励来换取顾客的数据。亚马逊了解消费者的兴趣，推荐他们可能想买的产品，这是它商业模式的基础。谷歌正在利用其专长把用户数据整合到产品之中，以进军家居维护等新领域（比

如说它旗下的Nest智能恒温器）。

由于为产品添加传感器和微芯片并将其连接到互联网的成本越来越低，制造商将能更好地了解终端消费者如何使用产品。这会帮助他们更快地开发产品、更迅速地修复故障、并更贴近个人买家的需要来定制产品。通用电气使用传感器来监测其喷气发动机飞行时的表现，并诊断出现的问题。同样，迪堡（Diebold）也监测其提款机是否有故障迹象，通过远程软件补丁解决问题，如果不奏效就派技工实地处理。

同样的办法正被应用于消费品。例如，当特斯拉发现一些汽车有斜坡启动问题时，它会发送一个软件更新来解决。音乐系统制造商Sonos刚发布了一项升级，使其扬声器能根据所在房间的声学特点来自我调节。资本主义的旧模式建基于商品内建的过期淘汰特性之上，现在这已让位于产品在购买后仍可获得改进的新模式。这使公司无法通过销售新款产品而迅速获利，但可能将它们与客户更紧密地连在一起。

哈佛商学院的迈克尔•波特（Michael Porter）预测，无线互联产品的崛起以及由此引发的制造商加入客户忠诚度之争，将带来一个“竞争的新时代”。产品制造商将获得与零售商以及谷歌等技术“平台”所有者同等的地位，因为这三者都争取消费者的青睐。制造商也将能够拓展到服务提供领域。网球拍生产商百宝力（Babolat）正在进入教练培训市场：它的球拍内置传感器，能把数据反馈到你的手机上，并建议你如何提升发球技术。照明公司Gooee让其电灯可以在火灾或有人非法闯入时激活警报，由此切入保安业务。农业设备制造商约翰·迪尔（John Deere）生产的机器能接收天气和土壤条件的数据，让农民更好地决定何时何地播种和耕作，以帮助他们从土地上获得最大的产出。

文化冲突

要充分利用智能产品，现有制造商将需要进行一场革命。他们需要雇用更多的IT专家，这些专家可能不容易适应由机械和电气工程师主导的文化。制造商将不得不重新考虑自己的核心竞争力，例如，他们可能会发现，能在公司内部处理产品数据与自己生产产品一样重要，而不应把数据管理外

包给IT公司。

他们也将不得不努力对付隐私和网络安全等不熟悉的问题。我们的姐妹机构经济学人智库（The Economist Intelligence Unit）最近对全球561位高管的一项调查显示，普通企业还远远不能理解这其中的任一问题。只有19%的公司正在计划重大的改变以利用智能产品的潜力；仅39%的公司业已引入数字技能的培训。优步和Airbnb的迅速崛起表明，低估数字革命的速度是愚蠢之举。如果制造商磨磨蹭蹭，它们将被抛离，因为其他企业愈发贴近客户。但如果制造商拥抱智能革命，它们创造出的产品——实际上也是服务——可能真正值得被奉若神明。■

Renewable energy

Waving good buy?

A hitherto-obscure piece of physics may be the secret to ocean power generation

THE idea of extracting energy from ocean waves and turning it into electricity is an alluring one. The first serious attempt to do so dates back to 1974, when Stephen Salter of Edinburgh University came up with the idea of "ducks": house-sized buoys tethered to the sea floor that would convert the swell into rotational motion to drive generators. It failed, as have many subsequent efforts to perform the trick. But the idea of wave power will not go away, and the latest attempt—the brainchild of researchers at Oscilla Power, a firm based in Seattle—is trying to address head-on the reason why previous efforts have foundered.

This reason, according to Rahul Shendure, the firm's boss, is that those efforts took technologies developed for landlubbers (often as components of wind turbines) and tried to modify them for marine use. The consequence was kit too complicated and sensitive for the rough-and-tumble of life on the ocean waves, and also too vulnerable to corrosion. Better, he reckons, to start from scratch.

Instead of generators with lots of moving parts, Oscilla is developing ones that barely move at all. These employ a little-explored phenomenon called magnetostriction, in which ferromagnetic materials (things like iron, that can be magnetised strongly) change their shape slightly in the presence of a magnetic field. Like many physical processes, this also works in reverse. Apply stresses or strains to such a material and its magnetic characteristics alter. Do this in the presence of permanent magnets and a coil of wire, such as are found in conventional generators, and it will generate electricity.

The core of Oscilla's design is a bar made from an alloy of iron and

aluminium, a mixture that is strongly ferromagnetic. Such bars need be compressed by only one part in 10,000 to have the desired effect. This means, to all intents and purposes, that the generator has no internal moving parts that can go wrong. But compressing a solid metal bar by even this tiny amount requires the application of a huge force. Fortunately, ocean waves are powerful enough to generate this force. Oscilla's design, as the firm's name suggests, does it by oscillation.

Its oscillating generators consist of two large objects connected by cables (see diagram). At one end of these cables, floating on the surface, is a buoy that contains the generating apparatus of alloy bars, magnets and coils, together with sets of hydraulic rams which can squeeze the bars as desired. At the cables' other ends hangs a structure called a heave plate, which is kept stationary by a combination of inertia and the drag of the surrounding water. This arrangement means that, as the buoy rises and falls with the waves at the surface while the heave plate stays more or less put, the tension on the cables increases and decreases. That changing tension drives the rams. The whole system is kept in place by a second set of cables that moor it to the seabed.

A full-scale device, which Oscilla hopes to build by 2018, will be a foam-filled steel buoy 27 metres in diameter, six metres high and weighing 1,000 tonnes, tethered to a toroidal concrete heave plate 70 metres below the surface. It will carry 12 magnetostrictive generators within. Mr Shendure says that a single such buoy, placed a few kilometres offshore, should deliver an average of 600 kilowatts—about the same as an onshore wind turbine. A prototype four metres in diameter underwent a brief but successful open-ocean trial off the Atlantic coast of America last year.

Oscilla's generators will, Dr Shendure acknowledges, be expensive to build and install. But their simple design, he says, should allow them to operate for decades with no more maintenance than an occasional scrub to remove

accumulated barnacles. He calculates that the cost of producing electricity from them will be around ten cents a kilowatt hour. That compares with 16 cents a kilowatt hour for offshore wind farms and six cents for the onshore variety. A grid-connected fossil-fuel power station would be cheaper still—five cents or less. But ten cents represents a decent start for such a novel way of generating electricity. ■

可再生能源

海浪发电，物美价廉？

迄今不太为人熟知的一个物理现象可能是海洋发电的秘诀所在

从海浪中获取能量并将其转变成电力是一个吸引人的创意。第一次严肃的尝试可以追溯到1974年，当时爱丁堡大学的斯蒂芬·索尔特（Stephen Salter）提出了“鸭子”的创意：把一栋房子大小的浮标拴在海床上，它会把涌浪转化成旋转的动力来驱动发电机。这个尝试失败了，之后很多类似的努力也一样。但海浪发电的设想却不会消失，最新的尝试由总部位于西雅图的“振电”（Oscilla Power）公司的研究人员设计，试图正视此前努力悉数告败的原因。

据公司老板拉胡尔·桑迪尔（Rahul Shendure）称，其原因是之前的尝试都把为陆地研发的技术（通常是风力涡轮机的构成）直接拿来，试图改造它们在海洋上使用。但由此而来的这套设备对海浪混乱激烈的状态而言过于复杂和敏锐，也非常容易被海水侵蚀。他认为，从头开始研制新设备会更好。

和那些由许多移动部件组成的发电机不同，振电公司正在研发的发电机几乎完全不动。它们利用了“磁致伸缩”这个鲜少被探索的现象，即强磁性材料（比如铁这种能被强烈磁化的物质）在磁场中会轻微改变形状。和许多物理过程一样，这一过程也会逆向作用：给这类材料施加压力或拉力会改变其磁性特征。把它和永磁铁及一个电线圈（比如在传统发电机使用的线圈）放在一起，它就会开始发电。

振电公司的设计核心是一根铁铝合金棒。铁和铝的组合带有强磁力。这种合金棒只需被压缩万分之一就能获得所需效果。这意味着，无论怎么使用，这个发电机里并没有什么移动的内部构件会出错。然而，要让一根坚硬的金属棒发生即使是这么小的压缩都需要施以巨大的力。幸运的是，海浪的冲击足够大而能产生这样的力。振电公司的设计正如公司名称所暗示的，是通过振荡来实现这一点。

这套振荡发电机由两个大型物件组成，通过电缆相连（见图）。这些电缆的一端是漂浮在海面上的一个浮标，其中包含一套发电装置，由合金棒、磁铁、电线圈，以及能根据需要挤压合金棒的几套液压撞槌组成。电缆的另一端悬挂着一个叫做垂荡板的结构，其周围海水的惯性和阻力会使其保持静止。在这一结构中，浮标随海面涌浪升降，而垂荡板基本保持平稳，使得电缆的拽拉力度时增时减，这种变化的拉力驱动了撞槌。整个系统由连接到海床的第二套电缆帮助其保持在原位。

振电公司希望在2018年前建成一套全尺寸设备：填充泡沫的钢制浮标直径27米，高6米，重1000吨，和海面下方70米处一个环状混凝土垂荡板拴在一起。浮标内部装载12个磁致伸缩发电机。桑迪尔说，装设在离岸几公里处的单个浮标平均应能产生600千瓦电，和一台岸上风力涡轮机的功率差不多。一台直径4米的原型机已于去年在美国大西洋海岸的公海完成了一次短暂但成功的试运行。

桑迪尔博士承认该公司的发电机造价昂贵，但他也说，其简单的设计应该会让它们能持续运行数十年，所需的保养不过是偶尔擦洗以去除累积的藤壶。他估计用它们来发电的成本在一度电10美分左右。相比之下，离岸风力电场的成本为一度电16美分，而陆地各类风力发电的成本为6美分。连接电网的化石燃料发电站的成本则更便宜——5美分或更少。但是，对于这样一种全新的发电方式而言，10美分已是一个很不错的起点。■

Container shipping

The big-box game

The largest container lines are bulking up to try to withstand a fresh downturn

SINCE the financial crisis, the tide of recovery has not lifted all boats equally. But in few industries is that more true than in shipping. Demand for oil tankers has boomed: a combination of weak spot prices and higher futures prices, driven by the assumption that supply and demand for crude will eventually rebalance, has encouraged traders to hire tankers to store oil at sea and cash in on the price gap. Meanwhile, bulk carriers, which carry such things as iron ore and coal, have been hit by massive overcapacity, as Chinese demand for such commodities has collapsed.

Until the start of this year, the container-shipping business—which carries around 60% by value of all seaborne trade in goods—looked more like that for oil tankers. Rising global trade volumes, and firm steel prices that made it worthwhile for owners to scrap old ships, had kept capacity in check, and container-freight rates seemed to be steadying. As recently as August last year, demand for container shipping was so high that BIMCO, an industry association, was warning of a capacity shortage. And at the start of this year Drewry, a shipping consultant, forecast a bumper year: owners of boxships would rake in profits of up to $8 billion in 2015, they thought, helped by low fuel costs.

But since then the industry has been rattled by renewed weakness in freight rates, prompted by a fall in the volume of seaborne trade. The cost of sending a container from Shanghai to Europe, for instance, has almost halved since March, according to the Chinese city's shipping exchange (see chart). And the absence of the usual pre-Christmas pick-up is worrying both analysts and investors, according to Rahul Kapoor of Drewry. On October 23rd Maersk, the world's largest container line, told investors to

brace themselves for a fall in profits when it announces its third-quarter figures on November 6th.

Some of the shipping lines' problems are due to factors beyond their control. At a time when weak trade volumes should be prompting them to scrap more old vessels, the steel price has slumped. So, 60% fewer boxships have been scrapped so far this year compared with the same period last year. However, some shipping groups have made a rod for their backs by taking on too much debt. This also makes it hard for them to scrap unprofitable vessels, since their balance-sheets would struggle to cope with the resulting writedowns.

Worse still, critics say, is that shipowners have embarked upon a building boom. Orders for new container ships were 60% higher in the first five months of this year, than in the same period in 2014, according to Alphaliner, a data provider. In June Maersk ordered 11 ships that can each carry up to 20,000 standard-sized containers, in a deal worth $1.8 billion. Next week Hapag-Lloyd, another operator, plans to raise $300m by floating on Frankfurt's stock exchange, to help pay for six giant new ships, ensuring that it stays in the game.

Hapag-Lloyd has had to delay its IPO a week because demand for the shares has been so weak. And investors have good reasons to be hesitant. All the extra capacity should depress rates further, adding to the industry's problems. But for those lines that can afford it, ordering big, new ships may be a sensible reaction to falling freight rates. There are still sizeable economies to be gained from increasing the size of vessels. As Hapag-Lloyd's boss, Rolf Habben-Jansen, recently pointed out, a ship capable of carrying 19,200 containers needs half as much fuel to shift each box by one mile as a vessel with a capacity of 4,900.

As a result, the capacity of the largest container ships afloat has risen from

around 14,000 before the financial crisis to just under 20,000 today—and boxships are taking the place of oil supertankers as the giants of the seas (see diagram).

Among the winners from this flight to scale will be the world's largest three lines—Maersk, Mediterranean Shipping Company (MSC) and CMA CGM. They have the industry's lowest costs, because they have the biggest ships and the cheapest finance costs. They also have the advantage of being based in Europe: demand to transport goods across the Atlantic has remained strong. Analysts expect the big three to stay profitable over the next few tough quarters, even as their revenues fall.

Maersk and MSC have also formed an alliance, 2M, to save more money by sharing space on their ships on transatlantic and transpacific routes. As the strongest lines get stronger, through fleet renewal and alliance-building, smaller lines that cannot cut their costs quickly enough or obtain cheaper finance to build bigger ships will suffer. China's two biggest lines, China Shipping Group and Cosco, were losing money before the current downturn started. They have recently swung back into profit, but only thanks to generous state aid to help them scrap old vessels. The government regards it as vital to have a national merchant fleet, so it will not let the two go to the wall. But it plans to merge them to save money, and to stamp out corruption at Cosco which, according to internal documents leaked this month, is another reason for its poor performance.

The hardest hit, however, will be the smallest container lines that do not enjoy state backing. Several smaller Japanese and South Korean operators, in particular, are sailing close to bankruptcy, analysts say. The pressure to cut costs is also hitting container lines' suppliers; several shipping-services firms in Denmark and container-logistics firms in Britain have gone bust in the past year.

The move towards ever bigger vessels poses a risk to ports which lack the capacity to handle them. International trade is shifting towards big, centralised hubs. And smaller ports, somewhat like smaller airports when the hub-and-spoke model for long-haul flights became dominant, are losing many of their direct connections. This has already happened at Portland on America's west coast, which is no longer served by any regular container routes.

To avoid this fate, port authorities in some countries are now investing heavily in upgrading their infrastructure, to handle larger vessels. Recent development projects in Liverpool and London have already brought traffic back to those British ports. In a similar vein, Indonesia announced details of a $3.6 billion project to upgrade its container ports earlier this month, to ensure it does not lose routes to Singapore, the nearest big hub.

As falling volumes and weak shipping rates force the industry to consolidate, with fewer, bigger lines sailing ever-larger ships to fewer, bigger ports, the resulting gains in efficiency should mean cheaper transport costs, bringing benefits for consumers in many places. That is, unless the consolidation goes too far, and the surviving lines are able to jack up their rates. The 2M alliance now controls more than 28% of global container-shipping capacity, and almost a third on the Europe-to-Asia route.

Regulators are already worried about the impact on competition: in June last year, the Chinese authorities vetoed plans for a larger alliance, called P3, that would have involved all three of the world's biggest lines.

Cheaper container rates are a boon for firms engaged in international trade, and their customers. But there is a risk that the benefits will not last. ■

集装箱运输

比拼规模

最大的集装箱航运公司纷纷扩大规模，试图抵御新一轮衰退

自金融危机以来，复苏之潮并未使各方都同样地水涨船高。然而没有几个行业比航运业对此体会更为真切。在原油需求与供给最终会再度平衡的假设推动下，其现货价格低迷而期货价格上扬。这吸引着商人租用油轮在海上储存石油以便从差价中获利。所以，对油轮的需求迅速增加。与此同时，由于中国对铁矿石、煤炭等大宗商品的需求大幅减少，运载这些大宗散货的航运公司因运能极度过剩而遭受打击。

直到今年年初，承载全部海上货物贸易价值将近60%的集装箱运输业看起来还更类似油轮业的境况。全球贸易量上升，钢材价格坚挺使船东淘汰旧船有利可图，运力因而得到控制，集装箱货运价格似乎趋于稳定。直到去年8月，对集装箱运输的需求依然十分强劲，行业协会波罗的海国际航运公会（BIMCO）还因此警告运力短缺。今年年初，英国德鲁里航运咨询公司（Drewry）预测这一年会是个丰收年。他们认为，受益于低廉的燃料费，集装箱船的船东在2015年将会大赚多达80亿美元的利润。

但是自那以后，受海上贸易量减少的影响，货运价格再次疲软，整个集装箱航运业惶恐不安。据上海航运交易所的数据（见图表），今年3月以来，将集装箱从上海运到欧洲的运费减少了将近一半。德鲁里航运咨询公司的拉胡尔·卡普尔（Rahul Kapoor）指出，圣诞节前货运价格常见的上涨今年还未出现，这让分析师与投资者都忧心忡忡。10月23日，全球最大的集装箱航运公司马士基（Maersk）告知投资者在11月6日公布第三季度业绩时要做好利润下跌的思想准备。

航运公司面临的问题有些是自身无法控制的。在贸易量低落而应该淘汰更多的旧船时，钢材价格却已暴跌。因此，今年到目前为止所淘汰的旧集装箱船比去年同期减少了60%。然而有些航运集团却因举债过多而背上沉重的包袱。这也使得它们难以淘汰无法盈利的货船，因为资产负债表很难处

理由此而产生的减计。

批评者指出，更糟糕的是船东们已经掀起了造船热潮。根据数据提供商Alphaliner的统计，今年前五个月新集装箱船的订单比去年同期增加了60%。今年6月，马士基订购了11艘船，每艘船最多可以装载两万个标准集装箱，总价值达18亿美元。另一家船运公司德国的赫伯罗特（Hapag-Lloyd）下周打算在法兰克福证券交易所上市，筹集三亿美元来购买六艘新巨轮，以确保公司不会出局。

由于赫伯罗特公司的股票认购相当低迷，它不得不将IPO推迟一周。而投资者有充分的理由犹豫不决。所有过剩的运力可能会进一步压低货运价格，令行业面临的问题更加严重。然而对于那些财大气粗、能够抵御风险的航运公司来说，订购新的巨轮来应对运费下跌不失为明智之举。建造更大的船舶仍然能节省很多费用。赫伯罗特公司总裁罗尔夫·哈宾－詹森（Rolf Habben-Jansen）最近指出，以运输成本比较，装载19,200个集装箱的船比装载 4,900个集装箱的船要节省一半的燃料。

因此，已下水最大集装箱船的运力从金融危机前的约 14,000箱增加到现在的近20,000箱。集装箱船正在取代巨型油轮成为海上巨无霸（见图）。

在这次向规模化经营的转移中，马士基、瑞士地中海航运公司（MSC）及法国达飞海运集团公司（CMA CGM）这三家全球最大的航运公司将成为赢家。它们拥有的船只最大，财务成本最少，因此运营成本为全行业最低。三大巨头还都有总部设在欧洲的优势，因为往来大西洋两岸的货物运输需求依然强劲。分析人士预计，三大巨头在未来几个惨淡季度里仍会继续盈利，虽然营业收入会下降。

马士基还和地中海航运结成了2M联盟，在跨大西洋及跨太平洋航线上共享船只空间以节约更多资金。最强大的航运公司通过更新船只、缔结联盟变得越来越强；相形之下，那些无法迅速削减成本或者获得更低廉的融资来建造大型船只的小公司将会陷入困境。中国海运集团与中远集团这两家中国最大的航运公司在这一次衰退之前就已陷入亏损。只是在政府大力扶

持下，这两家公司才得以淘汰掉旧船，最近又扭亏为盈。中国政府认定拥有一支国家商船队必不可少，所以不可能听任两家公司倒闭。不过，政府计划将这两家公司合并以节约开支，并要铲除中远集团内部的腐败。据本月传出的内部文件，腐败也是中远集团业绩欠佳的一个原因。

不过，受打击最严重的将会是无法得到政府扶持的小型集装箱航运公司。分析人士指出，特别是日本及韩国几家较小的公司已经濒临破产边缘。削减成本的压力还打击了航运公司的供应商：丹麦的几家航运服务公司以及英国的几家集装箱物流公司在过去一年里纷纷倒闭。

船只越造越大，这对缺乏足够服务能力的港口构成了威胁。国际贸易正在转向大型而集中的枢纽港口。小型港口正在失去很多直通航线，这与民航业适应长途航线的“轴辐”模式成为主导时，小型机场面临的状况有些类似。这种现象已经在美国西海岸的波特兰港出现：常规集装箱航线已经不再停靠该港。

为免遭此厄运，有些国家的港务管理部门正投入巨资为基础设施更新换代，以便接纳大型货船。利物浦港和伦敦港最近完成的改建工程已经使集装箱航线重新经过这两个英国港口。同样，印度尼西亚本月早些时候也公布了详细方案，准备斥资36亿美元升级集装箱港口，以确保航线不会流失到距离最近的大型航运枢纽新加坡。

运量减少加上运费低廉逼迫航运业整合。这样一来，航运公司数量减少、规模增大，拥有的船舶也越来越大，所用港口的数量更少、规模更大，由此可以提高效率、降低运费，从而使众多地方的消费者受益。这确可实现，只要整合不要过度而令生存下来的航运公司可以大幅提高运费。2M联盟如今控制着全球集装箱运力的28%以上，在欧亚航线上占近三分之一。

监管机构已在担心整合会影响竞争。去年6月，中国政府否决了一个规模更大的P3联盟计划，该计划如果实施，全球最大的三家航运公司都会加入其中。

更低的集装箱运费无论对于从事国际贸易的公司还是其客户都有益处，不过这样的益处可能不会持续太久。■

Buttonwood

What a carry on

Monetary policy could drive currency volatility

NEXT month will probably see the first great divergence in monetary policy since the financial crisis of 2008. The Federal Reserve is widely expected to push through a rate increase—its first since 2006. But the European Central Bank is expected to cut its deposit rate, already in negative territory, or to expand its programme of asset purchases. The Bank of Japan is also expected to maintain or amplify its expansionary monetary policy.

For the currency markets, the shift will herald a new era. Before 2008 one of the most popular strategies was the "carry trade"—borrowing in a low-yielding currency and investing in a higher-yielding one. But with interest rates in most of the rich world at or close to zero since 2008, there has been little carry to trade.

After December traders can probably look forward to a prolonged divergence between interest rates in America and the euro zone. Back in 2010 the markets thought the first interest-rate increase by the Fed and the ECB would occur at roughly the same time. (In fact, the ECB fleetingly began raising rates in 2011, before cutting them again.) But now there is an expected hiatus of nearly three years between the Fed's first increase and the ECB's first move, according to David Riley of BlueBay Asset Management.

The gap between American and German bond yields also reflects this divergence in expectations. On November 18th five-year Treasury bonds yielded 1.68%; German bonds with the same maturity had a negative yield of 0.14%. That is the biggest gap since the creation of the euro. It may well encourage income-seeking investors to pile into the dollar.

A further surge in the dollar could have big consequences. Emerging-market countries that tie their currencies to the dollar, formally or informally, will see their exchange rates rise, and their exports become less competitive. This could cause some to consider a devaluation. But there could also be difficulties for developing countries without dollar pegs. If their currencies fall sharply, that will put a strain on companies that have borrowed in dollars. Capital flight could also complicate refinancing for local-currency borrowers. Corporate debt in emerging markets has risen from 50% of GDP in 2008 to almost 75%.

In short, currency risk could become a big source of turbulence in financial markets, as it was in the late 1990s (the Asian crisis) or the early 1990s (when the European Union's Exchange Rate Mechanism broke apart). The volatility of the dollar versus the euro and yen, as measured by contracts traded on the Chicago Board Options Exchange, stayed below 10% for much of 2013 and 2014; this year it has risen to 10-15%.

Such volatility is a big concern for international investors. They might successfully pick an outperforming stock in another country, only to see all their gains evaporate as a consequence of exchange-rate movements. "Foreign-currency exposure is no longer a simple numéraire that can be hedged away or ignored," wrote Geraldine Sundstrom of PIMCO, a fund manager. "Foreign-exchange considerations will weigh disproportionately on the investment climate and opportunities."

Further dollar strength is not inevitable: rate expectations could already be reflected in prices. On a trade-weighted basis, the dollar has already had an energetic bull run (see chart). The pace of its rise over the past 12 months has been the fastest since the early 1980s. Fund managers polled by Bank of America-Merrill Lynch think that bullishness about the dollar is the most crowded trade in the markets at the moment.

If it were to happen, a further rapid rise in the dollar would affect the American economy, reducing import prices (and thus inflationary pressures) and cutting export growth (affecting GDP). A stronger currency equates to monetary tightening; this might reduce the extent to which the Fed needs to push up rates.

Indeed, central banks such as the ECB that have tightened since the credit crisis have been forced to reverse course. Torsten Slok of Deutsche Bank says that the median interval between the first such rate increase and the first cut was only 16 months. That suggests that a December rate increase could be followed by a cut in early 2017.

Since 2008 it has seemed as if all central banks have been happy to let their currencies decline, as a way of easing pressure on their domestic economies. Implicitly or explicitly, the Fed will be breaking with that approach if it pushes up rates in December. Billions of dollars will be at stake as investors try to cope with the fallout. ■

梧桐

如此继续

货币政策可能引发汇率波动

下个月可能出现2008年金融危机之后货币政策的第一次重大分歧。人们普遍预期美联储将加息，这是2006年以来的第一次。但欧洲央行预计将下调已经是负值的存款利率，或者扩大资产购买规模。日本央行预期也将维持或扩大其扩张性货币政策。

对于外汇市场而言，这一转变将开启一个新的时代。2008年之前，最流行的策略之一是套利交易，即借入低利率的一种货币，投向更高收益的另一种货币。但是自2008年起大部分富裕世界的利率都为零或者接近零，几乎没有套利交易的空间。

12月之后，交易员们或许可以期待美国和欧元区之间较为持久的利差。2010年时市场都认为美联储和欧洲央行将大致同时首次加息。（实际上，2011年欧洲央行曾短暂加息，之后又再次降息。）但是现在，蓝湾资产管理公司（BlueBay Asset Management）的大卫·莱利（David Riley）称，在美联储第一次加息和欧洲央行开始加息之间预计会有近三年的间隔。

美国和德国国债收益率之间的差距也反映出人们预期的这一利差。11月18日，美国五年期国债收益率为1.68%，而同期限德国国债的收益率为-0.14%。这是自欧元创立以来最大的差距，很可能驱使追求收益的投资者争相投资美元。

美元的进一步飙升可能带来严重后果。正式或非正式地将本国货币与美元挂钩的新兴市场国家将会面临汇率上涨，出口竞争力减弱。这可能会令有些国家考虑货币贬值。但是发展中国家如果不把自己的货币与美元挂钩，也将困难重重。如果本国货币大幅下跌，会给以美元贷款的公司带来压力。资本外逃也可能使本币借款人的再融资变得困难。新兴市场的企业负债已从2008年占GDP的50%升至近75%。

简而言之，汇率风险可能成为金融市场动荡的一大源头，正如20世纪90年代晚期（亚洲金融危机）或20世纪90年代早期（欧盟汇率机制解体）那样。根据在芝加哥期权交易所交易的合约计算，美元兑欧元和日元的波动率在2013年和2014年很长时间都保持在10%以下，但今年已升至10%到15%。

这样的波动令国际投资者非常担忧。他们可能在另一个国家成功选出一支表现优异的股票，结果因为汇率变动，所有的收益都化为乌有。“外汇风险敞口已不再是一个简单的计价问题，可以对冲或忽略，”基金管理公司PIMCO的杰拉丁·桑德斯通（Geraldine Sundstrom）写道，“在对投资环境和投资机会的考量中，外汇风险将权重明显增加。”

美元进一步走强并非必然：利率预期可能已经反映在价格上。在贸易加权基础上，美元已经经历了一个强劲的牛市（见图表）。过去12个月美元上涨的步伐是20世纪80年代初期以来最快的。美银美林（Bank of America-Merrill Lynch）调查的基金管理公司认为做多美元是目前市场上最多的交易。

如果美元前景真的进一步保持牛市，将会影响美国经济，降低进口价格（进而降低通胀压力），削减出口增长（影响GDP）。汇率走强等于货币紧缩，这可能减弱美联储需要加息的力度。

其实，像欧洲央行这样在信贷危机之后紧缩的中央银行已被迫调转方向。德意志银行的托斯滕·斯洛克（Torsten Slok）称，首次这类加息和首次降息之间的间隔中位数只有16个月。这表明如果12月加息，则2017年初可能降息。

自2008年以来，似乎所有央行都乐于让本国货币贬值，以缓解国内经济的压力。如果美联储12月加息，那么它将或隐或显地违背这种做法。投资者需应对由此带来的后果，数十亿美元将岌岌可危。■

Chinese companies

Red chips, red faces

The creditworthiness of China's big state firms is worsening

THERE was a time when China's biggest state-owned enterprises were seen as the country's crown jewels. The government cleaned up the balance-sheets of the best of the firms, and listed their shares on stockmarkets at home and abroad. The firms were dubbed "red chips", the supposed blue chips of state capitalism, by fawning analysts.

In fact, China's big state firms were largely a bloated, inefficient and cosseted lot. The real dynamism in the Chinese economy has long come from its entrepreneurial private firms, which now account for perhaps two-thirds of the country's entire economic output.

Thanks to weak commodity prices, a troubled property market and slowing economic growth, the outlook for all Chinese corporations is dimmer than it was a few years ago. But debt is a much bigger problem at the largest state firms. A report released on November 30th by Standard & Poor's, a credit-rating agency, looks at 200 public and private Chinese firms in 18 industries and warns that the creditworthiness of many big state firms has worsened significantly. S&P found that the average ratio of gross debt to earnings (before interest, tax, depreciation and amortisation, or EBITDA) at state firms rose from roughly 3 in 2008 to over 5 last year.

The worries are most acute among metals firms, such as Hebei Iron & Steel, and transport companies, such as China COSCO, a shipping line. The agency gives both of those companies a maximum financial-risk rating of 6. The main exceptions to the trend, the report notes, are state firms in industries such as telecoms and energy, which the government protects from serious competition.

Private firms are not without their problems, although the ratio of gross debt to EBITDA at such firms remains below 4 on average. The property sector and "bricks-and-mortar" retailers have been hit hard of late, and private firms with exposure to them—such as Fosun, one of China's largest private conglomerates—are also seeing a deterioration in their creditworthiness. But most private firms are in e-commerce, consumer businesses and technology services, which are less politicised industries that are still doing well.

The conventional wisdom has long been that China's biggest and best-known state firms will never be allowed to default, no matter how weak their finances. But doubts are now creeping in. Christopher Lee of S&P, an author of the agency's report, says, "there is a growing sense that the weakest are not default-free." The question for officials now, he reckons, is "how to let them go without sparking a systemic meltdown." ■

中国企业

红筹股，大红脸

中国大型国有企业信用恶化

曾几何时，中国最大的一批国有企业被视为这个国家皇冠上的明珠。政府挑选其中最优秀的企业，清理其资产负债表，让它们在境内外上市。这些企业被奉承的分析师称为“红筹股”，即所谓国家资本主义的蓝筹股。

而事实上，中国的大型国企大多机构臃肿、效率低下、娇生惯养。长久以来，中国经济的真正动力来源于进取的私营公司，如今它们在全国整体经济产出中的占比可能已达三分之二。

由于大宗商品价格疲软、房地产市场陷入困境以及经济增长放缓，所有中国企业的前景都较几年前黯淡。然而，债务问题在最大型国企里要严重得多。信用评级机构标准普尔11月30日发表的一份报告审视了18个行业中的200家国有及私营的中国公司，警告称当中许多大型国企的信用已显著恶化。标普发现，国企的总负债与利润（未计利息、税项、折旧及摊销，即EBITDA）的平均比率在2008年约为三，去年已上升至超过五。

最令人担忧的是河北钢铁这类金属企业，以及航运公司中远集团这类运输企业。标普把这两类企业的财务风险评定为最高的第六级。报告指出，这一趋势中的例外主要是电信和能源等行业的国企，它们受到政府保护而免于严酷的竞争。

私营企业并非没有自己的问题，不过平均计算，其总负债仍然保持在EBITDA四倍之下。地产及实体零售业最近备受打击，与这些行业相关联的私营公司信用度也在恶化，比如中国最大的私营企业集团之一复星集团。但中国大多数私营企业处于电子商务、消费者业务及技术服务领域，这些不那么政治化的行业仍然表现不俗。

人们一直习惯性地认为，中国政府不会让其最大最知名的国企以债务违约

收场，无论其财政状况多么疲弱。但如今，不确定性逐渐显现。标普上述报告的作者克里斯托弗·李（Christopher Lee）表示：“人们越来越感觉到，最弱的国企并非绝无可能违约。”他认为，官员们现在要面对的问题是“如何放弃这些国企而不引发系统性的崩溃。”

The rise of hackathons

What the hack?

A tech-industry tradition has entered the corporate mainstream

FUELLED by curiosity, coding know-how and caffeine, "hackathons" have been a pastime for tech geeks for a decade. In lengthy sessions often stretching through the night, software engineers fix bugs and come up with new ideas. Facebook's "like" button was born during such a late-night coding session.

However, hackathons are no longer the exclusive domain of techies. Several hundred big companies in other industries now have them, reckons Rob Spectre of Twilio, a software firm, up from only a handful two years ago. These include firms in industries as diverse as airlines, cars, telecoms, beer and banking.

Last month a group of British railway companies held a 48-hour session on board a train. One of the teams came up with a way to scan carriages and alert passengers to where they might find vacant seats. On December 5th-6th MasterCard, a credit-card processor, is holding its 13th hackathon of 2015: a season finale, of sorts, following a dozen regional "championships" around the world.

Hackathons differ in their scope, but most require participants to devise a solution to a problem within a day or two; the winning team is typically awarded some sort of prize. Though the ideas are off-the-cuff, they can sometimes be impressively original. Some hackathons are internal events, which offer employees the opportunity to work with new teams and to broaden their experience. Every year Dropbox, a cloud-storage company, hosts a "hack week" when employees can work on any project they like. Disney, a media firm, holds four internal hackathons a year.

The majority of hackathons, however, are external events aimed at enhancing a firm's reputation in the eyes of software developers. Some firms consider hackathons essentially as good PR, and pay for them out of their marketing budgets. Others find them helpful with recruiting. Hackathons reveal which participants can focus and perform under pressure, which is a good way to identify talent, says Sebastien Taveau of MasterCard.

Hackathons held by universities have become loaded with corporate sponsors, eager to reach young coders. "Job fairs no longer have any significance" for engineers, says Jerry Filipiak of Comarch, a software firm. "The hackathon has become the job fair." To disguise their corporate agenda, the representatives of the sponsoring firms often call themselves "developer evangelists".

As hackathons go mainstream, they are evolving to accommodate a wider audience. Some firms are experimenting with holding shorter gatherings, providing healthier food and offering child care so as to attract more female participants, says Susan Danziger of Ziggeo, a video-software firm. Purists will doubtless scoff that hackathons are abandoning their nerdy roots, but others are more open-minded. What's wrong, after all, with hacking the hackathon? ■

黑客马拉松兴起

黑客营？

一项技术行业的传统已经进入企业主流

在好奇心、编程技术和咖啡因的驱动下，“黑客马拉松”成为技术宅的消遣已有十年。漫长的赛程常常彻夜进行，软件工程师们调试程序，想出新点子。Facebook的点“赞”键就诞生于这样的深夜编程会。

不过，黑客马拉松已经不再是科技人员的专属领域。软件公司Twilio的罗伯·斯派克特（Rob Spectre）说，如今已有几百家其他行业的大公司在举办这类活动，而两年前还只有寥寥几家。这些公司来自航空、汽车、电信、啤酒和银行等各种领域。

上个月一批英国铁路公司在火车上举办了一场48小时的比赛。有个代表队想出了扫描车厢、提醒乘客哪里可能找到空位的办法。12月5日至6日，信用卡支付公司万事达举行了2015年的第13场黑客马拉松。在世界各地举办了12场区域性“锦标赛”后，此次比赛类似于一次年终总决赛。

黑客马拉松的内容各不相同，但大多数要求参赛者在一两天内为一个问题提出解决方案，获胜的团队通常会获得某种奖励。尽管创意是即席而发，但有时颇为新颖，引人瞩目。有些黑客马拉松是内部活动，让员工有机会和新团队合作，拓展他们的经验。云存储公司Dropbox每年都举办“黑客周”，员工可以做任何他们想做的项目。媒体公司迪士尼每年会举办四次内部黑客马拉松。

不过，大多数黑客马拉松是外部活动，目的是提升公司在软件开发人员眼中的美誉度。有些公司认为黑客马拉松本质上是极好的公关活动，从市场部预算中支出经费。有些公司发现这样的活动有助于招兵买马。万事达的塞巴斯蒂安·塔沃（Sebastien Taveau）认为黑客马拉松反映出哪些参赛者能够在压力之下保持专注并自如发挥，因此是发现人才的好办法。

大学举办的黑客马拉松已经被企业赞助商占据，它们渴望接触年轻的程序员。软件公司Cormarch的杰瑞·菲利皮亚克（Jerry Filipiak）说，对工程师来说，“招聘会已经不再有任何意义，黑客马拉松已经成了招聘会。”为了掩盖企业的动机，赞助公司的代表们常常自称“开发员布道者”。

随着黑客马拉松步入主流，它们也在不断演变以接纳更广泛的参与者。视频软件公司Ziggeo的苏珊·丹奇格（Susan Danziger）说有些公司正在尝试更简短的集会、提供更健康的食品并帮忙照看儿童，以吸引更多的女性参赛者。纯粹主义者无疑会嘲笑说黑客马拉松正在丢弃它们“宅”的本源，但其他人思想更开明。毕竟，黑了黑客马拉松又有什么不对呢？■

Germany's industry

Does Deutschland do digital?

Europe's biggest economy is rightly worried that digitisation is a threat to its industrial leadership

SINCE it was founded in 1923 Trumpf, a family-owned company based near Stuttgart, has had one main mission: making things that make things. It started out with motorised hand shears and other tools to work sheet metal. It then invented fabrication machines with a numerical-control system and later was among the first to use lasers to cut metal. A prime example of a firm from Germany's industrial Mittelstand that has outgrown the label (which literally means "mid-sized trades"), the firm today has annual sales of €2.7 billion ($3.2 billion) and more than 10,000 employees worldwide.

Trumpf's roots in metalworking and other hardware stand in stark contrast to what it is trying to achieve next: building a new business purely based on software and data. Unveiled last month, its online offering, called Axoom, connects machines built by Trumpf and others, and uses the data it collects from them to help customers organise their production—for instance, to warn them when they are running out of material or to order it directly from the supplier. Much like smartphones, Axoom will be able to run "apps" from other providers, such as software to schedule workloads, or to predict when machines will need a spare part.

The company's attempt to redefine itself is emblematic of the leap that manufacturers, in Germany and everywhere else, now have to make. The much-discussed "internet of things" (IoT) is becoming a reality on factory floors: industrial machines and the products they make are increasingly packed with sensors and connected to the internet (see Schumpeter).

As a result, the rules in many industries, from construction equipment to cars, are changing: making things matters less and knowing things more. In many cases the successful companies will no longer be the ones that make the best products, but the ones that gather the best data and combine them to offer the best digital services. And the biggest winners of all may be those that control a "platform", a layer of software that combines different kinds of devices, data and services, on top of which other firms can build their own offerings—just as Trumpf is trying to do with Axoom.

Mastering this sort of transformation ought to be on the agenda of any country with a big manufacturing base (see chart 1). But nowhere is the sense of urgency more developed than in Germany, where the fear that digitisation threatens its position as a leading industrial nation has been given added piquancy by Volkswagen's recent emissions scandals. The first half of the battle to master the digital world was lost, according to Timotheus Höttges, the boss of Deutsche Telekom. "The question now is: how do we win the second half?"

The problem is not that German companies have stopped innovating. In fact, many are ahead of the pack in digitising their products as well as their shop floors. Making products and factories "smart", however, is only the first stage in the digitisation journey, argues Germany's National Academy of Science and Engineering (Acatech) in a recent report. The next is to use the data generated by connected devices and other information to offer clever services, and make money with new business models. Firms that cannot create such offerings "may quickly lose their ability to compete," argues the Acatech report.

Smart services do not have to be closely related to the principal use of the product. A high-end car, for instance, has the digital horsepower of 20 personal computers and generates 25 gigabytes of data per hour of driving, estimates Gabriel Seiberth of Accenture, a provider of IT and consulting

services. Rather than just building vehicles, he argues, carmakers should be thinking about how to provide, and profit from, the entertainment and e-commerce services that could be offered on the screens inside a vehicle. "The car will become a central part of a person's digital life," says Mr Seiberth.

That strikes a particular chord in Germany. Some fear that its carmakers, which directly or indirectly employ one in seven workers nationwide, could be demoted to low-margin metal-bashers, while American tech giants make most of the money by providing the software and the in-car entertainment—and perhaps, in time, designing the cars themselves.

Apple and Google are pressing carmakers to install the operating systems they have designed for cars' entertainment systems, which in practice will suck up all sorts of other data about the car and its occupants. Carmakers are realising that to give up this territory would risk their "sovereignty over the data" generated by their vehicles, in the words of Wilko Stark, Daimler's strategy chief. They could end up like Samsung, whose profits from smartphones are limited by the fact that it depends on Android, Google's mobile operating system.

It is not just German carmakers which worry about this sort of future, however. The American tech giants are also trying to establish platforms for the "smart home", which collect data from appliances, heating systems and the like. "Whoever controls the platforms will rule the future," declares Henning Kagermann, the head of Acatech, who coined the term "Industrie 4.0" for German industry's collective efforts to make the transition to a digital, internet-connected future.

Despite such concerns, in some ways Germany's industry seems well prepared for the rise of services and platforms. Its bosses are alive to the threat. Axel Springer, a publishing giant, started a trend among German

firms by having some of its top people live in Silicon Valley for several months. The experience led the firm to invest in a consulting firm, gratingly called Hy!, which introduces old-economy executives to startups and helps them plan their digital transformation.

Some firms have already acted on the insight that digital platforms are crucial for their futures. One is Trumpf. Another is Klöckner, a metals trader, which has created a platform to connect steelmakers with construction firms and other customers. Germany's engineering and manufacturing giants, too, have started to take platforms seriously: Bosch now offers an "IoT Suite" to help other companies create new services around connected devices. Deutsche Telekom has teamed up with other firms to establish Qivicon, a smart-home platform to rival Apple's and Google's.

The government is trying to help. It has taken the lead in Industrie 4.0, creating around it an unwieldy structure that ropes in everyone from trade associations and ministries to unions and academics. Only in a country with Germany's corporatist tradition would an effort to make businesses more agile and responsive to change be so stuffed with steering committees, working groups and advisory boards.

The first aim of this bureaucracy is to produce templates and test beds for trying out innovative digital services, and to publicise interesting examples. Its second aim is to convince two groups of the need for change: the smaller among Germany's Mittelstand firms, and the industrial trade unions, which, under the country's "co-determination" model of labour relations, have a say in many management decisions. "Creating acceptance is key," says Matthias Machnig, a senior official who leads the Industrie 4.0 effort at the ministry of economic affairs.

Fortunately for many German industrial firms—and, for that matter, their

counterparts in other countries—they have more time to adapt than consumer firms. In consumer markets, digital newcomers can quickly become dominant by exploiting the "network effects" in some technology platforms: the more people use them, the more apps and other offerings they generate, and the stronger they get versus any rivals. This is why German makers of cars and heating equipment look with trepidation at Google's work on self-driving cars and intelligent thermostats.

Yet the economics of the markets for industrial equipment, and the other business-to-business products many German firms make, are different, explains a report this month by Stiftung Neue Verantwortung, a think-tank, and other organisations. These markets move more slowly and are more complex. The expertise of incumbents is hard to replicate and, more important, in many cases they control access to the data their products generate. As a result, network effects are not as strong in these sorts of business.

If that offers some comfort to German manufacturers, it only goes so far. First, platforms thrive when other firms, developers and customers make use of them. Most big IT companies have grown up managing such "ecosystems", but this will not come easy to manufacturers. As Sangeet Paul Choudary, a technology analyst, puts it, they are steeped in "pipe thinking": firms order supplies, fashion them into products and then send them towards customers. Now they must think more like a gardener, and maintain a park which attracts and retains other firms and customers, in order to flourish.

Second, successful platforms tend to be "open", meaning chiefly that their owners encourage other firms, including competitors, to build applications that run on them. Bosch, Trumpf, Siemens and others claim to be open, but it is not clear how welcoming they will be in practice. German bosses tend to think that they can offer all the necessary services themselves and do not

like the idea of inviting others onto their platform. German carmakers could probably build the dominant operating system for vehicles if they overcame their rivalries. But it is unclear whether BMW, Daimler and VW's Audi subsidiary will turn Here, the digital-maps business they are buying from Nokia, into a bona fide platform. Such proprietary thinking also makes German industrial firms reluctant to produce open-source software, or to give away other forms of intellectual property, in the way that Tesla, an American maker of electric cars, has done with its patents in an effort to spread its technology.

Shy about sharing

Third, platforms are about sharing the data they gather. The best new services are often the result of combining information from different sources. But in Germany this can be difficult. One barrier is privacy: in addition to the country's strict data-protection laws, there is a widespread suspicion of anything that smacks of monetising data. Even among younger Germans, nearly two-thirds worry that data generated by their cars will be sold on, according to a recent study by Deloitte, a consulting firm. Many Germans are wary of what has come to be called *Plattform-Kapitalismus*, meaning the dominance of new markets by mighty foreign providers such as Google and Facebook (see chart 2). This is seen as somehow unfair and an example of American "cowboy capitalism", which adds to the reluctance of German firms to create and promote their own platforms. Mittelstand firms too are reluctant to share data: they fear they could lose control of their intellectual property and thus their competitive edge.

A fourth and final hurdle relates to German corporate culture. Although German firms are no longer as hierarchical as they once were, they are still managed from the top down; risk-taking is discouraged. A key to developing successful platforms and services is to put them in the hands of

autonomous teams—rather like internal startups—and to be prepared to shut projects down if they fail to take off. Many German giants now have "accelerators" to incubate new business ideas, but lots are just public-relations exercises. Only a few have gone as far as Klöckner, which has set up an incubator for internal startups in Berlin, far away from its headquarters in Duisburg, with the aim of digitising the firm's entire supply chain.

Many employees, too, are not ready for the digital world. At German universities computer scientists are trained much like engineers, meaning they are focused on precision, explains Clemens Westerkamp of the University of Applied Sciences in Osnabrück. This mindset, he says, is a big advantage when building highly reliable systems, which are required in many industries. But it is a drawback in the world of software and data, where quick thinking and risk-taking are more important. "The battle for industrial platforms will be a fight between German precision and American speed," says Mr Westerkamp.

User-unfriendly

The engineering background of many managers also explains why they focus more on incremental improvements than on making drastic gains in their products' functionality and ease of use. "Germans are really good at reducing the *Spaltmass*, the clearance between the parts of a car's body," says Christoph Keese, who was one of the Springer executives who spent a few months in Silicon Valley and has written an influential book about the experience. But the user interfaces for German products are a different matter. They are often so complex, says Mr Keese, that the word that appears most often on their displays is *Anwenderfehler* ("user error").

Compare Silicon Valley and Germany's equivalent for industrial firms, the region around Stuttgart, and the cultural differences are clear. Google's campus in Mountain View offers about 30 different canteens with free food

and generous opening hours. Visitors can see some self-driving cars, but the scenery is dominated by bicycles in primary colours which employees use to pedal between the many buildings. At Bosch in Gerlingen, employees all stream into a huge, centralised corporate cafeteria at lunchtime. And the most striking vehicles are green self-driving lawnmowers that keep the grass around the firm's office block in perfect trim.

Yet it would be unfair not to mention the "Bosch Start-up Platform" which the firm has recently set up in Ludwigsburg, a short drive away. It has already incubated a handful of firms. One has developed a wireless sensor to improve asparagus yields, another builds agricultural robots that kill weeds. Germany's manufacturers are clearly changing. The question is whether they can do so fast enough. ■

德国工业

德国转向数字化？

欧洲最大经济体确有理由忧心数字化威胁其工业领导地位

通快（Trumpf）集团是一家总部位于斯图加特附近的家族企业，自1923年成立以来，其主要使命一直是“制造能制造产品的产品”。它最初生产用于加工金属片的电动手提剪切机及其他工具，接着发明了带数控系统的制造加工设备，之后又率先利用激光切割金属。作为德国式中小工业企业的杰出案例，通快已成长壮大，超出了中小企业的范畴，如今年销售额达27亿欧元（32亿美元），在全球拥有超过一万名员工。

通快在金属加工及其他器件上的根基与其当下的目标形成了鲜明对比：打造完全基于软件及数据的新业务。集团在10月推出的在线平台Axoom能连接通快和其他企业制造的机器，并从中收集数据，帮助用户管理生产过程，比如在材料即将耗尽时发出警示或直接向供应商订货。Axoom很像智能手机，能够运行其他供应商的“应用”，如调度工作量或预测机器何时需要更换零件的软件。

该公司重塑自我的努力代表了德国及世界各地的制造商如今不得不做出的跨越。备受热议的“物联网”（IoT）正逐渐在工厂车间里成为现实：工业机械及其制造的产品日益被装满传感器并接入互联网。

结果是，从建筑设备到汽车，许多产业的规则都在变化：制造产品的重要性减弱，了解事物的重要性提升。很多时候，成功者不再是做出最佳产品的公司，而是能收集到最有用的数据并利用它们提供最佳数字服务的企业。最大的赢家也许是那些“平台”控制者，这些平台在软件层上融合了各种设备、数据及服务，其他公司可以在此之上打造自己的产品和服务，通快集团就试图用Axoom构筑这样的平台。

任何制造业大国（见图表1）都应该把实现这一转变列入议事日程。但在德国，紧迫感尤甚，近期大众汽车的“排放门”丑闻更令人们忧虑数字化浪

潮将威胁到德国作为领先工业国的地位。德国电信（Deutsche Telekom）的首席执行官提摩太·霍特格斯（Timotheus Hottges）说，德国在争夺数字世界掌控权的上半场战事中已经落败，“现在的问题是，我们如何赢得下半场？”

问题并非德国企业在创新上裹足不前。事实上，在产品及车间的数字化方面，许多德国企业走在前列。然而，产品及工厂的智能化只是数字化征程的第一步，德国国家科学与工程院（National Academy of Science and Engineering，以下简称Acatech）在近日的一份报告中称。下一步是要利用设备互联所生成的数据及其他信息提供智能服务，并以新的商业模式盈利。无法提供这类产品和服务的公司“可能很快会丧失竞争力”，Acatech的报告指出。

智能服务不必与产品的主要用途密切相关。例如，据IT及咨询服务供应商埃森哲（Accenture）的加布里埃尔·赛博特（Gabriel Seiberth）估计，一台高档汽车拥有20台个人电脑的数字马力，行驶一小时能生成25GB数据。他认为，汽车制造商除了制造车辆本身，还应考虑如何通过车内屏幕提供娱乐及电子商务服务，并从中获利。“汽车将成为人们数字生活的核心部分。”赛博特说道。

这在德国尤其引起共鸣。有人担心其汽车厂商（直接或非直接雇用了全国七分之一的劳动力）会沦为低利润的五金工厂，而美国的科技巨头则通过提供软件和车载娱乐系统（甚至可能最终自行设计汽车）赚取大部分利润。

苹果和谷歌正向汽车厂商施压，要求其安装它们为车载娱乐系统设计的操作系统，这实际上将吸走有关汽车及用户的其他各类数据。汽车厂商日渐意识到放弃这一领域可能导致一个风险，用戴姆勒的战略负责人威尔科·斯塔克（Wilko Stark）的话说，就是“丧失对（汽车生成的）数据的主权”。这些制造商最终可能落入三星的境地，后者的智能手机因为依赖谷歌的安卓操作系统而使利润受限。

然而，对这一前景忧心忡忡的不单是德国汽车厂商。这两家美国科技巨头还在努力打造“智能家居”操作平台，收集家电和供热系统等设备的数据。“谁控制平台，谁就统治未来。”Acatech院长孔翰宁（Henning Kagermann）宣称。他创造了“工业4.0”（Industrie 4.0）一词，用以形容德国工业界向数字化联网未来过渡的集体努力。

尽管有这些忧虑，从某些方面看来，德国业界似乎已为各类服务及平台的崛起做好了准备。这里的老板们对威胁非常敏感。出版界巨头阿克塞尔·斯普林格（Axel Springer）在德国公司中开启了一股潮流——让部分高管到硅谷住上数月。这一经历促成斯普林格公司投资了一家名字奇怪的咨询公司Hy!，该公司向旧经济企业的高管引荐创业企业，并帮助他们规划数字化转型。奇怪的咨询公司Hy!，该公司向旧经济企业的高管引荐创业企业，并帮助他们规划数字化转型。

一些公司洞察到数字化平台对自身前景至关重要，并已采取行动，通快就是其中一家。另一家是金属经销商Klöckner，它建立的平台把钢铁企业与建筑公司及其他顾客连接起来。德国的工程及制造业巨头们也已开始重视打造平台：如今，博世提供“物联网套件”来帮助其他公司围绕互联设备创造新服务。德国电信与其他公司联手建立了智能家居平台Qivicon，以抗衡苹果及谷歌的同类平台。

德国政府也正试图添加助力。它已经在“工业4.0”运动中扮演起领军角色，集合行业协会、政府部委、工会及学术界的各方面人才打造一个庞大的架构。只有在德国这种奉行社团主义传统的国家才会有如此多的指导委员会、工作组及顾问委员会来推动企业变得更机敏应变。

这套官僚架构的首要目标是为创新数字服务建立样板及测试台，并宣传有趣的案例。第二个目标是让两个团体认识到变革的必要性：德国中小企业中的较小者和产业工会。后者因德国对劳工关系遵循“共治”模式而在许多管理决策上具有发言权。“营造共识来接受转型是关键。”德国经济事务部领导“工业4.0”运动的高级官员马蒂亚斯·马赫尼希（Matthias Machnig）表示。

幸好，相比消费品企业，德国许多工业企业拥有更多时间来调整，其他国家的情况也是如此。在消费市场上，新登场的数字公司可通过一些科技平台的“网络效应”迅速称霸：越多人使用这些平台，它们就产生更多的应用及其他产品，从而比任何对手更强大。正因如此，德国的汽车和供热设备厂商才会对谷歌研发无人驾驶汽车及智能温控器惶恐不安。

但德国厂商制造的工业设备及许多其他商用产品的市场有着不一样的经济模式，智库“新使命基金会”（Stiftung Neue Verantwortung）联同其他机构在11月发表的一份报告中解释道。这些市场的运作更缓慢也更复杂。既有企业的专长难以被复制，更重要的是，它们往往控制着对产品所生成数据的使用。所以，在这些行业，网络效应并不那么强。

这或许给德国厂商带来些许安慰，但仅此而已。首先，平台会因为其他公司、开发者及客户的使用而蓬勃发展。多数大型IT公司在运作这类“生态系统”的过程中成长起来，但这对制造业厂商来说并非易事。正如科技行业分析师桑杰特·保罗·乔达利（Sangeet Paul Choudary）所说，这些厂商习惯于“管道思维”：订购材料，制成产品，发给客户。而现在，要蓬勃发展，它们必须更像园丁，悉心护养园林以吸引并留住其他公司和顾客。

其次，成功的平台一般为“开放式”，这主要是指平台的所有者鼓励包括对手在内的其他公司开发基于其平台运行的应用程序。博世、通快、西门子等公司均宣称要建立开放的平台，但实际上它们能有多好客还是未知数。德国企业高层一般认为自己的公司能提供一切所需服务，不喜欢邀请别人加入自身平台的想法。德国的汽车厂商如果能打败对手，很可能会打造出主导市场的汽车操作系统。但是，目前仍不清楚宝马、戴姆勒及大众子公司奥迪在购入诺基亚的数字地图业务Here之后会否将其改造为真正意义上的平台。这样的专营思维也令德国工业企业不愿推出开源软件，或分享其他形式的知识产权，不像美国电动汽车制造商特斯拉那样为传播其技术而公开专利。

羞于分享

第三，平台的意义在于分享收集到的数据。最佳的新服务往往是不同来源

的信息相结合后的成果。但在德国，这可能难以实现。障碍之一是隐私：除了该国严格的数据保护法之外，德国社会还普遍质疑任何带有用数据盈利意味的行动。咨询公司德勤最近一项研究显示，即便是年轻一代德国人，也有近三分之二担忧其汽车生成的数据会被转售。许多德国人对所谓的“平台资本主义”（*Plattform-Kapitalismus*，即由谷歌和Facebook等强大的外国服务供应商统治的新市场）存有戒心（见图表2）。这种操作模式被视为不太公平，是美国“牛仔资本主义”的例证，这令德国公司更不愿建立并推广自己的平台。德国中小企也不太情愿分享数据：他们害怕因失去对知识产权的控制而丧失竞争优势。

第四个也是最后一个障碍与德国的企业文化有关。虽然德国公司不再像以往那样等级森严，但在管理上依然遵循上传下达的原则，并不鼓励冒险。开发成功平台及服务的关键是要让有自主性的团队来完成任务，就像公司内部的创业团队，而且要准备好如果产品不受欢迎就果断结束项目。德国许多企业巨头现在已拥有“加速器”来孵化新业务点子，但大多只是一种公关行为。只有少数做到Klöckner的程度，该公司在远离杜伊斯堡总部的柏林设立了内部创业孵化器，目标是实现公司整个供应链的数字化。

许多员工也还没有准备好进入数字世界。在德国的大学里，计算机专业的学生接受的训练和工程师很类似，专注于精密度，奥斯纳布吕克应用科学大学（University of Applied Sciences in Osnabrück）的克莱门斯·韦斯特卡普（Clemens Westerkamp）解释道。他表示，在建造许多行业所需的高可靠度系统时，这种思维模式是很大的优势。但在更讲求敏捷思维及勇于冒险的软件和数据世界，这就成了缺点。“产业平台的争夺战将是德国式精准与美国式速度之间的竞赛。”韦斯特卡普说。

用户界面不友好

德国许多管理者的工程背景也解释了为什么他们更强调逐步改良而非激烈提升产品的功能性及易用性。施普林格集团的一些高管到硅谷待了几个月，其中克里斯托夫·基斯（Christoph Keese）把这一经历写成了一本富有影响力的书。他认为“德国人非常善于收窄车身各部分间的缝隙（*Spaltmass*）”，但德国产品的用户界面则是另一回事。它们往往复杂难

懂，显示屏上最常出现的提示是“用户错误”（*Anwenderfehler*）。

斯图加特周边地区是德国工业企业界的硅谷，但两者的文化差异显而易见。谷歌在山景城的园区内约有30间不同的食堂，开放时间长且提供免费食物。访客会看见一些无人驾驶汽车，但举目所见最多的是员工骑着涂有鲜亮原色的自行车往来于众多建筑物之间。而在格尔林根（Gerlingen）的博世集团，午饭时间，只见全体员工涌入庞大的中央食堂。而最引人注目的车辆是把公司大楼周围的草坪修剪得整整齐齐的绿色无人驾驶剪草机。

但是，如果不提一下博世最近建立的“博世创业平台”（Bosch Start-up Platform），那将有失公允。该平台位于距格尔林根车程不远的路德维希堡（Ludwigsburg），已经孵化出了好几家公司。其中一家开发出了可提高芦笋产量的无线传感器，另一家打造出了除杂草的农业机器人。显然，德国的制造商正在改变，问题是它们的动作够不够快。■

Newspapers

Up against the paywall

Many publishers still see little alternative to continual cutbacks

IS IT boom or doom in the news business? Headline-grabbing sums are being invested in online newspapers: Axel Springer, a German publisher, bought *Business Insider* in September, in a deal valuing it at $442m. And in August NBCUniversal, a film and television studio, invested $200m in BuzzFeed, another online publisher. Yet for those publications founded in the era of hot-metal type, advertising revenues continue to fall, as illustrated by figures in November from News Corp and Tribune Publishing (whose titles include the *Chicago Tribune* and the *Los Angeles Times*).

American dailies lost around $30 billion in ad spending between 2005 and 2014, or 60% of the total. Each drop in revenues is being met, in most cases, with a fresh cull of newsroom staff (see chart). Tribune is offering redundancy terms to 500 employees, 7% of its workforce. The cuts have helped to limit short-term damage to publishers' bottom lines, but the outlook is bleak. Jim Chisholm, a media consultant, predicts that print-ad revenue is heading more or less to zero at many American and European papers. As for online ads, the ever-widening choice of places to put them means that prices keep falling.

What can newspapers do to save themselves, besides finding billionaire owners able to withstand years of losses? For most of them, one possible saviour, getting readers to pay for online news, has not worked well. Two years after introducing a paywall for the *Sun*, its biggest British title, News Corp said in October that it would be scrapped. "Metered" paywalls, which let readers see a few free articles before asking for payment, have worked at some large and prominent papers like the *New York Times*, and specialist ones like the *Financial Times* (which pioneered the idea). But for most

general-interest papers people tend to read the freebies, then leave. Mr Chisholm says a typical American personal-computer user spends just 228 seconds on each visit to a news website.

Some European newspapers are making a bit of money by selling individual articles, typically for a few tens of cents, in partnership with Blendle, a Dutch online firm. But Douglas McCabe of Enders Analysis, a research firm, says that as with paywalls, this idea has limited potential for English-language papers, which must compete with thousands of free sources of news for readers' attention.

For many papers, then, the main hope is to find ways of boosting online advertising and sponsorship. However, the digital-advertising revenue of America's daily papers was $3.5 billion in 2014, just 11% more than in 2007, according to the Pew Research Centre and the Newspaper Association of America. Analysts reckon that just two digital-media firms, BuzzFeed and Huffington Post, will grab around 10% of those revenues this year. Along with Vice Media, they have been far more creative in making money from their online traffic.

The problem for middle-market newspapers is that the most common digital advertising available is "programmatic"—that is, placed in bulk by software that seeks to maximise the target audience without much regard for what sort of outlet it is published in. This is extremely cheap, in part because the supply of space for such ads is near-infinite. The rise of ad-blocking software is also a threat, though Axel Springer's boss, Matthias Döpfner, said recently that on the website of *Bild*, the group's biggest title, the proportion of readers using ad-blockers fell from around a quarter to less than one in ten when it started forcing them to choose between viewing ads or paying for the articles.

Advertisers are keen to spend more on video and sponsored content, two

areas in which readers' attention is easier to hold (and which are not threatened by ad-blockers). But readers are not trained to expect video from their newspapers, and newspapers often lack the experience and resources to make them to a high enough standard. Some are making strong efforts, though. In October, the *New York Times* released a "virtual reality" app, with a series of slick 360-degree videos that the newspaper says kept readers engaged for close to 15 minutes on average.

Two of those videos were advertisements, for GE and Mini. This approach, where ads are served in exactly the same format as editorial content, and intermingled with it, is known as "native advertising". BuzzFeed and several other "digital-native" publishers make much of their money this way. Starchier papers are giving it a try, too, including the *Washington Post* (whose online traffic has surged under its new owner Jeff Bezos, the founder of Amazon), the *New York Times* and the *Wall Street Journal*. But smaller news outlets may struggle to get advertisers interested in creating ads that match their house style.

Mark Thompson, the *New York Times*'s chief executive, says the potential for native advertising is "limitless". Some of his readers may beg to differ. The paper has already had to make a change after some of them objected to it labelling sponsored content as "Stories from our advertisers": it dropped the word "stories".

One way that newspapers may be able to attract more advertising, or even get more readers to pay for news, is to identify new areas of specialist coverage that people find invaluable. The *Boston Globe* in October launched a website devoted to health and medicine called *Stat*, and has another devoted to covering Catholicism, called *Crux*. Some Sunday papers have long raised a bit of money through such things as gardening and wine "clubs", in which they sell products alongside related articles—a sideline being looked on with renewed interest by some newspaper bosses.

It is still too early to write the obituary of the general-interest daily newspaper, even if many are fighting for life. ■

报纸

背靠付费墙

众多出版商仍选择无多，只有持续削减开支

新闻产业目前是欣欣向荣还是日暮西山？数目惊人的投资正被砸向网络报纸：今年9月，德国出版商阿克塞尔·施普林格（Axel Springer）收购了美国商业新闻网站“商业内幕”（Business Insider），对其估值达4.42亿美元。8月，电影电视制作公司NBC环球（NBC Universal）向另一家在线出版商BuzzFeed投资两亿美元。但那些创立于铸字排版时代的刊物，广告收入持续下降，正如美国新闻集团（News Corp）及论坛出版公司（Tribune Publishing，其出版物包括《芝加哥论坛报》及《洛杉矶时报》）11月发表的数据所显示的那样。

2005至2014年间，美国报业损失了60%的广告投放，约300亿美元。多数情况下，每次收入下降都会引发新一轮的编辑部裁员（见图表）。论坛出版公司正向500名员工开出裁员条件，占其员工总数的7%。这样的裁员帮助出版商减少了短期利润损失，但长期前景堪忧。媒体咨询顾问吉姆·奇泽姆（Jim Chisholm）预计，美国及欧洲许多报纸的平面广告收入正或多或少走向“零”。至于网络广告，可投放的选择日益增加令其价格不断下跌。

除了让能负担多年亏损的亿万富翁收购，报业还可以怎样自救？让读者为在线新闻付费是一条可能的出路，但大部分报刊在这一尝试上成效不彰。新闻集团旗下发行量最大的英国报纸《太阳报》两年前推出在线付费阅读，但集团10月表示将放弃这一模式。“咪表”付费墙机制让读者免费阅读几篇文章，其余需付费订阅，这对《纽约时报》这样的主流大报及《金融时报》（最先尝试这种方法）这样的专业报刊行之有效。至于大多数大众型报纸，人们普遍在看完免费内容后就会离开。奇泽姆表示，美国个人电脑用户每次访问新闻网站通常只会停留228秒。

欧洲一些报纸正与荷兰网络公司Blendle合作，推出单篇文章的付费阅读

服务，通常每篇售价几十美分，目前也稍有盈利。但调研公司恩德斯分析（Enders Analysis）的道格拉斯·麦凯布（Douglas McCabe）表示，与付费墙一样，英语报纸在这方面潜力有限，因为它们必须与成千上万的免费新闻资源争夺读者。

由此，对于许多报纸来说，主要寄希望于设法增加网络广告及赞助。然而，据皮尤研究中心（Pew Research Centre）和美国报业协会（Newspaper Association of America）的数字，美国的日报在2014年的数字广告收入为35亿美元，仅比2007年上升11%。分析师认为，今年仅BuzzFeed和《赫芬顿邮报》（Huffington Post）这两家数字媒体公司就将攫取这项收入的10%左右。与Vice Media一道，这几家公司在利用其网络访问量来盈利方面远比同行更有创意。

大众报纸的问题是最常见的可供刊登的数字广告过于“程式化”，这些广告通过软件批量投放，以求实现受众最大化，而不怎么考虑广告在哪里投放。这种广告的价格极为低廉，原因之一是其投放空间近乎无限。广告拦截软件的兴起也是一个威胁，虽然阿克塞尔·施普林格（Axel Springer）的总裁马蒂亚斯·德普夫纳（Mathias Döpfner）最近表示，当公司强迫其最大报刊《图片报》（Bild）的网站读者在看广告和付费阅读之间二选一时，他们中使用广告拦截软件的比例从约四分之一下降至不到十分之一。

广告客户热衷在视频及赞助内容上加大投入，因为这两个领域更能吸引读者关注，也不受广告拦截软件的威胁。然而读者还不习惯通过报纸获得视频内容，报刊也往往缺乏经验及资源制作出高水准的视频。但一些报纸已做出有力的尝试。10月《纽约时报》发布了一款“虚拟现实”应用，包含一系列360度全景的精致视频，该报表示它们让读者平均逗留了近15分钟。

其中两个视频分别是通用电气和宝马Mini的广告。这种把广告与新闻内容混在一起，采用完全相同的形式呈现的方式被称为“原生广告”。BuzzFeed及其他几家“数字原生”出版商的盈利主要来源于此。较为传统的报纸也开始小试牛刀，包括《华盛顿邮报》（在亚马逊创始人杰夫·贝索斯接手后，其网站浏览量飙升）、《纽约时报》及《华尔街日报》。但较小型的

新闻机构也许难以吸引广告客户投资制作符合其出版风格的广告。

《纽约时报》的首席执行官马克·汤普森（Mark Thompson）称原生广告潜力“无限”。但它的部分读者可能并不买账。他们反对把该报登载的赞助内容标为“由广告主提供的故事”，《纽约时报》不得不做出改动，把“故事”二字去掉。

报纸要想吸引更多广告，甚至让更多读者付费订阅新闻，一个方法是找到新的领域来提供让读者感到无比宝贵的专门报道。《波士顿环球报》（Boston Globe）10月推出医疗健康资讯网站Stat，它的另一个网站Crux则专注天主教方面的报道。长久以来，部分逢周日出版的报纸在它们的园艺及红酒“俱乐部”里把产品和相关文章捆绑销售，赚到一些钱，如今一些报纸的老板们对这类副产品兴趣重燃。宣告大众型日报寿终正寝还为时过早，尽管它们中有许多正在挣扎求存。■

Negative interest rates

Bankers v mattresses

Central banks are still testing the limits to how low interest rates can go

IN JUNE of last year the European Central Bank reduced its benchmark interest rate, at which it lends to commercial banks, to 0.15% and its deposit rate, which it pays to banks on their reserves, to -0.1%. For a central bank that was once cautious about unconventional measures, setting a negative interest rate was a bold move. The ECB was in effect charging commercial banks to hold their excess deposits at the central bank, in the hope that this would drive down borrowing costs more generally.

Three months later, the ECB cut the deposit rate again, to -0.2%. When the ECB's rate-setting council met on December 3rd, it trimmed the deposit rate even further—by 10 basis points to -0.3%, as well as extended its "quantitative easing" program or QE (the creation of money to buy bonds). In a recent speech Mario Draghi, the ECB's boss, claimed that the ECB's unconventional policies over the past 18 months had been the "dominant force" in spurring the euro-zone economy and staving off deflation. Lending by banks is slowly reviving. Even so, he suggested, deficient inflation and lingering concerns about the strength of recovery justify further action.

Not so long ago, the lowest possible interest rate was thought to be zero. There is a ready alternative to keeping money in banks: holding it as cash. Mattresses do not charge for storing notes. Depositors might tolerate small fees, to avoid the cost and hassle of making other arrangements—but most had assumed their tolerance would be limited. "We are now at the lower bound," Mr. Draghi said after the last cut. He now seems to be reconsidering—but how low can the ECB go?

The ECB is not alone in testing the lower bound to interest rates. Denmark's central bank has set its main policy rate below zero for much of the past three years to repel capital inflows that had threatened its exchange-rate peg with the euro. In January the Swiss National Bank abandoned its attempts to stop the franc from appreciating against the euro by printing and selling francs in vast quantities; instead it resorted to negative interest rates to deter investors from buying francs. Sweden's central bank, the Riksbank, took its main policy rate negative in February, to weaken the krona, make imports more expensive and thus push inflation closer to its target of 2%.

For all these countries, it is the exchange rate against the euro that matters most. To suppress their currencies, their central banks must offer interest rates that are further below zero than the ECB's. The deposit rate in Denmark and in Switzerland is -0.75%. In Sweden it is -1.1%.

This has not caused commercial banks to swap their reserves at the central bank for cash, as theory would suggest. That is because to do so would itself be costly. To settle payments, banks must move vast sums between themselves each day. The costs of counting, storing, moving and insuring lorry-loads of banknotes apparently trumps the smallish charge Europe's central banks are levying to hold electronic deposits. The other possible use for banks' reserves is to lend them to other banks, but they are already awash with the excess liquidity created by QE.

The deposit rate at central banks sets a floor for the cost of overnight loans more generally, which is why short-term money-market rates have also turned negative. Indeed, negative policy rates and money creation through central-bank purchases of bonds or foreign currencies have dragged the yields on sovereign bonds into the red all over Europe (see chart). That in turn has pulled down the interest rates charged by banks for new loans.

Banks have passed on some of the cost of negative rates to their corporate clients. For them, too, the cost of moving and storing large stocks of cash is prohibitive; the obvious alternative—buying safe and liquid bonds—also now comes at a cost, thanks to negative yields.

In November Alternative Bank Schweiz, a tiny Swiss outfit, said it would be forced to levy negative rates on personal accounts from January. Most banks, however, have shielded retail customers from such charges, on the assumption they would move their accounts elsewhere. As a consequence, overall bank deposits have been stable. The banks have simply absorbed the cost of deposits at the central bank, which has dented profits. A further cut in the ECB's deposit rate of 0.2 percentage points could squeeze the net profits of European banks by 6%, according to Autonomous Research.

As interest rates creep further into the red, economists' prescriptions have become bolder. In a speech in September Andy Haldane, the chief economist of the Bank of England, outlined a range of options to allow rates to go lower still. The most radical would be to get rid of the mattress option by abolishing cash altogether. Ken Rogoff of Harvard University calculates that there is $4,000 of currency in circulation for every person in America. Much of it is used to hide transactions from tax authorities or the police. Abolishing it would curb such activities, as well as helping central bankers.

Yet depositors might still find ways to safeguard their savings. Switching to foreign currency or precious metals would be an obvious option. As Kenneth Garbade and Jamie McAndrews of the Federal Reserve Bank of New York point out, taxpayers could make advance payments to the taxman and subsequently claim them back. Depositors could withdraw funds in the form of bankers' drafts (certified cheques) to use as a store of value. Such drafts might even become a form of parallel currency, since they are transferable. Any form of pre-paid card, such as urban-transport passes, gift

vouchers or mobile-phone SIMs could double up as zero-yielding assets. If interest rates became deeply negative, it would turn business conventions upside down. Companies would seek to make payments quickly and receive them slowly. Their inventories would grow fatter.

In practice, euro-zone banks are the ones on the front-line of negative rates. That is sparking worries that, if rates go too low, they might harm the economy. Banks that are nervous about the stability of their deposits are less likely to lend, says Huw van Steenis of Morgan Stanley, an investment bank. Yet pushing rates lower still is also likely further to weaken the euro against the dollar, especially as the Federal Reserve seems set to raise its main interest rate on December 16th. That may even be the ECB's main motive—just as suppressing their currencies is the explicit aim of the other members of the negative-rate club. ■

负利率

银行家对阵压箱底

各国中央银行仍在测试低利率的极限

去年6月，欧洲央行将其对商业银行贷款的基准利率下调至0.15%，并将支付给银行准备金的存款利率降至-0.1%。对于一家曾对非常规措施持谨慎态度的央行，设定负利率实为大胆之举。这意味着，欧洲央行保管商业银行的超额准备金实际上要收取利息，目的是为了更广泛地降低借贷成本。

三个月之后，欧洲央行再次下调存款利率至-0.2%。欧洲央行负责设定利率的管理委员会于12月3日再次开会，进一步降低存款利率10个基点至-0.3%，同时延长实施“量化宽松”（QE，即创造货币以买入债券）。欧洲央行的行长马里奥·德拉吉（Mario Draghi）在最近一次演讲中声称，欧洲央行过去18个月的非常规政策一直是刺激欧元区经济以及避免通缩的“主导力量”。银行的放贷正在缓慢恢复。即便如此，他暗示，通胀不足以及人们对经济复苏力度挥之不去的担忧表明有必要采取进一步的行动。

不久以前，人们觉得利率再低也低不过零。如果钱不存进银行，另一个现成的选择就是持有现金。钱压箱底可不会被收费。为避免其他安排的成本和麻烦，储户或许能容忍小额的费用，但大多数人认为他们的容忍度是有限的。“我们已经在更低的利率区间了。”德拉吉在上一次降息后如是说。现在他似乎在反思，但是欧洲央行能承受多低的利率？

测试利率下限的不仅是欧洲央行。资本流入威胁到丹麦克朗的汇率与欧元挂钩，为了抵御这些资本流入，过去三年的大部分时间里，丹麦央行一直把主要政策利率设置在零以下。今年1月起，瑞士央行不再尝试用大量印钞和卖出瑞士法郎来阻止其对欧元升值；取而代之，该行实行了负利率以阻止投资者买入瑞士法郎。今年2月，瑞典央行（Riksbank）把主要政策利率降至负数，目的是让克朗贬值并推高进口商品价格，从而推动通胀接近2%的目标。

对所有这些国家而言，最重要的是本国货币兑换欧元的汇率。为了抑制本国货币升值，这些央行必须设定比欧洲央行更低的负利率。丹麦和瑞士的存款利率是-0.75%。瑞典为-1.1%。

这并没有如理论上应该的那样，导致商业银行把存在中央银行的准备金换成现金。原因是这样做本身成本很高。为了结算，银行间必须每天转移大量款项。这一车车钞票的清点、存储、运输和保险的成本显然超过欧洲央行提供电子簿计而征收的小额费用。银行准备金的另一可能用途是把钱借给其他银行，但是各家银行里已经充斥着QE造成的流动性过剩。

中央银行的存款利率整体上为隔夜贷款的成本设定了下限，这就是为什么短期货币市场的利率也变成了负数。的确，负政策利率以及中央银行通过购买债券或外币给市场注入的流动性已经把整个欧洲的主权债券收益率拉到了负数（见图表）。这继而又降低了银行的新增贷款利息。

银行已将负利率的一部分成本转嫁给了企业客户。对企业而言，转移和储存大量现金同样成本高昂；而现在由于负收益，买入安全性高、流动性好的债券这种明显的替代方法也需要成本。

11月，一家很小的瑞士机构“瑞士另类银行”（Alternative Bank Schweiz）表示，从明年1月起它将不得不对零售账户收取负利率。然而，由于假设个人客户会把账户转移到别处，大多数银行都免收这类费用，因此银行存款整体一直保持稳定。银行直接自行承担了在央行存款的成本，而这减少了利润。根据“自主研究”公司（Autonomous Research）的数据，欧洲央行的存款利率如再下调0.2个百分点，欧洲银行的净利润将减少6%。

随着负利率进一步下调，经济学家的处方变得更加大胆。英国央行的首席经济学家安迪•哈德恩（Andy Haldane）在9月的一次演讲中提出了一系列让利率继续走低的可选方案。最激进的就是完全废除现金，排除压箱底的选项。哈佛大学的肯•罗格夫（Ken Rogoff）计算出，美国的人均货币流通量为4000美元，其中大部分都用于避税和违法交易。废除现金将遏制这类行为，同时助央行一臂之力。

然而，储户仍可能找到保护积蓄的办法。换成外币或贵金属将会是一个显而易见的选择。正如纽约联邦储备银行的肯尼斯·加贝德（Kenneth Garbade）和杰米·麦克安德鲁斯（Jamie McAndrews）所说，纳税人可以向税务部门预付税款，随后再申请退税。储户能用银行汇票（保付支票）的形式提取资金作为价值储存方式。这些汇票甚至可能成为一种并行货币，因为它们可以转让。所有形式的预付费卡，如城市交通卡、礼品券或手机SIM卡等，都可能兼做零收益资产。如果利率变成很大的负值，就会颠覆商业惯例。公司会尽量早付款，晚收款。它们的库存会日益增多。

在实践中，欧元区的银行处于负利率的第一线。这引发人们担心，如果利率过低，可能会损害经济。投资银行摩根士丹利的休•范斯蒂尼斯（Huw van Steenis）表示，那些担心存款稳定性的银行放贷的意向会减弱。但是，压低利率也仍有可能进一步让欧元对美元贬值，特别是因为美联储似乎准备好了要在12月16日提高其主要利率。这甚至可能是欧洲央行的主要动机，正如负利率俱乐部其他成员的明确目标是抑制本国货币升值一样。

The speed of business

Cover Story: Hyperactive, yet passive

Worries about corporate myopia miss the point. Even in America, business is not dynamic enough

IT IS easy to make the case that modern business is too frenetic. This week 10 billion shares of America's 500 largest listed firms will have changed hands in frenzied trading. Their bosses will have been swamped by 750,000 incoming e-mails and a torrent of instant data about customers. In five days these firms will have bought $11 billion of their own shares, not far off what they invested in their businesses. With one eye on their smartphones and the other on their share prices, bosses seem to be the bug-eyed captains of a hyperactive capitalism.

Many bemoan the accelerating pace of business life. Long-term thinking is a luxury, say these critics of capitalism. When managers are not striving to satisfy investors whose allegiance to firms is measured in weeks, they are pumping up share prices in order to maximise their own pay. Executives feel harried, too. Competition is becoming ever more ferocious: if Google or Apple are not plotting your downfall, a startup surely is. Yet such perceptions do not bear close scrutiny. Short-termism is not the menace it seems. And the problem with competition is that it is not fierce enough.

Myopia: the long view

Start with short-termism. The fear that capitalism is too myopic has a long history. John Maynard Keynes observed that most investors wanted "to beat the gun". For over 50 years Warren Buffett has made money on the premise that other investors behave like headless chickens. But this drum has seldom been banged more loudly than today. If she wins the White House, Hillary Clinton wants to end the "tyranny" of short-termism. The Bank of England and McKinsey & Co, a consultancy trusted in boardrooms, worry

investors cannot see past their noses. The French have legislated to give more voting rights to longer-lasting shareholders. Economists fret that firms' reluctance to invest their profits hurts growth.

Since the 1990s the clock of business has whirred faster in some ways. Silicon Valley upstarts have unsettled some mature industries. Computers buy and dump shares in the stockmarket within milliseconds. Yet even in America Inc, the home of hyperactive capitalism, "short-termist" is the wrong label.

Since the crisis of 2008-09 firms' horizons have in fact lengthened. New corporate bonds have an average maturity of 17 years, double the length they had in the 1990s. In 2014 departing chief executives of S&P 500 firms had served for an average of a decade—longer than at any point since 2002 (and longer than most presidents). The average holding period of an S&P 500 share is a pitiful 200 days, but that is double the level of 2009. Constant trading masks the rise of index funds whose holding period, like Mr Buffett's, is "for ever". Larry Fink, the boss of BlackRock, the world's biggest asset manager, asks firms to draw up five-year plans.

Nor are firms investing less. The same system that is accused of myopia has just financed the $500 billion shale-energy revolution, a boom in experimental biotech companies and the electric-car ambitions of Elon Musk, a maverick entrepreneur. Relative to assets, sales and GDP, American firms' investment has held steady. The mix has shifted from plant and machines to things like software and research and development (R&D), but that is to be expected as equipment costs fall.

Economists grumble that listed firms are not investing their record profits, particularly since low interest rates mean that the cost of capital is cheap. But were companies to reinvest the cash they spend on buy-backs, their capital spending and R&D costs would rise to 15% of sales, way above the

25-year average of 9%. Few bosses would opt for such a splurge just because rates are low, especially if they are low as a result of economic worries. It is natural for mature firms to return cash to investors through dividends and buy-backs. And firms can invest too much as well as too little. China's idle factories and steel mills, absolved of duty to make a profit, are nothing to emulate.

That still leaves American businesses, and many of their rich-world peers, with a problem. If firms are sitting on cash, it can lead to a deficit in overall demand in the economy. Even if they return their surplus profits to shareholders, that may not boost demand if those shareholders are already rich and squirrel away the extra money. Macroeconomic policies to boost demand will help. But competition can also make a difference by reducing outsize profits and spurring firms to invest more. Here there is cause to fret.

The boom in Silicon Valley gives an impression of a golden age of dynamism—in some industries, such as taxis, startups are indeed causing revolutions. Overall, however, American capitalism is more sluggish than it was. Small firms are being started at the slowest rate since the 1970s. Young firms' weight has shrunk, measured by their number and share of employment. The labour market has become less dynamic.

Most industries are getting cosier. Of the 13 sectors in America (excluding farming), ten were more concentrated in 2007 than in 1997. Since Lehman Brothers folded in 2008, American firms have done $11 trillion of deals—worth 46% of their market value—whose main aim has been to increase market share and pricing power. Airlines, cable TV, telecoms, food and health care have all become less competitive. Giant tech firms with high market shares are making huge profits—tech firms together have 41% of all the cash held by non-financial firms.

The answer is twofold. First, remove the barriers to the creation of small firms. Nearly 30% of American occupations now require licences—tourist guides in Nevada need 733 days of training, for example. Some 22% of small firms complain that red tape is their biggest problem; many have trouble getting credit. Both issues loom even larger in Europe. Second, be vigilant about oligopolies: so far America's antitrust regulator has blocked only a handful of the large deals proposed since 2008, although it is now scrutinising combinations such as Office Depot and Staples. Rather than trying to stipulate the horizon over which investors and firms should think, governments should promote competition. That is the best way to harness capitalism's hyperactive energy in the service of growth. ■

商业的速度

【封面文章】极度活跃但消极

对公司短视的担忧其实不得要领。即使在美国，商业也不够有活力

很容易证明现代商业过于狂乱。本周，美国500家最大上市公司的100亿股在疯狂交易中易手。它们的老板将被来自客户的75万封电子邮件和即时数据洪流淹没。五天内，这些公司将会购入110亿美元的自家股票，与它们投资于自身业务的数字相差不远。老板们一只眼睛注视智能手机，另一只紧盯公司股价，如同过度活跃的资本主义世界里的暴眼船长。

很多人哀叹商业运作的节奏加快。这些资本主义的批评者说，长远思考成了奢侈品。当管理人员不再努力取悦投资者（他们对公司的忠诚度以周计算），他们推高股价是为了让自己的收入最大化。高管们也备感烦扰，因为竞争正变得越发残酷：如果谷歌或苹果没有在密谋让你倒台，那么一定有一家创业公司正在这么干。然而，这样的观点经不起严密的审视。短期主义不像看上去那么危险，而竞争的问题是它还不够激烈。

> *短视：长久以来的看法*

先从短期主义说起。对资本主义过于短视的恐惧有着长久的历史。凯恩斯发现，大多数投资者都想“抢跑”。50多年来，巴菲特赚钱的前提是其他投资者像没头苍蝇那样行事。但这一论调很少像现在这般响亮。如果赢得白宫，希拉里·克林顿希望结束短期主义的“暴政”。英国央行和受董事信任的咨询公司麦肯锡担心投资者鼠目寸光。法国已经立法，给予长期股东更多投票权。经济学家们担心，公司不愿把利润用于投资，将会影响增长。

自上世纪90年代以来，商业的时钟在某些方面转得更快了。硅谷的新兴企业已经动摇了一些成熟行业。计算机于毫秒之间在股市购入和抛售股票。然而，即使是在美国这个过度活跃资本主义的老家，“短期主义”也是一个错误标签。

自2008年至2009年的危机之后，公司的眼光其实放长远了。新发公司债券的平均期限为17年，是20世纪90年代时的两倍长。2014年从标准普尔500公司离职的首席执行官平均已任职十年，比2002年以来的任何时候都更久（也长过大多数总统的任期）。标准普尔500股票的平均持有期只有可怜的200天，但已是2009年的两倍。频繁的交易掩盖了指数基金的上涨，它们的持有期如巴菲特所说是“永久的”。全球最大的资产管理公司贝莱德集团（BlackRock）的老板拉里·芬克（Larry Fink）要求各个公司都制定五年计划。

公司的投资也并未减少。正是这个被指目光短浅的体系刚刚提供了资金，推动价值5000亿美元的油页岩能源革命、蓬勃发展的实验性生物技术公司，以及特立独行的企业家埃隆·马斯克（Elon Musk）对电动汽车的抱负。相对于资产、销售额和GDP而言，美国公司的投资保持稳定。投资的重点已由厂房和机器转变为软件和研发等等，但随着设备成本下降，这一点也很自然。

经济学家抱怨说上市公司没有将它们创纪录的利润用于投资，尤其是在低利率导致资本成本低廉的情况下。但如果公司花在回购上的现金都用于再投资，那么它们的资本支出和研发成本将升至销售额的15%，远高于25年来9%的平均水平。极少有老板会只因为利率低就选择如此挥霍，尤其当利率低是经济堪忧的结果之时。成熟公司通过分红和回购股份将现金返还给投资者是很自然的。而公司可能投资过少，也可能投资过多。中国闲置的工厂和钢厂被免于盈利的责任，根本无可效仿。

这仍给美国公司以及它们富裕世界的许多同伴留下了一个问题。如果各公司都坐拥现金，可能导致经济整体需求的不足。即便它们将剩余利润返还股东，如果这些股东已经很富有并且把多余的钱存起来，那么可能仍然无法提振需求。刺激需求的宏观经济政策会有帮助。但是竞争会减少巨额利润，促使企业增加投资，因而也会起到作用。而在这一点上，我们有理由感到担忧。

硅谷的繁荣让人觉得这是活力的黄金时代，在某些行业，如出租车，创业

公司的确在引发革命。但是整体而言，美国资本主义比过去更为迟缓。小公司的创建速度为上世纪70年代以来最慢。就数量和就业份额而言，年轻公司的比重已经缩减。劳动力市场已变得不那么活跃。

大部分行业越来越安逸了。美国13个部门（农业除外）中有10个在2007年比1997年时更集中。自2008年雷曼兄弟破产以来，美国公司已经完成11万亿美元的交易，占市值的46%，主要目的是增加市场份额和定价权。航空、有线电视、电信、食品和医疗行业的竞争都已减弱。拥有高市场份额的科技公司巨头正在赚取巨额利润，科技公司共占所有非金融公司持有现金的41%。

长期的偏执

答案在两方面。第一，移除创建小公司的壁垒。美国近30%的职业现在需要执照，例如，内华达州的导游需要经过733天的培训。约22%的小公司抱怨繁琐的政府手续是它们最大的问题，此外它们当中很多都难以拿到贷款。这两个问题在欧洲甚至更为严重。第二，对寡头垄断保持警惕。到目前为止，美国反垄断监管机构只阻止了2008年以来大规模交易提案中的少数几笔，尽管它目前正在严格审核如欧迪办公（Office Depot）和史泰博（Staples）的合并。与其试着规定投资者和公司应当达到的眼界，政府更应当促进竞争。这才是利用资本主义极度活跃的能量服务于增长的最佳方式。■

Tax evasion

The mega-haven

An index of financial secrecy highlights American hypocrisy

THE world is becoming less welcoming to tax dodgers. That is the conclusion of the latest Financial Secrecy Index, published every two years by the Tax Justice Network (TJN), an NGO. It looks at various measures of financial transparency and information-sharing in more than 90 countries, then weights them according to the level of financial services each country provides to non-residents. Most countries' scores have fallen since 2013, indicating greater transparency. Among the biggest improvers are the Cayman Islands, once a notorious tax haven, and Luxembourg, which tax campaigners used to call Europe's "death star" of financial secrecy.

The reason for the shift is the global, austerity-era push for countries to share more information on tax arrangements. Under the fast-spreading, OECD-sponsored Common Reporting Standard, countries will routinely exchange data on each other's citizens so they can be taxed appropriately in their home countries. Rules on the registration of corporate ownership are being tightened, too, in order to reduce opportunities to hide dirty money in anonymous shell companies.

But America, the country that has arm-twisted so many others to join the transparency revolution, is dragging its feet. It is now the third most secretive jurisdiction, behind Hong Kong and, inevitably, Switzerland (where rumours of the death of bank secrecy have been exaggerated).

America was in the vanguard in the fight against tax havens, first targeting the Swiss, then passing the Foreign Account Tax Compliance Act, or FATCA, which forces financial firms all over the world to spill the beans on their American clients. While demanding concessions from others, however,

Washington has made few itself. It has, for instance, failed to engage with the OECD's data-sharing scheme. Worse, anonymity-friendly incorporation regimes at the state level mean America is unmatched in corporate secrecy.

This matters, because America hosts a lot of offshore business—just ask a billionaire from Caracas or Cairo where he buys property or sets up the shell companies that hold it. The TJN offers a solution: it reckons Europe should mimic FATCA by imposing a stiff withholding tax (it suggests 35%) on payments from Europe to American financial institutions, until America gives as much data as it takes. That would induce wry smiles in Zurich. ■

逃税

超级避风港

一个财务保密指数凸显出美国的虚伪

这个世界正越来越不欢迎逃税的人。这是最新的财务保密指数（Financial Secrecy Index）得出的结论，这一指数由非政府组织“税收正义网络”（TJN）每两年公布一次。它考察90多个国家在财务透明度和信息共享方面的种种举措，然后依照每个国家提供给非居民的金融服务水平对其进行衡量。大部分国家的分数比2013年要低，意味着透明度提高了。提升最显著的国家包括开曼群岛和卢森堡，前者一度是臭名昭著的避税天堂，后者曾被提倡税收透明化的活动家称为欧洲的财务保密“死星”。

有此转变是因为全球化及财政紧缩的时代推动各国更多地分享特定税收安排的信息。根据经合组织确立的被广为接受的共同申报准则（CRS），世界各国将会常规性地交换彼此公民的信息，确保他们在自己的母国被合理地征税。公司所有权注册的相关规定也正在收紧，以减少通过匿名空壳公司藏匿脏钱的机会。

然而，美国虽然强迫了很多其他国家加入透明度改革，自己却在这一进程中拖了后腿。目前，美国在世界最不透明管辖区中排名第三，前面两位依次是香港以及毫无疑问的瑞士（有关瑞士银行保密制度寿终正寝的谣言被夸大了）。

美国曾经走在打击避税天堂的前列，它首先锁定瑞士，然后通过了《外国账户税务合规法案》（FATCA），要求世界各地的金融公司公开其美国客户的信息。在要求他人做出让步的同时，美国自己却很少让步。比如，美国未能加入经合组织的数据共享计划。更糟糕的是，美国州一级的公司注册制度对匿名制的宽容态度意味着美国在公司保密度上无可匹敌。

这事关重大，因为美国是大量离岸业务的目的地——随便问一位从委内瑞拉首都加拉加斯或者开罗来的亿万富翁，他在哪里购置房产或是创建空壳

公司来持有房产。“税收正义网络”提出了一个解决方案：它认为欧洲应当仿照《外国账户税务合规法案》，对欧洲向美国金融机构的付款征收严苛的预扣所得税（建议税率为35%），直到美国公开足够多的数据，至少规模与其收集的数据相等。这会让苏黎世露出揶揄的笑脸。■

Data privacy

We'll see you, anon

Can big databases be kept both anonymous and useful?

FREQUENT visitors to the Hustler Club, a gentlemen's entertainment venue in New York, could not have known that they would become part of a debate about anonymity in the era of "big data". But when, for sport, a data scientist called Anthony Tockar mined a database of taxi-ride details to see what fell out of it, it became clear that, even though the data concerned included no direct identification of the customer, there were some intriguingly clustered drop-off points at private addresses for journeys that began at the club. Stir voter-registration records into the mix to identify who lives at those addresses (which Mr Tockar did not do) and you might end up creating some rather unhappy marriages.

The anonymisation of a data record typically means the removal from it of personally identifiable information. Names, obviously. But also phone numbers, addresses and various intimate details like dates of birth. Such a record is then deemed safe for release to researchers, and even to the public, to make of it what they will. Many people volunteer information, for example to medical trials, on the understanding that this will happen.

But the ability to compare databases threatens to make a mockery of such protections. Participants in genomics projects, promised anonymity in exchange for their DNA, have been identified by simple comparison with electoral rolls and other publicly available information. The health records of a governor of Massachusetts were plucked from a database, again supposedly anonymous, of state-employee hospital visits using the same trick. Reporters sifting through a public database of web searches were able to correlate them in order to track down one, rather embarrassed, woman who had been idly searching for single men. And so on.

Each of these headline-generating stories creates a demand for more controls. But that, in turn, deals a blow to the idea of open data—that the electronic "data exhaust" people exhale more or less every time they do anything in the modern world is actually useful stuff which, were it freely available for analysis, might make that world a better place.

Of cake, and eating it

Modern cars, for example, record in their computers much about how, when and where the vehicle has been used. Comparing the records of many vehicles, says Viktor Mayer-Schönberger of the Oxford Internet Institute, could provide a solid basis for, say, spotting dangerous stretches of road. Similarly, an opening of health records, particularly in a country like Britain, which has a national health service, and cross-fertilising them with other personal data, might help reveal the multifarious causes of diseases like Alzheimer's.

This is a true dilemma. People want both perfect privacy and all the benefits of openness. But they cannot have both. The stripping of a few details as the only means of assuring anonymity, in a world choked with data exhaust, cannot work. Poorly anonymised data are only part of the problem. What may be worse is that there is no standard for anonymisation. Every American state, for example, has its own prescription for what constitutes an adequate standard.

Worse still, devising a comprehensive standard may be impossible. Paul Ohm of Georgetown University, in Washington, DC, thinks that this is partly because the availability of new data constantly shifts the goalposts. "If we could pick an industry standard today, it would be obsolete in short order," he says. Some data, such as those about medical conditions, are more sensitive than others. Some data sets provide great precision in time or place, others merely a year or a postcode. Each set presents its own dangers and requirements.

Fortunately, there are a few easy fixes. Thanks in part to the headlines, many now agree that public release of anonymised data is a bad move. Data could instead be released piecemeal, or kept in-house and accessible by researchers through a question-and-answer mechanism. Or some users could be granted access to raw data, but only in strictly controlled conditions.

All these approaches, though, are anathema to the open-data movement, because they limit the scope of studies. “If we’re making it so hard to share that only a few have access,” says Tim Althoff, a data scientist at Stanford University, “that has profound implications for science, for people being able to replicate and advance your work.”

Purely legal approaches might mitigate that. Data might come with what have been called “downstream contractual obligations”, outlining what can be done with a given data set and holding any onward recipients to the same standards. One perhaps draconian idea, suggested by Daniel Barth-Jones, an epidemiologist at Columbia University, in New York, is to make it illegal even to attempt re-identification.

While some level of anonymisation will remain part of any resolution of the dilemma, mathematics may change the overall equation. One approach that would shift the balance to the good is homomorphic encryption, whereby queries on an encrypted data set are themselves encrypted. The result of any inquiry is the same as the one that would have been obtained using a standard query on the unencrypted database, but the questioner never sets eyes on the data. Or there is secure multiparty computation, in which a database is divided among several repositories. Queries are thus divvied up so that no one need have access to the whole database.

These approaches are, on paper, absolute in their protections. But putting them to work on messy, real-world data is proving tricky. Another set of

techniques called differential privacy seems further ahead. The idea behind it is to ensure results derived from a database would look the same whether a given individual's data were in it or not. It works by adding a bit of noise to the data in a way that does not similarly fuzz out the statistical results.

Hot fuzz

America's Census Bureau has used differential privacy in the past for gathering commuters' data. Google is employing it at the moment as part of a project in which a browser plug-in gathers lots of data about a user's software, all the while guaranteeing anonymity. Cynthia Dwork, a differential-privacy pioneer at Microsoft Research, suggests a more high-profile proving ground would be data sets—such as some of those involving automobile data or genomes—that have remained locked up because of privacy concerns.

For now, differential privacy's difficult mathematical underpinnings make it tricky to implement more broadly. That needs to change, according to Salil Vadhan, of the Centre for Research on Computation and Society at Harvard. "The ball is in our court to not just to write papers, but to produce general-purpose tools," he says.

Public education is also needed. Data science could well lead to safer roads and long-sought cures, but people have to understand the trade-offs. In July researchers at Britain's Office for National Statistics (ONS), whose releases of data underpin billions of pounds of public spending, began to consult members of the public about their comfort with different types of data disclosure. There is always some risk to anonymity, says Jane Naylor of the ONS. But "there's also a risk of not making the best use of data." ■

数据隐私

很快，我们会知道那个人是你

大型数据库能既保持匿名又发挥用处吗？

纽约成人娱乐场所“好色客”俱乐部（Hustler Club）的常客怎么也想不到自己会变成“大数据”时代一场匿名问题辩论的一部分。数据科学家安东尼·托卡尔（Anthony Tockar）纯粹为了好玩而分析了一个出租车行程数据库，看看会发现点什么，结果有一件事变得很清晰：即使这些数据并没有包含俱乐部客人的直接身份信息，一些有趣的数据集仍显示出从俱乐部出发所抵达的私人住址。把选民登记记录与这些数据比对，看看谁住在这些地址（托卡尔并没有这么做），可能最终会搞得一些夫妻不合。

数据匿名通常意味着从数据中移除可鉴别个人身份的信息，首先当然是姓名，此外还有电话号码、住址以及生日等各种私隐详情。之后数据才被认为可对研究人员甚至是公众安全发布，用以从中发现他们想要的东西。许多人自愿提供信息，比如参与医疗试验，知道这些数据会经过匿名化后被用于分析。

但是，人们可以把不同的数据库拿来做比对，可能使得这种保护成为徒劳。基因组学研究项目的参与者在提供DNA信息时获得匿名的承诺，但经过和选举名册及其他公开可获得的信息做简单比对，就被查出了身份。马萨诸塞州州长的病历也被通过同样的方法从一个本该是匿名的州政府雇员就医记录中挖掘出来。记者在筛查一个追踪网络搜索历史的公共数据库时，能把不同的搜索信息关联起来，追查出一个在网上漫无目标地搜索单身男性的女子，令她尴尬无比。类似的例子还有很多。

这些登上新闻头条的故事中的每一则都在呼唤加强隐私控制，但这么做会沉重打击“开放数据”的理念。根据这一理念，现代世界中人们做任何事时都会排放出或多或少的电子“数据尾气”，它们实际上是有用的东西，如果能被自由地用作分析，会让世界变得更加美好。

鱼和熊掌兼得

举例而言，新型汽车在车载计算机中记录了车辆在何时、何地以及如何被使用的信息。牛津互联网研究所（Oxford Internet Institute）的维克托·迈耶-舒恩伯格（Viktor Mayer-Schönberger）说，比较许多汽车的记录可能会提供有信服力的理据，说明哪些路段具有危险。类似地，公开医疗记录（尤其像在英国这样具有一个全国公共医疗服务体系的国家），并把这些数据和其他个人数据做交叉比对，可能会帮助揭示老年痴呆症等疾病五花八门的成因。

这是一个真正的两难困境。人们想要百分百的隐私，同时也想享受数据公开的全部益处。但鱼和熊掌不可兼得。在一个数据尾气多得令人窒息的世界里，仅仅是移除几个细节已经不能确保人们能隐姓埋名。对数据的隐私设置不足只是问题之一，让事情变得更糟的是对于这种设置并无标准。比如，美国每个州对于什么构成恰当的标准都有自己的答案。

还有更棘手的问题：可能无法设计出一个广泛适用的标准。华盛顿乔治城大学的保罗·奥姆（Paul Ohm）认为，这在一定程度上是因为新数据的产生会让问题的焦点不断变换。“如果今天我们能够选择一个行业标准，它很快也会过时。”他说。有些数据比其他数据更敏感，比如和医疗状况相关的数据。有些数据集带有非常精确的时间或地点信息，其他的则可能只有一个年份或一个邮政编号。每个数据集都具有自己的风险和要求。

幸运的是存在一些便捷的修正办法。也多亏了那些新闻头条，许多人如今都认同把匿名的数据公开是糟糕的做法。相反，数据可以被分散后再发布，或被保留在机构内部，通过问答的形式由科研人员获得。又或者，一些用户可以被允许接触到原始数据，但必须是在严格受控的情况下。

但是，所有这些方法都是开放数据运动的诅咒，因为它们限制了研究的范围。“如果我们让分享变得如此之难，只有少数人能够获得，”斯坦福大学的数据科学家蒂姆·奥尔索夫（Tim Althoff）说道，“这对科学、对那些能够复制和推进你的研究的人，都会造成深远的影响。”

纯粹依赖法律手段可能会缓解这一问题。数据可能会携带所谓的“下游合同义务”，列明可以对一个特定的数据集做什么，并要求所有未来的使用者都遵循同样的标准。纽约哥伦比亚大学的流行病学家丹尼尔·巴思-琼斯（Daniel Barth-Jones）的提议可能颇为严苛：即使只是尝试识别身份，都是违法的。

面对进退两难，一定程度的匿名仍会是任何解决方案的一部分，但数学家可能会改变平衡。一个可能让事态向好的方向倾斜的方法叫同态加密，即对加密数据集的提问本身也是加密的。任何查询结果都和对未加密数据库做标准式提问的结果一致，但提问者永远看不到数据。或者还有一套安全的多方计算，将一个数据库分散放置于多个存储库中。而后提问会被分类，没人需要进入全部的数据库。

这些方法从理论上说可以实现绝对有效的保护，但当它们被放到混乱的现实世界数据上运作时，却被证实颇为困难。另一套名为差别隐私的技术看起来走得更远，其背后的原理是确保这样一点: 无论某个特定个体的数据是否包含其中，从这个数据库中得到的结果看起来都是一样的。要实现这一点，方法是在数据中添加一点点干扰信息，却又不会模糊掉统计结果。

重要的干扰

美国人口普查局过去曾用差别隐私的方法收集通勤者数据。谷歌目前正在一个项目中使用这一方法：一个浏览器插件收集有关用户软件的大量数据，与此同时保证数据匿名。微软研究院的差别隐私先锋辛西娅·德沃金（Cynthia Dwork）表示，一个更引人瞩目的检验场应该是那些因隐私顾虑而一直未公开的数据集，比如某些和汽车驾驶或基因组有关的数据。

目前，差别隐私艰深的数学基础让它难以被更广泛地运用。这一点需要改变，哈佛大学计算和社会研究中心的萨利拉·瓦达（Salil Vadhan）说，“那是我们的责任。不是写完论文就大功告成了，而是要拿出有广泛用途的工具来。”

还需要教育公众。数据科学很可能会带来更安全的公路和人类孜孜以求的

疾病治愈方法，但人们必须了解这其中的利弊得失。7月，英国国家统计署（ONS）的研究人员开始向公众咨询在公开不同种类的数据时人们的接受程度。该机构发布的数据为数十亿英镑的政府开支提供理据。永远都存在隐私受损的风险，该机构的简·内勒（Jane Naylor）说，但“不充分利用数据同样有风险”。 ■

Oil companies and climate change

Nodding donkeys

Some oil majors are still ducking the issue of global warming

FEW symbols of the oil industry are as familiar as the pumpjack, or "nodding donkey" (pictured). The technology is little changed since it was invented in 1925, and in some mature onshore fields it serves as a constant reminder of the world's insatiable thirst for oil—until recently, about one-sixth of American crude came from the tiny "stripper" wells that it usually pumps. It is also a metaphor for how oil-company bosses have responded to the risks of climate change. Every so often they put their heads up and survey the future, only to bury them again. At the time of the climate-change negotiations in Paris, the industry's willingness to stare the issue squarely in the eye is again under scrutiny.

In the 1990s oilmen responded to criticism from environmentalists by launching campaigns to encourage debate about climate change, and by increasing their investment in renewable energy. Under John (now Lord) Browne, BP of Britain declared itself to be moving "Beyond Petroleum". However, steadily rising crude-oil prices after the global financial crisis led firms to scale back their loss-making green-energy businesses, while continuing to pour money into hydrocarbons (see chart).

More recently a dramatic fall in oil prices has forced them to start cutting some big exploration projects. And as the Paris summit has approached, ambitious pledges by more than 150 countries to cut greenhouse-gas emissions have taken oil bosses by surprise—even if the pledges are likely to fall short of the target of limiting global warming to two degrees Celsius above pre-industrial levels.

If these commitments were to translate into significant moves to limit

global warming, this would challenge a view still held by oilmen on both sides of the Atlantic that demand for fossil fuels will keep growing strongly for the foreseeable future. Exxon Mobil, the world's biggest publicly traded oil company, argues that fossil fuels will still account for three-quarters of primary energy demand even in 2040, only slightly below their current share. But the International Energy Agency (IEA), a body that represents oil-consuming countries, says that to keep global warming to two degrees, fossil fuels would need to fall to 60% of the energy mix by 2040. The IEA sees no mass abandonment of hydrocarbons, but nonetheless, its executive director, Fatih Birol, said on November 10th that, "There should be no energy company in the world [which] believes that climate policies will not affect their business."

Some oil majors are going on the attack, realising the reputational shambles they face if they are considered foot-draggers on climate change. In October the heads of ten big oil and gas companies (none of them from the United States) officially threw their weight behind the "general ambition" to meet the two-degree goal. Many are cleaning up their energy portfolios by investing more heavily in producing natural gas, which creates less carbon dioxide than oil when burned, for each unit of energy liberated. Shell, an Anglo-Dutch major, is doing so by buying BG, a British firm with big gas reserves. "You can argue that Big Oil is becoming Big Gas," says Occo Roelofsen of McKinsey, a consulting firm. Others are going in for renewables. Total of France has a majority stake in SunPower, one of the world's biggest solar-power firms. Eldar Saetre, the boss of Statoil, Norway's state-run oil company, says that in 15 years there may be more opportunities outside oil and gas than within.

BP executives, also favouring a gassier future, have been modelling potential "demand destruction" scenarios based on the climate pledges made in the run-up to Paris. BP has become one of the first majors to acknowledge the risk that the industry is spending money developing

reserves that it may never tap. Spencer Dale, its chief economist (and formerly of the Bank of England), recently estimated that the world had almost three times the reserves of oil, gas and coal that it could burn if it were to hit the two-degree goal.

Yet oilmen still play down the risk that oil and gas assets will be abandoned en masse, not least because of the still-growing demand in the developing world. Collectively the industry is betting on three ways to stay in the fossil-fuel business and yet emit less carbon dioxide. First, executives see gas increasingly substituting for dirtier coal in the power-generation business. Second, they expect energy efficiency to keep improving, allowing drivers, for example, to travel longer on each tank of petrol. Third, they intend to reduce the considerable amount of natural gas (composed mostly of methane, an even more potent "greenhouse gas" than carbon dioxide) that leaks out of their wells and processing plants.

Plenty of oil firms (Exxon among them) are also calling for governments to enact a "carbon tax" on emitters of greenhouse gases. Their critics argue that this is less altruistic than it appears. For one thing, such a tax would hurt the coal industry especially, thereby boosting the oil firms' gas businesses. And governments, especially in the developing world, where fossil-fuel demand is still surging, may find such a tax politically impossible anyway; the oilmen are calling for it, opponents say, in the knowledge that such countries will never introduce it.

In the absence of a global carbon tax or some other effective measure, however, the risk for the oilmen is that everyone from environmentalists to politicians will simply find other ways to make them pay for global warming. On November 4th New York's attorney-general, Eric Schneiderman, subpoenaed documents from Exxon to investigate how much it has known since the 1970s about the effects of fossil fuels on the climate. Exxon is reportedly being investigated under the Martin Act,

dating back to 1921, which gives prosecutors wide-ranging powers to investigate securities fraud. Exxon says it has long disclosed information about the risks to its business from climate change, and from action to prevent it, in reports to its shareholders. But the firm's run-in with the New York justice department may be a portent of what is to come.

Another worry for oil executives is pressure from investors spooked by the financial risks of climate change. Policymakers, such as Mark Carney, governor of the Bank of England, talk about the possibility of many oilfields turning into "stranded assets", or "unburnable carbon", if governments get serious about climate-change action. Anthony Hobley of Carbon Tracker, a climate-advisory firm, says that if the Paris pledges are taken at all seriously, the oil and gas industry may become "ex-growth". Oil executives dispute that. But shareholders, if motivated, could force the industry to shrink just by limiting the funds they provide for new oil discoveries.

Curiously, the present situation may provide a foretaste of this—though cyclically, because of falling oil prices, rather than structurally, because of rising temperatures. Faced with a world awash in crude, oil majors are abandoning high-cost reserves in the Arctic, Canada, North Sea and Gulf of Mexico. One oil executive ruefully calls it a "practice run" for the day in the distant future when fears of global warming, or the emergence of cheap, clean alternative technologies, mean that demand for fossil fuels starts to wane. ■

石油公司和气候变化

“点头驴”

一些石油巨头还在逃避全球变暖的问题

石油产业里没什么比抽油机（俗称“点头驴”，见图）更为人熟悉的标志性事物。这一技术自1925年发明以来就少有变化，而在一些成熟的陆上油田，它一直在提醒人们世界对石油永无止境的渴求——直至最近，美国约六分之一的原油一直来自那些常用的小型“低产井”。它也是一个隐喻，因为石油公司老板正是这样回应气候变化风险的：不时抬头看看，展望未来，然后又低下头去。在巴黎举行气候变化谈判之际，外界再一次密切关注石油产业是否愿意正视这一议题。

上世纪90年代，石油商面对来自环保人士的批评，所做的回应包括发起系列运动来鼓励人们对气候变化展开辩论，以及增加对可再生能源的投资。英国石油公司在约翰·布朗（现在是勋爵）执掌时宣布扩展业务，“超越石油”。然而，全球金融危机后原油价格的稳步上升导致石油企业缩减其亏损的绿色能源业务，继续将大把的钱洒向对碳氢化合物的开采之中（见图表）。

最近油价大幅下跌，迫使石油公司开始放弃一些大型钻探项目。而随着巴黎峰会临近，150多个国家做出了抱负宏大的减排承诺，令石油老板们大吃一惊，即使这些承诺看来还达不到把全球变暖幅度控制在比工业革命前高2摄氏度的目标。

如果这些承诺真的变成限制全球变暖的重大行动，那它将挑战大西洋两岸油商仍然抱持的一个观点，即在可预见的未来，对化石燃料的需求会持续强劲增长。全球最大的上市石油公司艾克森美孚（Exxon Mobil）认为，即使到了2040年，化石燃料仍会满足对初级能源需求的四分之三，仅比目前的占比略低。但代表石油消费国的国际能源署（IEA）称，如果要把全球变暖幅度控制在2摄氏度以内，那么化石燃料须在2040年前减至占能源需求的60%。该机构预期不会发生广泛弃用碳氢化合物的情况，但署长法

提赫·比洛尔（Fatih Birol）在11月10日表示：“世界上不该有哪家能源公司认为气候政策不会影响到自己的生意。”

一些石油巨头意识到，如果在气候变化事宜上被视为拖后腿的害群之马，会令声誉极大受损，因此它们开始主动出击。10月，十大油气公司老板（无一来自美国）正式表示支持将全球变暖控制在2摄氏度以内的“总体目标”。许多公司正在通过更多地投资天然气生产来“净化”其能源业务组合。和石油相比，天然气在燃烧生成同等能量时所产生的二氧化碳更少。英荷壳牌集团为此就买下了英国天然气集团（BG）这家天然气储备巨大的英国公司。“你可以说石油巨头正在变成天然气巨头，”麦肯锡咨询公司的奥克欧·勒洛夫森（Occo Roelofsen）说。其他公司开始转向可再生能源。法国的道达尔（Total）持有全球最大的太阳能公司之一SunPower的多数股权。挪威国企国家石油公司（Statoil）的老板埃尔达尔·塞特勒（Eldar Saetre）称，15年后，来自油气业务外部的机遇可能会大于内部。

英国石油公司的高管也赞同未来更多向天然气倾斜，他们根据巴黎会议前夕各国提出的气候承诺来对将来可能发生的“需求颠覆”建模。该公司是石油巨头中最先承认储备风险的，即石油产业正在花钱开发那些它可能永远不会利用的储备。该公司的首席经济学家斯宾塞•戴尔（Spencer Dale，曾任英国央行首席经济学家）最近估计，和要达到2摄氏度的目标所能燃烧的油气和煤炭储备量相比，全世界的实际储备为近三倍之多。

但石油商仍然淡化油气资产可能被一同抛弃的风险，这主要是因为发展中国家的需求仍在增长。总体而言，该产业正在三个方面押注，以求在保存化石燃料业务的同时减少碳排放。首先，高管们预计天然气将日益取代更肮脏的煤炭用于发电。其次，他们预期能源效率将不断提升，举例而言，会让司机用同样多的油跑更长的路。第三，他们计划减少从自家油井和加工厂中泄漏的大量天然气（其主要成分为甲烷，是一种比二氧化碳威力更强的“温室气体”）。

大批石油公司（包括埃克森美孚）也在呼吁政府对温室气体排放征收“碳排放税”。批评人士指出，实情并不像看上去那般无私。原因之一是这样

的征税尤其会冲击煤炭业，从而助长石油公司的天然气业务。而政府——尤其是化石燃料需求仍在激增的发展中国家的政府——可能会发现这样的税种在政治上不可行。批评人士说，石油商呼吁征收这种税，其实他们心里很清楚这些国家永远不会这么做。

尽管缺乏全球碳排放税和其他有效措施，石油商仍然面对风险——从环保分子到政客的各色人等都会找到其他途径来让他们为全球变暖买单。11月4日，纽约州检察长史树德（Eric Schneiderman）从埃克森美孚传唤索取了文件，调查该公司自1970年代以来对化石燃料的气候效应了解多少。据称埃克森美孚正在因1921年立法的马丁法案（Martin Act）接受调查，该法案给予检察官大范围的权力来调查证券欺诈。埃克森美孚称，长期以来公司都在对股东的报告中公开气候变化及其防治行动对业务造成的风险。但该公司和纽约州司法部门的摩擦可能是未来走向的一个预兆。

石油公司高管的另一个担忧，是投资者被气候变化的财务风险吓到，而给公司带来压力。像英国央行行长马克·卡尼（Mark Carney）这类政策制定者都在谈论，如果政府对气候变化行动认真起来，许多油田可能要变成“闲置资产”或“不可燃碳”。气候咨询公司“碳追踪者”（Carbon Tracker）的安东尼·霍布利（Anthony Hobley）称，如果巴黎会议的承诺真的得到严肃对待，那油气产业可能会变得“增长乏力”。石油公司高管们对此并不认同，但如果股东们被鼓动起来，他们只需限制向石油钻探新项目提供资金，就可能会迫使该产业收缩。

说来也怪，当前的状况可能为这一前景提供了预演，虽然它是缘于油价下跌的周期性变化，而非气温升高引发的结构性变化。面对一个充斥着原油的世界，石油巨头正在放弃北极、加拿大、北海和墨西哥湾等地的高成本储备。一名石油公司高管悲伤地称之为一次“热身”，演习了在遥远的未来将要发生的事：出于对全球变暖的恐惧，或者因为廉价、清洁的替代技术崛起，对化石燃料的需求开始减少。 ■

Tax evasion

Leaks on tap

Making tax-transparency standards watertight will be difficult

THE optimistic view of the tax-evasion scandals that have bedevilled banks since 2008 is that they can only be seen in the rear-view mirror. The incriminating files in the latest case, regarding tax-dodging personal accounts held at the Swiss arm of HSBC, date from 2005-07. Since then governments have embraced the idea of exchanging tax information on an automatic basis. The emerging global standard—the OECD's Common Reporting Standard (CRS)—sounds the death knell for bank secrecy, or so campaigners hope.

The optimists are right, up to a point. A tax-transparency revolution is under way, catalysed by America's Foreign Account Tax Compliance Act of 2010. But wherever there is a financial crackdown, there are also enterprising moneymen looking to exploit remaining loopholes or to create new ones. One way they are doing this is by cloaking bank accounts in other financial products, such as insurance and pensions.

Some insurers have approached banks, offering to "wrap" batches of undeclared accounts and investments in such insurance, thereby providing an extra layer of protection from prying eyes. As a result, America, Italy and others have been investigating products like "private placement life insurance", which combines an investment portfolio with gold-plated life cover for rich clients.

As scrutiny increases and the CRS moves closer to reality—implementation is set to begin in 2016—these workarounds are evolving. Under the new standard, insurance wrappers will have to be reported if they have a "cash value" to the holder (if, say, he can withdraw funds from the policy or

pledge it as collateral). So financial engineers have turned their attention to a version that does not have to be disclosed: "irrevocable" life insurance.

This works as follows. The client pays a premium to a newly created offshore company. The assets are legally owned not by the client but by the company. This in turn is owned by the insurer, which extracts quarterly fees. The client cannot take cash out directly or use the policy as security, so it has no cash value. But he can enjoy its fruits since he can have full use of any yacht, house or other asset bought by the company. He can even be the portfolio's investment manager. If investigators start snooping around, they will find a company that is owned by a licensed insurer, not a tax-evading plutocrat.

The world's largest insurers are unlikely to hawk such products, given the reputational risks. Smaller, offshore providers will be more tempted. A consultant says he knows of at least two such insurers that have recently approached banks, offering to wrap batches of tax-dodging accounts. One of them was only interested in doing bundles of $1 billion or more, he says, suggesting this is "potentially very big".

Closing this loophole would require making all insurance reportable, not just policies with a cash value. That might seem straightforward, but moving the CRS forward can be like herding cats: there are 93 countries in the project, all at different stages of ratifying the existing blueprint.

The OECD hopes that upright financial firms will turn in rivals that abet tax evasion once the CRS kicks in, if only to stop them stealing business. Tax campaigners are another source of intelligence. A report published last year by the Tax Justice Network, whose membership includes smart tax lawyers with a conscience (supply your own punchline), identified more than 30 loopholes and exemptions in the CRS.

Andres Knobel, one of those lawyers, also points out that even if the loopholes in the CRS are fixed, it won't end all bank secrecy, but only the tax-related bit of it. Much money is parked offshore not to evade tax but to hide the proceeds of corruption or to launder criminal money. If the information is not important for tax purposes, either because the corrupt official or launderer paid taxes and declared the foreign income, or because his deposit abroad does not generate any income and thus there is no tax to pay, then under the CRS it shouldn't be shared with any authority not related to tax issues—even if this other authority questions the origin of the funds. The failure to agree to use the mountains of soon-to-be-reported data to tackle the blackest money is the biggest loophole of all. ■

逃税

有漏可乘

税务透明化准则难以滴水不漏

自2008年起逃税丑闻困扰银行业界，乐观来看，一切已成过去。在汇丰银行瑞士分行个人账户逃税的最新案件中，罪证文件的日期是2005年至2007年。自那以后，各国政府采纳了自动交换税务信息的想法。即将推行的全球标准——经合组织的通用报告准则（Common Reporting Standard，以下简称CRS）——似乎给银行保密敲响了丧钟，或者说，倡议者是这样想的。

在一定程度上，乐观派是对的。一场税务透明化革命正在展开，2010年美国颁布的《海外账户纳税法案》（Foreign Account Tax Compliance Act）是催化剂。但凡哪里出现金融禁令，就总有些爱钻营的金融家一心要钻余下漏洞的空子或者创造新漏洞。他们的一个手法是给银行账户披上其他金融产品的外衣，如保险和养老金。

一些保险公司已经接触了银行，可以把批量未申报账户及投资“包装”成保险产品，从而提供额外一层保护以防窥探。结果，美国、意大利及其他国家纷纷在调查“非公开发行人寿保险”（private placement life insurance）这类产品，其为富裕客户将投资组合与豪华寿险结合一身。

随着审查力度加大，CRS也愈加接近落实——已定于2016年实施，这些权宜之策也在变化。在新标准下，保险包装类产品如对持有人含“现金价值”（例如持有人可从保单提取资金或以之作抵押），则必须上报。所以金融工程师们已把注意力转向无须披露的一款保险：“不可撤销”人寿保险。

其操作如下。客户向新成立的离岸公司支付一笔保费。在法律上，资产为离岸公司而非客户所有。承保人持有离岸公司，按季度从该公司收取费用。客户不能直接提取现金或以保单作抵押，所以这份保险没有现金价

值。但客户可尽享个中好处，因为他可以全权使用上述公司购置的游艇、房屋或其他资产。他甚至可以担当该投资组合的投资经理。即便调查人员着手调查，他们发现的不过是一家有牌照的保险公司而非逃税富豪持有的公司。

虑及声誉风险，全球最大的那些保险公司不太可能兜售此类产品。较小型的离岸保险商更为跃跃欲试。一位顾问透露，他听说有两家保险公司最近与银行联系，向其提供逃税账户批量包装服务。他说，其中一家只对十亿美元或以上的资产包感兴趣，意味着该产品"潜在规模巨大"。

要堵住这一漏洞则须要求所有保险产品统统上报，而不仅是那些具有现金价值的保单。这看似简单直接，但推动CRS改革实则难比登天：项目涉及93个国家，各国对现有标准的审批尚且进度不一。

经合组织希望在CRS实施后，正派的金融公司会举报那些帮助他人逃税的对手公司，即便仅仅是为了防止对方抢占业务。税务透明化倡议者是另一情报来源。去年税收正义联盟（Tax Justice Network）公布的一份报告在CRS里找出超过30个漏洞及豁免规定。联盟成员包括良知尚存的精明的税务律师。

其中一位律师安德烈斯·诺伯尔（Andres Knobel）还指出，即使修补了CRS里的漏洞，也不会中止银行的所有秘密做法，而仅仅是与税务相关的那部分而已。大量资金转到离岸并非为了逃税，而是为了隐藏贪腐所得或洗黑钱。若信息对于税务审查显得不重要，那是因为那贪官或洗钱者缴纳了税金，申报了海外收入，或者他在海外的存款不产生收益，所以无须缴税。如此一来，按照CRS的规定，就无须向非税务管理机关披露此信息，即使该管理机关质疑所涉资金的来源。各国无法达成协议，利用这些即将要求上报的海量数据来对付最黑暗的钱财，这才是最大的漏洞。■

Corporate tax avoidance

Still slipping the net

Europe's corporate-tax havens say they are reforming. Up to a point

ON a roundabout near one of the main roads into Amsterdam sits a drab office block which is home to hundreds of multinationals—on paper. Intertrust, the firm whose flag flutters outside, provides registration for local subsidiaries of the big companies, and other ancillary services. But many of those multinationals have a minimal physical presence there. Of the Netherlands' more than 10,000 "letterbox" firms, such as these, many are empty.

Often, one of the main reasons for such subsidiaries is to cut the tax bills of their parent companies. The Netherlands, and other low-tax havens such as Ireland and Luxembourg, have attracted much criticism from other countries for the legal loopholes they leave open to encourage such tax avoidance by big corporations. The three countries attract a huge amount of foreign direct investment (see chart), but much of it flows back out again, with the money ultimately financing factory-building and the like in another part of the world. By routing such investments via tax havens, multinationals can save on a variety of taxes, perfectly legally. The havens say that all they are doing is providing a business-friendly climate. But critics, including the United States Senate and the European Commission, say they are undermining the global tax base and helping big firms to avoid paying their fair share.

Such accounting gimmicks are not new, but the pressure on governments to close loopholes and curb avoidance by big companies has grown, in Europe especially, as austerity has taken hold. Besides lending its support to the OECD's reform proposals, the European Commission is investigating whether sweetheart deals in which Ireland's authorities blessed the local

tax arrangements of Apple, Luxembourg did the same for Fiat Chrysler and Amazon, and the Netherlands did so for Starbucks, amounted to illegal state aid. Such deals are controversial because of their secrecy and the suspicion that governments are giving handouts to favoured firms.

The likes of Luxembourg and the Netherlands are also accused of helping firms abuse tax treaties designed to protect them from double taxation when trading across borders. As money is shuffled across a series of national frontiers, firms make the most of any loopholes in the relevant tax treaty at each stage. Eliminating such "treaty-shopping" is one of the aims of the OECD's reform proposals.

Perhaps the most notorious tax-reducing ruse is the "Double Irish with a Dutch sandwich". A multinational (often American) pays itself "royalties" on its intellectual property, routing the payments through an Irish-registered subsidiary, then a Dutch one, and finally another Irish subsidiary that is domiciled for tax purposes in somewhere like Bermuda. Ireland is tightening its rules on corporate residency, to curb this particular form of financial prestidigitation. In late October, its government proposed stricter reporting rules for foreign companies.

The Luxembourgers are also promising reform, and will sweep away many tax deductions and allowances by 2017, in return for a lower headline rate of corporation tax. The Netherlands has toughened its requirements for a business to maintain a physical presence on its territory. If these are not met, its tax authorities will automatically inform that company's home country. The Dutch are also renegotiating tax treaties with developing countries, aiming to insert anti-abuse clauses.

But there is a lot of window-dressing. The Irish may be vocal about reform, but their measures amount to tinkering. Accountants are already finding loopholes in the new rules to curb the Double Irish. Luxembourg may insist

that its economy is built on all sorts of other industries, from steel to satellites, but if its expanding skyline of accountants' offices is anything to go by, its tax-planning business is as strong as ever. The Dutch say they are keen on more transparency, but Francis Weyzig of Oxfam, an NGO that campaigns on the issue, argues that their "physical presence" requirements are still too easy to fulfil by hiring local firms to provide the required substance.

Nor are these countries by any means the only culprits. Nowhere is mentioned more by accountants and lawyers—with a mix of admiration and frustration—than Britain. A growing array of tax benefits have made London the city of choice for big firms to put everything from "letterbox" subsidiaries to full-blown headquarters. A loose regime for "controlled foreign corporations" makes it easy for British-registered businesses to park profits offshore. Tax breaks on income from patents are more generous than almost anywhere else. Britain has more tax treaties than any of the three countries currently on the naughty step—and an ever-falling corporate-tax rate. In many ways, Britain is leading the race to the bottom.

The real reason for luring firms with little substance, claim policymakers, is the hope that mailboxes will evolve into real headquarters, with real jobs. Britain is indeed winning the battle for multinationals' HQs: last year it attracted 57 to Ireland's 16 and the Netherlands' 15, reckons EY, an accounting firm. In 2013 it was 29, 24 and 25 respectively. Although tax is not the whole picture, "the UK's improved performance reflects the incremental impact of an increasingly competitive corporate-tax offer," says Mark Gregory of EY.

Though Britain may feel its loose regime is boosting the economy, the intense pressure from corporate-tax campaigners and from other governments may prompt some tax-haven countries to reconsider whether the benefits outweigh the reputational costs. The economic contribution of

tax-driven letterbox firms to the Netherlands may be little more than a couple of billion dollars a year. Jesse Klaver, the leader of the Dutch Greens, recently spoke about this to a packed-out crowd of youngsters in an Amsterdam nightclub. Their cheers boosted his confidence that public opinion is shifting, from an acceptance that there is no alternative to the current way of taxing companies to "the realisation that it's not worth keeping." ■

企业避税

依然漏网

欧洲的企业避税天堂表示正在改革。不过程度有限

在通向阿姆斯特丹的一条主干道附近的一个环岛旁，有一栋不起眼的办公大楼，数百家跨国公司驻扎于此——但只是在书面上。旗帜在大楼外飘扬的Intertrust公司为大企业的本地子公司及其他配套机构提供注册服务，但这些跨国公司中许多在这里都只有极少的实体。荷兰有一万多家类似的“信箱”公司，其中许多都是空壳。

设立这类子公司的主要原因往往是为母公司削减税务支出。荷兰及其他低税天堂，如爱尔兰和卢森堡，已引来其他国家的诸多指责，批评其法律漏洞大开，鼓励了大企业以此方式避税。这三个国家吸引了大量的外国直接投资（见图表），但大部分资金会再度流出，最终被用于在世界其他某处兴建厂房等用途。经由避税港调度投资令跨国公司在完全合法的情况下节省了各种税务开支。而这些避税港表示自己无非是提供了一个宜商的环境。但包括美国参议院及欧盟委员会在内的批评者则认为，这些国家正在破坏全球税基，协助大企业逃避应负之责。

这类会计伎俩并不新鲜，但要求政府堵塞漏洞及遏制大企业避税行为的呼声与日俱增，尤其是在紧缩政策已成常态的欧洲。除了支持经合组织的改革建议，欧盟委员会还在调查那些私相授受的“甜心交易”是否等同于国家对企业的非法援助，其中包括爱尔兰对苹果公司、卢森堡对菲亚特克莱斯勒和亚马逊，以及荷兰对星巴克的税务优惠。这些交易之所以具有争议是因为它们的保密性，而且涉事政府有偏袒部分公司而给予优惠的嫌疑。

卢森堡和荷兰等这类避税港也被指协助公司滥用某些税收协定，这些协定当初是为避免企业在跨境贸易中被双重征税而设立。由于资金是多番跨境调配，公司在每一阶段都会充分利用相关税收协定的任何漏洞来避税。消除这类“滥用税收协定”的行为是经合组织改革建议的目标之一。

最臭名昭著的避税诡计也许要数“双层爱尔兰夹荷兰三明治”（“Double Irish with a Dutch sandwich”），即一家跨国公司（多为美国公司）以知识产权“使用费”的名义做内部支付，款项迂回到账：先经过在爱尔兰注册的一家子公司，然后是荷兰的子公司，最后是因纳税目的设立在百慕大之类地方的另一家爱尔兰子公司。爱尔兰正在收紧公司注册落地的法规来遏制这种形式的财务戏法。该国政府于10月末提出了对外国公司更严格的申报规则。

卢森堡也承诺改革，将在2017年前撤销许多税收减免及补贴措施，以换取企业基础税率降低。荷兰已收紧规定，要求企业必须在其境内保持实体存在。如果达不到要求，荷兰税务当局将自动通报该公司的母国。荷兰也正与发展中国家重新谈判税收协定，旨在加入反滥用条款。

但许多只是门面功夫。爱尔兰也许高呼改革，然而所采取的措施却只是小修小补。会计师们已经在打击“双层爱尔兰”伎俩的新规则中找到漏洞。卢森堡可能坚称本国经济建基于从钢铁到卫星的其他各个行业，但看看那里会计师办公楼的天际线不断扩展，便可知其税务规划行业强势不减。荷兰人说他们热切希望提高透明度，但非政府组织乐施会（Oxfam）的弗朗西斯·维兹格（Francis Weyzig）认为他们对“实体存在”的要求仍然太过宽松，企业只要雇请当地公司即可为公司合规提供所需的证明。

罪魁祸首也并非只是这些国家。会计师和律师们提及最多的莫过于英国（言辞间混合着羡慕和失望）。伦敦的税收优惠不断增加名目，使得大公司纷纷把“信箱”子公司以至成熟的总部落户于此。对 “受控外国公司”的宽松管理令在英国注册的企业可轻易把利润留在境外。在英国，专利所得税的减免优惠比几乎任何地方都要慷慨。比起目前受指责的三个国家，英国签署的税收协定更多，而且企业税率不断下降。在许多方面，英国正在引领这场“逐底之争”。

决策者声称，吸引企业来英国建立没有什么实质业务的公司，真正原因是希望“信箱”会最终发展为真正的总部，带来真实的就业机会。英国的确在争取跨国公司总部的战役中赢得胜利：据安永会计师事务所的数字，英国

去年吸引到了57家，而爱尔兰为16家，荷兰为15家。2013年三个国家的这一数字分别为29、24和25。虽然税收情况不能代表一切，但“英国的成绩提升反映了企业税收优惠竞争日益加剧带来的增量影响。”安永的马克·格雷戈里（Mark Gregory）说道。

英国也许觉得其宽松的制度拉动了经济，但来自企业税收活动家及他国政府的强烈压力可能促使部分避税天堂国家重新考虑其获利是否大于声誉所受的损害。为避税而来的“信箱”企业给荷兰带来的经济贡献可能每年不过几十亿美元。荷兰绿党（the Dutch Greens）领袖杰西·克雷沃（Jesse Klaver）最近在阿姆斯特丹的一家夜店里向满场的年轻人提到这个问题。他们的欢呼增强了他的信心，他认为民意正在发生变化，从接受没有其他方法可取代目前的公司税征收方式，转变为“意识到旧有的一套不值得保留”。■

Property taxes

Assessing the assessments

Housing is taxed more heavily in New York than London—unless you're rich

NEW YORK may have a reputation as a brusque, unfriendly place, but to those who buy expensive properties, at least, it can be very welcoming. Take the anonymous owner of the penthouse in Midtown Manhattan's 90-storey One57 skyscraper. The flat sold for $100m in December, a New York record. The city collected a modest $2.8m in taxes, 2.8% of the price, when the deal went through. And the new owner's first annual property-tax bill came to $17,268, just 0.02% of its value.

In contrast, if Britain's main political parties can agree on anything, it is that expensive homes in London should be taxed heavily. In 2009 Vince Cable, a senior Liberal Democrat, first proposed a "mansion tax" on residences worth over £1m ($1.6m). Five years later Ed Balls, then Labour's shadow chancellor, said he aimed to raise £1.2 billion a year from a similar policy. Not to be outdone, last December George Osborne, the Conservative chancellor, raised stamp duty, a levy on property purchases, for houses worth more than £1.13m. A hefty 12% of the portion of the sales price above £1.5m now goes straight into the government's coffers.

So does that make New York a property-tax haven, and London a den of expropriation? Not exactly. In fact, it is New Yorkers who pay more tax on their property overall: last year New York's 3.5m households coughed up $12 billion on homes worth $1.7 trillion, a rate of 0.71%. In contrast, London's 3.5m households paid $11 billion last year on property that would sell for $2.2 trillion, just 0.51% of its value. London's take is lower for a heartening reason: it is only expensive properties that it taxes heavily, whereas New York soaks the poor.

Around 40% of New York's $50 billion a year in tax revenue comes from property. The city charges fixed rates on the assessed value of every home within its borders. In buildings with more than three units, state law requires flats to be valued at a multiple of the rent they could fetch if let out. This anodyne-sounding rule is tantamount to a massive tax break for the super-rich. Because stratospherically priced flats are rarely let out, there are no comparable properties in the rental market. That forces the taxman to rely on much more modest homes instead, leading to ludicrous valuations: although the penthouse at One57 cost $100m, it was valued at $6.5m.

Another quirk of New York law further shields the rich. In order to protect homeowners from soaring liabilities in the event that their properties appreciate faster than their incomes do, the city has instituted caps that limit tax increases for some types of buildings to 6-8% a year and 20-30% over five years. This system shifts the tax burden away from areas of sharply rising values and onto blighted regions where prices are stagnant. As a result of these policies, New York's property-tax system is sharply regressive: the cheapest homes, ranging from $100,000 to $250,000, tend to pay the highest rate (1.08% on average in 2014), whereas those worth more than $10m get away with just 0.36% (see chart).

Property taxes in London, in contrast, are reasonably progressive. Although the annual levy on the value of British homes, called council tax, is even more biased in favour of the rich than New York's is, it accounts for a far smaller share of the local property-tax burden. Instead, stamp duty brings in 45% of the total (in New York, transaction taxes represent just 13%). And thanks largely to Mr Osborne's recent reforms, stamp duty falls most heavily on the rich. The more expensive a house gets, the higher the effective tax rate.

Mr Osborne has also introduced a new levy to thwart loophole-seekers.

Before 2012 Britain did not charge stamp duty on properties bought by companies rather than individuals. Now, such residences not only incur the highest duty of all, at 15%, but are also subject to a separate, new annual tax on their value. In the year to April 2015, this policy raised an estimated £104m in London, increasing total property-tax revenues in the city by 1.6%.

Together, these reforms have shifted the burden of London's property taxes much more heavily onto the wealthy. Under the old rules, the 1,400 residences in London worth more than £10m were taxed at just 0.61% of their value. The new rules increase this to 1.09%, three times what homes of that value pay in New York. Meanwhile, Londoners living in properties worth less than £1m paid 0.44% last year, less than half the rate in New York.

In addition to its progressivity, London's system also trumps New York's on consistency. Although council-tax rates vary among London's 33 boroughs, the maximum bill is just £3,356 a year. As a result, liabilities for expensive homes stem mostly from stamp duty and from the tax on property owned by companies, for which units of equal value always pay the same amount. That is in sharp contrast to New York's tax code, which is riddled with exemptions that enable some homeowners to dodge the taxman almost entirely.

In 1971, after decades of population decline in Manhattan, New York launched a scheme to attract residents by offering a subsidy to developers intended to benefit homebuyers. This system, known as 421a, slashes property taxes for 10-25 years after a new development is built, in exchange for promises to build affordable housing. As home values have risen, these abatements have proven far costlier than expected: today, they add up to $1.1 billion a year, or 2% of New York's total tax take.

Worse, the programme has complicated rules on eligibility, which are only worth bothering with for big or pricey developments. Just 153,000 homes—among them One57—benefit from it. Even within this group, the magnitude of the benefit varies widely, depending on whether a building is near the start or end of its abatement. As a result, among homes in New York worth more than $10m, the most heavily taxed fifth pay three times as much in annual levies as the most fortunate fifth.

Just 12,750 of the 153,000 homes receiving a 421a subsidy were classed as affordable in 2013, according to the Association for Neighbourhood Housing Development, a trade group. At $400,000 a unit, the city could build that many affordable flats itself in less than five years using the money it spends on 421a. The tax breaks offered under the scheme, in contrast, can last five times longer. But after 45 years of profiting from special treatment, luxury developers and rich homeowners now have plenty of cash to lobby for the maintenance of their prized subsidy. ■

房产税

税额评估

纽约征收的房产税比伦敦高，除非你是富人

纽约这个城市可能素有冷漠粗暴、不友好的名声，但至少它会非常欢迎那些前来购置昂贵房产的人。以曼哈顿中城90层楼的One57摩天大楼顶层套房的匿名买家为例，这套公寓在12月份以一亿美元的价格售出，创下纽约市房价记录。成交时，纽约市从中收取了一笔数额不大的税款：280万美元，即售价的2.8%。新业主第一年的房产税为17,268美元，仅为房价的0.02%。

相比之下，如果英国的主要政党还能就什么达成共识的话，就只剩下一条：伦敦的高价住宅应被课以重税。2009年，自民党资深大佬温斯·凯博（Vince Cable）首先提议对价值超过百万英镑（160万美元）的住宅征收“豪宅税”。五年后，时任工党影子财政大臣的博雅文（Ed Balls）称他计划用一个类似的政策每年融资12亿英镑。不甘示弱的保守党财政大臣乔治·奥斯本（George Osborne）去年12月开始对估值超过113万英镑的房屋征收印花税即房产交易税。如今，售价中超过150万英镑的那部分被征收12%的大额交易税，直接进入政府金库。

如此看来，纽约是房产税的天堂，而伦敦是搜刮民脂的黑窝？不尽然。实际上，总体上支付了更多房产税的还是纽约客。去年，纽约市的350万家庭不得不为总额1.7万亿美元的房屋缴纳了120亿美元的房产税，税率为0.71%。对比来看，伦敦的350万户家庭去年就售价2.2万亿美元的房屋缴纳了110亿美元的房产税，税率仅为0.51%。伦敦征收的房产税更低是缘于一个令人振奋的原因：它只对昂贵的房产征收重税，而纽约却榨取穷人。

纽约每年税收达500亿美元，其中约40%来自房产。该市对辖区内所有房屋都基于估值收取固定税率。在那些多于三个单位的楼房里，纽约州的法律要求公寓房以它们如果对外出租会收取的租金的倍数来估价。这种听起来温和的规则无异于对超级富翁大规模减税。因为这些天价公寓极少出

租，所以在租房市场上没什么可比照的房产。税务人员只能依赖便宜得多的房产来做估价，得出荒唐的数字：虽然One57的顶层套房售价一亿美元，其估值仅为650万。

纽约法律还有另一个奇怪之处，进一步偏袒了富人。为防止在房产升值快过收入时业主的负担飙升，该市对某些类型的房屋的课税增幅设置了每年6%至8%、五年20%至30%的上限。这一规定把税务负担从急剧升值的地区转移到了价格停滞、萎靡不振的地区。这些政策让纽约的房产税系统明显成了递减税：最便宜的房屋（从10万美元到25万美元不等）往往支付最高的税率（2014年平均为1.08%），而那些价值一千万美元以上的房屋却只需缴付0.36%的税率（见图表）。

相反，伦敦的房产税则合理递增。虽然英国根据房屋价值每年征收的“市政物业税”甚至比纽约的物业税还偏袒富人，但它在地方房产税中所占比例却小得多。而印花税却占了房产税的45%之多（纽约的交易税仅占13%）。印花税对富人课税最重，这在很大程度上要归功于奥斯本近来实施的改革。一栋房子越贵，实际税率越高。

奥斯本还推出一项新的税赋来防止人们钻空子。2012年前英国对由企业而非个人购买的房产不征收印花税。现在，这类房产不但要缴付最高的税率——15%，而且还要支付另一种新的按年缴付的税。在截至今年4月的一年里，这个政策在伦敦估计总共征收了1.04亿英镑，使该市的全部房产税收入增加了1.6%。

这些改革措施共同发力，使得伦敦富人担负的房产税比穷人多得多。在旧规则下，伦敦1400套价值超过一千万英镑的住宅支付的税费仅为其价值的0.61%，新税法则将该数字提高到1.09%，是纽约同等价值的房屋所支付税率的三倍。与此同时，去年住在价格低于一百万英镑的房子里的伦敦居民支付的税率为0.44%，不及纽约这一数字的一半。

除了递进式征税外，伦敦的房产税体系在一致性上也优于纽约。虽然伦敦33个区的市政物业税各有不同，但最大笔的账单也仅为一年3356英镑。结

果，昂贵住宅的税务负担大部分源自印花税和由企业拥有的物业，且同等价值的房产总是缴纳相同额度的税。这和纽约的税法截然不同，后者充斥着各种豁免，使得一些业主几乎完全不用缴税。

1971年，在曼哈顿人口持续减少几十年后，纽约推出了一项计划来吸引人们入住曼哈顿：向房产开发商提供补助从而让购房者受惠。这个名为421a的计划为新开发项目大幅削减房产税，条件是开发商承诺建造经适住房，减税可延续至项目建成后的第10年乃至第25年。随着房价上涨，这些减税的成本被证明远高过预期：如今它们总值达一年11亿美元，即纽约全部税收的2%。

更糟的是，该项目对减税资格有复杂的规定，只有那些大型或昂贵的开发项目会花力气获得资格。仅15.3万套房屋从中获益，One57就是其中之一。即使在这些项目中，获益程度也大有不同，取决于一栋建筑是接近减税期的开始还是结束。结果，在纽约价值超过一千万美元的住宅中，被课税最重的五分之一每年缴付的税费是最幸运的五分之一所付税费的三倍。

根据行业组织邻里与住宅发展协会（Association for Neighbourhood Housing Development）的统计，2013年获421a补助的15.3万住宅中仅12,750套在2013年被列为可负担。以每套可负担住宅价值40万美元计算，纽约市可以在不到五年时间内用它在421a上的支出自行建成同等数量的经适住房。相比之下，421a提供的减免税却可持续五倍时间之久。然而，从这一特殊优待中获利45年后，豪华房产的开发商和富人业主如今有大量的资金来展开游说，以维持他们宝贵的补助。■

Schumpeter

Manage like a spymaster

Counter-intelligence techniques may help firms protect themselves against cyber-attacks

UNTIL recently, for most businesses security was a question of buying decent locks, doors and windows, installing CCTV, making sure that reception staff sign visitors in and out, and trying not to leave confidential papers in the photocopier. But attacks on their computer systems, be they by business rivals, political activists, criminals or foreign governments, are much harder to defend against—and can have far worse consequences than a physical break-in. A company can suffer a devastating blow to its reputation, its intellectual property, or its ability to serve customers—not to mention its bank balances. It may never learn who has attacked it or why, or how much information has been taken; so it may never be sure if it has done enough to plug the leak.

Cyber-security is now burning a hole in boardroom tables. Before the recent hacking of Ashley Madison, an online broker of adulterous trysts, the most notorious example in the past year was that of Sony Pictures Entertainment, in which a torrent of embarrassing e-mails, personal information about employees and copies of unreleased films was released on the internet by unknown infiltrators. But there is a steady stream of less prominent cases in which businesses suffer serious damage. Earlier this month the FBI said it had uncovered a scheme in which hackers had got into the computers of three firms that distribute corporate press releases, and made a fortune by trading on market-sensitive information before it had been officially released. Ubiquiti Networks, an American maker of wireless-networking equipment, admitted this month that it had been diddled out of $46.7m by fraudsters who falsified e-mails from an executive, instructing the finance department to wire money to the

criminals' bank accounts. Customers of Carphone Warehouse, a British mobile-phone retailer, are venting their fury after large numbers of them had their financial details stolen from the company by hackers.

Many companies now hire "penetration testers" to see how strong their defences are, both online and in the real world. This can help them to identify unexpected weaknesses before someone with malign intent takes advantage of them. But as soon as one gap is plugged, the hackers will start looking for others. So, it is important for managers to adopt some of the wiles of the spy world. Counter-intelligence officers assume that their adversaries are constantly probing for weaknesses and trying to exploit them. Instead of attempting to identify every potential line of attack, their aim is to minimise the damage when someone does break in, and if possible, to turn the situation to their advantage.

The first lesson from the spymasters is that sometimes the convenience of having everything easily accessible on an internal network has to be sacrificed. Intelligence agencies' most important stuff may not be kept on computers at all—manual typewriters and carbon paper still have their uses. Sensitive information may be kept in separate chunks, with no one person in possession of, or aware of, them all. A great deal of thought goes into who needs to know what, how the rules for information-sharing are set and who enforces them. Companies can adopt the same "defence in depth" approach, to make it hard for an electronic intruder to gather enough information to do serious damage.

More often than not, hacking attacks are facilitated by carelessness. But with the right incentives and punishments, good computer-security habits can be acquired, and bad ones shed. However, it has to start at the top—which is why spies fume about the way Hillary Clinton casually kept official e-mails on a private computer when she was America's secretary of state. If the boss does not take cyber-security seriously, nor will her

underlings.

Another lesson from counter-intelligence is the use of deception. The best way to find out if you are being attacked is to offer a tempting target. "Honeypots" are bogus but convincing computers, networks and files which will attract an attacker's attention, while revealing his presence to the silent watchers. For example, one American bank placed a series of fake profiles of non-existent staff on its internal computer network, including e-mail addresses. Whenever a transfer request arrived, addressed to one of these aliases, it knew that the sender was likely to be a fraudster.

If you find out who is attacking you, and what they want, you have some options. You can bring in law-enforcement: breaching someone else's network is a crime in most jurisdictions. But that may not help much if the attacker is from a lawless country. You may simply gather more information about the attacker, building a picture of his aims and capabilities. If he is trying to steal blueprints of your products, say, then make sure he gets fictitious documents that will mislead him. In 2012 spies in Georgia put a file labelled "Georgian-NATO Agreement" on a computer network that they knew a Russian hacker had breached. The document was, of course, bogus—it also contained a virus that let the Georgians spy back at the hacker, although this would be a step too far for most companies.

In paranoia we trust

Managers could also do with practising a little of the constructive paranoia that spymasters adopt when dealing with technology. For instance, when on a business trip abroad, take a disposable laptop containing no sensitive information; and assume there will be attempts to slip spyware onto it. Spooks know that people's private and family lives are a vulnerability to be exploited: an executive at a corporate-security firm says he knows of cases in which criminals stole the smartphones of the spouse or children of the boss of a family firm, to look for bank-account details or other exploitable

information. And an unexpected message from an old friend or business associate should always be treated with suspicion: it may be a spoof e-mail from someone who has scoured your LinkedIn or Twitter account to find out who your contacts are. You don't have to be paranoid to run a business in the age of cybercrime, but it helps. ■

熊彼特

像间谍头子一样做管理

反间谍技术或许有助于保护企业免受网络攻击

直到最近，对大多数企业而言，安全就是装上可靠的锁、门窗和视频监控系统，确保前台登记好进出的访客，还有别把机密文件遗忘在复印机上。但计算机系统的攻击则更难以防范，这些攻击可能来自商业竞争对手、政治活动者、犯罪分子或者外国政府。而且网络攻击造成的后果要比实际侵入严重得多。公司的声誉、知识产权或者服务客户的能力可能遭到毁灭性打击，更别说银行存款了。公司可能永远无法知道是谁发起了攻击、为什么攻击、有多少信息被窃取，因此可能也永远无法确定是否已经堵住了漏洞。

网络安全现在正成为董事会的热点问题。在最近婚外情网站Ashley Madison被攻击之前，过去一年里最众所周知的例子是索尼影视，该公司大量令人尴尬的电子邮件、员工个人信息以及未发行影片的拷贝被身份不明的攻击者泄露到互联网上。但是，不那么知名的案例源源不断地发生，涉事企业同样损失惨重。8月初，联邦调查局表示它已经发现了一个案例：黑客侵入了三家专事发布企业新闻稿的公司的电脑，获取了其中尚未被正式发布的市场敏感信息，并据此交易以牟利。美国无线设备制造商优倍快网络（Ubiquiti Networks）在8月承认被骗走了4670万美元，诈骗分子篡改了一位高管的电子邮件，指示财务部门向骗子的银行账户汇款。英国移动电话零售商Carphone Warehouse的大量客户被黑客窃取了详细的财务信息，惹来怨声载道。

许多公司现在聘请“入侵测试员”来检验它们的网络和实体防御体系的牢固程度。这可以帮助它们发现意想不到的漏洞，避免被人恶意利用。但是，一个漏洞被修补后，黑客们又会开始寻找其他的漏洞。所以管理者要能运用一些间谍领域的计谋，这很重要。反间谍官员假设敌人总是在不停地窥探其薄弱环节并试图利用，因此他们的目标不是找出每一条可能的攻击路线，而是在有人成功入侵时尽量减少损失，并在可能的情况下，趋利避

害，扭转乾坤。

间谍头子的第一条妙计是有时必须牺牲从内部网上轻易访问各类信息的便利。情报部门最重要的人物可能根本不会在电脑里露面——手动打字机和复写纸仍有用武之地。敏感信息可能会被分块独立保存，没有一个人能完全掌握或知晓全部信息。在谁该知道什么、如何设定信息共享规则，以及谁来执行规则等方面，他们费尽心机。公司可以采取同样的“纵深防御”策略，使电子入侵者难以获得足够的信息来造成严重损失。

粗心大意通常会方便黑客攻击。但是通过恰当的奖惩措施，可以培养良好的计算机安全习惯，而摒除坏习惯。然而这必须从高层开始做起——当希拉里任国务卿时，她随意地在私人计算机上保存公务邮件，这正是情报部门大为光火的原因所在。如果老板都不重视网络安全，下属们同样不会。

反间谍的另一妙计是使用骗术。要查明是否正受到攻击的最好方法是放出一个诱饵。所谓的“蜜罐”就是伪造的、引人入彀的计算机、网络或者文件，蜜罐会引起攻击者的注意，从而将其行踪暴露给潜藏一旁的监视者。例如，一家美国银行在内部计算机网络上放置了一系列子虚乌有的员工资料，包括电子邮件地址。一旦有发送到上述邮箱地址的转账请求到达，银行就会知道发信人很可能是个骗子。

如果你发现了谁在发起攻击，知道其目标何在，就能选择应对之道。你可以诉诸法律，在大多数司法辖区，入侵别人的网络是犯罪行为。但如果攻击者来自法律松弛的国家，这可能用处不大。你可以直接搜集更多攻击者的信息，搞清楚他的目标和能力。比如，如果他试图窃取你的产品设计蓝图，那就确保他拿到是伪造的文件，引他走上歧途。2012年，格鲁吉亚情报部门发现俄罗斯黑客侵入了一个计算机网络，他们顺势在该网络上存放了一份标为“格鲁吉亚-北约协议”的文件。当然，这份文件是伪造的，它还含有病毒，让格鲁吉亚情报人员可以跟踪黑客。尽管对大多数公司来说，这么大动干戈有些过头了。

> *我们相信偏执*

管理者也可以采用一些有益的偏执做法，就像间谍头子在对待技术时那样。例如，到国外公干时，带上一台存有非敏感信息的一次性使用笔记本电脑。同时假设会有人试图在其上安装间谍软件。间谍知道人们的私人和家庭生活是可以利用的突破口。一家企业安全公司的高管表示，在他所知的一些案例中，犯罪分子盗取老板的配偶或孩子的智能手机，在其中寻找银行账户的详情或其他可利用的信息。对一切来自老朋友或者生意伙伴的意外消息都要审慎对待：这可能是有人遍阅你在领英（LinkedIn）或推特账号上的联系人之后所发出的诈骗邮件。在网络犯罪的年代，你不需要如此偏执来经营一家公司，但偏执确实有用。■

Cyber-security

The cost of immaturity

The business of protecting against computer-hacking is booming

THE average time between an attacker breaching a network and its owner noticing the intrusion is 205 days. Like most statistics touted by the cyber-security industry, such as the supposed annual $575 billion global cost of 90m cyber-attacks, it is little more than a guesstimate. But there is no doubt that criminals and pranksters are thriving by attacking computers and networks, that companies are struggling to cope and that businesses offering answers are charging fat fees.

The penalties for getting cyber-security wrong are steep. Nortel, a Canadian telecoms giant, went bust in part because hackers stole so much of its intellectual property. Target, an American retailer, lost the credit-card details of 40m customers. Some of them are suing. Its share price plunged, and the CEO stepped down. TalkTalk, one of the biggest phone and internet companies in Britain, is floundering after an attack last month which leaked customer information—which was apparently stored unencrypted, on a computer accessible through a public website.

Unsurprisingly, then, the cyber-security industry is booming. A report by Bank of America Merrill Lynch reckons the market is $75 billion a year now and will be $170 billion by 2020. Not only is demand soaring, but barriers to entry are low. Anyone able to spout a bit of computer jargon can set up shop (it also helps if you can say you have a background in an intelligence service or the military). Unlike, say, businesses based on engineering or science, there are no standard qualifications, nor any established trade associations.

The range of products is bafflingly wide. Among those on offer are “threat

intelligence" (finding out who is planning to attack your company and why); "end-point protection" (making sure that nothing is lurking on your computers or mobile devices); "penetration testing" (hacking into your systems to reveal their security weaknesses); "identity assurance" (making sure that only the right people get onto your network); "incident response" (dealing with the aftermath of attacks); and "anomaly detection" (spotting mischief by looking for peculiar movements of data).

Quality varies hugely. The worst products may appear to work perfectly, but do nothing against the real threats. Anti-virus software, for example, can do a splendid job against old malevolent software, but fail to spot new versions (especially because those who invent malware fine-tune it to evade existing defences). And they defend against only one kind of attack. Other products do such a good job in spotting possible mischief that they create a plethora of false alarms. Keeping up-to-date is hard—malefactors who spot weaknesses quickly sell or share their knowledge.

Ropier providers are helped by the fact that customers, especially at board level, are usually ill-informed about what they are buying. Understanding how attackers work and what they are after is hard. Few senior executives have enough of a technical background to understand encryption or network design. Sharing data about attacks would help corporate buyers to become more informed but carries risks of its own—you may breach customer privacy by doing so, and publicising an attack highlights what may look like incompetence. (New laws pending in America and the European Union should give some much-needed clarity on what disclosure is required when cyber-attacks happen.)

All sorts of companies offer cyber-security services, from small, specialist outfits to giant arms companies such as BAE Systems (which TalkTalk has hired to sort out its mess). The biggest firms are finding it hard to keep staff. As in the public-relations and corporate-intelligence industries, if you

know your stuff, you can make more money starting up on your own. Venture-capitalists are not showering money on the industry as prodigiously as they did a year ago, but the fast growth rate means that raising capital is still easy. The big companies are still able to trade on their brand name (nobody gets fired for hiring IBM) but the mammals are beating the dinosaurs.

Purely technical solutions are also going out of fashion. Even the best technology doesn't work if the humans who operate it are careless or ill-trained. Attackers often use a mixture of computer hacking and "social engineering" (in effect, confidence tricks) to gain access to their targets. People who obligingly click on links or open attachments in bogus e-mails are the single biggest security weakness: even the strongest front door is insecure if those inside open it to all comers.

Even the best cyber-security products offer little protection against employees who are bribed or bullied to help the attackers, or who harbour a grudge against their bosses. Weeding out such people requires an approach more like that of the spy world. Training loyal staff to be sensible, while not infuriating them with restrictive rules or paralysing them with fear, is hard. Naturally, there are up-and-coming consulting firms which stand ready to offer these sorts of service.

Security will get worse before it gets better. The "internet of things"—hooking up all sorts of appliances to the web— offers new opportunities for attackers. Many companies do not have a proper understanding of the threat they face. Eventually, they will become choosier and thriftier. But for now, cyber-security companies of all kinds can feast on misfortune. ■

网络安全

不成熟的代价

防止黑客入侵的生意正如火如荼

从攻击者入侵网络到网络所有者注意到这一入侵平均相隔205天。与网络安全行业吹嘘的许多统计数据一样——比如假定全球每年九千万次的网络攻击造成了5750亿美元损失——这个天数差不多只是瞎猜而已。但是毫无疑问，犯罪分子和喜欢恶作剧的人正肆无忌惮地攻击电脑和网络，各家公司皆应对艰难，而提供解决方案的企业则从中大赚一笔。

在网络安全上出错代价惨重。加拿大电信巨头北电（Nortel）破产的部分原因是遭黑客盗取了太多知识产权。美国零售商塔吉特（Target）丢失了四千万客户的信用卡资料。部分客户正在起诉，公司股价大跌，CEO下台。英国最大的电话和互联网公司之一TalkTalk正陷入困境：上月TalkTalk受到攻击，客户信息泄露，显然这些信息并未加密保存，而是放在一台通过公共网站就可以访问到的计算机上。

因此网络安全行业蓬勃发展也就不足为奇了。美银美林（Bank of America Merrill Lynch）的一份报告估算，目前这一市场规模为每年750亿美元，到2020年将达到1700亿美元。不仅需求猛增，进入的门槛也很低。任何人只要能滔滔不绝地说些计算机术语就能开店了（如果你能自称有情报服务或军队背景，也会管用）。和基于工程或科学的公司不同，这一行没有标准资质，也没有任何行业协会。

产品的范围大得让人费解。提供的服务包括：“威胁情报”（找出谁打算侵入你的公司以及为什么）、“端点保护”（确保你的电脑或移动设备上无人潜伏）、“渗透测试”（侵入你的系统，找出安全弱点）、“身份确认”（确保只有正当身份的人接入你的网络）、“事故反应”（处理遭袭的后果）和“异常检测”（通过寻找数据的异常变化发现恶意行为）。

质量也千差万别。最差的产品可能看起来功效完美，但遇到真正的威胁时

则毫无作用。例如，杀毒软件在对付老版的恶意软件方面做得很出色，但无法发现新的版本（尤其是因为恶意软件的开发者对其进行微调以避开现有的防御体系）。并且它们只能防御一种类型的袭击。其他产品在发现可能的恶意行为时又太过出色，产生大量的错误警报。时刻掌握最新发展很难，因为发现薄弱环节的罪犯会很快卖掉或分享他们所攫取的知识。

客户们，尤其是在董事会层面，通常对于自己买的是什么知之甚少，这对于那些蹩脚的供应商大为有利。要懂得攻击者如何行动及其目的非常困难。极少高管有足够的技术背景理解数据加密或网络设计。共享关于攻击的数据能够帮助企业买家了解更多信息，但这么做也有风险，因为这可能侵犯客户的隐私，而且将攻击公之于众突显了可能防护不足的环节。（待通过的美国和欧盟新法规应当清楚规定当网络袭击发生时需要如何做披露，这一点非常必要。）

各式各样的公司都提供网络安全服务，从小的专业机构到大型军火公司如BAE系统（BAE Systems，TalkTalk已经请它打理困局）。最大的一些公司发现自己很难留住员工。正如在公共关系和企业情报行业那样，如果你懂行，自立门户赚钱更多。风险资本家不再像一年前那样大手笔投资这一行业，但增长速度之快说明募集资金依然很容易。大公司仍然能够凭借品牌做生意（没人会因为聘请IBM而被解雇），但小不点正在打败巨无霸。

纯技术解决方案也正在过时。如果操作者粗心大意或训练不足，那么再好的技术也不管用。攻击者通常结合使用计算机入侵和“社交工程”（实际上是欺诈）来侵入目标。那些乐于点击伪造电子邮件中的链接或打开其中附件的人是最大的单个安全漏洞。如果屋里的人对所有来客都敞开大门，那么门再怎么坚固也不管用。

如果有员工受贿或被迫协助攻击者，或者对老板怀恨在心，那么即便最好的网络安全产品也很难提供什么保护。清除这样的人需要的方法更像是间谍界的手段。培养忠诚的员工保持警觉，但又不以严苛的规定激怒他们，或是让他们心生恐惧而不敢作为，要做到这一点很难。自然，有积极进取的咨询公司随时准备提供这类服务。

在好转之前网络安全会变得更差。将各种各样的设备连入网络的“物联网”为攻击者提供了新的机会。很多公司没有正确意识到他们面临的威胁。最终，它们会变得更挑剔也更节俭。但目前说来，各种各样的网络安全公司可以尽享灾祸带来的盛宴。 ■

Free exchange

Putting Goldilocks to work

A new study shows that climate change is likely to sap productivity in the rich world

"ALWAYS pack a sweater," one local businessman advises visitors to Singapore, "because the best thing about our weather is the air conditioning." Singapore's first prime minister, Lee Kuan Yew, would have agreed—he considered the air conditioner the greatest invention of the 20th century. Another Singaporean politician once remarked that if it had not been for artificial cooling, local workers would be "sitting under coconut trees" rather than labouring away in high-tech factories.

Singapore is rich enough to keep its indoor spaces cool. Neighbouring Indonesia is not. Economists used to think that rich countries' greater cooling power would enable them to limit the damage to their economies from the higher temperatures brought by global warming. A cross-country comparison* published in 2012 found that higher temperatures did not seem to sap growth in rich countries, but did in poor ones. It is hard to compare the impact of temperature on growth in hot and cold countries directly, since there are too many variables to control for. Instead, the study compared growth in a given country during hot years with that during colder ones. It found that in poor countries, on average, higher temperatures were associated with slower growth. But some rich countries grew faster in hot years, and some in cold ones, suggesting that there was no clear correlation between temperature and growth in the developed world.

A paper published in October's *Nature* challenges this finding. The authors—Marshall Burke, Solomon Hsiang and Edward Miguel—suspected that economists had been looking for the wrong thing: a linear relationship between temperature and growth. Instead, they looked for an optimal

temperature, on the assumption that excessive cold could harm growth as much as punishing heat. That is exactly what they found: hotter-than-usual years benefit countries, rich and poor alike, up to an average annual temperature of 13°C, after which hotter weather begins to sear growth. That allowed them to draw inferences about the likely effect of climate change: for Brazil, for example, an increase in temperature of 3°C will lead to a fall in output of 3% (see chart).

The apparent heat resistance of rich countries, it turns out, is simply because some of them, such as Germany and France, lie on the colder side of the optimum, so grow faster in hotter years, whereas others, such as America and Australia, lie on the hotter side, and so wilt as temperatures rise. Within individual counties in America, for instance, every hot day (with an average temperature over 24 hours of 24-27°C) lowers the average income per person that day by 20%, according to a working paper from the National Bureau of Economic Research by Mr Hsiang and Tatyana Deryugina. Very hot days (over 30°C) lower income per person by 28%. Looking at the average impact of rising temperatures in rich countries as a group had obscured such strong responses.

Ironically, the fact that global temperatures are changing has prompted some economists to question these results, since it means there is no firm baseline for comparison. But there is plenty of evidence for an optimal temperature at the micro level. Crops, for example, flourish when it is neither too hot nor too cold. Workers, too, do better in mild settings. The British navy commissioned the first research on temperature and productivity in the 1940s. In one experiment, Morse-code operators were placed in rooms of varying temperature. Those in rooms heated to 40°C made more than ten times more errors than those in rooms that were 30°C.

In a similar vein, a paper published in the *Journal of Labour Economics* last year found that American workers in construction, manufacturing and

transport knocked off earlier when the temperature rose above 29°C, working an hour less per day on average. As the incidence of hot days increases, either more workers will be needed to finish the same project, or workers will need to be paid more to persuade them to stay on, just as workers are paid extra for the inconvenience of night shifts. Industries in which workers are exposed to the weather employ 28% of America's workforce, according to a recent study looking at how climate change will affect America's economy.

Cool but costly

Countries can try to mitigate the effects of warming, but cooling things down is expensive. In Singapore, air conditioning consumes 40% of the power used in buildings. If nothing is done to stop global warming, the world will see an 83% increase in electricity consumption between 2010 and 2100, due simply to greater use of air conditioning, fans and refrigeration, according to a paper published in the journal *PNAS* in March by Lucas Davis and Paul Gertler. Richard Tol of the University of Sussex points out that homes and offices in cold countries are built to conserve heat, with large south-facing windows. Refurbishing such buildings could help keep people cool, but at great cost.

There are many other ways, of course, that global warming will harm rich countries besides falling productivity tied to higher temperatures. Climate change will not only heat up the planet, but will also lead to sea-level rises and an increase in extreme weather, such as hurricanes. Since many big cities are on the coast, they will require protection. Environmental economists have already been working for decades on Doomsday calculations, such as whether it would be better to build costly flood defences for Singapore's business district or let it be inundated.

Moreover, even if rich countries manage to fend off the worst effects of global warming, they will still feel its repercussions. Trade with more

vulnerable places would decline; refugees would proliferate. The Paris climate conference this December is supposed to come up with policies to avoid such outcomes. The new findings on the baleful impacts of high temperatures should give rich countries an extra incentive to compromise.

* Studies cited in this article can be found at www.economist.com/heat15

自由交流

冷暖适宜

一项新研究显示气候变化可能会降低富裕国家的生产力

“永远记得带上一件毛衣,”一位新加坡本地商人向到访该国的游客建议，“因为我们这儿的天气最大的好处是空调。”新加坡建国总理李光耀应该会表示认同——他视空调为20世纪最伟大的发明。另一位新加坡政客曾表示，如果没有人工制冷，那本地工人都会“坐在椰子树下”无所事事，而不是在高科技工厂里辛勤劳作。

新加坡足够富足，因此能让它的室内空间保持凉爽。邻国印度尼西亚则无能为力。经济学家过去曾认为，富裕国家更好的制冷能力让它们能够限制全球变暖导致的气温升高对本国经济的损害。2012年发表的一则国家间比照研究*发现，更高的气温似乎并没有损害富裕国家的经济增长，但在穷国则不然。由于变量多到难以控制，很难直接比较气温对炎热国家和寒冷国家经济增长的影响。这一研究转而比较某个特定国家在炎热年份和较寒冷年份里经济增长的差异。它发现，在贫穷国家，平均而言更高的气温和更缓慢的增长相关联。但一些富裕国家在炎热的年份经济增长更快，而另一些富裕国家在寒冷的年份增长更快，显示在气温和发达国家的经济增长之间并没有清晰的关联。

10月发表在《自然》杂志上的一篇研究论文向上述发现发起了挑战。其作者马歇尔·伯克（Marshall Burke）、所罗门·谢恩（Solomon Hsiang）和爱德华·米格尔（Edward Miguel）怀疑一直以来经济学家找错了目标，即试图在气温和经济增长之间寻找线性关系。与之不同，他们要寻找一个最佳温度，其假设是过度的寒冷和令人疲惫的高温天气对经济增长的损害同样大。而他们的发现与这一假设完全吻合：在年平均气温不超过13°C的国家，无论贫富，比通常更热的年份都对经济增长有利；而在年平均气温超过13°C的地区，气温升高则会开始损害增长。这让作者们推断出气候变化可能具有的效应，比如在巴西，气温增加3°C会让产出降低3%（见图表）。

研究显示，原来富裕国家表面上对高温的抵御能力仅仅是因为他们中的一些国家比如德国和法国在图谱中是处在比这个最佳气温更冷的一侧，因而它们在更炎热的年份里经济增长更快，而在其他国家比如美国和澳大利亚处在更热的一边，当气温上升时成长疲软。在单个国家如美国国内，根据美国国家经济研究局的谢恩和塔季扬娜·德尤吉娜（Tatyana Deryugina）撰写的工作报告，在每一个温度较高的日子（24小时平均气温在24°C 到27°C之间），当天的人均收入会下降20%，而在高温天气（超过30°C）则会下降28%。把富裕国家作为一个整体来观察更高的气温所带来的平均影响，模糊了这样显著的效应。

讽刺的是，全球气温正在变化这一事实促使一些经济学家质疑这一研究结果，因为它意味着失去了一个坚实的比较基准。但是，在微观层面有大量证据显示存在着一个最适宜温度。例如，作物是在不太热也不太冷的条件下繁茂生长。工人也一样，在温和的环境中活干得更好。英国海军在上世纪40年代委托开展了有关气温和生产力的首个研究。其中一个实验中，摩尔斯电码的操作人员被安排在温度不同的房间里工作，那些待在加热到40°C的房间里的人出错的次数比30°C房间里的人多出十倍。

同样地，去年发表在《劳动力经济学期刊》（Journal of Labour Economics）上的论文发现，当气温升至29°C以上时，在建筑、制造和运输业工作的美国工人更快被打败，平均每天工作时长减少一小时。随着高温天气的影响日增，要么需要更多工人来完成同样的项目，要么得支付工人更多钱来劝说他们继续工作，就像给夜班工人支付额外报酬一样。一项最新研究观察气候变化会如何影响美国经济，它指出那些户外作业的行业雇用了28%的美国劳动人口。

凉爽但昂贵

国家可以努力减少气候变暖的影响，但制冷的成本高昂。在新加坡，空调消耗了建筑耗电量的40%。根据卢卡斯·戴维斯（Lucas Davis ）和保罗·格特勒（Paul Gertler）合著、于3月发表在《美国科学院院报》（PNAS）上的论文，如果不做任何事来阻止全球变暖，那么全世界在2010年至2100年间的耗电量将增加83%，而这还只是因为更多地使用空调、电扇和冷藏

冷冻。萨塞克斯大学（University of Sussex）的理查德·托尔（Richard Tol）指出，在气候较寒冷的国家，住宅和办公室的设计使用朝南的大窗户来蓄热，重新改造这类建筑能帮助人们保持凉爽，但耗资巨大。

当然，除了更高的气温导致生产力下降之外，全球变暖还会以其他许多方式损害富裕国家。气候变化不仅会让地球变暖，也会导致海平面上升，并出现飓风等更多极端天气。因为许多大城市都建在海边，它们将需要保护。几十年来，环境经济学家都在盘算如何应对世界末日，比如新加坡的商业区是建造昂贵的防洪设施为好，还是就听任它被淹没。

此外，即使富裕国家想方设法抵御了全球变暖最糟糕的效应，它们仍会感受到其间接影响：与更为脆弱的地区之间的贸易将减少，而难民将激增。12月将在巴黎举行的气候大会应该会出台政策来避免此类后果。关于高温有害影响的新发现应该会给富裕国家更多动力来做出妥协。

*本文所引研究可参见www.economist.com/heat15 ■

The circular economy

Greening of business

Helping the environment must be presented as a boon to business first

SUSTAINABILITY suffers from an image problem. Not with granola-crunching sandal-wearers, but with executives and the middle-of-the-road consumers to whom they want to sell their wares. How exactly companies make their offerings, or design their services, has always mattered enormously to margins. The effects on the environment less so. But resources can stretch only so far: by the middle of the century the global population will be 9.7 billion people, up from 7.3 billion now according to the UN. Most growth will occur in Asia and Africa. Between 2014 and 2030 estimates say 2.5 billion new middle-class consumers will join the crush, guzzling their way to a better standard of living.

Fans of the "circular economy" want growth decoupled from the ever more voracious consumption of resources. Three new books promote this view to varying degrees. Peter Lacy and Jakob Rutqvist, both of Accenture and authors of "Waste to Wealth", believe reuse and reduction will ensure that firms can "future-proof" their "growth agendas". In "Green Giants" Freya Williams wants companies to do good as a by-product of their usual activities. After working for Ogilvy advising big firms on going green, she has come to believe that sustainability must be "built in" to operations, not merely "bolted on". And Richard Dobbs, James Manyika and Jonathan Woetzel, who all work for McKinsey's Global Institute and have written "No Ordinary Disruption", see the circular economy chiefly as a clever way to cut costs amid the vast technological and demographic shifts already under way.

Efficiency is an obsession for the optimistic Messrs Lacy and Rutqvist. Cars sit unused for 90% of their lives, according to "Waste to Wealth".

Consumers should instead consider paying to drive as and when they need, renting a vehicle through car-sharing apps such as DriveNow and car2go. But this analysis presupposes that people spend their money on wheels mainly for mobility and not, for example, to stir up the envy of their neighbours.

The authors provide reams of alternative examples of green practices and the firms behind them. Tesla's flashy electric vehicles may cut emissions while keeping their drivers hip, for one. But the book assumes that bosses are green converts, keen to overhaul their operations, and fails adequately to persuade those who might not be. Instead it just offers reams of factual fodder for those already on-board.

The idea of leasing products to customers, rather than selling them, drives efficiency (as the car-sharing apps show). Firms renting out vehicles want them to last as long as possible. But as no one wants to rent socks that someone else has worn, other types of retailers may struggle with this model, especially as durability may interfere with future sales. The longer socks last, the longer it will take a customer to buy a new pair. Recycling can help instead. Clothing firms such as H&M see it both as a way to hedge against volatile cotton prices and as a means of securing customer loyalty. In 2013 the chain encouraged customers to bring in old clothes in exchange for discount vouchers on new ones. A year later it launched a recycled denim collection and collected more than 3,000 tonnes of ancient frocks and fuzzy jumpers, many of which became pipe insulation or damping material in carmaking.

For some, "green" may mean "weedy". Smart shoppers shy away from ecological washing powders they fear will not clean their tightest, whitest trousers. So firms keen to do good may manage to do so only quietly. Chipotle, an American burrito chain, is its country's largest seller of naturally raised meats yet also its most profitable fast-food restaurant

business. Chipotle's revenues were more than $4 billion in 2014, according to "Green Giants", a pacey attempt to convince business types of the advantages of sustainability.

Of the three books, "No Ordinary Disruption" does the best job of arguing why companies must consider their use of resources, and so inadvertently makes the strongest case for going green. The authors' clear assessments explain why bosses cannot afford to view it merely as a costly fad. Startups have never been better placed to challenge incumbents across the world. Mid-tier cities across the developing world, rising in population and prominence, incubate such companies with vital local knowledge. Western firms may owe their future success to fast-growing centres they have not yet heard of: Surat, for example, which accounts for two-fifths of India's textile production. Increasing interconnections between markets mean behemoths will suffer when suppliers fall short. Recycling and using resources sparingly will help firms survive despite the onslaught of newer foreign rivals. ■

循环经济

企业绿化

改善环境必须首先以一种有利于商业的面貌呈现

可持续性为形象问题所扰——倒不是因为踩着凉鞋、啃着健康食品的人，而是因为企业主管和他们想向之销售商品的主流消费者。一直以来，企业如何制造商品和设计服务对其利润影响重大，而企业对环境的影响倒和利润没那么大的关联。但是，资源终有穷尽之时。根据联合国的预计，到本世纪中叶全球人口将从目前的73亿增至97亿，大部分增长将发生在亚洲和非洲。据估计，2014年到2030年间将有25亿新增的中产阶级消费者加入消耗资源的大军，一路饕餮着奔向更高的生活水平。

“循环经济”的拥趸希望经济增长能摆脱对资源日益贪婪的吞噬。三本新书不同程度地推广了这一观点。《变废为宝》（Waste to Wealth）的作者、埃森哲公司（Accenture）的彼得·莱西（Peter Lacy） 和雅各布·鲁特奎斯特（Jakob Rutqvist）相信再利用和俭省会确保企业的“增长计划永不过时”。在《绿色巨人》（Green Giants）一书中，弗雷娅·威廉姆斯（Freya Williams）希望企业能把善举当作其常规行为的副产品。在就职于奥美（Ogilvy）为大企业提供环保方面的建议后，她开始相信可持续性必须被“内建”于企业的运营中，而不是仅仅“附加”在营运之上。麦肯锡全球研究所的理查德·多布斯（Richard Dobbs）、詹姆斯·马尼卡（James Manyika）和乔纳森·韦策尔（Jonathan Woetzel）合著的《不寻常颠覆》（No Ordinary Disruption）把循环经济主要视为在技术和人口构成发生巨大转变的大势下一种削减成本的巧妙方式。

乐观的莱西和鲁特奎斯特着迷于效率问题。《变废为宝》中提到，汽车有九成时间都闲置不用。消费者应转而考虑按需付费用车，用DriveNow和car2go这类汽车共享应用来租车。但是，这一分析假定人们花钱买车主要是为了出行而不是其他原因，比如让邻居艳羡。

该书作者列举了大量其他的绿色实践及其背后的企业，比如特斯拉光鲜的

电动汽车可能在减排的同时也让司机们赶了时髦。但该书假设企业老板们都已成为环保的信徒而热衷于彻底改变经营方式，却没能提出足够的论据来说服那些非环保人士。它仅仅为那些已经认可环保的人提供了大量的事实素材。

向顾客出租而非销售产品的创见促进了效率（就像汽车分享应用所展示的那样）。那些出租车辆的企业希望这些车能被使用尽可能长的时间。但就像没人会想租用别人已经穿过的袜子，其他类型的零售商可能难以利用这一模式，尤其当耐用性可能会影响到未来的销售时。袜子能穿越长时间，顾客就会等越久才买新袜子。而回收能帮忙解决这个问题。诸如H&M这类服饰公司把回收视为防范棉价波动的方式，同时也可以确保客户忠诚。2013年这家连锁店鼓励顾客把旧衣服送回店里，交换购买新衣服的折扣券。一年后，它推出了用再生棉制造的牛仔系列，并收集到了3000多吨旧连衣裙和毛绒套衫，其中许多变成了汽车制造中的排气管隔热和阻尼材料。

对一些人来说，“绿色”可能等同“不中用”。精明的购物者避开生态洗衣粉，因为担心洗不干净最紧身、最白的裤子。因此那些热衷环保的企业可能会设法悄悄行动。美国的墨西哥玉米煎饼连锁店Chipotle是美国最大的天然饲养肉类卖家，同时却也是最赚钱的快餐厅。《绿色巨人》中写道，2014年Chipotle收入超过40亿美元。该书节奏明快，尝试说服企业相信可持续性的好处。

三本书中，《不寻常颠覆》最好地论证了为何企业必须审视自己对资源的利用，由此在不经意间就企业走向环保给出了最强有力的理由。作者用清晰的评估解释了为何老板们不能仅仅视之为一种昂贵的风尚。在全球各地，创业公司从未像今天这般占据挑战既有企业的有利地位。发展中国家中型城市的人口和地位都在上升，它们用重要的地方知识来孵化这类企业。西方企业未来的成功可能要归功于那些他们闻所未闻的、迅速成长中的中心，比如印度的苏拉特市（Surat），它贡献了印度纺织品产出的五分之二。市场之间日益增加的相互联系意味着当供应商不足时超大型企业会陷入困境。回收及节约使用资源将帮助企业在新进外国对手凶猛来袭时

继续存活下去。

The Doing Business report

Pulling rank

The shortcomings of the World Bank's business-climate index

INDIA is mildly obsessed with rankings. More claims for record-breaking feats come from the country than from any other bar America and Britain, according to Guinness World Records, the publishers of a popular compendium of them. Its politicians like to boast that, as China's economy falters, India is (or will soon be) the world's fastest-growing big economy. And this month the commerce department published a ranking of India's states according to the progress they had made on economic reforms. The initiative was inspired by the World Bank's annual Doing Business report, which ranks countries on ten criteria, including the ease of starting a business, paying taxes and registering property. India lies a lowly 142nd out of 189 countries on the World Bank's scorecard, but Narendra Modi, its prime minister, has pledged to propel it into the top 50.

Other leaders have similar ambitions. A favourable spot in the World Bank's list is useful when pitching for foreign-direct investment or aid. Yet when such a measure becomes a target of policy, it may cease to be a reliable guide. Countries might seek to improve their ranking on the Doing Business index by amending regulations in ways that have little substance. Rwanda is often accused of this. It was ranked 46th (ten places above Italy) in the latest World Bank rankings, up from 158th in 2005, despite being one of the world's poorest countries. The gap between the Doing Business ranking and average income is hefty in other places, too (see chart).

Such discrepancies feed concerns about shortcomings in the Doing Business report (about many of which the World Bank is admirably upfront). There are three broad criticisms. One is that the survey has a bias against regulation and taxes. A disputed labour-market gauge that looked at

the ease of hiring and firing workers and the flexibility of working hours was cut from the survey in part to counter such criticism. But an indicator related to paying tax survives: it is based on the proportion of profits that firms have to fork over, as well as the number of taxes levied and the time taken to prepare tax returns.

High taxation may hamper the incentive to invest, but a low tax take can also hurt the business climate if it means governments do not have enough revenue to pay for essential infrastructure, education and health care. In a recent paper, Tim Besley of the London School of Economics found that the average rank of countries with a value-added tax in 2006 was 23 places lower than that of countries without one. Yet VAT is a vital plank of public finances in many countries where income taxes are hard to collect. In most cases, though, less really is more. Costly delays in starting a new firm, registering property or issuing building permits can hardly be the desired goals of regulation.

A second grumble about the World Bank index is that it does not cover important elements of the business climate, such as security, corruption, market size, financial stability, infrastructure and skills. The gauges that are included are often incomplete. For instance, the survey's credit-market measure is based in part on how well the legal rights of borrowers and lenders are protected; it is not a gauge of how easy it is to get loans or how wisely credit is allocated. The survey captures how troublesome it is to get electricity connected but not how reliable the power supply is.

A third weakness of the report is that it is not based on surveys of businesses. Instead it looks at what is required by a county's laws and regulations and tries to measure objectively how much time and effort it would take for a typical company to comply with them. Such yardsticks may be out of touch with reality.

Poor countries tend to have more rules but may not bother to enforce lots of them. In another recent paper, Mary Hallward-Driemeier of the World Bank and Lant Pritchett of Harvard University compared the Doing Business report with surveys of firms carried out by the World Bank. How business is done in theory and in practice was greatly at odds, they found. The median time to get a building permit in the countries covered was 177 days according to the Doing Business report, but the median firm said it took just 30 days. The experiences of firms varied enormously, even within countries with a low ease-of-doing-business ranking. Some secured permits almost as quickly as peers in high-ranked countries.

Such findings suggest that wherever strict rules are enforced by a weak state, connected firms find ways to escape the red tape. If India is successful in rising up the World Bank's ranking, some of its business people may not notice much of a difference. But if a higher ranking curbs opportunities for graft, the effort to improve will still have been worthwhile. ■

营商环境报告

拔高排名

世界银行营商环境指数之缺陷

印度有点沉迷各式排名。吉尼斯世界纪录出版的各类纪录大全广为流行，根据其数字，印度是英美之外拥有最多破纪录壮举的国家。印度政客喜欢夸耀说，随着中国经济放缓，印度已是（或即将成为）世界上增长最快的经济大国。9月，印度商务部根据各邦经济改革进展发表了一份排名。此举是受世界银行发表的年度营商环境报告的启发，后者每年基于十项标准对各国营商环境进行排名，包括创业、纳税及财产登记的简易程度。在世行的排名中，印度在189个国家中位列142位，排名不佳，但印度总理莫迪立下誓言，要推动印度打入前50位。

其他国家的领导人也同样雄心勃勃。在世行排名中占据高位有利于吸引外商直接投资或援助。但当排名变为政策目标，也许就不再是可靠的指标。各国或许会毫无实质意义地修订法规，只为提高营商排名。卢旺达就经常被指如此。在世界银行最新排名中，卢旺达从2005年时的158位上升至如今的46位（比意大利高出十位），尽管该国是世界上最穷的国家之一。其他一些国家的营商环境排名与其人均收入的差距也非常大（见图表）。

这样的差距令人担忧世行营商环境报告的缺陷（世行也坦承其中许多不足，值得钦佩）。批评来自三大方面。一是世行的调查对政府监管及税收存在偏见。为消解这一指责，世行已去除了一项备受争议的劳动力市场评分项目，这一项目着眼于雇用和解雇员工的便利度及工作时间的灵活性。但与纳税相关的一项指标仍被保留，它根据企业纳税额占利润比例、被征收税种的数量及纳税申报所需的时间而得出。

高税收可能不利于鼓励投资，但低税收可能导致政府缺乏足够收入支持必需的基建、教育及医疗服务，这也会损害营商环境。伦敦政治经济学院的蒂姆·贝斯利（Tim Besley）最近发表的论文显示，在2006年，设有增值税的国家的平均排名比没有该税项的国家要低23位。而在难以征收所得税

的许多国家里，增值税是公共财政的重要支柱。但在大多数情况下，征税的确是越少越好。对创办公司、财产登记或发放建筑许可证的拖延代价高昂，这绝非政府监管所渴求的目标。

关于世行营商指数的第二个抱怨是其并未涵盖营商环境的一些重要因素，如安全、腐败、市场规模、金融稳健度、基建水平及劳动力技能。而被纳入的衡量要素往往又有所欠缺。比如，调查中对信贷市场的评估部分是基于借款人和贷款人合法权益的受保护程度，而非借款有多容易或信贷分配有多明智；调查着眼的是接入电网的难度，而非电力供应的稳定性。

该报告的第三个缺点是排名并非基于对企业的调查。相反，它审视国家的法规要求，试图客观衡量一家普通公司要实现合规经营所需的时间及精力。这样的衡量标准可能与现实脱节。

穷困国家往往法规更多，但也许大多执行乏力。另一份最近发表的研究报告中，世界银行的玛丽·霍尔沃德-德里迈尔（Mary Hallward-Driemeier）及哈佛大学的兰特·普里切特（Lant Pritchett）对比了世行的营商环境报告和其对企业所做的多个调查。他们发现，企业营商的理论与实际情况相去甚远。根据世行的营商环境报告，在各国等候建筑许可证的时间中位数是177天，但在企业调查中，中位数水平的公司则表示只需30天。即便是在营商排名靠后的一些国家，公司开展业务的体验也相差极大，有些公司获批证照之快比得上在高排名国家里的同行。

这类研究显示，弱势政府无论在哪方面推行强硬法规，有关系的公司都有方法避开官僚程序。如果印度在世行的排名中成功攀升，该国的一些商界人士或许感受不到多大差别。但如果高排名能堵住贪腐门路，努力争先仍有其价值。■

Spaceplanes

SABRE-rattling

After more than 30 years of research, a new sort of rocket engine starts to sizzle

SOME good ideas take years of dogged perseverance to come to fruition. That has certainly been true of a hypersonic engine which Alan Bond, a British engineer, began developing in 1982. Its first incarnation was as part of a government-backed spaceplane project called HOTOL (horizontal take-off and landing), run by Rolls-Royce and British Aerospace. When the money for this dried up in 1989, Mr Bond and two fellow Rolls-Royce engineers set up a company called Reaction Engines to keep the work going. This month BAE Systems (as British Aerospace is now called) bought 20% of Reaction Engines for £20m ($31m). That vote of confidence suggests Mr Bond's novel propulsion system may be turning into reality.

His system is, as the firm's name implies, a reaction engine. That means it relies on Newton's third law of motion (to every action there is an equal and opposite reaction) to drive it forward. Broadly, reaction engines come in two varieties—rockets and jets—in which hot gases created by burning fuel are ejected out of the back, providing the action part of the law. The reaction part is forward movement. The distinction between rockets and jets is that rockets carry their own oxidant, as well as fuel, whereas jets use oxygen from the atmosphere for the purpose. However SABRE (synergetic air-breathing rocket engine) endeavours to have the best of both worlds. When the atmosphere is thick enough, it uses air and thus saves weight. But when it enters the vacuum of space, it switches to liquid oxygen. The result, if attached to a suitable airframe (see artist's impression), which the firm dubs *Skylon* because it resembles a piece of sculpture of that name that was on display at the Festival of Britain in 1951, would create a fully reusable spacecraft. This could take off from a runway and fly into orbit

carrying satellites, or might whisk passengers from London to Sydney in less than five hours.

Though the idea of such a hybrid between rocket and jet sounds reasonably straightforward, it is technically daunting. The biggest challenge is that at around the craft's proposed cruising velocity, Mach 5 (five times the speed of sound, or 6,180kph) the oncoming air is heated by friction to 1,000°C. In air-breathing mode the engine needs to compress this onrush to 140 times atmospheric pressure before it is injected into the combustion chamber. But that would heat it further, and no materials exist that could be used to build such a compressor without melting. The consequence is that the incoming air has to be cooled to -150°C before it reaches the compressor—which happens less than a hundredth of a second after it enters the engine.

For this, SABRE's engineers have devised what may be the world's fastest refrigerator. It consists of thousands of pipes made from an alloy of nickel. Each pipe is a mere millimetre in diameter and has walls 27 microns thick. These tiny tubes greatly increase the surface area available for the coolant being pumped through the system to absorb heat. SABRE uses helium, which is particularly good for the purpose.

Nor is the absorbed heat wasted. First, the expansion of the helium that it causes is used to drive a fuel pump and a compressor. Then, the remaining heat is extracted by running the helium through a second set of pipes that are bathed by liquid-hydrogen fuel on its way to the combustion chamber. This evaporates the hydrogen, preparing it for combustion.

The switch to rocket mode, at an altitude of about 25km, where the atmosphere is too rarefied to support this process, involves closing the air intake at the front of the engine and then injecting liquid oxygen from a tank on board directly into the combustion chamber. This will take *Skylon*

from Mach 5 to around Mach 25—and thus into orbit, whence it could deliver a satellite before gliding down to land.

Not surprisingly, SABRE has met with a fair amount of scepticism. But Reaction Engines has beavered away and, in recent years, has demonstrated in a series of trials that its heat exchanger works and is a robust piece of kit able to withstand high temperatures and pressures. Favourable assessments of the technology by the European Space Agency and America's Air Force Research Laboratory have helped persuade the European Union to approve a £60m development grant from the British government, which the company should receive this year.

With BAE's assistance the plan is, according to Mark Thomas, Reaction Engines' new managing director, to have a ground-based version of SABRE running by 2020. Mr Thomas joined the firm in May, having previously worked for Rolls-Royce, where he oversaw a number of new jet-engine projects. Gradually, then, and with several changes of name, the spaceplane is returning to its roots. How long it will be before anything SABRE-powered actually takes off remains to be seen. But Mr Bond, who is now 71, lives in hope that he will yet see his baby take to the sky. ■

太空飞机

耀武扬威

经过30多年的研究后，一种新的火箭发动机开始大展拳脚

一些好点子要经过多年坚持不懈的努力才能开花结果。英国工程师艾伦·邦德（Alan Bond）自1982年开始研发的一种超音速发动机无疑就是一例。这种发动机最早在由罗尔斯-罗伊斯（Rolls-Royce）和英国航宇公司（British Aerospace）运行、获政府资助的太空飞机项目“霍特尔”（HOTOL，水平起飞降落的缩写）中开发。该项目于1989年资金枯竭后，邦德和罗尔斯-罗伊斯的两名工程师朋友创立了一家名叫反应发动机（Reaction Engines）的公司，继续研发这项技术。本月，英国航太系统（BAE Systems，英国航宇公司现在的名字）以2千万英镑（3100万美元）买下该公司20%的股份。从这项交易显现的信心可见，邦德的这一全新推进系统可能将梦想成真。

从公司的名字就可以看出，邦德的这个系统是一个反应发动机。它倚赖牛顿第三运动定律（即每一个作用力都会产生一个大小相等的反作用力）来推动其前进。反作用力发动机大致可分为两类:火箭发动机和喷气发动机。燃料燃烧所产生的热气体从发动机尾部喷出，提供了牛顿第三运动定律中所说的作用力，所产生的反作用力使得发动机向前运动。火箭发动机和喷气发动机的区别是前者装载自己的氧化剂及燃料，而后者使用大气中的氧气来燃烧燃料。然而，“佩刀“发动机（SABRE，意为组合吸气式火箭发动机）竭力将两种方法的好处结合起来。当大气足够厚时，它使用空气以减少载重，但当它进入太空真空环境时则改用液氧。如果这种发动机被装配到一个合适的机身上（见绘图），它会创造出一架可完全重复使用的航天器。该公司研发的这个机身名为“云霄塔”，因和1951年“英国节”上展出的一件雕塑相像而得名。这架太空飞机能从机场跑道上起飞，搭载卫星飞进轨道，也可能花不到五小时就把乘客从伦敦送到悉尼。

这种结合火箭和喷气发动机的创意听来容易理解，但技术上的难度却令人生畏。最大的挑战是当它达到计划飞行速度即5马赫（音速的五倍，即

6180公里/小时）左右时，迎面而来的空气因摩擦阻力被加热到1千摄氏度。在吸气模式中，发动机需要把这些急流压缩到大气压力的140倍才能将其注入燃烧室，但这么做会进一步让气流升温，而目前还没有任何材料可以用来制造出不会因此而熔化的压缩机。所以，进入发动机的空气在抵达压缩机前必须被冷却至负150摄氏度，并且这必须在空气进入发动机后的百分之一秒内完成。

为满足这一要求，“佩刀”的工程师们已经设计出了可能是目前世界上最快的冷冻机。它由成千上万根镍合金管道组成。每根管子的直径仅一毫米，管道壁的厚度为27微米。这些微小的管子极大地增加了被泵进系统来吸收热量的冷却剂的表面面积。“佩刀”使用的冷却剂是冷却效果特别好的液氦。

被吸收的热量也没有被浪费掉。首先，因受热导致的氦膨胀被用来驱动一台燃油泵和一台压缩机。然后，剩余的热量在氦流过第二个管道堆的过程中被提取。这些管道堆被浸泡在流向燃气室的液氢燃料中。热量让液氢蒸发，为燃烧做好准备。

在约2.5万米的高空飞行时，大气太过稀薄而无法支持上述过程，发动机转为火箭模式。其头部停止吸入空气，而机上的一个储料箱开始向燃烧室直接注入液氧。这会让“云霄塔”的速度从5马赫增至25马赫，而后进入轨道，释放卫星，再滑翔返回地面。

不出所料，“佩刀”招致大量的质疑。但反应发动机公司埋头苦干，并在最近几年里的一系列测试中向人们展示，这种热转换系统能够奏效，是一套能够承受高温和压力的强大设备。欧洲航天局和美国空军研究实验室（Air Force Research Laboratory）对该项技术做出了有利的评估，帮助说服了欧盟批准英国政府发放6千万英镑的研发补助，该公司应该会在今年收到这笔款项。

在英国航太系统的援助下，反应发动机公司计划在2020年前开展全尺寸“佩刀”的地面测试，公司新任总经理马克·托马斯（Mark Thomas）表示

（托马斯在5月加入该公司，此前在罗尔斯-罗伊斯任职，负责一批新的喷气发动机项目）。在几度更名后，这架新型太空飞机正逐渐回归其本原。而由“佩刀”提供动力的设备还需要多久才能真正腾空而起，尚是未知数。不过，现年71岁的邦德希望自己仍有机会见证他亲手创造的成果一飞冲天。■

The oil market

Abnormally normal

For once, oil prices are responding to supply and demand, not OPEC

FROM John Rockefeller's Standard Oil in the late 1800s, through the Railroad Commission of Texas in 1930, to OPEC since 1960, institutions have long tried to control and stabilise the oil market for their own benefit. Only rarely, says Jason Bordoff, director of Columbia University's Centre on Global Energy Policy, has the oil market behaved like a normal market, more subject to the laws of supply and demand than to the whims of a cartel. Now is one of them.

Take supply. A year ago Saudi Arabia refused to allow OPEC to try to raise prices by pumping less crude, in the hope that a low price would drive competitors, especially America's shale-oil producers, out of business. Since then it has used its low cost of production to carve out a bigger slice of the pie. It has fought with Russia and fellow OPEC members to sell oil to China. Seth Kleinman of Citibank says that it has recently sought to displace Russian crude going into refineries in Sweden and Poland, and cut prices across Europe.

Producers with higher costs, including big listed oil firms and many rival national oil companies, have also behaved rationally, albeit reluctantly, cancelling at least $150 billion of investments this year, with more cuts to come next year. It takes time for this retrenchment to feed into lower production, because oil projects have long lead times, and in the meantime, producers naturally seek to compensate for lower prices by pumping more from existing facilities. But eventually diminished investment will reduce output.

The geopolitical tensions that sometimes play havoc with the oil market are

relatively absent this year, in part because OPEC has more or less abandoned its quotas. That means disputes within the cartel that might once have led to the breaching of production caps, such as the proxy war in Yemen between Saudi Arabia and Iran, barely stir prices. Instead the factors that are setting traders' pulses racing make crude oil sound about as thrilling as iron ore: an oil-workers' strike in Brazil; cuts to Iraq's investment budget; a Saudi bond issue that may enable it to withstand lower prices for longer.

Demand is also making its mark. As might be expected, the falling oil price is boosting consumption to a degree. Since last year, according to the International Energy Agency (IEA), a Paris-based forecaster representing oil-consuming nations, drivers have been opting more often for "larger, more fuel-guzzling vehicles" such as SUVs, especially in America and China. Overall the IEA expects demand to grow by 1.9% this year, well above the average for the past decade, of 0.9%.

Yet the nuances are as interesting as the overall direction. The IEA says that even in the developing world, the amount of oil consumed per unit of economic output is declining. China's growth, in particular, is becoming less energy-intensive. Fuel-efficiency standards may not be tightly enforced but they nonetheless affect three-quarters of all vehicles sold worldwide. Industry analysts are beginning to invoke "peak demand", as opposed to "peak supply", as a factor that may determine the trajectory of prices in the long run.

In its annual "World Energy Outlook", released on November 10th, the IEA predicted that a relatively sluggish recovery in demand and decline in supply would yield a price of $80 a barrel in 2020. But it also aired an alternative scenario in which oil stays in a range of $50-60 a barrel until well into the 2020s. One of the main reasons it hedged its bets is American shale oil, which has not been responding as promptly to changes in the

price as analysts had assumed.

Even after oil prices fell last year, production continued to increase, a process that has only recently started to reverse (see chart). The IEA says this longer-than-expected adjustment was caused by a timelag of several months between drilling a well and fracking it (ie, pumping in water and sand to split the shale rock, allowing oil to seep out). Cost-cutting and hedging also enabled the industry to maintain margins even as prices fell.

One big question is how quickly frackers would ramp up production again if oil prices rise. The IEA is sceptical. It argues that banks may be reluctant to fund more of their wells; staff will take longer to mobilise after recent lay-offs; and other factors will make shale-oil production "stickier" than boosters assume. It believes that rapid depletion rates in shale-oil fields may raise costs faster than new technology can lower them, putting a cap on shale's long-term potential. That would be music to Saudi Arabia's ears. But the shale-men are a resourceful bunch, who understand markets at least as well as the Saudis. The battle is not yet won. ■

石油市场

反常的正常

头一次，石油价格对供需而非欧佩克作出反应

从19世纪末洛克菲勒的标准石油公司，到1930年的德克萨斯州铁路委员会，再到1960年以来的欧佩克，这些机构为了自身利益一直试图控制与稳定石油市场。哥伦比亚大学全球能源政策中心（Centre on Global Energy Policy）主任杰森·波道夫（Jason Bordoff）说，只在很少情况下，石油市场曾表现得像个正常的市场那样，更多地服从供求规律，而非某个卡特尔的突发奇想。现在就是这少有的情况之一。

以石油供应为例。一年前，沙特阿拉伯拒绝同意欧佩克试图通过减产原油提高油价的计划，因为它希望低油价能把竞争对手排挤出局，尤其是美国的页岩油生产商。自那时起，沙特就一直利用其低成本生产来占据更多的市场份额。它还和俄罗斯以及欧佩克的其他成员竞争，向中国出售石油。花旗银行的塞思•克兰曼（Seth Kleinman）说，沙特最近试图取代俄罗斯，向瑞典和波兰的炼油厂供应原油，并在整个欧洲降低油价。

成本较高的生产商，包括大型上市石油公司和许多相互竞争的国家石油公司，也已理性行事，尽管并非情愿，但它们今年至少取消了1500亿美元的投资，明年的削减将会更多。由于石油项目的建设周期长，这种开支紧缩要转化为产量下降尚需时日，同时，生产商自然会设法用现有设施开采更多石油来弥补较低的油价带来的损失。但是最终，削减投资将会减少产量。

过去不时扰乱石油市场的地缘政治紧张局势，今年相对较少，部分原因是欧佩克已经或多或少地放弃了配额制。这意味着曾经可能导致突破生产上限的欧佩克内部争端，如沙特与伊朗在也门的代理人战争，如今几乎不会引起价格波动。相反，那些让交易员心跳加速的因素让原油听起来像铁矿石那样激动人心：巴西的一次石油工人罢工、伊拉克削减投资预算，以及沙特的一次债券发行可能让该国能够更长久地承受较低的油价。

需求也表现不俗。正如所预料的，油价下跌在一定程度上推动了消费。总部位于巴黎的国际能源署（IEA）是一个代表石油消费国的预测机构，根据其数据，去年以来，驾车者更多地选择SUV等“更大、更耗油的汽车”，尤其在美国和中国。总体而言，IEA预计今年的需求将增长1.9%，远高于过去十年0.9%的平均值。

然而，其中的细微差别与整体方向一样有趣。IEA表示，即使在发展中国家，每单位经济产出的石油消耗量也在下降，尤其是中国正在改变其能源密集型增长的方式。燃油效率标准可能不会被严格执行，但仍然影响着全世界售出汽车的四分之三。行业分析师开始引用“峰值需求”而非“峰值供应”作为可能决定长期价格走势的一个因素。

在11月10日IEA发表的年度《世界能源展望》（World Energy Outlook）中，该机构预测，由于相对缓慢的需求复苏以及供应下跌，2020年油价将回升至每桶80美元。但它也设想了另一种可能发生的情况，即直到20年代末，油价会保持在每桶50美元到60美元的区间内。它两面下注的一个主要原因是，美国的页岩油没有像分析师认为的那样，迅速地对油价变化做出反应。

即使在去年油价下跌后，美国页岩油产量仍继续上升，这个过程直到最近才开始逆转（见图表）。IEA表示，调整比预期要长，原因是从钻井到水力压裂处理（即：注入水和砂来压裂页岩，使油渗出）之间有几个月的间隔。成本削减和对冲使页岩油行业即使在油价下跌时也能保持盈利。

一个重要问题在于，如果油价上涨，页岩油开采商再度增产的速度能有多快。IEA对此表示怀疑。它认为，银行可能不愿意为油井提供更多融资；在最近的裁员之后，也将需要更长的时间来重新招募员工；以及其他因素也将使页岩油生产比支持者认为的更有“粘性”。IEA认为，页岩油田枯竭速度快，由此导致的成本提升可能快于新技术带来的成本降低，因而限制了页岩油的长期潜力。这对沙特而言可谓福音。但是，页岩油开采商们足智多谋，他们对市场的了解至少跟沙特人一样好。这场战斗目前仍未分出胜负。■

Free exchange

A serviceable deal

TPP is intended to spark a boom in trade in services, but it will be decades in the making

IT DID not take long for America's presidential candidates, busy though they must be, to digest the 6,000 pages of the agreement creating the "Trans-Pacific Partnership" (TPP). America and 11 other countries of the Pacific Rim struck the trade deal in early October, but the full text was not released until November 5th. Within days Bernie Sanders, a Democrat, had rendered judgment: "It's even worse than I thought." Donald Trump, a Republican, labelled it "insanity".

Even people of a less protectionist bent are unimpressed, complaining that TPP's short-term benefits will be indetectably modest. One estimate suggests that in its first ten years it will cause its members' exports of goods and services to rise by just $308 billion in total. In 2003-13 global trade in goods and services grew by more than $1 trillion a year on average. A ten-year horizon misses the point, however. TPP's real promise lies in the liberalisation of trade in services. Just as it took decades for supply-chain integration to flower into the rapid goods-trade growth of the 1990s and 2000s, the pay-off from TPP, and deals like it, is further off.

TPP cuts tariffs for some important industries, such as cars and agriculture, but its main concern is to eliminate non-tariff barriers, such as onerous customs procedures, buy-domestic rules for government agencies and regulatory barriers to trade in services. Indeed, Hillary Clinton, another Democratic presidential candidate, who was for TPP before she was against it, once said it set "the gold standard" in this respect.

Not all services can be traded: outside of border-straddling cities, the

international trade in manicures, say, is limited. Yet parts of other service industries, including finance, telecommunications, education and health care, are increasingly tradable thanks to advances in information technology. Such services account for an enormous share of GDP and employment in most rich countries, but only a tiny sliver of trade. Liberalisation could open them up to global competition. Hospitals in America, for instance, could outsource patient monitoring to nurses in Malaysia, diagnostics to technicians in India, and consultations to doctors in Canada, to the benefit of all four countries.

Fulfilling that hope will be hard. Trade typically grows in step with GDP. It grew rapidly in the decades after the second world war, for example, largely because the world's big economies were expanding so fast. So TPP's benefits may be held in check in the short-run by weak demand around the rich world.

But instigating a trade boom takes time as well as a propitious environment. Beginning in the 1980s trade began behaving strangely, growing twice as fast as GDP. This burst originated in a revolution in supply chains that had been decades in the making. For most of industrial history, countries traded raw materials or finished goods, with the process of turning the one into the other located entirely within a single country, and often within a single factory. From the 1980s, however, a large and rapidly growing share of trade consisted of "intermediate goods". Rather than produce a computer from scratch in one country, for example, a tech firm would source components from several different countries, bring them together in yet another country for assembly, and then ship the completed good to consumers around the world. As a result, rising GDP led to even greater jumps in trade.

The great supply-chain revolution was slow in coming, however. Tariff rates fell precipitously from the 1940s to the 1980s, by which time the

duties imposed on most goods traded between rich economies had fallen to negligible levels. The shift to container shipping, which made transit by sea much faster and more reliable, was largely over by the early 1980s. From 1950 to 1985 the cost of a long-distance phone call dropped dramatically. Yet it was not until the 1990s that the supply-chain boom really got going, abetted in part by China's economic opening.

About half of the current slowdown in trade growth represents the exhaustion of this process. At the turn of the century, for instance, imported parts accounted for nearly 55% of goods exported by China. By 2012, that share had fallen to 35%. Some large economies, like America and China, are keeping more of their supply chains for themselves. As China's rich coastal cities have progressed from the assembly of electronics to the development of more sophisticated components and designs, assembly work has often moved to poorer inland cities rather than to China's poorer neighbours. Hence the importance of services.

Long-haul service

There are lessons here for those awaiting a service-trade boom. TPP in its present form is just one element of several which must fall into place. Barriers to trading services remain prohibitively high, equivalent to an average tariff of 15-17% in Canada, Australia and Japan and 44% in Mexico, according to the Peterson Institute for International Economics, a think-tank. Provisions within the TPP deal to work toward mutual recognition of some professional certifications still need to be seen through. Adding China, which is currently excluded, would greatly help. So would completion of the Trans-Atlantic Trade and Investment Partnership, a mooted trade pact between America and Europe which is also preoccupied with services, and a multilateral Trade In Services Agreement being negotiated at the World Trade Organisation.

Technological change is also needed. Cross-border internet traffic grew

18-fold between 2005 and 2012, according to the McKinsey Global Institute, an arm of the consulting firm. Further advances—to enable even better digital translation, for example—would help overcome the cultural and personal barriers to trade in services. One day service industries may be as efficient and as globally integrated as manufacturing is today. TPP is a step toward that ideal, but just one of many that are needed. ■

自由交流

致力于服务的协议

TPP旨在激发服务贸易的繁荣，但需要数十年的酝酿

尽管一定很忙，但美国总统候选人们没用多少时间就消化了缔造“跨太平洋伙伴关系”（TPP）的6000页协定。10月初美国和环太平洋地区的其他11国达成了贸易协议，但直到11月5日才公布全文。几天后，民主党人伯尼·桑德斯（Bernie Sanders）已有评判：“比我预想的还要糟。”共和党人唐纳德·特朗普（Donald Trump）则直斥其“荒唐”。

即便是保护主义倾向不那么强烈的人也对它不以为然，抱怨TPP的短期效益会小到难以察觉。其中一项预测显示，这一协议最初十年带来的成员国商品与服务出口增长总额将只有3080亿美元。而2003年至2013年全球商品与服务的贸易增长平均一年就超过了一万亿美元。不过，只展望十年忽略了重点。TPP的真正前景在于服务贸易的自由化。正如供应链集成经历了数十年才带来了20世纪90年代和21世纪头十年商品贸易的迅速增长，TPP及类似协定的回报还远未到来。

TPP削减了一些重要行业的关税，如汽车和农业，但它主要关注的是消除非关税壁垒，如繁琐的通关程序、政府机构购买国货的规定以及服务贸易的监管壁垒。实际上，民主党另一位总统候选人希拉里在反对TPP之前曾对其支持有加，她曾称TPP设定了这方面的“黄金标准”。

并非所有服务都可以交易，例如，除了跨境城市，美甲的国际贸易就很有限。但是由于信息技术的进步，其他服务行业，包括金融、电信、教育和医疗，越来越可交易。这类服务在大部分富裕国家占GDP和就业的比重巨大，但只占贸易的极小部分。自由化将开放这些行业，引入全球竞争。例如，美国的医院可以将病患监护外包给马来西亚的护士，将诊断外包给印度的技术人员，将会诊外包给加拿大的医生，从而造福四个国家。

实现这一希望非常困难。贸易增长通常与GDP同步。例如，二战后几十年

里贸易迅速增长，主要得益于世界大型经济体发展迅猛。所以短期内TPP的效益可能受到富裕世界需求疲软的抑制。

但是推动一次贸易腾飞需要有利的环境，也需要时间。自上世纪80年代起，贸易发展开始异常繁荣，增长速度达到GDP的两倍。这场爆发源于此前孕育了几十年的供应链革命。在工业史的大部分时间里，国家之间交易原材料或成品，从原材料制成成品的过程完全在一个国家内进行，很多情况下在一家工厂内完成。然而从80年代开始，“中间产品”构成了贸易中相当大且迅速增长的一部分。比如，不同于以往生产一台电脑从头到尾都在某一个国家完成，现在一家科技公司会从不同国家采购部件，然后将部件汇集到另外一个国家进行组装，其后再将成品运往世界各地的消费者手中。结果就是，不断增长的 GDP带来了更大的贸易腾飞。

然而，供应链大革命的来临是个缓慢的过程。从上世纪40年代到80年代，关税急剧下降，同时对发达国家之间大多数商品贸易征收的税收下降到几乎可忽略不计的水平。使用集装箱运输令海运更快也更可靠，而这一变革在80年代早期基本结束。从1950年到1985年，长途电话的费用已大幅下降。但是直到90年代，供应链的繁荣才真正开始起步，中国的改革开放部分推动了这一进程。

目前贸易增长放缓约有一半是因为这一进程走到了终点。比如，在本世纪初，近55%的中国出口产品由进口的零部件组装而成。2012年，这一比例下降到35%。一些大的经济体，如美国和中国，将供应链更多留在了国内。随着中国富裕的沿海城市从组装电子产品进化到研发更为精细复杂的部件和设计，组装工作更多地转移到了贫困的中国内陆城市，而不是更为贫困的邻国。这样一来，服务业的重要性不言自明。

长距离服务

不过，那些期待服务业贸易一飞冲天的人，不要盲目乐观。TPP以其目前的形式来看，还只是诸多需要落实的元素之一。根据智库彼得森国际经济研究所的计算，服务业的贸易壁垒仍相当高，在加拿大、澳大利亚和日本相当于平均关税的15%到17%，在墨西哥相当于44%。TPP当中的一些条款

涉及逐步实现对某些职业资格的相互承认，这都还有待落实。将目前被排斥在外的中国纳入其中作用甚大。跨大西洋贸易与投资伙伴协定（TTIP）是美国和欧洲之间仍在讨论中的一个以服务业为重点的贸易协定，完成该协定以及正在WTO进行的多边服务贸易协定（TISA）谈判都会对TPP起到帮助作用。

科技革命也必不可少。咨询公司麦肯锡旗下的麦肯锡全球研究院（MGI）的数据表明，从2005年到2012年跨境网络流量增长了18倍。更进一步的发展——比如能拥有更好的数字翻译——将有助于跨越服务贸易中的文化和个人壁垒。也许有朝一日，服务业能像今天的制造业那样高效且全球一体化。TPP是向这个理想迈出的一步，但也只是所需的很多步之一而已。■

SoftBank

Here comes the Son

Masayoshi Son has always bounced back from setbacks, but his latest big moves are raising eyebrows

IT WAS a vintage performance from Masayoshi Son, the 58-year-old founder and chief executive of SoftBank, a Japanese telecoms and technology firm. He was speaking to members of SoftBank Academia, an in-house executive school set up five years ago with the chief purpose of finding his successor. On October 22nd Mr Son riffed at length on how the world will change in the era of the Singularity, when artificial intelligence will exceed the human kind—by around 2055, he reckons.

Mr Son described how SoftBank will reinvent itself well before then from an old-line, pre-Singularity Japanese telecoms company into SoftBank 2.0, a superior, global and web-enabled being with a lifespan of 300 years or more. His mind-blowing predictions include one that robots will let their owners lead lives of unparalleled luxury, as masters with slaves did in ancient Rome. (Indeed, SoftBank is about to launch "Pepper", a popular robot capable of expressing emotions, in America.)

Science fiction or reality? Despite his relatively low profile outside Asia, it is unwise to ignore Mr Son. He spotted the potential of Alibaba, a Chinese e-commerce giant, early. He has pulled off the largest foreign takeover by a Japanese firm yet seen. Even his aborted projects have grandeur: last year SoftBank talked about buying DreamWorks, a big Hollywood studio, and in 2013 it tried to buy Universal Music, the world's largest record company.

Mr Son also matters to the wider future of corporate Japan. As part of a sweeping plan to revive a stagnant economy, Japan's prime minister, Shinzo Abe, is trying to prod Japanese firms to take more risk, to spend

their hoards of cash and to venture overseas. This is precisely what SoftBank is doing under Mr Son's leadership.

He takes chances, and gears up SoftBank's balance-sheet: with a ratio of net debt to operating earnings of around 3.5 times, it is one of Japan's most heavily indebted firms, and is highly leveraged by global standards. It has become slightly less outlandish of late to be a business leader in the mould of Mr Son. But Japanese managers will seize on a failure as a sign that conservatism is best. Much of corporate Japan would be gratified to see Mr Son stumble, not least because his Korean origins have long kept him outside clubby business circles. His perceived success or failure will surely help to determine whether Mr Abe achieves his goals.

So far, SoftBank's 34-year lifespan has had three distinct phases. First it was a small Japanese packaged-software distributor in the early 1980s. Then it grew as an internet conglomerate with hundreds of stakes in web firms, including Yahoo, becoming the American firm's biggest shareholder. The dotcom crash of 2000 wiped out much of the value accumulated, but that same year Mr Son happened to invest $20m in a then-fledgling Alibaba. In 2014 Alibaba's initial public offering valued SoftBank's stake at more than $50 billion.

SoftBank's third incarnation was as a mobile-telecoms operator, starting with its purchase in 2006 of the ailing Japanese operations of Vodafone, of Britain. Many observers thought the debt Mr Son took on to buy it would spell his demise, but he built what is now called SoftBank Mobile into Japan's most profitable telecoms firm.

Similar naysaying accompanied his takeover in 2013 of Sprint Nextel, a struggling American operator, for $22 billion—the biggest foreign acquisition by a Japanese firm to date. So far there has been scant sign of a turnaround. Mr Son's plan was to merge the firm with T-Mobile US, but

America's telecoms regulator reportedly refused even to consider the deal. Quarterly figures on November 3rd showed Sprint continuing to lose money, as it slashed prices to stop subscribers quitting.

That setback has not deterred Mr Son from his world-altering ambitions. To help fulfil them, he has brought into SoftBank Nikesh Arora, Google's former chief business officer. In May he effectively named Mr Arora as his successor and gave him the title of president. In Japan the median level of pay for bosses of big firms is around $1m, so Mr Arora's pay for his first six months' work, of nearly $140m, made headlines. According to an adviser to some of SoftBank's investors, they were taken aback to see Mr Arora paid a sum equivalent to around a third of the total dividends SoftBank paid for the entire financial year.

Mr Son has argued that the profits booked from Mr Arora's investments since he joined have already more than made up for his compensation. In August Mr Arora returned the favour by pledging, as a measure of his commitment to Mr Son, to buy ¥60 billion ($483m) of shares in SoftBank.

As for Academia, Mr Son bluntly informed its members at its October gathering that it had failed to find a suitable successor, going on to explain how he had met, and selected, Mr Arora. In turn Mr Arora recalled how Mr Son drove 65 miles (105km) one night to have dinner with him in California. Analysts who cover SoftBank joke that Mr Son talks about his new hire rather like a new girlfriend.

Mr Son's whims are not a surprise in Japan, where the corporate world has grown accustomed to his ways. He has long been known as a maverick, the only Japanese business leader to invite comparisons with Bill Gates of Microsoft or the late Steve Jobs of Apple. Yet the bets on Sprint and, now, on Mr Arora are as sizeable and risky as any he has made. That worries investors, who tend not to be keen on a 300-year business plan that means

expensive investments in the short term, but whose returns may not come in their lifetimes. They are also said to be concerned about the sums Mr Arora will be paid in the future.

As a result, SoftBank's shares trade at a hefty discount to book value. According to Atul Goyal of Jefferies, an investment bank, given SoftBank's stake in Alibaba, which is worth more than ¥6 trillion, and its investments in Yahoo Japan, Sprint and other firms, the current market capitalisation of SoftBank, at ¥8.2 trillion, implies that its entire, profitable Japanese telecoms business is worth nothing.

Mr Goyal sees good reasons for investors to keep the faith with Mr Son. "It is difficult to find anywhere else a combination of Son's record as an entrepreneur, a turnaround operator and an investor—investing in the internet, where even Warren Buffett fears to tread—and with his track record of success," he says. Mr Son is said to be so frustrated at how far investors have marked down the shares that at one point this year he reportedly contemplated a management buyout—characteristically, it would have been one of the largest such deals in history.

A world-wide web of happiness

It is clear that of all the business roles Mr Son has played, he most relishes investing in web businesses, preferably those that promise to add to the sum of human happiness while delivering Alibaba-sized returns. SoftBank plans to invest around $3 billion a year for several years, analysts reckon, chiefly in Asian e-commerce. Now, though, SoftBank is no longer investing in entrepreneurs running businesses from their living rooms, as Jack Ma was when Mr Son first invested in Alibaba. It must compete with a host of Silicon Valley venture capitalists each time it invests.

That is partly why Mr Son needs Mr Arora and his prodigious social network. In June this year the pair invested $1 billion in Coupang, South

Korea's wannabe Amazon, in return for a fifth of the company. Coupang, which has yet to make a profit, became the best-financed startup in the world after Uber and Flipkart, an Indian e-commerce firm. Yet South Korea's online-retail market would have to grow by well over a third before SoftBank makes much of a return on its investment.

Other big bets have been on e-commerce in India and Indonesia. Without Mr Arora, Mr Son has said, he would not have been able to take as big a stake in Snapdeal, another Indian e-commerce platform, which Mr Son has hailed as the Alibaba of India. When he tried to follow up one investment with a second this summer, existing investors at first refused to be diluted. Mr Son would have given up until Mr Arora used his network to prevail.

Some venture capitalists snipe that for SoftBank, its big and growing position in Indian e-commerce may be inspired as much by Mr Arora's personal ties to the country as by the market's potential. Others reckon that as he contemplates his seventh decade, Mr Son is putting his desire to change the world ahead of moneymaking. "Each of these bets is a bet-the-farm kind of wager, and he is making lots of them," says a veteran venture capitalist in Tokyo.

The latest firms he has invested in face far more competition than did Alibaba, which was partially sheltered by the Chinese government from foreign competition. No such protection necessarily prevails elsewhere. (SoftBank declined our request to interview Mr Son or Mr Arora for this article.)

Another recent deal that raised eyebrows, even in Silicon Valley, where money is splashed around with abandon, came in the field of "fintech"—the application of digital technology to financial services. SoftBank has put almost $1 billion into SoFi, one of many online lenders striving to be "the Uber of banking". SoFi is at least profitable; yet the scale

of the funding caused surprise.

Making bets of such size and speed makes Mr Son quite unlike most Japanese bosses. Yet in one respect the firm may have followed a very Japanese tradition; overpaying for a foreign business after paying insufficient attention to the local climate in which it operates.

Sprint's woes began long ago, with its merger in 2005 with Nextel Communications, after which it backed WiMAX, a mobile-broadband technology that never caught on with customers. Since SoftBank bought its 80% stake in Sprint, the American firm's share price has fallen almost by half. A newly revitalised T-Mobile US overtook it this summer by number of customers, leaving it fourth out of the country's four main operators.

Mr Son seems to have underestimated the difficulty of pulling off a turnaround of Sprint in America's hyper-competitive telecoms market, dominated by two behemoths, Verizon and AT&T. It is certainly a far harder task than when SoftBank Mobile leapfrogged Japan's two sleepy market leaders, KDDI and Docomo. Much of Mr Son's success there came from exploiting the two incumbent firms' myopia on Apple's iPhone. One SoftBank-watcher recalls how their executives said the iPhone would never catch on in Japan because it had no hook on which young women could hang cutesy mascots. The iPhone quickly soared to dominance, and took SoftBank Mobile from a 19% share of the market in 2008 to 26% now. "Son was the only guy in Japan who could speak to Steve Jobs", says Jesper Koll, of WisdomTree, an asset-management firm, who has served on a board with Mr Son.

> *He's not in Kansas yet*

Sprint is a huge bet, even for a risk-taker like Mr Son; and if he cannot engineer a turnaround in an industry he knows so well, it will bode ill for his other investments. But he has yet to show that he has the energy to

oversee a revival of the sort he pulled off with Vodafone's Japanese offshoot.

Last year Mr Son appointed as Sprint's boss Marcelo Claure, a Bolivian-born entrepreneur and football-club owner who, thanks to Mr Son's investment in the mobile-handset distributor he founded, is said to be the richest Hispanic person living in America. Mr Claure has launched a price war and a big network-investment programme that are burning through the firm's funds. Sprint had $34 billion of debt at the end of fiscal year 2014, and in 2015-16 is expected to spend another $9 billion of its cash. Sprint's dire financial position may even prompt regulators to reconsider their bar on it merging with T-Mobile US. Even so, the path to recouping SoftBank's original investment looks arduous.

The only way that Sprint can recover is if Masayoshi Son is right on top of it, says a Japanese businessman with knowledge of the industry. Mr Son has spent weeks in late-night conference calls devising solutions for Sprint's network, but has also said that he is "a busy guy", questioning why he should put all his efforts into the American telecoms market when the situation "looks bad". In October, in an apparent attempt to convince investors of his determination to fix Sprint, Mr Son said he had bought a house near its headquarters in Kansas City. But there is no sign of him taking up full-time residence.

Mr Arora is among those at SoftBank who have questioned whether it would be better to sell Sprint, if a buyer could be found. How much influence on such issues he will have is hotly debated in Tokyo, as is the question of whether he will indeed succeed Mr Son. Some think Mr Son can, and perhaps will, drop him eventually if he disappoints. Others say that if he did so, he would never persuade any other tech luminary to take Mr Arora's place; and thus that their fortunes are now tied—they will rise, or sink, together.

Mr Son's initiative to bring in and anoint a successor while still in his prime is a sign of confidence, says one of his inner circle. It contrasts with many bosses in Japan who are unable to move on. Some years ago, Tadashi Yanai, the founder of Uniqlo, a fast-fashion giant, promised to retire in 2014 around the age of 65, then decided no one was good enough to take the job. It is conceivable that Mr Son may yet reach the same conclusion, given what an observer of the company describes as his habit of becoming intensely taken up with someone only to lose interest later on.

It will also be difficult for Mr Arora to navigate the internal politics at SoftBank, which remains Japanese in character, despite Mr Son's global outlook. It has been reported that the company was considering moving its investment arm to London, to cut the group's tax bill as well as helping to make it less Japanese. That this leaked out was widely seen as a sign of deep internal discontent at Mr Arora's influence.

Still, SoftBank's highly profitable position in Japanese telecoms, and the continuing strength of Alibaba in China, both offset the gloom from Sprint and provide the funds for Mr Son's foreign adventures. In the domestic market, SoftBank Mobile is expected to produce $3 billion-$4 billion of cash a year now that its investment in the network is largely complete. If the cash materialises—and SoftBank has suffered poor cashflow in the recent past—this will more than make up for the money it is spending elsewhere: in the year to June the group's free cash rose by a quarter, to the equivalent of $19 billion.

However, SoftBank's Japanese profits and those of its rivals have lately drawn unwelcome attention from the government. In September Mr Abe announced that he had instructed the telecoms minister to study how to achieve lower pricing. Monthly bills for smartphones in Tokyo are among the world's highest. Mr Abe will need to tread carefully, analysts reckon, for it would not take much to badly weaken Docomo, which makes much lower

profits than the other two firms. Yet Mr Abe's move has added to worries that growth for SoftBank at home is levelling off, with both numbers of new subscribers and revenues per customer now falling.

For the moment, though, Messrs Son and Arora seem able to funnel the riches earned from Japanese smartphone users to some of the world's most talked-about startups and their founders. "We stay young with that new blood and SoftBank will be the summation of those young, passionate entrepreneurs," enthused Mr Son last month. It is perhaps the best testament to him that his fan club in Academia shows no sign of attracting fewer recruits. To the young executives in Japan, his bold strategies make him a hero in a risk-averse corporate culture. Some of them doubtless reckon that, despite Mr Arora being the chosen one, they may yet be in with a chance of leading the company. ■

软银集团

后继有人？

孙正义总能谷底翻身，但他最近的大举动正引发争议

58岁的孙正义是日本电信科技公司软银集团的创始人及首席执行官。日前，他为集团内部的管理学院“软银学院”（SoftBank Academia）的成员做了一番精彩演讲。该学院主要为寻找其继任人而在五年前设立。10月22日，孙正义一再分析，在人工智能超越人类智能（他认为这将在2055年左右发生）的奇点时代，世界将如何变化。

孙正义为软银描画出一幅蓝图：它将在这一时代到来前很久就完成自我重塑，从一家“奇点前”的旧式日本电信公司发展为软银2.0——以网络为依托的卓越全球性企业，至少可再展宏图300年。其震撼人心的预言还包括，机器人将让主人过上无比奢华的生活，就像古罗马的奴隶主一般。（的确，软银即将在美国推出一款能表达情感的普及型机器人“辣椒”[Pepper]。）

这是科幻小说还是现实？尽管在亚洲以外的地区孙正义相对低调，但其影响力不容低估。他一早便发现了中国电子商务巨头阿里巴巴的潜力，也成功实现了日本企业历来最大宗的海外收购项目。即便其未果的计划也气魄不俗：去年，软银谈及收购好莱坞大型电影制作公司梦工厂（DreamWorks），而在2013年，公司曾试图收购全球最大的唱片公司环球音乐（Universal Music）。

孙正义对日本企业界更广大的未来而言也举足轻重。日本首相安倍晋三推出全面计划振兴陷入停滞的经济，其中大力鼓励日本企业承担更大的风险，把囤积的资金花出去，并投资海外。这恰恰是孙正义领导的软银正在做的事。

他敢于冒险，从软银的资产负债表也可见一斑：其净债务约为营运收入的3.5倍，是日本负债最高的公司之一，以全球标准来看也属于高杠杆经营的

企业。近来，像孙正义这样的商界领袖已经不像以前看来那般稀奇古怪了，但日本的管理人员还是会抓住一次失败的例子来证明保守主义才是上策。日本企业界的大部分人都巴望着孙正义失足出错，孙正义的韩裔背景令他一直无法融入日本商界的小圈子也是原因之一。他在人们眼中的成败必然会影响到安倍能否达到目标。

迄今，创立已34年的软银集团经历了三个不同阶段。上世纪80年代初，它还是日本一家套装软件的小型分销商。然后，它发展成为互联网企业集团，持有数百家网络公司的股份，包括雅虎，并成为这家美国公司的最大股东。2000年，互联网泡沫破灭，集团所积累的财富大部分蒸发殆尽，但正是在那一年，孙正义投资了两千万美元给当时刚起步的阿里巴巴。2014年，阿里巴巴上市，软银所持股份的市值超过500亿美元。

软银的第三重化身始于2006年收购英国电信公司沃达丰（Vodafone）经营艰难的日本业务，从此转身为移动电信运营商。当时许多观察者认为孙正义此次举债收购会导致惨败离场，而他却把这家如今名为软银移动（SoftBank Mobile）的公司打造成了日本最赚钱的电信公司。

类似的反对声也伴随着2013年的一次收购，当时孙正义斥资220亿美元接手陷入困境的美国电信运营商Sprint Nextel，是迄今日本公司最大规模的海外并购。目前为止，该公司的业绩仍未有好转的迹象。孙正义原本计划让该公司与T-mobile美国（ T-Mobile US）合并，但据媒体报道，美国的电信监管部门甚至拒绝考虑这一交易。11月3日公布的季度数据显示，在大幅降价以求挽留用户的举措下，Sprint仍在继续亏损。

这一挫败并未打消孙正义要改变世界的野心。为实现其目标，他已把谷歌的前首席商务官尼科什·阿罗拉（Nikesh Arora）请到软银。今年5月，他实际上已指定阿罗拉为继任人，给予其总裁头衔。在日本，大企业老板的薪酬中位数约为100万美元，而阿罗拉上任头半年便收到近1.4亿美元的薪酬，因而成为头条新闻。一位投资顾问称，眼看阿罗拉拿到的钱相当于软银全财年分红总额的约三分之一，软银的部分投资者深感震惊。

孙正义解释，阿罗拉加入后所做投资的账面利润已超过其所得报酬。今年8月，为回报孙正义的恩惠并表示忠心，阿罗拉承诺购入600亿日元（4.83亿美元）的软银股票。

至于软银学院，孙正义在10月的那次集会上先是直言不讳地告诉学员，没能在学院找到合适的继任人，并进而解释了自己如何遇到阿罗拉并最终选定他为接班人。而在另一边，阿罗拉则回忆起孙正义如何在某天晚上驱车65英里（105公里）在加州和他共进晚餐。关注软银集团的分析师开玩笑说，孙正义谈及这位新雇员时，好像在说自己的新女友。

在日本，企业界已逐渐习惯孙正义的作风，人们对其任性举动见怪不怪。一直以来他都以特立独行著称，是唯一能与微软的比尔·盖茨或苹果公司已故的史蒂夫·乔布斯相提并论的日本商界领袖。然而他押在Sprint及如今阿罗拉身上的赌注非常之大，也相当冒险，堪比其以往的任何“豪赌”。这令投资者感到担忧，他们对其300年的商业计划并不热衷，因为这意味着要在短期内做出昂贵投资，而在他们的有生之年未必能见到回报。另外，据称投资者也关注阿罗拉将来的薪酬多少。

结果是软银的股价较账面价值出现大幅折让。杰富瑞投资银行（Jefferies）的阿图尔·戈亚尔（Atul Goyal）表示，鉴于软银在阿里巴巴的股份价值超过六万亿日元，加上其对雅虎日本、Sprint及其他公司的投资，软银目前8.2万亿日元的市值意味着集团整个盈利的日本电信业务的价值被市场完全忽略。

戈亚尔认为投资者大有理由对孙正义保持信心。“很难再找到哪个人能像孙正义那样身兼企业家、翻盘能手及投资人（投资于连巴菲特也不敢涉足的互联网），还能有成功的过往业绩。”他说道。据称，眼见投资者大幅压低股价，孙正义感到受挫，今年一度考虑进行管理层收购——其典型的任性举动，如果真付诸实施，那会是史上最大型的此类交易之一。

> *幸福万维网*

显然，在涉足的所有商业领域中，孙正义最钟爱投资网络业务，特别是那

些既有望提高人类福祉又能带来“阿里巴巴级”回报的项目。分析师认为，未来几年，软银计划将持续每年投资约30亿美元，主要在亚洲电子商务领域。但现在，软银已不再投资那些在家中创业的企业家了——孙正义最初投资阿里巴巴时马云正是这样。如今，软银每次投资都必须与一群硅谷风投家一较高下。

这是孙正义需要阿罗拉及其广泛人脉的原因之一。今年6月，两人向致力成为韩国“亚马逊”的电商Coupang投资10亿美元，获得其五分之一的股权。至今尚未盈利的Coupang成为继优步和印度电商Flipkart之后获得融资最多的创业公司。然而，韩国的网上零售市场必须增长远超三分之一，软银的投资才有利可图。

软银的其他大赌注押在了印度和印尼的电子商务市场。孙正义说过，没有阿罗拉，他将无法获得他称之为印度阿里巴巴的另一个电商平台Snapdeal如此大的股份。今年夏天，他试图对该公司做第二轮投资，现有投资者最初不愿股份被摊薄而予以拒绝。若非阿罗拉运用人脉制胜，孙正义也许已经放弃。

一些风投家抨击说，软银之所以在印度电子商务市场的庞大份额有增无减，除了因为印度市场潜力巨大，同样可能是缘于阿罗拉在该国的人脉关系。其他人认为，孙正义正处于人生第七个十年的考虑中，相比赚钱，他更想要改变世界。“这些投资全是‘赌身家’式的赌博，而且他还在下很多这样的赌注。”东京一位资深风投家说道。

他新近投资的公司面临的竞争远大于当年的阿里巴巴，后者在一定程度上受到中国政府的保护，从而免于外国公司的竞争。但在别的地方不一定有这样的保护。（软银拒绝我们就本文采访孙正义或阿罗拉。）

软银最近另有一项交易甚至在挥金如土的硅谷也引发了争议。这一交易涉及“金融科技”领域——即把数字技术应用于金融服务。软银已向SoFi投资近10亿美元，SoFi是众多争当“银行业优步”的网络借贷平台之一。SoFi至少在盈利，但这一投资规模仍然令人惊讶。

孙正义以如此规模和速度押注投资，非常不同于大部分的日本老板。但在一个方面，软银可能遵循着非常日式的传统：先期对企业本地的经营气候了解不足，跨国并购时又花了大价钱。

Sprint在2005年和Nextel通信（Nextel Communications）合并后力推的移动宽带技术WiMAX一直没有流行起来，公司早已陷入困境。自软银购入Sprint 80%的股份以来，这家美国公司的股价至今已下跌近半。今年夏天，重振旗鼓的T-mobile美国在用户数量上赶超Sprint，致使后者在美国四大移动通信运营商中排名垫底。

孙正义似乎低估了Sprint要在美国竞争激烈的电信市场上翻盘的难度，公司面对的是Verizon和AT&T这两大霸主。这绝对比软银移动当初超越日本市场上两家昏昏欲睡的领军企业KDDI和Docomo要难得多。孙正义能成功在日本抢夺份额，主要源自这两家企业在iPhone上的短视。一位关注软银的分析师回想起这两家公司的高层当时判定iPhone在日本不会流行，原因是它没有地方让年轻女性挂可爱小挂件。然而iPhone迅速蹿红，占领市场，也令软银移动的市场份额从2008的19%上升至如今的26%。“孙正义是日本唯一能和乔布斯说得上话的人。”资产管理公司WisdomTree的杰斯珀·科尔（Jesper Koll）说道，他曾与孙正义共事于同一董事会。

不在其位

即便对敢于冒险的孙正义来说，投资Sprint也是一场豪赌；如果无法在自己如此熟悉的行业里扭转乾坤，那么他的其他投资前景也将凶多吉少。但他有没有精力像当年重振沃达丰日本业务那般部署又一次翻盘大计，还需拭目以待。

去年，孙正义任命出生于玻利维亚的企业家及足球俱乐部老板马塞洛·克劳雷（Marcelo Claure）为Sprint的总裁。孙正义曾投资克劳雷创立的手机分销公司，据称这已令其成为当今美国最富有的拉美裔人。克劳雷发起了价格战及大型网络投资项目，耗尽了公司资金。2014财政年度末，Sprint已负债340亿美元，而2015到2016年预计还要再花掉90亿美元现金。Sprint严峻的财政状况甚至会促使监管机构重新考虑他们对其与T-Mobile美国合

并的禁令。即便如此，软银要想收回初始投资也显得十分艰巨。

了解行业内情的一位日本商人说，只有孙正义亲自坐镇，Sprint才有机会翻盘。孙正义已经好几周参加深夜电话会议，为Sprint的网络制定解决方案。但他也说自己是个“大忙人”，自问既然情况“看来不妙”，为何还要把全副精力投入到美国的电信市场上。10月，孙正义说自己在Sprint总部所在的堪萨斯城附近买了一所房子，明显是为了说服投资者相信其重整Sprint的决心，但并无迹象显示他会长期在那里居住。

软银中有一些人认为能找到买家卖掉Sprint也许会更好，阿罗拉也这么想。在此类事情上他的影响力究竟有多大，这为东京业界所热议，同样受关注的另一问题是他是否真的能接替孙正义。有人认为如果他的表现不如人意，孙正义大可舍弃他，或许最终确会这样做。也有人说孙正义如果真这么做，他将无法再说服其他科技精英取代阿罗拉；所以两人的命运现在被绑在了一起——崛起或沉沦，共同进退。

接近孙正义的圈内人士表示，他在自己的鼎盛期就招入并确立继任人，这显示了自信。相比之下，日本许多老板都不愿退位。几年前，快时尚巨头优衣库的创始人柳井正承诺在2014年自己65岁时退休，后来又认定没人能接手他的工作。可以想象，孙正义最终也有可能得出同样的结论。一位跟踪软银的分析师说，孙正义惯于对某个人心醉神迷后又兴趣尽失。

尽管孙正义具备全球视野，但软银集团本质上仍是日式企业，其内部的政治角力也是阿罗拉难以招架的。据称，软银正考虑把其投资部门搬到伦敦，既为减低集团的税务支出，也为减弱自身的日本特色。这一消息的泄露被广泛视为公司内部对阿罗拉影响力深感不满的信号。

不过，软银在日本电信市场盈利丰厚，加上阿里巴巴在中国的持续强势，冲淡了Sprint的愁云惨雾，并为孙正义的海外扩张提供了资金。在日本市场，软银移动对网络的投资已大体完成，估计每年可产生30至40亿美元的现金。如果这些资金能兑现（这些年来，软银的现金流问题严重），将足够弥补集团在别处的支出。在截至6月的一年里，集团的自由现金流增长

了四分之一，达到190亿美元。

但最近，软银及其对手在日本的盈利被政府盯上了。9月，安倍宣布已责成邮政大臣研究如何降低通讯收费。东京是世界上智能手机通讯费最贵的地区之一。分析师认为，安倍需要小心处理这一问题，因为稍加改革便足以令利润远不及其他两家公司的Docomo被严重削弱。但安倍的举动已加重坊间忧虑，认为新用户数及每用户收入均在下降的软银在国内市场的增长已趋于平缓。

但在目前，孙正义和阿罗拉似乎能把在日本智能手机用户身上赚取的财富投资到世界最热门的一些创业公司及其创始人身上。“凭着这样的新鲜血液，我们永葆青春，软银将是激情洋溢的年轻企业家的集合。”上月，孙正义激昂抒怀道。他位于软银学院的粉丝俱乐部在吸引新人方面毫无衰弱迹象，也许就是最好的证明。在一种规避风险的企业文化中，孙正义的大胆战略使其成为日本年轻高管心中的英雄。他们当中有些人仍然确信，尽管现在被选中的是阿罗拉，自己或许仍有机会争夺软银的领导之位。■

Evolution

Greater than the sum of its parts

It is rare for a new animal species to emerge in front of scientists' eyes. But this seems to be happening in eastern North America

LIKE some people who might rather not admit it, wolves faced with a scarcity of potential sexual partners are not beneath lowering their standards. It was desperation of this sort, biologists reckon, that led dwindling wolf populations in southern Ontario to begin, a century or two ago, breeding widely with dogs and coyotes. The clearance of forests for farming, together with the deliberate persecution which wolves often suffer at the hand of man, had made life tough for the species. That same forest clearance, though, both permitted coyotes to spread from their prairie homeland into areas hitherto exclusively lupine, and brought the dogs that accompanied the farmers into the mix.

Interbreeding between animal species usually leads to offspring less vigorous than either parent—if they survive at all. But the combination of wolf, coyote and dog DNA that resulted from this reproductive necessity generated an exception. The consequence has been booming numbers of an extraordinarily fit new animal (see picture above) spreading through the eastern part of North America. Some call this creature the eastern coyote. Others, though, have dubbed it the "coywolf". Whatever name it goes by, Roland Kays of North Carolina State University, in Raleigh, reckons it now numbers in the millions.

The mixing of genes that has created the coywolf has been more rapid, pervasive and transformational than many once thought. Javier Monzón, who worked until recently at Stony Brook University in New York state (he is now at Pepperdine University, in California) studied the genetic make-up of 437 of the animals, in ten north-eastern states plus Ontario. He worked

out that, though coyote DNA dominates, a tenth of the average coywolf's genetic material is dog and a quarter is wolf.

The DNA from both wolves and dogs (the latter mostly large breeds, like Doberman Pinschers and German Shepherds), brings big advantages, says Dr Kays. At 25kg or more, many coywolves have twice the heft of purebred coyotes. With larger jaws, more muscle and faster legs, individual coywolves can take down small deer. A pack of them can even kill a moose.

Coyotes dislike hunting in forests. Wolves prefer it. Interbreeding has produced an animal skilled at catching prey in both open terrain and densely wooded areas, says Dr Kays. And even their cries blend those of their ancestors. The first part of a howl resembles a wolf's (with a deep pitch), but this then turns into a higher-pitched, coyote-like yipping.

The animal's range has encompassed America's entire north-east, urban areas included, for at least a decade, and is continuing to expand in the south-east following coywolves' arrival there half a century ago. This is astonishing. Purebred coyotes never managed to establish themselves east of the prairies. Wolves were killed off in eastern forests long ago. But by combining their DNA, the two have given rise to an animal that is able to spread into a vast and otherwise uninhabitable territory. Indeed, coywolves are now living even in large cities, like Boston, Washington and New York. According to Chris Nagy of the Gotham Coyote Project, which studies them in New York, the Big Apple already has about 20, and numbers are rising.

Even wilier

Some speculate that this adaptability to city life is because coywolves' dog DNA has made them more tolerant of people and noise, perhaps counteracting the genetic material from wolves—an animal that dislikes humans. And interbreeding may have helped coywolves urbanise in another way, too, by broadening the animals' diet. Having versatile tastes is

handy for city living. Coywolves eat pumpkins, watermelons and other garden produce, as well as discarded food. They also eat rodents and other smallish mammals. Many lawns and parks are kept clear of thick underbrush, so catching squirrels and pets is easy. Cats are typically eaten skull and all, with clues left only in the droppings.

Thanks to this bounty, an urban coywolf need occupy only half the territory it would require in the countryside. And getting into town is easy. Railways provide corridors that make the trip simple for animals as well as people.

Surviving once there, though, requires a low profile. As well as having small territories, coywolves have adjusted to city life by becoming nocturnal. They have also learned the Highway Code, looking both ways before they cross a road. Dr Kays marvels at this "amazing contemporary evolution story that's happening right underneath our nose".

Whether the coywolf actually has evolved into a distinct species is debated. Jonathan Way, who works in Massachusetts for the National Park Service, claims in a forthcoming paper that it has. He thinks its morphological and genetic divergence from its ancestors is sufficient to qualify. But many disagree. One common definition of a species is a population that will not interbreed with outsiders. Since coywolves continue to mate with dogs and wolves, the argument goes, they are therefore not a species. But, given the way coywolves came into existence, that definition would mean wolves and coyotes should not be considered different species either—and that does not even begin to address whether domestic dogs are a species, or just an aberrant form of wolf.

In reality, "species" is a concept invented by human beings. And, as this argument shows, that concept is not clear-cut. What the example of the coywolf does demonstrate, though, is that evolution is not the simple process of one species branching into many that the textbooks might have

you believe. Indeed, recent genetic research has discovered that even *Homo sapiens* is partly a product of hybridisation. Modern Europeans carry Neanderthal genes, and modern East Asians the genes of a newly recognised type of early man called the Denisovans. Exactly how this happened is unclear. But maybe, as with the wolves of southern Ontario, it was the only way that some of the early settlers of those areas could get a date. ■

进化

一加一大于二

一个新的动物物种在科学家眼皮底下诞生的情况很罕见，但这似乎正在北美东部发生

同一些人一样（虽然他们可能不太愿意承认），狼在面对潜在交配对象稀缺时也会降低标准。生物学家认为，正是这种绝望导致加拿大安大略省南部数量缩减的狼群在一两个世纪前开始和狗及郊狼广泛交配。伐林辟田加之人类经常故意杀戮狼群，令狼难以生存。但砍伐森林也使得郊狼开始从它们的草原故乡扩散到此前一直由狼独占的地带，并把陪伴农夫的狗也带进了这场杂交中。

不同动物物种杂交产下的后代即使能存活下来，通常也不及其父母强壮。但狼、郊狼和狗出于繁衍后代的需求结合其DNA却制造出了例外。一种非常强健的新动物（见图）大量繁殖，在北美东部地区广泛扩散。一些人称这种动物为东部郊狼，另一些人给它取了“狗狼”（coywolf，译注：郊狼和狼的名字组合）的名字。不论沿用哪种称法，位于罗利的北卡罗莱纳州立大学的罗兰·凯斯（Roland Kays）估计它如今的数量以百万计。

创造出狗狼的这种基因混合要比很多人曾以为的更快、更普遍也更具改造性。此前在纽约州石溪大学工作的哈维尔·蒙松（Javier Monzón，目前在加州的佩珀代因大学任职）研究了美国东北部十个州及安大略省的437条狗狼的基因构成。他发现，虽然郊狼的DNA占据主导，一般狗狼十分之一的遗传物质是狗，四分之一是狼。

凯斯博士说，同时从狼和狗获取DNA造就了很大的优势（这里的狗主要是杜宾和德国牧羊犬这类大品种）。许多狗狼体重在25公斤左右甚至更重，是纯种郊狼的两倍。它们的颌骨更大，有更多肌肉，腿的跑动速度更快。一头狗狼能拿下一头小鹿，一群狗狼甚至能够杀死一头麋鹿。

凯斯说，郊狼不爱在森林里捕食，而狼喜欢。杂交产生的动物在开阔的地形和林木繁茂的地区都擅长捕食。甚至其叫喊声都混合了祖先的不同特

点。狗狼嚎叫时，一开始的声音和狼相似（很低），但之后转为郊狼那样的高音吠叫。

这种动物扩散至覆盖包括城市在内的整个美国东北部地区，至少已有十年。此外，它们于半个世纪前就抵达了美国东南部地区，现在还在继续扩散。这令人吃惊。纯种郊狼从没能在北美大草原以东的地区定居下来。东部森林里的狼在很久以前就被杀光了。但通过把它们的DNA结合而诞生的这种动物却能扩散到一个广阔且原本不宜居住的地区。实际上，狗狼现在甚至还在波士顿、华盛顿和纽约这些大城市生活。研究纽约狗狼的高谭郊狼项目的克里斯·纳吉（Chris Nagy）说，纽约市已有约20头狗狼，且数字还在上升。

> *更加狡黠*

一些人猜测，狗狼之所以能适应城市环境，是因为它带有狗的DNA，让它更能容忍人和噪音，这可能对抗了来自狼的遗传物质——狼不喜欢人类。而杂交可能也从另一个方面帮助狗狼变得更都市化：扩展其食物范围。城市环境给多样化的口味带来便利。狗狼吃南瓜、西瓜和其他菜园里栽种的蔬果，也吃垃圾桶里的食物。它们还吃鼠类和其他小型哺乳动物。许多草坪和公园不种茂密的灌木丛，因此捕食松鼠和宠物很容易。猫通常被连皮带骨地全部吃掉，只在排泄物里留下线索。

由于这样的丰富性，都市里的狗狼所需的居住地只是乡间的一半。而进入城市也很容易。铁路开辟的通道让动物和人的旅程都变得容易。

而一旦抵达城市，要存活下来却需要保持低调。除占有较小的领地，狗狼转而更多在夜间活动，以适应城市生活。它们还学会了公路交通法规，知道在穿马路时左右都要看一看。凯斯惊叹于这种“就在我们眼皮底下发生的、不可思议的当代进化故事”。

狗狼是否真的进化成了一种不同的物种？对此尚无定论。美国国家公园管理局（National Park Service）马萨诸塞分部的乔纳森·韦（Jonathan Way）在一篇即将发表的论文中宣称，狗狼已经可算一种独有物种。他认

为，狗狼不同于其祖先的形态和遗传特征已经足以认定它为不同的物种。但许多人持有异议。一个物种的通常定义是它不会和外部物种杂交。而因为狗狼继续和狗及狼交配，它们因而不算一个物种。但是，想想狗狼的由来，这一定义意味着狼和郊狼也不该被视为不同的物种，它甚至都无法回答家犬是否算一个物种，或者只是狼的一个畸变体。

实际上，“物种”是人类发明的一个概念，而上述辩论显示这个概念并不清晰。但狗狼的例子确实显示出一点，即进化并非教科书让你相信的那样是一个物种分支进化出许多物种的简单过程。实际上，近来的遗传研究已经发现，甚至连智人也部分是杂交的结果。现代欧洲人带有尼安德特人的基因，而现代东亚人带有丹尼索瓦人（*Denisovans*）这一新发现的原始人的基因。这一切具体如何发生的尚不清楚。但可能就像安大略省南部的狼一样，这可能是那些地区部分早期居住者能找到约会对象的唯一途径。■

Behavioural economics

Learning from failure

What stops people from turning mistakes into success?

EMBRACING failure is a cliché of the business world. The *Harvard Business Review* devoted an entire issue to it in 2011. People should be open about their mistakes and tolerant of others'; this is the route to improvement, goes the thinking. But as Matthew Syed, a journalist at the *Times*, shows in a new book, "Black Box Thinking", in practice a "stigmatising attitude towards error" pervades everyday life. This has big implications.

Success brings its own rewards, but the world comes down hard on those who are deemed failures. The desire to avoid such opprobrium prompts people to cover up mistakes, argues Mr Syed. Doctors tell patients of "complications". Police fail to drop cases against people accused of committing a crime, even after clear evidence emerges of their innocence. Politicians plough on with policies even when it is obvious they are not working. All are psychological strategies to avoid admitting fault.

Fear of failure can have devastating consequences, as Mr Syed shows in a story about United Airlines. In 1978, as a plane approached its destination, the pilot worried that the landing gear had not come down. Desperate, he tried to establish what was wrong, becoming blinded to the plane's dwindling fuel reserves. Eventually the tank was empty and the plane crashed. The worry of making a mistake—subjecting the passengers to a bumpy landing—blinded him to bigger problems.

The story is a metaphor. Investors hold on to losing stocks longer than they should. Unable to face the shame of a bad return, they end up with a much bigger loss. Fred Goodwin of RBS, a bank, fretted about the colour of the carpets at head office while his firm collapsed under the weight of the

financial crisis. The medical profession is especially intolerant of mishaps, says Mr Syed. This means that mistakes are not scrutinised and people do not learn from them. Small wonder that blunders are pervasive. According to one study of acute care in hospitals, one in ten patients "is killed or injured as a consequence of medical error or institutional shortcomings".

What to do? One solution is making it easy for people to own up or speak up, as the airline industry has learned to do better than any other. Mr Syed's more novel suggestion, though, is the rigorous testing of business strategies. This forces people to make improvements. The gold standard is the "randomised control trial" (RCT), in which a treatment group is compared with a control group. Capital One, a credit-card company, has used RCTs obsessively—over the fonts it uses, for example, and the scripts at its call-centres—to assess which initiatives fail and which do not. James Dyson, a technology entrepreneur, and Google are other cheerleaders for this hyper-rational school of management.

This approach may also hold benefits for governments. David Halpern is the boss of the British government's Behavioural Insights Team (BIT), known as the "nudge unit", which uses RCTs to improve policy. His new book, "Inside the Nudge Unit", offers an interesting, if familiar, discussion. Identifying points of failure and making small changes, he argues, reaps disproportionate gains. By including a message on a car-tax form appealing to people's sense of humanity, the BIT sharply boosted organ donations.

Much still needs to be done. Between 2010 and 2012 the BIT saved the British government only £300m ($457m), a negligible proportion of GDP. Few businesses incorporate RCTs as extensively as Capital One. Much more could be done. Hospitals could subject doctors to RCTs; identify the mistake-prone and then help them. Civil servants could randomly test the economic impact of policies, such as changes to income tax, before rolling them out. It sounds extreme, but confronting failure rationally would bring

huge rewards.

行为经济学

从失败中学习

是什么阻止了人们把错误变为成功？

“拥抱失败”在商界已属陈词滥调。《哈佛商业评论》2011年曾为此出版过一期专刊。人们应该坦承自己的错误，包容别人的过失。更进一步说，这是一条改进之途。但是，《泰晤士报》的记者马修·赛义德（Matthew Syed）在一本新书《黑箱思维》（Black Box Thinking）中表示，事实上“让犯错者蒙羞”在日常生活中无处不在，且影响巨大。

成功自有回报，但是这个世界对那些被看作失败者的人倍加苛责。赛义德说，为了免受这些责难，人们会掩盖过错。医生和病人谈论“并发症”。警察不愿为被控有罪的人撤诉，即使有清楚的证据证明他们的清白。政客会坚持执行政策，即使很明显这些政策已不奏效。所有这些都是为了避免承认错误的心理策略。

对失败的恐惧可能带来毁灭性的后果，赛义德以联合航空公司的故事说明了这一点。1978年，在一架飞机接近目的地时，飞行员担心起落架没有放下。他不顾一切地试图解决这一问题，却无视飞机的燃料储备不断减少。最终燃油耗尽，飞机坠毁。飞行员由于担心犯错——起落架出问题会让乘客经历一次颠簸的降落——而无视更严重的问题。

这个故事是一个隐喻。投资者持有亏损股票的时间过长。因为羞于面对糟糕的回报，他们最终承受了更大的损失。苏格兰皇家银行的弗雷德·古德温（Fred Goodwin）在公司受金融危机重压而破产之时，还在为总部地毯的颜色纠结不已。赛义德说，医疗界尤其不能容忍医疗事故，这使得错误不能被仔细剖析，而人们无法从中吸取教训，经常酿成大错也就不足为奇了。一项对医院急症护理的研究显示，有十分之一的病人由于“医疗过失或制度性缺陷而丧命或受伤”。

能做什么？一个解决办法是让人们能轻松地坦承错误或者说出问题，在这

一点上航空业已经比其他任何行业都做得更好。然而，赛义德有一个更新颖的建议，就是对经营策略做更严格的检视。这迫使人们不断改进。一条黄金标准是“随机对照试验”（RCT），即把试验组和对照组做对比。信用卡公司第一资本（Capital One）着迷于使用RCT评判各种措施的成败，从所用的字体到呼叫中心的对话模版。科技创业者詹姆斯·戴森（James Dyson）和谷歌也是这一超理性管理派别的鼓吹者。

这一方法可能对政府也有所裨益。大卫·哈尔彭（David Halpern）是英国政府行为洞察小组（Behavioural Insights Team，简称BIT）的负责人，这个被称为“推进小组”（Nudge Unit）的团队使用RCT来改进政府政策。他的新书《走进推进小组》（Inside the Nudge Unit）提出了虽可能常见但有趣的讨论。哈尔彭认为，识别出不奏效之处并做出细微改动会收获很大的益处。通过在车船税申报表上添加一句话来唤起人文关怀，BIT极大地推动了器官捐赠。

需要做的还有许多。2010年到2012年间，BIT仅仅为英国政府节省了3亿英镑（4.57亿美元），相比英国GDP微不足道。少有企业像第一资本那样广泛使用RCT。可以做的也还有很多。医院可以对医生使用RCT，发现易犯错误的医生，然后帮助他们。政府官员可以在政策实施前随机测试其对经济的影响，比如对所得税的调整。这听起来极端，但理性面对失败将会带来巨大回报。■

Free exchange

Keeping up with the Karumes

A new study shows that money can buy you happiness—but only fleetingly, at others' expense

"WHEN you open the window, both fresh air and flies come in," said Deng Xiaoping, describing the good and bad consequences of the opening of China's economy. Most people see economic growth and rising incomes as desirable, but they have their disadvantages. Families break apart, as young people move to the cities. Jobs become more insecure if the labour market is liberalised. Rising inequality may upset even those who are becoming richer. Small wonder, perhaps, that the satisfaction ordinary Chinese expressed with their lot fell at the start of the economic boom sparked by Deng's reforms, before rising again as growth accelerated. So, at any rate, concluded a study* published in 2012 by Richard Easterlin of the University of Southern California and colleagues.

Mr Easterlin is best known for a hotly contested paper published in 1974, which argued that rising incomes do not make people happier. Ever since, in spite of the obvious benefits, economists have debated whether getting richer is all it's cracked up to be. The most comprehensive study, published in 2012, looked at a range of countries over time, and concluded that there is a positive relationship between income growth and satisfaction.

That study did not make clear, however, whether money leads to happiness or happiness to money. Andrew Oswald, Eugenio Proto and Daniel Sgroi of the University of Warwick have posited that happiness comes first. Depressed workers are less productive, after all, and so earn less. In addition, high incomes and happiness may have a common cause. Those with a big network of friends are both more satisfied in life and better at finding well-paid jobs.

One way to answer questions about causality is to look at evidence from randomised trials. Lotteries randomly allocate extra wealth, and so could serve as a focus of study, but in most countries only a small proportion of people buy tickets. The behaviour of those having a flutter may not be typical of people in general, skewing the results. The solution would be for economists to run their own experiments, doling out big jackpots at random among the population. In rich countries it is too expensive to mimic a lottery. But in poorer places some charities already do.

The Busara Centre for Behavioural Economics in Nairobi, Kenya, runs experiments with participants from slums and rural areas. Its researchers looked at the results of a lottery-like scheme in rural Kenya, in which a random sample of 503 households spread over 120 villages was chosen to receive cash transfers of up to $1,525. The average transfer, $357, was almost enough to double the wealth of a typical villager. The researchers measured the well-being of villagers before and after the transfer, using a range of different methods: questionnaires about people's life satisfaction, screening for clinical depression and saliva tests for cortisol, a hormone associated with stress.

Since not all the villagers received a transfer, the experiment sheds no light on what would happen if everyone's wealth increased equally. But the study does mimic the distributional results of economic growth, which tends to allot gains unevenly. As expected, those who received transfers reported greater satisfaction with their lot after the money arrived. Cortisol levels and the incidence of depression fell too.

However, the satisfaction of those who did not receive anything fell sharply as their neighbours' fortunes improved. The decline in satisfaction prompted by seeing one's peers get $100 richer was bigger than the increase of satisfaction from getting a handout of the same size. The bigger the handouts to others in their village, the greater the dissatisfaction of non-

recipients. (The handouts did not seem to have any impact cortisol levels or the prevalence of depression among non-recipients.)

Both the bitterness and the joy that the windfalls produced were passing. The effects of changes in people's circumstances wear off as they get used to them—a phenomenon economists call "hedonic adaptation". The large swings in satisfaction were found in the middle of the transfer scheme. Within about six months, all the transfers had been made (if they had been spread over a longer period, as usually happens when a country develops, the outcome may have been different). A year later the happiness of both the recipients and those who did without had returned close to its initial level.

Moreover, it was not inequality in general that bothered the unlucky, so much as a decline in their own wealth relative to the mean. Participants in the experiment shrugged off changes in the Gini coefficient of their village, which measures overall inequality. Take the example of a village in which one person gets richer, and another gets poorer. The village is less equal, but the mean income is unchanged. In the Kenyan experiment this did not matter to the rest of the village. Instead, participants compared how well everyone else was doing (the village mean) to themselves.

Blinded by aspiration

A study by Ada Ferrer-i-Carbonell looking at data on life satisfaction from Germany might help explain the Kenyans' reactions. She concludes that there is an asymmetry in the way people compare themselves with others. We tend to look exclusively at those better off than us, rather than contemplate our position within the full range of outcomes. When the lot of others improves, we react negatively, but when our own lot improves, we shift our reference group to those who are still better off. In other words, we are never satisfied, since we quickly become accustomed to our own achievements. Perhaps that is what spurs people to earn more, and

economies to grow.

* Studies cited in this article can be found at www.economist.com/happiness15 ■

自由交流

这山望着那山高

一项新研究表明，金钱能买来幸福，但转瞬即逝，还会导致他人不幸福

“打开窗户，新鲜空气会进来，苍蝇也会飞进来”，邓小平曾这样描述过中国经济开放带来的好和坏的影响。大多数人视经济增长和收入增加为心之向往，但它们也有不利之处。年轻人移居城市，与家人分离；如果劳动力市场自由化，工作会变得更没有保障；不平等加剧甚至会让那些正变得更富裕的人感到失望。普通中国人对自己际遇的满意程度在邓小平改革带来经济繁荣之初有所下跌，之后随着增长加速才见回升，或许就不足为奇了。至少，南加州大学的理查德·伊斯特林（Richard Easterlin）及其同事于2012年发表的研究是这样总结的。

伊斯特林最出名的是他于1974年发表的一篇备受争议的论文，文中指出收入增加不会使人更幸福。从那以后，尽管变富有明显的好处，但经济学家们一直在争论它到底有没有像人们说的那么好。发表于2012年的一项最全面的研究对一系列国家进行了长期调查，得出结论：在收入增长与满意度之间有正向关联。

然而，这项研究并没有阐明，是金钱带来了幸福还是幸福创造了财富。华威大学的安德鲁·奥斯瓦尔德（Andrew Oswald）、尤金尼奥·普罗托（Eugenio Proto）和丹尼尔·斯加瑞（Daniel Sgroi）认为先有幸福再有财富。毕竟，情绪低落的工人生产力较低，因而收入也更少。此外，带来高收入和幸福感的原因可能是相同的。朋友圈子广的人对生活更满意，也更善于找到高薪工作。

回答因果关系问题的一种方法就是研究随机试验得来的证据。彩票是对额外财富的随机分配，因此可以作为研究的一个着眼点。但在大多数国家，只有一小部分人买彩票。总体而言，这些下注者的行为可能并不典型，造成结果有偏差。解决办法是让经济学家们自行组织实验，向民众随机发放大奖。在富裕国家，模仿彩票的做法太过昂贵。但在较贫穷的地方，一些

慈善机构已经在这样做。

肯尼亚内罗毕的布萨洛行为经济学中心（Busara Centre for Behavioural Economics）在贫民窟和农村地区的参与者中开展实验。研究人员研究了肯尼亚农村一个类似彩票项目的结果。该项目在120个村庄中随机抽样，选出的503户家庭可最高获得1525美元的现金奖励。平均奖励金额为357美元，几乎足以使一位普通村民的财富翻一番。研究人员评估了村民在获奖前后的幸福感，使用了一系列不同的方法，如生活满意度问卷调查、筛查临床抑郁症，以及用唾液测试与压力相关的激素皮质醇水平。

由于不是所有村民都收到奖金，这个实验未能说明如果所有人的财富同等增长将会如何。但这项研究确实模仿了经济增长带来的分配结果，即收益是不均衡分配的。不出所料，钱到帐后，那些获得奖金的人表示对自身际遇更加满意，其皮质醇水平和抑郁症发病率也下降了。

然而，看着邻居们财富增长，那些一无所得者的满意度大幅下跌。因同伴获得额外100美元而引起的满意度下降幅度超过了因自己获得100美元而导致的满意度提升幅度。村里其他人拿到的钱越多，那些一无所得者就越不满意。（这些奖金似乎对一无所得者的皮质醇水平或抑郁症患病率并没有任何影响）。

意外之财带来的痛苦和喜悦都会过去。人们处境的改变所带来的影响随着他们适应这种改变而逐渐消退——这种现象被经济学家称为“享乐适应”。满意度大幅的波动发生在奖金发放的中期。大约六个月之内，所有的奖金就会发放完毕（如果发放奖金的时间跨度更长，就像一个国家发展时通常发生的那样，结果可能会不同）。一年后，受惠者与未受惠者的幸福感都恢复到接近最初的水平。

此外，让不幸运的人烦恼的并非总体上的不平等，而是他们自身财富相对于平均水平的下滑。实验参与者对村里基尼系数（测量总体不平等）的变化满不在乎。以一个村庄为例，一个人变富，另一个人变穷，村里的平等程度下降，但平均收入没有变。在肯尼亚的实验中，这种变化对村里其他

人来说无关紧要，但参与者把其他人都过得如何（村里的平均值）与他们自己作比较。

被渴望所蒙蔽

艾达·法拉-卡博内尔（Ada Ferrer-i-Carbonell）的一份研究分析了德国人生活满意度的数据，可能有助于解释肯尼亚人的反应。她的结论是，人们把自己和他人作比较的方式存在不对称。我们往往只注意那些比我们境况更好的人，而不考虑自身在总体结果中的位置。其他人的际遇改善时，我们反应消极，但当我们自身际遇改善时，我们就把自己的参照群体转向另外一些境况仍然好过我们的人。换句话说，我们永远不会满意，因为我们很快就对自己所得到的习以为常。也许正是这种力量激励着人们去赚更多钱，并推动经济的发展。

本文引用的研究可参见www.economist.com/happiness15

Silicon Valley's startup boom

Y Combinator, the X Factor of tech

A tech talent-spotter has come to dominate Silicon Valley's startup scene

IT SOUNDED like an oddball idea, but that is how many breakthroughs in Silicon Valley begin. In late 2008 three young men applied to Y Combinator (YC), a school for startups, looking for help with their tiny firm, AirBed & Breakfast, a website that helped people rent out inflatable mattresses in their living-rooms during conferences. Paul Graham, one of YC's founders, did not think much of their idea, but liked their pluck. Strapped for cash, the three had sold novelty breakfast cereals during the presidential election (Obama O's and Cap'n McCains) to earn enough money to keep their startup going. Mr Graham and his partners at YC helped them to refine their idea and meet early investors. Today Airbnb, as their firm is now known, rents out whole apartments in 190 countries and is one of the most talked-about startups, valued at $25.5 billion.

Since 2005 YC has taken on batches of promising founders, and this month will celebrate the funding of its 1,000th startup. Though about half of its startups have failed, which is typical of early-stage investing, it has had a head-turning record of success. In addition to Airbnb, YC has had a hand in Dropbox, a cloud-storage firm, and Stripe, a payments company (see table). Eight of its firms have become what Valley folk call "unicorns", valued at $1 billion or more. Combined, the companies it has invested in are worth around $65 billion (based on their most recent funding round), although YC's share is only a small fraction of that total—perhaps $1 billion-$2 billion.

It is because of this record that YC has become a juggernaut in Silicon Valley. Today fast-growing startups, not big incumbents like HP (see next article), are celebrated as the centres of innovation and influence in

technology. By providing training and producing a group of successful alumni, YC has helped popularise the idea that startups are a viable career.

Aspiring entrepreneurs clamour to attend the three-month YC programme, as much for what they learn there as for the stamp of approval and network they can claim when they leave. Just as an Ivy League degree opens doors in certain professions, graduating from YC is a priceless asset in the tech industry. For its spring 2015 batch YC received more than 6,700 applications and accepted around 1.6% of them. In contrast, Harvard's admissions process this year was the most competitive in its history, yet its admissions rate was 5.3%.

> *Investor, teacher, talent-show judge*

Paul Graham, an entrepreneur who sold his startup, Viaweb, to Yahoo in 1998, started YC with Jessica Livingston, a banker, and two Viaweb colleagues, Trevor Blackwell and Robert Morris, ten years ago. They hoped to devise a more efficient way to invest in startups but never expected to make a fortune. They stumbled upon a formula that melds the best of an investment firm and a university, and which in some respects also resembles television talent shows such as "The X Factor". YC admits batches of startups in classes, and each receives coaching on how to refine their product—though they are usually not quite as blunt as Simon Cowell.

YC's small campus in Mountain View, a short zip down the freeway from the Googleplex, has long tables reminiscent of a dining hall. The classroom setting creates a sense of paranoia and competition, encouraging entrepreneurs to accomplish in a few months what might otherwise take far longer. The programme teaches engineers—some of whose idea of a polished pitch is to look at your shoes rather than their own while speaking—how to sell their ideas to investors.

At the end of three months they graduate at "demo day", when they deliver a

presentation about their business to a group of the Valley's top investors, who plan their schedules around it, like tennis fans booking seats for the Wimbledon finals. Demo day fosters a sense of urgency, because investors have only a limited opportunity to see a business and decide whether to back it. Venture capitalists complain that YC has pushed up prices for startups, which is probably true. YC typically pays all those it admits $120,000 in return for a 7% stake, valuing each one initially at more than $1m. Sam Altman, YC's president, says there is "no question YC has driven up the price of early-stage investing…But I think in the long run it's going to be in investors' interest, because there will be better companies."

In its investments YC has benefited from the power of "network effects", the notion that a platform becomes more valuable the more people use it. As it grows, YC has become better at what it does, by enlisting its alumni to find new applicants, advise those going through the programme and be the first testers of their products. Some of the earliest users of Stripe, for example, had come out of YC, says Patrick Collison, one of Stripe's founders. They even have their own private social network, cheekily titled Bookface. Mr Graham's frequent blogposts on his startup philosophy are quoted like scripture by many in the Valley.

YC has also given startup founders more negotiating muscle with investors by acting as a sort of union to protect their rights. "If an investor is abusive toward a YC founder, we're going to remember, and we're going to let other YC founders know about it," says Paul Buchheit, a partner who was the creator of Gmail, Google's e-mail service. YC discreetly maintains a ranking of investors, and lets its startups, but no one else, glimpse at it. All this has changed the power relationship compared with the past, when "venture capitalists treated entrepreneurs like employees rather than the talent," says Steve Blank, an entrepreneur and academic.

YC has taken care to avoid one of the pitfalls that many firms, in tech,

investment and other industries, fall into: succession. Last year Mr Graham, who had been running YC, chose Mr Altman as his replacement. He had been among the first batch of YC startups and sold his firm, Loopt, in 2012, for around $43m (it is not known how profitable this was for investors). The energetic and ambitious Mr Altman, aged 30, wants to make YC even more influential than now. Last month YC raised a $700m fund to invest in YC startups at later funding stages. This sort of investing requires different skills, and risks annoying the venture capitalists YC works with, whose turf it is invading.

Mr Altman is also setting his sights beyond the Valley. YC is investing in companies that have not typically been of interest to tech investors, including one that works on nuclear fusion. This year YC launched a "light" version of its programme, an eight-week fellowship, so more people can take part without moving full-time to Silicon Valley for three months, which the core programme requires. This may help attract a more diverse group, and earlier-stage ideas, but it might, again, be a risky move away from YC's successful formula of the hands-on cultivation of small groups.

Tech firms' fortunes can turn rapidly, and no one knows that better than a startup factory. Most of YC's profits are still on paper. With the exception of Twitch, a firm that streams videos of people playing games—acquired by Amazon for nearly $1 billion last year—none of its biggest successes have gone public or been bought. Their valuations could just as easily fall as rise. Some wonder, for example, if Dropbox w / ill be valued so highly once it goes public. If the valuations of some of its stars droop, this could hurt perceptions of YC's Midas touch.

YC's partners seem surprisingly uninterested in money, or competitive threats. There are hundreds of other "accelerators" worldwide that have replicated YC's investment and training philosophy, but none with its brand or its record. The greater risk is not that founders choose to go with a

rival, says Mr Altman, but that they decide they can do without advice from any accelerator. That would be another sign that YC had changed the environment for entrepreneurs for the better. But no firm wants to put itself out of business. ■

硅谷创业大潮

Y Combinator，科技业的“X音素”

一家科技“星工厂”已主导硅谷创业圈

想法听来古怪，但在硅谷，众多突破正始于此。2008年底，三位年轻人申请报读创业培训学校Y Combinator（以下简称YC），为他们的小公司AirBed & Breakfast寻求帮助。他们创建的网站帮助人们在展会期间房源紧张时出租自家客厅的充气床垫。YC创始人之一保罗·格雷厄姆（Paul Graham）一开始并不太看好这一构想，但欣赏他们的勇气。一开始资金紧缺，三人曾在当时总统选举期间靠卖奇趣早餐麦片（“奥巴马奥氏”和“船长麦凯恩氏”）赚到足够的资金维持公司运营。格雷厄姆及YC其他合伙人帮助三人完善想法并约见早期投资者。这家公司便是如今人们熟悉的Airbnb，为190个国家的房东出租整套公寓，公司估值达255亿美元，已成为最受热议的创业公司之一。

2005年以来，YC迎来一批又一批前景光明的创业者，本月将庆祝第1000家创业公司借助其平台融资成功。虽然经其孵化的企业约有半数失败——初创期投资惯常的现象，但论成功个案，YC的成绩令人瞩目。除了Airbnb，YC还助推了云储存公司Dropbox及支付服务公司Stripe（见图表）。八家经YC投资孵化的公司已成为在硅谷被称作“独角兽”的企业，估值至少达10亿美元。YC投资的公司总估值约达650亿美元（按其最近一轮融资情况计算），尽管YC的股份只占其中的一小部分——可能介乎10亿至20亿美元之间。

正因为如此佳绩，YC已成为硅谷的主宰。今天，被视为科技创新及影响力中心的是快速发展的创业公司，而非像惠普那样的成熟大企业。通过提供培训并培养出一群成功的校友，YC已经让更多人相信创业公司是可行的事业成功之路。

有志创业的人士纷纷抢着报读为期三个月的YC课程，既为到那里学点东西，也为自己贴金及打造人脉，日后可以此为招徕。正如常春藤名校学位

为人们打开了某些行业的大门，YC的毕业证是科技产业界的无价宝。2015年YC的春季课程收到6700多份报名申请，获录取的约占1.6%。相比之下，虽说今年报读哈佛大学的竞争为史上最激烈，其录取率也有5.3%。

投资者、导师、才艺秀评委

格雷厄姆是一位企业家，他在1998年把自己创办的公司Viaweb卖给了雅虎，而后在十年前与银行家杰西卡·利文斯顿（Jessica Livingston）及两名Viaweb的同事特雷弗·布莱克韦尔（Trevor Blackwell）和罗伯特·莫里斯（Robert Morris）一同创立了YC。他们希望设计出更高效的方式来投资创业公司，但没想过以此赚大钱。他们偶然发现了一个配方来融合投资公司和大学的优点，并且在某些方面与“X音素”这类电视才艺秀相似。YC分批招收创业学员，逐个提供培训助其完善产品，虽然这些导师一般倒不像西蒙·考威尔（Simon Cowell，“X音素”的评委）那样毒舌。

YC的小型校园位于山景城（Mountain View），从谷歌总部沿高速公路驱车不远即到，课室内的长桌让人联想到饭堂。课室的设计营造出一种偏执与竞争的氛围，鼓励企业家们在短短数月内完成本需要更长时日方能达到的目标。课程教导工程师们如何向投资者推销自己的创意。一些工程师原本以为得体的推销就是说话时看着对方的鞋子而不是自己的鞋子。

结束三个月的课程后，他们将在“演示日”毕业，这一天他们要向一群硅谷顶尖的投资人介绍自己的商业项目，而这些投资人则专门为此安排时间，就像网球粉丝为温网决赛订位一般。演示日催生出一份紧迫感，因为投资者只有十分有限的时机去了解一份商业计划并决定是否支持它。风险投资人抱怨YC推高了创业企业的价码，这大概是真的。YC一般会向其“录取”的创业公司支付12万美元，以换取7%的股份，如此每家公司的最初估值被定为超过100万美元。YC的总裁山姆·奥特曼（Sam Altman）表示：“毫无疑问，YC推高了初创期投资的价格……但我认为，长远来看这符合投资者的利益，因为将会有更好的公司可以投资。”

在投资过程中，YC通过“网络效应”而得益，即平台有越多人使用就越有价值。随着YC日渐发展壮大，其运作也越来越得心应手，比如发动校友寻找

新的申请者，并让校友们为参与项目的人士提供咨询意见，以及充当其产品的首批试用者。例如，Stripe创始人之一帕特里克·科里森（Patrick Collison）说，它的部分早期用户就是YC的毕业生。他们甚至拥有自己专享的社交网站，不无戏谑地命名为Bookface。格雷厄姆有关创业理念的频繁更贴常被硅谷众人如圣经般引用转述。

YC也像某种能保护创业公司利益的“工会”，令创业者在与投资人的谈判中更有议价能力。“假如某个投资者欺侮YC的创业者，我们会留有记录，并让其他YC创业者知道。”曾参与创立谷歌邮件服务Gmail的YC合伙人保罗·布克海特（Paul Buchheit）说道。YC低调地存有一份投资者排名列表，只供加入企业查阅，其他人无缘一睹。这一切改变了过去的权力关系，以往“风险投资人看待创业者就像自己的雇员，而不是有才华的企业家。”学者兼企业家史蒂夫·布兰克（Steve Blank）说道。

YC还小心地避开了科技及投资等行业里的许多公司难免掉入的一大陷阱：接班问题。去年，YC一直以来的总裁格雷厄姆选择了奥特曼为其接班人。奥特曼是YC孵化的首批创业者之一，他在2012年以约4300万美元出售了自己创立的公司Loopt（投资者获利的情况不得而知）。现年30岁的奥特曼精力充沛，雄心勃勃，他希望推动YC进一步发展，比现在更具影响力。上月，YC筹集到七亿美元的基金，用于在后期融资阶段投资其创业公司。这类投资需要不同的技巧，而且有可能触怒与YC合作的风投家，因为YC进犯了他们的地盘。

奥特曼同时也把目光投到硅谷之外。YC正投资到高科技投资通常不感兴趣的一些公司上，包括一家研究核聚变的公司。今年，YC推出了“轻量级”的改版课程，提供为期八周的培训，令更多人可以参加，而无需搬到硅谷专职学习三个月（原版核心课程要求如此）。这可能吸引到更多元的群体及更早阶段的创业想法，但也可能是一着险棋——它偏离了YC手把手培育小型团体的成功法则。

高科技公司的命运瞬息万变，没有谁比“创业工厂”更清楚这一点。YC的利润大部分仍属于纸上富贵。除了播放玩家游戏视频的网站Twitch（去年被

亚马逊以近10亿美元收购）之外，YC最成功的创业公司均未上市或被收购。这些公司的估值升得快，要跌起来也很猛。例如，有人会怀疑，若Dropbox上市，估值会否有现在这么高。假如YC的部分明星创业公司的估值下跌，可能会令其点石成金的形象受损。

令人意外的是YC的合伙人看似并不在乎金钱或是竞争威胁。目前，全球有数以百计的其他“加速器”复制了YC的投资及培训理念，但却无法复制其品牌和业绩。奥特曼表示，更大的风险并非创业者选择其对手平台，而是他们认为自己无需任何“加速器”的指引便能顺利创业。如果事情真的如此，那么这从另一方面显示YC已经改善了企业家的创业环境。但是，没有哪家公司愿意自己的业务走到尽头。■

Genetic engineering

Editing humanity

A new technique for manipulating genes holds great promise—but rules are needed to govern its use

THE genome is written in an alphabet of just four letters. Being able to read, study and compare DNA sequences for humans, and thousands of other species, has become routine. A new technology promises to make it possible to edit genetic information quickly and cheaply. This could correct terrible genetic defects that blight lives. It also heralds the distant prospect of parents building their children to order.

The technology is known as CRISPR-Cas9, or just CRISPR. It involves a piece of RNA, a chemical messenger, designed to target a section of DNA; and an enzyme, called a nuclease, that can snip unwanted genes out and paste new ones in. Other ways of editing DNA exist, but CRISPR holds the promise of doing so with unprecedented simplicity, speed and precision.

A dizzying range of applications has researchers turning to CRISPR to develop therapies for everything from Alzheimer's to cancer to HIV. By allowing doctors to put just the right cancer-hunting genes into a patient's immune system, the technology could lead to new approaches to oncology. It may also accelerate the progress of gene therapy—where doctors put normal genes into the cells of people who suffer from genetic diseases such as Tay Sachs or cystic fibrosis.

It will be years, perhaps even decades, before CRISPR is being used to make designer babies. But the issues that raises are already the subject of fierce discussion. In April scientists in China revealed they had tried using CRISPR to edit the genomes of human embryos. Although these embryos could not develop to term, viable embryos could one day be engineered for

therapeutic reasons or non-medical enhancement.

That is a Rubicon some will not want to cross. Many scientists, including one of CRISPR's inventors, want a moratorium on editing "germ line" cells—those that give rise to subsequent generations. America's National Academy of Sciences plans a conference to delve into CRISPR's ethics. The debate is sorely needed. CRISPR is a boon, but it raises profound questions.

> *The only way is ethics*

These fall into two categories: practical and philosophical. The immediate barrier is practical. As well as cutting the intended DNA, CRISPR often finds targets elsewhere, too. In the laboratory that may not matter; in people it could cause grave harm. In someone with a terrible disease, the risk of collateral damage might be worth running. But for germ-line applications, where the side-effects would be felt in every cell, the bar should be high. It may take a generation to ensure that the technology is safe. Until then, couples with some genetic diseases can conceive using in-vitro fertilisation and select healthy embryos.

Moreover, awash though it is with gene-sequence data, biology still has a tenuous grip on the origins of almost all the interesting and complex traits in humanity. Very few are likely to be easily enhanced with a quick cut-and-paste. There will often be trade-offs between some capabilities and others. An à la carte menu of attributes seems a long way off. Yet science makes progress—indeed, as gene sequencing shows, it sometimes does so remarkably quickly. So scientists are right to be thinking now about how best to regulate CRISPR.

That means answering the philosophical questions. There are those who will oppose CRISPR because it lets humans play God. But medicine routinely intervenes in the natural order of things—saving people from infections and parasites, say. The opportunities to treat cancer, save

children from genetic disease and understand diabetes offer justification to push ahead.

A harder question is whether it is ever right to edit human germ-line cells, to make changes that are inherited. This is banned in 40 countries and restricted in many others. There is no reason for a ban on research or therapeutic use: some countries, rightly, allow research on human embryos, as long as they are left over from in-vitro fertilisation and are not grown beyond 14 days; and Britain has allowed a donor to supply mitochondrial DNA at conception to spare children needless suffering, even though the change will be passed on. And CRISPR deals with the objection that germ-line changes are irrevocable: if genes can be edited out, they can also be edited back in.

A deeper quandary concerns the use of CRISPR to make discretionary tweaks to a person's genome. There comes a point where therapy (removing genes that make breast cancer or early-onset Alzheimer's more likely, say) shades into genetic enhancement. Some might see being short or myopic as problems that need fixing. But here, too, the right approach is to be cautiously liberal: the burden is on society to justify when and why it is wrong to edit the genome.

> *CRISPR, happier, more productive*

It is not too soon to draw on these principles to come up with rules. Some countries may have gaps in their legislation or poor enforcement, letting privately funded scientists or fertility clinics carry out unregulated CRISPR research. The conservative, painstaking approach taken by Britain's Human Fertilisation and Embryology Authority in its decision on mitochondrial DNA is a model. Regulators must also monitor CRISPR's use in non-human species. Changing animals' genomes to spread desirable traits—mosquitoes that cannot transmit malaria, for example—could bring huge benefits. But the risk of unanticipated consequences means that such "gene drives"

should be banned unless they can be reversed with proven countermeasures.

If CRISPR can be shown to be safe in humans, mechanisms will also be needed to grapple with consent and equality. Gene editing raises the spectre of parents making choices that are not obviously in the best interests of their children. Deaf parents may prefer their offspring to be deaf too, say; pushy parents might want to boost their children's intelligence at all costs, even if doing so affects their personalities in other ways. And if it becomes possible to tweak genes to make children smarter, should that option really be limited to the rich?

Thinking through such issues is right. But these dilemmas should not obscure CRISPR's benefits or obstruct its progress. The world has within its reach a tool to give people healthier, longer and better-quality lives. It should be embraced. ■

基因工程

改写人类

一项操控基因的新技术带来了巨大的希望，但需要规则来管理其运用

基因组的编排一共只用到了四个字母。读取、研究和比较人类及其他成千上万物种的DNA序列已经成了平常事。一项新技术承诺，人类将能迅速而便宜地剪辑基因信息。这会纠正那些会损害生活的糟糕的基因缺陷，也预示着在遥远的未来，家长们将会按照自己的需求打造儿女。

这项技术称为CRISPR-Cas9系统或简称CRISPR。它用一个RNA（一种化学信使）片段来瞄准一段DNA，还用一种叫核酸酶的酶把不想要的基因剪去而把新的基因贴入。已经有其他剪辑DNA的方法，但CRISPR很有希望用前所未有的便捷、速度和精确度剪辑DNA。

CRISPR运用范围之广令人眼花缭乱，吸引了科研人员利用它来研发针对各种病症的疗法，从老年痴呆、癌症到HIV。这项技术能让医生把适于猎杀癌症的基因置入病人的免疫系统，从而可能导向新的肿瘤治疗方法。它也可能加速基因疗法的发展。在基因疗法中，医生把正常基因放入家族黑蒙性痴呆症和囊肿性纤维化等遗传疾病患者的细胞中。

运用CRISPR技术打造订制婴儿尚需几年甚至几十年时间，但和这种前景相关的问题已经引发了激烈的探讨。4月，中国的科学家们透露，他们已经尝试用CRISPR来剪辑人类胚胎的基因组。虽然这些胚胎不能发育至足月，但今后可生长发育的胚胎也能被设计，可能是出于治疗疾病的需要，也可能无关医疗目的，而只是为了加强某些特性。

这是一些人不愿跨越的卢比孔河。许多科学家，包括CRISPR的研发者之一，想要暂停剪辑那些繁殖后代的“生殖系”细胞。美国国家科学院计划举办一次大会来探讨CRISPR的伦理问题。这样的辩论是极其必要的。CRISPR技术是一个福音，但也引发了深远的问题。

伦理是唯一途径

这些问题可归为两类：实践的与哲学的。眼前的障碍是实践上的。CRISPR除了删掉不想要的DNA外，常常也会在其他地方发现可剪辑的目标。在实验室里这或许不成问题，但在真人身上则可能带来严重损害。对于某个患有严重疾病的人而言，这种发生附带损害的风险或许值得承受。但在剪辑生殖系细胞的应用上，这种副作用会出现在所有细胞上，因此应设置高标准。要确保这种技术的安全性，可能需要经过一代人的时间。唯有到了那时，那些患有遗传疾病的夫妇才可以考虑使用试管受精并选择健康的胚胎。

此外，虽然生物学已经有了海量的基因序列数据，但它对人类几乎所有有趣而复杂的特征的起源仍然所知不多。很少有哪些特质可以通过快速的剪贴被轻而易举地加强，在某些能力和其他一些能力之间将常常需要做出权衡取舍。要像随意点菜那样选择想要的特质，看来还是很遥远的事。但科学毕竟在向前发展，恰如像基因序列所展示的，它有时发展速度惊人。因此，科学家现在就开始思考如何最好地规范使用CRISPR是对的。

这意味着需要回答哲学上的问题。一些人会反对CRISPR，因为它让人类扮演了上帝的角色。但医学就是在惯常地干预事物的自然规律，比如防止人们感染疾病和寄生虫病。CRISPR有机会治疗癌症、让儿童避免患上遗传疾病、理解糖尿病的病理机制，人类有正当的理由来推动发展这一技术。

一个更麻烦的问题是，剪辑人类的生殖系细胞以改变那些继承而来的特质的做法是否正确。目前有40个国家禁止这一做法，还有许多其他国家采取限制。没有理由去禁止它用于研究或治疗的用途。一些国家允许在人类胚胎上做研究，只要这些胚胎是从试管受精中剩余的，且生长不超过14天，这不无道理。英国已经允许一名捐赠者贡献线粒体DNA用于人工授精之时，让繁育的孩子免遭不必要的病痛，即使这种改变会被传递给下一代。一些人对改写生殖系细胞不可逆转发出反对声，对此CRISPR也有解决方案：如果基因可以被剪掉，它们也可以被贴回去。

一个更深层次的困境关乎使用CRISPR来对某人的基因组做随心所欲的修

改。在某一个分割点上，治疗（比如去除那些更可能导致乳癌或早发性老年痴呆的基因）会进入遗传加强的范畴。一些人可能会认为长得矮或近视眼也是需要修正的问题。但在这一点上，正确的做法也应该是审慎的开明：何时或为何改写基因图谱是错的，这应该由社会负责来给出理据。

更愉快、更高效

根据这类原则来制定规则并不嫌早。一些国家的法律可能存在漏洞或执法不力，让私人资助的科学家或生育诊所得以开展不受监管的CRISPR研究。英国人类受精与胚胎管理局在针对线粒体DNA做决定时采用的保守、费力的方式是一个典范。监管部门也必须监督在非人类物种上使用CRISPR。改变动物的基因组来传播某些受人类欢迎的特征（比如不会传播疟疾的蚊子）会带来巨大的益处。但因为存有发生不可预知后果的风险，所以这类“基因驱动”应该被禁止，除非它们被证明可以采用有效的反制措施来逆转。

如果证实可在人类身上安全运用CRISPR，也还需要办法来处理知情同意和平等的问题。基因剪辑可能会让父母做出不一定是对孩子最有利的选择。比如失聪的父母可能宁愿子女也是聋的，而急于求成的父母可能会想要不计一切代价提升孩子的智力，即使这么做会在其他方面影响孩子的个性。而如果可以修改基因来让孩子变得更聪明，这样的选择真的应该只限于富人吗？

仔细考虑这类议题是对的。但这些两难议题不该模糊CRISPR的好处或者阻碍它的发展。一个让人们活得更健康、长寿、生活质量更高的工具已经触手可得，人类应该拥抱它。■

The yuan and the SDR

Feeling special

The IMF debates whether to include China's currency in its reserves

THE summer of 1969 is remembered for many things: the moon landing, Woodstock and the start of American troop withdrawals from Vietnam. The International Monetary Fund's creation of the Special Drawing Right (SDR) does not rank high on this list. An artificial accounting unit, the SDR resides on the margins of the global financial system. But over the next few weeks, China will haul it into the spotlight.

The question is whether the IMF will include the yuan in the basket of currencies of which the SDR is composed. Its decision, part of a five-yearly review, is expected at the end of the month. Since the late 1990s the SDR has comprised four currencies: the dollar, the euro, the pound and the yen. The IMF allocates some of its notional stash of SDRs to its members, which can be swapped in a pinch for their constituent parts to make external payments.

Adding the yuan to the basket would give it the IMF's imprimatur as a reserve currency: easily tradable and a good store of wealth. This does not mean it would suddenly rival the dollar. The outstanding value of SDRs is just over $300 billion, about 2.5% of global currency reserves. The yuan would only form a small portion, and it is rare for countries to make payments in SDRs.

The symbolism would nonetheless be powerful. Central banks might feel more comfortable holding yuan, as would institutional investors. Standard Chartered, a bank, estimates an extra $1 trillion will be allocated to Chinese assets in the coming five years if the IMF brings the yuan into the SDR.

That the yuan even qualifies for consideration might seem surprising. The People's Bank of China (PBOC) has a big hand in determining its value and the yuan is not freely convertible. China limits how much money its citizens can send abroad and foreigners can bring in. But convertibility is not a prerequisite for SDR status. As IMF staff explained in a report in August, there are only two criteria: the issuing country must be a big exporter and its currency widely used.

China, the world's biggest exporter since 2009, obviously satisfies the first criterion. The second, however, is woollier. The yuan is not as widely used as the other SDR currencies. In 2014 it ranked seventh in countries' official reserves, eighth in international bond issuance and eleventh in global currency trading. Yet its trajectory is impressive: SWIFT, a global transfer system, calculates it has gone from the 20th most-used currency for cross-border payments at the start of 2012 to fifth today.

Elevating the yuan might serve two ulterior purposes for the IMF. First, the PBOC has been the strongest proponent of financial reform in China, and bringing the yuan into the SDR would strengthen its authority and spur it to do more. In the past three months, to prepare the yuan for the SDR, the PBOC has opened the Chinese bond market to foreign central banks and changed the way the yuan is managed, giving the market more influence. These are important steps towards opening the capital account. Rejection from the SDR would risk undermining China's financial reforms, at a time when other efforts, notably in overhauling state-owned monopolies, are sputtering.

Second, bringing the yuan into the SDR is as significant for the IMF as for China. Reforms to give emerging markets more voting power have been held up for years by America's dysfunctional politics, and in any case do not go far enough. The SDR would be a consolation prize for the world's biggest emerging market. "The IMF needs this to go forward so that it

maintains legitimacy," says Eswar Prasad of Cornell University.

人民币与特别提款权

特殊化待遇

国际货币基金组织正讨论是否把人民币纳入其储备货币

1969年的夏天因为许多原因被铭记：登月、伍德斯托克音乐节、美国开始从越南撤军。国际货币基金组织（以下简称IMF）设立特别提款权（以下简称SDR）在这些事件中不算特别引人瞩目。作为人为设立的核算单位，SDR一直处于全球金融体系的边缘，但未来几周它将被中国拉至聚光灯下。

焦点在于IMF会否把人民币纳入构成SDR的一篮子货币中。这个决策是IMF五年一次例行评估的一部分，答案预期将在本月底揭晓。上世纪90年代末以来，SDR由四种货币构成：美元、欧元、英镑、日元。IMF把部分SDR名义储备分配给成员国，在遭遇危机时，这些国家可把所获的SDR兑换成篮子中的货币用于对外支付。

人民币若被纳入SDR篮子，意味着其得到IMF的认可而成为储备货币：容易兑换，并且是好的财富保值工具。但这不代表人民币突然就能匹敌美元了。SDR的发行规模刚刚超过三千亿美元，约为全球货币储备的2.5%。人民币只会构成很小的份额，同时，国家很少会以SDR进行支付。

但此中的象征意义会很强大。各国央行可能会因此更安心地持有人民币，机构投资者亦然。渣打银行估计，IMF若将人民币纳入SDR，未来五年将有额外一万亿美元购买中国资产。

人民币竟有资格被考虑纳入SDR，这也许令人觉得意外。人民币的定价权由中国人民银行掌握，而且不能自由兑换。中国对国民汇到国外及外国人带入国内的资金均设有限额。然而，可兑换性并非获得SDR地位的先决条件。正如IMF工作人员在8月发表的报告中解释道，条件只有两个：发行国必须为出口大国；其货币被广泛使用。

中国自2009年以来已是世界第一大出口国，显然符合第一个条件。但第二个条件则复杂得多。人民币不如其他SDR货币使用广泛。2014年，人民币在各国官方储备货币中排名第七，在国际债券发行上排名第八，在全球外汇交易上排名第11。但其成长轨迹惊人：据全球电汇系统SWIFT计算，在最常用的跨境支付货币中，人民币在2012年初仅排第20位，到今天已跃升至第五位。

提升人民币的地位或许有利于IMF达到两个不为人知的目的。首先，中国人民银行一直是中国金融改革的最强推手，推动人民币纳入SDR将加大其权威，鼓励其开展进一步改革。过去三个月，为使人民币成为SDR篮子货币，中国人民银行已向外国央行开放中国债券市场，并改变了对人民币的管理方式，让市场发挥更大影响力。这是朝着开放资本项目迈出的重要步伐。若人民币被拒于SDR之外，中国的金融改革可能会被削弱，要知道此时诸多改革正如火如荼地展开，特别是对国有垄断企业的重整。

其次，人民币纳入SDR不止对中国意义重大，对IMF同样如此。美国政治运转不灵，多年来阻挠了IMF推行改革让新兴市场获得更多投票权，而这些改革怎么看都还不够。SDR地位将是授予世界最大新兴市场的一份安慰奖。康奈尔大学的埃斯瓦尔·普拉萨德（Eswar Prasad）说：“为了保持自身的合法性，IMF需要这样做。”■

Cloud computing

The sky's limit

Shifting computer power to the cloud brings many benefits—but don't ignore the risks

ELECTRICITY was once generated where it was used; now it comes from the grid. So it is with computing power, once the province of mainframes and personal computers, and now moving into the "cloud"—networks of data centres that use the internet to supply all kinds of services, from e-mail and social networks to data storage and analysis.

The rise of cloud computing is rapid, inexorable and causing huge upheaval in the tech industry. The old guard is suffering: October's $67 billion merger between Dell and EMC, makers of computers and storage devices respectively, was a marriage forced by the rise of the cloud. Disruptive newcomers are blooming: if Amazon's cloud-computing unit were a stand-alone public company, it would probably be worth almost as much as Dell and EMC combined.

The gains for customers have been equally dramatic. Compared with older IT systems, cloud computing is often much cheaper. It adds tremendous flexibility: firms that need more computing capacity no longer have to spend weeks adding new servers and installing software. In the cloud they can get hold of it in minutes. Their applications can be updated continually, rather than just every few months. Individual users can reach their e-mails, files and photos from any device. And cloud services also tend to be more secure, since providers know better than their customers how to protect their computing systems against hackers.

But cloud computing makes one perennial problem worse. In the old IT world, once a firm or a consumer had decided on an operating system or database, it was difficult and costly to switch to another. In the cloud this

“lock in” is even worse. Cloud providers go to great lengths to make it easy to upload data. They accumulate huge amounts of complex information, which cannot easily be moved to an alternative provider.

Cloud firms also create a world of interconnected services, software and devices, which is convenient but only for as long as you don’t venture outside their universe. Being locked in to a provider is risky. Firms can start to tighten the screws by increasing prices. If a cloud provider goes bust, its customers may have trouble retrieving their data.

These risks have already triggered a debate about whether the cloud needs stricter regulation. Some European politicians want to force cloud providers to ensure that data can be moved between them. That is too heavy-handed, not least because rigid rules will inhibit innovation in what is still a young industry. The history of computing suggests that common standards may well emerge naturally in response to customers’ demands—just as in personal computers, where it is now much easier to use the same files on different systems.

Be quick, be nimbus

In the meantime, a few commonsense measures can reduce the risk of lock-in. Firms that use more than one cloud provider to host their data are less vulnerable. So are those that keep their most important information in their own data centres—General Electric jealously guards its most valuable data, Walmart has a phalanx of its own developers so that it can move its data from cloud to cloud. Consumers can take precautions, too. Some services are better than others at enabling users to move data between providers (Google does well on this score). Cloud computing promises its users many benefits, but don’t mistake it for some sort of digital heaven. ■

云计算

天之涯

将计算能力转到云端益处多多，但也别忘了风险

电力曾经是随用随发，现在则来自电网。计算能力也是如此，一度是大型主机和个人电脑的天下，如今正转向云端：数据中心网络用互联网提供各类服务，从电子邮件到社交网络，再到数据存储和分析。

云计算发展迅猛，势不可挡，引发了科技行业的剧变。保守派正遭受折磨：10月计算机制造商戴尔和存储设备制造商EMC价值670亿美元的合并正是迫于云崛起的联姻。颠覆性的新进者正蓬勃发展：如果亚马逊的云计算业务是独立运作的上市公司，它很可能几乎相当于戴尔与EMC市值的总和。

对于客户来说，收益也同样激动人心。与旧的IT系统相比，云计算常常便宜得多。它增加了极大的灵活性：需要更多计算能力的公司不再需要花数个星期增加新的服务器并安装软件。在云端它们只要几分钟就能获得。它们的应用程序可以持续更新，而不是每隔几个月才更新一次。个人用户可以通过任何设备访问他们的电子邮件、文件和照片。云服务往往也更安全，因为服务供应商比客户更懂得如何保护计算系统免受黑客的侵袭。

但是云计算让一个长期存在的问题更加严重。在旧的IT世界，一旦一家公司或一位用户决定使用某个操作系统或数据库，要切换到另一个既困难又昂贵。在云端这种“锁定”甚至更为严重。云供应商不遗余力地方便数据上传。它们积累了巨量的复杂信息，无法轻易被转到另一个供应商那里。

云公司也创造出一个服务、软件和设备互相连接的世界，这很方便，但前提是你不去它们之外的空间冒险。锁定一个供应商有风险。云公司可以通过提升价格来攫取利益。如果云服务供应商倒闭，它的客户可能难以取回数据。

这些风险已经引发了关于云端是否需要更严格监管的争论。一些欧洲政治家想强迫云供应商们确保数据可以在它们之间移动。此举太过粗暴，尤其是因为死板的规定会抑制这个仍然年轻的行业中的创新。计算机的历史表明，共同标准很可能会自然而然地产生以满足客户的需求，正如在私人计算机上，现在在不同系统中使用同样的文件就容易得多了。

> *快捷，有灵气*

同时，一些常识性的措施可以降低锁定的风险。使用不止一家云供应商存储数据的公司不容易受到伤害。将最重要的信息保存在自己的数据中心的公司也一样：通用电气极其小心地守护着它最有价值的数据，沃尔玛有一群自己的开发人员，因此可以将数据从云端的一处移到另一处。客户们也可以采取预防措施。有些服务优于其他，让客户能够在供应商之间移动数据（谷歌在这方面做得不错）。云计算向用户承诺了很多好处，但是别把它错当成某种数字天堂。■

Multinationals in China

A harder road ahead

Life is getting tougher for foreign firms, but the fittest can still flourish

FOR two decades China was a land of seemingly limitless opportunity for multinationals. Japan and South Korea had shut out foreign firms during the early phase of their economic development. By contrast, China's leaders, after Deng Xiaoping's reforms in the early 1990s, made them welcome. Provided firms brought world-class technologies, and agreed to joint ventures with locals in certain strategic industries, they were free to take a generous slice of China's growing economic pie. But now a combination of factors is making life much more difficult for them.

Even foreign firms that looked like they might dominate the Chinese market are getting a rude awakening, as its economy slows and as competition from local rivals intensifies. Earlier this year Douglas McMillon, Walmart's boss, declared that China was vital to the American retail giant's future growth and vowed to add more than 100 new stores in the next two years to its current tally of 400-plus there. Walmart does not give much detail on how those outlets are performing. But a filing this month by its local joint-venture partner at 21 of the stores revealed that those outlets' sales had fallen 6% last year compared with the year before.

One of the great success stories of multinationals in China has been Yum Brands. It was the first big foreign fast-food firm to enter the country. Its thousands of KFC restaurants became hugely popular with local families. Even opening a restaurant a day, the firm could not keep pace with demand. In 2011 Yum's China division was providing more than half of its global operating profits. But the days of finger-lickin' good performance now seem to be over. KFC's sales growth in the most recent quarter was down to a plodding 3%, and on October 20th, shortly after cutting its global profit

forecast because of weakness in China, Yum said it would spin off the China division into a separate company next year.

In some cases the authorities seem to be coming down hard on foreign firms while going easier on their Chinese competitors. State-run China Central Television (CCTV) has broadcast harsh criticisms of some multinationals, including an absurd harangue over Starbucks' prices—as if Chinese consumers were incapable of deciding how much they wanted to pay for a coffee. New rules on internet security have a techno-nationalist bent, which may help local technology firms like Huawei and Lenovo gain an edge over IBM and Cisco in government procurement (although these American firms can hardly complain, since their government has blacklisted Huawei from its official contracts).

China's antitrust laws have been used to bully foreign carmakers into cutting the price of spare parts, whereas legions of state-owned firms, in everything from telecoms to tobacco, have been left to enjoy their monopolies and oligopolies. GlaxoSmithKline, a British drugmaker, was fined heavily under anti-corruption laws, over sales practices that local analysts say were common across China's health-care industry. A recent report from the EU Chamber of Commerce in China, representing European firms operating there, lamented the lack of a level playing-field.

For all that they have some legitimate gripes, not all of the multinationals' problems can be blamed on an obstructive government. In Yum's case, food-safety scares in 2012 and 2014 left consumers with the impression that it was not keeping a close enough eye on its suppliers. In the 2014 case, for example, investigative reporters found that one supplier had sent out-of-date meat to KFC outlets in China. Yum, like foreign restaurant groups, had hitherto benefited from Chinese consumers' assumption that its quality controls were higher than those of local rivals, an advantage it seems to have squandered.

In other cases, foreign firms' travails have more to do with the maturing of the Chinese market. Growth is slowing. Wage costs are rising because broader demographic trends are making labour scarcer. The government is introducing higher environmental standards, not to punish multinationals but because wealthier, more educated citizens now demand cleaner air and water. Those citizens are also becoming more sophisticated as consumers and will no longer pay huge premiums for brands just because they are foreign.

The most potent challenge of all for multinationals in China comes from local upstarts. When China's economic opening began there were few domestic brands of any note. Multinationals had superior technology as well as slicker marketing. But local firms are catching up fast, and are winning over Chinese shoppers.

A study by Bain, a Western consulting firm, looked at 26 categories of consumer products, from confectionery to cosmetics, with combined sales of 542 billion yuan ($85 billion) last year. In value terms, they found that local brands gained market share in 18 categories last year, and now command 70% of their combined markets. As overall sales growth of such goods is falling, Western firms' share is declining (see chart). The hottest brands on Chinese high streets are such things as Huiyuan's fruit juices and Galanz's domestic appliances rather than Western rivals' offerings.

Frustrating though this is for foreign consumer-goods firms, they cannot claim that it is because the game is rigged. For one thing, there is little state involvement in their industry: the competition comes from private-sector Chinese firms. For another, the rise of local brands is a global phenomenon. A recent study by José Santos of INSEAD and Peter Williamson of Cambridge University's Judge Business School shows that foreign multinationals are losing out to local firms in other emerging markets too, across a range of products. Nowhere is this more evident than in China,

though. After years of investment in the country's ice-cream market, Unilever had won a market share of just 7% by 2013; Nestlé's share was a mere 5%. But Yili and Mengniu, two local firms, enjoyed shares of 19% and 14%. Unilever and Procter & Gamble were bested in laundry detergents, their traditional strong suit, by two Chinese rivals, Guangzhou Liby and Nice.

Fools rush in, or out?

If life has become so hard for foreign firms in China, why not quit? A few have done so—prominent examples include Revlon, an American cosmetics firm; and Best Buy and Media Markt, an American and a German electronics retailer. But few others are following. Others are still rushing in, or doubling down on existing bets on China. It received more than $120 billion in foreign direct investment last year, double Brazil's total, and four times what India got.

There are still plenty of multinationals doing nicely in China. On October 27th Apple announced sparkling quarterly results, boosted by an 87% year-on-year rise in sales of iPhones in China. Samsonite, an American maker of luggage, enjoyed a 30% rise in sales in the first half of this year, compared with a year earlier. Adidas, a German sportswear firm, had a 20% rise in first-half sales. Surveys of the members of foreign business chambers in China often highlight the problems that some firms are having. But read on, beyond the executive summaries, to the figures below, and they show that a majority are still making money and still see the country as a leading investment destination.

China may struggle to achieve even the reduced target of 6.5% annual GDP growth that it is expected to set soon. Even so, that much growth in an economy already so big is not to be sniffed at—and a fair chunk of it will translate into increased spending on consumer goods. The Boston Consulting Group expects urban private consumption in China to grow by

more than $2 trillion by 2020. However, as the recent stockmarket panic makes clear, this is not a market for the faint of heart. Therefore, multinationals must work out how to put their businesses on a stronger footing.

First, they need to shift from a mindset of growth at all costs. One implication of this, argues Nigel Knight of EY, another consulting firm, is the need to boost productivity. EY surveyed more than 1,700 firms across various industries in China last year. It found that many were being squeezed (due to rising wages, higher input prices and tougher competition) or had got bloated (through acquisitions) but that few could pass on cost increases. Multinationals must therefore make the same efforts to enhance competitiveness that they are used to making in mature economies. But Mr Knight says many local managers are too "accustomed to a growth agenda and lack the experience, expertise or, to be blunt, desire to carry out major efficiency-improvement programmes."

Another is the need to put more effort into marketing. In the past, suggests Anil Gupta of the University of Maryland's Smith School of Business, many industries were so undeveloped in China that all a business needed to make sales was some people to take down customers' orders. Now, with overcapacity in everything from steel to cars, competition has intensified; and with rising sophistication among shoppers even in smaller cities, branding and differentiation are vital.

Rachel Duan, who runs General Electric's businesses in China, says it is more important than ever to align the firm's strategy with the government's goals. The days when officials courted foreign firms with tax breaks and other incentives are largely over. But they are putting more pressure on the firms to invest in areas the government sees as priorities. That is why GE is ploughing billions into health care, civil aviation and energy, including into cutting-edge local research. The strategy is starting to pay off. In

January, the firm's wind-turbine division won its largest Chinese contract to date.

A willingness to learn from mistakes also helps. Yonghui, a supermarket chain that started in Fujian province, has grown into one of China's most successful by staying focused on a few provinces. Walmart, in contrast, spread itself too thinly and hit snags in distribution and quality control. Sean Clarke, the head of its China operations, has revised his expansion plans, realising that, "To be successful in China you don't have to be in every city."

Another tactic is to find a powerful local partner, even in industries in which the government does not require this. Jeffrey Towson and Jonathan Woetzel, authors of "One Hour China", a business book, point to basketball as an example. Football (soccer) has a far longer history in China, but has fallen flat commercially. In contrast, America's National Basketball Association (NBA) has made China its biggest foreign market. Four or five NBA games are broadcast weekly on CCTV, and big games attract 200m viewers. It helped that Yao Ming, a Chinese player, became a global sensation, but Messrs Towson and Woetzel believe the real secret lay in the NBA's partnership with CCTV.

To see how to get China right, consider L'Oréal, a French beauty firm which has enjoyed 18 years of uninterrupted sales growth there. The country's cosmetics market, now the world's second largest, is brutal. Customers are extremely fickle, and switch brands often. Chinese rivals attack foreign firms both from below, on price, and from above, using traditional medicine and herbs to sell premium products. But unlike Revlon, the French firm stayed, and adapted to local conditions.

Alexis Perakis-Valat, L'Oréal's China boss, whips out his smartphone to give an example. Since earlier generations of Chinese women rarely used make-

up, few girls learn how to apply cosmetics from their mothers. They are often too shy to experiment in front of friends or at shop counters, he explains. Millions now do so in private using Makeup Genius, an app that shows them, like a magic mirror, what they would look like in various styles of lipstick, eyeliner and blusher.

The firm has invested 2 billion yuan in the past decade on a gleaming research centre in Shanghai, which has created winning products tailored to local tastes. A pricey range of cosmetics and creams to fight skin damage from air pollution, a big concern for Chinese consumers, has flown off the shelves. But when it makes sense, the firm has pulled back—for example, last year it yanked Garnier, a middling brand that did not sell well, out of the country.

In all, most multinationals would be wise to tough it out in China, and adapt to its changing markets. Those which do so will find there are still fortunes to be made. And though their advantages over local firms are diminished, they still have some strengths, in technology and marketing, that they can exploit. As Xiang Bing, dean of Beijing's Cheung Kong business school, puts it, multinationals are no longer sitting comfortably at the very front of the plane, but compared with Chinese firms, they are "still flying in business class." ■

跨国公司在中国

前路愈艰难

外国公司境况渐显艰难，但能适应者仍可兴旺发达

对跨国企业而言，过去20年来中国似乎是一片商机无限的土地。日本和韩国在经济发展早期就对外国公司关上了大门。相比之下，在90年代初邓小平推动改革之后，中国领导人一直欢迎外国企业。只要能带来世界级技术，在特定战略性行业同意与本地公司组建合资企业，跨国公司就可以从中国经济增长的蛋糕中分得一大块。但如今，一系列因素令其境况变得艰难得多。

随着中国经济放缓及来自本地对手的竞争加剧，即便原本看似能称霸中国市场的外国公司也正遭到当头棒喝。今年早前，沃尔玛的老板董明伦（Douglas McMillon）宣称中国对这一美国零售巨头的未来增长至关重要，并承诺未来两年将在中国现有400多家门店的基础上增开100家。沃尔玛并未公布现有门店经营状况的细节。但本月，其21家门店的本地合资伙伴的一份文档显示，这些门店去年的销售额相比前年下降了6%。

跨国公司在中国大获成功的一个例子是百胜餐饮集团。它是首家打入中国市场的外国快餐公司，旗下数千家肯德基餐厅大受本地家庭欢迎。即便一度以每天新开一家餐厅的速度扩张，仍然赶不上需求的增长。2011年，在百胜集团的全球营业利润中，中国事业部占比超过一半。 但业绩“如此多娇”的日子如今似乎已经结束。肯德基最近一季度的销售增长下降到3%，已显乏力。而10月20日，百胜集团在因中国增长疲软而下调全球盈利预测后，又表示明年会把其中国事业部分拆为一家独立公司。

在某些情况下，当局似乎对外国公司严加惩治，而对其中国竞争对手相对留情。官方媒体中国中央电视台曾严厉抨击一些跨国公司，包括针对星巴克的定价荒谬地大肆批评——仿佛中国消费者无力决定自己想为一杯咖啡付多少钱似的。有关互联网安全的新条例也带有科技民族主义的倾向，可能会帮助华为和联想这类本地科技公司在竞标政府采购时相比IBM和思科

占有先机（但这些美国公司也无从抱怨，因为美国政府已把华为列入官方采购的黑名单）。

中国的反垄断法被用于威逼外国汽车制造商削减零件售价，而从电信到烟草等行业的国有企业大军则安享垄断和寡头地位。英国制药公司葛兰素史克（GlaxoSmithKline）在反腐法律下受到重罚，但本地分析人士表示，受罚的销售行为实际是中国医疗保健业中的常见做法。欧洲公司在中国市场的代表机构中国欧盟商会最近发表了一份报告，怨叹缺乏公平的竞争环境。

尽管怨言有合理之处，跨国公司的问题却并不能全然归咎于政府的阻碍。就百胜餐饮集团而言，2012年及2014年其爆发的食品安全丑闻令消费者觉得该集团对供应商监管不力。比如2014年的事件中，调查记者发现，一家供应商把过期肉品发往中国的肯德基餐厅。之前，中国消费者以为外国企业的质量控制水平会高于本地对手，百胜集团与其他外国餐饮集团一样，一直受惠于这种心理，但丑闻爆发后这一优势也已打水漂。

而在其他案例中，外国企业的征程艰辛更多是因为中国市场日渐成熟。经济增速正在减缓。由于整体人口趋势令劳动力变得稀缺，工资成本也在上涨。政府正推出更严格的环境标准，并非为惩罚跨国企业，而是因为随着国民财富及教育程度的提升，他们要求更清洁的空气和水源。中国人作为消费者也变得更加成熟老练，不再会仅仅因为品牌来自外国就支付高额溢价。

对于在中国的跨国企业来说，最强势的挑战来自当地的新兴企业。中国经济开放之初，国内鲜有知名的国产品牌。相比之下，跨国企业在技术上更胜一筹，营销手法也更娴熟巧妙。但本地企业正奋起直追，也日渐赢得了中国消费者的青睐。

西方咨询机构贝恩公司（Bain）做过一项研究，调查去年中国市场上从糖果到化妆品的26类消费产品，其总销售额为5420亿元人民币（850亿美元）。他们发现，按价值计算，本地品牌的市场份额在18个类别上呈现增

长，共占据了70%的市场份额。随着这些商品的整体销售增长放缓，西方企业的市场份额也在下降（见图表）。中国各地的商业街上最热门的产品都是国内品牌，如汇源果汁和格兰仕家电，而非西方竞争对手的产品。

虽然外国消费品公司对此感到沮丧，但也不能因而指责"游戏"被人幕后操纵。一方面，其所在行业中，政府的参与程度很低：竞争来自中国的私营企业。另一方面，本地品牌的崛起是全球性现象。最近由英士国际商学院（INSEAD）的何塞·桑托斯（José Santos）和剑桥大学贾吉商学院的彼得·威廉姆森（Peter Williamson）所做的研究显示，在其他新兴市场的一系列产品上，外国跨国公司也日渐不敌当地企业。然而没有哪个地方的这一趋势比在中国更明显。多年投资于中国冰淇淋市场的联合利华到2013年仅取得7%的市场份额，而雀巢的份额则只有5%。但伊利和蒙牛这两家本地公司所占份额分别为19%和14%。联合利华和宝洁在洗衣液这一传统强项上也败给了两家中国对手——广州立白和纳爱斯。

奋勇向前还是急流勇退？

如果外国企业在中国经营已如此艰难，为什么还不抽身离场？一些企业已经退出，突出的例子包括美国化妆品公司露华浓，还有美国和德国的两家电子产品零售商百思买和Media Markt。但效仿者并不多。其他跨国企业仍蜂拥而至，或在现有基础上加倍投入中国市场。去年，中国接收外国直接投资超过1200亿美元，是巴西的两倍，印度的四倍。

还有许多跨国公司在中国表现不俗。10月27日，苹果公布靓丽的季度报告，其中iPhone在中国的销售同比增长87%，居功至伟。美国箱包制造商新秀丽今年上半年的销售额比去年同期上升30%。德国运动服装公司阿迪达斯上半年的销售额上涨20%。对在中国营商的外国商会成员所做的调查往往强调某些公司面对的问题。但读下去，在摘要之后，往下的数据其实显示大多数跨国公司仍处于盈利状态，而且仍然视中国为主要投资目的地。

中国估计很快将把GDP年增长率预期调低至6.5%，但即使要达到这个目标或许仍有难度。即便如此，对于已经如此庞大的经济体而言，这样的增长

仍不可小视——而且其中一大部分将转化为消费品开支的增长。波士顿咨询集团估计，中国的城市居民消费到2020年将增长超过两万亿美元。然而，近期股市的恐慌表明这并非是一个胆小鬼能驾驭的市场。因此，跨国公司必须找到更坚实的踏脚点来开展业务。

首先，他们需要改变那种不惜一切代价追求增长的思维惯式。安永咨询公司的奈杰尔·奈特（Nigel Knight）认为，这一方面意味着需要提高生产率。安永去年对中国各行业的1700多家企业做过调查，发现许多因工资上涨、投入成本上升及竞争加剧而受压，或者由于并购而变得臃肿，而极少有企业能转嫁增加的成本。因此，跨国企业必须像在成熟经济体中那样努力提升竞争力。但奈特表示，许多本地管理人员过于“习惯追求增长目标，而缺乏经验和专才开展大型的效率提升计划，或说白了，根本不想这样做。”

另一方面是需要在市场营销上投入更多精力。马里兰大学史密斯商学院的阿尼尔·古普塔（Anil Gupta）表示，过去，中国许多产业发展落后，企业销售所要做的只不过是雇人接订单而已。如今，从钢铁到汽车的各类产业均出现产能过剩，竞争也已加剧。同时，连小城市的消费者也日益成熟老练，打造品牌和实现差异化至关重要。

通用电气大中华区总裁段小缨表示，顺应政府目标调整公司战略变得越来越重要。政府官员以税收减免等优惠政策拉拢外国企业的日子已经基本结束，但官员们正施加更多压力，希望这些外国企业投资政府重点发展的领域。这正是通用电气向医疗、民航及能源业投入数十亿资金的缘故，其中还包括本地的前沿研究项目。这一战略开始得到回报。今年1月，通用电气的风力涡轮机部门赢得了迄今为止最大的一宗中国订单。

愿意汲取教训的态度也会有所帮助。始创于福建省的连锁超市永辉专注在几个省份发展，已成为中国最成功的超市之一。相比之下，沃尔玛的拓展过于分散，在配货及质量控制上遇到瓶颈。其中国业务负责人柯俊贤（Sean Clarke）已修订公司的扩张计划，意识到“要在中国取得成功，不必打入所有城市”。

另一策略是要找到强大的本地合作伙伴，即使是在政府并未做要求的行业。商业书籍《一小时读通中国》（One Hour China）的作者杰弗里·陶森（Jeffrey Towson）和乔纳森·韦策尔（Jonathan Woetzel）以篮球为例做过一番论述。在中国，足球运动历史悠久，但其商业运作完全失败。相反，美国NBA却能令中国成为其最大的海外市场。央视每周会播出四五场NBA比赛，重要赛事能吸引两亿观众收看。中国球员姚明成为全球热捧的球星是一个推动因素，但陶森和韦策尔认为真正的秘诀在于NBA与央视的合作伙伴关系。

要寻找在中国发展的成功路径，不妨看看欧莱雅，这家法国美妆公司在中国的销售连续18年增长。如今位居世界第二大的中国化妆品市场竞争残酷。顾客非常善变，换品牌是常事。中国对手既在价格方面对外国企业发动直接冲击，也利用传统中草药进军高端市场。但与露华浓不同，这家法国公司因地制宜地做出调整，坚守下来。

欧莱雅的中国业务负责人贝瀚青（Alexis Perakis-Valat）掏出他的智能手机来举例。由于之前几代中国女性少有化妆，女孩们很少能从母亲那里学会化妆。她们往往羞于在朋友面前或商场专柜前试妆，他解释道。现在，数百万女孩会利用手机应用“化妆天才”（Makeup Genius）私下试妆，这款魔镜般的应用让她们看到自己涂上各款口红、眼线和腮红后的效果。

过去十年，该公司已在其闪亮夺目的上海研发中心投入20亿元，根据本地的品味研发出众多制胜产品。中国消费者非常关注空气污染造成的皮肤损伤，欧莱雅就此推出的一系列高端化妆品和面霜成为热销货。但在必要时，公司也会抽身而退，比如，旗下中端品牌卡尼尔因销售不佳，去年已退出中国市场。

总的来说，大多数跨国公司会明智地选择在中国坚持到底，并适应其不断变化的市场。能这样做的公司将发现仍有大笔财富等待发掘。虽然跨国企业相对本地公司的优势已经减弱，但在技术和营销上，他们仍有一些强项可加以利用。正如北京的长江商学院院长项兵所说，跨国公司不能再安坐于飞机的最前排，但相比中国企业，他们飞的仍然是“商务舱”。■

Agricultural commodity markets

Oily food

Fuel-price shocks have a big influence on the price of food

THE prices of staple crops, like those of other commodities, are falling fast. In August they reached their lowest level for eight years, down by over 41% from their peak in 2011. That is not because people are eating less, or because farmers have become much more productive. Nor is it because of a slowdown in Chinese growth, in contrast to many other commodities. Whether going down or up, food prices are largely driven by other factors, among them oil prices and government policy.

Oil first. Cheap fuel means cheaper food. Natural gas, whose price is tied to that of oil, is used for producing fertiliser; other hydrocarbons are used for machinery and transport. Roughly 20% of the cost of producing grain comes from oil, according to Kona Haque at ED&F Man, an agricultural-commodities merchant. Cheap oil also means less demand for biofuels, which in turn means cheaper food because of reduced appetite for grains used in biofuels, particularly maize (corn). Biofuel demand, once an insignificant feature of food markets, now has a sizeable impact: from 2000 to 2011, America went from using 6% of its corn crop (the world's biggest) to make ethanol, to 40%.

Derek Headey and Shenggen Fan of the International Food Policy Research Institute, based in Washington, DC, estimate that the rising cost of oil increased the price of American corn, wheat and soybeans by 30-40% between 2001 and 2007 simply by raising input costs. Adding in the impact of higher oil prices on the demand for biofuels, the effect on food prices was even greater, according to a paper by Sheng-Tung Chen, Hsiao-I Kuo and Chi-Chung Chen, three economists in Taiwan.

Just as the price of food went up with that of oil, its current fall owes more to low oil prices than a self-correcting food market, says Josef Schmidhuber of the UN's Food and Agriculture Organisation. In theory, when prices rise, producers should respond by expanding supply. But investment in agriculture did not increase in response to price increases. It dropped by 4.5% in real terms during a run-up in prices in 2008, and remained flat despite the price spike of 2011-12.

In part, this is simply a matter of timing. Agricultural investment naturally lags price movements, since it takes time to bring more land under cultivation and grow a new crop. But even allowing for that, the rich world seemed blind to the price signals of 2008 and 2011, presumably because of the credit crunch and a lack of unused arable land. Britain's Overseas Development Institute found that only 23% of the post-2008 expansion in cereal supply came from rich-world commercial farms.

Instead, production was ramped up in developing countries, particularly in Asia and Africa. India accounted for 29% of the global increase in wheat production between 2005 and 2013. Taken together, China, India and Vietnam accounted for 61% of the global rise in rice production. However, it was not the market that induced this rise, but governments. Policymakers wanted to support domestic agriculture after seeing how the price spike could threaten their food security.

India added to subsidies on fertilisers and power for farmers, as well as cancelling the debts of small farmers and offering them fresh credit. At the same time as dampening prices for consumers by releasing grain stocks, the government raised the "support" prices at which it buys up excess grain. All told, both China and India increased annual government spending on agriculture by 20-30% in 2008.

For all the extra grain produced, government interference made the price

increases worse in many respects. As the price of rice started to creep up in late 2007, China, India, Vietnam and many other producers began restricting rice exports. Such policies can help keep domestic prices down, but they worsen food shortages for everyone else. India's ban led to great hardship in neighbouring Bangladesh: as the share of Bangladesh's rice imports coming from India fell from 95% in 2007 to 3% in 2009, local rice prices almost doubled. Will Martin and Kym Anderson of the World Bank found that export bans explained 45% of the increase in international rice prices. Fear of shortages also led to stockpiling: the Philippines imported more rice in the first quarter of 2008 than it had for the whole of the previous year.

Grain stocks were low in 2008, which left little cushion when prices began to surge. But even though stocks have since been rebuilt, they may not be of much use during the next price spike. Robert Subbaraman of Nomura, an investment bank, argues that stocks are concentrated in developing countries such as China and Thailand that could resort to export bans in times of high prices. Such a moment may not be far off: the incipient El Niño weather pattern normally provokes chaos in agricultural markets. ■

大宗农产品市场

油染食物

燃料价格暴跌对食品价格有巨大影响

像其他大宗商品一样，主要农作物的价格正在快速下跌。8月，它们达到了8年来的最低点，比2011年的峰值下跌超过41%。这不是因为人们吃得少了，或者农民生产率大幅提高了。不同于其他许多大宗商品，它也并非是因为中国增长放缓所导致。食品价格无论上涨还是下跌，大体上都是受其他因素影响，包括油价和政府政策。

首先是油价。燃料便宜，食品就会便宜。天然气用于生产化肥，而其价格与油价挂钩；其他烃类则用于机械和运输。大宗农产品贸易商ED&F Man的科纳·哈克（Kona Haque）表示，粮食生产约20%的成本来自石油。低油价还会造成对生物燃料的需求减少，继而造成食品价格下跌，因为对制造生物燃料的粮食特别是玉米的需求减少了。生物燃料的需求曾对食品市场无关紧要，现在则影响颇大：从2000年到2011年，美国用于制造乙醇的玉米类作物（全球产量最多）的占比从6%上升到40%。

位于华盛顿的国际食物政策研究所的德里克·海蒂（Derek Headey）和樊胜根估计，从2001年到2007年，仅仅由于投入成本增加，油价上涨导致美国玉米、小麦和大豆价格上涨了30%至40%。而根据台湾的三位经济学家陈盛通、郭晓怡、陈吉仲在一篇论文中所指出的，加上高油价对生物燃料需求的刺激，油价对食品价格的影响甚至还要更大。

正如食品价格随油价上涨一样，它目前的下跌也更多是由于油价低迷而非食品市场的自我修正，联合国粮农组织的约瑟夫·施米德胡贝（Josef Schmidhuber）说。理论上，价格上涨时，生产商应该会扩大供应。但对农业的投资并没有随价格上涨而增加。2008年价格开始攀升时，投资按实值计算却下跌了4.5%。尽管价格在2011年至2012年达到高峰，投资却仍保持平稳。

在某种程度上，这只是个时间问题。农业投资天生滞后于价格变动，因为开拓更多耕地和种植新作物都需要时间。但即便考虑到这一点，富裕国家似乎仍无视了2008和2011年的价格信号，这可能是由于信贷危机和缺乏未使用的耕地。英国海外发展研究院（Overseas Development Institute）发现，2008年之后的谷物供应扩张中，只有23%来自富裕国家的商业化农场。

相反，发展中国家的生产则逐步提升，特别是在亚洲和非洲。印度占2005年到2013年全球小麦增产量的29%。中国、印度和越南总共贡献了全球水稻增产量的61%。然而这一增长并非由市场引导，而是由政府促成。在看到价格飙升可能危及粮食安全之后，政策制定者想要支持国内农业生产。

印度增加了对化肥和农民用电的补贴，取消了小农户的债务并为他们提供新的贷款。在释放粮食库存抑制消费价格的同时，政府提高了收购过剩粮食的“支持”价格。总的来说，在2008年，中国和印度在农业上的年度政府开支都增加了20%至30%。

尽管粮食增产，但政府的干预在很多方面使价格上涨更为严重。在2007年底水稻价格开始慢慢攀升之时，中国、印度、越南和其他许多生产国开始限制稻米出口。这些措施可以帮助抑制国内价格，但加剧了其他地方的粮食短缺。印度的禁令导致邻国孟加拉国陷入极大困境：随着孟加拉国从印度进口的稻米比例从2007年的95%骤降到2009年的3%，该国国内的米价几乎翻番。世界银行的威尔·马丁（Will Martin）和凯姆·安德森（Kym Anderson）发现，出口禁令贡献了国际米价涨幅的45%。对粮食短缺的担忧还导致囤积：菲律宾在2008年第一季度进口的稻米比上一年的总量还多。

2008年的粮食储备较少，使得粮价开始飙升时缺乏缓冲。但即使储备在那之后得以重建，在下一次价格猛涨时仍可能难有大用。投行野村证券的苏博文（Robert Subbaraman）认为，粮食储备集中于中国和泰国等发展中国家，它们在价格高涨时可能采取出口禁令。这一时刻可能并不遥远：初期的厄尔尼诺现象通常会引起农业市场的混乱。■

Resilient notes and coins

Money for everything

Despite many usurpers, cash is still king

CASH has many enemies. Banks have added contactless technology to their credit and debit cards; apps like Uber use pre-stored details for transactions and services such as Venmo allow people to make transfers to one another using only mobile phones. Peter Bofinger of the German Council of Economic Experts says cash should be phased out to save the money spent printing and distributing it, and to eliminate the annoying queues generated by shoppers who insist on using it. Lawmen dislike it, since it is an enticingly anonymous store of value for criminals. Now even central bankers are getting in on the act: the chief economist of the Bank of England has proposed eliminating cash as part of a plan to permit negative interest rates. (Storing bank notes under the mattress is an easy way of thwarting a bank intent on charging negative rates.) Yet for all its detractors, cash is puzzlingly resilient.

Economists had long assumed that as nations grow richer and their financial infrastructure becomes more elaborate, the amount of cash in circulation would first grow rapidly and then begin to slow, as alternatives gained traction. Eventually, an absolute decline seemed likely, as cards and apps supplanted notes and coins.

Thus the value of cash in circulation in China grew fourfold between 2000 and 2014 as the economy soared. In Sweden, meanwhile, demand for the physical sort of krona has fallen steadily for the past decade. In 2005 there were 10,700 kronor ($1,430) in circulation for every Swede; by 2014 that had fallen to 8,000. This has had interesting anecdotal effects: would-be robbers have been turned away by cashless banks; churches now offer card-readers to tech-savvy parishioners. Denmark, another early deserter of

cash, has seen weak demand for banknotes.

But even among rich countries, Sweden and Denmark remain outliers. Elsewhere, demand for cash continues to rise steadily (see chart). Curiously, the rich country clinging the most enthusiastically to cash appears to be South Korea. Despite Koreans' fondness for plastic and a declining number of cashpoints, won in circulation have risen by 15% a year since 2009, or more than triple the rate of the previous five years. This cash is not being spent in shops; nor is it likely that the shadow economy has grown enormously.

Instead, Koreans seem to be hoarding cash. Very low interest rates have reduced the opportunity cost of snubbing banks. And in 2013 the government reduced the amount of interest Koreans could earn before becoming liable for tax. To avoid the resulting paperwork and scrutiny, many wealthy Koreans began storing their excess earnings in cash. The Bank of Korea saw many high-denomination notes disappear from view; sales of private safes tripled between 2010 and 2014.

Koreans are not the only hoarders. Recent British surveys suggest that locals keep £3 billion-5 billion ($4.5 billion-7.5 billion) in their piggybanks, representing up to 10% of the sterling in circulation. That points to a more nuanced explanation for the persistence of cash. It may well be ceding ground to contactless cards and the like for low-value transactions, but high-denomination notes are still in favour. In America, $100 notes now account for almost 80% of the value of banknotes, up from 60% two decades ago. In Britain, £20 and £50 notes (the two highest denominations) make up a growing share of the cash in circulation. As a means of exchange, cash may be losing its lustre, but as a store of value, it seems to have a future. ■

坚韧的纸币和硬币

有钱万事通

尽管篡位者众多，现金仍是王者

现金敌人众多。银行已经在信用卡和借记卡上添加了非接触式技术，优步一类的应用把预先存储的信息用于交易，诸如Venmo的服务让人们只用手机就可以互相转账。德国经济专家委员会（German Council of Economic Experts）的彼得·博芬格（Peter Bofinger）称现金应当被淘汰，从而节省印刷和发行货币的成本，并能避免因为一些人坚持使用现金而使得结账处大排长龙的恼人情形。执法人员不喜欢现金，因为这对于罪犯来说是匿名储值的诱人手段。现在甚至连央行的人也加入了这一行列：英格兰银行的首席经济学家已经提出要取消现金，作为允许负利率计划的一部分。（把纸币藏在床垫下是阻碍银行收取负利率的简单方法。）不过尽管贬损者众多，现金却依旧莫名其妙地坚韧。

长久以来经济学家都假定，随着各国越来越富裕以及其金融基础设施变得更加精密，流通中的现金量起初将迅速增长，之后，因为其他的替代选择渐受欢迎，增速开始减缓。最终，随着各种卡和应用取代纸币和硬币，现金似乎会发生绝对的衰落。

因此，2000年至2014年间伴随经济猛涨，中国流通中的现金量增加了四倍。与此同时在瑞典，过去十年对实物克朗的需求稳步下降。2005年每个瑞典人拥有1.07万流通中的克朗（1430美元），到2014年已降至8000克朗。这据传已经产生了这样有趣的效果：没有现金的银行摆脱了劫匪；教堂向精通科技的教友提供读卡器。丹麦也早早抛弃了现金，对纸币的需求业已疲软。

但即便是在富裕国家，瑞典和丹麦也属另类。在其他地方，对现金的需求仍在稳步上升（见图表）。令人好奇的是，最热衷使用现金的富裕国家看来是韩国。尽管韩国人喜爱信用卡且自动柜员机的数量在下降，但自2009年起，流通中的韩元每年以15%的速度增长，是前五年增长率的三倍多。

现金并没有花在商店里，而影子经济也不可能增长那么多。

相反，韩国人似乎在囤积现金。非常低的利率降低了离弃银行的机会成本。2013年政府降低了韩国人利息所得税征收的起点。为了避免由此带来的文书工作和审查，很多富裕的韩国人开始以现金存放超额收益。韩国银行发现很多大面额钞票从市场上消失，而2010年至2014年间私人保险柜的销售量增加了两倍。

韩国人不是唯一的囤积狂。最近英国的调查显示英国人在自家的储蓄罐里存着30亿至50亿英镑（45亿至75亿美元），相当于流通中英镑的10%。这就指向了对现金韧性更细致的一个解释。它很可能会在小额交易中让位于非接触式卡片等技术，但大面额的纸币仍受青睐。在美国，面值为100美元的钞票如今占纸币价值的80%，20年前为60%。在英国，20镑和50镑面值的钞票（最大的两种面值）在流通现金中的比例越来越大。作为交换手段之一，现金可能正渐渐失去光彩，但作为储值手段，它似乎还有前途。

Exchange rates

Pegs under pressure

Currency pegs are still in fashion, but some are creaking

SINKING might be a better description than floating when it comes to many of the world's currencies. A plunge in commodity prices has hit producers of natural resources hard. The weak oil price, in particular, has undermined the current-account position of oil exporters. The Economist Intelligence Unit (EIU), our sister company, expects the Norwegian current account to have deteriorated by 3.3 percentage points between 2013 and 2015. Many currencies have followed the oil price down. Since June 2014, the Norwegian krone has declined by 26%, the Brazilian real by 40% and the Russian rouble by 45% against the greenback (see chart).

Those who believe that competitive exchange rates boost economic growth should be pleased. But not every country is willing to let its currency freely adjust. The IMF's annual review of currency regimes, published in October, revealed that at the beginning of 2015 only 35% of member countries let their currencies float, and only 16% intervened rarely enough for the IMF to classify them as "free floating". The rest, from Hong Kong's iron-clad peg to the dollar to the stumbling Nigerian naira, are managed with a tighter grip.

This penchant for pegs can make sense. Many big oil exporters peg their exchange rates to the dollar because oil is priced in that currency. Anchoring a country's exchange rate to another, stable currency allows a weak central bank to latch on to the credibility of a stronger institutions, and so keep inflation expectations steady. Just ask a Zimbabwean whether they prefer the old regime (when 175 quadrillion Zimbabwean dollars exchanged for five American dollars) or the new, hard-currency one.

But pegs come with strings attached. In a free market, a shock such as a

collapse in the value of exports would boost relative demand for foreign exchange, which in turn would cause the domestic currency to depreciate. The danger of a peg is that rather than allowing the exchange rate to adjust gradually, imbalances build up. Speculators spot the problem and attack the currency; if the country has to push up interest rates to defend the peg that hurts the underlying economy, but devaluing brings potential ruin to companies that have borrowed in foreign currency.

If the exchange rate does not adjust to a shock, then something else has to shift instead. Some places, like Hong Kong, have enough flexibility to cope; its strong peg to the dollar works because workers' wages can go down as well as up. But not everywhere is so nimble. An alternative approach is to build huge reserves to ward off speculators, as Saudi Arabia has done. According to estimates from Jadwa Investment, a Saudi Arabian fund manager, the government has amassed enough reserves to cover a comforting 48 months of imports. Few seem to think that the Saudi peg will fall soon.

Other pegs have been buckling under global pressures. Both the Kazakh tenge and the Vietnamese dong have seen their pegs break in the wake of the recent Chinese devaluation. The Kazakhs had little choice, even though a similar move in February 2014 led to street protests as imported luxuries were lifted out of the reach of ordinary people. The country has also had to cope with a fall in the Russian rouble, a big trading partner. Maintaining the dollar peg would have left Kazakh exporters painfully uncompetitive.

Naira-do-well

Other oil producers have adopted strategies that risk doing more harm than good. The Nigerian naira and Angolan kwanza have depreciated by 19% and 27% respectively against the dollar since June 2014, as their central banks have allowed them to drop in a series of steps. But according to Yvonne Mhango of Renaissance Capital, an emerging-market investment bank,

both still have some way to go.

Rather than getting the pain over with, the Nigerian government is trying to shock the economy into plugging the gap between import and export revenues. In June the Central Bank of Nigeria produced a list of 41 items that cannot be bought using foreign exchange, including rice, rubber, toothpicks and private jets. According to Ms Mhango, these import restrictions are causing a recession in its manufacturing sector, which cannot get access to the raw materials it needs. “There is nothing to suggest that the gap in supply that has been created by the import ban can be filled. In the short term, the prices of those goods are just increasing,” she says. The government is creating the very problem it is trying to prevent.

Venezuela is also in a fix. The falling oil price is expected to turn its current account from a surplus to a deficit. With enough reserves for only three months of imports, it has clamped down on access to foreign exchange. The IMF expects it to be one of this year’s worst economic performers. The inflation rate is widely estimated to be in triple digits.

For countries such as these, burning through central-bank reserves is a short-term solution to defending a currency; and restricting trade is self-defeating. Nigeria and Angola have already devalued more than once, and investors sense that there is further to go. The only question is what will force the move; outside speculators, or economic pressure from within. ■

汇率

联系汇率制度面临压力

货币挂钩仍然普遍，但部分已出现危机

要描述世界许多货币的汇率现状，“下沉”也许比“浮动”更贴切。大宗商品价格暴跌已对自然资源生产国造成严重打击，油价疲软尤其损害了石油出口国的经常帐户状况。我们的姐妹公司经济学人智库（EIU）估计，挪威的经常帐目盈余在2013至2015年间已下降3.3%。多国货币随着油价下跌而贬值。自2014年6月，挪威克朗兑美元已下跌26%，巴西雷亚尔和俄罗斯卢布则分别下降了40%及45%（见图表）。

那些认为浮动汇率能刺激经济增长的人该为此感到高兴。然而并非每个国家都愿意让其货币自由调节。国际货币基金组织（以下简称IMF）10月发表了对各国货币制度的年度调查报告，其中显示2015年初只有35%的成员国允许本国货币汇率浮动，而且仅16%的国家干预甚少而符合IMF的“自由浮动”标准。其余的货币则管制更严，像与美元牢牢挂钩的港元以及持续下跌的尼日利亚奈拉。

偏爱联系汇率确有其道理。许多石油出口大国将其汇率与美元挂钩，因为石油以美元定价。一国汇率锚定另一种稳定货币能令弱势央行搭上便车，借强势机构（央行）的信誉，使通胀预期保持平稳。随便问一个津巴布韦人，看他们喜欢旧汇率制度（175千万亿津元兑换五美元）还是新的硬通货制度。

但联系汇率是有代价的。在一个自由交易的市场里，出口产品价值暴跌等冲击会导致相应的外汇需求加大，这反过来会造成本国货币贬值。汇率挂钩的危险在于，汇率并未得到逐步调节，反而越来越失衡。投机者发现问题，趁机狙击这一货币；假如该国不得不推高利率捍卫联系汇率，基础经济将受到损害，而贬值又可能殃及以外币借债的公司。

假如汇率不针对冲击做出调整，别的方面则不得不改变。有些地方，比如

香港，在应对上有足够的灵活性。港元与美元稳定挂钩之所以可以有效运行，是因为工人工资可跌可升。但并非所有地方都如此灵活。另一方法是建立庞大的外汇储备以抵御投机者，就像沙特阿拉伯所做的那样。据沙特基金管理公司扎德瓦投资公司（Jadwa Investment）的估计，政府积聚的外汇储备足够安心支付48个月的进口货款。似乎很少人认为沙特会在短期内脱离联系汇率制度。

其他地方的联系汇率制度则在全球压力下逐渐瓦解。随着近期人民币贬值，哈萨克斯坦坚戈及越南盾已解除联系汇率制度。哈萨克斯坦是迫于无奈，尽管2014年2月类似的举措令进口货品成为普罗大众无法负担的奢侈品，引发了街头示威。其主要贸易伙伴俄罗斯的货币贬值也是该国要应对的问题。保持联系汇率制度会令哈萨克斯坦的出口商痛失竞争力。

> *一文不值*

其他石油生产国采取的策略有可能会弊大于利。自2014年6月以来，尼日利亚奈拉和安哥拉宽扎兑美元已分别贬值19%及27%，这是因为其央行推出一系列措施允许汇率下降。但新兴市场投资银行复兴资本（Renaissance Capital）的伊冯娜·曼戈（Yvonne Mhango）认为，两国仍有一段路要走。

尼日利亚政府并没有收拾残局，而是试图冲击经济来收窄入超。6月份，尼日利亚央行列出一份清单，规定不能使用外汇购买41种产品，包括大米、橡胶、牙签及私人飞机。曼戈认为，这些进口限制令制造业无法购入所需原材料，正在导致行业衰退。“没有证据显示这一进口禁令导致的供应缺口可以得到填补，短期内这些产品的价格只会上涨。”她说道。政府的措施适得其反。

委内瑞拉也是进退两难。油价下跌预计将令其经常帐户从盈余变为赤字。眼看外汇储备只够支付三个月的进口货款，委内瑞拉已收紧换汇。IMF预计该国将是今年经济表现最差的国家之一。普遍估计其通胀率将会达到三位数。

对于这样的国家，依赖央行储备只是捍卫本国货币的短期方法，而限制贸易更会弄巧成拙。尼日利亚和安哥拉已不止一次贬值本币，投资者估计还会有进一步的贬值。唯一的疑问是，什么会迫使政府这样做？是外部投机者，还是其自身的经济压力？■

China

China's economic blueprint

Deeper reform is the way forward, says Li Keqiang, prime minister of China

For the Chinese economy, 2016 is a year of reform, openness and international co-operation. These priorities may sound surprisingly familiar to China-watchers. Their potent combination has been instrumental in China's growth story over decades. We are taking them further.

Given the size of China's $10 trillion economy, overdependence on investment and exports is not tenable. What is called for is not temporary fixes: my government has resisted the temptations of quantitative easing and competitive currency devaluation. Instead we choose structural reform.

We are pushing through market reforms, to speed the transition to a sustainable growth model markedly more driven by innovation and consumption. Employment, income levels and the environment are all high on our list of priorities.

We are combining myriad policy tools into two major drivers of growth. The first, essential to structural reform, highlights entrepreneurship and innovation. The second focuses on better provision of public goods and services—which in turn contributes to stronger demand and a higher quality of life. It is all about striking a better balance between the state and the market by offering individuals, small and medium-sized companies as well as major corporations a more enabling environment for business development and innovation, thereby unlocking growth potential. A leaner government can play a better role as macroeconomic fine-tuner, regulator for fair competition, champion of the reform agenda and ultimate backstop

when systemic risks threaten.

These efforts are already paying off. The services sector, accounting for half of China's GDP, keeps widening its lead over manufacturing. Entrepreneurship and innovation are the new fashion. Over 10,000 new businesses are registered every day. Growth in high-tech industries is leading that of the industrial sector by a wide margin. Innovations in technology, business models and management keep widening the economic horizon in previously unimaginable ways.

We are creating over 10m jobs a year and disposable-income growth is outstripping that of GDP. Consumption, already responsible for 60% of growth, keeps going strong and up-market. Take outbound tourism, for example: Chinese citizens made over 100m trips overseas in 2014, and the first half of 2015 saw year-on-year growth of 10%.

In short, despite moderation in growth, the Chinese economy is moving in the desired direction of stronger domestic demand and innovation. One by-product is a fall in the relevance of indicators such as power consumption, rail-cargo volume and new bank credit in gauging economic performance. Yet this transition from "bigger is better" to "less is more" is a good thing. I would otherwise be worried whether the reforms were working as intended.

Structural reform is not only about exploring new sources of growth, but also about making traditional industries more competitive. China's massive industrial sector remains a vital part of our plan for growth. We are working on upgrading "Made in China" with "China Manufacturing 2025", "Internet Plus" and other initiatives. We are deepening integration with the world economy with deregulation in many areas to improve access for foreign investments, not least in service sectors.

Make no mistake. Competition is growing tougher as the Chinese market matures. But we are confident that China is a worthwhile market, a pivot of the global supply chain and a partner for the wider world market.

The best of all worlds

This is not yet a world of plenty. Billions in developing countries are yet to benefit from large-scale industrialisation and proper infrastructure. The demand is enormous, but largely subdued for lack of proper funding, affordable equipment and technology.

This can be changed. On connectivity, we have the "Belt and Road" initiative. On industrialisation and urbanisation, we offer partnerships in industrial-capacity co-operation. Combining China's manufacturing prowess with the cutting-edge technologies of the developed economies, we can, together, supply good equipment at good prices to the developing world, sustaining robust growth with supply-side innovation. If development for 1.3 billion Chinese has helped buoy world growth, imagine what such growth spurts for many more billions could do for the commodities market, manufacturing and many others.

Structural reform featuring entrepreneurship and innovation, greater openness and win-win international co-operation—these are our priorities for 2016 and beyond. This is our answer to the call for sustainable growth—a blueprint for sharing with the world China's market opportunities and Chinese ingenuity.

by Li Keqiang

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中国

中国经济的蓝图

中国总理李克强说，深化改革是前进之路

2016年，中国将继续深化改革，扩大对外开放， 拓展国际经济合作。对于长期观察中国的人们来说， 这些听起来大概耳熟能详。改革、开放与国际合作的有力结合，是多年来中国增长故事的核心要素。我们正在将其进一步推向前进。

中国经济总量已超过10万亿美元。在这样的体量基础上继续发展，过度依赖投资和出口拉动是不可持续的。小修小补只能应付一时：本届政府没有推行量化宽松，也没有采取竞争性货币贬值的措施，我们作出了推动结构性改革的抉择。

我们要通过大力推动市场化改革，尽快构建起一个大幅度增加创新驱动和消费拉动力的可持续增长新模式，更加关注社会就业、居民收入增长和生态环境的持续改善。

我们将很多政策工具组合成两大经济增长引擎， 一个是大众创业、万众创新，这是结构性改革的重要内容；另一个是增加公共产品、公共服务供给，既拉动有效需求，又可以改善民生。这两者的关键在于处理好政府和市场的关系，为个人、中小企业和大企业等市场主体营造更加适于创业创新的环境，释放增长潜力。一个更加简政放权的政府可以运用自身所长，做好宏观经济调控者、公平竞争的有效监督者、改革的推动者，并在系统性风险冒头时果断加以应对。

这些改革努力正在收到成效。服务业已占到中国GDP的一半，实现对制造业的反超且升势不减。创业创新蔚然成风，每天新增注册企业超过1万家。高技术产业增速明显快于整个工业，新技术、新的商业模式和管理方式正在以过去难以想象的方式拓宽中国经济的地平线。

中国每年新增城镇就业1000万人以上，居民收入增长超过GDP增速。消费对经济增长的贡献率达到 60%，消费升级也伴随着强劲增长。以出境游为例，去年中国公民出境达1亿人次，今年上半年又同比增长10%。

简而言之，尽管增速有所放缓，中国经济正在朝着我们期待的方向，朝着更多立足内需和创新拉动的方向发展。一个副产品是，经济运行状况同用电量、铁路货运量和新增银行贷款等衡量指标之间的关联系数在发生着变化。中国经济从“求快求大”到“求优求精”的转变是一件好事。不然我要开始担心各项改革措施是否真的取得成效了。

结构性改革不仅是寻找新的增长点，也包括提高传统产业的竞争力。中国规模庞大的工业部门仍是我们增长规划的重要组成部分。我们正在努力推动“中国制造”更上层楼，提出了“中国制造2025”、“互联网+”等举措。我们也将更大程度融入世界经济，在更多领域放宽外资准入，其中服务业领域的开放也会进一步扩大。

当然，随着中国市场不断成熟，竞争也会愈发激烈。但我们有信心，因为中国市场值得投入，因为中国是全球供应链的重要枢纽，而且中国还可以成为同各国合作开发全球市场的理想伙伴。

> *集各方所长*

我们的世界难称富足。生活在广大发展中国家的数十亿人民还没有享受到大规模工业化和良好基础设施的便利。他们的需求是巨大的，但由于缺乏资金和负担得起的装备和技术，这些需求很大程度上被抑制了。

这是可以改变的。中国正在推动“一带一路”建设。通过国际产能合作，将中国制造业的性价比优势同发达经济体的高端技术相结合，向广大发展中国家提供“优质优价”的装备，帮助他们加速工业化、城镇化进程，以供给创新推动强劲增长。试想如果中国13亿人的发展能为支撑世界经济增长作贡献，那涉及数十亿人的增长将为大宗商品市场、制造业以及更广泛的领域等带来多么巨大的机遇！

2016年以及之后的更长时期，推动大众创业、万众创新等结构性改革和更

高水平对外开放、各方共赢的国际合作都将是我们工作的重点。这是我们对实现可持续和高质量增长的答案，是一份中国市场、中国创造与世界共享的蓝图。

撰文：李克强

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Insider trading

Friends without benefits

America's Supreme Court allows an important ruling to stand

EVEN a non-decision by the Supreme Court can cause waves. On October 5th, as part of its routine disclosure of upcoming cases, the Court declined to take up a petition related to insider trading. The Justice Department had wanted it to overturn an appeals court's decision in December to throw out the conviction of two hedge-fund managers. That means the decision will now stand, setting an important legal precedent.

This is not only a blow to Preet Bharara, the federal prosecutor with jurisdiction over Wall Street who had brought the original case, but also an attack on an aggressive and—up to that point—successful approach to insider trading. Since his appointment in 2009 as the US Attorney for the Southern District of New York, Mr Bharara's office has had a remarkable record in insider-trading cases: 87 findings of guilt, and only one acquittal.

This record is all the more impressive given the stature, connections and legal resources of the defendants. Among the most prominent were Rajat Gupta, who sat on the boards of Goldman Sachs and Procter & Gamble, and once led McKinsey, a consultancy; Raj Rajaratnam, head of Galleon, once among America's largest hedge funds; and eight employees of SAC Capital, another top-tier hedge fund. All were sentenced to jail.

Now the courts have done what defendants failed to do—put Mr Bharara on the defensive. The two hedge-fund managers whose case was thrown out—Todd Newman and Anthony Chiasson—were accused of being members of a circle that involved analysts at fund managers, employees at Dell and NVIDIA, two technology firms, and others. Information about upcoming quarterly earnings was passed through the network. That proved

to be extremely valuable, resulting in $4m in profits for Mr Newman and $68m for Mr Chiasson. As damaging as this may have appeared, it was diluted by testimony, cited in the appeals-court opinion, indicating that, to at least a limited extent, the sharing of special information between large funds and investor-relations departments is common.

Under the standard imposed by the appeals court, prosecutors must henceforth show that the person providing the inside information received a "direct personal benefit". That is a shift from what Mr Bharara's team had claimed was sufficient: showing that the recipient could profit from the information, and was a friend or family member of the person providing it. The "benefit", in short, came from merely providing something of value to someone the provider valued.

Mr Bharara has said he believes that 90% of the prior convictions will stand under the new rules. But that still raises questions about not only past cases but also those yet to come. Thirteen are pending and others surely in development.

A second component of the appeals-court decision was that prosecutors must show that the recipient of the information was both aware that the information came from someone who had an obligation not to provide it, and that the recipient was aware that the provider received a benefit. That was not challenged in the government's appeal, but has nonetheless rattled prosecutors: if confidential information is passed along a chain of people, the chances grow that this test will not be met.

"There's a category of conduct that arguably will go unpunished going forward," said Mr Bharara in response to the Supreme Court's decision. "This creates an obvious road map for unscrupulous behaviour." Under the new standards, he added, a chief executive with access to material, non-published information could pass it along, knowing it could be worth

millions of dollars to the recipient, yet possibly avoid prosecution because he was not explicitly compensated.

Mr Bharara predicts that the consequences could harm the "integrity" of the markets. Perhaps. Investing has always been, to at least some degree, about finding and using information that others do not have. Insider-trading cases are typically full of grey areas. But one thing in this legal back-and-forth could not be clearer: by sitting on their hands, the justices of the Supreme Court have taken the shine off the hitherto glittering record of Wall Street's prosecutor-in-chief. ■

内幕交易

无益之友

美国最高法院拒不翻案，重要裁决成定局

最高法院即便不做裁决也会掀起波澜。10月5日，美国最高法院例行公布了即将审理的案件，其中拒绝受理一宗有关内幕交易的上诉。去年12月联邦上诉法院推翻了对两名对冲基金经理人的有罪裁定，美国司法部曾寄望这次最高法院能逆转结果。但如今，最高法院拒不受理该案意味着上诉法院的判决将被维持，并成为重要判例。

这不仅打击了最初提出检控的联邦检察官普里特·巴拉拉（Preet Bharara）——他对华尔街负有管辖权，而且在对付内幕交易上，原本激进且在此之前一直颇有成效的手段现在也受到了冲击。自从在2009年被任命为美国纽约南区联邦检察官后，巴拉拉携员在打击内幕交易上取得了骄人战绩：87宗裁定有罪，只有一宗被判无罪。

考虑到被告人的地位、人脉及法律资源，这样的战绩更显彪炳。那些最为显赫的被告人包括：曾任高盛集团及宝洁公司董事并曾领导麦肯锡咨询公司的拉雅·古普塔（Rajat Gupta）、曾是美国最大的对冲基金之一的帆船集团（Galleon）老板拉杰·拉贾拉特南（Raj Rajaratnam），以及另一顶级对冲基金公司SAC资本（SAC Capital）的八名雇员。他们全部被判入狱。

如今法院替这些被告完成了当日未竟之事——置巴拉拉于守势。有罪裁决被推翻的两位对冲基金经理——托德·纽曼（Todd Newman）和安东尼·夏亚松（Anthony Chiasson）曾被指控为一个内幕圈子的成员，该圈子还包括基金管理公司的分析师、戴尔和英伟达（NVIDIA）两家科技公司的雇员及其他人等。据称，季报信息提前在该圈子内分享。这些信息之后被证明极具价值，分别给纽曼和夏亚松带来了400万美元和6800万美元的收益。虽然看似如此具有破坏力，但上诉法院引用的证词中却对此轻描淡写，显示至少在限定范围上，大型基金和投资者关系部门之间共享特殊信

息的情况很普遍。

根据上诉法院的判决标准，检察机关今后必须证明提供内幕信息的人士收受了“直接的个人利益”。这不同于巴拉拉团队之前所认为的充分证据：证明内幕信息的接收者能从中获利，并与提供信息的人是朋友或家人关系。简而言之，“利益”仅仅源于输送者向其看重的人士提供了具有价值的信息。

巴拉拉说过，他相信之前90%被定罪的案件不会因新规则而被推翻。但这仍令人们产生疑问，不只是对旧案的裁决，也包括对将来案件的审理。目前待决案件有13宗，此外肯定还有正在调查准备起诉的案件。

上诉法院这一裁决的第二层含义是检察官必须证明信息接收者既明白信息来自有义务保密的人士，又清楚泄密之人收受了利益。虽然政府在上诉时并没反驳这一点，但它仍让检察官们焦躁不安：假如机密信息经由连串人士传递，可能就无法按上述要求取证。

“可以说，有一类行为将从此逍遥法外，”巴拉拉在回应最高法院裁决时说，“这给不道德行为提供了明显的路线图。”他补充道，在新标准之下，拥有非公开资料知情权的首席执行官可以将信息传出，深知对信息接收人而言这可能价值数百万美元，而同时因为他本人没有明确收取报酬，所以可能避免被起诉。

巴拉拉预言这造成的后果将损害市场的“诚信”。或许是这样，但投资活动一直讲求寻找并利用其他人没有获得的信息，至少在某种程度上是如此。内幕交易案件通常充满灰色地带。然而，在这场法律拉锯战中，有一点再清晰不过：最高法院的法官们这一招“坐视不理”使得华尔街首席检察官先前的战绩光芒尽失。■

Climate change

Clear thinking needed

Global warming cannot be dealt with using today's tools and mindsets. So create some new ones

IN SOME ways, the climate talks that begin in Paris on November 30th will show world leaders at their best. Taking a break from pressing issues such as terrorist threats and stuttering economies, they will try to avert a crisis that will pose its gravest risks long after they have left office. It is the opposite of the myopic thinking that is often said to afflict politics. A pity, then, that politicians have set themselves an impossible task, and that they are mostly going about it in the wrong way.

That climate change is happening, that it is very largely man-made and that it is exceedingly dangerous, are all now hard to deny (though America's leading Republican presidential candidates routinely try). This year will all but certainly be the hottest since 1880, when NASA's records begin. If so, 2015 will break a record that was set only in 2014. Every single year so far this decade has been hotter than every single year before 1998 (see our special report).

The wind turbines and solar panels that are spreading across Europe, America and China are barely restraining carbon-dioxide emissions. Since the turn of the century, global energy has become more, not less, carbon intensive. Coal now supplies 41% of the world's electricity and 29% of the world's energy—a bigger share than at any time in at least four decades. The atmospheric concentration of carbon dioxide is 40% higher than it was at the beginning of the industrial revolution.

A terrible two

The presidents and prime ministers who gather in Paris will insist that

global warming must be halted before the world becomes 2°C (3.6°F) hotter than it was in pre-industrial days. That is what they have said for years but, considering the momentum behind climate change, this target is as unrealistic as it is arbitrary. If annual greenhouse-gas emissions remain at the present level, enough pollution will enter the atmosphere in just 30 years eventually to warm the world by two degrees.

Greens say that the target is a rallying point—that it is useful because it inspires action, and action, once under way, will inspire yet more action in a virtuous circle. If only world leaders would stiffen their spines and promise even more green energy, they argue, disaster could be averted. But this drastically understates the challenge. The parts of the planet that have become rich have done so by tapping a vast store of fossil energy with feckless, if understandable, abandon. For the rest of the world to join them over the century ahead, and then for all concerned—as well as the planet's non-human inhabitants—to flourish in the centuries that follow, will take a lot more than just a big expansion of existing renewable technologies.

The world and its leaders need more ambition and more realism. The ambition requires increasing the options available. Generous subsidies perpetuate today's low-carbon technologies; the goal should be to usher in tomorrow's. Unfortunately, energy companies (unlike, say, drug firms or car companies) see investment in radical new technologies as a poor prospect, and governments have been feeble in taking up the slack. A broad commitment quickly to raise and diversify R&D spending on energy technologies would be more welcome than more or less anything else Paris could offer.

This would be costly. But remember three things. One is that spending money to reduce grave risks is reasonable. The second is that some of today's climate policies cost a lot more than a greatly expanded research portfolio and yield rather less. The subsidies that have created thousands of

wind and solar farms have achieved only a little and at great cost. Other green subsidies, such as some of those for biofuels, have done actual harm. There is plenty of money to be saved.

A third is that one of the best measures against climate change raises money. Well-designed carbon prices can boost green power, encourage energy-saving and suppress fossil-fired power much more efficiently than subsidies for renewables. A few brave places have plumped to set such prices through carbon taxes: the latest is Alberta, in Canada. Most countries that have tried to price carbon have instead issued tradable pollution permits—invariably too many of them, with the result that the price is too low to change behaviour. Ideally such countries would admit their mistake and start taxing. Failing that, they should keep their emissions-trading schemes but add a floor price, and raise it steadily.

The new research agenda needs to tackle the deficiencies of renewables. Though solar, in particular, has become a lot cheaper, new materials, manufacturing and assembly technologies could make it cheaper still. Better ways of storing energy are required—so that wind or solar power can be used, for example, in the cold, still winter evenings when European electricity demand tends to peak. So are better ways of getting it from A to B, either through larger grids or in the form of newly synthesised fuels. Could biotechnology produce photosynthetic bugs that pump out lots of usable fuels? No one knows. It would be worth a few billion to find out.

Nor should the ambitions for research be limited to renewables. There are other forms of fossil-fuel-free energy, such as nuclear. Innovation in nuclear energy is not easy: such power plants are dangerous and need vigilant, independent regulation; they are unpopular and currently vastly expensive. But a civilisation that looks decades or more ahead cannot exclude new forms of nuclear from the research agenda.

Living with it

Radical innovation is the key to reducing emissions over the medium and long term, but it will not stop climate change from getting worse in the meantime. This is where the realism comes in: many people will have to adapt to a hotter Earth, and some of them will need help.

Wealthier countries (including China) have promised $100 billion a year to help poorer ones. The trouble is that it is not clear what counts towards this total or what the money is for. If the Paris climate conference dissolves in rancour, this will probably be the cause. The priority should be research into crops that can survive extreme weather; better sanitation and health care to make the poor more resilient to climate shocks; and cheap energy, whether green or not. The poor need all these things more than they need gifts of green-power technologies that even the West finds too expensive.

The final strand of new thinking ought to be research into cooling the Earth artificially. Climate models suggest that global warming could be slowed by spraying particles into the stratosphere or by using salt crystals to make clouds whiter, and hence better at reflecting sunlight. No one knows whether such "geoengineering" projects can be designed in a way that does not replace existing climate risks with worse new ones. But that is a reason for research and debate, not for looking the other way. Geoengineering is not a substitute for cutting greenhouse-gas emissions (for one thing, it does not stop carbon dioxide from changing the chemistry of the oceans). But putting it off-limits, as many greens desire, is foolish.

In short: thinking caps should replace hair shirts, and pragmatism should replace green theology. The climate is changing because of extraordinary inventions like the steam turbine and the internal combustion engine. The best way to cope is to keep inventing. ■

气候变化

需要清晰思考

用当今的工具和思维方式已无法应对全球变暖。需要创造些新发明和新思想

某种程度上，定于11月30日在巴黎召开的气候大会将展现各国领导人的最佳状态。他们将暂时从恐怖主义威胁和吃紧的经济形势等紧迫问题中抽身出来，去努力避免一场危机，而这场危机最大的风险将在他们离任很久之后才会发生。这恰与困扰政界的短视思维背道而驰。然而遗憾的是，政治家们为自己设定了一项不可能的任务，而且正以基本错误的方式执行它。

气候变化正在发生，它主要由人为造成，而且异常危险，所有这些如今都难以否认（尽管美国民调领先的几个共和党总统候选人经常试图否认）。今年几乎肯定会成为自1880年美国国家航空航天局（NASA）有记录以来最热的一年。果真如此的话，2015年将会打破2014年刚刚创下的记录。到目前为止，在本世纪的第二个十年里，每一年都比1998年之前的任何一年更热。

风力发电机和太阳能板遍布欧洲、美国和中国，却仍然难以抑制二氧化碳排放。自世纪之交以来，全球能源结构变得更为高碳，而非更低碳。煤炭如今提供了全球41%的电力和29%的能源——这一比例高于最近至少40年里的任何时期。相比工业革命开始时，如今大气中的二氧化碳浓度提高了40%。

可怕的2度

齐聚巴黎的各国首脑将坚称，在全球温度比前工业时代高出2摄氏度（3.6华氏度）之前，必须遏制住全球变暖的趋势。这一点他们已经说了很多年，但是，考虑到气候变化背后的动因，这一目标既武断又不切实际。如果温室气体排放保持在目前的水平，进入大气的污染物在仅仅30年内就足以把全球温度推高2度。

环保人士称这一目标具有号召力，可以激发行动，而行动一旦点燃，将激

起更多的行动，从而形成良性循环。他们认为，只要各国领导人能挺直腰杆，承诺发展比以往更多的绿色能源，就可能避免灾难。但这大大低估了挑战。地球上先富起来的国家通过不负责任地肆意消耗大量化石能源而致富，其做法或许情有可原。而如果世界上其他国家在未来一个世纪也这么做，然后所有国家，以及地球上的其他生物，要在之后的几个世纪里繁荣发展，则将会消耗更多的能源，远不是现有可再生能源技术大规模扩张就能够满足的。

这个世界及其领导人需要有更宏大的抱负和更务实的态度。这一抱负需要增加可供考虑的其他选择。慷慨的补贴成就了今天的低碳技术，但目标应该是开拓明天的技术。不幸的是，能源企业（不像制药和汽车等行业）认为投资于全新技术的前景黯淡，而政府也无力填补空缺。在巴黎会议上，如果能达成一项广泛的承诺来快速提高能源技术的研发开支并增加多样性，会比其他几乎任何成果都更受欢迎。

这一承诺代价高昂。但是请记住三件事。第一，花钱减少重大风险理所应当。第二，当今的一些气候政策与大力增加各项研发投入相比，成本高得多，成效却更低。政府补贴造就了成千上万的风力和太阳能发电厂，它们耗资巨大而成效寥寥。其他的绿色补贴，例如对生物燃料的补贴，实际上还带来了害处。这其中有很多可以节省的资金。

第三，应对气候变化最有效的方法之一恰恰可以筹集资金。在促进绿色电力、鼓励节能并抑制化石燃料发电方面，设计周全的碳排放价格远比对可再生能源的补贴更有效。一些勇于进取的地区已经在定价时引入碳排放税，最新的一个例子是加拿大的亚伯达省（Alberta）。大多数试图设定碳排放价格的国家转而签发可交易的碳排放许可证，这不可避免地会发证过多，从而导致碳排放定价过低而无法改变排放行为。理想的情况下，这些国家应该会承认错误，并开始征收碳排放税。如果做不到这一点，也可继续执行排放权交易计划，但要设定最低限价，并持续提高这一价格。

新的研究规划需要解决可再生能源的缺陷，尤其太阳能，尽管其成本已经降低了很多，新的材料、制造和装配技术还能让它变得更便宜。需要更好

的能源储存方法，这样一来，例如在欧洲寒冷寂静的冬夜里，当电力需求达到高峰时，也能使用风能或太阳能。同样还需要更好的方法来输送能源，或者使用更大型的电网，或者以新合成燃料的形式输送。生物技术能够创造出可进行光合作用的细菌来生成可用燃料吗？没有人知道。这值得花上几十亿美元来探索。

研究的目标也不应局限于可再生能源。还有其他形式的非化石燃料能源，比如核能。核能的创新并不容易：核电站非常危险，需要严密且独立的监管；它们不受欢迎，而且目前造价高昂。但是，一个放眼于数十年后乃至更长远时期的文明不应把新型核能排除在研究议程之外。

与之共存

从中长期来看，根本性创新是减少排放的关键，但在此期间这并不能阻止气候的恶化。这就需要有务实的态度：很多人将不得不适应一个更炎热的地球，而其中一些人将需要帮助。

较富裕的国家（包括中国）已经承诺每年拿出1000亿美元来帮助较贫穷的国家。但哪些资金计入这一开支，这些钱又将用于何处，答案并不清楚。如果巴黎气候大会不欢而散，这可能是原因所在。当务之急应是研究能够在极端天气下存活的农作物，探索更好的卫生和医疗措施，使穷人能更适应气候突变，并开发廉价的能源，不论其环保与否。穷国更需要这些东西，而不是连西方国家也认为过于昂贵的绿色能源技术。

新思维的最后一环应该是探索人工冷却地球的方法。气候模型表明，在同温层喷洒微粒或者使用盐晶让云彩更白可以反射更多的阳光，从而可能延缓全球变暖。没有人知道这类“地球工程”项目的设计是否能确保在延缓全球变暖的同时不带来更大的新风险。但这正是需要研究和辩论的原因，而不是另寻他途的借口。地球工程并不能取代减少温室气体排放的措施（例如，它不能阻止二氧化碳改变海洋的化学组成）。但像很多环保人士所想的那样把它排除在外，同样是愚蠢的。

总之，认真思考应该替代克己苦行，务实主义应该替代环保神学。蒸汽机

和内燃机等超凡发明造成了气候变化，最好的解决方法是继续发明创造。

The world economy

Cover Story: The never-ending story

First America, then Europe. Now the debt crisis has reached emerging markets

IT IS close to ten years since America's housing bubble burst. It is six since Greece's insolvency sparked the euro crisis. Linking these episodes was a rapid build-up of debt, followed by a bust. A third instalment in the chronicles of debt is now unfolding. This time the setting is emerging markets. Investors have already dumped assets in the developing world, but the full agony of the slowdown still lies ahead.

Debt crises in poorer countries are nothing new. In some ways this one will be less dramatic than the defaults and broken currency pegs that marked crashes in the 1980s and 1990s. Today's emerging markets, by and large, have more flexible exchange rates, bigger reserves and a smaller share of their debts in foreign currency. Nonetheless, the bust will hit growth harder than people now expect, weakening the world economy even as the Federal Reserve begins to raise interest rates.

> *Chronicle of a debt foretold*

In all three volumes of this debt trilogy, the cycle began with capital flooding across borders, driving down interest rates and spurring credit growth. In America a glut of global savings, much of it from Asia, washed into subprime housing, with disastrous results. In the euro area, thrifty Germans helped to fund booms in Irish housing and Greek public spending.

As these rich-world bubbles turned to bust, sending interest rates to historic lows, the flow of capital changed direction. Money flowed from rich countries to poorer ones. That was at least the right way around. But this was yet another binge: too much borrowed too fast, and lots of the debt

taken on by firms to finance imprudent projects or purchase overpriced assets. Overall, debt in emerging markets has risen from 150% of GDP in 2009 to 195%. Corporate debt has surged from less than 50% of GDP in 2008 to almost 75%. China's debt-to-GDP ratio has risen by nearly 50 percentage points in the past four years.

Now this boom, too, is coming to an end. Slower Chinese growth and weak commodity prices have darkened prospects even as a stronger dollar and the approach of higher American interest rates dam the flood of cheap capital. Next comes the reckoning. Some debt cycles end in crisis and recession—witness both the subprime debacle and the euro zone's agonies. Others result merely in slower growth, as borrowers stop spending and lenders scuttle for cover. The scale of the emerging-market credit boom ensures that its aftermath will hurt. In countries where private-sector indebtedness has risen by more than 20% of GDP, the pace of GDP growth slows by an average of almost three percentage points in the three years after the peak of borrowing. But just how much pain lies ahead will also depend on local factors, from the scale of the exchange-rate adjustment that has already taken place to the size of countries' reserves. Crudely, most emerging economies can be put into one of three groups.

The first group includes those for which the credit boom will be followed by a prolonged hangover, not a heart attack. The likes of South Korea and Singapore belong in this category; so, crucially for the world economy, does China. It still has formidable defences to protect it against an exodus of capital. It has an enormous current-account surplus. Its foreign-exchange reserves stood at $3.5 trillion in October, roughly three times as much as its external debt. Policymakers have the ability to bail out borrowers, and show little sign of being willing to tolerate defaults. Shovelling problems under the carpet does not get rid of them. Firms that ought to go bust stagger on; dud loans pile up on banks' balance-sheets; excess capacity in sectors like steel leads to dumping elsewhere. All this saps growth, but it also puts off

the threat of a severe crisis.

For that risk, look instead to countries in the second category—those that lack the same means to bail out imprudent borrowers or to protect themselves from capital flight. Of the larger economies in this category, three stand out. Brazil's corporate-bond market has grown 12-fold since 2007. Its current-account deficit means that it relies on foreign capital; its political paralysis and fiscal inflexibility offer nothing to reassure investors. Malaysia's banks have lots of foreign liabilities, and its households have the highest debt-to-income ratio of any big emerging market; its cushion of foreign-exchange reserves looks thin and its current-account surplus is forecast to shrink. Turkey combines a current-account deficit, high inflation and foreign-currency-denominated debts that have become more onerous as the lira has fallen.

The third group of countries consists of those emerging markets that will either escape serious trouble or have already gone through the worst. Of the big ones, India is in healthier shape than any other big emerging economy and Russia might just surpass expectations. The rouble has already gone through a bigger adjustment than any other major currency, and the economy shows tentative signs of responding. Argentina, a perennial flop but one with little private debt, could also shine if a reformist wins the presidency this month.

Such brighter spots aside, everything else points to another pallid year for the world economy. The IMF has forecast higher growth in emerging markets next year; the lesson of past debt cycles suggests another year of slowdown is more likely. And weakness in the developing world, which accounts for over half of the global economy (in purchasing-power-parity terms), matters far more than it once did. Lower growth in emerging markets hits the profits of multinationals and the cash flows of exporters. Low commodity prices help oil importers but ratchet up the pressure on

indebted miners, drillers and traders, which between them owe around $3 trillion.

> *Volume four?*

Europe's open economy is most exposed to a cooling in emerging-market demand, which is why more monetary easing there looks likely. But America's policy dilemma is more acute. The divergence in monetary policy between it and the rest of the world will put upward pressure on the dollar, hurting exports and earnings. And waves of capital may again seek out the American consumer as the borrower of choice. If so, the world's debt crisis may end up right back where it started. ■

世界经济

【封面故事】永不完结的故事

先是美国，然后是欧洲，现在债务危机已经波及新兴市场

距离美国房地产泡沫破裂已近十年。距离希腊无力偿债而引发欧元危机已有六年。将这些事件联系在一起的是债务的快速累积，继而崩溃。债务编年史的第三部正在徐徐展开。这一次的背景是新兴市场。投资者已经在抛售发展中国家的资产，但经济放缓带来的彻底痛苦还等在后头。

较穷国家的债务危机并不新鲜。在某些方面，这次危机不会比20世纪八九十年代那几次更为剧烈，当时违约频发、联系汇率断裂。总的说来，今天的新兴市场汇率更灵活、外汇储备更多、以外汇计价的债务所占比例更小。尽管如此，债务崩溃对于经济增长的打击将强于人们的预期，即便美联储开始加息，也将削弱世界经济。

> *债务预言纪事*

在债务三部曲的全三卷中，危机周期都始于资本洪流跨境涌入，压低利率，刺激信贷增长。在美国，过剩的全球储蓄（很多来自亚洲）涌进次级房贷市场，造成灾难性的后果。在欧元区，节俭的德国人为爱尔兰的房市热潮和希腊的公共支出提供了资金。

随着这些富裕国家泡沫的破裂，利率降至历史低点，资本流向改变。钱从富裕国家流往较穷的国家。这个方向至少是正确的。但这又造就了另一场狂欢：贷款太多太快，企业把大量的借款都投入草率的项目或是购买价格虚高的资产。总体上，新兴市场的债务已由2009年占GDP的150%增至195%。企业债务由2008年不到GDP的50%猛增至约75%。过去四年，中国债务占GDP比例已经上升了近50个百分点。

现在这样的信贷繁荣也走到了尽头。中国增长减缓和大宗商品价格疲软令前景黯淡，即使更强劲的美元和美国的加息策略阻挡了廉价资本的洪流。接下来要清算了。有些债务周期以危机和经济衰退告终，比如次贷崩溃和

欧元区的痛苦。其他的债务周期仅导致增长减缓，因为借款人停止投资，而放款人四处寻求保护。新兴市场的信贷膨胀规模之大注定会带来严重后果。那些私营部门负债增长超过GDP20%的国家在借贷高峰期过后的三年间，GDP的增速平均减缓了约3个百分点。但是，还有多少痛苦等在前面还取决于当地因素，从已采取的汇率调整的程度到国家外汇储备的规模。大体上，多数新兴经济体可以分为以下三类。

第一类是在债务膨胀之后陷入长时间的宿醉但没有心肌梗死的国家。像韩国和新加坡这样的国家属于这一类。对全球经济至关重要的是，中国也属此列。它仍然具有强大的防御体系来保护自己免于资本大量外流。它有着巨大的经常账户盈余。10月它的外汇储备达到3.5万亿美元，约是其外债的三倍。政策制定者有能力为借款者脱困，且几乎没有任何愿意容忍违约的迹象。遮遮掩掩并不能解决问题。应当破产的公司仍苟延残喘；不良贷款在银行资产负债表上堆积如山；钢铁等部门的产能过剩导致往外国倾销。以上种种都削弱了经济增长，但也推迟了严重危机的威胁。

危机严重的要看第二类国家，这类国家缺乏同样的途径为轻率的借款者解困，也无法保护自己免于资本外逃。这一类别中较大的经济体里有三个较为突出。巴西的企业债券市场自2007年以来增长了12倍。它的经常账户赤字说明它依赖外国资本，而其瘫痪的政治和僵化的财政无法安抚投资者。马来西亚的银行有很多外债，该国的家庭负债与收入比在大的新兴市场中位列最高。其外汇储备的缓冲看来很薄弱，经常账户盈余预计会缩减。土耳其既有经常账户赤字，通胀又高，而且随着里拉下跌，该国以外汇计价的债务更为繁重。

第三类是另一些新兴市场国家，它们或将免于陷入严峻局面，或已挺过了最艰难的时刻。印度的情况比所有其他大型新兴经济体更健康，而俄罗斯可能会稍稍好于预期。卢布已经经历了比其他主要货币更大幅度的调整，经济已初显复苏效应。阿根廷经济常年失衡但少有私人债务，如果改革派能赢得本月的总统大选，它也可能表现不俗。

抛开这些亮点，其他的一切都表明世界经济将迎来又一惨淡年景。IMF已

预测新兴市场下一年增长会加速，但历史上多次债务周期的经验表明，下一年经济更可能会再度减速。发展中国家占全球经济总量的一半以上（按购买力平价计算），它们的疲软所产生的影响远超以往。发展中国家的增长放缓打击了跨国公司的利润和出口商的现金流。大宗商品价格低迷有利于石油进口国，但却加大了对负债累累的矿产国、产油国和贸易国的压力，它们的负债总额约为3万亿美元。

> *第四卷？*

欧洲的开放型经济受新兴市场需求降温的影响最大，这正是那里看来会实施更多货币宽松政策的原因。但美国的政策困境却更为严峻。它和世界其他国家在货币政策上的分歧将给美元带来升值压力，损害出口和收益。而资本浪潮可能再一次选择美国的消费者作为借款人。如果这样，全球债务危机最后将终结于它的起点。■

Peak profits

The age of the torporation

Big listed firms' earnings have hit a wall of deflation and stagnation

THE idea that profits grow is embedded in the corporate world. Bosses' pay rises if they boost earnings per share. Managers who admit their firms may shrink are viewed as cowards and taken outside and shot. Lenders assume that firms' cashflows will grow, allowing them to repay debts. In a daft ritual, Wall Street analysts start most years by collectively forecasting that earnings per share will rise at double-digit rates. Actual growth has been lower but has still had a dazzling run, averaging 8% over the past 30 years for the S&P 500 index of big American firms. Even after the 2007-08 crisis floored the global economy, profits recovered smartly.

Perhaps that is why reality has yet to sink in: the business world is stagnating. For the second quarter in a row the sales and profits of members of the S&P 500 are expected to fall; for the three months to September they are forecast to be 3-5% lower than in the same period last year. Earnings recessions are rare, happening only about once in each decade.

The Panglossian response this time is to blame one-off factors, in this case low energy prices and a strong dollar. The latter crimps the value of foreign income once it is translated into greenbacks.

Alas, corporate sloth is a far deeper and more widespread problem than that. Consider that half of big listed American firms now have shrinking profits (see chart 1). Even excluding energy and the dollar, S&P 500 earnings growth is slow. Many bellwethers—Walmart, IBM, General Electric (GE)—face flat or declining top lines. While traditional industries, from hotels to television, grumble that technology firms are eating their lunch,

even the tech industry's earnings are flat, with the likes of Alphabet (formerly known as Google) approaching middle age. Sluggishness is everywhere. Worldwide earnings per share have stopped growing, measured in dollars. In local-currency terms sales growth has stalled in Asia, slowed in Europe and is expected to collapse in Brazil. On October 16th Nestlé, Europe's second-most-valuable firm, said it would miss its long-standing sales target this year.

At the economy-wide level companies' sales are closely related to nominal GDP growth (which includes inflation). So it should be no shock that firms are struggling given that deflation stalks rich countries and growth is slowing in the emerging world. After two lost decades, Japanese firms' sales per share are still similar to the level in the 1990s. For Western firms there is also a suspicion that the methods used to crank out profits during the golden era were unsustainable. The unease is compounded by the fact that earnings are high relative to two yardsticks. S&P 500 earnings per share are 28% above their ten-year average. And in America profits are stretched relative to GDP (see chart 2).

Since the 1970s American firms have yanked on three big levers to boost profits. First, multinationals expanded abroad, with foreign earnings supplying a third or so of long-term earnings growth. Today, however, it seems that emerging economies are at the end of their 15-year boom. Second, finance was a crucial prop for profits in the two decades to 2007 (see chart 3), with the banking industry expanding rapidly and industrial firms such as GE and General Motors building huge shadow banks. The regulatory clampdown since the financial crisis means this adventure is now over.

Third, after 2007-08 firms relied heavily on pushing down the share of their profits that they paid out in wages. But now there are hints that wages are rising. On October 14th Walmart said that higher pay and training costs

would lower its profits by $1.5 billion, or just under 10%, in 2017. A week later Chipotle, a fast-food chain specialising in burritos big enough to ballast a ship, blamed falling margins on labour costs. If the share of domestic gross earnings paid in wages were to rise back to the average level of the 1990s, the profits of American firms would drop by a fifth.

Faced with stagnation, the quick fix is share buy-backs, which are running at $600 billion a year in America. They are a legitimate way to return cash to investors but also artificially boost earnings per share. IBM spent $121 billion on buy-backs over the past decade, twice what it forked out on research and development. In the third quarter its sales fell by 14%, or by 1% excluding currency movements and asset disposals. Big Blue should have invested more in its own business. Walmart spent $60 billion on buy-backs even as it fell far behind Amazon in e-commerce.

A radical option is to embrace torpor. The Brazilian investment firm 3G has become a specialist in buying mature firms and cutting what it claims is fat. Sales at its most recent target, Kraft, are falling at a rate of 5% a year. 3G is the force behind the proposed $120 billion takeover of the brewer SABMiller by AB Inbev. Inbev's volumes are shrinking at a rate of 2%. In America the telecoms, cable and health-insurance industries are consolidating. The aim is to create stodgy oligopolies.

For business as a whole profit margins may eventually erode as wages rise. Regardless of whether that happens, though, most firms will still be faced with static top lines. Relative to sales and assets, capital investment in America has at least been steady and the shift of production to China and technological changes may mean the "natural" rate of investment firms need has fallen. But there is little doubt that a splurge in capital spending is necessary to get big companies growing again.

For all their obsession with growth, big listed firms appear paralysed. They

long to expand, yet also want to protect peak profits, restrain wages and investment, buy back shares and hold armfuls of excess cash on their balance-sheets. What might make sense at the firm level causes stagnation across the economy, which in turn guarantees firms will stagnate. How many big companies will summon the strength of will to escape this exquisite trap?■

最大利润

休眠时代

大型上市公司的盈利因通缩和停滞受阻

利润增长的理念在企业界根深蒂固。如果能提高每股收益，老板的工资就会上涨。管理者若承认自己的公司可能缩水，会被视为懦夫而拉出去枪毙。银行假设企业的现金流会不断增长而还得起债务。就像一个愚蠢的套路，华尔街分析师在大多数年份的年初都会集体预测每股收益以两位数增长。实际增长虽不比预测，却仍令人赞叹，由美国大公司组成的标准普尔500指数在过去30年中平均增长了8%。即使在2007年至2008年经济危机重创全球经济之后，利润也迅速回升。

也许正是因为如此，现实尚未被充分理解：商业世界正在陷入停滞。标普500成份股公司的销售和利润预计将连续第二个季度下滑；而第三季度的销售和利润预计会同比下降3%至5%。盈利衰退颇为罕见，大约十年才得一遇。

这一次，过分乐观的反应会将其归咎于一次性因素。当前，这些因素是能源价格低迷和美元走强。一旦海外收入以美元计算，美元走强就会压低其价值。

可惜，企业疲态问题远比上述因素更深刻也更广泛。想想美国一半的大型上市企业如今利润收缩就知道了（见图表1）。即便排除能源和美元的因素，标普500企业的收益增长依然缓慢。沃尔玛、IBM和通用电气等诸多领军企业的总收入都持平或下降。虽然从酒店到电视等传统行业都抱怨科技公司抢走了自己的午餐，但随着Alphabet（前身为谷歌）等公司临近中年，甚至高科技行业的盈利亦无甚增长。疲软的现象比比皆是。按美元计算，全球范围内的每股收益均已停止增长。按当地货币计算，亚洲的销售增长停滞，欧洲增长放缓，而预计巴西将会大幅下滑。10月16日，欧洲市值第二大公司雀巢表示，今年可能达不到长期销售目标。

在整体经济层面，企业的销售与名义GDP的增长（包括通货膨胀）密切相关。因此，考虑到富裕国家通缩肆虐、新兴国家增长放缓的背景，就无需震惊于企业发展的艰难现状了。在“失去的二十年”之后，日本企业的每股销售额仍与上世纪90年代的水平相似。对于西方企业，也有人怀疑它们在黄金时期里用来榨取利润的方法不可持续。而与以下两个衡量指标相比收益偏高，更是加重了这种不安情绪：标普500企业的每股收益比过去十年的平均值高了28%；在美国，利润占GDP的比例提升了（见图表2）。

自上世纪70年代以来，美国企业依靠三大杠杆提高利润。首先，跨国公司向海外扩张，海外收入贡献了长期收入增长的三分之一左右。但如今，新兴经济体15年的繁荣期似乎走到了终点。其次，1987年至2007年间，金融是利润至关重要的支撑（见图表3），银行业迅速扩张，通用电气和通用汽车等工业企业建立起庞大的影子银行。金融危机后监管收紧，这种冒险现在已经终结。

第三，2007年至2008年之后，企业严重依赖于压低其利润中用于支付工资的部分。但目前有迹象表明，工资水平正在上升。10月14日，沃尔玛表示，工资和培训费用提高将使其2017年的利润减少15亿美元，即略少于利润的10%。一周之后，专卖那种大得可以拿来压舱的墨西哥卷饼的快餐连锁店Chipotle把利润率的下降归咎于劳动力成本上升。如果要让国内总收入中用于工资支付的部分重回上世纪90年代的平均水平，美国公司的利润将下降五分之一。

面对停滞，快速的解决方法是股份回购，目前美国一年的股份回购额达到6000亿美元。这是一种向投资者返还现金的合法方式，同时也人为地提高了每股收益。过去十年里，IBM在回购上花费了1210亿美元，是其研发投入的两倍。公司销售额在第三季度下滑了14%，如果排除汇率变动和资产处置则下降了1%。蓝色巨人本应更多地投资于自身业务。沃尔玛在回购上也花费了600亿美元，尽管它在电子商务方面远落后于亚马逊。

一个激进的选择就是欣然接受休眠状态。巴西投资公司3G已经成了一个专业户，专门收购成熟企业并砍掉它认为多余的业务。其最新目标卡夫

（Kraft）的销售额正以每年5%的速度下跌。3G也是百威英博（AB Inbev）以1200亿美元收购英国南非米勒酿酒公司（SABMiller）的幕后推手。目前英博的销售量正以2%的速度萎缩。美国的电信、有线电视和医疗保险等行业正在整合，目标是创造出几个古板乏味的寡头。

就整体商业而言，随着工资上涨，利润率最终可能被侵蚀。但是，无论这种情况发生与否，大多数公司仍将面临总收入停滞不前的局面。与销售和资产相比，美国的资本投资至少保持稳定，生产转到中国以及技术变革可能意味着公司所需的“自然”投资率已经下降。但毫无疑问的是，为了让大公司再度增长，有必要在资本支出上挥霍一番。

尽管沉迷于增长，大型上市企业看来却一蹶不振。它们渴望扩张，但也想保护最大利润、限制工资与投资、回购股份，并在资产负债表上持有一些过剩现金。这些在企业层面可能合情合理，但却会导致整体经济停滞，继而注定会导致企业停滞。有多少家大企业会鼓起强大斗志来逃脱这个精致的陷阱？■

Free exchange

Quantitative frightening

The world's vast stockpile of reserves is falling, raising fears of dwindling global liquidity

A DEFINING feature of the world economy over the past 15 years was the unprecedented accumulation of foreign-exchange reserves. Central banks, led by those in China and the oil-producing states, built up enormous hoards of other countries' currencies. Global reserves swelled from $1.8 trillion in 2000 to $12 trillion by mid-2014. That proved to be a high point. Since then reserves have dropped by at least $500 billion. China, whose reserves peaked at around $4 trillion, has burnt through a chunk of its holdings to prop up the yuan, as capital that had once gushed in started to leak out. Other emerging markets, notably Russia and Saudi Arabia, have also called on their rainy-day stashes.

This has sparked warnings that the world faces a liquidity squeeze from dwindling reserves. When central banks in China and elsewhere were buying Treasuries and other prized bonds to add to their reserves, it put downward pressure on rich-world bond yields. Running down reserves will mean selling some of these accumulated assets. That threatens to push up global interest rates at a time when growth is fragile and financial markets are skittish. Analysts at Deutsche Bank have described the effect as "quantitative tightening".* In principle, rich-world central banks can offset the impact of this by, for instance, additional "quantitative easing" (QE), the purchase of their own bonds with central-bank money. In practice there are obstacles to doing so.

That one country's reserves might influence another's bond yields was expressed memorably in 2005 by Ben Bernanke, then a governor at the Federal Reserve and later its chairman, in his "global saving glut"

hypothesis. Large current-account surpluses among emerging markets were a reflection of excess national saving. The surplus capital had to go somewhere. Much of it was channelled by central banks into rich-world bonds held in their burgeoning reserves. The growing stockpiles of bonds compressed interest rates in the rich world.

Controlling for the range of things that influence interest rates, from growth to demography, economists have attempted to gauge the impact of reserve accumulation. Francis and Veronica Warnock of the University of Virginia concluded that foreign-bond purchases lowered yields on ten-year Treasuries by around 0.8 percentage points in 2005. A recent working paper by researchers at the European Central Bank found a similar effect: increased foreign holdings of euro-area bonds reduced long-term interest rates by about 1.5 percentage points during the mid-2000s. ■

自由交流

量化恐慌

庞大外汇储备日减，全球流动性堪忧

过去15年来世界经济的一大显著特征是外汇储备的空前积累。以中国和石油生产国为首的各国央行囤积了大量外币。全球外汇储备从2000年的1.8万亿美元膨胀到2014年中的12万亿美元。那已成一时高位。之后，全球外汇储备下降了至少5千亿美元。中国的外汇储备在最高峰时约达4万亿美元，但随着一度源源涌入的资本开始流失，为支撑人民币汇率耗费了不少外汇储备。其他新兴市场，尤其是俄罗斯和沙特阿拉伯，也已动用了应急储备。

这引起了警示，人们担忧外汇储备减少将令世界面临流动性短缺。以往，中国等国家的央行购入各国国债及其他高等级债券以增加储备，给富裕国家的债券收益率带来下行压力。储备减少将意味着这些累积资产的一部分将被出售。在增长脆弱而金融市场多变的形势下，这么做可能会推高全球利率。德意志银行的分析师曾将此效应概括为“量化紧缩”。*原则上，富裕国家的央行可以通过一些方式抵消这一影响，比如进一步“量化宽松”（QE），使用央行资金购入本国债券。但实践起来有困难。

2005年，时任美联储理事、后来成为主席的伯南克在其“全球储蓄过剩”假说中令人印象深刻地指出，一国的外汇储备量可能会影响到另一国的债券收益率。新兴市场中庞大的经常账户盈余是国民过度储蓄的反映。过剩的资本必然要流向某处。其中，大部分会被央行用来购入富裕国家债券，壮大其外汇储备。囤积的债券不断增多，对富裕国家的利率造成压力。

经济学家们曾控制从经济增长到人口结构等一系列影响利率的因素，试图衡量外汇储备积累带来的冲击。弗吉尼亚大学（University of Virginia）的弗朗西斯·沃诺克和维罗尼卡·沃诺克（Francis and Veronica Warnock）的结论是，2005年，十年期美国国债的收益率因外国购入债券而下降约0.8个百分点。最近，欧洲央行研究人员撰写的一份工作报告中

发现了类似的效应：2005年前后，外国增持欧元区债券令长期利率下降了约1.5个百分点。■

Buttonwood

Collateral damage

How bank funding may be squeezed in the next crisis

WHEN the financial system teetered on the brink of collapse in 2008, the biggest problem was a lack of liquidity. Banks were unable to refinance themselves in the short-term debt markets. Central banks had to step in on a massive scale to offer support. Calm was eventually restored, but not without enormous economic damage.

But has the underlying problem of liquidity gone away? A research note from Michael Howell of Crossborder Capital argues that, in the modern financial system, central banks are no longer the only, or even the main, providers of liquidity. Instead, the system looks a lot like that of the Victorian era, with banks dependent on the wholesale markets for funding. Back then, the trade bill was the key asset for bank financing; now it is the mysteriously named "repo" market.

A repurchase, or repo, agreement involves a borrower selling a bunch of securities for cash and agreeing to buy them back later for a higher price. The difference between the two prices represents the interest payment. The market is huge: a survey by the International Capital Market Association estimated that, in June this year, European repo agreements were worth €5.6 trillion ($6.4 trillion).

To borrow in the repo market, banks need assets to pledge against the loans—collateral, in other words. And, Mr Howell argues, it is the supply of, and demand for, collateral that determines liquidity in the financial markets.

The problem is that not all collateral is treated equally. Lenders worry that,

if the borrower fails to repay, the securities they are left holding may not sell for their face value. So they apply a discount, or "haircut", to the collateral, depending on its perceived riskiness. At times of stress, lenders get nervous and apply bigger discounts than before. This is what happened during the financial crisis (see table).

Bigger haircuts mean that borrowers need more collateral than before in order to fund themselves. "When market volatility jumps, funding capacity drops in tandem and often substantially," writes Mr Howell. The result, a liquidity squeeze at the worst possible moment, is a template of how the next crisis may occur (although regulators are trying to reduce banks' reliance on short-term funding).

Viewed in this light, global liquidity should not be measured merely by the size of central banks' balance-sheets but by the availability of acceptable collateral as well. On Mr Howell's calculations, global collateral shot up in the aftermath of the financial crisis, but grew much more slowly from 2012 onwards. This may explain why global growth has been so sluggish.

Traditional quantitative easing may do little to help. "Simply expanding the central bank balance-sheet by buying in Treasuries from the private sector is robbing Peter to pay Paul," writes Mr Howell, since the bonds could have anyway been used as collateral for repo transactions.

Given that funding conditions resemble those in Victorian times, Mr Howell thinks that central banks should return to the policies favoured by Walter Bagehot, a former editor of this newspaper, and focus, above all, on the smooth running of the credit markets. If they do not, the risk is that a shortage of collateral may induce another funding squeeze; low as they are, government-bond yields may then fall even further as banks scramble to get hold of them for funding purposes.

This view is an interesting contrast with a popular investment theme of the moment—the idea of "quantitative tightening" (QT). Central banks are slowing their pace of asset purchases; China has been offloading some foreign-exchange reserves. Since many people think that central-bank purchases have been propping up the financial markets, their fear is that QT may cause bond yields to rise in the absence of central-bank support.

These differing interpretations point to the difficulty of analysing a broad concept like "global liquidity". It is reminiscent of the problem of defining the money supply during the heyday of monetarism in the late 1970s and early 1980s. Everyone can agree that notes and coins are money but the wider the definition, the greater the scope for disagreement. Use the wrong measure, and the monetary signals may completely mislead. A fast-changing financial system makes things even harder: how does Bitcoin fit into global liquidity calculations?

Such complexity makes the withdrawal of monetary stimulus by central banks even more difficult. The IMF warned in a paper last year that "central banks' exit strategy needs to be mindful of disruptions to the financial plumbing". Even if they manage that trick, Mr Howell is surely right. One day the financial headlines will be dominated by worries about a collateral shortage. ■

梧桐

间接伤害

未来危机中银行融资或受挤压

2008年金融体系濒临崩溃时，最大的问题是缺乏流动性。银行无法在短期债务市场上获得再融资，各国央行不得不大规模介入提供援助。最终风暴过去，恢复平静，但巨大的经济损失却无法避免。

然而，流动性这一根本问题是否已得到解决？跨境资本（Crossborder Capital）的迈克尔·豪威尔（Michael Howell）认为，在现代金融体系中，央行不再是流动性的唯一提供者，甚至算不上是主要提供者。相反，该体系看起来与维多利亚时期的金融体系很相似，银行融资依赖批发市场。在那个时期，商业汇票是银行融资的重要资产，如今则是那名称神秘的“回购”市场。

在回购协议中，借款人出售一批证券换取现金，并同意日后以更高的价格买回这些证券。前后的价差即为利息。这是个巨大的市场：国际资本市场协会（International Capital Market Association）的一项调查估计，今年6月，欧洲的回购协议价值5.6万亿欧元（6.4万亿美元）。

要在回购市场上借款，银行需要以资产来做贷款抵押，换句话说，需要抵押品。而豪威尔认为，正是抵押资产的供求关系决定了金融市场的流动性。

问题是，并非所有抵押品都得到平等对待。贷款人担心假如借款人无法还款，自己手上持有的证券可能无法按面值售出。所以，他们会按照抵押品可感知的风险，对其作估值折扣，或称“折算率”。在市况受压之时，贷款人会变得紧张，从而提高折扣率。金融危机期间就是如此（见图表）。

更高的折扣率意味着借款人需要更多的抵押品才能融到资金。“当市场波动性增大时，融资能力会相应下降，而且往往是大幅度下降。”豪威尔写

道。造成的结果是可能在最糟糕的时刻发生钱荒，下一次危机或许就会这样酿就（尽管监管机构正努力减少银行对短期融资的依赖）。

从这个角度看，全球流动性不该只看央行的资产负债表规模，还应看有多少可接受的抵押品。据豪威尔的计算，金融危机之后，全球抵押品激增，但自2012年开始增速明显下降。这也许可以解释为何全球经济增长变得如此滞缓。

传统的量化宽松政策可能帮助不大。“仅仅向私营部门购买国债来扩大央行资产负债表的规模，这是拆了东墙补西墙。”豪威尔写道，因为这些债券本来就可以用做回购交易的抵押品。

鉴于如今的融资状况与维多利亚时期相似，豪威尔认为，央行应回归到《经济学人》前主编沃尔特·白芝浩（Walter Bagehot）提倡的那套政策，首先把重心放在信贷市场的平稳运行上。如果他们不这样做，抵押品短缺或许会引发另一场钱荒；尽管目前政府债券收益率很低，若银行为融资而争相抢购这些债券，那其收益率将跌至更低的水平。

这个观点与当前流行的投资主题——“量化紧缩”（QT）——形成了有趣的对比。各国央行正放缓资产购买的步伐；中国已在抛出部分外汇储备。许多人认为金融市场靠央行购入资产来支撑，他们因而担忧，量化紧缩可能使债券收益率在缺乏央行支持的情况下回升。

众说纷纭，显示了分析“全球流动性”这类大概念的难度。这让人想起上世纪70年代末80年代初货币主义正盛时，对如何定义货币供应的一番争论。大家都同意纸币和硬币都是货币，但定义越宽泛，争议就越大。使用错误的衡量手段，货币信号可能产生完全误导的作用。金融体系日新月异，使得问题愈显复杂：计算全球流动性时，比特币该怎么算？

这种复杂性使央行更难收回货币刺激政策。国际货币基金组织在去年一份文件中警告“央行的退出战略需谨防对金融管道造成破坏”。即使他们做到无损离场，豪威尔的预言也无疑是正确的。终有一天，财经头条将充斥着对抵押品短缺的忧虑。■

Central banking

After the hold, be bold

It will take more than patience to free rich economies from the zero-interest-rate world

SOMETIMES doing nothing really is better than doing something. On September 17th the Federal Reserve made the right decision to leave its benchmark interest rate, unchanged since 2008, near zero. With inflation sitting well below the Fed's 2% target and doubts about China's economy prevalent, a rise would have been an unnecessary risk.

Yet Janet Yellen, chair of the Fed, faced a similarly tough choice in October—and possibly for many months thereafter. And whenever "lift-off" occurs, financial markets expect rates to stay historically low for years to come. The era of unconventional monetary conditions shows no sign of ending. If the rich world's central banks are to get back to the normality they crave, their standard toolkit may not suffice. It is time to think more boldly, especially about the idea of inflation targeting.

That is because the usual relationship between inflation and unemployment appears to have broken down. In the short run, economists think these two variables ought to move in opposite directions. High joblessness should weigh on prices; low unemployment ought to push inflation up, by raising wages.

Unfortunately, in many rich countries this standard inflation thermostat is on the blink. In 2008 economic growth collapsed and unemployment soared, but inflation only gradually sank below target. Now, by contrast, unemployment has fallen to remarkably low levels, but inflation remains anaemic. This has wrong-footed central banks. Assuming that rising prices would follow hard on the heels of a jobs boom, both the Fed and the Bank of England ended stimulative bond-buying programmes and prepped markets

for looming rate rises. Their recoveries have instead proved nearly inflation-free. Worse, with interest rates close to 0%, central bankers have less room to respond if they misread inflation risks and tighten too soon. Given this double bind, it makes sense to look beyond inflation—and to consider targeting nominal GDP (NGDP) instead.

Nominal but substantive

A target for nominal GDP (or the sum of all money earned in an economy each year, before accounting for inflation) is less radical than it sounds. It was a plausible alternative when inflation targets became common in the 1990s. A target for NGDP growth (ie, growth in cash income) copes better with cheap imports, which boost growth, but depress prices, pulling today's central banks in two directions at once. Nominal income is also more important to debtors' economic health than either inflation or growth, because debts are fixed in cash terms. Critics fret that NGDP is hard to measure, subject to revision, and mind-bogglingly unfamiliar to the public. Yet if NGDP sounds off-putting, growth in income does not. And although inflation can be measured easily enough, central banks now rely nearly as much on estimates of labour-market "slack", an impossibly hazy number. Most important, an NGDP target would free central banks from the confusion caused by the broken inflation gauge. To set policy today central banks must work out how they think inflation will respond to falling unemployment, and markets must guess at their thinking. An NGDP target would not require the distinction between forecasts for growth (and hence employment) and forecasts for inflation.

What might an NGDP target mean in practice? Most economies have fallen well short of their pre-recession trend in nominal-income growth. Before the financial crisis, nominal GDP growth of 5% was considered normal in America. Yet the economy is 16% below the income threshold it would have reached had it grown at that pace since 2006. In Britain, too, NGDP is 15%

short of where it could have been. The euro zone and Japan are even worse. Such shortfalls are too great to make up quickly; doing so would imply dangerously high inflation rates. Yet even relative to recent trends, rich economies are coming up short; American NGDP is 5% below what you might have anticipated in 2010. Faster NGDP growth could come from better productivity, more hiring or faster inflation; all of which rich economies could use a bit more of.

Setting a different target does not mean central banks will automatically reach it. And their unconventional toolkit looks depleted. Quantitative easing, which is still in use in Europe and Japan, is falling out of favour because of worries about asset prices. Interest rates cannot be cut far below zero without radical changes in the nature of money (the Bank of England's chief economist recently suggested eliminating cash). But getting the target right is an important start. Patiently waiting for inflation to turn up is no longer good enough. ■

中央银行

小心加息，大胆求变

富裕国家要摆脱零利率，单凭耐心不够

有时，有所为确实不如不作为。9月17日，美联储做出了正确决定，维持基准利率不变，保持自2008年以来接近零的水平。鉴于通胀远低于美联储2%的目标水平，中国经济前景又疑虑重重，加息将构成不必要的风险。

但美联储主席珍妮特·耶伦在10月（并很可能在之后的多个月里）面对类似的艰难抉择。无论首次加息在何时，金融市场仍预期未来几年利率将停留在史上低位。非常规货币态势的时代没有终结的迹象。富裕国家的央行要回归它们所企盼的常态，单凭一般工具也许不足成事。是时候做更大胆的设想了，尤其是关于通胀目标的制订。

这是因为通胀和失业之间的常规关联似乎已经瓦解。短期来看，经济学家认为这两个变量应该会向相反的方向发展。高失业率应该会打压价格；低失业率应该会令工资上升，从而推高通胀。

不幸的是，在许多富裕国家，这一标准的"通胀恒温器"已经失灵。2008年，经济增长崩溃，失业率飙升，但通胀仅缓降至低于目标水平。如今的情况相反，失业率已跌至相当低的水平，但通胀仍旧疲弱。这令各家央行乱了阵脚。美联储及英国央行都假设物价会紧随就业热潮走高，因而停止了刺激经济的债券购买计划，并向市场吹风，计划加息。但事实与预期相反，两国经济复苏对通胀几乎没有影响。更糟糕的是，因为目前利率接近于零，如果央行误读通胀风险并过早推行紧缩政策，之后的调整空间会变得更窄。鉴于这双重约束，把目光从通胀转移到名义GDP（NGDP）上不失为一种明智之举。

名义也实际

以名义GDP（即一个经济体每年货币收入的总和，未计算通胀因素）为目标并没有听起来那么激进。上世纪90年代，通胀目标变得普遍，名义GDP

目标是看似可行的备选方案。如今，廉价进口产品涌入，刺激增长，但压低价格，令各大央行同时受到两个方向的牵制，定下名义GDP增长目标（即现金收入增长）更利于应对这样的冲击。此外，相比通胀或增长数字，名义收入也更能反映出债务国的经济状况，因为债务是以现金计算的。反对者担心，名义GDP难以衡量，又可能被修正，而且公众对这个概念异常陌生。如果“名义GDP”听起来令人抗拒，“收入增长”则不会。而且，尽管通胀可轻易衡量，央行现在几乎同样依赖于估算劳动力市场“萧条度”这一极为模糊的数字。更重要的是，名义GDP目标将消除因通胀指标失灵而给央行带来的混乱。目前央行在制订政策时必须预测失业率下降时通胀的变化，市场又必须揣测央行的想法。名义GDP目标则不必区分增长预测（和相应就业情况）和通胀预测。

在实践中，名义GDP目标可能意味着什么？如果看名义收入增长，大多数经济体目前已远低于衰退前的走势。金融危机前，在美国，名义GDP增长5%被视为常态。相比以2006年的增长速度本该达到的收入水平，美国目前的数字低了16%，英国的名义GDP也比预期低了15%，欧元区和日本的情况更糟。距离目标差距太大，要迅速弥补并不容易，如果这样做意味着通胀率将被推高至危险境地。然而，即便相对于近年的趋势而言，富裕经济体的增长依然不达标。美国的名义GDP比2010年的预期数字低5%。要加快名义GDP的增长，可以提高生产率、改善就业或加速通胀，所有这些富裕经济体都可以多加利用。

设立另一目标并不意味着央行就能自动实现这个目标，而且央行的非常规工具看起来也所剩无几。因为担忧资产价格泡沫，仍在欧洲和日本推行的量化宽松手段渐渐失宠。在货币本质没有根本变革的情况下（英国央行的首席经济学家最近提议取消现金），利率不能减至远低于零的水平。但确立正确的目标是一个重要的开端。耐心等待通胀上扬已不足够。■

Future aircraft

Electrifying flight

By using electric and hybrid forms of propulsion, very different-looking aircraft may end up taking to the sky

WHEN Didier Esteyne, an Airbus test pilot, flew a small two-seat electrically powered aircraft called the E-Fan across the English Channel in July, the giant European aerospace group was keen to point out the journey was not a gimmick. Indeed, Airbus is serious enough about electric flight to want to put the E-Fan into production as a pilot-training aircraft. It will go on sale towards the end of 2017 to be followed by a four-seat version.

Airbus is not alone in thinking about making much bigger electric and hybrid aircraft to carry passengers. Just as in cars, electrical propulsion offers a number of advantages over piston and jet engines. Modern, digitally controlled electric motors supply lots of torque, a rotational force which is as good at turning propellers and fan blades as it is wheels. Electric power is also quiet, clean and highly reliable, with fewer engine parts to wear or break.

Batteries, it is true, do not provide the range many would like: lithium-ion ones allow the E-Fan to fly for about an hour with a 30-minute reserve. That may be fine for a flying lesson, but not for a passenger airliner. Batteries, though, are steadily improving and, because aircraft have long service lives (the Boeing 747 first flew in 1969), aerospace engineers work on projects set well into the future.

What really excites them about electric propulsion is that it provides the opportunity to build radically different aircraft, like the Airbus E-Thrust concept illustrated above. The idea is that instead of hanging big and heavy jet engines below the wing, a greater number of small and lighter

electrically driven fans or propellers could instead be incorporated into other areas of an aircraft. Doing this with lots of small conventional engines would be complicated and would add a lot of weight. But electric motors make the concept, called distributed electric propulsion (DEP), feasible. The advantage of distributing power is that it can be used to increase the airflow over the wings and thus allow an aircraft to fly more efficiently. "DEP enables a fundamental shift in how we design aircraft," says Mark Moore, a principal investigator into electric flight at NASA's Langley Research Centre in Virginia.

On the runway

NASA is testing a DEP wing mounted above a truck and driven at high speed across a dry lake bed at Edwards Air Force Base in California. The wing uses 18 small, electric propellers strung along its leading edge. The next step is a project called Sceptor, which involves replacing the wing on a conventional four-seater light aircraft—in this case, a twin-engined Italian-built Tecnam P2006T—with a DEP wing containing a dozen or so electrically driven propellers (illustrated below). Sceptor is due to begin test flights in 2017.

Sceptor's line of small propellers will increase the aircraft's lift at lower speeds, allowing it to take off and land on shorter runways. It also means the wing could be made more slender, perhaps only a third of the width of the wing on a conventional aircraft, thus saving weight and fuel costs. Typically the wing on a light aircraft is relatively large to prevent it from stalling (which happens at low airspeeds, when the wing cannot provide sufficient lift). But large wings are not very efficient when an aircraft is cruising because they create a lot of drag. Sceptor's wing will be optimised for cruise, yet still provide enough lift to help prevent stalling on take-off or landing.

The wing will also be capable of other tricks. The speed of each electric propeller can be controlled independently, which provides the ability to

change the pattern of airflow over the wing to cope with rapidly changing flying conditions, such as wind gusts. When cruising, the propellers closer to the fuselage could be folded back, leaving those on the wing tips to do the work. If Sceptor's test flights are a success, the technology could be incorporated into small commuter aircraft within a decade, even with present progress in battery development. These aircraft, says Mr Moore, would have no in-flight emissions, be extremely quiet and reduce operating costs by around 30%.

Airbus's E-Thrust concept is further from the runway. A collaborative project with Rolls-Royce, a British manufacturer of jet engines, and other research groups, the aircraft, or something like it, is projected to enter service around 2050. By then, the European Union expects the aviation industry to have cut fuel consumption, emissions and noise from passenger aircraft by at least 20-30%, relative to today's state-of-the-art designs.

The goal of the E-Thrust is to meet such targets and be able to carry around 90 passengers on flights of two hours or more, and still have a generous safety margin from its batteries. This, though, will require a breakthrough in the technology to store electricity—which might well happen over the next few decades. The concept also uses distributed propulsion, but with a twist because it is hybrid.

A traditional jet engine sits in the tail of the E-Thrust. It also has three electrically driven fans on each wing. On take-off, the jet and all six electric fans will be used to provide maximum lift. When the aircraft reaches its cruise altitude, the jet can be throttled back but is powerful enough both to power the fans and to top up the batteries. During descent, both the jet and the fans will be turned off. As the aircraft glides, the oncoming air will turn the fans so that they work like wind turbines to top up the battery some more. The fans will be used to land, with the jet ticking over ready to

provide additional thrust should the aircraft need to go around again.

One advantage of the hybrid system is that it provides a massive boost to a jet aircraft's "bypass" ratio. This is a measure of the amount of air that flows around the hot core of a jet engine compared with that which goes through it to provide oxygen in the combustion chamber. The jet engines on early passenger aircraft had a low bypass ratio, producing a lot of their thrust from the fast-moving air blasting out of the rear of the core. This made them noisy and fuel-hungry. As the blast leaves the core it turns a turbine, which via a shaft turns a fan at the front of the engine to draw in more air. By making the fan larger, it has been possible to move a bigger volume of slower-moving air (the bypass) around the outside of the core. This is more efficient and much quieter. It is also the reason why jet engines have over the years got fatter.

Modern jets have a bypass ratio of up to 12:1 compared with about 5:1 or less in the 1970s. But making the fans even larger is becoming difficult as they take up more and more room under the wing. And bigger engines need stronger wings, which adds to an aircraft's weight. The hybrid set up in the E-Thrust neatly gets around these problems because only the jet engine in the tail has a fuel-burning core. This means all of the air flowing through the six electrically driven fans contribute to its "effective" bypass ratio of 20:1 or more. This would make the aircraft extremely fuel-efficient and very quiet.

> *Smooth operator*

Another efficiency comes from the distributed engines "ingesting" what is called the boundary layer of air flowing over the wing. This is a very thin layer of air close to the surface of the wing. It is slowed down by friction as molecules of air touch the wing's surface. The boundary layer passing over the raised upper surface of the aerofoil shape of a wing (which provides a wing with its lift) can become turbulent, which helps produce the wake

which a jet aircraft leaves behind. By positioning the E-Thrust's electric fans above the wing to intercept the boundary-layer air, the fans can accelerate it, which reduces drag from the wake.

Technical advances in two areas are needed for the E-Thrust to fly. Besides better batteries the other is superconductivity, a phenomenon that removes electrical resistance when certain materials are cooled below a critical temperature. Reducing resistance allows construction of electrical and motor systems light and powerful enough to fly the aircraft. This has been done on a small scale, in equipment such as hospital scanners. But for an aircraft it will require intense cooling at a level beyond anything commercially available. A group at the University of Cambridge is working with Airbus on that problem.

Get over those hurdles, and electric aircraft will gather momentum. They will start off small but get bigger and carry more passengers as technologies improve. Some of those technologies, Airbus expects, will also help make traditional jet aircraft more efficient and quieter, too. ■

未来的飞机

令人兴奋的电动飞行

使用电动和混合动力推进系统，可能会把外观截然不同的飞机送上天空

当空客的试飞员迪迪埃·艾斯特纳（Didier Esteyne）7月驾驶着一架两人座小型电动飞机E-Fan飞越英吉利海峡时，这家欧洲航空航天巨头急于表明这次旅程并非什么宣传噱头。实际上，空客对电动飞行是来真的，它想把E-Fan作为一种飞行员教练机投产。它将在接近2017年底时开始出售，之后会推出四人座版本。

一些航空企业想制造出大得多的电动和混合动力飞机来运载乘客，空客只是其中之一。和在汽车中一样，电力推进相比活塞和喷气发动机有许多优势。现代的数控电动马达提供了大量扭矩，这种扭转力可以像转动轮盘那样很好地转动螺旋桨和风扇叶片。同时，电动系统安静、清洁、高度可靠，飞机装载的引擎部件都会变少，也会减轻对损耗的担心。

诚然，电池不能提供许多人想要的飞行距离：锂离子电池让E-Fan可以飞行约1小时，外加30分钟的储备。这对驾驶课程来说可能够用，但对客机还不够。不过电池正在稳步改善，而由于飞机的服役年限长（波音747最早在1969年起飞），航空工程师们目前专研的项目将运用于久远的未来。

电力推进技术真正让工程师们兴奋的是它提供了一种可能性，可以打造出截然不同的飞机，比如前面阐述的空客E-Thrust概念。其创意是，无需在机翼下方悬挂又大又重的喷气发动机，而是在飞机的其他部位装设一大批小且更轻的电动螺旋桨。如果使用许多小型传统发动机会很复杂，而且会增加许多重量。但电动马达让这个名为分布式电力推进（DEP）的设想变得可行。分散动力的好处是可以增加机翼上方的气流，从而让飞机更高效地飞行。“分布式电力推进让我们得以从根本上改变了飞机的设计。”美国国家航空航天署（NASA）位于弗吉尼亚的兰利研究中心（Langley Research Centre）的电动飞行首席研究员马克·摩尔（Mark Moore）说。

蓄势待发

美国航空航天署正在加州测试装载于一辆卡车上方的分布式电力推进机翼，它高速穿过爱德华兹空军基地的一个干涸湖床。这只机翼使用18个小型电动螺旋桨，它们沿着机翼前缘整齐排列。下一步是一个名叫Sceptor的项目，用包含了十几个电动螺旋桨的分布式电力推进机翼（见下图）取代一架传统四座轻型飞机上的机翼。这架飞机是意大利制造的双发泰克南（Tecnam）P2006T。Sceptor将在2017年开始试飞。

Sceptor带有的一排小螺旋桨会增加飞机以较低速飞行时的升力，从而能在更短的跑道上起飞或降落。这也意味着机翼可以变得更纤细，或许只是传统飞机机翼的三分之一宽。这将减轻重量，节省燃油成本。通常轻型飞机的机翼相对较大，以防飞机失速（在低航速时因机翼无法提供足够升力而发生）。但当飞机平稳巡航时，大翼展会产生诸多阻力，因而不是很高效。Sceptor的机翼会针对巡航高度时的需要做优化，但仍会提供足够升力以防飞机在起飞或着陆时失速。

这种机翼还有其他本领。每个电动螺旋桨的速度可被独立控制，因此可以改变机翼上方的气流模式来应对如阵风等迅速变化的飞行状况。当以平稳的速度飞行时，那些靠近机身的螺旋桨可以收起，而让位于机翼两端的螺旋桨继续工作。如果Sceptor试飞成功，即便考虑到目前的电池发展，这一技术仍可在十年内被使用在小型通勤飞机上。摩尔说，这些飞机将不会有旅途碳排放，极其安静，并将运营成本减少约30%。

空客的E-Thrust概念则需要更长时间来实现。该项目和英国的喷气发动机制造商罗尔斯·罗伊斯（Rolls-Royce）以及其他研究团体协作完成，预计将在2050年左右让这架飞机——或者类似飞机的某种东西——开始服役。据欧盟预期，到那时，相比目前最先进的设计，航空业已经把客机的油耗、排放和噪音减少了至少20%到30%。

E-Thrust的目标就是要达到这类指标，并能承载约90名乘客飞行两小时或更久，而电池尚有充足而安全的剩余量。这需要蓄电技术有所突破，这可能在未来几十年里发生。E-Thrust也使用分布式螺旋桨，但有些不同，因

为它是混合动力飞机。

E-Thrust的尾部装有一个传统的喷气发动机，每只机翼上带有三个电动螺旋桨。起飞时，喷气发动机和全部六台螺旋桨会被用来提供最大的升力。当飞机飞到巡航高度时，喷气发动机可以减速，但仍提供足够的动力来推动螺旋桨以及为电池充电。飞机下降时，喷气发动机和螺旋桨都被关闭。飞机滑翔时，迎面而来的气流会驱动螺旋桨，它们就像风力涡轮机那样可以给电池再充些电。着陆时螺旋桨会再次打开，而喷气发动机也会慢速运转，以准备好在飞机需要再度起飞时提供额外推力。

混合系统的一大优势是它极大地提升了喷气式飞机的“旁通”比。旁通比是喷气发动机外进气道与内进气道的气流量比值。内进气道气流直接穿过发动机的高温内核来向燃烧室供氧。早期客机的喷气发动机旁通比低，大量推力来自从内核区后部冲出的高速气流。这使得这些飞机噪音大、燃油消耗也多。随着这股高速气流离开发动机内核，它会驱动一台涡轮机，继而通过一个轴杆驱动发动机前方的一台风扇，让它能吸入更多空气。把风扇造得更大些，发动机内核的周边就会有更大量较低速的气流（即旁通气流）。这不仅更加高效，也会安静很多。喷气发动机多年来越变越大的原因就在于此。

现代喷气发动机的旁通比可达12：1，而在上世纪70年代约为5：1或更小。但随着风扇占用机翼下方空间日增，很难让它们变得更大了。而且更大的发动机需要更强劲的机翼，这增加了飞机的重量。E-Thrust的混合动力设计解决了这些问题，因为只有飞机尾部的喷气发动机带有燃油内核。这意味着穿过其六个电动螺旋桨的气流全都帮助提升了它的旁通比，达到“高效的”20：1甚至更多。这将让飞机变得极为省油，同时非常安静。

更加流畅

高效还源自分布式发动机“吸纳”了机翼上方的边界层气流。这是靠近机翼表面一层非常薄的气流。当气体分子接触机翼表面，产生的摩擦力降低了气流速度。边界层在穿越机翼上表面抬起的部分时（为机翼提供升力）时可能产生乱流，因而增加飞机的尾流。E-Thrust把电动风扇装在机翼上

方，拦截边界层气流，风扇会加速这种气流的流动，从而减少尾流带来的阻力。

要让E-Thrust展翅高飞，需要两个领域里的技术进步。除了更好的电池外，还需要超导性。超导现象会在某些材料在临界温度以下冷却时消除电阻，而减少电阻能让电动和马达系统的构造足够轻巧又强大以维持飞机航行。这已经在小规模的设备中实现，比如医院的扫描仪器。但对飞机来说，它所需要的高强度冷却的程度在现有商业运用中还难觅踪影。剑桥的一个团队正和空客公司合作攻克这个难题。

一旦征服了这些障碍，电动飞机将一跃而起。它们刚开始时只是小型的，但随着技术进步会变得越来越大，搭载更多乘客。空客预期，这些技术中的一些也会让传统喷气式飞机变得更加高效和安静。■

Unmanned aerial vehicles

Welcome to the Drone Age

Miniature, pilotless aircraft are on the verge of becoming commonplace

THE scale and scope of the revolution in the use of small, civilian drones has caught many by surprise. In 2010 America's Federal Aviation Authority (FAA) estimated that there would, by 2020, be perhaps 15,000 such drones in the country. More than that number are now sold there every month. And it is not just an American craze. Some analysts think the number of drones made and sold around the world this year will exceed 1m. In their view, what is now happening to drones is similar to what happened to personal computers in the 1980s, when Apple launched the Macintosh and IBM the PS/2, and such machines went from being hobbyists' toys to business essentials.

That is probably an exaggeration. It is hard to think of a business which could not benefit from a PC, whereas many may not benefit (at least directly) from drones. But the practical use of these small, remote-controlled aircraft is expanding rapidly. After dragging its feet for several years the FAA had, by August, approved more than 1,000 commercial drone operations. These involved areas as diverse as agriculture (farmers use drones to monitor crop growth, insect infestations and areas in need of watering at a fraction of the cost of manned aerial surveys); land-surveying; film-making (some of the spectacular footage in "Avengers: Age of Ultron" was shot from a drone, which could fly lower and thus collect more dramatic pictures than a helicopter); security; and delivering things (Swiss Post has a trial drone-borne parcel service for packages weighing up to 1kg, and many others, including Amazon, UPS and Google, are looking at similar ideas).

The drones' club

Nor is commerce the only area in which drones are making a mark. A glance at the academic world suggests many more uses await discovery. Because drones are cheap, geographers who could never afford conventional aerial surveys are able to use them to track erosion, follow changes in rivers' sources and inspect glaciers. Archaeologists and historians are taking advantage of software that permits drones fitted with ordinary digital cameras to produce accurate 3D models of landscapes or buildings. This lets them map ancient ruins and earthworks. Drones can also go where manned aircraft cannot, including the craters of active volcanoes and the interiors of caves. A drone operated by the Woods Hole Oceanographic Institution, in Massachusetts, has even snatched breath samples from spouting whales for DNA analysis. And drones are, as might be expected, particularly useful for studying birds. A standard shop-bought drone can, for example, be used unmodified for counting nests high in a forest's canopy.

Public servants, too, are putting drones through their paces. In the case of nest-counting, the idea is not to disturb the wildlife in question. In Ottawa officials have taken the opposite approach, with a "goosebuster" drone that is fitted with speakers which play the calls of birds of prey. This has kept a city park on Petrie Island free from the hundreds of geese whose droppings were causing problems. Police in Michigan are considering using drones for mapping the scenes of accidents, so that roads can be reopened more quickly. And drones can save lives, as well as keeping parks clean and traffic moving. In June, for example, Frank Roma, a fireman, rescued two boys from a river in Maine with the help of a drone. The boys were stuck on a rock in the middle of a powerful current. Mr Roma employed a drone to carry a line out to them, along which he passed life jackets that they were able to put on before an inflatable boat went out to perform the tricky manoeuvre of picking them up.

Other roles for drones are more questionable. Their use to smuggle drugs and phones into prisons is growing. Instances have been reported in America, Australia, Brazil, Britain and Canada, to name but a few places. In Britain the police have also caught criminals using drones to scout houses to burgle. The crash of a drone on to the White House lawn in January highlighted the risk that they might be used for acts of terrorism. And in June a video emerged of KATSU, a pseudonymous graffito artist, using a drone equipped with an aerosol spray to deface one of New York's most prominent billboards.

How all this activity will be regulated and policed is, as the FAA's own flat-footed response has shown, not yet being properly addressed. There are implications for safety (being hit by an out-of-control drone weighing several kilograms would be no joke); for privacy, from both the state and nosy neighbours; and for sheer nuisance—for drones can be noisy. But the new machines are so cheap, so useful and have so much unpredictable potential that the best approach to regulation may simply be to let a thousand flyers zoom.

The trailblazers of the field—the Mac and the PS/2 of the drone world, if you like—are the AR and the Phantom. The AR, built by Parrot, a French company, became a bestseller in 2010. It is an easy-to-fly quadcopter that beams video back to a smartphone. Then, in 2013, a Chinese firm called DJI introduced the Phantom. That brought professional-quality aerial photography within the reach of general users. The Phantom's latest incarnation, which costs less than $2,000, can shoot 20 minutes' worth of footage before it has to land.

How long these two firms will dominate the world of drones is anybody's guess. Andrew Amato of Dronelife.com, an American consultancy, says that the Phantom's limited flight time makes it vulnerable. A drone that could fly for significantly longer—an hour, perhaps—would change the

marketplace, as would one that was fitted with “sense-and-avoid” technology that would stop it running into obstacles by mistake. Researchers are busy in both these fields.

Up, up and away

Sense-and-avoid, needed for drones to operate safely in shared airspace without close human supervision, is hard without extra sensors, such as radar. Using a drone’s own video camera to recognise objects in real time requires tremendous computing power. Some firms are, however, attempting to do just that. One, Bio Inspired Technologies of Boise, Idaho, is tackling the problem with a hard-wired neural network, a type of device that is good at learning things. This can, the firm’s engineers believe, be trained to recognise and avoid aerial obstacles. Alternatively, a conventional, if high-end, computer can be programmed with algorithms pre-designed to recognise and evade threats, by understanding how objects visible to a drone’s camera are moving. Percepto, a firm based in Tel Aviv, uses this approach, which it dubs “intelligent vision”. Percepto’s system might also be used to frame camera shots, by taking into account such things as lighting angles.

Whichever approach—training and learning, or pre-cooked recognition software—wins, drones that are able to understand their environments to even a limited extent will be a lot more useful. They could, for example, recognise their operator and home in on him when required. They might be set loose on frost-damaged roads, to look for potholes. They could be released to cruise over forests to spot fires early, or sent off to seek errant hikers who have failed to report in when expected.

Extended flight time will make all these putative uses more plausible, and many people are working on that, too. The most common approach is to switch in mid-air from being a helicopter, which relies on power-hungry rotor blades to stay aloft, to being an aeroplane, which gets its lift, more

efficiently, from fixed wings.

The SkyProwler, from Krossblade, a firm based in Tempe, Arizona, looks like an aeroplane, but has four rotor blades which flick out of its body for vertical take-offs and landings. Dan Lubrich, the company's boss, claims it is efficient at both hovering and forward flight, and says the transformation mechanism adds only about 10% to the drone's weight. The SkyProwler cruises at 100kph (60mph) and has a flying time of 40 minutes. It can travel up to 25km, hover to shoot video or drop off a package when it arrives, and then return. It should go on sale in December.

Engineers at VTOL Technologies, a company spun out of the University of Reading, in Britain, are working on Flying Wing, a drone with a 120cm wingspan. Four ducted fans propel it forward in level flight, but their attitudes can be adjusted to allow them to provide lift directly. The upshot is a device which can be angled into the wind, to provide yet more lift. That permits it to hover in the way that gulls and other soaring birds do, with little expenditure of energy. VTOL estimates it will be able to do so for an hour, or remain in level flight for more than two hours.

The days of the Parrot/DJI duopoly thus look numbered. Mr Amato extends the comparison to PCs to the time when IBM's grip on its half of the personal-computer duopoly faltered and numerous competitors rushed in. This did not, of course, prevent Apple's business surviving on the back of a loyal and particular group of consumers, but it did mean that small computers became commodity products. Like a drone in a gust of wind, the future of the this market will have many twists and turns—but all the signs suggest that the air will soon be abuzz with machines. ■

无人航天器

欢迎来到无人机时代

无人驾驶的微型飞机即将变得无处不在

小型民用无人机应用中发生了革命性的变化，其规模和范围让很多人都大吃一惊。美国联邦航空总署（FAA）曾在2010年预计，到2020年，无人机在美国可能达到1.5万架。但现在，美国每月卖出的无人机数量都已超过这个数字。这一狂潮不仅仅发生在美国。一些分析师认为，今年在全世界范围里制造和出售的无人机将超过100万架。在他们看来，目前正在无人机领域里发生的事就类似于上世纪80年代个人电脑领域里的变化，当时苹果公司推出了麦金塔电脑，而IBM发布了PS/2，使得个人电脑从玩家手里的玩具变成了商业必需品。

这可能不无夸张。很难想象有哪家公司不会享受到个人电脑的好处，但许多公司可能无法（至少是直接地）因无人机而获益。但是，这些小型遥控飞机正在迅速散播。美国联邦航空总署在拖拖拉拉数年后，至8月已发放了一千多个无人机商用许可，涉及的领域多种多样，从农业（农民用无人机监测作物生长、虫害，以及需要灌溉的土地，所用成本只是载人空中勘测的一个零头）、土地勘测、电影制作（《复仇者联盟：奥创时代》一片的某些壮观场景就由无人机拍摄。无人机能比直升机飞得更低，因而可以收集到更富戏剧性的画面）、保安、送货（瑞士邮政［Swiss Post］的一个试验项目用无人机递送不超过1公斤重的包裹，而包括亚马逊、UPS和谷歌在内的许多公司正在研究类似的创意）。

> *无人机俱乐部*

商业并非无人机崛起的唯一领域。只需瞥一眼学术界，便可知道许多应用尚待发掘。因为无人机费用低，那些永远无力负担传统飞行勘测花费的地理学家能用它们来监测侵蚀，追踪河流源头变迁，以及观察冰川。考古学家和历史学家正在利用一类软件，让带有常规数字摄像头的无人机能够就地形地貌或建筑楼群生成准确的三维模型，这一技术使他们能够测绘古代

遗址和土方工程。无人机也能飞到载人飞机无法到达的位置，包括活火山的喷火口和岩洞的内部。马萨诸塞州的伍兹霍尔海洋研究所（Woods Hole Oceanographic Institution）操纵的无人机甚至抓取了鲸鱼喷水时的呼气样本，用于DNA分析。此外，可想而知，无人机尤其有助于研究鸟类，比如，从商店里购买的标准无人机无需调整就能统计丛林顶端的鸟巢数量。

政府部门也在考察无人机的能力。在统计鸟巢数量这个案例中，使用无人机是为了不干扰那些林地里的野生生物。而在渥太华，官员们采取了相反的方式，使用“野鹅驱赶”无人机携带喇叭来播放猛禽的叫声，驱逐了皮特里岛上一座城市公园内因其粪便造成困扰的成千上百只野鹅。密歇根的警察正在考虑用无人机记录事故现场，这样就可以更快地重新开放道路。无人机还可以拯救生命、维持公园整洁、减少交通拥堵。比如在6月份，消防员弗兰克·罗玛（Frank Roma）在一架无人机的帮助下从缅因州的一条河里救起了两个男孩，他们在一次强大的湍流中被冲到一块岩石上动弹不得。罗玛用无人机把一根绳子和救生衣传给了他们。就这样，在充气橡皮艇费劲地把他们救上来之前，他们先穿好了救生衣。

无人机扮演的其他一些角色则更让人质疑。它们越来越多地被用以将毒品和手机运到监狱。在美国、澳大利亚、巴西、英国和加拿大等许多地方都报道了此类事件。英国警察还抓获了用无人机入屋行窃的罪犯。今年1月一架无人机坠落在白宫的草地上，突显了它们可能被用于恐怖活动的风险。6月出现了一则视频，自称KATSU的匿名涂鸦艺术家使用配备了喷雾剂的无人机，把纽约市最有名的广告牌之一涂了个大花脸。

从联邦航空署笨手笨脚的应对中可以看出，如何监督和管制上述行为尚属一个未经恰当讨论的问题。无人机牵扯到的麻烦包括：安全性（被一架几公斤重的无人机失控撞击可不是开玩笑的）；隐私——无论是被国家还是被八卦的邻居侵犯隐私；单纯的小麻烦——无人机可能有噪音。但是，这些新机器如此廉价、有用，还具备这么多无法预知的潜能，最好的监管方式可能就是让成千上万无人机飞向天空。

这个领域里的领头羊——也就是无人机世界里的麦金塔和PS/2——是AR和

Phantom。法国公司派诺特（Parrot）制造的AR在2010年成为畅销品。这架很容易飞行的四轴飞行器能把视频传回到智能手机上。然后，在2013年，一家名叫大疆创新的中国公司推出了Phantom，让大众用户也能用上专业水准的航拍。Phantom的最新型号售价不到两千美元，可以拍摄20分钟的影像，然后降落充电。

没人知道这两家公司会主宰无人机世界多久。美国咨询网站Dronelife.com的安德鲁·阿马托（Andrew Amato）说，Phantom有限的飞行时间让它很容易失去这一地位。一架飞行时间明显更久——比如一小时——的无人机将改变市场，而一架配备“感知与规避”技术、从而能防止误撞障碍物的无人机也会有同样的影响力。研究人员正在这两个领域里积极探索。

远走高飞

无人机若要在没有人类密切监控的情况下在共享飞行空间里安全操作，没有感知与规避技术将十分困难。而这一技术如果缺少雷达这类额外的传感器则难以实现。使用无人机自带的视频摄像头实时辨认物体需要巨大的计算能力，不过一些企业正迎难而上。位于爱达荷州博伊西市的“生物启发技术”公司（Bio Inspired Technologies）正尝试用一种擅长学习的类神经系统硬件攻克这一难题。这家公司的工程师相信，该系统能被训练用来识别和规避空中障碍物。另一种方法是给一台传统但可能高端的计算机编程，配备一套经预先设计的算法来识别和躲避危险。这种算法尝试理解无人机摄像头看到的物体如何移动。总部位于特拉维夫市的Percepto就使用这种它称之为“智能视觉”的方法。该公司的这套系统还可能被用于摄像头取景，它会把光照角度等因素都计算在内。

无论最终胜出的是训练和学习这种方法，还是预先设定识别方式的软件，能理解环境的无人机将会有大得多的用处，即便这种理解的程度有限。比如，它们能够识别操控自己的人员，在需要时回到他那里。它们可能会被派到因霜冻受损的路面寻找坑洞，可以在森林上方巡航以尽早发现火灾，或被送去寻找没有在预定时间里汇报行踪的迷途的徒步旅行者。

延长飞行时间会让所有这些假想的用途变得更可实现，而在这方面也有许

多人在努力。最常见的方式是让无人机在半空中从直升机变身飞机。前者依赖耗电的螺旋桨来保持飞行，后者从固定的机翼中获得升力，更加高效。

总部位于亚利桑那州坦佩市的Krossblade公司出品的SkyProwler看起来像一架飞机，但在垂直起飞和降落时机身上会伸出四个螺旋桨叶片。该公司的老板丹·卢布里希（Dan Lubrich）声称这架无人机在盘旋和前进时都很高效，而其变形系统只让飞机的重量增加了约10%。SkyProwler以每小时100公里（60英里）的速度飞行，最多飞40分钟。它能飞行长达25公里，盘旋着拍摄视频，或在到达目的地时卸下包裹然后返回。它应该会在12月上市。

从英国雷丁大学派生出来的VTOL Technologies公司的工程师们正在研发一架120厘米翼展的无人机Flying Wing。四个管式风扇在水平飞行中驱动它前行，但可以调整它们的姿势以直接提供升力。结果是这台设备可以根据风向设置角度，以提供更多的升力。这让它能像海鸥和其他翱翔的鸟类那样盘旋而不耗费多少能量。VTOL估计它能这样盘旋一小时，或者维持水平飞行超过两小时。

由此，派诺特和大疆双头垄断的日子看来已屈指可数。阿马托把这比作IBM在个人电脑领域里双寡头地位的摇摇欲坠，而许多竞争对手纷涌而入。当然，这并没有阻碍苹果依靠一批忠诚的特定消费者支持而存活下来，但它确实意味着小型计算机变成了大宗商品。就像在一阵疾风中飞翔的无人机，这个市场的未来将充满浮沉转折，但所有迹象都显示，很快，天空中将充斥着嗡嗡作响的机器。■

Artificial intelligence

Elementary

Watson, IBM's attempt to crack the market for artificial intelligence, is starting to be tested in the real world

IT IS a nice coincidence that IBM's greatest boss and Sherlock Holmes's sidekick shared a surname. But whether it was Thomas J. or Dr John H. who inspired the name of the firm's latest venture into artificial intelligence (AI), the association of that name with a touch of genius makes "Watson" a clever choice. This sense of cleverness was reinforced in 2011, when Watson won a specially staged version of an American TV quiz show called "Jeopardy!" The system's capacity to parse questions posed to it in the show's convoluted, pun-ridden English, to search huge natural-language databases for clues, to synthesise those clues into answers and to frame those answers in a conversational way was able to beat to the draw the finest minds of American quizdom.

Winning game-show prizes, though, is not a good enough business model to justify the investment it takes to build such a system. Watson has undertaken a successful test-run of a real-world application, by encoding the expertise of the doctors and nurses at Memorial Sloan Kettering Cancer Centre, in New York, for use by other medics, but it has yet to make real money. A year ago, in the hope of doing so, IBM made Watson available for general business use, letting firms create and market their own Watson-based apps. Some 350 have now signed up to do so, and their number is set to grow with IBM's announcement, on September 24th, of a new set of tools that will help outsiders develop commercial applications for Watson. The next year or so should thus see whether Watson is as clever at making money as it is at answering questions.

Head in the cloud. Feet on the ground?

The computational nitty-gritty of Watson's *modus operandi* remains IBM's trade secret. Watson lives in the cloud—the computing industry's name for application software and data stored and run on company-controlled machines remote from the user, rather than on the user's own machine—so it is unavailable to those who might wish to reverse-engineer it. But the principle behind it, called "cognitive computing" by IBM, is well known, the crucial point being that the software involved can modify itself, and thus learn as it goes along.

The process starts with Watson comparing a question it has been asked with a database of potential answers, and generating a long list of possible responses from these. It then scores the elements of this list against the contents of its numerous other databases, be those encyclopedias, medical files, audio clips or images. Fact-checking algorithms moderate the process, according to the perceived reliability of the sources, and a most-probably-correct result (or, often, a set of them) pops out. The final step is for human experts to rate and fine-tune the results, improving them (and thus teaching the software what to do) in an iterative process until the system has been trained well enough to be released to the world. To this end, IBM itself employs teams of linguists, psychologists and sociologists, as well as coders. But it also encourages others to do likewise.

Rob High, chief technology officer for the Watson project, says the tools just announced will extend the range of things developers can do with Watson. They will, for instance, permit the coding of apps that can understand questions in languages other than English; that can carry on an apparently intelligent conversation (a particular desideratum of AI engineers, since it was set as a benchmark of success by Alan Turing, an early computer scientist); that can help people reach decisions about things like what sort of car to buy (Mr High says IBM used Watson to select the location within San Francisco of its new cognitive-computing headquarters); and even that

can assess the emotional state or personality traits of their interlocutor.

One early adopter of Watson, @Point of Care, a firm in New Jersey, provides doctors with iPad apps that summarise the latest peer-reviewed research on specific diseases. Earlier this year, @Point of Care's staff trained Watson to answer, based on the most up-to-date information, thousands of questions that doctors and nurses might ask about the symptoms and treatment of multiple sclerosis, lung cancer and diabetes. Sandeep Pulim, the company's chief medical-information officer, says the training process for a particular condition takes about 12 weeks. After that, the app can incorporate new research automatically, as it is published.

Ross Intelligence, in Toronto, is doing something similar for lawyers. They can pose to its Watson app obscure questions on bankruptcy, and receive answers complete with citations and useful readings from legislation or case law. And services for less-specialised customers than doctors and lawyers are also starting up. Wine4me, an iPhone app developed by VineSleuth, in Houston, Texas, recommends bottles based on taste, budget and accompanying food. Go Moment, in Santa Monica, California, uses Watson to power a virtual assistant called Ivy to help hotels automate their customer service. UnitesUs, an online employment agency based in Irvine, California, asks Watson to analyse candidates' writing style, such as their social-media updates and tweets, to gain insight into their personalities. It sounds like seaside palmistry, but the firm claims candidates get more interviews as a result.

IBM itself makes money from this by the simple expedient of charging firms for access to Watson, according to a standard menu of fees. Transcribing a minute of speech costs 2 cents. Help with a decision (such as choosing a bottle of wine) costs 3 cents. A personality analysis is 60 cents. A session training Watson with a large quantity of data will set a developer back $3.

Other AI systems are available. IBM's rivals, though, usually limit their ambitions to one area of expertise. Clarifai, in New York, tags pictures with keywords. Metamind, in Palo Alto, California, analyses tweets for brand names and positive or negative emotions. Even Microsoft, which launched a set of AI development tools earlier this year, concentrates on detecting and identifying faces. Watson, however, seems truly multipurpose. IBM is even experimenting with using it to add cadence and intonation, accompanied by appropriate non-verbal gestures, to the speech of a humanoid robot. If it can pull that off, a truly disturbing possibility looms: that the next TV show featuring Watson might be "America's Got Talent". ■

人工智能

初级阶段

IBM欲以沃森打开人工智能市场，并已开始在真实世界中测试它

IBM最伟大的老板和福尔摩斯的助手同姓是个不错的巧合。但是，无论IBM探索人工智能的最新项目取名“沃森”是因为托马斯·J·沃森（Thomas J.）还是源自约翰·华生医生（Dr John H. 译注：常译华生，也可译作沃森），都带有一股天才的气息，实属聪明的选择。这股灵气在2011年深入人心：沃森赢得了美国电视智力竞猜节目《危险边缘》（Jeopardy!）特别版的冠军。面对节目中用充满双关的英语提出的费解问题，沃森能做出分析并在巨大的自然语言数据库中寻找线索，综合这些线索形成答案，再用对话的方式回答，从而击败了美国竞猜节目中最聪明的人脑。

不过，赢得节目赛事还不是一个足够好的商业模式，值得花大价钱来创造这样一个系统。沃森已经成功完成了在现实环境中的一次应用测试，将纽约斯隆-凯特琳癌症中心（Memorial Sloan Kettering Cancer Centre）医护人员的专业技术编码，以便其他医疗人员使用，但它还没有真正赚钱。一年前，期望沃森能盈利的IBM把它开放给一般商业用途使用，让企业创造和销售自家基于沃森的应用。如今已有约350家企业加入，而随着IBM在9月24号发布了一套新工具来帮助外部人士开发沃森的商业应用，这个队伍还将扩大。因此，沃森在赚钱方面是否和回答问题一样聪明，大概一年左右便会见分晓。

> *顶天。立地？*

沃森运作模式的计算方式仍是IBM的商业机密。沃森住在云端（计算机行业的称法，指在远离用户、由企业控制的机器而非在用户自己的机器上存储和运行的应用软件及数据），因而使那些可能想通过逆向工程来解秘它的人无从下手。但它背后被IBM称之为“认知计算”的原理已广为人知，其核心是所涉软件能自我修改从而不断学习。

这个改进过程的一开始，沃森会把拿到的问题和一个潜在答案的数据库做比对，从中生成一个罗列各种可能答案的长列表。然后它用大量其他数据库如百科全书、医疗文档、音频或图片的内容来给这些答案打分。事实核查算法会根据资料来源的可信度来调节这个过程，然后一个（或常常是几个）最可能是正确答案的结果被挑选出来。最后一步是由人类专家评定和微调这些结果，在一个迭代过程中完善它们（从而教导软件该做什么），直到该系统被训练得足够好而可向外界发布。为达到这一目标，IBM雇用了一批语言学家、心理学家、社会学家及编程人员，但也鼓励其他人这么做。

沃森项目的首席技术官罗布·海伊（Rob High）表示，刚刚发布的工具将扩大开发者使用沃森的范围，比如，它们会让应用的编程能够做下列事：理解非英语提问；展开明显是智能的对话（早期计算机科学家阿兰·图灵[Alan Turing]将这种对话能力设定为评定人工智能是否成功的标准，自此成为人工智能工程师们尤其向往的目标）；帮助人们做决定，比如买哪种车（海伊说IBM位于旧金山市内的认知计算总部是由沃森选址）；甚至评判对话者的心理状态或个性特征。

新泽西的@Point of Care是较早采纳沃森系统的公司，它为医生们提供一项iPad应用，对某些特定疾病经同侪评定的最新研究报告提供简要版本。今年稍早时，公司员工训练沃森基于最新信息回答医护人员可能就多发性硬化症、肺癌和糖尿病的症状及治疗提出的成千上万个问题。该公司的首席医疗咨询官桑迪普·普利姆（Sandeep Pulim）称，就某种特定病症的训练耗时约12周，之后该应用能在新研究发布时自动将其纳入。

多伦多的Ross Intelligence公司正在为律师做类似的事。律师可向沃森应用提出有关破产的难题，得到的答案附带引证和来自法律或其他判例法的有用资料。而除了医生和律师外，沃森也开始向专业性不那么强的客户提供服务。得克萨斯州休斯顿的VineSleuth开发的iPhone应用Wine4me根据口味、预算和搭配的食物来推荐酒。加州圣莫尼卡的Go Moment用沃森打造虚拟助理Ivy，帮助酒店将客户服务自动化。总部位于加州尔湾的在线职业中介所UnitesUs请沃森分析候选人的写作风格，比如根据他们在社交

媒体和推特上发布的消息来了解其个性。这听起来好像和海边看手相的差不多，但该公司声称候选人因此获得了更多的面试机会。

目前IBM的赚钱方法是一个简单的权宜之计：根据一系列标准费用向使用沃森的公司收费。抄录一分钟音频收费两美分；帮忙做个决定（比如挑选一瓶红酒）收费三美分；一次个性分析收费60美分；用大量数据训练沃森一次向开发者收费三美元。

市场上已有其他的人工智能系统，不过IBM的对手们通常都把野心限于某个专长领域。纽约的Clarifai给照片添加关键词标签。加州帕罗奥多的Metamind分析推特消息流中的品牌名和积极或消极的情绪。即便是今年稍早时推出一套人工智能开发工具的微软也仅专注于识别人脸。而沃森看起来是真正多功能的，IBM甚至正在试验用它为仿真机器人的语言添加节奏和语调并伴以恰当的非言语手势。如果它真能做成这桩事，那么下一个可能性会真正让人不安：沃森现身的下一个电视节目可能是真人秀《美国达人》（America's Got Talent）。 ■

Quantum computers

A little bit, better

After decades languishing in the laboratory, quantum computers are attracting commercial interest

A COMPUTER proceeds one step at a time. At any particular moment, each of its bits—the binary digits it adds and subtracts to arrive at its conclusions—has a single, definite value: zero or one. At that moment the machine is in just one state, a particular mixture of zeros and ones. It can therefore perform only one calculation next. This puts a limit on its power. To increase that power, you have to make it work faster.

But bits do not exist in the abstract. Each depends for its reality on the physical state of part of the computer's processor or memory. And physical states, at the quantum level, are not as clear-cut as classical physics pretends. That leaves engineers a bit of wriggle room. By exploiting certain quantum effects they can create bits, known as qubits, that do not have a definite value, thus overcoming classical computing's limits.

Around the world, small bands of such engineers have been working on this approach for decades. Using two particular quantum phenomena, called superposition and entanglement, they have created qubits and linked them together to make prototype machines that exist in many states simultaneously. Such quantum computers do not require an increase in speed for their power to increase. In principle, this could allow them to become far more powerful than any classical machine—and it now looks as if principle will soon be turned into practice. Big firms, such as Google, Hewlett-Packard, IBM and Microsoft, are looking at how quantum computers might be commercialised. The world of quantum computation is almost here.

A Shor thing

As with a classical bit, the term qubit is used, slightly confusingly, to refer both to the mathematical value recorded and the element of the computer doing the recording. Quantum uncertainty means that, until it is examined, the value of a qubit can be described only in terms of probability. Its possible states, zero and one, are, in the jargon, superposed—meaning that to some degree the qubit is in one of these states, and to some degree it is in the other. Those superposed probabilities can, moreover, rise and fall with time.

The other pertinent phenomenon, entanglement, is caused because qubits can, if set up carefully so that energy flows between them unimpeded, mix their probabilities with one another. Achieving this is tricky. The process of entanglement is easily disrupted by such things as heat-induced vibration. As a result, some quantum computers have to work at temperatures close to absolute zero. If entanglement can be achieved, though, the result is a device that, at a given instant, is in all of the possible states permitted by its qubits' probability mixtures. Entanglement also means that to operate on any one of the entangled qubits is to operate on all of them. It is these two things which give quantum computers their power.

Harnessing that power is, nevertheless, hard. Quantum computers require special algorithms to exploit their special characteristics. Such algorithms break problems into parts that, as they are run through the ensemble of qubits, sum up the various probabilities of each qubit's value to arrive at the most likely answer.

One example—Shor's algorithm, invented by Peter Shor of the Massachusetts Institute of Technology—can factorise any non-prime number. Factorising large numbers stumps classical computers and, since most modern cryptography relies on such factorisations being difficult, there are a lot of worried security experts out there. Cryptography, however,

is only the beginning. Each of the firms looking at quantum computers has teams of mathematicians searching for other things that lend themselves to quantum analysis, and crafting algorithms to carry them out.

Top of the list is simulating physics accurately at the atomic level. Such simulation could speed up the development of drugs, and also improve important bits of industrial chemistry, such as the energy-greedy Haber process by which ammonia is synthesised for use in much of the world's fertiliser. Better understanding of atoms might lead, too, to better ways of desalinating seawater or sucking carbon dioxide from the atmosphere in order to curb climate change. It may even result in a better understanding of superconductivity, permitting the invention of a superconductor that works at room temperature. That would allow electricity to be transported without losses.

Quantum computers are not better than classical ones at everything. They will not, for example, download web pages any faster or improve the graphics of computer games. But they would be able to handle problems of image and speech recognition, and real-time language translation. They should also be well suited to the challenges of the big-data era, neatly extracting wisdom from the screeds of messy information generated by sensors, medical records and stockmarkets. For the firm that makes one, riches await.

Cue bits

How best to do so is a matter of intense debate. The biggest question is what the qubits themselves should be made from.

A qubit needs a physical system with two opposite quantum states, such as the direction of spin of an electron orbiting an atomic nucleus. Several things which can do the job exist, and each has its fans. Some suggest nitrogen atoms trapped in the crystal lattices of diamonds. Calcium ions

held in the grip of magnetic fields are another favourite. So are the photons of which light is composed (in this case the qubit would be stored in the plane of polarisation). And quasiparticles, which are vibrations in matter that behave like real subatomic particles, also have a following.

The leading candidate at the moment, though, is to use a superconductor in which the qubit is either the direction of a circulating current, or the presence or absence of an electric charge. Both Google and IBM are banking on this approach. It has the advantage that superconducting qubits can be arranged on semiconductor chips of the sort used in existing computers. That, the two firms think, should make them easier to commercialise.

Those who back photon qubits argue that their runner will be easy to commercialise, too. As one of their number, Jeremy O'Brien of Bristol University, in England, observes, the computer industry is making more and more use of photons rather than electrons in its conventional products. Quantum computing can take advantage of that—a fact that has not escaped Hewlett-Packard, which is already expert in shuttling data encoded in light between data centres. The firm once had a research programme looking into qubits of the nitrogen-in-diamond variety, but its researchers found bringing the technology to commercial scale tricky. Now Ray Beausoleil, one of HP's fellows, is working closely with Dr O'Brien and others to see if photonics is the way forward.

For its part, Microsoft is backing a more speculative approach. This is spearheaded by Michael Freedman, a famed mathematician (he is a recipient of the Fields medal, which is regarded by mathematicians with the same awe that a Nobel prize evokes among scientists). Dr Freedman aims to use ideas from topology—a description of how the world is folded up in space and time—to crack the problem. Quasiparticles called anyons, which move in only two dimensions, would act as his qubits. His difficulty is that no usable anyon has yet been confirmed to exist. But laboratory

results suggesting one has been spotted have given him hope. And Dr Freedman believes the superconducting approach may be hamstrung by the need to correct errors—errors a topological quantum computer would be inherently immune to, because its qubits are shielded from jostling by the way space is folded up around them.

For non-anyonic approaches, correcting errors is indeed a serious problem. Tapping into a qubit prematurely, to check that all is in order, will destroy the superposition on which the whole system relies. There are, however, ways around this.

In March John Martinis, a renowned quantum physicist whom Google headhunted last year, reported a device of nine qubits that contained four which can be interrogated without disrupting the other five. That is enough to reveal what is going on. The prototype successfully detected bit-flip errors, one of the two kinds of snafu that can scupper a calculation. And in April, a team at IBM reported an eight-qubit version that can catch both those and the other sort, phase-flip errors.

Google is also collaborating with D-Wave of Vancouver, Canada, which sells what it calls quantum annealers. The field's practitioners took much convincing that these devices really do exploit the quantum advantage, and in any case they are limited to a narrower set of problems—such as searching for images similar to a reference image. But such searches are just the type of application of interest to Google. In 2013, in collaboration with NASA and USRA, a research consortium, the firm bought a D-Wave machine in order to put it through its paces. Hartmut Neven, director of engineering at Google Research, is guarded about what his team has found, but he believes D-Wave's approach is best suited to calculations involving fewer qubits, while Dr Martinis and his colleagues build devices with more.

Which technology will win the race is anybody's guess. But preparations are

already being made for its arrival—particularly in the light of Shor's algorithm.

Spooky action

Documents released by Edward Snowden, a whistleblower, revealed that the Penetrating Hard Targets programme of America's National Security Agency was actively researching "if, and how, a cryptologically useful quantum computer can be built". In May IARPA, the American government's intelligence-research arm, issued a call for partners in its Logical Qubits programme, to make robust, error-free qubits. In April, meanwhile, Tanja Lange and Daniel Bernstein of Eindhoven University of Technology, in the Netherlands, announced PQCRYPTO, a programme to advance and standardise "post-quantum cryptography". They are concerned that encrypted communications captured now could be subjected to quantum cracking in the future. That means strong pre-emptive encryption is needed immediately.

Quantum-proof cryptomaths does already exist. But it is clunky and so eats up computing power. PQCRYPTO's objective is to invent forms of encryption that sidestep the maths at which quantum computers excel while retaining that mathematics' slimmed-down computational elegance.

Ready or not, then, quantum computing is coming. It will start, as classical computing did, with clunky machines run in specialist facilities by teams of trained technicians. Ingenuity being what it is, though, it will surely spread beyond such experts' grip. Quantum desktops, let alone tablets, are, no doubt, a long way away. But, in a neat circle of cause and effect, if quantum computing really can help create a room-temperature superconductor, such machines may yet come into existence. ■

量子计算机

小小比特，更进一步

在实验室里沉寂多年之后，量子计算机正引发商业关注

传统计算机一步步地处理信息。其每一个比特（计算机用以加减得出结果的二进制数位）在任一特定时刻只有一个确定值：0或1。那一刻，机器只处于一个状态，即一些0和1的特定集合。因而这台机器只能一步接一步地执行运算，这限制了其计算能力。在这种情况下，要提升计算机的性能就必须加快其计算速度。

但比特并非抽象的存在，它的状态由计算机处理器或存储器的物理状态决定。而在量子层面的物理状态并不像经典物理学所假定的那般泾渭分明。这给工程师们带来了些许变通的空间。利用特定的量子效应，他们可以创造出“量子比特”（qubits），量子比特没有定值，从而突破了传统电脑计算能力的限制。

在全球各地，一些小规模的工程师团队几十年来潜心研究这一方法。利用“叠加”（superposition）及“纠缠”（entanglement）这两个独特的量子现象，他们创造出了量子比特，并将其连接起来，制造出能同时处于多种状态的计算机原型。这样的量子计算机无须通过提升速度来提高运算能力。理论上，这可令其性能远高于任何传统计算机，如今看来，似乎理论即将化为现实。谷歌、惠普、IBM、微软这类大公司正在研究如何商业化利用量子计算机。量子计算的世界已然在望。

> *秀尔算法，成竹在胸*

与传统比特概念一样，“量子比特”一词既指计算机中的信息记录单元，又指所记录下的数值本身，这可能会造成一点困扰。量子不确定性意味着量子比特的值在测定前只能以概率来描述。以术语来说，0和1的可能状态可以叠加，即该量子比特在一定程度上处于一种状态，在一定程度上又处于另一状态。而且，叠加的概率可随时间消长。

另一关联现象为量子纠缠。如果量子比特经过精心排列使能量能畅通无阻地流动其间，那么量子比特的概率会相互混合，造成纠缠现象。要实现这一点十分不易。量子纠缠的过程很容易受热诱导振动这类情况干扰。所以，有些量子计算机不得不在接近绝对零度的温度中运作。但如果能实现量子纠缠，得到的便是这样一台设备：在特定瞬间能呈现量子比特混合概率造就的一切可能状态。纠缠原理也意味着，对处于纠缠态的量子比特操作时，动其中任一便等于动全体。正是这两个现象赋予量子计算机以力量。

然而，要利用这种力量并不容易。量子计算机需要特殊的算法来发挥其特性。这类算法在量子比特集合上运行时将问题分解，汇总每一量子比特值的各种概率，最终得出最可能的答案。

麻省理工学院教授彼得·秀尔（Peter Shor）发明的秀尔算法（Shor's algorithm）是其中一例，该算法能把任何非质数作因子分解。传统电脑不善于做大数因子分解，而现代密码系统大多正是基于这一点建立，所以众多安全专家深表忧虑。然而，密码术仅为开章。每家探索应用量子计算机的公司均请来数学家团队探寻可应用量子分析的其他领域，并打造相应的算法。

首要任务是精确模拟微观粒子层面的物理现象。这类模拟研究可加速药物研发，同时改善工业化学的重要环节，比如极耗能源的哈柏法，全球大部分化肥所用的氨即由这一方法合成而得。对微观粒子更加深入的了解也可能为淡化海水或清除二氧化碳以遏制气候变化觅得良方。这甚至可能推进超导研究，为发明室温超导体创造条件，从而实现零损耗传输电力。

量子计算机并非在一切方面都优于经典计算机。例如，量子计算机不会加快网页下载速度或者提高电脑游戏画质。但它们能处理识别图像及语音的问题，并能进行实时语言翻译。量子计算机也十分契合大数据时代的挑战，能处理传感器、医疗记录及股市生成的庞杂纷乱的信息，利落地从中萃取智慧。能制造出一台量子计算机的公司，财富指日可待。

开启量子比特

何为制造量子计算机的最优方案？对此争论激烈。最大的问题是量子比特本身该以什么材料制备。

量子比特所需的物理系统要具备两个相位相对的量子态，如绕原子核转动的电子的自旋方向。目前能胜任的物质有好几种，各有捧场客。有建议采用金刚石晶格内的氮原子。另一热门材料是磁场中的钙离子，还有形成光的光子（此情况下量子比特会被存储在偏振面中）。也有人支持采用准粒子这一表现如真正亚原子粒子的振动能量。

目前领先的方案是运用超导体，其中量子比特表现为循环电流的方向或电荷的存在与否。它的优点是超导体量子比特可置于当今电脑采用的那种半导体芯片上。谷歌和IBM均对这一方式寄予厚望，认为这样的量子计算机更容易商业化。

支持光量子比特的人认为他们的选择也很容易商业化。英格兰布里斯托尔大学（Bristol University）的杰里米·奥布莱恩（Jeremy O'Brien）是其中一员，他观察到计算机业在制造常规产品时正越来越多地使用光子而非电子，量子计算技术可充分利用这一点。惠普把握先机，已成为在数据中心之间用光编码传输数据的专家。该公司曾立项研究以金刚石内的氮做量子比特的前景，但研究人员发现要把这项技术商业化颇为棘手。惠普的研究员之一雷·博索莱伊（Ray Beausoleil）正与奥布莱恩博士及其他研究人员紧密合作，探讨应否循光子学这一途径前进。

微软在这场竞逐中支持的是更高风险的一套做法。这是由著名数学家、菲尔兹奖获得者迈克尔·弗里德曼（Michael Freedman）牵头的项目。菲尔兹奖备受数学家的尊崇，有如科学家眼中的诺贝尔奖。弗里德曼的目标是利用描述世界如何在时空中折叠的拓扑学来解决问题。他主张以仅在二维系统中移动、名为任意子的准粒子作量子比特。难题在于至今仍未有可用的任意子被证实存在。但实验结果显示有这么一种任意子已被发现，给他带来了希望。弗里德曼博士认为，超导体的方法可能会因为需要纠错而大打折扣，而拓扑量子计算机天生就可以避免这些错误，因为其量子比特可

以通过折叠周边空间而得到保护，不受碰撞。

对非任意子方式而言，纠错的确是个严重问题。过早检测量子比特是否运作正常会破坏整个系统赖以存在的量子叠加态。然而，有办法避免这一问题。

去年被谷歌招至麾下的著名量子物理学家约翰·马提尼斯（John Martinis）在今年3月发表报告，介绍一款包含九个量子比特的设备，其中四个比特做误差检测时不会干扰到另外五个。这足以显示研究的进展。该设备原型成功检测到比特翻转错误（bit-flip errors），那是干扰计算的两种乱象之一。4月，IBM旗下研究团队宣布了一个八量子比特设备［译注：该公司宣布开发出四量子位原型电路，并表示正在实验升级的八量子位版本］，不但可以检测到前述两种乱象，还能发现另一类错误——相位翻转错误（phase-flip errors）。

谷歌还与加拿大温哥华的D-Wave合作，D-Wave公司销售名为量子退火机（quantum annealers）的设备。为了让人们相信这些设备确实具备量子计算的优势，该领域的研究人员大费周章，而且它们被局限在更狭窄的问题上，例如搜索类似基准图的图像。但这类搜索正是谷歌感兴趣的应用类型。2013年，谷歌与美国航天局及研究团体“大学太空研究协会”（USRA）合作，购入一台D-Wave退火机，以测试其能耐。谷歌研究院的工程总监哈特穆特·内文（Hartmut Neven）对于团队的研究结果不愿多做透露，但他相信， D-Wave的方式最适合涉及较少量子比特的计算，虽然另一方面，马提尼斯博士及其团队正在制造有更多量子比特的设备。

哪项技术将最终胜出还是个未知数，但是为迎接其到来的准备工作已经铺开，尤其是秀尔算法的出现。

鬼魅作用

泄密者爱德华·斯诺登公开的文件显示，美国国家安全局一个名为“攻克难关”（Penetrating Hard Targets）的项目在积极研究“制造可应用于密码系统的量子计算机的可行性及方法”。美国政府的情报研究机构美国情报

高级研究计划署（IARPA）在 5 月发出公告，召集合作伙伴参与其“逻辑量子比特”项目，一同研发稳健无误的量子比特。同时，荷兰埃因霍温科技大学（Eindhoven University of Technology）的塔尼娅·兰格（Tanja Lange）和丹尼尔·伯恩斯坦（Daniel Bernstein）在 4 月宣布启动名为“PQCRYPTO”的项目，旨在推进及标准化“抗量子计算密码技术”（post-quantum cryptography）的研究。他们担心如今的加密通讯在将来会遭到量子计算机的破解。这意味着亟需研发出先发制人的强大加密技术。

抗量子计算的加密技术确已存在，但粗疏笨拙，因而耗费大量计算能力。PQCRYPTO项目的目标是要发明新的加密形式，既可避开量子计算机尤为擅长的数学运算，又能保留那份精简计算的雅致。

不管是否准备就绪，量子计算的时代即将到来。像经典电子计算那样，量子计算一开始也会是在专业设施中由训练有素的技术团队操作笨重的机器来进行。但是，作为灵巧智慧的化身，量子计算肯定会超越这类专家的掌控而被广为应用。当然，台式量子计算机距离我们还很遥远，更不用说平板量子电脑。但是，按完美的因果推论，假如量子计算确能催生室温超导体，台式和平板量子电脑也许还真不是梦想。■

Ben Bernanke at the Fed

More talk, more action

The former chairman of the Federal Reserve is gracious to critics—but clearly keen to give his version of events.

BEN BERNANKE is known for his cool head and thoughtful persona. Towards the end of his stint as chairman of the Federal Reserve from 2006 to 2014, President Barack Obama described him as the "epitome of calm". It is no surprise, then, that Mr Bernanke's account of his time in office is an analytical affair, lacking the pulsating drama of previous accounts of the financial crisis. Instead, he provides a robust defence of the Fed's response to it. Mr Bernanke clearly sees himself as having done what was necessary to avert disaster, in the face of a barrage of unwarranted criticism.

When markets began to seize up in late 2007, Mr Bernanke, a student of the Depression, knew the importance of keeping credit flowing. Bank failures in the 1930s had wreaked havoc on the real economy. The Fed would need to follow the dictum of Walter Bagehot, a 19th-century editor of *The Economist*: lend freely to solvent institutions, at a penalty interest rate against good collateral.

This principle lay behind Mr Bernanke's early response to the crisis, which included an alphabet soup of lending programmes to channel funds to banks. Mr Bernanke is rightly proud of these interventions, which helped moderate the crisis and eventually turned a profit for the taxpayer. But as things got worse, Mr Bernanke had to show boldness beyond Bagehot, particularly by using emergency powers to support two over-the-weekend rescues, of Bear Stearns, by J.P. Morgan, and AIG, an insurance firm, by the taxpayer.

The bail-outs were politically toxic, especially when AIG later announced

bumper bonuses for its staff. Mr Bernanke says he shared the public's emotions and "seethed" at reckless AIG executives. But the purpose of the Fed is to take actions that are necessary but unpopular, he says, and a bail-out was in the interests of ordinary Americans.

After the crisis, with interest rates stuck at zero, the Fed embarked on three paradigm-shifting rounds of quantitative easing (QE), the purchase of securities with newly created money. When it comes to monetary policy, though, the real theme of the book is communication. Mr Bernanke made the Fed more transparent. In 2012 he fulfilled a long-term ambition of setting an explicit inflation target; he also introduced regular Fed press conferences. He appeared twice on "60 Minutes", a television programme, to explain Fed policies. "Monetary policy is 98% talk and 2% action," he argues. As the Fed tried to rev up the economy after the crisis, it came to rely on "forward guidance"—in effect, a promise to keep policy loose for a long time.

Yet the reader is left wondering whether the Bernanke Fed, which acted so decisively to support banks, was behind the curve on monetary policy, despite the novelty of QE. In retrospect, the decision not to cut the federal funds rate from 2% in September 2008, immediately after the collapse of Lehman Brothers, was "certainly a mistake", he writes. Mr Bernanke seemed to have an easier time persuading his committee that bail-outs were necessary to prevent catastrophe than that loose policy was necessary once disaster occurred.

Most of the criticism Mr Bernanke faced was from hawks who hated QE. In 2012 Rick Perry, then governor of Texas and a candidate for president, said that Texans would treat the Fed chairman "pretty ugly" if he visited the state. (Mr Bernanke recalls that he went to Texas and was, in fact, well-received.)

The book convincingly rebuts the hawks. QE did not cause runaway inflation and America has outpaced the euro zone, which has run a tighter policy. What of the claim that loose policy hurts savers? Low returns are the inevitable result of a weak economy; higher rates only make that problem worse. Mr Bernanke, who used to be a Republican, now laments his former party's resistance to bank rescues and their occasional flirtation with discredited monetary systems like the gold standard. The Republicans' obsession with spending cuts at the end of his tenure risked damaging the economy, he says. He wanted Congress to rein in long-run deficits while supporting growth in the near-term.

The book's biggest revelation is that, when testifying before Congress after Lehman's collapse, Mr Bernanke hid his belief that the government had been powerless to save the bank. In the midst of a crisis, he and Henry Paulson, the treasury secretary, did not want to acknowledge the limits to their power, for fear of spooking markets. This, he says, has left an incorrect impression that letting Lehman fail was a choice.

Mr Bernanke is gracious about his critics, but he is clearly keen to give his version of history. The result is a book which compels more than it entertains. That tendency, though, is a desirable trait in a central banker—especially during a crisis. ■

伯南克在美联储

说更多，做更多

美联储前主席对批评者彬彬有礼，但显然渴望对事件给出自己的版本。

伯南克以头脑冷静、富有思想著称。在他于2006年至2014年间担任美联储主席的后期，奥巴马形容他是“冷静的典型”。由此，伯南克会对自己的任期做分析性的回顾，而忽略以往各种关于金融危机的叙述中那惊心动魄的戏剧性，也就不足为奇了。他为美联储对危机的应对做出了坚定有力的辩护。面对如潮的无端指责，伯南克显然认为自己所做的是为避免灾难而必需的。

2007年末当市场开始失灵时，研究过大萧条的伯南克懂得保持信贷流动的重要性。上世纪30年代，银行倒闭对实体经济造成了极大破坏。美联储需要遵循《经济学人》19世纪的主编沃尔特·白芝浩（Walter Bagehot）的原则：向有偿还能力的机构自由放贷，以优质抵押品作为抵押，征收惩罚性利率。

这个原则被应用在伯南克对危机的早期应对中，包括一系列令人眼花缭乱、把资金导入银行的贷款方案。这些干预措施帮助缓和了危机，最终使纳税人获利，伯南克有理由为此感到自豪。但随着事情变得更糟，伯南克不得不大胆超越白芝浩的原则，尤其是运用紧急权力来支持两次周末纾困，分别是由摩根大通拯救贝尔斯登公司（Bear Stearns），以及由纳税人拯救保险公司美国国际集团（AIG）。

这些救市行动是政治毒药，特别是AIG后来宣布向其员工发放丰厚奖金。伯南克表示，他认同公众的情绪，并对AIG高管的胆大妄为感到“怒火中烧”。但是，他说，美联储的目的是采取必要却不受欢迎的行动，而救助计划符合普通美国人的利益。

危机之后，利率停留在近零，美联储打破常规，启动了三轮量化宽松（QE），用新发行的货币来买入证券。但在讲到货币政策时，这本书真

正的主题是沟通。伯南克将美联储变得更加透明。2012年，他实现了设定明确通胀目标的长期理想，还引入美联储定期新闻发布会。他两次现身电视节目《60分钟时事杂志》（60 Minutes），解释美联储的政策。他说："货币政策的98%靠沟通，2%靠行动。"由于美联储在金融危机后试图加速经济发展，它开始依靠"前瞻指引"，实际上这是一项长期保持政策宽松的承诺。

不过，尽管量化宽松很新颖，读者仍然不知道，伯南克治下那个如此坚决果断地支持银行的美联储是否在货币政策方面已经落后于形势。他写道，回想起来，在雷曼兄弟刚破产后，没有立即把联邦基金利率从2008年9月时的2%削减下来的决定"肯定是个错误"。伯南克似乎在说服他的委员会救助计划对防止灾难的必要性时比较轻松，但是在强调金融危机之后需要实施宽松政策时则比较困难。

伯南克面对的批评大部分来自于憎恨量化宽松的鹰派。2012年，时任德州州长、总统候选人里克·佩里（Rick Perry）表示，如果美联储主席来访，德州人的接待将会"相当难看"。（伯南克回忆说，他后来去了德州，实际上很受欢迎。）

这本书令人信服地反驳了鹰派。量化宽松没有导致通胀失控，美国还胜过了实行更紧缩政策的欧元区。宽松政策伤害储户的说法又该如何评价？低回报是经济疲软的必然结果，高利率只会使问题更糟。伯南克曾经是共和党人，现在他哀叹他的前政党抵制银行救助以及他们偶尔还会考虑金本位等名声不好的货币制度。他说，在自己任期的末尾，共和党人沉迷于削减开支，有损害经济的危险。他希望国会能遏制长期赤字，同时支持短期赤字增长。

这本书最大的揭示是，雷曼兄弟倒闭之后，伯南克在国会作证时隐藏了自己认为政府已无力拯救这家银行的观点。危机中，由于担心会惊吓市场，他和财政部长亨利·保尔森（Henry Paulson）不想承认他们的权力有限。他说，这给人们留下了一个错误的印象，以为雷曼破产是监管者的选择。

伯南克对批评者彬彬有礼，但他显然渴望给出自己对历史的解读。结果就是这本说教多于消遣的书。然而，这种倾向是央行行长身上可取的特质，尤其在危机期间。■

Schumpeter

Professor Dr Robot QC

Once regarded as safe havens, the professions are now in the eye of the storm

IN 1933, as the Depression ground on, two British sociologists, Alexander Carr-Saunders and Paul Wilson, wrote a book celebrating the professions. They describe them as "stable elements" in a turbulent world, which "inherit, preserve and hand on a tradition." They act as "centres of resistance to crude forces which threaten steady and peaceful evolution".

Professions resist these "crude forces" through high barriers to entry. They routinely limit their recruitment to people with degrees. Some, such as medicine or law, require professional licences and sometimes membership in professional bodies. Others demand long periods of apprenticeship: although anybody can call themselves a management consultant, elite firms such as McKinsey and the Boston Consulting Group provide their recruits with extensive training and only promote a minority to partnerships. The oldest professions also emphasise the importance of tradition: professors dress up in medieval gowns on ceremonial occasions and British barristers wear wigs.

But today these islands of security are being battered as never before. Professional-services firms are becoming more business-minded: Accenture now contracts lots of work to people in the emerging world and has abandoned the partnership model to become a public company. Customers are getting fussier: big firms will no longer put up with consultancies that woo them with partners and then send in a team of juniors. But the most important source of instability is information technology, argues "The Future of the Professions", a new book by Richard Susskind, a consultant, and Daniel Susskind, an Oxford don (a father-and-son combo).

Machines are challenging the professions' two most important claims to being special: their ability to advance the frontiers of knowledge and their exclusive licence to apply their expertise to an unordained laity. IBM and the Baylor College of Medicine have developed a system called KnIT ("knowledge integration toolkit") that scans the medical literature and generates new hypotheses for research problems. Computer scientists in Tel Aviv University have invented an algorithm that, using facial-recognition software, is solving a puzzle that has kept Torah scholars busy for decades: piecing together 300,000 ancient Jewish manuscripts that were found, many torn and tattered, in the attic of an old Cairo synagogue. Various bits of software regularly outperform legal experts in predicting the outcome of court decisions from patent disputes to America's Supreme Court.

New technology is enabling machines and para-professionals to take over many routine tasks. Programs developed by Kensho, a startup, provide answers to financial questions such as what happens to technology stocks when there is a privacy scare. Nurses and "physician associates", equipped with computers and diagnostic tools, are doing more and more of the work once reserved for doctors.

Online services and smartphone apps allow the laity to dispense with some professionals entirely, or at the very least to take them down from their pedestals. Every month 190m visit WebMD—more than visit regular doctors in America. Educational apps are the second-most popular category in Apple's app store after games, and MOOCs (massive open online courses) are attracting millions of students. Judges and lawyers are increasingly resolving small claims through "e-adjudication". It is one of the techniques employed by eBay to settle the more than 60m disagreements among its users each year.

How far will this revolution go? Messrs Susskind and Susskind predict that

it will go all the way to "a dismantling of the traditional professions". These jobs, they argue, are a solution to the problem that ordinary people have "limited understanding" of specific areas of expertise. But technology is making it easier for them to get the understanding they need when they need it.

The authors deal deftly with some objections to their position. One counter-argument cites complexity: people hand their tax forms over to professionals because they are too complicated to bother with. The authors reply that machines have a bigger capacity for coping with complexity than humans. Another criticism invokes emotion: people would rather be told about death or bankruptcy by a human being. The authors note that expertise and empathy rarely come in the same package. Bad news is better delivered by people who excel in sympathy rather than expertise.

Still, Messrs Susskind and Susskind probably take their case too far. They ignore the fact that, as people get richer, they choose to spend their surplus wealth on the human touch. Students, for instance, compete to get into elite colleges with high teacher-student ratios (and rich parents hire more and more personal tutors for their children to increase their chances of so doing). But the authors are undoubtedly right that the professions will change more in the next quarter-century than they have in the previous three. New sub-disciplines will emerge, such as "knowledge engineers" who encode professional wisdom into software and various groups of para-professionals who work out ways of applying this knowledge.

> *Professionals of the world, unite!*

The gathering storm has profound social implications. The professions represent a big slice of modern society. New occupations such as social work aspire to join them. Professionals are accustomed to wealth and privilege: in 2011 57% of British undergraduates accepted to medical school came from the top three socio-economic groups. There is no doubt that

these professionals will have to abandon the idea that, in the words of Messrs Carr-Saunders and Wilson, “nothing is to be achieved in their own sphere by destruction or revolution.” The big question is whether the re-ordering of such a vital and stable group will threaten the “steady and peaceful evolution” of society. ■

熊彼特

教授医生大律师机器人

专业工作曾被视为安全的避风港，现在却被推到风口浪尖

1933年，大萧条还在肆虐，英国两位社会学家亚力山大·卡尔-桑德斯（Alexander Carr-Saunders）和保罗·威尔逊（Paul Wilson）合著了一本书，歌颂专业职业。他们称之为动荡世界中的“稳定元素”，“继承、保护和传递传统”，是“抵御威胁着稳定与和平演变的粗暴力量的中坚”。

专业职业通过设置高门槛来抵御这些“粗暴力量”。他们通常只招聘拥有学位者。医疗、法律等行业要求拥有从业资质，有时还要求有专业团体的成员资格。其他行业则需要长时间的学徒期，因此虽然谁都可以自称管理顾问，但像麦肯锡和波士顿咨询集团这样的精英企业会对新员工进行大量的培训，并且只将少数人晋升为合伙人。而那些历史最悠久的专业职业还强调传统的重要性：教授在仪式场合身着中世纪长袍，英国出庭律师则头戴假发套。

但现如今，这些曾经安全的岛屿正在遭受前所未有的冲击。一方面，提供专业服务的公司越来越商业化：埃森哲将大量工作外包到新兴国家，并已摈弃合伙人模式而成为上市公司。同时，客户也越来越挑剔：大企业不会再容忍咨询公司先用合伙人打动他们、而后派来一群资历浅薄的员工干活。不过，按咨询顾问理查德·萨斯坎德（Richard Susskind）与牛津大学教师丹尼尔·萨斯坎德（Daniel Susskind）父子合著的新书《专业职业之未来》（The Future of the Professions）中的观点看，信息技术是导致不稳定的最重要根源。

专业人士号称在两个最重要的方面与众不同：一是他们能够推进知识的前沿发展，二是唯有他们才可使其专业技能用到不懂行的普通人身上。而机器正在对这两点发起挑战。IBM和美国贝勒医学院（Baylor College of Medicine）已经开发出一种称为“知识集成工具包”（KnIT）的系统，可以扫描医学文献并为研究问题生成新的假设。特拉维夫大学（Tel Aviv

University）的计算机科学家发明了一种算法，通过使用面部识别软件来解决困扰了犹太教律法学者数十年的一个难题：将在开罗古老的犹太教堂阁楼上发现的30万份古犹太手稿（很多已经撕烂破损）拼接起来。现在，各种软件在推测法庭的裁决结果时常比法律专家还厉害，小至专利争议，大到美国最高法院的判决。

新技术使得机器和专业人士的助手可以接手许多日常事务。创业公司肯硕（Kensho）开发的一些程序可以解答诸如出现隐私恐慌时科技股会怎样之类的财经问题。护士及“医师助理”借助电脑和诊断工具，正越来越多地承担以前只有医生才能做的工作。

在线服务以及智能手机应用让不懂专业技能的普通人可以彻底摆脱部分专业人士，或至少把他们从圣坛上拽下来。医疗健康服务网站WebMD的月访问量已经达到1.9亿人次，超过了美国人线下看医生的次数。在苹果应用商店，教育类应用的受欢迎程度仅次于游戏。大型开放式网络课程（MOOCs）正吸引着数以百万计的学生。法官及律师们在越来越多地通过“电子裁决”来处理小额索赔诉讼。这也是eBay采用的技术之一，用以解决用户中每年六千多万次的争议。

这场革命能走多远？萨斯坎德父子预言它会一直继续，直到“传统专业职业全部解体”。他们认为，由于普通人对专业领域的知识“了解有限”，这些职业才应运而生。然而，现在科技提供了便利，使得人们在有需要之时更容易获得相关知识。

作者巧妙地反驳了一些反对观点。其一以复杂性为证，比如，由于不愿为复杂的税务申报表劳神，人们会把它交给专业人士处理。作者反驳说，机器处理错综复杂问题的能力比人更强。另一种批评则从情感出发，比如人们宁愿从人而不是机器那里听到有关死亡或破产的消息。为此，作者提请大家注意：很少有人能兼备专业知识和同理心。坏消息由擅长劝慰而不是精于专业知识的人传递会更好。

不过，萨斯坎德父子可能还是过于理想化了。他们忽视了这样一个事实：

当人们更富有时，他们会把富余的钱财用于人际交往。例如，学生拼命想挤进师生比很高的名牌大学，而为了更有机会进入这样的学校，越来越多有钱的父母会为孩子聘请家庭教师。但是，萨斯坎德父子认为专业职业在未来25年的变化会比过去75年里发生的变化更大，这无疑是正确的。新的分支学科将层出不穷，比如将专业技能编码制成软件的“知识工程师”，以及设法将这些知识加以应用的诸多专业人士助手。

> *全世界专业人士团结起来！*

这场愈演愈烈的风暴有深远的社会影响。专业职业占据了现代社会很大的一部分，而像社会工作这类新职业也渴望加入其中。专业人士对财富和特权习以为常：2011年，英国医学院录取的本科生中，有57%是来自社会经济地位最高的三个群体。毫无疑问，那些专业人士将不得不放弃一个念头，用桑德斯和威尔逊的话来说就是：“想在他们自己的领域里搞破坏或革命将一无所获”。现在很重要的问题是，对这样一个重要而又稳定的群体进行重组是否会威胁到社会“稳定与和平的演变”。■

Virtual personal assistants

The software secretaries

Technology firms are vying to become consumers' personal secretaries, which may threaten privacy and competition

A PEPPY crowd poured into the Bill Graham Civic Auditorium in San Francisco on September 9th. They had turned up at the venue, which usually hosts rock concerts, to watch a show by Apple, a firm with a cult following of its own. Executives took the stage to unveil updates to the Apple Watch, iPhone and iPad, as well as a new television set-top box, which makes it easier to find TV shows and play games.

The real star of the show, however, was Siri, Apple's personal-assistant technology. Siri, which is already available on iPhones, responds to voice commands and will be embedded in Apple's new TV remote controls, so users will not have to lift a finger to change channel or find new shows. If users want to know the weather or the results of a sporting event they can ask Siri, and be met with a rapid reply.

Siri's migration to television exemplifies the rise of virtual-assistant software that mimics some of the skills of human secretaries: creating reminders for appointments, looking up information and completing other tasks. Apple, which bought Siri in 2010 for an estimated $200m, has been a leader in this area, but many tech firms have been working on rival products.

Google and Microsoft offer digital assistants on smartphones, called Google Now and Cortana, respectively, which have deep knowledge of their users' habits and schedules. Amazon sells a stand-alone device that, among other things, plays music, reads books aloud and can help buy items through Amazon. On September 8th Baidu, a Chinese internet giant, announced its

own digital agent, Duer. And recently Facebook announced that a concierge service, called M, would be available through its messaging app. To start with, tasks will be completed by humans, but that could change over time.

All these firms still have kinks to work out, but the sophistication and range of functions of their personal-assistant software are expanding (see table). The rise of Siri et al signals two important trends that will shape the future of the consumer internet: the evolution of "search", away from typed search-engine queries towards a more personalised, interactive service, and a gradual shift from individual apps to an ecosystem of services that is mediated by a powerful software assistant.

According to Gartner, a research firm, around 38% of American consumers have used virtual-assistant services on their smartphones recently; by the end of 2016 an estimated two-thirds of consumers in developed markets will use them daily. Software robots are getting better at predicting what users need based on past behaviour and current location.

The virtual secretaries offered by a variety of tech giants form part of their wider efforts to master artificial intelligence and, in particular, "machine learning"—teaching computers to crunch vast amounts of data, recognise patterns and get better at what they do. Firms are spending billions of dollars buying startups in this area, and are rushing to hire specialists in artificial intelligence. Apple alone is reportedly looking to hire around 90 experts, and Facebook has hired a star artificial-intelligence academic, Yann LeCun, to head its research centre on the subject.

Voice recognition is quickly improving, although it remains imperfect. Two years ago Google Now used to misinterpret around 25% of words spoken, but today it only misses 8%, according to Aparna Chennapragada, who oversees the product. Firms' big focus has become how to use the information consumers store on their devices to make proactive

recommendations instead of just responding to requests.

Google is especially good/creepy at this. For example, it goes through users' e-mails to prompt them about when to leave for appointments or flights. Microsoft's Cortana does this too but until recently it has been limited to Windows devices. Global-positioning technology, already a standard feature on smartphones, is helping virtual assistants to do their job better. If a consumer wants to be reminded to buy milk when he next goes to the supermarket, an alert will flash when the phone detects that he has arrived.

Technology is also making it possible to automate the headache of arranging meetings. A few startups, including Clara Labs and x.ai, offer virtual scheduling assistants that employ a combination of algorithms and humans to help set up appointments. Subscribers copy in the software robot on e-mails; it scans their calendars and chooses a convenient slot on their behalf. On average it takes humans around seven e-mails to set up a meeting, so virtual assistants can save lots of time. People tend to be nice to virtual assistants, even when they know they are corresponding with a robot, says Dennis Mortensen, the boss of x.ai. In time, the software will become so good they may never know their interlocutor is a machine.

Most real-life personal assistants do not need to worry about their jobs being threatened by technology—at least yet. Digital assistants serve as a hands-free way to search for information but struggle to complete actions that require more complex steps, such as booking flights. Your correspondent spent several days "employing" a variety of available digital assistants. Although they can find nearby restaurants and make a booking through OpenTable, they do not yet know her well enough or have the judgment to tell her which is the "best" Italian food. Echo, Amazon's product, can recite the definition of "personal assistant" without hesitation, but had no idea how to respond when your correspondent asked whether Echo was her personal assistant.

To please their masters, virtual assistants will need to do better at connecting to outside services to fulfil requests. This is the vision of Viv, a startup led by the founders of Siri, which is expected to launch a service in this vein next year. Existing virtual assistants are also making steps to open up. Cortana links to Uber, for example, to help its users book cars, and recently started to show them relevant coupons when they go to shops or browse online.

The rise of virtual assistants poses several challenges. One is privacy. The best services will have access to troves of data, but how consumers' information will be shared with outside firms that fulfil requests has yet to be ironed out. Unlike human secretaries who work for one person or firm, virtual assistants have divided loyalties. For example, Google Now and Facebook M may work on behalf of consumers, but their parent companies make money by selling targeted ads and mining consumer data. Apple, in contrast, has made privacy one of its main selling-points.

A similar dilemma is raised when it comes to commerce. As virtual assistants help purchase more things online, they will have the power to boost certain firms and deprive others of business. When asked to book a ticket from San Francisco to London, will a virtual assistant select the cheapest fare, or a ticket on an airline that has a promotional relationship with the company that invented the assistant? As virtual secretaries become more powerful, the question of who works for whom will become more pressing. ■

虚拟个人助理

软件秘书

科技公司正竞相成为消费者的私人秘书，这可能会威胁隐私和竞争

9月9日，人们满腔热情地涌进旧金山的比尔·格雷厄姆市政礼堂。他们来到这个通常举办摇滚音乐会的会场，是要观看苹果公司的发布会。这家公司也拥有一群狂热的崇拜者。公司高管登台发布了最新的Apple Watch、iPhone和iPad，还有一款新的机顶盒，它让电视节目搜索和玩游戏都变得更便捷。

然而，这场发布会真正的明星却是苹果的个人助理技术Siri。目前Siri已可在iPhone上使用，回应语音命令。它将被嵌入苹果的新型电视遥控器里，这样用户无需动一根手指就能转换频道或者搜索新节目。用户如果想知道天气情况或某场体育比赛的结果，问Siri会得到迅速回复。

Siri在电视上的应用昭示着虚拟助理软件的崛起。这些软件可模仿一些人类秘书的技能，如创建约会提醒、查找信息和完成其他任务等。2010年，苹果公司以大约2亿美元收购Siri，已成为该领域的领导者，但许多科技公司一直在研制竞争产品。

谷歌和微软在智能手机上提供数字助理，分别叫 Google Now 和小娜（Cortana），它们对用户的习惯和日程表有深入的了解。亚马逊出售的一款独立设备能够播放音乐、大声读书、帮助用户在亚马逊上购物等等。9月8日，中国互联网巨头百度推出了自己的数字助理——度秘。Facebook最近宣布，一项名叫M的助理服务将在其消息应用中上线。刚开始，任务将由人来完成，但随着时间的推移情况可能会发生改变。

所有这些公司仍有难题需要解决，但其个人助理软件的复杂性和功能范围正不断扩大（见图表）。Siri等服务的崛起预示着两个重要的趋势将塑造消费者互联网的未来：“搜索”从在搜索引擎中打字演变为更加个性化和互动式的服务；从各自独立的应用逐渐变成由一个功能强大的软件助理作媒

介的服务生态系统。

根据研究公司Gartner的调研，近来约38%的美国消费者在智能手机上使用过虚拟助理服务；到2016年底，估计发达国家三分之二的消费者每天都将使用这类服务。软件机器人越来越善于根据用户过去的行为和现在的位置来预测其需求。

各类科技巨头提供的虚拟秘书是他们更广泛努力的一部分：要掌握人工智能，尤其是“机器学习”，即教会计算机处理大量数据、辨别规律和提升功能。各公司正斥资数十亿美元收购这个领域里的创业公司，并争相招聘人工智能方面的专家。据报道，仅苹果公司就打算招聘大约90名专家，而Facebook已经聘请了人工智能领域的学术明星燕乐存（Yann LeCun）负责其研究中心对此课题的研究。

语音识别正在迅速改进，尽管仍不完善。负责Google Now的阿帕纳·辰纳普拉伽达（Aparna Chennapragada）表示，两年前该产品错误理解了25%的词，但如今错误率仅为8%。各家公司的研发重点已变为如何利用消费者存储在其设备上的信息来做主动推荐，而不只是回应指令。

谷歌尤其擅长这件事（或者说让人有点毛骨悚然）。例如，它会查阅用户的电子邮件，提醒他们何时该动身赴约或赶乘航班。微软的小娜也能做这些，但直到最近，它都仅限于在Windows设备上使用。全球定位技术已经是智能手机的标配，它正帮助虚拟助理更好地完成工作。假如说，一名消费者想在下次去超市时被提醒要买牛奶，当手机测出他到达超市时，一条提醒就会跳出来。

技术也有可能把安排会议这件让人头疼的事自动化。包括Clara Labs和x.ai在内的几家创业公司都提供虚拟日程安排助理，结合算法和人工来帮助安排会面。用户的电邮会同时抄送软件机器人，机器人然后浏览用户的日程，并代为选择一个方便的时段。人们安排一场会议平均需要七封邮件，所以虚拟助理可以节省很多时间。x.ai的老板丹尼斯·莫滕森（Dennis Mortensen）表示，人们往往对虚拟助理很友善，即使知道自己是在和机

器人通信时。假以时日，这种软件将日臻完善，人们可能根本不知道跟自己对话的是一台机器。

大多数真人私人助理无需担心自己的工作受到技术的威胁，至少目前还不会。使用数字助理搜索信息让人们无需自己动手，但要完成预订机票等更复杂的工作它们就力不从心了。本刊记者花了几天时间“雇用”了各种现有的数字助理。虽然它们能找到附近的餐厅并通过OpenTable预订位子，但是它们还不够了解这名记者，也没有足够的判断力来告诉她哪家意大利菜“最好吃”。亚马逊的Echo可以毫不迟疑地背出“私人助理”的定义，但当记者问Echo是不是她的私人助理时，它却不知该如何应答。

为了取悦主人，虚拟助理需要改进与外部服务的衔接以便完成指令。这就是Viv的愿景。这家由Siri创始人领导的创业公司预计将在明年推出这种形式的服务。现有的虚拟助理也在变得更加开放。例如，小娜接入了优步（Uber）来帮助用户订车，最近还开始在用户逛商店或在线浏览时展示相关的优惠券。

虚拟助理的崛起带来了一些挑战。一是隐私。最好的一批服务将获得海量数据，但是，如何与完成指令的外部企业共享消费者信息，这一难题尚待解决。人类秘书为某个人或某家公司效力，虚拟助理却分事二主，难以确保对谁忠诚。例如，Google Now和Facebook的M可能代表消费者的利益来工作，但它们的母公司却通过销售定向广告和挖掘消费者数据来赚钱。相比之下，苹果公司已经把隐私作为主要卖点之一。

谈到商业，一个类似的困境也显现出来。当虚拟助理帮助用户越来越多地在网上购物，它们会有能力促进某些公司的发展，却夺走另一些公司的业务。当被请求预订一张旧金山飞伦敦的机票时，它会选择最便宜的机票，还是让一家和发明了自己的公司有广告业务的航空公司出票？随着虚拟秘书变得日渐强大，谁给谁干活这个问题将愈发紧迫。■

Internet access

Gordian net

Why network neutrality is such an intractable problem—and how to solve it

THE idea that certain businesses are so essential that they must not discriminate between customers is as old as ferries. With only one vessel in town, a boatman was generally not allowed to charge a butcher more than a carpenter to move goods. This concept, called “common carriage”, has served the world well, most recently on the internet. The principle of blindly delivering packets of data, regardless of origin, destination or contents, is welded into the network’s technical foundations. This, more than anything else, explains why the internet has become such a fountain of innovation.

Yet with the internet becoming more crowded and traffic-management tools improving, this principle—known today as “network neutrality”—is under threat. Telecoms firms would like to create lanes of different speeds, not just to manage their networks better, but to capture more profits. Internet advocates fear this would lead to an online world studded with toll booths and other choke-points. They fret that rent-seeking network operators would abuse their market power. Prices would shoot up for those using the fast lanes; everyone else would get much cheaper, but much crummier, service.

Governments are taking different actions. America’s Federal Communications Commission (FCC), which has been chewing on the problem for years, passed a set of network-neutrality rules in February that prohibit network operators from granting faster access to companies that pay for the privilege. In Europe however, the EU passed this week new legislation that allows the creation of fast lanes for certain "specialized services". Both sets of rules will face opposition continuously. How can the

debate be settled?

More providers, fewer rules

Finding a solution has proved tricky. First, neutrality is a slippery concept. Although the internet was designed to treat all data equally, it was never completely neutral: services such as games or video have always been at a disadvantage because the public internet cannot guarantee real-time connections. Second, any reform involves legal quandaries. Should an e-mail campaign from a political party count as spam, or freedom of speech? After losing several American court cases in the past because the internet was held to be an unregulated information service, the FCC has reclassified it as an old-style utility in order to impose network-neutrality rules.

The debate is, therefore, unlikely ever to end—which means that trying to impose detailed rules or even utility-type regulation, as the FCC is likely to do, looks misguided. Better to stick with broader rules, such as insisting that a provider's basic broadband service cannot be much slower than the fast lanes it offers—and ensure that regulators and the public can police them. Each operator should be required to publish detailed information about its network's performance. Broadband providers can then be exposed if they slow or ration customers' access to, say, Netflix or Skype. Regulators should have the power to punish such underhand tactics.

Wherever possible, however, they should leave the market to sort things out. The best way to do this is to encourage vigorous competition in all parts of the internet, particularly between broadband providers, so that none can become a bottleneck and exploit that position. That, alas, happens all too often, particularly in America, where 75% of households have no choice of provider for fast internet access. Get rid of those monopolies and there would be much less need to worry about the mind-numbing intricacies of network neutrality. ■

互联网接入

难解之网

为什么网络中立性会成为一个死结，又该如何解开它？

某些生意是如此的必不可少，所以对顾客须一视同仁，这一观念和轮渡一样古老。若镇上只有一条船，船夫在运货时对屠夫的要价就不能比对木匠的要价高。这一被称为“公共运输”的理念一直运转良好，最近在互联网上也是如此。不问来源、目的地或内容，只管传递数据包的原则已成为网络技术基础的一部分。这一点最能解释为何互联网会成为创新之源。

然而，随着互联网变得越来越拥挤，流量管理工具不断改进，这条如今被称为“网络中立性”的原则正受到威胁。电信公司希望提供网速不同的多条线路，不只是为了更好地管理网络，更是为了获得更多利润。互联网的拥护者担忧这会使线上世界遍布收费站和其他阻塞点。他们担心寻租的网络运营商会滥用其市场支配力。高速网络的用户将面临费用暴涨，而所有其他用户将获得便宜得多但质量也差得多的服务。

政府正在采取不同的措施。美国联邦通讯委员会（FCC）已就此问题研究多年，2月通过了一套网络中立性法规，禁止网络运营商向那些为优先权付费的企业提供更高速的网络。而在欧洲，欧盟本周投票通过的新法案允许为某些“特殊服务”创建快车道。两种法规都会面临持续的反对声。争议该如何解决？

> *供应商宜多，规则宜少*

要找到解决之道实属不易。首先，中立性的概念并不明确。尽管互联网生来即是要平等地处理所有数据，但它从未完全中立：游戏或视频这样的服务始终处于不利地位，因为公共互联网难以保证实时连接。其次，任何改革都会陷入法律困局。一个政党发起的电邮宣传活动应该被划入垃圾邮件之列，还是被视为言论自由之举？由于互联网被视为不受管理的信息服务，FCC过去曾在多起诉讼中败诉，如今它已把互联网重新划分为传统公用设施，以便强制实施网络中立性规则。

因此争议可能永远都不会平息，这意味着像FCC那样，试图强加细化规则甚至是公用设施类的监管，可能是误入歧途。更好的方法是实行更宽泛的规则，例如坚持要求供应商的基础宽带服务不能比其提供的高速网络慢太多，还要保证监管部门和公众能够发挥监督作用。每个运营商都必须公布其网络性能的详细信息。如此一来，如果宽带供应商对用户接入Netflix或Skype这类服务进行限速或带宽限制，它们的行径将会暴露。监管部门应有权惩罚此种卑劣手段。

然而只要有可能，还是应该让市场来解决问题。最好的方法是在互联网的各个领域鼓励激烈竞争，特别是在宽带供应商之间，这样没有谁可以成为流量集中地并利用这一地位。呜呼哀哉，这种垄断太司空见惯了。特别是在美国，75%的家庭在选择高速互联网供应商时并没有什么余地。除掉了这些垄断者，就远不需要再去担心网络中立性那些个令人厌烦的难题了。

Wireless charging

Coiled and ready to strike

Electronics has already cut the data cord. Can it now cut the power cord as well?

DRONES may one day transform the way parcels are delivered, crops monitored and suspects apprehended. Those who talk up these possibilities, though, often neglect to mention the drawbacks of such robot aircraft—one of which is that most cannot fly for more than a quarter of an hour before they need to find a human being to swap their batteries for them or plug them into an electrical socket.

Joshua Smith, a computer scientist at the University of Washington, in Seattle, hopes to change that. In May he started a company called Wibotic that plans to recharge drones (and also earthbound robots) without them having to establish an awkward physical connection with a plug. A 'bot whose batteries were low would simply manoeuvre itself to within half a metre or so of a recharging station to top them up. LaserMotive, another Seattle-based company, is even more ambitious. It is developing a system designed to replenish the batteries of drones that are still aloft, using lasers and photovoltaic cells.

The idea of wireless power-transmission of this sort goes back more than a century. In 1893 Nikola Tesla (pictured), who was one of the pioneers of industrial-scale electricity, illuminated light bulbs across a room in a demonstration at the Columbian Exposition in Chicago. And that was a mere fleabite compared with his grander ambitions. He claimed to believe it possible to broadcast power around the world using a system of towers and balloons, and even convinced J.P. Morgan to back a trial.

That failed, as most other physicists of the time predicted it would. (Tesla was a good scientist, but also an inveterate showman.) More modest

remote power-transmission is, however, now attracting attention again. The technology Tesla pioneered is already being used to charge mobile phones, and researchers are working on similarly wirelessly powered kitchen appliances, military equipment such as heads-up displays, and medical devices ranging from heart pumps to brain monitors. IHS, a market-research firm, estimates that sales of such machines, now half a billion dollars a year, will grow 30-fold over the next decade.

A question of standards

Lasers aside, the principle behind most wireless power-transmission is a piece of basic physics known as induction. In this process an alternating current passing through a coiled wire creates an oscillating magnetic field. That field then induces another alternating current in a second, nearby coil. If the transmitting and receiving coils are close together and aligned in the same direction, almost all of the power will be transmitted. Separate the coils by more than a few millimetres however, or wiggle them around, and the efficiency of the process drops off quickly.

Inductively coupled systems like this thus work well for things like repowering electric toothbrushes. They would be impractical, though, for a drone trying to hover over a charging station. Wibotic's answer is to use tuned electrical circuits in place of simple transmitting and receiving coils. When such circuits are tuned to the same resonant frequency, they exchange energy more efficiently. That permits power to be transferred over distances up to the diameter of the coils, or even slightly farther. Besides being used to power up drones, chargers that worked this way could be shaped into bowls, to accommodate things like smart watches, or simply built invisibly into desktops.

Like induction itself, resonant induction is not a new idea (Tesla's Victorian demonstrations used it). But those demonstrations were optimised to work at one, specific distance. Modern resonant circuits are able to change their

electrical properties on the fly. That, Wibotic claims, permits its equipment to cope with wobbly drones and windy days. Wireless charging also allows devices to be sealed against water or mess. Philips, a large electronics manufacturer, has, for example, demonstrated a cordless food processor powered by a coil sunk into a counter.

For remote charging to take off metaphorically as well as literally, though, devices employing it need to be interoperable. That means establishing industry standards. Unfortunately, in a competition reminiscent of that in the 1890s between alternating current (Tesla's preference) and direct current (promoted by Thomas Edison), three main consumer standards have emerged.

One, from the Wireless Power Consortium, a group of around 200 technology firms, is called Qi. It operates up to about five watts—the sweet spot for charging mobile phones. A second, that of the Power Matters Alliance (PMA), is a direct competitor of Qi. The third, Rezence, devised by the Alliance for Wireless Power (A4WP), permits higher power levels. To make matters still more complicated, PMA and A4WP merged earlier this month, meaning that one organisation now promotes two standards. And Apple, ever idiosyncratic, made a wireless charger for its Watch that complies with none of the others.

Standards wars are often won not by the sweetest technology but by whatever comes out first and fastest, and thus rolls over the opposition. In this case all three contenders seem to have a chance. Qi is the standard of choice for phone cradles in a dozen models of car, and more than 80 models of smartphone can draw power from these cradles. Qi is also built into some flat-pack tables and bedside lamps sold by IKEA.

PMA, however, is beating it in the fast-food market. Chargers conforming to its standard can already be found in several hundred American branches of

McDonald's and Starbucks that hope to lure customers with the promise of refreshment for their gadgets as well as themselves. Even Rezence, which has virtually no existing applications, is in the running. Intel, the world's biggest silicon-chip maker, is adopting it for the next generation of its microprocessors destined for tablet and laptop computers.

Luckily for confused consumers, receivers that can work with two or even all three standards are starting to be built into phones and other gadgets. And, whichever does come out on top, Alex Gruzen, boss of WiTricity, a remote-charging equipment company that is a founder member of A4WP, thinks Intel's intervention will prove a turning-point. He compares it to the moment, in 2003, when the firm decided to incorporate wireless networking into its processors. This launched the Wi-Fi revolution. Something similar may now happen in the field of wireless power.

The Tesla exception

That something, moreover, may not be restricted to machines small enough to be picked up and carried. The rise of electric cars opens yet another market for remote power-transmission. Carmakers are keen to avoid the standards war that has broken out among makers of smaller gadgets. The Society of Automotive Engineers, an industry body, has consulted manufacturers, wireless-power companies and energy suppliers, and has already agreed on such things as the power level (around 20kW) and operating frequency (85kHz) of future car-charging systems.

The first cars to include such systems should arrive in 2017 or 2018. Ironically, models made by Tesla Motors will not be among them. Elon Musk, the firm's boss, is no fan of wireless power. He thinks it inefficient and underpowered compared with the (wired) "Superchargers" that Tesla Motors has developed. These provide six times the wattage of wireless, and have already been installed at hundreds of places around the world.

Fixed-point recharging stations, whether wired or wireless, are not, though, the limit of some peoples' ambitions. Qualcomm Halo, a company working with Daimler on automotive charging, envisages wireless chargers being integrated into the roadway itself. That would certainly help electric-car makers compete with rivals using other forms of power, for the batteries required to give a car a reasonable range are its most expensive component. Indeed, such technology already exists in a limited form. Electric buses in parts of South Korea, Italy, Britain and California are, today, recharging themselves from underground wireless chargers.

If convenient wireless charging lets carmakers halve the size of electric-vehicle batteries, it could slash thousands of dollars from their prices. That would make a huge difference to the economics of owning and running them. Nikola Tesla failed to beam power between continents but his tricks may yet succeed in something equally dramatic: decarbonising the world's road vehicles. ■

无线充电

蓄势待发

电子产品已经摆脱了数据线。现在能把电源线也省掉吗？

有朝一日，无人机可能改变运送包裹、监测庄稼及抓捕疑犯的方式。但是，大谈这些可能性的人往往对这些飞行机器人的缺点避而不谈。其中一个缺点是它们的续航时间大多不超过15分钟，需要人来帮它们更换电池或连上电源插座。

在位于西雅图的华盛顿大学，计算机科学家约书亚·史密斯（Joshua Smith）希望改变这一点。5月，他创办了一家名为Wibotic的公司，计划研制出无需笨拙连接插座就能给无人机（以及地面机器人）充电的技术。那些电量低的无人机只要飞到距充电站约半米内的位置就可自行充电。另一家总部位于西雅图的公司LaserMotive野心更大，它正在开发的一套系统使用激光和光伏电池，能给仍在高空飞行的无人机充电。

这类无线输电方式的创意可以追溯到逾一个世纪前。1893年，大规模配电的先驱之一尼古拉·特斯拉（Nikola Tesla，见图）在芝加哥的哥伦布纪念博览会（Columbian Exposition）的一次展示上点亮了房间另一边的灯泡。但相比他的宏大抱负，这只是雕虫小技罢了。他声称自己坚信能用由传输塔和气球组成的系统向世界各地输电。他甚至说服了J.P.摩根公司资助了他的一次尝试。

然而，那次尝试失败了，正如当时大多数物理学家所预料的那样。（特斯拉是一名优秀的科学家，但也无可救药地热爱作秀。）不过，更适度的远程输电如今又一次吸引了眼球。特斯拉引领的技术已被用来给手机充电，而科研人员正在研发使用类似的无线充电技术的厨房电器、头顶显示器等军用设备，以及从心脏起搏器到大脑监测仪的各种医疗设备。这类机器目前的年销售额为五亿美元。但据市场调研公司IHS预计，这一数字未来十年会增长30倍。

标准的问题

镭射除外，大部分无线输电背后的原理是一种名叫电磁感应的基础物理。在这一过程中，流经一个线圈的交流电创造出一个振荡的磁场。这个磁场而后在附近第二个线圈上引发交流电。如果输电的线圈和接收的线圈紧挨在一起，并以相同方向布线，那么几乎所有电都会被传输。但若把线圈分开超过几毫米或左右摆动它们，输电效率立刻下降。

因此，像这样的电感耦合系统在给电动牙刷这类物品充电时效果颇佳，但对一架尝试在充电站上悬浮的无人机来说则不切实际。Wibotic的解决办法是用调谐电路取代简易的输电和接收线圈。当这种调谐电路被调到同样的谐振频率，它们能更高效地交换能量，由此可以在等同于线圈直径甚至略远一些的距离内输电。除了给无人机充电，用这种方式运作的充电器可以被制成碗状，盛放如智能手表这样的物品，或者简单藏在台式电脑的内部。

和电磁感应一样，谐振感应并不是什么新鲜的概念（特斯拉在维多利亚时代的那些演示就使用了它）。但那些演示经过了优化，只能在某个特定距离上生效。而现代的谐振电路能即时、动态地改变它们的电力属性。Wibotic称，这使得该公司的设备能适应飘摇不定的无人机和刮风的日子。无线充电也使得设备可被密封而隔绝水或其他脏乱的环境影响。例如，大型电器制造商飞利浦就展示了一台没有电源线的食物加工机，它由埋设在一台计数器内的线圈输电。

远程充电若要实现“腾飞”——无论是从比喻义上还是字面意义上——则使用这种技术的设备必须具有交互操作性。这意味着要建立一定的行业标准。不幸的是，正如1890年代在交流电（特斯拉的选择）和直流电（爱迪生所提倡的）之间的竞争，目前已经出现了三种主要的消费品标准。

第一种叫Qi，由约200家科技企业组成的团体“无线充电联盟”（WPC）推行。该标准的运作范围为约5瓦以下——手机充电的最佳功率。第二种标准由电源事物联盟（PMA）倡导，是Qi的直接竞争对手。第三种标准Rezence由无线电源联盟（A4WP）设计，允许更高的功率等级。让局势变

得更加复杂的是，PMA 和A4WP在本月稍早时合并，也就是说，现在同一家机构推行着两种标准。而从来特立独行的苹果给它的智能手表搭配的无线充电器不适用其他任何标准。

行业标准之战通常的赢家不是最佳技术，而是最先最快推出从而让对家来不及还手的技术。在本案例中，所有三个对手看来都有机会。Qi是十几种车型中的手机充电支架的标准选择，而80多种智能手机型号都能从这些支架中充电。在宜家出售的平板组装桌和床头灯中也置入了这种标准。

不过，PMA在快餐市场打败了Qi。在美国几百家麦当劳和星巴克分店中已经可以看到符合PMA标准的充电器。这些餐饮店承诺让顾客和他们的小设备都在自家店内得到“充电”，以此来吸引顾客。而即使是尚无实际应用的Rezence也有希望胜出。全球最大的芯片制造商英特尔将在运用于平板和手提电脑的下一代微处理器中采用这种标准。

对于晕头转向的消费者来说，幸运的是那些可以通行两种甚至全部三种标准的接收器已经开始被安装进手机和其他小设备中。A4WP的创始成员之一、远程充电设备公司WiTricity的老板亚历克斯·格鲁森（Alex Gruzen）认为，无论哪一种标准最终胜出，英特尔的介入都会变成一个转折点。他把这比作2003年英特尔决定在其处理器中整合进无线网络的那一刻——这启动了Wi-Fi革命。如今在无线充电领域可能会发生类似的事。

例外的特斯拉

而这件事的发生可能不局限于那些足够小而可携带的机器。电动车的出现开辟了又一个远程输电市场。汽车制造商正努力避免那种在小型设备制造商之间爆发的标准之战。行业组织汽车工程学会已经咨询了汽车制造商、无线充电企业和能源供应商，并且已就未来汽车充电系统的功率等级（约20千瓦）和运作频率（85千赫）等达成一致。

包含这类系统的第一批汽车应该会在2017年或2018年面世。讽刺的是，特斯拉汽车公司制造的车型并不在此列。该公司老板埃隆·马斯克对无线充电并不感兴趣。他认为，和自己公司研发的（有线）“超级充电站”相比，

这种方式低效又动力不足。他的充电站提供的功率是无线充电的六倍，已经安装在世界各地成百上千个地点。

不过，另一些人的野心不局限于固定位置的充电站，无论有线还是无线。正和戴姆勒合作研发车载充电系统的高通Halo设想在车道中铺设无线充电设备。这毫无疑问将有助于电动车制造商与使用其他动力形式的对手竞争，因为电动车中最昂贵的组件正是能让汽车跑上合理里程数的电池。实际上，这类技术已经以有限的形式存在。如今在韩国、意大利、英国和加州的部分地区，电动公交车从地下无线充电设施中自行充电。

如果便捷的无线充电技术能让汽车制造商把电动车的车载电池尺寸减半，就可能把电动车的价格砍去数千美元。这会给购买和使用电动车的经济效益带来大不同。尼古拉·特斯拉未能在洲际间发射电力，但他的戏法或许还是能在同样戏剧化的事情上大展拳脚：让地球上的车辆脱碳减排。 ■

Corporate messaging

First movement

Symphony, a Wall Street-backed service, takes on Bloomberg

STARTUPS typically strain to be noticed. Symphony, a new communication service backed by a consortium of 15 financial firms, does not have this problem. Its unveiling on September 15th was preceded by frenzied speculation not only about what Symphony might do, but which companies and products could become collateral damage if it turns out to be a success.

At the top of the list is Bloomberg, the world's largest provider of financial information (whose newish editor-in-chief is John Micklethwait, a former editor of *The Economist*). But the more immediate targets are online-collaboration platforms for companies, such as Slack, which have become increasingly popular. Over time, its creators hope, Symphony will evolve into a hub for all sorts of business and social interaction—a Facebook without all the clutter and unsolicited self-promotion—that could become an alternative to the most ubiquitous digital-communication product in the business world: e-mail.

The technical roots of Symphony reach back to another company, Perzo, founded by David Gurle, a former executive at Microsoft and Thomson Reuters. Whatever Perzo's initial goals, interest in such communications platforms increased on Wall Street in the aftermath of news in 2013 that journalists at Bloomberg may have gleaned some information from monitoring the messaging system on the company's terminals. This is a critical conduit for correspondence between traders, bankers, and even officials.

The resulting indignation may have been largely opportunistic: banks were

already unhappy that an outside entity not only controls a key part of their communication infrastructure, but charges so much for doing so. Goldman Sachs began building its own network, and then led the purchase of Perzo in 2014 and the creation of Symphony's ownership syndicate. This also includes Bank of America, BlackRock, Citigroup, JPMorgan Chase, Morgan Stanley and other usual suspects.

That sort of backing means that Symphony stands a chance of becoming an industry-wide platform. But its initial version is intended for use within a single company. The service lets employees, among other things, form discussion groups and offers mechanisms that make it easy to distribute outside information such as research reports. It also allows firms to consolidate their many messaging services. Mr Gurle, now Symphony's chief executive, says that one of the financial firms consulted during the development of Symphony uses as many as 44 systems.

But Mr Gurle has much bigger plans than just consolidating communication. Symphony is built in such a way that the internal user groups created on Symphony can be expanded to include employees from other firms and then, eventually, customers. An obvious step would be for financial firms to open up the system to their wealth-management clients.

The service will also provide access to a stream of financial information. Three companies have agreed to provide news and data for Symphony's initial release: Dow Jones, Standard & Poor's Capital IQ and Selerity, an information aggregator that offers a filtering system to provide relevant content based on a user's interests. This line-up will soon be complemented by a facility for users to pay for further content, which will presumably have all sorts of information providers trying to claw their way in through the door.

A big question ahead of Symphony's launch was how it would bring

together the seemingly contradictory goals of ensuring users' privacy while being open to financial regulators. Under an agreement with New York's Department of Financial Services, which was announced the day before the service's unveiling, all messages on Symphony will be copied and held by an independent entity for at least seven years. Encryption will mean that these can only be read with the permission of the company involved, but the set-up also guarantees that the data will be preserved and that a court order could force co-operation. Discussions are ongoing with a number of regulators in other countries to get them to sign up to this approach.

Most importantly, perhaps, Symphony will be cheap: $15 a month per user. That is a fraction of the $1,700 a month that a Bloomberg terminal costs. But the price tag will not guarantee Symphony's success. Other challengers to Bloomberg have failed, largely because it is exceedingly hard to dethrone a messaging service that enjoys a near-monopoly among the people who count in finance. Bankers' occasional petulance aside, Bloomberg is also the repository of vast amounts of trust: its data are central to how many products are evaluated, priced and traded.

Bitter sweet

Symphony's greatest advantage, its ownership structure, may also be a source of vulnerability. If Symphony turns out to be a huge success, would a Wall Street consortium really be permitted to control a critical platform for global financial communications? If Symphony succeeds, expect to hear applause, and then, perhaps, the audience will turn. ■

企业通信

第一乐章

华尔街投资打造通信平台Symphony，对抗彭博

创业公司通常竭尽全力吸引关注，但由15家金融公司组成的财团投资打造的通信服务新平台Symphony（意为交响曲）则不存在这一问题。在该平台于9月15日揭幕启用之前，坊间即有诸多揣测，不仅关注其具体功能，还推测如果它一举成功，将给哪些企业及产品带来间接伤害。

首当其冲的是彭博这一全球最大的金融信息供应商（其新任总编辑约翰·米克尔思韦特[John Micklethwait]是《经济学人》前任总编辑），但更直接受到影响的是Slack这类日益流行的企业在线协同办公平台。Symphony的创建者希望该服务将逐渐演化成为各类商务及社交互动的门户——类似Facebook但没有杂乱信息和不请自来的广告推销，而且可以替代商业世界里最普遍的数字通信产品：电子邮件。

Symphony的技术根源可追溯至另一家公司Perzo，它由微软和汤森路透的前高管大卫·格利（David Gurle）创建。无论Perzo创立之初的目标为何，2013年爆出彭博记者可能从彭博终端上的通信系统搜集了信息的新闻后，华尔街对于这类通信平台的兴趣骤增。这是交易员、银行家及甚至官员之间联系通信的关键渠道。

这一事件引发的忿怒也许只是借题发挥：银行早就对由外部机构控制自己的通信平台并索取高价心存不满。高盛开始建设自己的网络，然后在2014年牵头收购Perzo并组建财团打造Symphony平台，其中包括美国银行、黑石集团、花旗集团、摩根大通、摩根士丹利及其他大家可能想到的机构。

如此规模的后盾意味着Symphony有可能成为行业的通用平台，但其初始版本只为供单一企业内部使用。除其他功能外，该服务可让员工建立讨论小组，设有轻松发布如研究报告等外部信息的机制，也能让公司整合其众多通信服务。Symphony的现任首席执行官格利表示，研发该平台过程中

征询过的其中一家金融机构便采用多达44个系统。

但格利的志向远不止整合通信。Symphony的设计让在此平台上创建的内部用户组可以扩展添加其他公司的雇员，并最终让客户也加入。显然，金融企业的下一步会是对其理财客户开放系统。

该平台还将提供金融信息流的接入服务。三家公司已同意为Symphony的初始版本提供新闻及数据：道琼斯、标普资本智商（Standard & Poor's Capital IQ）及Selerity。Selerity是一家金融数据公司，它聚合信息并提供过滤系统，根据用户的兴趣提供内容。这一阵容很快将有新的补充，添加让用户付费获取更多内容的功能。可想而知，各类信息供应商会争相挤进门来。

Symphony在推出前面对的一大问题是如何统一两个看似矛盾的目标：既保障用户的隐私，又向金融监管机构保持透明公开。在Symphony推出的前一天，一份与纽约州金融服务管理局（Department of Financial Services）达成的协议被公布，指明该平台上的所有信息将由一家独立机构复制并留存至少七年。信息将被加密，只有在相关公司许可下才能读取，但这样的设计保证了数据得以保留，法庭颁令便可迫使涉事公司合作。为得到其他国家多个监管机构的支持参与，商议正在进行之中。

最重要的也许是Symphony的费用低廉：每个用户每月15美元，只是彭博终端每月1700美元费用的零头。但这价码并不能保证Symphony成功。之前挑战彭博的产品都以失败告终，这主要因为在举足轻重的金融界人士中，彭博的信息服务享有近乎垄断的地位，谋朝篡位绝非易事。银行家们偶发的暴脾气除外，彭博也是庞大信任的源泉：无论多少产品被评估、定价及交易，其数据都是关键。

> *甘苦交响曲*

Symphony的所有权结构是其最大优势，也可能是其软肋所在。如果Symphony一鸣惊人，真的能允许这个华尔街财团掌控全球金融通信的重要平台吗？假如Symphony成功了，估计会听到掌声，然后，也许，观众

就转身离场了。■

Debt in China

Deleveraging delayed

Credit growth is still outstripping economic growth

IN MOST respects, double-digit growth is a relic of the past for China. In the third quarter the economy grew by just 6.9% year-on-year according to official data, and probably by a percentage point or two less in reality. Yet bank loans increased by 15.4% in the third quarter compared with the same period in 2014. Having released a torrent of credit to buoy the economy during the financial crisis, China was supposed to have started deleveraging by now. Instead, banks are continuing to pump debt into the economy, while the authorities, apparently worried about the damage a contraction in credit might do, coax them on.

Growth in credit has at least slowed in recent years. A broad measure is "total social financing" (TSF), which encompasses bank loans, corporate bonds and a range of shadowy loan-like products. TSF growth soared to 35% in 2009 when the government called on banks to open the taps and support the then-faltering economy. It has since decelerated: it rose by 13% in the third quarter from a year earlier. The problem, though, is that nominal GDP growth has fallen much lower, to 6.2%.

This means that China's overall debt-to-GDP ratio is continuing its steady upward march (see chart). Debt was about 160% of annual output in 2007. Now, China's debt ratio stands at more than 240%, or 161 trillion yuan ($25 trillion), according to calculations by *The Economist*. It has risen by nearly 50 percentage points over the past four years alone, with slowing growth only serving to magnify indebtedness.

A rapid increase in debt in a short space of time has historically been a good predictor of financial trouble, from Japan in the 1990s to southern Europe

in the 2000s. But there is no level that automatically triggers crises. Since most of China's debts are held within the government-controlled bits of its economy (state-owned firms are the biggest debtors and state-owned banks their biggest creditors), the country has the means to avoid an acute crisis. It can, in effect, roll over bad loans as they come due or abstain from calling them in. However, although that spares the economy short-term pain, it leaves it with a chronic ailment. Ever more credit is needed to sustain growth. Loans that should have gone to sprightly companies with promising new ideas go instead to corporate zombies.

There are worrying signs that China is heading in this direction. In the six years before the global financial crisis, each yuan of new credit brought about five yuan of national output. In the six years since the crisis, that has fallen to just over three yuan. It is not hard to find examples of companies on life support that in other countries might have perished by now. In September China National Erzhong Group, which makes smelting equipment, received a bail-out from its parent. Investors in Sinosteel, a metals conglomerate, are now hoping for the same after it delayed payment on a bond last week.

It is not too late for China to bring its debts under control. Regulators have taken steps in the right direction. They have obliged local governments to provide better data on their debts and have forced banks to bring more of their shadow loans onto their balance-sheets, providing a clearer picture of liabilities. One reason that banks have been issuing loans so quickly this year—faster than overall credit growth—is that they are replacing shadowier forms of financing. China has also used both monetary easing and a giant bond-swap programme for local governments to reduce the cost of servicing debts. The weighted interest rate on existing liabilities has fallen from roughly 6% to 4.5% this year.

But some worry that these measures are just pushing risks elsewhere. A

bond-market boom is the newest concern. Net bond issuance in the first nine months of 2015 reached 8.7 trillion yuan, up 67% from the same period a year earlier. At the same time, the gap between funding costs for companies and the government has narrowed sharply. The one-year yield on government bonds has fallen by nearly a percentage point over the past year, whereas corporate yields have fallen by 1.5 percentage points. In other words, investors are lending to companies as if they were becoming safer borrowers, even as their liabilities increase. Yang Chen of Bank of America Merrill Lynch notes that some investors are buying bonds with borrowed cash, believing that the government will wade in to spare them from any big defaults—as it has done in the past. If that impression persists, China's debt mountain could grow bigger still. ■

中国债务

去杠杆化延后

信贷增长仍超过经济增长

从大多数方面看来，两位数的增长在中国已经成为过去。据官方数据，今年第三季度中国经济同比增速仅为6.9%，而实际数字可能还要低一到两个百分点。但银行贷款在第三季度则比2014年同期增加了15.4%。在金融危机期间，中国曾大举放贷以提振经济，到了现在本应已启动去杠杆化。但相反，银行继续向经济中注入信贷，而当局显然担心信贷收缩会造成损害，也促使银行不断放贷。

最近几年，信贷的增速至少是放缓了。一项宽泛的衡量指标是社会融资总量（TSF），涵盖银行贷款、企业债券和其他一系列影子银行类信贷产品。2009年，政府要求银行打开信贷阀门，支持当时岌岌可危的经济，TSF增长率在当年飙升至35%。自那以后，TSF增长呈减速态势：今年第三季度的同比增长率为13%。但问题是，名义GDP增速下跌的幅度要大得多，已降至6.2%。

这意味着中国整体的债务对GDP比率继续稳步上行（见图表）。2007年时，中国的债务与年产出比率约为160%。如今，据《经济学人》计算，该比率已超过240%，债务达161万亿元（25万亿美元）。单是过去四年内，该比率就上升近50个百分点，而经济增长放缓更是放大了负债问题。

从历史上看，债务在短时间内迅速增长一直是预示金融危机的准确信号，从上世纪90年代的日本到本世纪头十年的南欧无不如此。但是，并非到达某个程度危机就会自动爆发。由于中国大部分的债务归属政府控制的经济领域（国有企业是最大债务人，国有银行是其最大债权人），国家有办法避免严重危机。实际上，政府可以在不良贷款到期时作展期操作，或放弃收回贷款。然而，这样做虽为经济免去了短期痛苦，但却遗留下了长期病症。要维持经济增长所需的信贷会越来越多。贷款本该流向具备活力、创意颇佳的公司，而非被“企业僵尸”吸走。

有令人忧虑的迹象表明中国正朝着这一方向行进。在全球金融危机爆发前的六年间，每一元新增的信贷能带来约五元的国民经济产出。危机后的六年间，该数字已降至仅为三元多。不难发现，一些换在其他国家早已破产消亡的企业得益于中国政府的支持还在苟延残喘。9月份，制造冶炼设备的中国第二重型机械集团公司获母公司拨款纾困。金属矿产集团中钢上周延迟兑付到期本息，其投资者现在期望政府以同样方式出手营救。

中国要控制债务规模，如今为时未晚。监管机构已朝着正确的方向迈出步伐。他们已经要求地方政府提供更真实的债务数据，并迫使银行把更多影子贷款纳入其资产负债表中，令负债情况更清晰。今年银行之所以放贷如此迅速（比整体信贷增长为快），原因之一是它们在取代更隐蔽的融资形式。中国也已利用货币宽松政策和大型的债券互换计划为地方政府降低偿债成本。今年，现有负债的加权利率已从约6%下降至4.5%。

但有人担心，这些措施只是把风险转移到别处而已。债券市场的兴旺是最新的忧虑。2015年头九个月的债券发行净值达8.7万亿元，同比增长67%。同时，企业和政府融资成本之间的差距大幅收窄。政府债券的一年期收益率在过去一年下降了近一个百分点，而企业债券的收益率下降了1.5%。换言之，即使企业负债增加，投资者仍继续贷款给它们，好像企业已成为更安全的借债方。美国美林银行的陈扬（Yang Chen，音译）表示，部分投资者正在借入资金购买债券，深信政府会一如往常般介入，避免发生任何大型违约事件。假如这一看法持续，中国的债台还将越筑越高。■

Foreign takeovers in Australia

Selling the farm

The prospect of foreign ownership of two giant agri-businesses causes alarm

THE bare expanse of Anna Creek cattle station (as Australians call ranches) belies its strategic attraction to investors. Straddling the river plains of the state of South Australia, and reputed to be the world's biggest cattle ranch by area, Anna Creek belongs to an empire of ten stations that Sidney Kidman, the "cattle king", started in 1899 (see map). Now, 116 years later, his descendants have put their inheritance on the market. The sale of S. Kidman & Co, due by the end of the year, has touched raw nerves over foreign investment, as Chinese and other overseas contenders circle a company that many Australians associate with their frontier heritage.

The interest of would-be buyers is understandable. The Kidman herd of almost 200,000 cattle sprawls across a swathe of the outback about three-quarters the size of England, making it Australia's biggest private landholding. Australia is the world's biggest beef exporter after India and Brazil. Rising demand from China and elsewhere in Asia, as Australia's currency falls in value, has helped business boom. Kidman could sell for around A$325m ($228m).

About half the 12 shortlisted bidders, whose identities have not been revealed, are foreign. Many may be Chinese. Doug Ferguson, a China expert at KPMG, a consulting firm, reckons that about 15 Chinese companies, some government-linked, would be capable of bidding for Kidman.

Australians are becoming more used to Chinese investment. Four years ago, China ranked ninth by stock of foreign direct investment (America, Britain and Japan, three of Australia's oldest trading partners, top the list). Now Australia's biggest trading partner, China's inward investment has taken off:

by 2014 it had moved up to fifth place. Australia's Foreign Investment Review Board (FIRB) says China has become a bigger investor by value than any country, measured by its share of the A$170 billion of proposed investments it examined last year. In the 2013-14 fiscal year, property worth A$12 billion represented China's biggest investment in Australia.

Agricultural investments of all kinds, however, were just a fraction of that year's inflow: a mere A$32m. Chinese deals to buy farmland have been few and far between. Two years ago Shandong Ruyi, a Chinese textile company, bought most of Australia's biggest cotton farm, Cubbie Station in the state of Queensland. Tianma Bearing Group, another Chinese company, recently paid a reported A$47 million for Wollogorang and Wentworth, two cattle stations in the Northern Territory, where part of the Kidman empire is also located. Now the prospect of Kidman falling into Chinese hands has given extra piquancy to broader Australian anxieties about "selling the farm" to foreigners.

Such anxieties are nothing new. When Tony Abbott, the recently-ejected prime minister, led the conservative Liberal-National coalition to government in 2013, he declared that Australia was "open for business". But a few weeks later Joe Hockey, then the treasurer, rejected a bid by Archer Daniels Midland (ADM), an American food-commodities giant, to take over GrainCorp, an Australian counterpart. Mr Hockey said foreign acquisition of "this key Australian business" would be against the national interest. He was bowing to pressure from the rural-based National Party, the coalition's junior partner. Similar pressures could come into play over the Kidman sale. The agriculture minister, Barnaby Joyce, who is from the National Party, opposes a "foreign state-owned enterprise" taking over Kidman.

The ranch operator's sale could now be the first big test of Malcolm Turnbull, who deposed Mr Abbott as Liberal leader and prime minister on September 14th. Mr Turnbull is more of a free-market champion than his

predecessor. He acknowledges Australia's "long history of ambivalence to foreign investment". But he identifies the country's key dilemma: "resource-rich but capital-poor". As soon as he took over as prime minister, there was speculation that ADM might make a fresh bid for full ownership of GrainCorp, of which it is already the largest shareholder.

However, Mr Turnbull is bound by tighter foreign-investment rules that the government introduced under Mr Abbott. They require the FIRB to scrutinise all sales to foreign entities of rural land worth A$15m or more—the limit was previously A$252 million. The new rules will apply to bidders from China, Japan and South Korea, with which Australia recently signed free-trade agreements. But bidders from places like America, New Zealand and Chile, whose free-trade deals pre-dated the changes, can buy land worth more than A$1 billion before they are screened.

Similar screening discrepancies will apply to bids for agri-businesses other than farms and ranches, such as GrainCorp. Critics charge that such a two-tier approach barely masks a quest to make life harder for investors from Asia. Peter Drysdale, an economist at the Australian National University, says it "does not make any policy sense". The FIRB only advises the government on foreign takeovers, but the very fact that a particular deal has fallen under the board's purview risks making it a political hot potato.

Soaring house prices in Sydney and Melbourne, Australia's two biggest cities, have added to politicians' nervousness about foreign money coming into the country. Without presenting evidence, some press pundits and radio "shock jocks" have blamed Chinese investors for forcing Australians out of the market. But non-resident foreign investors are banned from buying houses in Australia. New dwellings are excepted on the ground that such sales help expand the housing stock.

Some worry that the government risks scaring off foreign investors just

when the country needs capital as its economy cools. Fears about foreign takeovers are exaggerated anyway. Australians still entirely own almost 99% of the country's farm businesses, and 90% of its agricultural land. Yet competition can only grow. Mr Ferguson reckons China's pursuit of food security will see a "bigger shift" in Chinese offshore farm investment. "The Chinese have constantly declared they're looking for very large-scale properties," he says. "Kidman is a classic example." ■

澳大利亚的外资收购

卖掉农场

两大农业巨头均为外资所有，这一前景令人恐慌

安娜溪（Anna Creek）养牛场（澳大利亚人称之为“大牧场”）的广袤无垠掩盖了它对投资者的战略吸引力。安娜溪横跨南澳大利亚州的冲积平原，被认为是世界上面积最大的养牛场。它属于一个拥有十个牧场的帝国，这一帝国由“牛王”西德尼•基德曼（Sidney Kidman）于1899年开创（见地图）。116年后的今天，他的后代把家族企业挂牌出售。基德曼公司（S. Kidman & Co.）的出售将在今年年底截止，这一举措触痛了人们对外国投资的敏感神经，因为很多澳大利亚人把中国和其他海外竞争者环伺的这家公司与他们的拓边传承联系起来。

潜在买家的兴趣无可厚非。基德曼公司拥有约20万头牛，放牧于一块条形的内陆地区，面积约相当于英格兰的四分之三，是澳大利亚最大的私人拥有土地。澳大利亚是仅次于印度和巴西的全球第三大牛肉出口国。随着澳元贬值，中国和亚洲其他地区不断增长的需求推动业务蓬勃发展。基德曼的收购价可能达到约3.25亿澳元（2.28亿美元）。

12个入围的竞标者约一半来自国外，身份尚未透露，不过可能很多是来自中国。咨询公司毕马威会计师事务所（KPMG）的中国问题专家道格•弗格森（Doug Ferguson）认为约有15家中国公司有能力竞标基德曼，其中有些与政府有关联。

澳大利亚人越来越对中国的投资习以为常。四年前，就外国直接投资存量而言，中国排名第九（澳大利亚三大最长久的贸易伙伴美国、英国和日本排名前三）。现在，作为澳大利亚最大的贸易伙伴，来自中国的投资已经开始迅速增长：到2014年中国的排名已升至第五。澳大利亚外国投资审查委员会（Foreign Investment Review Board）称，去年经其审查的拟定投资达1700亿澳元，按在其中所占份额衡量，中国的投资额已超过其他所有国家。2013至2014财政年度，价值120亿澳元的地产是中国在澳大利亚最

大的投资。

不过各种各样的农业投资不过是当年资金流入的一小部分：仅仅3200万澳元。中国人购买农场的交易寥寥无几。两年前一家中国纺织公司山东如意收购了位于昆士兰州的库比农场（Cubbie Station）这个澳大利亚最大棉花农场的大部分股份。据报道，另一家中国公司天马轴承集团最近花费4700万澳元购买了伍洛格朗（Wollogorang）和温特沃斯（Wentworth）两大牧场，这两处养牛场位于北领地（Northern Territory），基德曼帝国的一部分也在那里。如今基德曼可能落入中国人之手，这对于普遍担忧“卖农场”给外国人的澳大利亚人来说无异于火上浇油。

这样的担忧并不新鲜。最近下台的首相托尼·阿博特（Tony Abbott）在2013年领导保守派自由党-国家党联盟执政时，宣布澳大利亚“商业开放”。但是几周后时任财政部长的乔·霍基（Joe Hockey）即否决了美国粮食商品巨头阿彻丹尼尔斯米德兰公司（ADM）收购澳大利亚公司GrainCorp的要约。霍基说外国收购“这一关键的澳大利亚公司”会有悖国家利益。他屈从于立足农村的国家党的压力，该党是联盟中较小的合作党派。类似的压力也可能施加于基德曼的出售，来自国家党的农业部长巴纳比·乔伊斯（Barnaby Joyce）就反对“外国国有企业”收购基德曼。

9月14日，马尔科姆•特恩布尔（Malcolm Turnbull）击败阿博特成为自由党领袖和澳大利亚总理，牧场经营者的出售现在可能是他遇到的首个巨大考验。与其前任相比，特恩布尔更拥护自由市场。他承认澳大利亚“长久以来对外国投资态度矛盾”，但他认为本国最核心的困境是“资源丰富但资本匮乏”。他一接任总理，就有人推测ADM可能会再次投标收购GrainCorp的全部股权。ADM已经是GrainCorp最大的股东。

不过，特恩布尔被阿博特政府引入的更严格的外国投资规定所束缚。规定要求外国投资审查委员会严格审查所有卖给外国实体、价值1500万澳元及以上的农村土地，而以前这一限额是2.52亿澳元。新规定将适用于中国、日本和韩国的竞标者，澳大利亚近期与这三个国家签订了自由贸易协定。但是，在规则变化前就签订了自由贸易协定的美国、新西兰和智利等国的

竞标者却可以购买价值超过10亿澳元的土地，而无需经过审批。

在除农场和牧场以外的其他农业竞标中也将实施类似的审查差异，例如GrainCorp。批评人士认为这样的双重标准很难掩盖为难亚洲投资者的立意。澳大利亚国立大学的经济学家彼得·德赖斯代尔（Peter Drysdale）认为这“作为政策不合理”。澳大利亚外国投资审查委员会仅就外国收购向政府提供建议，但某项具体交易落入了该委员会权限以内这一事实有可能令其成为政治上的烫手山芋。

澳大利亚两大城市悉尼和墨尔本狂飙的房价加剧了政治家们对外资涌入该国的紧张不安。一些媒体专家和言辞耸人听闻的广播节目主持人未提供证据就指责中国投资者把澳大利亚人挤出了市场。但是，非常住居民的外国投资者不被允许在澳大利亚购买二手房。新建住房不属此列，理由是这样的销售有助于扩大存量房。

有人担忧现在本国经济放缓亟需投资时，政府的做法恰恰可能吓跑外国投资者。对于外国收购的担忧无论如何是被夸大了。澳大利亚人仍然完全拥有全国几乎99%的农业公司和90%的农业用地。但是竞争只会更激烈。弗格森认为中国对食品安全的追求将引发中国人“更多地转向”海外农业投资。“中国人一直宣称他们在寻找非常大规模的地产，”他说，“基德曼就是个典型的例子。”■

Free exchange

Taking a pounding

What America can learn from sterling's decline as a reserve currency

WHEN did Britain cease to be the world's pre-eminent power? Some date its dotage to the end of the first world war; others to the second. By the time of Britain's humiliation during the Suez crisis in 1956, America's hegemony was clear to all. Yet perhaps the most significant indicator of decline went relatively unnoticed by contemporaries: the dollar's usurpation of sterling as the world's main reserve currency.

Fears that a similar fate awaits America and the dollar, at the hands of China and the yuan, have burgeoned over the past decade. They have been fuelled by China's growing economic weight—last year it became the world's biggest economy in terms of purchasing power—and by the efforts of its government to promote the use of the yuan in international transactions. That has prompted economic historians to re-examine sterling's downfall, in search of clues about how the impending tussle between the dollar and the yuan might unfold. The research yields lessons in three broad areas—how a currency attains reserve status, whether a two-currency system is possible, and how poor policymaking can speed a currency's decline.

The pound dominated the financial world in the late 19th century: more than 60% of trade and 90% of public-debt issuance around the world was conducted in sterling. In part, this was owing to sheer economic clout: at its zenith, the British empire encompassed nearly a quarter of the world's people and territory. But as a recent series of papers* by Barry Eichengreen of the University of California, Berkeley, and several colleagues shows, this was not a sufficient condition for financial hegemony. After all, America's economy overtook Britain's in size around 1880, yet the dollar was rarely

used abroad until after the first world war.

Mr Eichengreen argues that the "size, stability and liquidity" of financial markets are the most important determinants of reserve status. The pound was a reliable store of value, having been freely convertible with gold since the 1820s. It also offered access to London, the world's biggest and most stable financial centre. Moreover, as Charles Kindleberger, another economic historian, pointed out, sterling's place in the world was bolstered by international co-operation: to help deal with destabilising current-account surpluses and deficits, Europe's central banks co-ordinated monetary policy and extended one another loans.

As a result, the dollar only began to supplant the pound after the establishment of the Federal Reserve in 1913, which helped make America's financial markets both more liquid and more stable. Soon after, the international co-operation that supported the pound collapsed amid acrimony regarding reparations and war loans following the first world war.

All this should reassure the dollar's defenders. America's capital markets remain massively bigger, more liquid and better regulated than China's, the financial crisis notwithstanding. Although the Chinese government is actively promoting the development of its financial markets, just as America did a century ago, progress has been fitful. The yuan is not fully convertible, the authorities meddle with the markets and Chinese stocks have become a byword for instability.

> *It need not be lonely at the top*

Mr Eichengreen's research also suggests that two reserve currencies can co-exist for a long period. Although the dollar began gaining ground in the aftermath of the first world war, the pound remained an equally significant reserve currency throughout the interwar period (see chart). Nor is the road to a new reserve currency a one-way street: sterling regained some ground

when America was hit by a series of banking crises in the early 1930s.

Economists had tended to assume that there are big gains to be had from using a single reserve currency, in the form of lower transaction costs for international trade and investment. That, in turn, should lead to a rapid transfer of allegiances during a switch from one reserve currency to another. But Mr Eichengreen argues that central banks and investors will continue to hold some reserves in a waning currency as long as it remains sufficiently liquid, since diversification brings even greater benefits by helping limit capital losses in the event of currency turmoil.

However, misguided policymaking during a period of overlap can hasten a reserve currency's decline. In the interwar years Britain took various steps to reverse London's waning status as a financial centre, including fixing the pound against gold at a rate that made its exports uncompetitive and introducing protectionist tariffs. In the long-run, such policies proved counterproductive: by dampening growth in Britain, they further diminished sterling's standing. Devaluations of the pound and exchange controls after the second world war terminally damaged its reputation for reliability and stability.

With luck, Congress will resist the temptation to erect obstacles to trade, despite the enthusiastic endorsement of the idea by populist politicians of the left and right. But it is not hard to imagine America undermining the dollar by refusing to co-operate with the world's other big economies. As it is, America is at loggerheads with China about reforming the IMF and the World Bank. It has also churlishly resisted Chinese initiatives such as the Asian Infrastructure Investment Bank.

The breakdown of international financial co-operation as a result of the first world war led to messy and unstable conditions in the interwar years. The IMF and World Bank were founded after the second world war to

ensure that this error was not repeated. It would be ironic if those institutions themselves became emblematic of America's failure to learn the lessons of history: that the dollar will not soon be supplanted, that a rising currency need not be an adversary, and that insularity is the quickest way to hasten a reserve currency's demise.

*Studies cited in this article can be found at www.economist.com/reserves15 ■

自由交流

英镑殷鉴

作为储备货币的英镑衰落，美国可以从中学到什么

从何时起，英国不再是首屈一指的强国？有人认为它的老迈始于第一次世界大战结束，也有人认为是第二次世界大战之后。到了1956年令英国蒙羞的苏伊士运河危机发生之时，美国的霸主地位已昭昭在目。但是，英国衰落可能最重要的指标相对而言却被当代人士所忽视：美元篡夺了英镑作为世界主要储备货币的地位。

过去十年，对美国和美元会面临类似命运、终结于中国和人民币之手的担忧不断滋长。去年中国成为以购买力计世界上最大的经济体，中国不断增长的经济权重以及中国政府努力推动人民币在国际交易中的使用加重了这种担忧。这促使经济历史学家重新审视英镑的衰落，试图为美元和人民币之间可能将展开的争斗寻找头绪。这一研究在三个广泛领域得出了经验：一种货币如何获得储备货币的地位；双货币系统是否可行；糟糕的政策会如何加速一种货币的衰落。

十九世纪末期英镑统治了金融世界：全球超过60%的贸易和90%的公共债务以英镑计价。部分原因是其纯粹的经济影响力：全盛时期的大英帝国拥有世界上近四分之一的人口和领土。但是加州大学伯克利分校的巴瑞·艾肯格林（Barry Eichengreen）和他的几位同事在近期发表的一系列论文*中指出，这并不是实现金融霸权的充分条件。毕竟在1880年左右美国经济就已在规模上超过了英国，但在第一次世界大战之前，美元极少在国外使用。

艾肯格林认为金融市场的“规模、稳定性和流动性”是决定储备货币地位的三个最重要因素。英镑曾是可靠的储值手段，自19世纪20年代起就能自由兑换黄金。它也为进入世界上最大最稳定的金融中心伦敦提供了渠道。而且，正如另一位经济历史学家查尔斯·金德尔伯格**（Charles Kindleberger）所指出的，英镑在全球的支配地位曾由英国领导的国际合

作支撑：为了帮助处理不稳定的经常账户盈余和赤字，欧洲各大中央银行协调了货币政策，互相为彼此提供贷款。

因此，直到1913年美联储成立后，美元才开始取代英镑。美联储使得美国的金融市场更具流动性也更加稳定。很快，在一战后关于赔款和战争贷款的争执中，曾经支撑英镑的国际合作轰然倒塌。

所有这些因素应当会让美元的捍卫者安心。尽管有金融危机，但比之中国，美国的资本市场规模仍然大得多、流动性更佳并且监管做得更好。虽然一如美国一百年前所做的那样，中国政府正在积极推动金融市场的发展，但进展时断时续。人民币不能完全自由兑换，中国政府干预市场，而中国的股市已经成为不稳定的代名词。

无需高处不胜寒

艾肯格林的研究也表明两种储备货币可以长期共存。尽管一战后美元开始逐渐取得优势，但在两次世界大战之间的时期英镑一直都是同等重要的储备货币（见图表）。晋升新的储备货币的道路也并非单行道：20世纪30年代当美国遭受一系列银行危机重创时，英镑地位一度有所复兴。

经济学家曾倾向于认为采用单一储备货币会有许多益处，因为它降低了国际贸易与投资的交易成本。反过来，当从一种储备货币转向另一种时，这理应导致忠诚度的迅速转移。但是艾肯格林认为央行和投资者们仍将持有部分逐渐式微的货币作为储备，只要它保持足够的流动性，因为多样化有助于在汇率动荡时限制资本损失，从而带来更大的利益。

然而，并行期的错误决策会加速某种储备货币的衰落。在两次大战之间的时期英国采取了种种措施以重振伦敦日渐削弱的金融中心地位，包括固定英镑与黄金的兑换率而导致其出口丧失了竞争力，此外还引入了保护性关税。长期看来，这些政策适得其反：它们抑制了英国的增长，从而进一步削弱了英镑的地位。第二次世界大战之后的英镑贬值和外汇管制最终摧毁了它可靠稳定的美誉。

幸运的话，美国国会将抵挡住树立贸易障碍的诱惑，尽管左派和右派的民

粹主义政客都狂热地支持设置这种障碍。但不难想象美国会拒绝与世界其他大型经济体合作，从而削弱美元。实际上，在改革IMF和世界银行的问题上美国和中国僵持不下。美国也粗暴地抵制了中国提出的一些举措，如亚洲基础设施投资银行。

一战后国际金融合作的破裂导致了两次大战之间混乱且不稳定的状态。二战后IMF和世界银行成立，以确保不会重蹈覆辙。如果这些机构自身成为美国无法吸取前车之鉴的标志，那倒是件讽刺的事。这些教训是：美元不会迅速被取代；崛起的货币不一定要成为对手；偏狭是加速一种储备货币死亡的最快途径。

*本文引用的研究可参见www.economist.com/reserves15■

The world economy

Dominant and dangerous

As America's economic supremacy fades, the primacy of the dollar looks unsustainable

IF HEGEMONS are good for anything, it is for conferring stability on the systems they dominate. For 70 years the dollar has been the superpower of the financial and monetary system. Despite talk of the yuan's rise, the primacy of the greenback is unchallenged. As a means of payment, a store of value and a reserve asset, nothing can touch it. Yet the dollar's rule has brittle foundations, and the system it underpins is unstable. Worse, the alternative reserve currencies are flawed. A transition to a more secure order will be devilishly hard.

When the buck stops

For decades, America's economic might legitimised the dollar's claims to reign supreme. But a faultline has opened between America's economic clout and its financial muscle. The United States accounts for 23% of global GDP and 12% of merchandise trade. Yet about 60% of the world's output, and a similar share of the planet's people, lie within a de facto dollar zone, in which currencies are pegged to the dollar or move in some sympathy with it. American firms' share of the stock of international corporate investment has fallen from 39% in 1999 to 24% today. But Wall Street sets the rhythm of markets globally more than it ever did. American fund managers run 55% of the world's assets under management, up from 44% a decade ago.

The widening gap between America's economic and financial power creates problems for other countries, in the dollar zone and beyond. That is because the costs of dollar dominance are starting to outweigh the benefits.

First, economies must endure wild gyrations. In recent months the

prospect of even a tiny rate rise in America has sucked capital from emerging markets, battering currencies and share prices. Decisions of the Federal Reserve affect offshore dollar debts and deposits worth about $9 trillion. Because some countries link their currencies to the dollar, their central banks must react to the Fed. Foreigners own 20-50% of local-currency government bonds in places like Indonesia, Malaysia, Mexico, South Africa and Turkey: they are more likely to abandon emerging markets when American rates rise.

At one time the pain from capital outflows would have been mitigated by the stronger demand—including for imports—that prompted the Fed to raise rates in the first place. However, in the past decade America's share of global merchandise imports has dropped from 16% to 13%. America is the biggest export market for only 32 countries, down from 44 in 1994; the figure for China has risen from two to 43. A system in which the Fed dispenses and the world convulses is unstable.

A second problem is the lack of a backstop for the offshore dollar system if it faces a crisis. In 2008-09 the Fed reluctantly came to the rescue, acting as a lender of last resort by offering $1 trillion of dollar liquidity to foreign banks and central banks. The sums involved in a future crisis would be far higher. The offshore dollar world is almost twice as large as it was in 2007. By the 2020s it could be as big as America's banking industry. Since 2008-09, Congress has grown wary of the Fed's emergency lending. Come the next crisis, the Fed's plans to issue vast swaplines might meet regulatory or congressional resistance. For how long will countries be ready to tie their financial systems to America's fractious and dysfunctional politics?

That question is underscored by a third worry: America increasingly uses its financial clout as a political tool. Policymakers and prosecutors use the dollar payment system to assert control not just over wayward bankers and

dodgy football officials, but also errant regimes like Russia and Iran. Rival powers bridle at this vulnerability to American foreign policy.

Americans may wonder why this matters to them. They did not force any country to link its currency to the dollar or encourage foreign firms to issue dollar debt. But the dollar's outsize role does affect Americans. It brings benefits, not least cheaper borrowing. Alongside the "exorbitant privilege" of owning the reserve currency, however, there are costs. If the Fed fails to act as lender of last resort in a dollar liquidity crisis, the ensuing collapse abroad will rebound on America's economy. And even without a crisis, the dollar's dominance will present American policymakers with a dilemma. If foreigners continue to accumulate reserves, they will dominate the Treasury market by the 2030s. To satisfy growing foreign demand for safe dollar-denominated assets, America's government could issue more Treasuries—adding to its debts. Or it could leave foreigners to buy up other securities—but that might lead to asset bubbles, just as in the mortgage boom of the 2000s.

> *It's all about the Benjamins*

Ideally America would share the burden with other currencies. Yet if the hegemony of the dollar is unstable, its would-be successors are unsuitable. The baton of financial superpower has been passed before, when America overtook Britain in 1920-45. But Britain and America were allies, which made the transfer orderly. And America came with ready-made attributes: a dynamic economy and, like Britain, political cohesiveness and the rule of law.

Compare that with today's contenders for reserve status. The euro is a currency whose very existence cannot be taken for granted. Only when the euro area has agreed on a full banking union and joint bond issuance will those doubts be fully laid to rest. As for the yuan, China's government has created the monetary equivalent of an eight-lane motorway—a vast

network of currency swaps with foreign central banks—but there is no one on it. Until China opens its financial markets, the yuan will be only a bit-player. And until it embraces the rule of law, no investor will see its currency as truly safe.

All this suggests that the global monetary and financial system will not smoothly or quickly wean itself off the greenback. There are things America can do to shoulder more responsibility—for instance, by setting up bigger emergency-swaplines with more central banks. More likely is a splintering of the system, as other countries choose to insulate themselves from Fed decisions by embracing capital controls. The dollar has no peers. But the system that it anchors is cracking. ■

世界经济

支配但危险

美国经济霸权渐弱，美元主导看来难以为继

假如霸权有什么好处，那便是能为其称霸的体系赋予稳定性。70年来，美元一直是主导金融货币体系的强势力量。尽管有人民币崛起之说，但美元的霸主地位仍无可匹敌。作为支付手段、储值工具及储备资产，美元无可撼动。但这一主导地位的根基脆弱，所支撑的体系也不稳定。更糟的是，各种替代性的储备货币均有缺陷，向更安全的新秩序过渡将极为艰难。

当美元不再

几十年来，美国的经济实力令美元理所当然地占据着统治地位。但是，美国的经济影响力及其金融实力之间已出现断层。美国GDP占全球23%，商品贸易额占全球12%，但全球产出的约60%来自实际美元区（这些地区的货币盯住美元或走势在某种程度上趋同于美元），这一区域内的人口也占世界约60%。跨国企业投资存量中美国公司所占份额已从1999年的39%下降至如今的24%，但华尔街对全球市场节奏的主导却更胜以往。美国的基金经理们掌管着全球55%的在管资产规模，十年前这一比例为44%。

美国经济与金融实力之间的差距不断扩大，给美元区内外的其他国家造成了一些问题。这是因为美元支配地位的成本开始超过收益。

首先，各经济体必须忍受剧烈的波动。近月来，对美国即使只是小步加息的预期就已经促使新兴市场资本外流，令汇率和股价急挫。受美联储决定影响的离岸美元债务及存款高达约九万亿美元。由于部分国家的货币与美元挂钩，其央行必然对美联储的政策作出反应。在印尼、马来西亚、墨西哥、南非及土耳其等地，外国人持有20%至50%以本币计价的政府债券，如果美国加息，他们更可能退出新兴市场。

曾几何时，资本外流之苦或可因美国的需求（包括进口需求）加强而得到缓解，这也是促使美联储加息的最初原因。然而，过去十年，美国在全球

商品进口中的占比已从16%下降至13%。目前，美国仅为32个国家的最大出口市场，1994年时为44个；而中国同期的数字则从2个上升至43个。美联储一跺脚全世界都发抖的体系是不稳定的。

第二个问题是，离岸美元体系如果面临危机，并无退路可支撑。2008至2009年间，美联储被迫出手救市，作为最终贷款人向外国银行及央行注入一万亿美元的流动性。将来若再次发生危机，涉及的救市资金将远高于这一数额。目前，离岸美元体系已是2007年时的近两倍，到本世纪20年代可能会增长至与整个美国银行业相当的规模。2008至2009年以来，美国国会已对美联储的紧急贷款计划心生警惕。下次再遇危机，美联储欲以大规模货币互换协议救市可能会遭遇监管当局或国会的阻力。各国对于自己的金融体系受缚于阴晴不定且运作不良的美国政治，还能忍受多久？

第三个忧虑更是加重了上述问题：美国愈发把金融实力作为政治工具加以利用。决策者及检察官运用美元支付体系来施加控制的对象不仅有任性的银行家和狡猾的足球官员，还包括俄罗斯及伊朗这类不按理出牌的政权。如此受制于美国的外交政策，敌对强国忿忿不甘。

美国人或许不解这与他们有何关系，他们并没有强迫任何国家把货币与美元挂钩，也没鼓励外国公司发行美元债务。但美元的超强地位的确影响到了美国人。一方面是带来好处，起码借款成本低；同时还有坐拥储备货币的“过度特权”，但也要为此付出代价。假如美联储在美元流动性危机爆发之际无法作为最后贷款人救市，海外市场会随之崩溃，遂而冲击美国经济。即便没有危机，美元的支配地位也将使美国决策者陷于两难。如果外国人继续囤积外汇储备，到本世纪30年代他们将主导美国国债市场。为满足外国对安全的美元资产日益增长的需求，美国政府可能会发行更多国债——这将加重自身的债务。或者等外国投资者买光其他证券——但这可能会导致资产泡沫，正如本世纪初抵押贷款兴盛时所发生的那样。

一切向钱看

理想的情况是美国与其他货币分担责任。但如果说美元霸权不稳，眼下的替选货币也不见得适宜继位。1920至1945年间美国赶超英国，金融霸权的

接力棒曾经历交接，但当时英美为盟国，过渡有条不紊。而且美国拥有现成的优势：经济充满活力，以及同英国一样具备政治凝聚力及法治。

相比之下，看看如今觊觎储备货币之位的竞逐者。欧元连自身的存在都并非必然。只有当欧元区就全面的银行联盟及联合发行国债的问题达成共识，这些疑虑才会完全消失。至于人民币，中国政府达成了一个与诸多外国央行进行货币互换的庞大网络，但这好像是建立了一条八车道的高速公路，却没什么车在上面跑。在中国开放金融市场之前，人民币只会是个小玩家。而且法治一天不到位，没有投资者会视其货币为真正安全。

所有这些表明，全球货币及金融体系将无法顺利或迅速戒除对美元的依赖。美国可以做更多的事情来扛起更大的责任，比如，与更多央行达成更大额度的紧急互换协议。更有可能的是，随着各国通过资本管制保护自身免受美联储决定的影响，美元体系将分崩离析。美元天下无敌，但以其为支柱的体系正在开裂。■

Global housing markets

Upwardly mobile

House prices are on the rise again around the world

WHEN the bottom finally fell out of America's housing market in 2006, it triggered the worst global recession since the 1930s. But rising house prices need not spell disaster. *The Economist*'s latest round-up of house prices across the globe shows that prices have risen over the past year in 21 of the 26 economies we track, at a median pace of 4.7% (see table). Not every rise is alike, however.

America is still—just—in the category of countries where the housing market remains in recovery. House prices there increased by 4.7% in the 12 months to July, according to the Case-Shiller national index. Prices have now risen by 25% from their 2011 trough, but still remain 7% from their 2007 peak. *The Economist* measures national affordability by comparing prices to the long-run average of their relationship with rents and income. On this basis, we reckon house prices in America are broadly at their fair value.

Not for long, perhaps. Activity is buoyant: sales of existing homes increased by 6.2% on the previous year. With 30-year fixed-rate mortgages at record lows, the effect of an interest-rate rise on the housing market is expected to be minimal.

What is more, construction is lagging. The National Association of Realtors, a trade body, has found that new house-building is failing to keep pace with job creation in many cities. For every 12 jobs created builders have historically gained construction permits for ten new homes. Between 2012 and 2014 that number fell to 4.8 permits. Some cities are sizzling again as a result: prices in San Francisco increased by 10% in the year to July, and are

up by 75% since 2009.

Other countries' housing markets are already well above fair value. Taking an average of our two measures, houses are more than 30% overvalued in six markets. Britain is perhaps the most supply-constrained of this group. Although prices have risen by 35% since their trough in January 2009, housebuilding is failing to respond. Just 140,000 homes were completed in the year to March 2014, some 25% below the long-term norm. That puts a firmer floor under prices than in other notably overvalued markets such as Canada and Australia.

Hong Kong is the most extreme example of soaring prices and limited supply. Property prices in the territory appreciated by 21% in the year to June, and have now doubled in five years. Since 2009 the regulator has introduced seven rounds of "macroprudential" measures designed to cork the rises. Its latest, in March this year, reduced the average loan-to-value ratio for new mortgages from 64% to just 52%. In practice, China's recent stockmarket crash is likely to be a bigger dampener on demand, as wounded mainland investors put off new purchases.

As for China's own housing market, it is one of only five in our index where prices are falling, joining Singapore and a trio of euro-zone countries—France, Greece and Italy. Prices are falling at a slower rate than before, however. The government has been trying to boost the market over the past ten months, cutting interest rates by 1.4 percentage points and relaxing rules on downpayments. Prices are now rising on a monthly basis in many cities. In Beijing and Shanghai, they look positively frothy again. ■

全球楼市

节节攀升

世界各地房价又一次上扬

2006年美国房地产市场终于崩溃，触发了自上世纪30年代以来最严重的全球经济衰退。但是，上升的房价不一定会引发灾难。《经济学人》最新全球房价总汇显示，过去一年里，在我们追踪的26个经济体中有21个房价上涨，中位涨幅为4.7%（见图表）。不过，并非所有的上涨都相似。

美国仍然（刚好）处于楼市持续复苏的国家之列。根据凯斯-席勒指数，截至7月份的12个月中，美国房价上涨了4.7%。相比2011年的低谷，房价已经上涨了25%，但仍比2007年的峰值低7%。《经济学人》用房租和收入这两个指标与房价的长期平均比值来衡量全国的房屋购买力。据此，我们认为美国的房价大体处于公允水平。

但这样的状况可能不会维持很久。交易很活跃：现房销售比上一年增加了6.2%。30年期固定利率抵押贷款量处于历史低点，因此利率上升对楼市的影响预期将会很小。

此外，新房建设滞后。行业组织全国地产经纪商协会（National Association of Realtors）发现，在许多城市新屋建造速度跟不上工作增加的速度。过去，每新增12个职位，建筑商会拿到10套新屋的建筑许可。而在2012到2014年间，这一数字降至4.8套。其结果是一些城市的楼市再一次红火起来，比如旧金山的房价在截至7月份的一年中上涨了10%，自2009年以来上涨了75%。

其他国家的楼市已经远超公允价值。将我们的两个指标取平均值，显示有六个市场的房价被高估超过30%。英国可能是其中房屋供给最紧缺的国家。尽管该国房价自2009年1月的低谷以来已经上升了35%，但新屋建设并未相应加快。2013年3月至2014年3月的一年里仅有14万套房屋建成，比长期平均值少约25%。这使得英国相比加拿大和澳大利亚等房价明显被高

估的市场具有更坚实的上升基础。

香港是房价飙升和有限供给最极端的例子。该地区的房产价格在截至6月份的一年里升值21%，过去五年里已经翻番。自2009年起监管部门已推出七轮“宏观审慎”措施以求抑制房价。最近一次是在今年3月份，新批准按揭的贷款与估值平均比率从64%降到仅为52%。而实际上，中国最近的股市崩盘对需求的抑制可能更大，因为在股市里遭受损失的内地投资者暂缓了买房。

至于中国自己的楼市，则是我们的指数中仅有的五个房价下跌的市场之一，其余为新加坡和三个欧元区国家：法国、希腊和意大利。但房价下跌的速度已经减缓。中国政府在过去十个月中努力提振楼市，把利率降低了1.4个百分点并放宽了首付规定。在许多城市房价正逐月攀升，而北京和上海的楼市看起来再次出现泡沫。■

Brain scan: Sebastian Thrun

Teaching tomorrow

The pioneer of Google's autonomous cars wants to teach people how to face the future

"BECAUSE of the increased efficiency of machines, it is getting harder and harder for a human to make a productive contribution to society," says Sebastian Thrun. This is what you might expect to hear from the man who suggested Google's controversial Street View project to photograph the world's roadsides, who developed the company's eerie self-driving cars and who founded the secretive Google "skunk-works" project responsible for Glass, a wearable computer that resembles spectacles. Yet that does not mean Mr Thrun is in thrall to the march of the machines. "To the extent we are seeing the beginning of a battle between artificial intelligence (AI) and humanity, I am 100% loyal to people," he says.

Long before he felt compelled to pledge his allegiance to the human race, Mr Thrun was fascinated by the interaction of people and robots. Mr Thrun was born in Germany in 1967 and as a graduate student at the University of Bonn designed RHINO, a cleaning robot that could explore an office it had never been in before, build a digital map of its floors and locate items such as drinks cans or balls of paper. Lacking arms, it simply barked out its intention to clean up the mess—or perhaps to encourage humans nearby to muck in.

In 1994 Mr Thrun entered RHINO into a competition organised by the Association for the Advancement of Artificial Intelligence, in Seattle. The robot was a success, not only helping tidy up the contest's intended conference room but venturing out into hallways to find more rubbish. RHINO was succeeded by a brace of experimental robotic guides, complete with voices and faces that smiled and frowned, to interpret exhibits for museum visitors in Bonn and Washington, DC.

These innovations attracted the attention of Stanford University in California, which in 2004 invited Mr Thrun to become the head of its revitalised Stanford Artificial Intelligence Laboratory (SAIL). Given a throng of enthusiastic students and free rein to "change the way we understand the world", Mr Thrun chose to focus on a follow up to the Grand Challenge, an off-road race for self-driving vehicles organised by DARPA, the Pentagon's R&D wing.

"At the time, there were a few, little-noticed people who had this vision to transform the world by making cars drive themselves," says Mr Thrun. They consisted mostly of university researchers and enthusiasts with little funding and even less exposure. Their cars were equally uninspiring. One flipped itself over before the first DARPA race in 2004 started and soon others broke down or became stuck. Even the best completed just seven miles of the 150-mile course.

The follow-up event in 2005 was a different story. Mr Thrun's SAIL group modified a Volkswagen sports-utility vehicle with lidar, which works like radar but uses light waves to bounce off features and thereby build up a much more detailed picture of its surroundings. The car, nicknamed Stanley, also had video cameras, wheel sensors and GPS navigation. It crossed the finish line of a (slightly easier) 132-mile course first, in under seven hours. It was also during this desert race that Mr Thrun met and befriended Larry Page, co-founder of Google.

Stanley and its rivals proved so competent that in 2007 DARPA held a third contest for autonomous cars, the Urban Challenge. This required vehicles to navigate 60 miles of city streets, avoiding traffic and obeying all the rules of the road. This time around, SAIL's car, a Volkswagen estate dubbed Junior, took only second place. But in developing it, Mr Thrun discovered that car-mounted cameras pointing in all directions enabled his team more easily to understand and debug Junior's performance. "And then at some

point we realised the images alone were really interesting, that they might allow you to travel to distant places," says Mr Thrun.

Picture this

Mr Page agreed, and lured Mr Thrun out of academia to work on Google's project to photograph the world. Google Street View quickly became the biggest image database ever built. In the process, it captured more than just landmarks and shopfronts; it immortalised individuals leaving strip clubs, political protesters, sunbathers and people being arrested. Street View vehicles also illegally (but inadvertently, says Google) collected Wi-Fi data transmissions from millions of private users. The company subsequently faced legal and regulatory action around the world.

By this time, Mr Thrun had moved on. "The obvious next thing was to use these methods for something other than just sightseeing and helping people find their way around," he says. Google had decided to build its own self-driving car. Mr Thrun assembled a team of engineers from Silicon Valley, and Google purchased a small startup from Berkeley, called 510 Systems, that had demonstrated a self-driving Toyota Prius. This formed the nucleus of a fleet of autonomous Prius hybrids that were soon criss-crossing the Bay Area, using Mr Thrun's mapping technology.

Unlike traditional carmakers, which were inching their way towards autonomy with collision avoidance and lane-keeping systems, Mr Thrun's vision was always a fully self-driving car. "Imagine how many weeks of your life you waste being in traffic jams, that you could use productively, or watch a movie or sleep," he says. "Then think, if a car could come to you empty, would you still own one? We could live in a much better society if there was less personal car ownership."

Mr Thrun points out that cars are typically being driven on the road for just a fraction of time, and that even motorways that appear jam-packed are

only 5-10% physically occupied. Intelligent, self-driving cars could unlock existing capacity in cities, meaning less road-building and fewer cars and car parks. But the great promise of self-driving cars is their supposed ability to reduce accidents that now kill over 1m people globally each year. "At this point, I can happily and proudly say that Google's cars are clearly better drivers than me," says Mr Thrun.

With his self-driving cars making rapid progress, Mr Thrun was given responsibility for nurturing other innovative concepts at a secretive new division of Google that came to be known as Google [x]. Google [x] projects that have been publicly announced include airborne wind turbines, diagnostic contact lenses, wireless internet for remote areas using high-altitude balloons and surgical robotics. "We ran a whole bunch of experiments, crazy moonshots that rational people would probably agree could never be done, just to see how far we could get," he says. "While not every project has been a success [and] there have been many failures, I still believe we made substantial progress."

Mr Thrun says that the biggest difference between Google[x] and a research institute is Google's drive to take ideas from the drawing board to a finished product. The only example, so far, is Google Glass—lauded and derided in equal measure for its miniaturised heads-up display, speech control and pervasive video capture. Despite the public's tepid reaction to Glass, Mr Thrun believes that prosthetic devices capable of recording, digitising and transcribing a person's entire life are already technically feasible.

Recently, however, Mr Thrun has come to realise that such things come at a price. "Machines will eventually outsmart people in every dimension. They are becoming more capable at a faster pace than people and therefore will effectively outsmart us in a short amount of time," he says. Professional drivers may be among the first to be displaced by robots but few professions are safe, he says: "There are already robotic journalists. Sure,

they aren't very good but they're getting better faster than human journalists are."

Mr Thrun now believes that education is the best way to tackle the big upheavals that are likely to spring from the widespread adoption of artificial intelligence and robotics. But not education as you might know it. "We are still living with an educational system that was developed in the 1800s and 1900s," he says. "Needs have shifted in the modern age and what's also shifted is our ability to use digital media. We can now deliver a top-notch education at home in a way that was never possible before."

The nano alternative

In 2012 Mr Thrun left full-time work at Google to found Udacity, a startup dedicated to reinventing education for the 21st century. Udacity's "nanodegrees" combine on-demand video lessons, short online quizzes and longer projects, and are designed in collaboration with high-tech companies desperate for skilled workers. The idea is that anyone with a few minutes to spare can log on and work through a programming course at their own pace.

Mr Thrun insists that nanodegrees are distinct from massive open online courses (MOOCs), the digital lecture series which are now offered by many higher educational institutions. Udacity analyses individual students' learning data (using AI) in an attempt to increase their retention and completion rates. "We effectively reverse-engineer the human learning brain to find out what it means for a person to engage," says Mr Thrun. "It's my dream to make learning as addictive as a video game."

Online lessons and automated tests are free, although students pay for feedback from real humans and to obtain a certificate on completion. Because the teachers are usually recent nanodegree graduates rather than traditional professors, Udacity can keep prices to just a couple of hundred

dollars a month, which is about a tenth of the price of a university. Mr Thrun also claims that over 60% of Udacity students finish their courses, compared with around 10% for MOOCs.

Depending on their complexity, nanodegrees are designed to take just 4-12 months to complete. Shorter courses like these are appropriate for today's high-paced workplace, says Mr Thrun. "The dream of lifetime employment has gone. In my field, whatever you've learned becomes obsolete within five years. If you only spend six months on your first degree, as opposed to the average six years for a bachelor's degree today, you can afford to get more education when you need it again later on."

Udacity has some 4m registered users worldwide, and about 60,000 students working on nanodegrees at any one time—more in all than the largest university in America. However, at the moment it only offers six nanodegrees, all of which relate to computer programming. Mr Thrun says this reflects a big demand for computer-science courses. He refers to a report by McKinsey Global Institute, a research arm of the consultancy firm, which estimates that by 2020 the world will have 95m more low-skilled workers than employers require, and 85m too few educated workers to fill jobs.

"We have a situation where the gap between well-skilled people and unskilled people is widening," he says. "Udacity is my response to the development of AI. The mission I have to educate everybody is really an attempt to delay what AI will eventually do to us, because I honestly believe people should have a chance." ■

智力扫描：塞巴斯蒂安·特龙

教育在明天

谷歌无人驾驶汽车的先驱想要教会人们如何面对未来

“因为机器越来越高效，人类越来越难对社会做出卓有成效的贡献。”塞巴斯蒂安·特龙（Sebastian Thrun）说道。你可能想的到他会说这样的话，因为正是他提出谷歌颇具争议的街景项目，拍摄全球各地路边图景，是他开发了谷歌怪异的无人驾驶汽车，也是他成立了机密的谷歌“臭鼬工厂”项目，负责可穿戴式电脑谷歌眼镜的研发。但是这并不意味着特龙臣服于机器的进步。他说：“如果说我们看到人工智能和人类之间战火初燃，那么我百分百忠于人类。”

在特龙觉得必须向人类宣誓忠心之前，他一直痴迷于人与机器人的互动。特龙1967年出生于德国。在波恩大学读研究生时，他设计了清洁机器人“犀牛”。它会在从未到过的办公室里四处游走，绘出数字平面图，确定饮料罐和纸团的位置。没有手臂的它会把清理杂物的想法喊出来，或者鼓励附近的人类一同参与。

1994年，特龙携“犀牛”参加了国际人工智能促进协会（the Association for the Advancement of Artificial Intelligence）在西雅图举办的一场竞赛。它大获成功，不仅帮忙打扫了竞赛预备好的会议室，还跑到走廊上找到了更多垃圾。继“犀牛”之后诞生了一系列实验性的机器人导游，它们不止会发声，还有了能够微笑和皱眉的脸庞，在波恩和华盛顿特区的博物馆里为游客解说展品。

这些创新吸引到了加州斯坦福大学的注意，该校于2004年邀请特龙执掌复兴的斯坦福人工智能实验室（SAIL）。特龙的手下有了一群热情高昂的学生，也被给予充分的自由去“改变我们理解世界的方式”。他选择了专注于“大挑战”（the Grand Challenge）的后续项目。“大挑战”是美国国防部高级研究计划局（DARPA）举办的无人驾驶汽车越野赛。

“当时只有少数几个默默无闻的人有这样的理想，想要通过研发自动驾驶汽车改变世界。”特龙说道。他们大多数是大学科研人员和爱好者，资金很少，曝光更少。他们的汽车也同样引不起人们的兴趣。2004年第一届DARPA越野赛开赛前就有一辆车自己翻了车，很快其他车也纷纷抛锚或动弹不得。表现最好的车也只跑了150英里赛程中的7英里。

2005年举行的第二届比赛则完全不同。特龙的SAIL团队用激光雷达（lidar）改装了一辆大众SUV。激光雷达与普通雷达作用相似，但利用激光束反射地形特征，从而创建对周围环境更加详细的图景。这辆车的昵称是“斯坦利”，配有摄像头、车轮传感器和GPS导航。它用了不到7小时第一个冲过132英里赛程的终点线（赛事比上一届稍微容易一点）。正是在这次沙漠越野赛中，特龙遇到了谷歌的创始人之一拉里·佩奇（Larry Page），并和他成了朋友。

斯坦利和它的对手们表现如此出众，因此2007年DARPA举办了第三届无人驾驶汽车竞赛，这次是城市拉力赛（the Urban Challenge），要求车辆在城市街道上行驶60英里，避开车流，并遵守所有交通规则。SAIL本次的参赛车辆是一台名为“Junior”的大众旅行车，但只拿了第二名。不过在研发过程中，特龙发现车载的全方位摄像头让他的团队能更容易地了解并调试Junior的性能。“然后有一天我们意识到单是这些图像本身非常有趣，它们或许能带你到遥远的地方旅行。”特龙说道。

> *想象一下*

对此佩奇表示赞同，他引诱特龙离开学术界，到谷歌从事拍摄全世界的项目。谷歌街景很快成为有史以来最大的图像数据库。在这一过程中，它拍摄的远远不止地标和店面，也让走出脱衣舞俱乐部的客人、政治抗议人士、日光浴者、被逮捕的人永远地定格。街景车也从数百万私人用户那里非法（但是谷歌称并非故意）收集了WiFi传输数据，随后谷歌不得不面对世界各地的法律和监管干预。

到了这时候，特龙已经开始干别的了。他说：“很明显，接下来要做的是利用这些方法做更多事，而不仅仅是观光和帮人找路。”谷歌已经决定打

造自己的无人驾驶汽车。特龙集结了硅谷的一群工程师，谷歌又从伯克利收购了一家名为“510 systems”的小型创业公司，这家公司已经成功研发出一辆无人驾驶的丰田普锐斯。这形成了无人驾驶普锐斯混合动力车队的核心，很快，车队利用特龙的地图测绘技术，纵横于湾区。

传统汽车制造商多通过避碰和车道保持系统来逐步靠近自动驾驶。与之不同的是，特龙的愿望始终是一辆完全无人驾驶的汽车。“想象一下你的生命中有多少个礼拜浪费在交通堵塞上，这些时间你本可以更有成效，也可以看电影，或者睡觉，”他说，“然后再想想，如果一辆空车会自己开到你面前，你还想要拥有一辆车吗？如果少一些私家车，我们可以生活在一个美好得多的社会里。”

特龙指出，通常车子只是一部分时间在路上跑，而即便是看起来拥堵不堪的高速公路也只有5%到10%的实际占用率。智能的无人驾驶汽车可以释放城市已有的容量。这意味着可以建更少的路，不需要那么多汽车和停车场。但是无人驾驶汽车给人最大的希望是它能够减少交通事故，现在全球每年有100多万人死于交通事故。“在这一点上，我可以很高兴也很自豪地说，谷歌的汽车显然比我开得好。”特龙说道。

随着他的无人驾驶汽车取得快速进展，特龙又承担了在谷歌一个神秘新部门培育其他创新概念的职责，这个部门就是谷歌X。已经对外公布的谷歌X项目包括空中风力涡轮机、诊断用隐形眼镜、用高空气球为偏远地区提供无线网络，以及外科手术机器人。“我们做了一大堆实验，这些‘探月’计划非常疯狂，理性的人可能认为永远不可能完成，我们只是想看看能走到哪一步，”他说，“虽然不是每个项目都成功，很多都失败了，但我仍然相信我们取得了实质性的进展。”

特龙认为谷歌X和一般研究机构之间最大的区别在于谷歌努力把图纸上的创意变成产品。目前为止唯一的例子是谷歌眼镜，这款毁誉参半的产品包括头戴式微型显示屏、语音控制，以及随时随地拍摄视频等功能。尽管公众对谷歌眼镜的反响不温不火，但特龙相信，能把一个人的一生录制下来、数字化并转成档案的假体设备在技术上已经可行。

不过，最近特龙意识到这样的东西有其代价。他说：“在各个方面，机器都终将比人更聪明。它们的能力增长快于人类，因此在很短时间内就会实际上超越我们。”职业司机可能是首先被机器人取代的人之一，但少有职业是安全的。他指出：“已经有机器人记者了。当然它们不是特别出色，但它们比人类记者进步的速度更快。”

特龙现在相信，面对人工智能和机器人的广泛应用可能引发的巨大动荡，教育是最好的应对方式。但可能不是你所知的那种教育。“我们实行的教育体系还是在19世纪和20世纪发展起来的，”他说，“在现代，需求已经发生了改变，我们使用数字媒体的能力也改变了。现在我们在家里也可以提供一流的教育，这在以前根本不可能。”

选择纳米

2012年，特龙离开谷歌的全职工作，创办了Udacity。这家创业公司致力于重塑适合21世纪的教育。Udacity的“纳米学位”（nanodegrees）结合了视频课程点播、短期在线测试和长期项目，与急需熟练员工的高科技公司共同设计而成。它的创意是，任何人都可以利用短暂的闲暇时间登录学习，按自己的进度完成一门编程课。

特龙坚称纳米学位与大型开放式网络课程（MOOC）截然不同。MOOC是现在许多高等教育机构都提供的数字课程系列。Udacity分析每个学生的学习数据（利用人工智能技术），以此提高继续和完成学业的人数。“我们有效地反向研究了人类大脑的学习活动，来找出一个人投入兴趣是怎么回事，”特龙说，“我的梦想是让学习和打游戏一样让人上瘾。”

在线课程和自动化测试是免费的，但如果要得到真人反馈和获得结业证书，学生要付费。因为老师通常是纳米学位刚毕业的学生，并非传统意义上的教授，Udacity可以将价格维持在几百美元一个月，约为大学学费的十分之一。特龙还说60%以上的Udacity学生都完成了课程，而念完MOOC课程的大约只有10%。

根据复杂程度的不同，纳米学位只需4至12个月即可完成。特龙说，这样

的短期课程非常适合今天快节奏的职场需要。“终身雇佣制的梦想已经终结。在我的领域，无论你学了些什么，五年之内都会过时。如果你只需花六个月时间拿到第一个学位，而不是像今天这样平均花六年拿到学士学位，那么日后再度需要受教育的时候，你就有钱去付学费。”

Udacity在世界各地有约四百万注册用户，在任何时候都有约六万名学生忙于研读纳米学位，总数超过美国最大的大学。但它目前只提供六个纳米学位，都与计算机编程有关。特龙说这反映出对计算机科学课程巨大的需求。他提到咨询公司麦肯锡旗下研究部门麦肯锡全球研究院的一份报告。报告预测，到2020年，与雇主的需求相比，将会多出9500多万名低技能员工，相反，又会有大量职位因为没有合适的员工而空缺，受过教育的员工人数的缺口为8500万。

“我们现在的情况是，技术精湛的人和没有技能的人之间的差距越来越大，”他说，“Udacity是我对人工智能发展的回应。我想要去教育每个人的这种使命其实是要推延人工智能最终会对我们做的事，因为我真的相信人应该给人类机会一搏。” ■

Buttonwood

The vultures circle

Rising credit spreads are the latest bad omen

THERE is no shortage of bad omens for the global economy at the moment. To name a few: plunging commodity prices, wobbly equity markets, weak world trade, reduced profit forecasts for American companies and lower long-term inflation expectations. In recent weeks, a new one has joined the list: rising corporate-bond spreads.

These spreads—the difference between the interest rates paid by governments and blue-chip companies and those paid by riskier borrowers—reflect the risk of default. Rising spreads imply that investors are getting antsier about being repaid. That anxiety may well stem from worry about the economy.

Spiking credit spreads have often been a harbinger of recession (see chart). As David Ranson of Wainwright Economics argues: "Yield spreads represent a market assessment of the strength of the economy and are not affected by any of the technical measurement problems that plague the GDP figures."

As an indicator, credit is clearly not entirely reliable: a rise in spreads in 2012 was not followed by a downturn. As yet there is no sign of a rise in the default rate on high-yield debt: it dropped to 2.3% in August, according to Moody's, well below the historical average of 4.5%. However, the proportion of American corporate bonds classed as "distressed" (a yield ten percentage points or more higher than Treasury bonds) has risen to 15.7%, a four-year high. Liquidity in the corporate-bond market is not great, since banks have reduced their market-making activity. This can lead to sharp price moves if institutions lose their enthusiasm for credit. David Lloyd of M&G, a fund manager, says current conditions resemble "a temporary

buyers' strike".

Many will point to the problems of energy and mining firms and argue that the rise in bond spreads is yet another manifestation of the fall in commodity prices. Worries about the health of Glencore, a big mining firm, led to a plunge in its share price and a rise in its bond yields in September.

However, the fall in commodity prices is itself being driven by a worrying slowdown in demand from China and the rest of Asia. South Korea, seen as a bellwether economy, has suffered a 14.7% fall in exports over the past year. Even India's central bank, presiding over one of the strongest economies in Asia, decided to cut rates by half a percentage point on September 29th, citing flagging global demand.

Slower emerging-market growth creates another problem for bond investors to worry about. The debt of non-financial firms in emerging markets quadrupled between 2004 and 2014, according to a new report from the IMF. Over the same period, the average ratio of corporate debt to GDP in emerging markets rose by 26 percentage points. That debt will be harder to service as growth slows.

The role of credit in driving booms and exacerbating busts is extremely important. Stronger credit growth tends to boost economic activity and push up asset prices—encouraging further credit growth since banks become more confident about lending in a world of higher asset values. This is a virtuous circle. But after the peak is reached, asset prices fall, banks become less keen on lending and activity declines—the circle turns vicious.

In a recent speech Andrew Haldane, the chief economist at the Bank of England, talked of a "large slug of global liquidity" that has "by turns inflated then deflated capital flows, credit, asset prices and growth in

different markets and regions". The Anglo-Saxon crisis of 2008-09 was the first manifestation of this problem, the euro-zone crisis of 2011-12 was the second, and we may have entered into a third crisis, this time in emerging markets, he argues.

Matt King of Citigroup points out that capital flows into emerging markets seem to have stalled. Furthermore, the central banks of emerging markets have been selling, rather than buying, assets. This means that, despite the efforts of the Bank of Japan and the European Central Bank, central banks are no longer net buyers of financial assets at the global level. Given the huge role played by central banks in supporting financial markets since 2008, this is a worry. And given the role played by emerging markets in supporting global growth, their problems are a concern, too.

The rise in credit spreads is not proof that recession is imminent—it is a necessary, but not sufficient, condition. But it is an indication that financial stresses are beginning to emerge. One swallow does not make a summer. But the sudden appearance of a vulture circling overhead ought to raise serious concerns. ■

梧桐

秃鹫在盘旋

信用利差扩大是最新的不祥之兆

全球经济目前不乏坏征兆。举几个例子：大宗商品价格暴跌、股票市场波动不定、世界贸易疲软、美国企业盈利预测下滑，以及长期通胀预期降低。最近几周，清单上再加上一条：企业债券的利差不断扩大。

这些利差（即政府和蓝筹股公司所支付的利率与较高风险借款人所支付的利率之间的差异）反映的是违约风险。利差扩大意味着投资者越来越担心能否收回债务。这种焦虑很有可能源自对经济的担忧。

信用利差大幅上扬过去往往预示了经济衰退（见图表）。正如温赖特经济研究公司（Wainwright Economics）的大卫·兰森（David Ranson）所指出的："收益率利差体现了市场对经济实力的评估，而且不为任何困扰GDP数据的技术测量问题所影响。"

信用作为一项指标，显然不完全可靠：2012年的利差扩大之后并没有出现经济衰退。高收益债券的违约率迄今没有上升的迹象：根据穆迪的评级，这一数字在8月降至2.3%，远低于4.5%的历史平均水平。然而，归类为"廉价债券"（收益率高于国债10%或以上）的美国企业债券比例已升至15.7%，为四年来新高。企业债券市场的流动性不佳，因为银行已减少做市行为。假如机构对信用债失去兴趣，将会导致价格的大幅波动。基金管理公司M&G的大卫·劳埃德（David Lloyd）表示，目前的情况类似于"临时买方行权"。

许多人会指出能源和矿业企业的问题，认为债券利差上升是大宗商品价格下跌的又一表现。9月，人们对大型采矿企业嘉能可（Glencore）的境况感到担忧，导致公司股价暴跌以及债券收益率上升。

然而，大宗商品价格的下跌本身是由中国和亚洲其他国家的需求放缓所推

动。在被视为经济晴雨表的韩国，出口在过去一年下滑了14.7%。9月29日，即使是掌管亚洲最强经济体之一的印度央行也决定降息半个百分点（0.5%），以应对全球需求疲软。

新兴市场经济增长放缓引发了债券投资者担心的另一个问题。根据国际货币基金组织的一份新报告，新兴市场非金融公司的债务在2004年到2014年间翻了两番。同期，新兴市场的企业债务和GDP的平均比率上升了26%。随着经济增长放缓，偿债将愈发困难。

信贷在推动繁荣以及加剧萧条方面的作用极为重要。更加强劲的信贷增长往往会促进经济活动并推高资产价格，从而刺激信贷进一步增长——因为资产价值越高，银行越有信心放贷。这是一个良性循环。但在到达峰值之后，资产价格会下跌，银行变得不那么热衷于放贷而经济活动减少，此时转而进入恶性循环。

英格兰银行（Bank of England）首席经济学家安德鲁·霍尔丹（Andrew Haldane）在最近一次演讲中谈到一股“巨大的全球流动资金”，称其已经“在不同的市场和地区轮番推高随后打压资本流动、信贷、资产价格和经济增长”。他认为，2008年至2009年的盎格鲁-撒克逊危机是这个问题的首次表现，2011年至2012年的欧元区危机是第二次，而我们可能已经进入了第三次危机，这次发生在新兴市场。

花旗集团的马特•金（Matt King）指出，流入新兴市场的资本似乎已经停滞。此外，新兴市场的中央银行一直在出售而不是购入资产。这意味着，尽管有日本央行和欧洲央行的努力，就全球而言，各国央行已不再是金融资产的净买家。鉴于2008年以来各国央行在支持金融市场方面发挥的巨大作用，这一点令人担忧。同样，考虑到新兴市场在支撑全球经济增长中的作用，它们的问题也值得关注。

信用利差的扩大并不能证明经济衰退已迫在眉睫。它是个必要条件，但不是充分条件。然而，它表明金融压力已经开始出现。一燕不成夏。但是，当一只秃鹰突然出现在头顶盘旋，则应该引起严密的关注。■

China's consumers

Doughty but not superhuman

China's consumption boom is not enough to succour the world economy

IN THE 1950s Caoyang New Village, then on the outskirts of Shanghai, became one of China's first model settlements for heroic socialist workers. Thousands moved into its plain, lookalike homes to man its state-owned textile mills. Today, rising from the once-modest streets is a gaudy building intended for a new kind of model citizen: consumers.

Global Harbor (pictured) ranks among the world's biggest shopping malls, its floor space equivalent to nearly 70 football fields. It blends ersatz European architecture with a distinctly Asian selection of stores. Beneath its vaulting glass domes and mock renaissance murals are a Hello Kitty café, a half-dozen noodle restaurants, jewellery shops dripping with gold and a theatre used for karaoke contests.

It is only a slight exaggeration to say that China's economic hopes rest on the faux-Corinthian columns of Global Harbor. With the country's decades-old investment boom fast dwindling, it needs consumption to kick in as a new driver of growth. This rebalancing has been talked about for years, but has become more urgent as China's industrial downturn has deepened. The nationwide frenzy of construction is abating, factories are saddled with overcapacity and the northern rustbelt is on the brink of recession. Last month, a manufacturing index recorded its lowest monthly reading in six years, and the seventh successive contraction.

Amid the extreme pessimism about China's economy in recent months, it is tempting to conclude that rebalancing has failed. Just look at the car market, usually a good shorthand for the health of consumer demand. Automobile sales fell by 3.4% in August compared with a year ago, the third

monthly decline in a row. Yet other forms of consumption are accelerating. A property recovery has stoked demand for furniture, home electronics and renovation materials, with sales rising an average of 17% in August from a year earlier. From jewellery to traditional Chinese medicine, buying has picked up in recent months.

Smartphone sales are down in volume terms but soaring by value, as shoppers move upmarket. Companies hit by the anti-corruption campaign under Xi Jinping, China's president, are learning to prosper despite the new strictures. Distillers' profits, which fell last year, have rebounded, pulled along by affordable brands for ordinary consumers rather than the exorbitantly priced bottles previously used as bribes for officials.

Overall, China's retail sales have increased by 10.5% in real terms this year, well ahead of economic growth (officially 7% but closer to 6% according to many analysts). There are, as ever, doubts about the reliability of China's data, though in this case it may be that the retail figures are too low. Nicholas Lardy, an expert on Chinese statistics at the Peterson Institute for International Economics, a think-tank, notes that retail numbers do not include services, a glaring omission since surveys show that services account for as much as two-fifths of China's consumer spending.

All this suggests that consumption is picking up at least some of the slack from the industrial downturn. The main reason for the resilience of the Chinese shopper is steady income growth. Wages for migrant workers rose by 10% in the second quarter compared with a year earlier, faster than the national average of 7%. Since low-income earners tend to spend more of their pay than the rich, that has given consumption an extra boost.

One concern is whether this income growth can continue as Chinese industry struggles. Some factories are cutting jobs. But services account for a bigger share of the economy than industry, employ more people and are

still growing well.

Structural factors are also at work. With China's working-age population now shrinking, labour is becoming scarcer and employees command higher wages. China's household savings rate of nearly 30%, among the world's highest, is also beginning to fall as the population ages and the elderly draw down some of their accumulated wealth. Household consumption as a share of GDP fell to 35.9% in 2010, unusually low even by Asian standards, but has since been clawing its way up.

A generational shift has helped. For older Chinese, the experience of deprivation in Mao's day inhibits spending. At Global Harbor on a Sunday afternoon, those carrying shopping bags or queuing up at restaurants are overwhelmingly in their 20s and 30s. "Our parents are very careful but we want to have more of a balance in life," says Lulu Yu. A legal assistant out with her boyfriend to watch a film, she is the picture of a fully grown consumer. Sporting fashionably tinted hair and contact lenses to make her eyes appear bigger, she dangles new high heels from her arm, an impulse purchase on the way to the cinema.

Does this mean that Chinese shoppers are poised to become an engine of the world economy, like their fabled American counterparts? In some ways this has already happened. The number of Chinese tourists going abroad rose by 19.5% last year to 107m. What's more, Chinese tourists spend more than others, snapping up goods that are cheaper abroad. All this makes China the world's biggest source of tourism dollars (see chart). In South Korea and Thailand, the increase in spending by Chinese tourists in 2011-14 made up for the fall in exports to China over the same period, according to Capital Economics, a research firm.

But even if Chinese consumption remains healthy, it will not be a cure for ailing global growth. The commodity-exporting countries whose fortunes

have hinged on China over the past decade stand mainly to lose, since they produce little in the way of consumer goods that appeal to Chinese buyers. Indeed, for the outside world as a whole, China's shift from investment to consumption will subtract from demand, since making steel involves more imports than stocking malls like Global Harbor. The imported component of Chinese consumption is 11 percentage points lower than that of its investment, according to Goldman Sachs, a bank. A rebalancing of 1 trillion yuan ($157 billion) from investment to consumption would thus cut Chinese imports by about 110 billion yuan.

This relative self-reliance is likely to increase with time. A study by Bain, a consultancy, found that out of 26 categories of cheap consumer goods, foreign brands lost market share in 18 last year, including skin cream, milk, fabric softener and toothpaste. In more sophisticated products, domestic companies are also elbowing into territory once dominated by international players. Chinese car brands have accounted for 41% of sales this year, a 3.5 percentage-point increase in market share. Growing consumption of services, whether cosmetic surgery or restaurant meals, only accentuates the home advantage, since most services are delivered locally. China's consumer boom is real. But do not count on it to lift the global economy. ■

中国消费者

强悍但非超人

中国高涨的消费势头不足以拯救世界经济

上世纪50年代，当时属于上海市郊的曹杨新村成为中国首批为社会主义劳动模范兴建的示范社区之一。成千上万人住进千篇一律的简朴新房，成为国有纺织厂的工人。今天，从曾经朴实无华的街道上拔地而起的是一座浮华的建筑，它的目标人群是新一类模范市民：消费者。

上海月星环球港（见图）是世界上最大的购物中心之一，其建筑面积几乎相当于70个足球场。建筑风格虽然仿照欧洲样式，但店铺的选择又全然是亚洲的类型。弧形玻璃穹顶和仿文艺复兴时期的壁画下，有Hello Kitty咖啡馆、六七间面馆、金光灿灿的首饰店和一间用于卡拉ok比赛的剧院。

稍微夸张一点，不妨说中国的经济希望依靠的是环球港仿科林斯式的柱子。随着中国几十年的投资热潮迅速减弱，它需要消费作为增长的新动力。多年来人们都在讨论从投资到消费的再平衡，但随着中国产业衰退的加剧，这一点变得越发紧迫。全国建设狂潮正在减退，工厂背上了产能过剩的包袱，北方的老工业区处于衰退边缘。上月9月制造业指数达六年来最低水平，连续第七个月下滑。

在近几个月对中国经济极度悲观的情绪下，很容易得出这样的结论：再平衡已经失败了。汽车市场通常能够较好地反映消费者需求的健康程度。8月汽车销售量同比下跌3.4%，连续第三个月下降。但其他形式的消费正在加速。房地产的复苏激发了对家具、家电和装修材料的需求，与上年相比，8月销售额平均上升17%。从珠宝到中药，近几个月的购买量都已上升。

随着购买者转向高端市场，智能手机销量虽降但销售额猛增。中国主席习近平的反腐行动打击了一些公司，但它们正学习如何在新的约束下发展。白酒企业的利润去年下降，现已回升，拉动这一回弹的是普通消费者买得

起的品牌，而不是过去用来贿赂官员的昂贵酒水。

总体说来，中国的零售销售额今年实际增长了10.5%，远超经济增长（官方公布为7%，但很多分析人士认为接近6%）。一如既往，有人对中国数据的可靠性心存疑虑，不过在零售额这一点上，数字倒可能是太低了。智库彼得森国际经济研究所的尼古拉斯·拉迪（Nicholas Lardy）是中国统计数据的专家，他指出零售数据不包括服务业，这是明显的遗漏，因为调查显示服务业占中国消费者支出的五分之二。

所有这些表明，消费至少弥补了产业衰退的部分萧条。中国消费者的弹性主要源自稳定的收入增长。第二季度农民工的工资比上年同期上涨了10%，超过全国平均7%的水平。因为低收入者通常比富人花出更多的工资，这给了消费额外的刺激。

担忧之一是在中国工业苦苦挣扎之际，这样的收入增长能否持续。有些工厂正在裁员。但服务业在经济中所占的比重大过工业，雇用的人员更多，而且仍在不断增长。

结构性因素也在起作用。中国劳动年龄人口正在萎缩，劳动力越来越少，雇员要求更高的工资。中国近30%的居民储蓄率位列世界最高水平，然而随着人口老龄化，老年人动用了他们积累的部分财富，居民储蓄率也开始下降。2010年，居民消费占GDP的比例降至35.9%，即便就亚洲标准而言也属过低，但之后逐渐攀升。

代际转变也起到了帮助。年长一些的中国人经历过毛泽东时代的物质匮乏，这抑制了他们的消费。周日下午，在环球港拎着购物袋或者在餐厅前排队的绝大多数是二三十岁的年轻人。“我们的父母非常精打细算，但我们希望生活能更平衡。”余露露（音译）说。她是一名法律助理，和男朋友一起来看电影，是一位完全成熟的消费者的写照。她染了头发，看起来很时髦，戴着让眼睛看起来更大的美瞳，胳膊上挂着新买的高跟鞋——去电影院路上的冲动购物。

这是不是意味着中国消费者已准备好成为世界经济的引擎，正如传说中的

美国消费者一样？在某些方面，这已成事实。去年中国出国旅游人数增长了19.5%，达到1.07亿。而且，中国游客比其他人花得多，大肆抢购在国外卖得更便宜的商品。所有这些让中国成为世界上最大的旅游收入来源（见图表）。根据调研公司凯投宏观（Capital Economics）的数据，在韩国和泰国，2011年至2014年中国游客的消费增长弥补了同期对华出口的下降。

但是即使中国消费保持健康，它也无法治愈羸弱的全球经济增长。过去十年与中国命运与共的大宗商品出口国基本上一定会是输家，因为他们极少生产那些能吸引中国买家的消费品。其实，对于整个外部世界而言，中国从投资到消费的转变会减少需求，因为比起为环球港这类购物商场的备货，炼钢牵涉到的进口更多。高盛银行的数据显示，中国消费的进口部分比投资的进口部分低11个百分点，因此从投资再平衡到消费的一万亿元（1570亿美元）将会削减掉约1100亿元的中国进口。

这样相对的自力更生可能会逐渐增强。咨询公司贝恩的研究发现，26类便宜的消费品中，外国品牌去年在18类上丢失了市场份额，包括润肤霜、牛奶、织物柔顺剂和牙膏。对于更复杂的产品，国内公司也正挤进曾被国际公司主导的领域。中国汽车品牌占今年销售的41%，市场份额增加了3.5%。服务消费的增长，无论是整容手术还是餐馆就餐，只会加重主场优势，因为大部分服务是在本地提供的。中国的消费热潮真实存在，但别指望它能提振全球经济。■

Development

The two Mexicos

With its combination of modernity and poverty, Mexico provides lessons for all emerging markets

"IN ESTABLISHING the rule of law, the first five centuries are always the hardest." For much of the past two decades, that quip by Gordon Brown, a former British prime minister, has seemed not just dour, but wrong. Buoyed by China, by trade growth and capital inflows, by talk of new middle classes and the bottom billion, it was easy to forget old truths about how hard it is for poor countries to become rich. A breezy assumption took hold: that emerging markets would surely follow the likes of South Korea and Taiwan on the path to wealth.

That view of development has crumbled of late, along with emerging markets' growth rates. China, the locomotive to which many are still hitched, is slowing. Russia, South Africa and Brazil are in reverse gear. Their currencies drop with every fall in commodity prices; they will no doubt weaken further if the Federal Reserve raises American interest rates in a meeting due to end after we went to press. Trade is growing more slowly than global GDP, a trend that seems unlikely to reverse soon. All of this makes the trajectory taken by the East Asian tigers seem ever more exceptional.

A more realistic model of development is Mexico, a country that has parlayed its considerable advantages into patches of modernity but has singularly failed to eradicate poverty nationwide. Some of its disappointments can be laid at the door of specific policies. But they also reflect the difficulties countries face throughout the emerging world.

Duet for one

Mexico has a lot going for it just now. Its economy is tied to America's rather than China's: in a week it sells more exports to the world's largest consumer market than it does to China in a year. Once dependent on oil, it has Latin America's largest and most sophisticated industrial base, exporting more cars than any country except Germany, Japan and South Korea. For two decades its macroeconomic management has been impeccably orthodox. Recently, it has thrown open its oil industry to private investment, and has tackled private monopolies. A vibrant Mexican middle class prospers along an industrial corridor running from the American border down to Mexico City. Its political system is essentially stable.

Yet despite decades of reforms—at times half-hearted, at times full-throttled—Mexico has failed to bridge the gap between a globalised minority and a majority that lives in what Enrique Peña Nieto, the president, admits is "backwardness and poverty". Since 1994, when Mexico joined the North American Free Trade Agreement, income per head has grown by an annual average of barely 1%. About half the population remains stuck in poverty; another quarter risks slipping back into penury. Lawlessness, corruption and conflicts of interest prevail among the police, courts and politicians supposed to care for the marginalised.

Mexico's duality shows that getting macroeconomic policy right is necessary to success, but not sufficient. The difficulties it still faces are a cautionary tale. The first lesson, and easiest to learn, is the centrality of urbanisation. Cities offer people opportunities to prosper that cannot be found in the countryside: about 120,000 people in Asia are migrating to cities every day, for example. But unless cities provide transport, power, sanitation and security, they will fail to fulfil their economic potential. Violent, drug-related crime stalks Mexico's scruffy *barrios*, where city-dwellers live. In South Africa the lack of public transport obliges slum-

dwellers to take expensive minibus-taxis to work. Cities in Pakistan and the Philippines are plagued by blackouts. Slums ought to be every moderniser's priority. They are where most people live, and where jobs, schools and technology are closest to hand.

Roads and rails

The second is the importance of infrastructure, and not just in the cities. Many of the foundations of the modern Mexican economy were laid a century ago, in the form of roads and railways tying its industrial heartland to its ports and the northern border. That leaves swathes of the country unconnected. Centralisation breeds anomalies: beach resorts often buy their seafood in Mexico City's wholesale market, hundreds of miles from the coast. Yet linking up parts of a country is not easy. It takes both investors willing to bear risk and also politicians prepared to take on the status quo. In India, for example, plans for big infrastructure projects have been frustrated by squabbles over land and a dearth of long-term financing.

A third lesson from Mexico is the need to bring the informal economy into the light. Small, unregistered firms provide employment to most of the labour force, but are shunned by banks and anxious to remain below the taxman's radar. That saps the domestic economy. In the past decade and a half, while the productivity of the biggest Mexican companies has grown by 5.8% a year, that of the smallest has plunged by 6.5% a year. This problem is as prevalent in Mexico's *changarros*, where tacos sizzle alongside every bus stop, as it is in the shops and stalls of India, where only 2% of food and grocery retailing is in the formal sector. Electronic invoicing, which creates digital trails for the taxman, and mobile banking, which brings poor people out of the cash economy, both offer promise.

But the ubiquity of informal firms also points to a final lesson—the corrosive effects of a general lack of trust. Without enforceable laws and contracts, public services that make taxes seem worth paying and a political

establishment that serves the national interest, the only institution that most people can rely on is the family. As Mr Brown hinted, it can take generations to build institutions that enable people to trust arm's-length transactions. But it is not impossible. Witness the confidence now invested in Mexico's and Brazil's central banks, or South Africa's tax authorities.

Even the boldest reformer could not rapidly resolve all of these problems. This is the less cheering message of the two Mexicos: for all but a handful of countries, the road to prosperity is hard and long. But Mexico's successes also demonstrate that it does exist. Even if the gains must be measured in decades, perseverance eventually brings rewards. ■

发展

双面墨西哥

集现代与贫困为一体，墨西哥为所有新兴市场提供了经验教训

“在建立法治方面，头五百年总是最难的。”过去20年的大部分时间里，英国前首相戈登·布朗（Gordon Brown）的这句妙语看来不但严苛，还是错的。在中国经济的鼓舞下，在贸易增长和资本流入的支撑下，在关于新中产阶级和最底层亿万人的谈论中，很容易忘记穷国致富有多难这样的古老真理。一个令人感觉轻松愉快的假设占了上风：新兴市场必将会按照韩国和台湾那样的致富之路前行。

近来随着新兴市场增速的下降，这样的发展观崩溃了。作为许多国家依附的火车头，中国正在减速。俄罗斯、南非和巴西在开倒车，它们的货币随着大宗商品价格的每一次下跌而贬值。贸易增长慢于全球GDP增长，这一趋势短期内似乎不可能逆转。所有这些都让亚洲四小龙的发展轨迹看起来越发特殊。

一个更实际的发展模式是墨西哥，这个国家已经成功地将可观的优势转为一片片现代化区域，但令人费解的是，它仍未能在全国范围内消除贫困。墨西哥的一些让人失望之处可以归咎于具体政策，但也反映出整个新兴世界所面临的困难。

合二为一

眼下墨西哥具备许多有利条件。它的经济与美国而非中国联系更紧密，它在一周内卖给这个全球最大消费市场的出口产品比在一年里卖给中国的还多。它曾经依赖石油，拥有拉丁美洲最大最精良的工业基础，汽车出口量仅次于德国、日本和韩国。过去20年，它的宏观经济管理严谨规范，无可指摘。最近，它已将石油工业向私人投资开放，并解决了私人垄断的问题。充满活力的墨西哥中产阶级正沿着从美国边境到墨西哥城的工业走廊蓬勃发展起来。它的政治体制基本稳定。

但尽管经历了数十年时而三心二意、时而开足马力的改革，墨西哥仍未能消除全球化的少数人与贫穷的大多数之间的差距。墨西哥总统恩里克·培尼亚·涅托（Enrique Pena Nieto）承认后者生活在“落后与贫困”之中。自1994年加入北美自由贸易协定以来，墨西哥人均收入年均增长不过1%，大约一半人口仍深陷贫困，另有四分之一挣扎在贫困线上。警界、司法界和政界本应关照边缘群体，但却充斥着目无法纪、腐败与利益冲突。

墨西哥的二元性表明，正确的宏观经济政策是成功的必要条件，而非充分条件。它仍然面临的困难可谓警世寓言。第一个也是最容易学到的教训是城市化的集中。城市为人们提供了在农村难以企及的发展机会，例如在亚洲每天约有12万人移居城市，但是除非城市能够提供交通、电力、卫生和安全，否则它们将无法实现自己的经济潜能。在墨西哥城镇居民所住的脏乱贫民区内，暴力及与毒品有关的犯罪挥之不去。在南非，公共交通不足迫使贫民窟的居民乘坐昂贵的小巴出租车去上班。巴基斯坦和菲律宾的城市深受停电困扰。贫民区应当是每一位现代主义者的工作重心。大多数人生活在那里，工作、学校和技术在那里也最为唾手可得。

公路和铁路

第二个教训是基础设施的重要性，而且不仅是在城市里。现代墨西哥经济的很多基础在一百年前奠定，通过公路和铁路将工业腹地与港口和北部边境相连，这使得该国大片区域互不相连。集中化滋养了种种异象，比如海滨度假地往往要从距海边数百英里之遥的墨西哥城批发市场购买海鲜。然而要将墨西哥各部分连成一体并非易事，不但需要愿意冒险的投资者，还需要准备好挑战现状的政治家。例如在印度，大型基础设施工程的计划常因土地纠纷和缺乏长期融资而失败。

墨西哥带来的第三个教训是必须让非正规经济见光。未注册的小型公司为大部分劳动力提供了就业，但被银行拒之门外，并且竭力不被税务人员发现，这削弱了国内经济。过去十五年间，规模最大的墨西哥公司每年生产率增长5.8%，而规模最小的公司则每年下降6.5%。这个问题在墨西哥的路边摊（西班牙语为changarros）就很普遍，每个公交车站都有玉米饼滋滋作响，就像在店铺林立的印度只有2%的食品杂货零售店属于正规行业。

电子发票为税务人员创建了数字记录，移动银行让穷人摆脱了现金经济，它们都带来了改变的希望。

但是非正规公司的普遍存在也引出最后一个教训：普遍缺乏诚信所导致的腐蚀效应。没有强制性的法律与合同，没有人们认为值得纳税的公共服务，没有为国家利益服务的政治机构，大多数人唯一可以依赖的只有家庭。正如布朗所说，要建立让人们互相信任、公平交易的体系可能需要几代人的努力。但这并非不可能，墨西哥央行、巴西央行和南非税务机关现在投入的信心可为佐证。

即便是最无畏的改革家也无法迅速解决所有这些问题，这是双面墨西哥传达出的不那么让人振奋的信息：除了少数国家之外，通向繁荣的道路艰巨而漫长。但墨西哥的成功也表明，这样的道路的确存在。即使要花几十年才能获得可观的成就，坚持不懈终会有所回报。■

World trade

Becalmed

A slowdown in global trade growth is bad news for many emerging markets

AT THE blustery Port of Tilbury, on the eastern outskirts of London, the word in the air is diversification. Less space is being given over to conventional container shipping. Instead, the port's owners are investing in new projects. A large metal skeleton will soon become a refrigerated storage unit, to hold perishables on their way to Britain's supermarkets. According to Tilbury's chief operating officer, Perry Glading, the country's container ports have a problem with overcapacity. Tilbury's response is to use the port's 1,000-acre site as flexibly as possible.

World trade data bear out Mr Glading's caution. In South Korea, a bellwether for the global economy, exports of goods fell by almost 15% year on year in August in dollar terms. In China, the most important link in global supply chains, exports were down by over 5%. British and American exports have also been slipping. In the first six months of the year global merchandise trade shrank by more than 13% year on year. From the mid-1980s until the middle of the last decade, annual trade growth stood at 7%.

The recent falls can be partly explained by changes in prices. The dollar is strong, reducing the notional value of goods priced in other currencies. Commodity prices have plunged: that not only reduces the value of the raw materials shipped around the world, but also helps hold down input costs, and thus the price, of all manner of manufactured goods. In volume terms, trade is still growing—by 1.7% year-on-year in the first half of 2015 (see chart 1). But that is far below the long-term average, of around 5% a year. In emerging markets, volume growth was weaker still, at 0.3% year on year.

In the early 1990s trade grew slightly faster than world GDP. But later in that decade, China and the former Soviet Union began to integrate into the global economy, the World Trade Organisation (WTO) was founded to bolster exchange, and technological change started making it easier to manage long, dispersed supply chains. As a result, trade grew twice as fast as the world economy in 2003-06. Since then, however, it has been slowing. For the past two years world GDP has grown more quickly than trade. The slowdown is all the more remarkable given that declining transport costs thanks to cheap oil should be boosting international commerce.

The problem is partly cyclical. Europe, which accounts for around a quarter of global output but one-third of world trade, is enduring "an extremely long cyclical downturn", according to Paul Veenendaal of the Netherlands Bureau for Economic Policy Analysis. Its GDP growth was 0.8% in 2012-14, compared with 3.5% in 2005-07.

At the same time, falling demand for raw materials in China is harming the economies of many commodity exporters. These countries are also final markets for many Chinese exports, creating something of a vicious cycle.

One-off events have also contributed. In early 2015 trade with America was hit both by a strike at ports on the west coast, which absorb 50% of imports, and unseasonably cold weather, which put off shoppers. These disruptions to supply and demand saw imports fall by 3.4% in the first quarter of the year compared with the previous one. A study by Emine Boz, Matthieu Bussière and Clément Marsilli at the Centre for Economic Policy Research estimated that such passing factors were responsible for around half of the slowdown in trade in rich economies in 2012-14.

Yet structural factors play a part, too. A recent IMF working paper argues that trade elasticity—the amount of trade generated as incomes rise—has fallen significantly in both China and America. China is making more at

home: the share of imported components in exports has fallen from 60% in the 1990s to 35% this decade (see chart 2). America, meanwhile, has begun to exploit its huge domestic reserves of shale oil; imports of crude fell by 1.9m barrels a day between 2010 and 2014. At an average price of $93 a barrel, that represents savings of $60 billion, or the equivalent of 25% of what America did spend on crude oil in 2014, according to its Energy Information Agency.

The slowing pace of trade liberalisation is another drag. In 2010-14, 109 new trade deals came into force, down from 128 in the previous five years, according to the WTO. The biggest deal currently under negotiation, the 12-country Trans-Pacific Partnership (TPP), seems to have run aground. Negotiating new pacts is becoming harder as average tariffs have fallen; deals now hinge on much thornier subjects such as labour standards and protection of intellectual property.

It would have been naive to imagine that the remarkable confluence of trade-boosting circumstances of the early 2000s would last forever. The falling dollar value of world trade is not necessarily a terrible thing. Cheaper products help consumers to buy more goods. By the same token, the slump in volumes is not a disaster for the world economy if it reflects growing domestic output in America and China.

But many economies will suffer. Commodity exporters in the rich world, such as Australia and Canada, are relatively diversified. Their falling currencies will boost tourism and exports of manufactured goods, among other industries. Of greater concern are the many economies without much manufacturing. Rapid trade growth in the 1990s and 2000s led to a golden age of convergence between incomes in emerging economies and the rich world, as poor countries joined global supply chains. Yet many have barely begun the process of industrialisation: average income in sub-Saharan Africa is about one-quarter of that in China. Weaker trade growth and

shorter, leaner supply chains mean the ladder Chinese workers climbed is being pulled up behind them.

If the world is unlikely to repeat the trade boom of the 2000s, there are nonetheless ways to prevent trade from stagnating. Rich countries should push ahead with the trade deals they have begun, and ratify the ones they have already negotiated. The deal on trade facilitation the WTO reached in 2013, which aims to reduce the cost of trade in poor countries in particular, requires ratification by two-thirds of the organisation's 161 members to come into force. So far, just 16 have signed on. Efforts to pass TPP have been undermined by electoral politics. Barack Obama, having won "trade promotion authority" (the power to submit trade deals for an up-or-down vote in Congress) should strive to finish TPP, lest the political capital already spent on the deal go to waste. TPP is especially worthwhile as it lowers barriers to agricultural imports and services, which will be of critical importance to developing economies that can no longer count on manufacturing to carry them to greater wealth. ■

世界贸易

停滞不前

对于很多新兴市场而言，世界贸易增长趋缓是坏消息

狂风呼啸的蒂尔伯里港（Tilbury）位于伦敦东郊，这里的流行词是多元化。分配给传统集装箱货运的地盘变小了，而港口的业主们正在投资新项目。一个巨大的金属框架很快会成为一个冷藏存储区，储存运往英国超市的生鲜食品。蒂尔伯里的首席运营官佩瑞·格拉丁（Perry Glading）认为英国的集装箱港口有产能过剩的问题。蒂尔伯里的对策是尽可能灵活地利用港口1000英亩的场地。

世界贸易数据证明格拉丁的谨慎是对的。在韩国这一全球经济的晴雨表，8月以美元计价的货物出口同比下降了近15%。在中国这个全球供应链上最重要的一环，出口下降超过5%。英国和美国的出口也已下滑。上半年全球商品贸易同比缩水13%以上。从上世纪80年代中期直到五六年前，贸易年增长率始终维持在7%。

最近贸易下滑的部分原因是价格变动。美元坚挺，降低了以其他货币计价的货物的名义价值。大宗商品价格已暴跌，不仅降低了运送到世界各地的原材料的价值，也有助于压低投入成本，因此压低了各种制成品的价格。以量计，贸易仍在增长，2015年上半年同比增长1.7%（见图表1），但这远低于每年约5%的长期平均水平。在新兴市场，贸易量增长更为疲软，同比为0.3%。

上世纪90年代初，贸易增长略快于世界GDP增长。但90年代末，中国和前苏联国家开始融入全球经济，为增进交流，世贸组织（WTO）成立，同时科技变革开始让又长又分散的供应链更易于管理。因此，2003年至2006年，贸易增速是世界经济增速的两倍，但之后就开始放缓。过去两年，世界GDP已比贸易增长得更快。考虑到便宜的石油引起运输成本下降，应该能促进国际贸易，这样的下滑就更加引人注目。

一定程度上这个问题是周期性的。荷兰经济政策分析局（the Netherlands Bureau for Economic Policy Analysis）的保罗·费嫩达尔（Paul Veenendaal）称，占全球总产出约四分之一、却占世界贸易三分之一的欧洲正经历着“一轮超长的周期性经济衰退”。2012年至2014年，它的GDP增长为0.8%，而2005年至2007年为3.5%。

同时，中国对原材料需求的减弱正在损害许多大宗商品出口国的经济。这些国家也是许多中国出口商品的最终市场，从而在某种程度上形成了恶性循环。

一次性事件也推波助澜。2015年初，对美贸易遭受了双重打击，一是西海岸港口罢工，而这些港口吸纳了美国50%的进口商品；二是反常的严寒天气让购物者足不出户。这些扰乱供求关系的事件导致今年第一季度进口同比下降了3.4%。英国经济政策研究中心（the Centre for Economic Policy Research）的艾米尼·博兹（Emine Boz）、马修·比西耶尔（Matthieu Bussière）和克莱门特·马尔西利（Clément Marsilli）的一项研究预计，这类临时因素造成了富裕经济体2012至2014年约一半的贸易减缓。

但是结构性因素也起了作用。国际货币基金组织最近一份工作报告指出，贸易弹性（即由于收入增加而产生的贸易额）在中美两国都大幅下降。中国正在国内制造更多的产品：进口零部件在出口商品中的份额已经从上世纪90年代的60%降至这十年的35%（见图表2）。同时，美国已经开始开采国内巨大的页岩油资源，其原油日进口量在2010年至2014年间下降了190万桶。根据美国能源信息署的数据，以每桶93美元的平均价格计，这意味着节省了600亿美元，相当于2014年美国原油开支总额的25%。

贸易自由化的步伐越来越慢，这是另一阻力。根据WTO的数据，2010年至2014年有109项新贸易协议生效，比之前五年的128项有所减少。目前正在谈判的最大协议即12国跨太平洋伙伴关系协议（TPP）似乎已经搁浅。随着平均关税已经下降，商讨新协议变得越来越难，如今协议的达成取决于诸如劳工标准和知识产权保护这样更加棘手的议题。

若幻想本世纪初促进贸易的非凡环境永远持续，那就太天真了。世界贸易的美元价值下降并不一定是件可怕的事，更便宜的产品让消费者能购买更多的商品。同样地，如果贸易量的下降映射出的是美国和中国不断增长的国内产出，那么对于世界经济而言算不上是灾难。

但是许多经济体将遭受影响。富裕世界的大宗商品出口国，如澳大利亚和加拿大，相对多元化。它们的货币贬值将促进旅游业和制成品出口，以及其他行业的发展。更令人担忧的是很多没有多少制造业的经济体。上世纪90年代和本世纪初贸易的快速增长带来了新兴经济体和富裕世界收入趋同的黄金时期，因为贫穷国家加入了全球供应链。然而很多穷国刚刚开始工业化进程：撒哈拉以南非洲的平均收入约为中国的四分之一。贸易增长疲软、供应链更短更精益意味着中国工人走过的路对后起国家已经不再适用。

即便世界不可能重复本世纪初的贸易繁荣，也还有其他方式能防止贸易停滞不前。富裕国家应当推进它们已经开始的贸易协议，正式批准已经商定的协议。WTO于2013年达成的《贸易便利化协定》旨在降低贸易成本，尤其是在贫穷国家。这一协定需要该组织161个成员国的三分之二批准方可生效。截至目前，仅有16个国家签署。通过TPP的努力已经遭到选举政治的破坏。已赢得“贸易促进授权”（将贸易协议直接提交国会，国会有权批准或者否决）的奥巴马应当努力达成TPP，以免已经耗费在此协议上的政治资本付诸东流。TPP非常有价值，因为它会降低农产品进口和服务的壁垒，这对于发展中经济体至关重要，它们再也不能依靠制造业带来更多财富。■

Free exchange

Game of zones

Regional trade deals aren't as good as global ones but they are still beneficial

AFTER years of missed deadlines, the coming months will be decisive for international trade talks. Much hinges on whether Congress gives the president "trade promotion authority" by waiving its right to reopen trade deals that have already been approved by America's negotiators. This would help clear the path to an agreement among Pacific countries and to an American-European pact. Completion of these deals, in turn, would be evidence that regional trade negotiations are capable of success where global talks have foundered. With that, an old debate will begin anew: do regional deals lead to freer trade globally, or do they obstruct it by Balkanising the world?

In classical economic theory, free trade boosts prosperity by encouraging nations to focus on their relative strengths. The reality of regional deals is messier. Jacob Viner, a Canadian economist, showed more than 60 years ago that customs unions sometimes divert rather than create trade by inducing consumers to buy from inefficient producers. A hypothetical example: Thailand makes widgets more cheaply than Mexico, but Americans buy them from Mexico due to lower tariffs on Mexican goods. Such a diversion hurts the global economy, keeping resources from the places where they would be used most productively. Jagdish Bhagwati of Columbia University expanded on this with his observation that regional deals might be stumbling, not building, blocks towards freer trade worldwide. Many had hoped that regional agreements in the early 1990s would lead to global pacts. But Mr Bhagwati argued that less efficient producers would lobby for regional accords, seeking protection inside them.

At first glance, the past 20 years bear out his warnings. Since 1994 there have been more than ten regional deals a year on average but only one global deal: the World Trade Organisation's underwhelming "Bali package" of 2013. Moreover, forecasts about the regional deals now under negotiation highlight the dangers of trade diversion. According to a controversial study by Germany's Ifo Institute, the Transatlantic Trade and Investment Partnership (TTIP), a mooted deal between America and the European Union, would boost America's GDP by 13.4%. But it would leave the economy of Canada, which is not part of the pact, 9.5% smaller than it would otherwise have been. Other studies reach similar, if less dramatic, conclusions about the Transpacific Partnership (TPP), which links 12 countries in Asia and the Americas.

On closer scrutiny, though, regional deals do not look so bad. One indication that the stumbling-block claim was true would have been a proliferation of preferential tariffs following the explosion of regional agreements in recent years, as trading partners lowered barriers for each other exclusively. There has not been one. As of 2008 less than 17% of global trade flows were subject to any preferential treatment. Instead, there has been a spectacular decline in tariffs in general. The average rate applied by Latin American countries fell from 13.1% in 1996 to 4.8% in 2012, according to the World Bank. Developing countries in Africa, Asia and Europe have also slashed tariffs.

The trade-diversion argument is also wanting. Despite the gloomy forecasts for countries excluded from TPP and TTIP, regional deals have a good record in practice. Almost all have boosted trade for non-members, albeit not by as much as for members. The reason is that trade deals nowadays have relatively little to do with tariffs; they focus instead on deeper regulatory issues such as rules governing capital flows and competition policy.

Richard Baldwin, a trade economist, explains their benign external impact

by way of two examples. First, America and Peru, in their free-trade deal, promised that one another's firms would get just as good access to telecoms services as local companies. That may sound like a non-tariff preference for American firms in Peru, since, say, Japanese companies do not get the same guarantee. But the nationality of firms is malleable: Toyota USA qualifies since it is incorporated in America. Second, aligning regulations is more like a public good than a preference, since countries outside the deal also benefit. The European Union's shared standards on mobile telecoms, for instance, make life easier for all firms doing business in Europe, wherever they are headquartered.

In predicting trouble for those outside TTIP, the Ifo study did not consider the positive spillovers from harmonised regulation. The Centre for Economic Policy Research, which did, forecast small income gains for non-members. To be clear, truly global deals would deliver even greater gains. But this research suggests that regional agreements, especially big ones, should be welcomed as productive alternatives.

Block and tackle

The European example reveals another dimension to regional deals. Although third parties may benefit from a common mobile standard, it is Europe that sets the standard, with the interests of its companies in mind. Those inside trade zones get to draft rules that outsiders must adhere to.

This helps to explain America's decision to exclude China from TPP at the outset, Shintaro Hamanaka of the Asian Development Bank argues in a new paper. America is pushing, among other things, for severe restrictions on state-owned firms, which are central to China's economy. If TPP is completed, America could then invite China to join, presenting the limiting provisions as a fait accompli. China, meanwhile, is trying to craft an Asian free-trade pact, with America on the outside. Describing regional deals as stumbling or building blocks often misses their real importance. They are

also power bases. Countries use them to project their vision of free markets on to the global economy.

*Studies cited in this article can be found at www.economist.com/tradedeals15 ■

自由交流

区域的博弈

区域贸易协定的效果比不上全球性贸易协定，但依然利大于弊

在多年来一再错过最后期限之后，国际贸易谈判在未来几个月面临关键期。成败与否，取决于美国国会能否授予总统“贸易促进权”，放弃重启谈判美国贸易谈判代表已经通过的贸易协定的权利。这有助于为环太平洋国家间及美欧间的贸易协定扫清障碍。这些贸易协定一旦达成将是一个例证，表明在全球贸易磋商遇挫之际，区域贸易谈判仍能开花结果。紧接着，一个旧议题的新辩论开始了：区域贸易协定是促成了更自由的全球贸易，还是因割据一方而阻碍了全球自由贸易？

古典经济学理论认为，自由贸易通过鼓励各国发挥自身相对优势促进繁荣。事实上，区域贸易协定情况更为复杂。60多年前，加拿大经济学家雅各布·维纳（Jacob Viner）提出，关税同盟有时引导消费者从生产效率不高的国家购买商品，因而转移而非创造了贸易。一个假设的例子：泰国生产某种小部件比墨西哥成本更低，但美国人却因墨西哥进口的关税更低而选择从墨西哥购买。这种转移伤害了全球经济，让资源配置无法达到效益最大化。哥伦比亚大学的贾格迪什·巴格瓦蒂（Jagdish Bhagwati）通过自己的观察进一步阐发了该理论。他认为区域贸易有可能是全球自由贸易的“绊脚石”而非“垫脚石”。很多人曾希望上世纪90年代初期的区域贸易协定能够带来全球性贸易协议。但是巴格瓦蒂认为效率较低的生产商会极力促成区域协定，在其中寻求保护。

乍一看，过去20年证实了他的警告。自1994年以来，每年平均签署十多项区域贸易协定，但只诞生了一个全球性协议：世贸组织2013年反响平淡的《巴厘一揽子协定》。不仅如此，对正处谈判中的区域贸易协定的预测也强调了贸易转移的危险。根据德国依弗研究所（Ifo Institute）一项颇具争议的研究，美国和欧盟仍在商讨中的《跨大西洋贸易与投资伙伴协定》（TTIP）将会促进美国GDP增长13.4%。但对于没有加入该协定的加拿大，其经济与如果加入的情况相比，会减少9.5%。对于连结了亚洲和美

洲12个国家的《跨太平洋伙伴关系协议》（TPP），其他相关研究也做出了相对和缓但仍然类似的结论。

但仔细观察，我们会发现区域贸易协定看上去并没那么糟糕。称其为绊脚石的断言如果正确，其表现应当是随着近年来区域协定的爆炸性增长，贸易伙伴间互相降低关税，优惠关税呈现扩散趋势。然而此种现象并未出现。截至2008年，不到17%的全球贸易往来是在优惠关税下进行的。在整体上关税反而有相当可观的下降。根据世界银行的计算，拉美国家实行的平均关税率从1996年的13.1%下降到2012年的4.8%。非洲、亚洲的发展中国家和欧洲也都大幅度削减了关税。

贸易转移的观点也值得商榷。虽说被《跨太平洋伙伴关系协议》和《跨大西洋贸易与投资伙伴协定》排除在外的国家经济前景不被看好，但区域贸易协定的历史实际效果不错。几乎所有的协定都推动了非成员国的贸易，尽管推动幅度不如对成员国那么大。其中的原因是如今的贸易协议相对而言与关税关联甚少，更多地关注深层次的监管问题，比如监管资金流动的相关规定和竞争政策等。

贸易经济学家理查德•鲍德温（Richard Baldwin）通过两个例子解释了这些区域贸易协定对非成员国产生的良性影响。第一，美国和秘鲁在其自由贸易协议里承诺彼此的公司能像本地公司一样获得电信服务的准入。这看起来对在秘鲁的美国公司像是一种非关税的优待，因为像是对日本公司就没有同样的待遇保证。但是公司的国别是一个弹性概念：丰田美国公司就具有资格享受此待遇，因为公司建立于美国。第二，协同监管更像是一种公共利益而不是对某一方的优惠，因为协议之外的国家也能从中受益。比如，欧盟有着共同的移动通讯标准，所有在欧洲做生意的公司都得享其便，不管它来自哪个国家。

在预测《跨大西洋贸易与投资伙伴协定》非成员国面临的麻烦时，依弗研究所的研究没有考虑到协调一致的监管产生的积极溢出效应。经济政策研究中心（The Centre for Economic Policy Research）考虑到了这一点，它预测非成员国能获得少量的收益。毫无疑问，真正的全球性贸易协定可以

带来更大的收益。但是该研究表明，区域贸易协定，特别是大型协定，应当被视作是全球协定富有成效的替代物。

阻挡与制约

欧洲的例子揭示出区域贸易协定的另外一个方面。尽管第三方可能从共同的移动标准中获利，但是制定标准的是欧洲，自然优先考虑其公司自身利益。在贸易区内的国家着手制定规则，局外人则必须遵守。

亚洲开发银行的滨中慎太郎（Shintaro Hamanaka，音译）在一篇新的论文中提到，这就能解释美国为何从一开始就决定将中国排除在《跨太平洋伙伴关系协议》之外。原因之一是美国致力于推动对国有企业的严厉约束，而国有企业对中国经济至关重要。一旦《跨太平洋伙伴关系协议》达成，美国届时可以邀请中国加入，对国有企业的限制条款就能以既成事实的面貌出现。与此同时，中国也在推动亚洲的自由贸易协定，将美国排除在外。将区域贸易协定描述成绊脚石或者垫脚石都忽略了其真正的重要性。它们同样还是权力基础。各国运用区域贸易协定将其自由市场的观念投射到世界经济之上。

*本文引用的研究可参见www.economist.com/tradedeals15

Fast-casual restaurants

Better burgers, choicer chicken

Why slightly more upmarket outlets are eating fast food's lunch

BRIDGING a gap in the market between fast-food joints and full-service restaurants, fast-casual chains such as Shake Shack, Nando's chicken restaurants and Chipotle Mexican Grill are enjoying success across the world. The combined sales of American fast-casual outlets rose by 10.5% last year, compared with 6.1% for fast-food chains, according to Mintel, a market-research firm.

There are four main reasons why these outlets have been winning customers. First, they promise "fresh" food, meaning at the very least not frozen. Chipotle also says it uses, where possible, meat from animals raised without hormones or antibiotics, and organic and locally grown vegetables. Having once been controlled by McDonald's, Chipotle is now a threat to its former parent. Although still relatively small, it is enjoying 20% annual growth, quite a feat in the crowded restaurant market.

Second, they offer diners a high level of customisation, such as choosing each ingredient in a sandwich, burrito or burger. This appeals to fussy eaters and those with allergies. The service is not always as quick as at a burger joint but, it seems, quick enough. Some fast-casual chains let diners order at their tables.

Third, clever pricing helps these chains optimise their profits. They offer some dishes at around the same price as those at burger joints, but they seem to be better than McDonald's at nudging diners towards pricier dishes and extras. Fast-casual chains typically manage to squeeze 40% more out of each diner's wallet than fast-food joints do.

Fourth, fast-casual chains often try to give each outlet a touch of distinctiveness. This distances them in the eyes of consumers from the "corporate" feel of burger chains—and their legacy of bad publicity—says Sophie Carroll of Planet Retail, another research outfit. Nando's, for instance, decorates its restaurants with South African art.

For all their success so far, some of the fast-casual chains are finding that as they get bigger, they come under more scrutiny. Campaigners have recently criticised Chipotle and Panera Bread for using ingredients from genetically-modified crops and artificial additives—they say they are working to eliminate these. Campaigners against the use by companies of (legal) tax-avoidance techniques have added Nando's to their targets. Fast-casual restaurants are joining the ranks of big business and having to endure the attention that comes with it. ■

休闲快餐厅

汉堡更好，鸡肉更优

为什么略高档一点的餐厅正在夺取快餐店的生意？

休闲快餐厅由于填补了市场上快餐店和全服务餐厅之间的空缺，正在全球范围内斩获成功。Shake Shack、Nando's鸡肉餐厅和Chipotle墨西哥烤肉店（Chipotle Mexican Grill）都在此列。市场调查公司Mintel的数据显示：去年，美国休闲快餐厅总销售额上升10.5%，而快餐连锁店为6.1%。

这些休闲快餐厅赢得顾客的原因主要有四个。首先，他们承诺食品够"新鲜"，意思是至少不会用冷冻食品。Chipotle还声称该店尽量使用没有添加激素和抗生素的肉类，以及本地有机蔬菜。Chipotle原属麦当劳旗下，现在已对曾经的母公司造成威胁。虽然目前规模相对较小，但年增长率达20%，在对手林立的餐饮业，实属不易。

第二，休闲快餐厅为食客们提供更多的自主选择，比如三明治、卷饼和汉堡里的各种配料都可自选。这对挑剔和过敏的食客很有吸引力。虽然服务速度通常赶不上汉堡快餐店，但也足够快了。有些休闲快餐厅还可以入座后点菜。

第三，灵活的定价机制使得这些连锁店可将利润最大化。这些餐厅部分餐点的价格和汉堡快餐店相仿，但是它们看起来比麦当劳更能吸引顾客点高价的菜肴或是加单。休闲快餐厅一般比快餐店能多赚取食客40%的餐费。

第四，休闲快餐厅每个店铺通常都会有些小特色。这些小特色给消费者带来不同于汉堡连锁店给人的"商业化"感觉，且使它们不受汉堡连锁店负面新闻的困扰，另一家调查公司星球零售咨询（Planet Retail）的索菲·卡罗（Sophie Carroll）说。比如，Nando's鸡肉餐厅用南非工艺品作为装饰。

有些休闲快餐厅尽管已获得一些成功，但是当规模变大后，已面临更多的审查。社会活动者最近抨击Chipotle和Panera Bread使用转基因作物和人工添加剂，而它们宣称要杜绝使用这些东西。反对公司使用（合法）手段避税的社会活动者已瞄准了Nando's鸡肉餐厅。休闲快餐厅正在步入大公司之列，也必将承受随之而来的关注。 ■

Italian football

More than just trophy assets

The country's largest clubs are belatedly becoming more businesslike

FOR all their fans' passion, Italian football clubs struggle to make profits. In the 1990s Italy's Serie A was the most glamorous and high-profile of Europe's five main football leagues; it has since fallen, in revenue terms, from second to fourth place. In this year's Football Money League, published on January 22nd by Deloitte, a consulting firm, three of the four Italian clubs in the worldwide top 20 dropped at least one position. However, there are signs of a turnaround in the clubs' fortunes.

Italy's league fell behind its peers partly because of the complacency of clubs' owners. Tycoons treated them as trophy assets more than businesses. The clubs suffered chronic losses and corruption scandals, and their stadiums were left to decay. But Italy's sustained economic downturn and the introduction by UEFA, European football's governing body, of rules to stop clubs habitually spending more than they earn, have been among the main reasons why a number of clubs have changed hands. Foreign investors are trickling in.

For those seeking to turn around a club's finances, one of the most important tasks is to boost match-day takings, which account for 11% of total revenues in Serie A, compared with 23% in both the English Premier League and the German Bundesliga. That means improving the match-day experience. However, few Italian clubs own the stadiums they play in, and unlike in Britain and Germany, where official encouragement and incentives have led to stadiums being upgraded, Italian ones largely remain in a poor state.

There is plenty of money coming in from television: the amount that

broadcasters pay to show Italian football matches is second only to that in England. However, Italian clubs are missing a few other tricks. For instance, they do not get much from renting out VIP boxes at their grounds on match days: Italian businesspeople tend to take clients to dinner or the opera; and to persuade them to start bringing them to football matches, the facilities at grounds would need to be improved. Also, unlike England's top clubs, Italian ones have not been good at conning their fans into buying overpriced team strips.

But the tide could turn soon. Italy's top performer is Juventus, owned by the Agnelli family, whose forebears founded Fiat. The Turin-based club opened a new, 41,000-capacity stadium in 2011; it has since more than trebled its match-day revenues. Two other teams, Sassuolo and Udinese, have since embarked on revamping their stadiums, and AS Roma plans to build itself a new home on the outskirts of the eternal city.

Efforts are being made to earn more from foreign sources. Over the past five years the Supercoppa, the opening match of the season, has been played three times in China and once in Qatar. AS Roma, bought by a group of American investors in 2011, has since struck a ten-year kit-sponsorship deal with Nike. In 2013 Erick Thohir, an Indonesian businessman, acquired 70% of Inter Milan, bringing in a clutch of foreign executives to boost the brand globally: of Inter's 280m fans, 60% live in Asia, including 18m in Indonesia.

Harry Philp of Portland Advisers, a consulting firm which advises on sports infrastructure, predicts that more Italian football teams could soon be welcoming foreign investors. Their expertise in running a profitable business will be as welcome as their money. ■

意大利足球

不仅仅是炫耀性资产

虽然姗姗来迟，该国最大的俱乐部也正在变得更像企业

虽然球迷的热情爆棚，但意大利的足球俱乐部盈利艰难。上世纪90年代，意甲联赛在欧洲五大联赛中最具魅力，也最受瞩目；但后来开始衰落，以收入计，排名从第二位跌至第四位。在咨询公司德勤1月22日发布的本年度"足球俱乐部财富排名榜"中，有四家意大利俱乐部进入全球前20位，其中三家的排名下降至少一位。然而，这些俱乐部的命运正出现转机。

意甲联赛落后于其他联赛的部分原因是俱乐部老板的自满。这些大亨们更多地把俱乐部当作资产去炫耀，而非作为生意去打理。俱乐部饱受长期亏损和贪污丑闻之害，球场也年久失修。很多俱乐部易手的主因包括意大利经济持续低迷，以及欧洲足球管理机构欧足联出台新政，限制俱乐部习惯性的入不敷出。外国投资者正接踵而至。

要想扭转俱乐部的财务状况，一项最重要的任务就是提高比赛日收入，这占到意甲联赛总收入的11%，相比之下，英超和德甲的比例均为23%。提高这项收入就需要提升比赛日体验。然而，没有几家意大利俱乐部拥有其主场球场所有权，在英国和德国则不同，两国官方的鼓励和刺激使球场不断升级，而大多数意大利球场则维护不善。

大量的收入来自电视转播：广播公司为播出意大利足球比赛所支付的费用仅次于英格兰赛事。但是，意大利俱乐部错失了其他一些生财之道。比如，它们没有从比赛日出租球场VIP包厢中获得太多收入：意大利商人更习惯请客户吃晚餐或是看歌剧；要让他们带客户亲临比赛现场，球场的设施将需要改善。此外，不同于英格兰的顶级俱乐部，意大利的俱乐部并不善于鼓动球迷购买标价超高的球衣。

但这种潮流很快就会转变。意大利最好的球队是尤文图斯，由阿涅利（Agnelli）家族所有，该家族的先人还创建了菲亚特。这家位于都灵的俱

乐部于2011年启用了可容纳41,000人的新球场；这使其比赛日收入翻了超过三倍。另外两只球队萨索洛（Sassuolo）和乌迪内斯（Udinese）也已着手翻新其球场，而罗马则计划在永恒之城的郊区为自己兴建一座新主场。

俱乐部正在努力提高国外收入来源。在过去五年里，作为赛季揭幕战的意大利超级杯赛三次在中国打响，一次在卡塔尔鸣哨。罗马俱乐部于2011年被一群美国投资者收购，随之与耐克签订了为期十年的装备赞助合同。2013年，印尼商人埃里克•托希尔（Erick Thohir）购得国际米兰70%的股份，并带来了一群外籍经理人在全球推广俱乐部品牌：国际米兰的2.8亿球迷中有60%在亚洲，其中1800万在印尼。

咨询公司Portland Advisers为体育基础设施提供咨询，该公司的哈里•菲利普（Harry Philp）预测很快会有更多的意大利球队欢迎外国投资者进入。这些投资者的经营手段与盈利技巧将会和他们的资金一样广受欢迎。 ■

High-speed rail in Europe

Problems down the line

High-speed networks are spreading fast, but face rising competition

FAST trains in Europe ended 2014 with a flourish. In December Eurostar, which connects London, Paris and Brussels, started selling tickets for a new, year-round service to the Mediterranean, starting this May. Poland introduced its first high-speed service, between Warsaw and Krakow; Serbia signed an agreement with China to build a fast line from Belgrade to Budapest; and Turkey inaugurated a line from Istanbul to Konya, having opened one between Istanbul and Ankara in July.

High-speed rail is controversial, as those now trying to introduce it to America know to their cost. This week, as work began on California's "bullet train" project, taxpayer groups condemned it as a monstrous waste of money. Indeed, high-speed trains usually depend on public subsidy, yet their tickets are often unaffordable for many potential users, so they may not fill enough seats to avoid losses. The counter-argument is that over distances of 300-800km, fast trains between big population centres are quicker and less polluting than most forms of transport. No one is keener on them than the European Commission.

Supported by EU and national subsidies, Europe has added more than 6,000km of high-speed track—on which trains travel at least some of the time at 250kph (155mph) or more—to the 1,000km or so it had in 1990. Much more is under construction or planned (see chart). In 2015 a new line from Leipzig to Erfurt is due to open. A Milan-Brescia service may begin in 2016. By 2017 no fewer than four new French lines will come into service. The EU, which is itching to spend more on infrastructure, plans to finance a €4.5 billion ($5.3 billion) fast-rail link between Estonia, Latvia, Lithuania and Poland.

On a few routes high-speed rail has clawed market share from airlines: Eurostar now claims more than 75% of the combined rail/air market on its main routes; and Paris-Lyon and Madrid-Barcelona are also successful. Often, however, fast trains just take business from slow ones. Between 2000 and 2011, as high-speed lines opened across the EU, rail's overall share of passenger-kilometres travelled was little changed, at 6.4% in 2011. Cars' share had barely budged, at 72.5%. Buses and coaches lost a percentage point, to 8.2%, with air travel (excluding flights to outside the EU) gaining more than a point, to 8.9%.

Some countries may have overextended their networks. In France, whose *Trains à Grande Vitesse* (TGVs) launched high-speed rail in Europe in 1981, traffic, revenues and profit margins have fallen from their peaks. To keep local politicians happy, TGVs stop at too many places, the national auditor concluded recently. Cheap flights and *co-voiturage*, or car-sharing, are siphoning off customers; SNCF has started a cut-price service in response. Spain's high-speed track is even longer than France's, despite it having about a fifth as much passenger demand. Fares were cut in 2013 to boost demand, but on many routes there are still plenty of empty seats.

Lack of competition among rail operators is another reason why high-speed rail is failing to win passengers from other means of transport. The EU is finding it hard to transform a bunch of national rail monopolies into a pan-European market in which operators compete across borders. Three rail-reform packages since 2001 have made a start: competition was introduced into freight services; some common technical standards have been laid down to make it easier to run trains across frontiers, and the beginnings of a single market in cross-border passenger services has been introduced. But a fourth reform package, to liberalise further the market for passenger rail, has been held up and watered down by the European Parliament and national politicians.

So far national rail firms are preferring to collaborate than to compete. In September France's SNCF and Germany's Deutsche Bahn renewed a joint venture, Alleo, which manages some high-speed services between the two countries. In December Lyria, owned by SNCF and its Swiss counterpart, opened a new service between Lille and Geneva.

However, on a few of the busiest routes, competition may eventually take off. Deutsche Bahn has postponed but not abandoned a plan to send trains from Frankfurt through the Channel Tunnel to London. That means taking on Eurostar, in which SNCF owns a majority stake. Deutsche Bahn is also gradually pulling out of Thalys, a venture with SNCF and its Belgian and Dutch counterparts, in preparation for competing with them on those routes.

In domestic markets, too, things are moving. Europe's first private-sector high-speed operator is battling for market share in Italy. Nuovo Trasporto Viaggiatori (NTV, in which SNCF has a stake) started services in 2012 and reckons it now has over 20% of the business. It has struggled to compete with the state-owned incumbent, FSI, which controls the tracks. NTV has complained to the authorities about what it sees as FSI's dirty tricks; and it is hoping that a newly created independent regulator will insist on fair play.

The national rail operators would surely find it harder to rally political support to keep foreign rivals off their tracks if they were privatised. The Italian government is said to be considering at least a part-privatisation of FSI. But Germany is thought to have quietly shelved a similar notion. And in France, especially, privatisation seems out of the question.

However, competition from other forms of transport will only keep rising. Low-cost airlines are continuing to expand and in parts of Europe long-distance coaches are being liberalised. Germany opened up its coach market in 2013 and Deutsche Bahn reckons that as a result its high-speed

routes lost €50m of revenues in the first half of 2014. A similar liberalisation is being proposed in France (where SNCF owns a big coach operator). While high-speed rail remains in the grip of sluggish state monopolies, its chances of becoming a successful, competitive business look poor. ■

高铁在欧洲

前路艰难

高铁网络正迅速铺开，但面临的竞争日益激烈

欧洲高铁以高调的行动为2014年画上了句号。12月，连接伦敦、巴黎和布鲁塞尔的欧洲之星（Eurostar）开始发售通往地中海地区的车票，这是一条今年5月起运行的全新常年线路。波兰推出了首条高铁线路，从华沙开往克拉科夫（Krakow）；塞尔维亚与中国签订协议修建贝尔格莱德至布达佩斯的高铁；土耳其则在7月推出伊斯坦布尔至安卡拉线路后，开通了伊斯坦布尔至科尼亚（Konya）的高铁。

高铁颇具争议，那些目前想把它引入美国的人已吃了苦头。本周，在加州“子弹头列车”项目动工之际，有纳税人团体指责它极度浪费。的确，高铁一般依赖政府补贴，票价却往往让很多潜在用户负担不起，所以会因上座率不足而导致亏损。有人反驳说，在相距300至800公里人口稠密的大城市之间，高铁比大多数交通方式更为快捷与环保。而最热衷于高铁的莫过于欧盟委员会了。

在欧盟和各国补贴的支持下，欧洲已新增6000多公里的高铁，列车至少有一定时间时速可达250公里（155英里）或以上。而在1990年，高铁总里程约为1000公里。此外，更多线路正在建设或规划之中（见图表）。莱比锡至埃尔福特（Erfurt）的新线路预计2015年开通。米兰至布雷西亚（Brescia）段可能2016年启用。截至2017年，法国投入使用的新线路将不少于四条。欧盟在基础设施上花钱心切，计划融资45亿欧元（53亿美元）兴建一条高铁，连接爱沙尼亚、拉脱维亚、立陶宛和波兰。

在几条线路上，高铁已挤占航空公司的市场份额：欧洲之星声称在其主要线路上目前占有铁路航空合并市场的75%以上；巴黎至里昂和马德里至巴塞罗那的线路也很成功。然而很多时候，高铁只是抢了“慢铁”的生意。2000年至2011年期间，高速线路在欧盟全境铺开的同时，铁路占旅客周转量的总体比例变化很小，2011年的比例为6.4%。小汽车的比例基本没变，

为72.5%,。公共汽车和客车的比例下降一个百分点至8.2%。飞机（不包括飞往欧盟以外的航线）则占8.9%，升幅超过1%。

一些国家的高铁网络可能扩建过度。在法国，法国高速列车（TGV）于1981年推出欧洲第一条高铁，目前的运量、收入和利润率与高峰期相比都下降了。为取悦地方政客，TGV停站过多，这是国家稽核员最近得出的结论。廉价航班与拼车的做法，正在逐渐分流乘客；法国国家铁路公司（SNCF，简称"法国国铁"）相应地推出了一项减价服务。西班牙的高铁里程甚至超过了法国，尽管其旅客需求仅约为法国的五分之一。该国2013年曾降低票价以增加需求，但多条线路仍有大量空位。

铁路运营商之间缺乏竞争是高铁未能从其他交通方式手中赢得乘客的另一个原因。欧盟发现要把各国铁路的垄断经营改造成多家运营商跨境竞争的泛欧市场，确实困难重重。2001年起实施的三套铁路改革方案就是行动的开端：把竞争引入货运服务；制定通用技术标准来便利火车跨境运营；推出跨境乘客服务单一市场的初步方案。但是铁路客运市场的进一步自由化，即第四套改革方案，受到欧洲议会和各国政客的拖延和削弱。

迄今，国营铁路公司宁愿合作不愿竞争。法国国铁和德国联邦铁路（Deutsche Bahn）在9月续办了合资企业"阿罗"（Alleo），负责管理两国间的一些高速线路。12月，由法国国铁及其瑞士同行共同拥有的Lyria开通了里尔（Lille）至日内瓦的新线路。

然而，在少数几条最繁忙的线路上，竞争或许终会来临。德国联邦铁路推迟了开通法兰克福经海峡隧道（Channel Tunnel）至伦敦线路的计划，但并未放弃这个计划。那意味着要挑战欧洲之星，而法国国铁是欧洲之星的大股东。德国联邦铁路也在逐步退出它与法国国铁以及比利时和荷兰同行的合资企业大力士高速列车（Thalys），准备在这些线路上与它们展开竞争。

国内市场上，事情也有了进展。在意大利，欧洲首家私营高铁运营商正在争夺市场份额。新旅客运输公司（NTV）2012年投入运营，估计当前市场

占有率超过20%。它奋力挑战国有企业意大利国家铁路集团（FSI）的主导地位，已就它认为FSI采取的卑鄙手段向当局投诉；同时它希望新成立的独立监管机构将坚持公平竞争的原则。

一旦私有化，国营铁路运营商肯定会感到更难争取到政治支持，来把外国竞争对手排除在外。据说意大利政府正在考虑把FSI至少部分私有化。但是，外界认为德国已经悄然搁置了类似计划。而在法国更是如此，私有化看起来根本不可能。

然而，来自其他交通方式的竞争只会越来越激烈。廉价航班正在继续扩张，而欧洲一些地区的长途客运领域正在自由化。德国2013年开放了长途客运市场，德国联邦铁路估计2014年上半年其高铁业务因此而损失的营业额达5000万欧元。法国也提出类似的自由化方案（法国国铁拥有一家大型长途客运公司）。高铁依旧把持在行动迟缓的国有垄断企业手中，想转型为成功而有竞争力的企业看来机会渺茫。 ■

Which MBA? 2015

There is no immediate end in sight to American dominance of the business-school world. Fourteen of the top 20 schools in our latest ranking of full-time MBA programmes are based there, including the table-topping University of Chicago's Booth School of Business. It is the fifth time in six years that Chicago has topped our ranking, which is based on a mix of hard data and subjective marks given by the students. One reason for the school's success is glowing student accounts of its careers service, faculty and facilities. This is not surprising, given that the school has been home to seven Nobel laureates, maintains impressive campuses in London and Hong Kong as well as in Chicago, and that 98% of its graduates find jobs within three months.

This is the 13th time we have published the ranking. Each year we ask students why they decided to take an MBA. Our ranking weights data according to what they say is important. The four categories covered are: opening new career opportunities (35% weighting), personal development and educational experience (35%), increasing salary (20%) and the potential to network (10%). ■

全球最佳MBA课程

2015年MBA排名

美国在商学院中的统治地位短期内没有终结的迹象。在我们最新的全日制MBA课程排名中，前20名商学院有14家来自美国，包括排名第一的芝加哥大学布斯商学院。这是六年来芝加哥大学第五次在我们的排名中占据榜首。我们的排名结合硬性的数据和学生的主观评分得出。布斯商学院成功的原因之一是学生对于其就业服务、师资和设施的高度评价。这并不让人意外：该学院诞生过七位诺贝尔奖获得者，并在伦敦、香港和芝加哥都拥有出色的校区，其98%的毕业生在3个月内找到工作。

这是我们第13次公布这一排名。每年我们都会询问学生为何要念MBA。我们的排名根据他们所认为的重要方面来分配数据权重，包括四个方面：开启新的职业机会（35%权重）、个人发展和教育经历（35%）、薪水增长（20%），以及发展人脉的潜力（10%）。■

The Trans-Pacific Partnership

Every silver lining has a cloud

The sealing of a Pacific trade deal is welcome. But spare the cheers

UNTIL this week, the world had not seen a big multilateral trade pact for over 20 years. The deal that has broken the drought—the Trans-Pacific Partnership (TPP), which comprises 12 countries in Asia and the Americas, including the United States and Japan—is welcome. But those who believe in free trade, and the benefits it brings, ought not to miss the bigger picture. The backdrop to this week's deal is a bleak one.

First, the pact itself. It has flaws—what compromise doesn't?—but the advantages are greater. The negotiators who brokered the agreement in Atlanta did not just lower tariffs in coddled sectors such as agriculture, but also drew up shared rules on everything from visas for business travellers to competition policy. The deal limits veiled forms of protectionism, such as special treatment of state-owned firms and arbitrary import bans after safety scares. The benefits of such steps are hard to quantify, especially as the fine print of the deal has not yet been released, but the most comprehensive assessment thus far reckons they could boost the GDP of its members by 1% by 2025. The impact on emerging-market signatories to the deal is likely to be by far the biggest.

Away from the bright spot

Viewed from a different angle, however, the tale of TPP tells a different story. First, there is the fact that the agreement has been so hard to sell in America. It took months, and several legislative setbacks, before Barack Obama won the authority to fast-track a congressional vote on TPP. The deal may still be voted down, in America or elsewhere. Those who would succeed Mr Obama as president know that TPP holds few votes. This week

Hillary Clinton, the Democratic front-runner and once a promoter of TPP, came out against it. The beneficiaries of TPP—consumers, as well as exporters—are numerous, but their potential gains diffuse. By contrast, inefficient firms and farms, about to be exposed to greater foreign competition, are obvious and vocal. Canada, for example, limited the threat to its dairy farmers and doled out a big new subsidy. The saga is a reminder of how hard free trade is to champion.

Second, the TPP deal underscores the shift away from global agreements. The World Trade Organisation, which is responsible for global deals, has been trying, and largely failing, to negotiate one since 2001. Reaching agreement among its 161 members, especially now that average tariffs around the world are relatively low and talks are focused on more contentious obstacles to trade, has proved almost impossible. Regional deals are the next best thing, but, by definition, they exclude some countries, and so may steer custom away from the most efficient producer. In the case of TPP, the glaring outcast is China, the linchpin of most global supply chains.

Third, good news on TPP stands in contrast to bad news elsewhere. Cross-border trade today is as much about the exchange of data as it is the flow of goods and services: this week saw the annulment by a European court of a deal that had enabled American firms to transfer customer data across the Atlantic. Conventional trade faces even stronger headwinds. The volume of goods shipped in the first half of this year was just 1.9% higher than in the same period of 2014, far below its long-term average growth of 5%. This reflects not only China's soggy demand for imports—a threat to the developing economies that supply it—but also the accumulation of minor measures that silt up global trade.

Deals like TPP are the most effective way to reverse this sorry trend, by reducing tariffs and other obstacles to trade. Optimists hope it can now be

expanded, to include China and others. Sadly, experience suggests that will be hard. ■

跨太平洋合作伙伴

银边背后总有乌云

缔结太平洋贸易协定值得欢迎，但莫急欢呼

直至本周之前，全球已有20多年没有签订过大型多边贸易协定了。打破这一困局的《跨太平洋合作伙伴协定》（TPP）值得欢迎，它涵盖了包括美国和日本在内的12个亚洲和美洲国家。但是，信奉自由贸易及其益处的人们不应忽略大环境：本周缔结这一协定的背景颇为惨淡。

首先是协定本身。它有缺陷（哪个折衷方案会没有缺陷呢？），但好处更多。在亚特兰大谈判协定的各国代表并不只是降低了农业等备受保护产业的关税，还拟定了从商务签证到竞争政策等方方面面的共享规则。这一协议限制了隐性的贸易保护主义，例如国有公司享有特别待遇，以及在安全恐慌事件后做出任意武断的进口禁令。这些措施的效益难以量化，尤其协定的细节条款尚未披露。但迄今为止最全面的评定估计，到2025年，它们能够推动协议成员国的GDP增长1%，这可能是到目前为止对新兴市场签署国最大的正面影响。

亮点之外

然而，从另一个角度看，TPP的传奇所讲述的却是一个不同的故事。首先，这一协议在美国历尽波折。奥巴马耗时数月、在国会屡次受挫后才获得“贸易促进授权”，将TPP直接提交国会表决。在美国或其他国家，该协议仍可能被否决。奥巴马可能的继任者知道TPP难以赢得很多支持。呼声很高的民主党候选人希拉里曾经支持TPP，本周也站出来反对。不计其数的消费者和出口商是TPP的受益者，但他们的潜在收益分散。相比之下，那些低效的公司和农场将面对更激烈的外国竞争，而它们更能引起关注并表示反对。例如，加拿大限制了对该国奶农的威胁，并发放了大量新补贴。这一事例提示了要维护自由贸易殊为不易。

第二，TPP突显了脱离全球协定的方向。负责全球协定的世界贸易组织自2001年起就曾试图达成一项全球贸易协定，但基本失败。事实证明，要在

它的161个成员国间达成协议几无可能，尤其如今全球平均关税相对较低，而谈判侧重于更具争议的贸易壁垒。区域协定是仅次于全球协定的最佳选择，但是顾名思义，它们把一些国家排除在外，因而会使贸易远离最有效率的生产商。就TPP而言，最引人注目的局外人是中国，它是大多数全球供应链的枢纽。

第三，TPP的达成是好消息，但其他领域却有诸多坏消息。今日的跨境贸易不仅仅是商品和服务的流通，也是数据的交换。本周，欧洲法院废除了之前的一项协议，该协议使得美国公司可以将客户数据送往大西洋彼岸储存。传统贸易面临更加强劲的顶头风。今年上半年货运量只比2014年同期高出1.9%，远低于5%的长期平均增长率。这不仅反映出中国进口需求的疲软——这对提供出口的发展中国家是个威胁——也反映出各种较小措施的叠加对全球贸易的阻碍。

TPP这类协议的出台可以通过降低关税和消除贸易壁垒，最有效地扭转上述令人遗憾的趋势。乐观派希望现在TPP能够扩大范围，将中国和其他国家纳入进来。不幸的是，经验告诉我们，这将非常困难。■

The promise of the blockchain

Cover Leader: The trust machine

The technology behind bitcoin could transform how the economy works

BITCOIN has a bad reputation. The decentralised digital cryptocurrency, powered by a vast computer network, is notorious for the wild fluctuations in its value, the zeal of its supporters and its degenerate uses, such as extortion, buying drugs and hiring hitmen in the online bazaars of the "dark net".

This is unfair. The value of a bitcoin has been pretty stable, at around $250, for most of this year. Among regulators and financial institutions, scepticism has given way to enthusiasm (the European Union recently recognised it as a currency). But most unfair of all is that bitcoin's shady image causes people to overlook the extraordinary potential of the "blockchain", the technology that underpins it. This innovation carries a significance stretching far beyond cryptocurrency. The blockchain lets people who have no particular confidence in each other collaborate without having to go through a neutral central authority. Simply put, it is a machine for creating trust.

The blockchain food chain

To understand the power of blockchain systems, and the things they can do, it is important to distinguish between three things that are commonly muddled up, namely the bitcoin currency, the specific blockchain that underpins it and the idea of blockchains in general. A helpful analogy is with Napster, the pioneering but illegal "peer-to-peer" file-sharing service that went on line in 1999, providing free access to millions of music tracks. Napster itself was swiftly shut down, but it inspired a host of other peer-to-peer services. Many of these were also used for pirating music and films.

Yet despite its dubious origins, peer-to-peer technology found legitimate uses, powering internet startups such as Skype (for telephony) and Spotify (for music streaming)—and also, as it happens, bitcoin.

The blockchain is an even more potent technology. In essence it is a shared, trusted, public ledger that everyone can inspect, but which no single user controls. The participants in a blockchain system collectively keep the ledger up to date: it can be amended only according to strict rules and by general agreement. Bitcoin's blockchain ledger prevents double-spending and keeps track of transactions continuously. It is what makes possible a currency without a central bank.

Blockchains are also the latest example of the unexpected fruits of cryptography. Mathematical scrambling is used to boil down an original piece of information into a code, known as a hash. Any attempt to tamper with any part of the blockchain is apparent immediately—because the new hash will not match the old ones. In this way a science that keeps information secret (vital for encrypting messages and online shopping and banking) is, paradoxically, also a tool for open dealing.

Bitcoin itself may never be more than a curiosity. However blockchains have a host of other uses because they meet the need for a trustworthy record, something vital for transactions of every sort. Dozens of startups now hope to capitalise on the blockchain technology, either by doing clever things with the bitcoin blockchain or by creating new blockchains of their own.

One idea, for example, is to make cheap, tamper-proof public databases—land registries, say, (Honduras and Greece are interested); or registers of the ownership of luxury goods or works of art. Documents can be notarised by embedding information about them into a public blockchain—and you will no longer need a notary to vouch for them.

Financial-services firms are contemplating using blockchains as a record of who owns what instead of having a series of internal ledgers. A trusted private ledger removes the need for reconciling each transaction with a counterparty, it is fast and it minimises errors. Santander reckons that it could save banks up to $20 billion a year by 2022. Twenty-five banks have just joined a blockchain startup, called R3 CEV, to develop common standards, and NASDAQ is about to start using the technology to record trading in securities of private companies.

These new blockchains need not work in exactly the way that bitcoin's does. Many of them could tweak its model by, for example, finding alternatives to its energy-intensive "mining" process, which pays participants newly minted bitcoins in return for providing the computing power needed to maintain the ledger. A group of vetted participants within an industry might instead agree to join a private blockchain, say, that needs less security. Blockchains can also implement business rules, such as transactions that take place only if two or more parties endorse them, or if another transaction has been completed first. As with Napster and peer-to-peer technology, a clever idea is being modified and improved. In the process, it is fast throwing off its reputation for shadiness.

> *New chains on the block*

The spread of blockchains is bad for anyone in the "trust business"—the centralised institutions and bureaucracies, such as banks, clearing houses and government authorities that are deemed sufficiently trustworthy to handle transactions. Even as some banks and governments explore the use of this new technology, others will surely fight it. But given the decline in trust in governments and banks in recent years, a way to create more scrutiny and transparency could be no bad thing.

Drawing up regulations for blockchains at this early stage would be a mistake: the history of peer-to-peer technology suggests that it is likely to

be several years before the technology's full potential becomes clear. In the meantime regulators should stay their hands, or find ways to accommodate new approaches within existing frameworks, rather than risk stifling a fast-evolving idea with overly prescriptive rules.

The notion of shared public ledgers may not sound revolutionary or sexy. Neither did double-entry book-keeping or joint-stock companies. Yet, like them, the blockchain is an apparently mundane process that has the potential to transform how people and businesses co-operate. Bitcoin fanatics are enthralled by the libertarian ideal of a pure, digital currency beyond the reach of any central bank. The real innovation is not the digital coins themselves, but the trust machine that mints them—and which promises much more besides. ■

区块链的前途

【封面文章】建立信任的机器

比特币背后的技术可能改变经济运作的方式

比特币的名声不好。这一由庞大计算机网络支撑的去中央化数字加密货币之所以声名狼藉，原因很多：骤涨暴跌的价格、狂热的支持者，以及堕落的用途，例如勒索、购买毒品和在“黑暗网络”的在线集市上雇用职业杀手。

这有失公允。今年大部分时间比特币的价格比较稳定，一比特币约合250美元。在监管者和金融机构中，怀疑论已被热情所取代（欧盟最近承认它是一种货币）。但最大的不公是比特币的阴暗形象导致人们忽略了支撑它的区块链技术所具有的非凡潜力。这一创新技术的影响力远不止于加密货币。区块链让彼此间没有特别信任的人们无需通过中立的中央管理机构即可达成合作。简言之，它是建立信任的机器。

> *区块链食物链*

要了解区块链系统的能力及用途，分清三个常被混淆的概念非常重要，即：比特币、支撑它的特定区块链和广义上的区块链。拿Napster做类比可能有助于理解，这一首创但非法的P2P文件分享服务于1999年上线，免费提供数百万首音乐下载。Napster很快被关停，但它启发了众多其他P2P服务出现，其中很多也被用于盗版音乐和电影。尽管起源存疑，P2P技术仍找到了合法的用途，比如为Skype（电话通讯）和Spotify（音乐流媒体）这样的互联网创业公司提供支持，而且碰巧的是，它也支持比特币。

区块链技术的功能甚至更强。本质上它是一个共享的、可信的公共账目，每个人都可以查看它，但它不受单个用户的控制。一个区块链系统的参与者共同维护账目的更新：只有根据严格规则并获得普遍同意才能修改账目。比特币的区块链分类账避免了重复支付，并且不断追踪交易。这让没有中央银行的货币成为可能。

区块链也是密码学意外成果的最新案例。使用数学加扰将一条原始信息压缩成一段编码，称为散列（hash）。想篡改区块链任何部分的任何行为都会立即被发现，因为新的散列会与旧的不符。这样一来，有些自相矛盾的是，一种让信息保密的科技（对于信息加密、网上购物和银行业来说至关重要）同时却也是一种公开交易的工具。

比特币本身可能永远不过是一件奇物，但区块链却有很多其他用途，因为它们满足可信记录的需求，而这对于任何交易都至关重要。几十家创业公司现在都希望利用区块链技术获利，用比特币区块链或者自创区块链来做些聪明事。

例如，创意之一是创建廉价的、防篡改的公共数据库，比如土地登记注册（洪都拉斯和希腊对此有兴趣），或是奢侈品或艺术品所有权的注册。通过将相关信息嵌入公共区块链来公证文件，你将不再需要公证处的证明。金融服务公司正仔细考虑用区块链替代一系列内部账目，来记录资产的所属关系。一个可信的私密分类账无需与交易对手方核实每笔交易，这样速度快，还能把错误减到最少。桑坦德银行（Santander）估计到2022年这一技术每年可为银行业节约多至200亿美元。25家银行已经与一家名为R3 CEV的区块链创业公司合作开发通用标准，纳斯达克也打算开始使用这一技术记录私有公司的证券交易。

这些新的区块链的运作方式不一定要与比特币完全相同。它们中的很多可以对该模式进行微调，比如，给十分耗能的“挖矿”流程找到替代方法，在该流程中，矿工提供维持总账所需的计算能力，获得新造的比特币作为奖励。再如，某个行业中一群通过审查的参与者可能同意加入一个私密区块链，因为它对安全性的要求更低。区块链还可以用于实施业务规则，例如可以设定只有当两方或多方背书，或者只有当另一笔交易先行完成时，当前交易才能发生。正如Napster和P2P技术，一个好点子正在被修改和完善。这一过程中，它正在迅速摆脱不光彩的名声。

区块上的新链条

区块链的普及对任何从事“信任生意”的人来说都是坏消息，这些中央组织

和官僚机构包括银行、清算公司和政府机关等，它们被认为在处理交易时足够可信。而即使有些银行和政府探索使用这一新技术，其他人毫无疑问也会反对。但是，考虑到近年来对政府和银行的信任度下降，能有一种产生更多监督和更大透明度的方法不是件坏事。

在目前这个初期阶段就给区块链制定管理规程将是个错误：P2P技术的历史表明，可能需要数年时间这一技术的所有潜力才会清晰显现。在此期间监管者应静观其变，或者寻找让新方式适应现有框架的途径，而不是冒险以过度指令性的法规来抑制这一迅速演进的创意。

分享型公共分类账的理念或许听来不够具有革命性或性感。复式簿记或股份制公司同样也是如此。但是，和它们一样，区块链这个貌似普通的过程有着转变人们以及企业合作方式的潜力。比特币的狂热信徒迷醉于一个自由主义的货币理想，它纯净、数字化、不受任何中央银行的干预。然而真正的创新并非数字货币本身，而是铸造这些货币的信任机器，而这一机器昭示着更多其他的前景。■

Exploring the ocean

An ambassador to Neptune's kingdom

A new miniature submarine will mean aquanauts can visit the abyss in comfort

THERE has, in recent years, been much talk of holidays in space. Though things have not gone well for one aspiring space-tourism business, Virgin Galactic, whose prototype suborbital rocket plane blew up on a test flight in October, those with truly deep pockets can still book a trip to the International Space Station courtesy of an American firm called Space Adventures that arranges seats on Russian launches. But for people who cannot quite stretch to the $20m or so such a trip will cost, there may soon be an alternative to rocketing upwards in search of adventure: heading in the other direction.

This, at least, is the hope of Stockton Rush, the boss of a company called OceanGate. Mr Rush is the mastermind behind *Cyclops*, a five-seat submarine that will be able to brave depths currently accessible by but a handful of research vessels.

Cyclops aside, there are eight such deep-diving submersibles in the world. Most date back to the Cold War. One of the best known is *Alvin*, which surveyed the wreck of the *Titanic* in 1986. But *Alvin* exemplifies the problem of manned submersibles. Around 90% of its weight is dedicated to keeping the three people within it alive. Only the remaining 10% is applied to the job of scientific investigation. It is also ruinously expensive to maintain and operate. It has, for example, just undergone a $42m refit, and it costs over $50,000 a day to keep at sea, because of its need for a large, specially adapted support vessel. The trend in deep-ocean research, as in the exploration of outer space, has thus been to prefer robots: ROVs (remotely operated vehicles), which are tethered to a ship, and AUVs (autonomous underwater vehicles), which swim freely. These have

progressed in leaps and bounds over the past 20 years. They can now dive to the ocean's deepest trenches, glide beneath ice caps for months at a time or fix underwater drilling rigs.

Mr Rush, however, believes he can buck this robotic trend. And *Cyclops*, unveiled in Seattle on March 11th, is his attempt to do so. It has a steel pressure hull that will let it dive 500 metres beneath the waves and a battery which will allow it to manoeuvre for up to eight hours when it gets there. It also has a specially strengthened acrylic window (which inspired the craft's name) at the front for the crew to observe what is going on, and a life-support system that will last three days. It is packed with the latest marine technology, including a swanky sonar, a PlayStation games controller instead of conventional thruster controls and wraparound LED mood lighting to lessen the crew's feeling of claustrophobia. Its successor, *Cyclops 2*, which should be ready next year, will have a carbon-fibre hull and a borosilicate-glass window that are good for a depth of 3,000 metres, an autopilot and 24 hours' battery life.

Carbon fibre, though more resistant to pressure than steel, is less forgiving of microscopic fractures. This means holes drilled through the hull to control *Cyclops 2*'s thrusters and external lights will need to be kept as small as possible, to reduce the risk of structural failure. Mr Rush therefore plans to use narrow fibre-optic cables to carry instructions to electronic instruments held in spherical pods mounted outside the hull. Some pods will control *Cyclops 2*'s thrusters, lights and mechanical "arms". Others will crunch data from sensors, cameras and microphones. The pods themselves will be filled with oil to avoid life-threatening implosions if the pressure proves too much for them.

Mounting the vessel's electronics this way, instead of inside the craft, means they can be swapped swiftly in case of malfunction, making maintenance far cheaper. This, in combination with the use of a novel

launch rig that can be towed behind a variety of support ships, rather than having to rely on specially built vessels of the sort that support *Alvin*, means, Mr Rush believes, that *Cyclops 2* will be as cheap to run as an ROV while offering the advantages of having its human operators actually within it. It could even act as the control-centre for a fleet of AUVs, letting people keep an eye on them directly, rather than relying on images on television screens.

Most of *Cyclops*'s early customers, Mr Rush thinks, will be scientific institutions. But it has other potential uses. Sub-aquatic tourism is one—he reckons bespoke cruises to sunken ships and coral reefs should be possible for as little as $1,000 a person. And he foresees lucrative opportunities selling to the offshore oil and gas industry. The market for ROVs in this business is worth about $1.5 billion a year. Manned submersibles will not replace robots for most of that, but Mr Rush reckons there are enough awkward jobs which are better done by a craft unencumbered by tethers that *Cyclops* and its successors might garner as much as 5% of the pie. ■

探索海洋

出使海神王国

一种新的微型潜艇让潜水员能得心应手地探访海底深渊

近年来，人们常常讨论太空假日。对于雄心勃勃的太空旅行公司维珍银河（Virgin Galactic）来说，事情进展得不那么顺利。该公司的亚轨道火箭飞机样机在去年10月的一次试飞中爆炸。但那些财力雄厚的人仍可以通过美国的太空探险公司（Space Adventures）在俄罗斯飞船上订座，到国际空间站旅行。不过，对于那些拿不出约两千万美元旅费的人，除了乘火箭向上太空旅行之外，可能很快会有另一种探险的选择：去往相反方向。

这至少是海洋门（OceanGate）公司的老板斯托克顿·拉什（Stockton Rush）的希望。拉什是五人座潜水艇Cyclops的策划者。这艘潜水艇将能下潜到目前仅一小批科研船能够到达的深度。

除Cyclops外，全球尚有八艘这样的深潜器。大部分制造于冷战时代。最著名者之一是Alvin，它在1986年勘探了泰坦尼克号残骸。但Alvin显现了载人潜水器的缺陷。其约90%的重量用来维持潜水艇内三个人的生存所需，剩余仅10%用于科学调查工作。此外，维修和运行费用都无比昂贵。比如，它刚刚经过了一次耗资4200万美元的整修，而它在海洋中每天花费5万多美元，因为它需要一艘专门改装过的大型支援船。因此，和探索外太空一样，深海研究已经倾向使用机器人：用缆绳拴在船上的远程操控潜水器（ROV）和任意游动的自动水下航行器（AUV）。这些设备在过去20年中飞速发展。它们如今能够潜入最深的海槽，在冰盖下连续滑翔数月之久，或者修理水下钻井。

拉什却相信他能和这种借助机器人的趋势反其道而行。3月11日他的这种尝试在西雅图揭开面纱。Cyclops的钢压船体将让它下潜至海浪以下500米处，它的电池让它在抵达这一深度后运行长达八小时。它还在驾驶员前方安装了特殊加固的亚克力窗户（这也为这艘潜艇的名字提供了灵感），让他们可以观察外部状况，另外还有可以持续三天的维生系统。Cyclops装

载了最新的航海技术，包括时髦的声波定位仪、取代传统助推器控制器的操控杆、类似PlayStation游戏控制器，以及减少船员幽闭感的环绕LED情景照明。新一代Cyclops 2应该会在明年建成，将具有碳纤维船体和光学玻璃，能在3千米深度畅游，还有一个自动驾驶仪和续航24小时的电池。

虽然碳纤维比钢更能承压，但对微小裂缝的容忍度更低。因此，给Cyclops 2的助推器和外部灯安装控制器时，在船体上打的洞须尽可能小，以减小结构损坏的风险。拉什因而计划使用狭窄的光纤电缆来向安装在船体外部的球形舱中的电子装置传送指令。一些球形舱将控制Cyclops 2的助推器、灯和机械“手臂”，另一些会处理来自传感器、相机和话筒的数据。这些球形舱自身会被灌入油，以免因承压过大而发生内爆威胁生命。

用这种方式装设潜水艇的电子设备，而不把它们放在船体内部，使得它们在发生故障时能被迅速更换，这让维修变得便宜许多。另外，Cyclops2使用了新的发射台，它可以被拖行在各种支援船只后，而不必依赖像支持Alvin的那种专门建造的船。这两点让拉什相信，运行Cyclops2 会和远程操控潜水器一样便宜，却具有让操作人员实际坐在舱内的优势。它甚至可以充当自动水下航行器舰队的控制中心，让人们可以直接监测这些航行器，而不用依赖电视屏幕上的图像。

拉什认为Cyclops的早期客户大多会是科研机构。但它还有其他潜在用途。比如水下旅游。他预估预订潜艇来勘探沉船和珊瑚礁应该能便宜至一千美元一人。此外，他预测能把它们出售给离岸油气产业而大赚一笔。在这一行业里，远程操控潜水器市场每年产值约15亿美元。载人潜水器不会取代其中大部分机器人，但拉什认为，有足够多的麻烦活会由不受缆绳牵制的潜水器更好地完成，因此Cyclops及其接班人可能会分到这块大饼的5%的份额。■

Bitcoin

Much more than digital cash

The rise and fall of the crypto-currency is good news for authors at least

BITCOIN may well be the world's worst-performing currency. In 2014 it lost more than half of its value against the dollar, beating even Ukraine's hryvnia and the Russian rouble. But measured by the number of new books it has inspired, bitcoin is top of the pile. Nearly 200 titles about the crypto-currency came out last year, according to Amazon. Another dozen hit the shelves this year.

Be warned, though, some are pretty bad. Brian Kelly, an investment manager and talking head on CNBC, takes several stabs in "The Bitcoin Big Bang" at explaining how the crypto-currency works, only to confuse the reader with his odd metaphors: "Let's call the first bitcoin a socialite named Genesis." Dominic Frisby is a comedian and a financial writer who in an earlier book outed himself as an anarcho-capitalist. In "Bitcoin: The Future of Money?" he suggests that bitcoin will change the world as we know it because governments will be unable to raise money for long wars if the currency is widely adopted. "It is a force for peace," Mr Frisby insists.

For any book on bitcoin to be worth reading, though, it has to delve further: into the crypto-currency's ideological and technical roots, for instance, or what it adds to the narrative of money, or even what its economic and political impact may be. The currency's dollar price may be three-quarters down on its peak, but the underlying technology also provides plenty of intellectual fodder—and is unlikely to go away. So there is plenty to write about if you are serious.

Paul Vigna and Michael Casey, two journalists at the **Wall Street Journal**, are certainly serious. In their new book, "The Age of Cryptocurrency", they

don't waste time projecting millenarian political beliefs or searching for bitcoin's elusive creator, Satoshi Nakamoto, though they argue that the crypto-currency's quasi-religious "creation myth" has been an important factor in creating a community around the project. Before he went offline in 2011 without leaving much of a trail, Mr Nakamoto had cleverly combined ideas developed by others with his main invention: the "blockchain", a public ledger of all bitcoin transactions. The blockchain lives on the system's global network and is maintained and protected by "miners", operators of specialised computers who are rewarded with bitcoin for their efforts.

Rather than begin their book with a breathless account of how bitcoin could change everything, Messrs Vigna and Casey start with a brief account of the centuries-old debate about the nature of money. The "metallist" school sees money as a commodity, a thing with its own inherent value—which governments should leave alone as much as possible. By contrast, "chartalists" view money as a complex system of credit relationships, which allows value to flow within a society. For these people currency is just the token around which the monetary system is arranged. And governments have a role to play in managing this system and thus the economy.

This philosophical division is also present in the debate about bitcoin. Libertarians treat it as a scarce commodity that needs to be "mined" (to create bitcoin and maintain the blockchain, miners solve mathematical puzzles, meaning that bitcoin is willed into existence by burning energy). But for a growing number of geeks and venture capitalists bitcoin is less a currency than a technology that can be used to transfer money and other assets cheaply and securely.

Messrs Vigna and Casey predict that bitcoin's main calling will indeed be as a disruptive payment system. Before the crypto-currency, societies had to

rely on banks and other centralised institutions to keep track of payments and guarantee the financial system. This position as gatekeeper has allowed these institutions to capture much economic rent. The blockchain technology cuts away the middlemen by taking over the role of ledger-keeping. “At its core, crypto-currency is not about the ups and downs of the digital currency market,” the authors write, but “about freeing people from the tyranny of centralised trust.”

The book is at its liveliest when it discusses the potential impact of bitcoin. The currency may not be a must-use in rich countries with well-developed payment services, but it could help the poor world’s 2.5 billion unbanked to connect to the formal financial system (the book opens with the story of an Afghan woman who gets paid in bitcoin for the articles she writes for an American website). What is more, because no one controls the blockchain it has already become the foundation (“platform” in the parlance) for a growing number of start-ups. And the technology may also undermine other centralised institutions in the “trust business”, such as stockmarkets, or give the sharing economy a boost (some have speculated that in future taxis may be not only self-driving, but self-owned—meaning they are effectively owned by the blockchain).

Wisely Messrs Vigna and Casey do not predict that this will happen overnight, or that the technology is a panacea. Bitcoin and other crypto-currencies will continue to grow, they write, not alongside the offline world, but attached to it, with institutions and businesses adopting it to suit their needs. Bitcoin may well trigger a revolution, but it will be a slow one. ■

比特币

不仅仅是数字现金

加密电子货币的兴衰至少对作家来说是好消息

比特币很可能是世界上表现最差的货币。2014年它兑美元贬值一半以上，甚至比乌克兰货币格里夫纳和俄罗斯卢布还差。但若按以它为灵感的新书数量来计，比特币傲居榜首。亚马逊称，去年共有近两百本以加密电子货币为题的书出版，今年还有十几本上架。

不过要当心，有些书非常糟糕。CNBC（美国全国广播公司财经频道）的投资经理和特邀评论员布莱恩·凯利（Brian Kelly）在《比特币大爆炸》（The Bitcoin Big Bang）中数次尝试解释加密电子货币如何运作，结果他拙劣的比喻让读者一头雾水："让我们把第一枚比特币叫做名为'创世纪'的社交名流。"多米尼克·弗里斯比（Dominic Frisby）是一位喜剧演员，同时也是金融撰稿人，在此前的著述中他称自己是无政府资本主义者。在《比特币：货币的未来？》（Bitcoin: The Future of Money?）一书中他提出，正如我们所知，比特币将改变世界，因为一旦这种货币被广泛采用，政府将无法为长期战争筹集资金。弗里斯比坚称："这是一股和平的力量。"

然而，任何一本关于比特币的书要做到值得一读，必须内容深刻：例如，研究加密电子货币在意识形态和技术上的根源，或者它为金钱的故事增加了什么，甚至是它可能造成何种经济和政治影响。比特币兑美元的价格与其峰值时相比已跌掉四分之三，但底层技术仍提供了丰厚的精神养料，而这些不太可能消失。所以如果你足够认真，还有很多东西可写。

《华尔街日报》的两位记者保罗·魏格纳（Paul Vigna）和迈克尔·凯西（Michael Casey）就很认真。在新书《加密电子货币时代》（The Age of Cryptocurrency）中，他们没有浪费笔墨阐述千年来的政治信仰，抑或寻找比特币神出鬼没的创造者中本聪（Satoshi Nakamoto），尽管他们认为加密电子货币类似宗教般的"创世神话"的确是围绕这一主题建立社区的一

个重要因素。中本聪于2011年离线，未留下多少踪迹，此前他巧妙地将他人的想法和自己的主创“区块链”（blockchain）相结合。区块链是一个包含比特币所有交易的公共分类账。区块链以系统中的全球网络为生，并由“矿工”（miners）维护和保护。矿工是专用计算机的操作者，他们付出努力获得比特币。

魏格纳和凯西的新书开篇并没有令人窒息的描述，比特币会改变一切云云，而是简述了关于货币本质的古老争论。主张只使用金属货币的人将货币视为商品，有其本身的内在价值，因而政府应当尽可能不干预。相反，主张只使用纸质货币的人将货币视作信用关系的一个复杂系统，使得价值在社会中流通。对这些人来说，货币仅仅是一种象征，货币系统围绕它而设。政府在管理这一系统进而管理经济方面需要发挥一定作用。

这种哲学意义上的划分在关于比特币的争论中也有体现。自由主义者将其视为需要“挖掘”才能获得的稀缺商品（要创造比特币并维护区块链，矿工们要解答数学谜题，意味着比特币要消耗能量才能产生）。但是对越来越多的极客和风险投资家来说，比特币与其说是货币，不如说是一种技术，人们可以用它便宜且安全地转账和转移其他资产。

魏格纳和凯西预测比特币的主要使命其实是一种颠覆性的支付系统。在加密电子货币之前，社会不得不依靠银行和其他集中的机构来保持付款跟踪，保障金融系统。这个守门员的位置让这些机构获取了大量经济租金。区块链技术接管了记录分类账的工作，砍掉了中间人。“加密电子货币的核心并不是数字货币市场的兴衰，”作者写道，而是“将人们从集中信贷的专制统治下解放出来”。

该书在讨论比特币的潜在影响时最为生动。在支付服务成熟的富裕国家里可能不是非要用到这种货币，但它可以帮助贫穷世界里没有银行账户的25亿人连接到正规金融系统（该书开篇的小故事就讲述了一名阿富汗妇女为一家美国网站写文章，领到比特币作稿费）。并且，因为无人控制区块链，它已经成为越来越多创业公司的基础（术语叫“平台”）。这项技术还可能削弱了“信托业”中其他集中管理的机构，如股票市场，甚至推动了分

享经济的发展（有人预计未来出租车不仅无人驾驶，而且是自己拥有，意思是它们实际上归区块链所有）。

明智的是，魏格纳和凯西预计这不会在一夜之间就发生，而技术也不是灵丹妙药。他们写道，随着各种机构和公司采用比特币和其他加密电子货币来满足需求，这样的货币仍然会成长，但其成长不是和线下世界并行，而是依附于它。比特币很可能会引发一场革命，但它会缓慢发生。■

Management

Reinventing the company

Entrepreneurs are redesigning the basic building block of capitalism

NOW that Uber is muscling in on their trade, London's cabbies have become even surlier than usual. Meanwhile, the world's hoteliers are grappling with Airbnb, and hardware-makers with cloud computing. Across industries, disrupters are reinventing how the business works. Less obvious, and just as important, they are also reinventing what it is to be a company.

To many managers, corporate life continues to involve dealing with largely anonymous owners, most of them represented by fund managers who buy and sell shares listed on a stock exchange. In insurgent companies, by contrast, the coupling between ownership and responsibility is tight. Founders, staff and backers exert control directly. It is still early days but, if this innovation spreads, it could transform the way companies work.

Listing badly

The appeal of the insurgents' model is partly a result of the growing dissatisfaction with the public company. True, the best public companies are remarkable organisations. They strike a balance between quarterly results (which keep them sharp) and long-term investments (which keep them growing). They produce a stream of talented managers and innovative products. They can mobilise talent and capital.

But, after a century of utter dominance, the public company is showing signs of wear. One reason is that managers tend to put their own interests first. The shareholder-value revolution of the 1980s was supposed to solve this by incentivising managers to think like owners, but it backfired. Loaded up with stock options, managers acted like hired guns instead,

massaging the share price so as to boost their incomes.

The rise of big financial institutions (that hold about 70% of the value of America's stockmarkets) has further weakened the link between the people who nominally own companies and the companies themselves. Fund managers have to deal with an ever-growing group of intermediaries, from regulators to their own employees, and each layer has its own interests to serve and rents to extract. No wonder fund managers usually fail to monitor individual companies.

Lastly, a public listing has become onerous. Regulations have multiplied since the Enron scandal of 2001-02 and the financial crisis of 2007-08. Although markets sometimes look to the long term, many managers feel that their jobs depend upon producing good short-term results, quarter after quarter.

Conflicting interests, short-termism and regulation all impose costs. That is a problem at a time when public companies are struggling to squeeze profits out of their operations. In the past 30 years profits in the S&P 500 index of big American companies have grown by 8% a year. Now, for the second quarter in a row, they are expected to fall, by about 5%. The number of companies listed on America's stock exchanges has fallen by half since 1996, partly because of consolidation, but also because talented managers would sooner stay private.

It is no accident that other corporate organisations are on the rise. Family companies have a new lease of life. Business people are experimenting with "hybrids" that tap into public markets while remaining closely held. Astute investors like Jorge Paulo Lemann, of 3G Capital, specialise in buying public companies and running them like private ones, with lean staffing and a focus on the long term.

The new menagerie

But the most interesting alternative to public companies is a new breed of high-potential startups that go by exotic names such as unicorns and gazelles. In the same cities where Ford, Kraft and Heinz built empires a century ago, thousands of young people are creating new firms in temporary office spaces, fuelled by coffee and dreams. Their companies are pioneering a new organisational form.

The central difference lies in ownership: whereas nobody is sure who owns public companies, startups go to great lengths to define who owns what. Early in a company's life, the founders and first recruits own a majority stake—and they incentivise people with ownership stakes or performance-related rewards. That has always been true for startups, but today the rights and responsibilities are meticulously defined in contracts drawn up by lawyers. This aligns interests and creates a culture of hard work and camaraderie. Because they are private rather than public, they measure how they are doing using performance indicators (such as how many products they have produced) rather than elaborate accounting standards.

New companies also exploit new technology, which enables them to go global without being big themselves. Startups used to face difficult choices about when to invest in large and lumpy assets such as property and computer systems. Today they can expand very fast by buying in services as and when they need them. They can incorporate online for a few hundred dollars, raise money from crowdsourcing sites such as Kickstarter, hire programmers from Upwork, rent computer-processing power from Amazon, find manufacturers on Alibaba, arrange payments systems at Square, and immediately set about conquering the world. Vizio was the bestselling brand of television in America in 2010 with just 200 employees. WhatsApp persuaded Facebook to buy it for $19 billion despite having fewer than 60 employees and revenues of $20m.

Three objections hang over the idea that this is a revolution in the making. The first is that it is confined to a corner of Silicon Valley. Yet the insurgent economy is going mainstream. Startups are in every business from spectacles (Warby Parker) to finance (Symphony). Airbnb put up nearly 17m guests over the summer and Uber drives millions of people every day. WeWork, an American outfit that provides accommodation for startups, has 8,000 companies with 30,000 workers in 56 locations in 17 cities.

The second is that the public company will have the last laugh, because most startups want eventually to list or sell themselves to a public company. In fact, a growing number choose to stay private—and are finding it ever easier to raise funds without resorting to public markets. Those technology companies that list in America now do so after 11 years compared with four in 1999. Even when they do go public, tech entrepreneurs keep control through "A" class shares.

The third objection is that ownership in these new companies is cut off from the rest of the economy. Public companies give ordinary people a stake in capitalism. The startup scene is dominated by a clique of venture capitalists with privileged access. That is true, yet ordinary people can invest in startups directly through platforms such as SeedInvest or indirectly through mainstream mutual funds such as T. Rowe Price, which buys into them during their infancy.

Today's startups will not have it all their own way. Public companies have their place, especially for capital-intensive industries like oil and gas. Many startups will inevitably fail, including some of the most famous. But their approach to building a business will survive them and serve as a striking addition to the capitalist toolbox. Airbnb and Uber and the rest are better suited to virtual networks and fast-changing technologies. They are pioneering a new sort of company that can do a better job of turning dreams into businesses. ■

管理

重塑公司

企业家们正在重新设计资本主义的基础构件

因为优步正在强势挤占他们的行当，伦敦出租车司机的脾气变得更糟了。与此同时，全世界的酒店经营者在与Airbnb较劲，而硬件制造商则在跟云计算角力。在各行各业中，颠覆者都在改变商业运作的模式。不那么明显但却同样重要的是，它们也在重新定义何为公司。

对很多管理者而言，企业生活仍旧是与大多为匿名的所有者打交道。这些所有者多由基金经理代表，买卖在交易所上市的股票。相反，在反叛公司，所有权和责任紧密挂钩。创始人、员工和出资人直接控制公司。这一创新虽然还在初始阶段，但如果推广开来，可能改变公司运作的方式。

糟糕的上市

反叛公司模式的吸引力部分源于对上市公司不断增多的不满。诚然，最好的上市公司是卓越的组织：它们在季度业绩（维持灵敏）和长期投资（维持增长）之间达成平衡；它们不断培育出优秀的管理者和创新的产品；它们能动员人才，调动资本。

但是，在经历了一个世纪的绝对统治之后，上市公司正在显现疲态。原因之一是管理者往往将自身的利益置于首位。上世纪80年代的股东价值革命本应通过激励管理者像所有者那样思考来解决这一问题，但事与愿违。手握股票期权的管理者反而像是雇佣枪手，操纵股价来提升自己的收入。

大型金融机构（占美国股票市值约70%）的崛起进一步削弱了公司名义拥有者与公司本身之间的联系。基金经理不得不应付不断增长的中介群体，从监管者到公司自己的员工，每一层都要服务其自身利益并从中榨取租金。难怪基金经理通常无法监控到每个公司。

最后，上市已经变成繁重的负担。自2001年至2002年的安然丑闻和2007

年至2008年的金融危机之后，监管规定成倍增加。尽管市场有时也看长期，但很多管理者还是觉得他们的饭碗取决于创造季度复季度的短期佳绩。

利益冲突、短期盈利主义和监管都增加了成本，在上市公司苦于难从运营中挤出利润之际，这就成了问题。过去30年，标准普尔500指数里大型美国公司的利润每年增长8%。现在，这一利润预计将出现连续第二个季度下跌，跌幅估计为5%。在美国股票交易所上市的公司数量自1996年起已经减少了一半，部分是因为整合，但也因为出色的管理者宁愿公司不上市。

其他企业组织正在增长，这绝非偶然。家族企业重获新生，而商业人士正在试验既能利用公开市场，又能继续被牢牢掌控的“混血公司”。精明的投资者，如3G资本（3G Capital）的豪尔赫·保罗·雷曼（Jorge Paulo Lemann）专注于购买上市公司，但像私营企业那样运营它们，配置精干的团队，着眼长期的发展。

众生新气象

但上市公司最有趣的替代形式是新一代潜力巨大的创业公司，有着如独角兽和羚羊这类奇异的名字。在福特、卡夫和亨氏于一个世纪前建造起商业帝国的城市里，现在成千上万的年轻人正在咖啡和梦想的助推下，在临时办公室里打造新公司。他们的公司正在开启一种新的组织形式。

主要的区别是所有制：没人清楚上市公司到底属于谁，但创业公司竭尽全力定义清楚什么归谁所有。在公司发展初期，创始人和首批加入的员工拥有大部分股权，他们以股权或绩效奖励来激励其他员工。创业公司一贯如此，但今天在律师起草的合同中，权利和责任都被界定得清清楚楚。这样利益得到统一，并营造了辛勤工作、互相关爱的文化。而因为公司为私有而非上市，所以是用绩效指标（如生产了多少产品）来衡量自己做得怎样，而非复杂的会计规则。

新公司对新技术的利用也让它们无需扩大自身规模即可走向全球。创业公

司过去常常面临艰难的选择，不知该在何时投资地产和计算机系统等大型笨重资产。现在它们可以仅在需要时购买服务，从而迅速扩张。它们能够仅用几百美元就在线注册公司，通过Kickstarter之类的众筹网站筹集资金，从Upwork聘请程序员，从亚马逊租用计算处理能力，在阿里巴巴上找到制造商，在Square上准备好支付系统，然后立即着手征服世界。只有200名员工的Vizio是2010年美国最畅销的电视机品牌。WhatsApp说服Facebook以190亿美元收购了它，尽管它当时只有不到60名员工和2000万美元的营业收入。

对于革命将至的想法，有三大反对意见。其一是这仅限于硅谷一隅。但是反叛者经济正在成为主流。从眼镜商（Warby Parker）到金融业（Symphony），各行各业都有创业公司。今年夏天Airbnb为近1700万客人提供了住宿，优步每天接送数百万人。WeWork是一家为创业公司提供办公场所的美国机构，它在17个城市有56家分店，拥有8000家公司会员，这些公司共有3万名员工。

其二是笑到最后的还是上市公司，因为大多数创业公司最终想要上市或者把自己卖给上市公司。但其实，越来越多的公司选择维持私有，并且发现比以前更容易筹集资金而无需依靠公开市场。今天那些在美国上市的科技公司在成立11年后才通过公共市场筹集资金，而在1999年间隔只有4年。即便真正上市，科技企业家也能通过A类优先股保持控制权。

第三个反对意见是这些新公司的所有权与经济体的其他部分相隔绝。上市公司让普通人也能在资本主义里分一杯羹，而创业公司由一小群享有特权的风险投资家主导。这是事实，但普罗大众可以通过种子投资（SeedInvest）这类平台直接投资创业公司，或者通过T. Rowe Price这样的主流共同基金间接投资，这些基金在创业公司的襁褓期就已入股。

今天的创业公司不会一切随心。上市公司有它们的地位，尤其是对油气等资本密集型产业而言。很多创业公司不可避免地会失败，包括一些最知名的公司。但它们创造公司的方式会留存下来，并且为资本主义的工具箱添上引人注目的一项。Airbnb、优步以及其他公司更适应虚拟网络和迅速变

化的科技。它们正在开创一种新型的公司，能更好地将梦想转变为实业。



Business schools

Still a must-have

MBAs remain surprisingly popular, despite the headwinds

THE master of business administration (MBA) is no stranger to damning criticism. In the 1950s an influential report commissioned by the Ford Foundation lambasted the degree for being weak and irrelevant. In the 1980s *Business Week* reported that firms were bemoaning "the inability of newly minted MBAs to communicate, their overreliance on mathematical techniques of management and [their] expectations of becoming chairman in four weeks". In the 2000s observers noticed that firms involved in corporate disasters, such as Enron and Lehman Brothers, tended to be run by alumni from prestigious business schools.

Yet the MBA remains hugely popular. Nobody knows exactly how many people study for the degree globally, but 192,000 masters degrees in business were awarded in America in 2012, making it easily the most popular discipline among post-graduate students. Worldwide 688,000 people sat the GMAT, the de facto entrance exam for MBA programmes, in 2014—although this is down considerably from 2008, when 745,000 took the test.

The reason for this drop is partly cyclical: people tend to apply to business schools during downturns in an attempt to shelter themselves from the economic storm. But the MBA faces many longer-term problems. The most pressing is tighter visa requirements in parts of the rich world. It may seem obvious that countries would wish to attract and retain the brightest young minds. But to the despair of business-school deans, both America and Britain—the two most popular destinations for foreign students—now place tougher restrictions on foreign students who want to stay and work in the country after they finish studying.

In America foreign MBA graduates must find a firm to sponsor them for an H-1B visa, which entitles them to work for up to three years in the country, with the possibility to extend to six years. But the demand for these visas by far exceeds supply. America caps the number of H-1Bs at a total of 85,000 (the first 20,000 applications are reserved for students of a master's degree). These are snapped up within days. In Britain graduates must find work even before their student visa expires if they want to stay in the country.

Such restrictions are a particular problem for MBA programmes because many students choose a business school based on where they want to work after they graduate. Predictably, countries with a more welcoming attitude, such as Canada, are seeing applications from abroad rise. In contrast, the proportion of applicants interested in American schools fell from 83% in 2007 to 73% in 2015, according to GMAC, a business-school body.

Canada and other countries do not just covet foreigners deciding whether to apply to American schools. The Canadian government has hired giant billboards in Silicon Valley reading "H-1B Problems? Pivot to Canada" to attract disgruntled foreign graduates. "If [American firms] can't import the talent, they will export the jobs," says Matt Slaughter, the dean of the Dartmouth College's Tuck School of Business. "Unlike lawyers or doctors, the MBA qualification is transferable across borders."

Such concerns highlight the fact that MBA graduates are still in demand among employers. At schools included in *The Economist*'s latest ranking of full-time MBA programmes (see table), 89% of students found a job within three months of graduating. Their median basic salary is close to $100,000, an increase of 88% compared with their pre-study salaries. But some things have changed: banks, for instance, have become much less keen on MBAs since the financial crisis (perhaps because business-school alumni were often singled out as the culprits).

Western business schools are also losing ground to those based in emerging economies. The share of students who send their GMAT scores to an Asian and Australasian business school—a good proxy for applications—has nearly doubled to 8.1% since 2007. Eight-and-a-half Asian business schools now make it into our ranking of full-time programmes (INSEAD has campuses in France and Singapore). These numbers are small, but they are likely to rise. China, in particular, plans to improve its business schools to meet demand for local managers.

Established schools are also disrupting themselves. Over the past five years the number of master-in-management (MiM) degrees, which unlike MBA programmes admit students straight from university without prior work experience, has shot up. In America even schools such as Michigan, Duke and Notre Dame are embracing what was once considered a strictly European qualification. Despite covering much of the same ground as an MBA, MiM programmes also tend to be much cheaper. Every student who graduates from them is likely to be one fewer lucrative MBA candidate in the future.

Not all business schools are affected in the same way. Students will always, it seems, want an MBA from Harvard, Chicago or London Business School. It is those with lesser reputations that face the toughest times. More than two-thirds of full-time programmes costing under $40,000 a year reported either flat or declining application numbers in 2015, according to GMAC. In contrast, most of those charging more than $40,000 said that their applicant pool had grown.

That suggests an oversupply of MBA programmes. Those taking an economics class in one of them might reasonably expect a shakeout. Alas, in the world of business schools such laws do not seem to apply. No matter how few people an MBA programme can attract, few schools will countenance dropping the programme altogether: a business school is

defined by its MBA. As Stephen Hodges, the president of Hult International Business School, puts it: “Is a business school really a business school if it doesn’t offer an MBA?” ■

商学院

仍是必备品

尽管处境不利，MBA仍然惊人地流行

工商管理硕士学位（MBA）对严厉的批评并不陌生。上世纪50年代由福特基金会委托完成的一份颇具影响的研究报告痛斥这一学位薄弱且名不符实。上世纪80年代，《商业周刊》报道称，企业哀叹“MBA新晋毕业生没有沟通能力，过分依赖数学上的管理技巧，还期待四个礼拜就当上公司主席”。到了21世纪，观察家们注意到，发生企业灾难的公司，如安然和雷曼兄弟，往往由知名商学院的校友管理。

然而MBA仍然极受欢迎。无人知晓全球到底有多少人在攻读这一学位，但在2012年，美国共有19.2万人被授予商科硕士学位，它无疑是研究生中最受欢迎的学科。2014年全世界有68.8万人参加了MBA课程的入学考试GMAT，尽管相较2008年的74.5万人已经大幅下降。

人数下降部分是出于周期性的原因：人们倾向于在经济衰退期申请商学院，以保护自己免受经济风暴的冲击。但MBA也面临很多长远的问题。最紧迫的一点是部分富裕国家的签证要求变得更严格了。各国都会希望吸引并留住最聪明的年轻人，这一点似乎显而易见，但让商学院院长们绝望的是，在美国和英国这两个最受外国学生欢迎的目的地国，如今对毕业后想留下来工作的外国学生都设置了更严格的限制。

在美国，毕业的MBA留学生必须找到一家公司来为其申请H-1B签证，该签证允许他们在美国最多工作三年，有可能延至六年。但到目前为止，这些签证严重供不应求。美国将H-1B的发放总数限制在8.5万个（前2万个申请名额保留给有硕士学位的学生），在几天内就会被一抢而空。在英国，想要留下来的毕业生甚至必须在学生签证过期前就找好工作。

这样的限制对MBA课程来说尤其是个问题，因为很多学生会基于自己毕业后想要工作的地点选择商学院。不出所料，在更持欢迎态度的国家，如加

拿大，来自国外的申请在增加。相反，根据商学院协会管理专业研究生入学考试委员会（GMAC）的数据，对美国学校有兴趣的申请者比例从2007年的83%降至2015年的73%。

加拿大等国瞄准的不仅仅是在犹豫是否要申请美国学校的外国人。加拿大政府在硅谷租下巨幅广告牌，上书“H-1B问题？转来加拿大吧”，以此吸引满腹牢骚的外国毕业生。“如果（美国公司）不能进口人才，它们将出口工作岗位，”达特茅斯学院塔克商学院院长马特·斯劳特（Matt Slaughter）说道，“与律师和医生不同，MBA资质跨境仍然有效。”

这种担忧凸显了一个事实：MBA毕业生在雇主那里仍有市场。在《经济学人》对全日制MBA课程的最新排名所涵盖的学校中（见表），89%的学生在毕业后三个月内找到了工作。他们的基本工资中位数接近10万美元，比念MBA之前的工资增长了88%。但是也有一些变化，例如，自金融危机以来银行对MBA们的热衷已经减褪不少（可能是因为商学院的校友常被拎出来斥为罪魁祸首）。

西方商学院的优势也在流失给位于新兴经济体的商学院。自2007年以来，向亚洲和大洋洲的商学院递交GMAT成绩（统计申请数量的一个很好的指标）的学生比例几近翻番，达到8.1%。现在有八所半亚洲商学院已进入我们的全日制课程排名（英士国际商学院[INSEAD]在法国和新加坡都有校区）。数量虽少，但很可能会增长。中国尤其计划提升其商学院以满足本地管理人士的需求。

老牌商学院也在自我颠覆。过去五年，管理硕士（master-in-management, MiM）学位的数量已经飙升。与MBA课程不同，MiM直接从大学招收尚无工作经验的学生。在美国，甚至连密歇根、杜克和圣母大学（Notre Dame）都开始提供这一曾经只在欧洲才有的学历。尽管和MBA覆盖的范围大致相同，MiM课程往往便宜得多。每有一人从这一课程毕业，意味着将来攻读昂贵MBA课程的人可能又少了一个。

并非所有商学院都受到同样的影响。学生们似乎总是想进哈佛、芝加哥大

学或伦敦商学院攻读MBA。处境最艰难的是那些名声不那么显赫的学校。根据GMAC的数据，2015年，一年收费4万美元以下的全日制课程中有超过三分之二称它们的申请人数持平或下降。相反，收费4万美元以上的学校大部分都称它们收到的申请有所增加。

这表明MBA课程供过于求。那些在MBA项目中上经济学课程的人可能会合理预期发生一场洗牌。可惜，在商学院的世界里，这样的法则似乎并不适用。不管MBA项目吸引到的人多么少，极少学校会同意完全撤销它，因为一所商学院正是由其MBA来定义的。正如霍特国际商学院（Hult International Business School）的校长史蒂芬·霍奇斯（Stephen Hodges）所说：“要是没有MBA课程，商学院还成其为商学院吗？”■

Predicting the future

Unclouded vision

Forecasting is a talent. Luckily it can be learned

WEAPONS of mass destruction will be found in Iraq. It will rain tomorrow. Jeremy Corbyn cannot possibly become leader of the Labour Party. The Japanese rugby team will never beat South Africa. Human beings cannot resist trying to scry the future. If soothsaying is not the oldest profession, it is certainly one of them.

The Chinese had the I-Ching; the Romans peered at the entrails of sacrificed animals. These days, anyone wanting to know what the future holds can consult everything from telephone psychics to intelligence agencies, bookies, futures markets and media pundits. Their record is far from perfect. But it is difficult to say just how imperfect: for all the importance people attach to forecasting, hardly anyone bothers to keep score.

Philip Tetlock is a rare exception. His most recent book, “Superforecasting”, (written with Dan Gardner, a Canadian journalist with an interest in politics and human psychology) is a scientific analysis of the ancient art of divination. Mr Tetlock, who teaches at the Wharton School of Business, became famous for concluding, on the basis of a 20-year forecasting tournament that ran between 1984 and 2004, that the average expert is “roughly as accurate as a dart-throwing chimpanzee”. His findings were more subtle than that, and his new book is an attempt to set the record straight. It shows that the future can indeed be foreseen, at least in the near term. More interestingly, it shows that some people are much better at it than others. And, crucially, it shows that prophecy is not a divine gift, but a skill that can be practised and improved.

The book describes another contest, this time run by America's spies in the wake of the disastrous misadventure in Iraq. Begun in 2011, it posed hundreds of geopolitical questions ("Will Saudi Arabia agree to OPEC production cuts in November 2014?" for instance) to thousands of volunteer participants. A small number of forecasters began to pull clear of the pack: the titular "superforecasters". Their performance was consistently impressive. With nothing more than an internet connection and their own brains, they consistently beat everything from financial markets to trained intelligence analysts with access to top-secret information.

They were an eclectic bunch: housewives, unemployed factory workers and professors of mathematics. But Mr Tetlock and his collaborators were able to extract some common personality traits. Superforecasters are clever, on average, but by no means geniuses. More important than sheer intelligence was mental attitude. Borrowing from Sir Isaiah Berlin, a Latvian-born British philosopher, Mr Tetlock divides people into two categories: hedgehogs, whose understanding of the world depends on one or two big ideas, and foxes, who think the world is too complicated to boil down into a single slogan. Superforecasters are drawn exclusively from the ranks of the foxes.

Humility in the face of a complex world makes superforecasters subtle thinkers. They tend to be comfortable with numbers and statistical concepts such as "regression to the mean" (which essentially says that most of the time things are pretty normal, so any large deviation is likely to be followed by a shift back towards normality). But they are not statisticians: unlike celebrity pollsters such as Nate Silver, they tend not to build explicit mathematical models (after all, questions such as "Will Russia officially annex Ukranian territory in the next three months?" are less suitable for the data-heavy, historical approach that Mr Silver prefers).

But superforecasters do have a healthy appetite for information, a

willingness to revisit their predictions in light of new information, and the ability to synthesise material from sources with very different outlooks on the world. They think in fine gradations. Rather than assigning something a probability of 60 to 40, for instance, a superforecaster might, after careful thinking and many small revisions to take account of newfound data, settle on odds of 62 to 38.

Most important is what Mr Tetlock calls a "growth mindset": a mix of determination, self-reflection and willingness to learn from one's mistakes. The best forecasters were less interested in whether they were right or wrong than in why they were right or wrong. They were always looking for ways to improve their performance. In other words, prediction is not only possible, it is teachable.

Talk of growth mindsets, statistical fluency and a complicated world may sound dry and technical. It is not. Mr Tetlock's thesis is that politics and human affairs are not inscrutable mysteries. Instead, they are a bit like weather forecasting, where short-term predictions are possible and reasonably accurate.

What tomorrow brings

The implications of this are far-reaching, and not just for governments and spies. The book opens with a discussion of Archie Cochrane, a Scottish doctor born in 1909, who did more than perhaps anyone else to transform medicine from a black art into a fully fledged science. His insight—deeply controversial half a century ago—was that a doctor's qualifications, eminence and confidence are irrelevant and that the only test of a treatment's effectiveness was whether it could be shown, statistically and rigorously, to work. Mr Tetlock hopes to bring about a similar rigour to how people analyse forecasts of the future.

That will be an uphill struggle. Prediction, like medicine in the early 20th

century, is still mostly based on eminence rather than evidence. The most famous forecasters in the world are newspaper columnists and television pundits. Superforecasters make for bad media stars. Caution, nuance and healthy scepticism are less telegenic than big hair, a dazzling smile and simplistic, confident pronouncements. But even if the hoped-for revolution never arrives, the techniques and habits of mind set out in this book are a gift to anyone who has to think about what the future might bring. In other words, to everyone. ■

预测未来

一览无余

预测是一种才能，值得庆幸的是它可以习得

在伊拉克会找到大规模杀伤性武器。明天会下雨。杰瑞米·科尔宾（Jeremy Corbyn）不可能成为工党领袖。日本橄榄球队永远打不赢南非。人类总是忍不住用水晶球占卜未来。预言即便不是最古老的职业，也一定是其中之一。

中国人有《易经》，罗马人则观察献祭动物的内脏。现在，任何想知道未来会如何的人都可以多方求教，从电话灵媒到情报机构，从博彩公司、期货市场到媒体专家。他们的预言记录远非完美，但又很难说究竟多么不完美：虽然人们认为预测无比重要，几乎没人费事去记分。

菲利普·泰特洛克（Philip Tetlock）是个少见的异类，他最近的著述《超级预言》（Superforcasting）科学地分析了古老的占卜艺术（和加拿大记者丹·加德纳[Dan Gardner]合著，加德纳对政治和人类心理学感兴趣）。泰特洛克是沃顿商学院的老师，曾根据1984年到2004年间一项长达20年的预测比赛得出结论，称一般专家的准确率“差不多就相当于掷飞镖的大猩猩”，从此声名大噪。他的发现要比这句话细微得多，这本新书就试图澄清事实、纠正误解。书中表明，未来确实可以预见，至少在短期内是如此。更有趣的是，该书指出有的人比其他人更擅长这件事。而最为关键的一点，该书表明预言并非神赐天赋，而是一种能够锻炼和提高的技能。

该书记录了另一场竞赛，这一次是在伊拉克毁灭性的灾难之后由美国间谍举办的。自2011年开始，它向成千上万名自愿参与者提出了好几百个地缘政治问题，诸如“2014年11月沙特阿拉伯会不会同意欧佩克减产”等。一小部分预言者开始脱颖而出：这就是所谓的“超级预言家”。他们的表现始终令人惊叹。他们可利用的不过就是互联网和自己的大脑，却能始终击败各路对手，从金融市场，到能够获取绝密信息、训练有素的情报分析员。

这群人不拘一格：有家庭主妇、失业工人和数学教授。但泰特洛克和他的合作者们还是能总结出一些共同的性格特征。超级预言家通常更聪明，但绝非天才。比纯粹的智商更重要的是心态。泰特洛克借用了生于拉脱维亚的英国哲学家以赛亚·伯林（Isaiah Berlin）爵士的方法，将人分为两类：一类是刺猬，他们对世界的认识依赖一到两个重大观点；一类是狐狸，他们认为世界太过复杂，无法归结为单一的口号。超级预言家毫无例外都来自“狐狸”的行列。

面对复杂世界时的谦卑之心让超级预言家成为洞若观火的思想家。他们往往很适应数字和统计概念，如“向均数回归”（这本质上是说大部分时间情况都很正常，因此任何大的偏离之后都可能转向回归常态）。但他们不是统计学家：与知名的民意测验专家如纳特·西尔弗（Nate Silver）不同，他们往往不会建立明确的数学模型（毕竟诸如“俄罗斯会不会在未来三个月内正式吞并乌克兰领土”这样的问题不太适合用西尔弗偏爱的、运用大量数据的历史研究方法来解决）。

但是超级预言家的确对信息胃口颇佳，愿意根据新信息重新审视他们的预测，并且能够综合源自截然不同世界观的材料。他们在细微的层级上思考问题。例如，一位超级预言家不会说某件事的可能性是六四开，而可能在谨慎思考并根据新发现的数据做出很多小修订之后，将几率设定为62%比38%。

最为重要的是泰特洛克所说的“成长心态”：综合了决心、自省和从自己过往错误中学习的意愿。最优秀的预言家更感兴趣的并非自己对错与否，而是对错背后的原因。他们总是在想方设法提升自己的水平。换句话说，预言不只是可能的，而且是可以学习的。

成长心态、擅长统计、复杂的世界，谈论这些可能听起来枯燥、技术性太强。其实不然。泰特洛克的观点是政治和人类事务并不是什么高深莫测的秘密，相反，它们有点像天气预报，短期预测是可能的，而且颇为准确。

明天会带来什么

这一发现的影响意义深远，而且不只是对政府和间谍而言。该书开篇讨论了阿奇·考科伦（Archie Cochrane）。在将医学从妖术转变为一门完全成熟的科学方面，这位生于1909年的苏格兰医生可能比任何人的贡献都多。半个世纪前他的观点颇具争议性，他认为医生的资质、声望和信心都无关痛痒，检验治疗手段的唯一标准是它能否显现疗效，无论是统计学意义上还是严格意义上。泰特洛克希望能把类似的严谨带到人们对预测的分析中。

这将是一场艰苦的战斗。正如20世纪初的医学，预言仍然主要基于显赫声望而非证据。世界上最知名的预言家是报章专栏作家和电视评论员，而超级预言家则是糟糕的媒体明星。比起爆炸头、迷人的微笑和简单自信的宣言，谨慎、细微差别和合理的怀疑不那么上镜。但是即便期盼中的革命永不会到来，书中所述的心智技巧和习惯对于必须考虑未来可能会带来什么的人来说，都是一份礼物。换句话说，每一个人都将从中获益。■

Higher education in America

Better ways to pay for college

Hillary Clinton and, especially, Marco Rubio have promising ideas for how to finance a university degree

HARD as it may be to believe with Donald Trump hogging the headlines, America's presidential primary campaigns are proposing serious ideas for how to deal with real economic problems. High among them is how to fix the country's broken system of university finance. Hillary Clinton has come up with intriguing plans, but the ideas of Marco Rubio are the more radical. And radicalism is what the system badly needs.

America is home to the world's best universities. But taken as a whole, its higher-education system is marred by soaring costs, stratospheric student debt and patchy performance. Tuition fees have doubled in real terms in the past 20 years. Student debt has trebled in the past decade, to $1.2 trillion. A recent study of academic achievement at college found that 45% of America's students made no discernible academic progress in their first two years. Sorting out this mess demands three things: reforms that bear down on costs, that encourage students to make more informed choices about their future and that match repayments to borrowers' ability to pay.

Mrs Clinton's plan meets the third of those aims, and nods at the first. She proposes capping the repayment of college loans at a maximum of 10% of income over 20 years. If a loan is not paid off by then the government will pick up the tab. The estimated bill for her scheme, which would push America further towards a model used in Britain and Australia, comes to $350 billion over ten years. Income-based loan repayments make sense. But if government still picks up the tab for defaults, there is little pressure on colleges to curb costs and students to choose wisely. Mrs Clinton's answer is to make subsidies to colleges contingent on reducing costs.

Mr Rubio deals with the three reform priorities more comprehensively. He wants to encourage the take-up of online education platforms to curb costs and has good ideas for how to spread information on the earnings associated with particular degrees. But his boldest proposal is to link repayment of university funding to income by using equity financing, an idea floated by Milton Friedman in 1955.

Under Mr Rubio's plan, private investors would pay for a student's education in return for a claim on a chunk of his future earnings. Just as dividends accruing to a shareholder depend on a firm's profits, so a student's subsequent payments to the investor would rise and fall with his income. Equity financing would lead to more informed choices because investors would be less willing to fund courses and colleges that offer low returns. And it would squeeze costs because unpopular courses would have to trim their spending.

The logic is impeccable. Nonetheless, the idea of equity financing for college is controversial. There are silly criticisms, for instance that any equity contract on human capital is tantamount to indentured servitude. In fact, these contracts would be less constraining than a student loan that imposes fixed payment obligations and cannot be discharged in America's bankruptcy courts. It is possible—and sensible—to set caps on the period in which income is shared, the percentage of earnings that can be given away and the total amount paid out.

> *Marco to market*

The more substantive problems involve information asymmetries and moral hazard. Prospective students know better than any investor what they plan to do with their lives. A lawyer who financed his study by issuing equity could, on graduating, afford to choose whether to join a well-paying law firm or to become a public defender without having that decision influenced by the need to repay a mound of debt. From society's point of

view, that freedom to choose has benefits: a debt-laden graduate is less likely to take a risk on setting up a new company and more likely to head for Wall Street instead. But from the investor's perspective, the risk that students might offer low returns would need to be compensated for by other students pursuing more remunerative paths.

People who think they will do well in later life also have an incentive to opt for the certainty of fixed debt repayments rather than face the possibility of handing over big chunks of future income. Again, there are potential solutions: some fintech startups have experimented with models of future income that enable students with better earnings potential to give up a smaller share of income in return for the same amount of funding as those with dimmer prospects.

Resolving these difficulties will take time and ingenuity. And whatever happens, it makes sense to have a combination of debt and equity, and of private and public money, in the mix. That's why Mrs Clinton's proposals are a sensible start, but Mr Rubio's ideas are worth serious debate. ■

美国的高等教育

筹集学费有良方

希拉里和马克罗·鲁比奥——尤其是后者——就如何资助大学生完成学业提出了好点子

也许就像很难想象唐纳德·特朗普（Donald Trump）竟然抢占了报纸头条一样，人们发现美国总统初选中竟然针对现实经济问题提出了一些深思熟虑的见解。其中颇为引人注目的一条是如何改善美国陈旧的大学助学体系。希拉里已经提出了引人入胜的构想，但马克罗·鲁比奥（Marco Rubio）的想法更为激进。而激进主义恰恰是这个体系目前所迫切需要的。

美国拥有世界上最好的大学，但整体来看，其高等教育体系为三大弊端所累：办学成本不断飙升、学生债务高企、学业成绩不如人意。在过去20年里，按实值计算，学费翻了一倍。学生债务过去十年里增长了两倍，高达1.2万亿美元。最近一项关于大学学业成绩的研究发现，45%的美国大学生在校头两年未能取得显著的学业进步。解决这些问题需要通过改革做到三件事：压低办学成本、鼓励学生为自己的将来做出更明智的选择、将学生贷款的还款额与借贷者的偿还能力匹配起来。

克林顿夫人的计划能实现第三个目标，对第一个目标则表示首肯。她提议将助学贷款的最高还款额度设置为贷款者收入的10%，期限为20年。如果届时贷款仍未还清，则政府将偿付余款。该项计划将会使美国的助学贷款模式进一步靠近英国和澳大利亚，在未来十年预计需要3500亿美元。以收入为基准的还贷模式固然合情合理，但如果仍由政府为违约买单，那么大学就不会因感到压力从而控制办学成本，学生也不会想方设法去明智择业。对此，克林顿夫人的应对方案是依据大学控制成本的情况对其提供补助。

鲁比奥针对上述三个问题的改革思路更为全面。他希望通过鼓励采用网络教育平台以降低办学成本，也有很好的想法来传播与不同学位相对应的收

入信息。但他最大胆的建议是将助学贷款偿还与收入通过股权融资的方式联系起来，这一想法米尔顿·弗里德曼（Milton Friedman）在1955年就曾提出过。

在鲁比奥的设想里，私人投资者通过资助一名学生完成学业而可以在其未来收入中获得一部分收益。就像股东积累的分红取决于一家公司的盈利一样，受资助的学生在毕业后对资助者的偿还将随着其收入的上下波动而起伏。此种股权融资会带来更为明智的选择，因为投资者对回报不高的课程和大学的投资兴趣不大。该方法同时还会压低成本，因为不受欢迎的课程将不得不削减开销。

这在逻辑上无可挑剔。然而，以股权融资来助学的想法仍然充满争议。比如，有批评者认为，以人力资本为条件的股权合同相当于卖身契 。可事实上，和一份规定了固定支付义务且不能由美国破产法庭解除的学生贷款相比，这些合同的束缚更少。人们可能也有理由设定从毕业生的工作收入中提取收益的最长期限、最高比例以及最大数额。

> *马克罗用市场*

更为实质性的问题包括信息不对称以及道德上的风险。有远见的学生比任何投资者都更清楚自己的人生规划。一个通过出售自己未来收入的股权完成学费融资的学生，在毕业即将成为律师之际，可以在无需操心偿还一大笔债务的情况下，决定是进入一家薪酬较高的律师事务所还是成为一名公共律师。从社会的角度来看，这种自由选择益处颇大：毕竟一名债务缠身的毕业生更可能投身华尔街，而不愿冒险自己开公司创业。但从投资者的角度来看，毕业生可能提供低回报的风险必须得有其他追求高收入工作的毕业生来加以抵消。

认为自己前途不错的人当然也可能更倾向选择偿还固定债务，而不愿面对有朝一日需将自己收入相当一部分交出去的可能性。对此依然有潜在的解决方案，一些金融科技创业公司已经在实验一种未来收入模式：要获得同样数额的贷款，收入前景看好的学生可以支付较低比例的未来收益，而那些前景相对黯淡的学生则需要付出更高的比例。

解决这些困难需要时间和智慧。无论发生什么，将债务和股权，私人投资和公共投入结合起来都不失为明智之举。这就是为什么克林顿夫人的方案是一个合理的开头，而鲁比奥的想法更值得严肃地探讨。■

Energy subsidies

Waste not, harm not

Energy subsidies gobble money. They also kill people and cook the planet

BLUNDERS in economic policymaking abound, but among the worst are energy subsidies. They stoke waste, squeeze other spending, enrich middlemen and help the comfortably-off more than the poor, who use little energy.

Include the cost of pollution and the bill is even higher. A new IMF working paper puts it at a stonking $5.3 trillion, or 6% of global GDP—more than all government spending on health care. The+ biggest subsidies are in the poorest countries (where they can reach 18% of GDP) and the lion's share goes to coal, the dirtiest fuel, which no country taxes properly. By contrast, renewable energy subsidies (mostly in the rich world and not covered in the IMF paper) amount to a mere $120 billion, and would vanish if fossil fuels were taxed fully. The biggest subsidiser of fossil fuels is China at $2.3 trillion, followed by America ($700 billion), Russia ($335 billion), India ($277 billion) and Japan ($157 billion).

Big numbers bring big headlines. In this case, they also introduce much greater margins for error. The common and strict definition of subsidies is "pre-tax": directly intervening to keep a price artificially low. On that basis, the cost of fuel subsidies is an order of magnitude lower, at $333 billion. Moreover, it is down from $492 billion in 2011. The falling oil price has helped; some of the worst offenders such as India are now hacking away subsidies.

The IMF authors, however, use a broader "post-tax" definition, including tax exemptions (fuel is often untaxed) and wider costs such as pollution. Three-quarters of the damage pollution does, they say, is to the local

environment (thereby hurting human health); the remainder is the cost of global warming (see chart). By the same token, the benefits that would come from ending subsidies include a halving of the death toll caused by outdoor air pollution and a cut of CO_2 emissions by a fifth.

A previous study in 2013 reckoned the overall cost of fuel subsidies, including environmental harm, was $2 trillion. The new figure reflects gloomier assumptions about the damage to health from subsidised fossil fuels, particularly coal: recalculating the life-shortening effect of sulphur-dioxide emissions accounts for 45% of the extra $3 trillion. Including previously ignored emissions of nitrogen dioxide and fine particulates accounts for another 24%; other externalities such as congestion, 23%.

As the IMF authors accept, this is an area in which imponderables abound. Scientists disagree about the link between emissions and bad weather, and how to split the bill for climate change between future (presumably richer) generations and the current population. But even the most quantifiable drawbacks of fuel subsidies are dire enough. ■

能源补贴

不浪费，不伤害

能源补贴大量耗费金钱、草菅人命并烘烤地球

经济决策的失误比比皆是，但其中最严重的当属能源补贴。它们助长浪费，挤占其他支出，肥了中间商，帮助富人多于穷人，因为穷人只使用很少的能源。

如果包括污染的成本，账单数字甚至更高。据国际货币基金组织（IMF）一份最新研究报告估算，能源补贴的总成本达5.3万亿美元之巨，相当于全球GDP的6%，比所有政府的医疗卫生支出还要高。最大的补贴来自最贫穷的国家（在那里，补贴可能高达GDP的18%），最大的份额补贴到污染最严重的燃料——煤炭，而没有一个国家对煤炭适当征税。相比之下，对可再生能源的补贴（主要在富国，且IMF文件没有涉及）金额仅为1200亿美元，而如果对化石燃料全面征税，这一补贴就会不再必要。对化石燃料补贴最多的是中国，达2.3万亿美元，接下来是美国（7000亿美元）、俄罗斯（3350亿美元）、印度（2770亿美元）和日本（1570亿美元）。

庞大的数字成了头条新闻。在这种情况下，它们还带来更大的犯错余地。对补贴通常的严格定义是“税前”，即直接干预，人为压低价格。在此基础上，燃料补贴的成本就低了一个数量级，为3330亿美元。此外，它比2011年的4920亿美元有所下降。油价的下跌也助了一臂之力，诸如印度这样一些补贴最严重的国家目前正在削减这项支出。

然而，IMF报告的作者使用了一个更为笼统的“税后”定义，包括免税（燃料往往免税）和更广泛的成本，例如污染。他们说，污染四分之三的损害施加于当地环境（从而损害人体健康），其余则是全球变暖的成本（见图表）。同样，结束补贴可带来的好处包括室外空气污染造成的死亡人数减半，以及二氧化碳排放量削减五分之一。

2013年的一项研究认为，包括环境危害在内，燃料补贴的总成本达到2万

亿美元。新的统计数字显示，关于获得补贴的化石燃料（尤其是煤炭）损害健康的假定变得更为悲观。燃料补贴的总成本增加了3万亿美元。而重新估算二氧化硫排放对寿命缩短的影响，发现这一损失占到新增成本的45%，之前被忽略的二氧化氮和细颗粒物的排放占到24%，其他诸如拥堵等外部效应则占了23%。

正如IMF报告的作者承认的，这个领域充满了不确定因素。科学家们对排放与恶劣天气之间的联系，以及如何在未来几代人（想必更富裕）和当前一代人之间分摊对抗气候变化的开支等方面存在分歧。但是，即便只是看燃料补贴那些最容易被量化的缺点，情况也已经足够糟糕了。 ■

Schumpeter

When workers are owners

The received wisdom that employee ownership is a good thing comes with caveats

IT IS popular to lament the growing gap between capitalists and workers. In one respect, however, the gap is shrinking: the number of workers who own shares in the business that employs them has never been higher. America leads the way: 32m Americans own stock in their companies through pension and profit-sharing plans, and share-ownership and share-option schemes. The idea continues to gain momentum. Hillary Clinton's recent speeches suggest that she may make it an important plank in her plans to reform capitalism. And worker-capitalists are also on the march in Europe and Asia.

Conservatives like employee ownership because it gives workers a stake in the capitalist system. Left-wingers like it because it gives them a piece of the capitalist pie. And middle-of-the-roaders like it because it helps to close a potentially dangerous gap between capital and labour. David Cameron, Britain's Conservative prime minister, praises John Lewis, a retailer entirely owned by its staff. Bernie Sanders, America's only socialist senator and now a candidate for the Democratic nomination (see Lexington column), is a champion of employee share-ownership.

The trend is also being driven by a long-term shift from "defined benefit" (DB) pension plans, in which employers guarantee the retirement income of their workers, to "defined contribution" (DC) schemes, in which workers and employers put money into an investment pot, with no guarantees of how much it will eventually pay out. Including current workers and pensioners there are more than 88m DC plans in existence. A 2013 survey by Aon Hewitt, a consulting firm, found that 14% of such plans' assets were invested in the shares of the employer in question.

A number of studies have found that workers at firms where employees have a significant stake tend to be more productive and innovative, and to have less staff turnover. Employee ownership has its drawbacks, however. One is the risk that workers have too many eggs in one basket: if their employer goes bust they can lose their pensions as well as their jobs. Enron employees were encouraged to stuff their "401(k)" plans (the most popular type of pension scheme) with company stock. Just before the firm went bankrupt in 2001 the average employee held 62% of his or her 401(k) assets in Enron shares. Likewise when Global Crossing went bust a few months later, the collapse in its shares wiped out a large chunk of its workers' pension savings. Despite various initiatives by Congress to stop firms touting their shares to employees, cases are still arising: some former workers at Radio Shack, a retailer that filed for bankruptcy in February, are taking the firm to court, arguing that it kept offering to make its pension contributions in the form of company shares, when it should have known they were going to lose value.

A second problem is entrenchment. Supporters of worker ownership argue that it helps companies take a more long-term perspective. Critics argue that it can entrench bad management and undermine a company's long-term competitiveness: underperforming bosses are much more likely to be able to stay in place, and resist hostile takeovers, if some of the company's shares are in friendly hands. In 1994 United Airlines handed many of its workers a 55% stake, and representation on the board, in return for pay cuts. But its performance remained poor, and it filed for bankruptcy in 2002.

A third risk is entitlement. The strongest argument in favour of employee ownership is that workers will not only toil harder if they get a slice of the profits, but will make sure that their colleagues do so too. A new paper by Benjamin Dunford and others, presented at the Academy of Management's annual meeting in Vancouver, argues that commitment can transmute into

entitlement. The academics studied a sample of 409 employees at a commercial-property firm in the Midwest and found that those who invested a higher proportion of their 401(k) accounts in company stock expected better benefits—in the form of promotions and pay rises—than the rest, and took more discretionary leave. (However, the study did not consider whether, nevertheless, employee ownership boosted the firm's overall performance.)

ESOP fables

Arguments about employee ownership can easily become too sweeping: grand claims from supporters invite vigorous rebuttals by critics. A great deal depends on how schemes are structured, and the motives for introducing them. Another recent paper, by Han Kim and Paige Ouimet, of the University of Michigan and University of North Carolina respectively, considers the sizes of ESOPs and of the firms that offer them. They find that small ESOPs (which control a stake of less than 5% in the company in question) are far more likely to boost productivity than large ones, because firms that introduce large ESOPs are often troubled ones trying to conserve cash by substituting shares for pay, or seeking to fend off hostile takeovers by giving shares to friendly insiders. They also argue that ESOPs are much more likely to work in smaller firms than larger ones because employee-owners can more easily monitor each other and thereby boost overall productivity.

There is plenty to be said for employee ownership. It can sharpen workers' motivation and go some way to healing a potentially dangerous divide between the working class and the boss class. But if politicians are serious about the idea, they need to think harder about how to make it work in practice. They should pay closer attention to how schemes are designed, and look for ways to tailor regulations and tax incentives so as to encourage well-designed schemes. They also need to deal with the problem of

concentrating risk in a single company's shares. Given that the average life expectancy of *Fortune* 500 companies has fallen from 75 years in the 1930s to perhaps just 15 years today, encouraging employees to invest their savings with the companies that employ them is a recipe for miserable retirements. ■

熊彼特

当员工成为主人翁

人们普遍认为员工所有制是好事，但有几点需要注意

资本家和员工之间的差距越来越大，对此人们常常发出哀叹。然而，有一个方面的差距正在缩小：持有自己公司股份的员工数量远多于以往。美国在这方面一马当先：3200万美国人通过养老金、利润分享计划、股票所有权和期权计划持有自己公司的股票。这种方式日益受到欢迎。希拉里在最近的演讲中表示这可能是她改革资本主义计划中的重要一环。与此同时，员工资本家也在进军欧洲和亚洲。

保守派喜欢员工所有制，因为它让员工与资本主义体系利益攸关。左派喜欢它，因为它让员工在资本家的收入中分得一杯羹。中间派喜欢它，因为它有助于拉近资本和劳动力之间潜在的危险差距。英国保守党首相卡梅伦盛赞完全由雇员所有的零售商店约翰·路易斯（John Lewis）。美国唯一一位信奉社会主义的参议员伯尼·桑德斯（Bernie Sanders）现在是民主党总统参选人，他是员工股份所有制的积极拥护者。

这一潮流也受到另一种长期转型的驱动，即养老金计划从“收益确定型”（DB）转为“缴费确定型”（DC）。若按照前者，雇主保证雇员的退休工资，而按照后者，员工和雇主将钱用于投资，不能保证最终将给付多少。包括现有员工和养老金领取者在内，已有8800万人参加了缴费确定型养老计划。怡安翰威特咨询公司（Aon Hewitt）2013年的一项调查发现，这些计划的资产有14%投资在员工雇主的股票上。

许多研究已发现，在员工大量持股的公司里，雇员通常生产力更高、创新力更强，人员流失率也更低。不过，员工所有制也有弊端。一是员工们把太多鸡蛋放在同一个篮子里的风险：如果雇主破产，他们既没了养老金也丢了饭碗。安然（Enron）公司鼓励员工以公司股票填满他们的401（k）计划（美国养老金方案最常见的类型）。就在2001年该公司破产之前，雇员的401（k）资产中平均有62%是安然股票。同样，几个月后电信公司

Global Crossing破产，股价暴跌，彻底毁掉了其员工养老金储蓄的一大块。尽管国会采取种种举措，禁止公司向其员工兜售股票，诸如此类的事件仍然越来越多：今年2月申请破产的零售商Radio Shack的前雇员正将公司告上法庭，称公司明知道自己的股票价值会缩水，却仍然一直以公司股票的形式缴付退休金。

第二个问题是固步自封。员工所有制的支持者认为它有助于让公司目光长远。批评者则认为这会保护糟糕的管理，削弱公司的长期竞争力：如果公司的部分股权在自己人手里，表现不佳的老板更可能保全职位，抵制恶意收购。1994年美国联合航空公司（United Airlines）将55%的股权和董事会的代表权交予很多雇员，条件是减薪。但是公司表现仍然不佳，并于2002年申请破产。

第三个风险是权利。赞同员工所有制最强有力的观点是如果员工能分得一分利润，他们不但会更努力地工作，还会保证他们的同事也努力工作。本杰明·邓福德（Benjamin Dunford）与他人合著的一篇新论文在温哥华举行的美国管理学会（the Academy of Management）年会上发表，该文认为承诺可以转化为权利。作者以美国中西部一家商业地产公司的409名员工为样本展开研究，发现401（k）账户投资于公司股票比例较高的员工比其他人期待更好的获益，形式有升职和涨薪，请假时也更随意。（但是这一研究没有考虑雇员所有制是否提升了公司的整体绩效。）

持股寓言

关于员工所有制的论断很容易牵涉甚广：支持者的宏大主张招来批评人士的有力反驳。这很大程度上取决于制度如何架构，以及引入这些制度的目的。由密西根大学的金汉（Han Kim）和北卡罗来纳大学的佩吉·维梅特（Paige Ouimet）合著的新论文研究了ESOP（员工持股计划）的规模和采用这一模式的公司的规模。他们发现，小规模的ESOP（员工持有所在公司的股权少于5%）远比大规模的ESOP更可能提高生产力，因为引入大规模ESOP的公司常常麻烦缠身，为了保存现金而用股票支付，或者试图通过将股票给予内部友方来抵制恶意收购。他们还指出，小公司的ESOP效果好于大公司，因为在小公司，做了主人翁的雇员会更容易互相监督，因

此能够提升整体的生产力。

关于员工所有制要说的还有很多。它能够提高员工的积极性，一定程度上能修复员工阶层和老板阶层之间潜在的危险分裂。但是如果政治家们认真考虑这个主意，他们需要更努力地思考如何让它在实践中发挥作用。他们要更密切地关注这些制度该如何设计，并且寻求方法来调整政策法规和税收优惠，以鼓励精心设计的制度。他们还需要处理将风险集中于单一公司股票的问题。财富500强公司的平均寿命已经从上世纪30年代的75年降至今天的仅15年左右，因此鼓励员工将积蓄投资在雇用他们的公司上可算是招致悲惨退休的一个配方。■

Schumpeter

Myths about millennials

Businesses should beware of dubious generalisations about younger workers

ONE of the perks of getting old is that you are allowed to talk nonsense about the young. Plato was said to have complained that young people "disrespect their elders" and "ignore the law". Peter the Hermit griped that they "think of nothing but themselves" and are "impatient of all restraint". Today, grizzled business pundits tend to mix in some praise with their gripes. But they abuse the privilege of age as much as anyone ever did.

Such modern-day sages tell employers they must adjust their management styles to meet the expectations of millennials—those born between 1980 and 2000, also known as generation Y. These people are now the largest group in America's workforce, making up 37% of the total, compared with 34% for the baby-boomers—those born up to the mid-1960s, now retiring in droves. It is often pointed out that millennials are the first generation to have grown up in the digital era. That is true, but much else that is said about them is conjecture. They are said to be natural collaborators. Everything from their education in kindergartens to their participation in social media has turned them into team players. But at the same time they reject careerism and are allergic to being managed. Tamara Erickson, a consultant and author of "Plugged In: The Generation Y Guide to Thriving at Work", says millennials "think in terms of how to make the most out of today and make sure that what they are doing is meaningful, interesting and challenging." Andrew Swinand of Abundant Venture Partners, a venture-capital firm, says that doing business responsibly is the millennials'"new religion". The only way to attract and retain these highly strung creatures is to turn your offices into open-plan playpens and boost the corporate social responsibility (CSR) budget.

Finding evidence that contradicts all this is not hard. CEB, a consulting firm, polls 90,000 American employees each quarter. It finds that the millennials among them are in fact the most competitive: 59% of them, in the latest poll, said competition is "what gets them up in the morning", compared with 50% of baby-boomers. Some 58% of millennials said they compare their performance with their peers', as against 48% for other generations. They may spend much time messaging with other millennials on their smartphones, but they do not have much faith in them. Fully 37% of millennials say they don't trust their peers' input at work; for other generations the average was 26%. This is a generation of individualists, not collaborators. As for the idea that they are anti-careerist, CEB's poll finds that 33% of millennials put "future career opportunity" among their top five reasons for choosing a job, compared with 21% for other generations. Likewise for corporate do-goodery: only 35% of millennials put a high emphasis on CSR, compared with 41% of baby-boomers.

Jennifer Deal of the Centre for Creative Leadership, an executive-training outfit, and Alec Levenson of the University of Southern California studied 25,000 people in 22 countries and concluded that most generalisations about millennials as employees are "inconsistent at best and destructive at worst." Consider the idea that they do not want to be told what to do. In a poll of 5,000 workers Ms Deal and Mr Levenson found that 41% of millennials agreed that "employees should do what their manager tells them, even when they can't see the reason for it," compared with 30% of baby-boomers and 30% of members of generation X (born between the mid-1960s and 1980). Or the idea that firms should communicate with digital natives through digital media. More than 90% of millennials said they wanted to receive their performance evaluations and to discuss their career plans face-to-face.

It would be going too far to say that there are no differences between the generations. There are variations in consumption patterns. Young people

are much more likely to get their news from BuzzFeed than baby-boomers are. But these do not necessarily translate into different attitudes to work. Ms Deal notes that millennials who have been in a job for a couple of years have much more conventional attitudes to work than those of the same age who are still at university. Some differences in attitudes cross the generations. In CEB's recent poll, 51% of millennials said they would look for a job at another organisation within the coming year compared with 37% of generation X-ers and 18% of baby-boomers. It also discovered that millennials are more likely to seek and value feedback from their managers than members of other generations are. But this is because they are still young, and not because of the particular generation they were born into. Young people in every generation change jobs more frequently than older people because they are looking for the right one. Young people also look for feedback because they are still learning the ropes.

De-generating into banality

Companies are right to be exercised about the millennial generation. Nothing is more important for a firm's survival than recruiting and retaining the next wave of talent. But in their enthusiasm to embrace that generation, they risk swallowing a lot of snake oil. To get the most out of young workers, it may in fact be wiser to put less emphasis on collaboration and corporate do-goodery, and more on rewarding individual performance and providing clear paths to career progress. Companies need to recognise that individual differences are always bigger than generational differences. Every age group contains introverts and extroverts, high-flyers and low-riders. But they also need to recognise that human commonalities swamp both individual differences and generational variations. The most striking thing about the research data compiled by the likes of CEB and the Centre for Creative Leadership is how much workers of different generations have in common. They want roughly the same things regardless of when they were born: to be given interesting work to do, to be

rewarded on the basis of their contributions and to be given the chance to work hard and get ahead. ■

熊彼特

千禧世代之迷思

看待年轻员工，企业切忌以偏概全

上了年纪的一大好处是可以对年轻人大放阙词。据说，柏拉图曾抱怨年轻人既“不尊重长辈”，又“目无法纪”。隐士彼得埋怨他们“一副心思只为自己”，且“厌烦一切束缚”。今天，商界前辈在抱怨之余，往往还不忘略加赏识之辞，但他们倚老卖老之心其实不亚于从前时代的众人。

这些现代大师提醒雇主们必须调整管理风格，以迎合千禧一代的期望。千禧一代是1980年至2000年间出生的人群，也被称为Y世代，他们如今是美国劳动力大军的主力，占总数的37%。而那些上世纪60年代中期前出生、现在大批退休的婴儿潮一代则占了34%。人们常指出，千禧一代是数码时代中成长起来的第一代。事实的确如此。但这之外，其他有关他们的看法纯属猜想。他们被认为天生擅长协作：从幼儿园教育到社交媒体互动，一切令他们善于团队合作。然而同时，他们并无事业心，不爱听命于人。塔玛拉•埃里克森（Tamara Erickson）是一名顾问，也是《插上电源：Y世代事业成功指南》（Plugged In: The Generation Y Guide to Thriving at Work）的作者，她表示，千禧一代“总想活在当下，要确保所做一切有意义、有趣味、有挑战性”。风投公司Abundant Venture Partners的安德鲁•斯维兰德（Andrew Swinand）说，负责任地营商成为千禧一代的“新信条”。要吸引并留住这群高度敏感的孩子，唯一的方法是把办公室都改成开放式格局，并提高企业的社会责任预算。

要找到证据驳斥上述说法并不难。咨询公司CEB每季度对九万美国雇员作调查，发现千禧一代实际上好胜心最强：在最近一次调查中，59%的千禧一代雇员表示竞争向上之心是“他们早上起床的动力”，而有这样想法的婴儿潮雇员为50%。约有58%的千禧一代雇员表示会与同侪比较工作表现，其他世代的相应数字为48%。千禧一代也许会花许多时间用智能手机与同辈人互通信息，却对彼此没太多信任。足足37%的千禧一代雇员说不信任同辈所做的工作，其他世代有如此心态的平均为26%。千禧一代是崇尚个

人主义而非集体协作的一代。至于说他们缺乏事业心，CEB的调查则发现，他们当中有33%的人把“事业发展前景”视为挑选工作的五大因素之一，其他世代的这一数字为21%。同样地，说到企业的慈善义举，仅有35%的千禧一代雇员表示高度重视企业社会责任，而婴儿潮一代则达到41%。

高管培训机构“创新领导中心”（Centre for Creative Leadership）的詹妮弗·迪尔（Jennifer Deal）及南加州大学的亚历克·列文森（Alec Levenson）对22个国家的2.5万人展开调研后得出结论：对千禧代雇员的大部分泛化看法“轻则前后矛盾，重则害人不浅”。以他们不愿听命于人的这一说法为例，迪尔和列文森的一项调查发现，受访的5000名雇员中，41%的千禧一代同意“员工应听命于上司，即便不明白个中理由”，认同这一点的婴儿潮及X世代（上世纪60年代中期至1980年间出生）雇员均为30%。再看看认为公司应通过数字媒体与这群数字原生代沟通的观点，受访的千禧一代雇员中超过90%表示希望以面谈的方式接受绩效评估，并与上司面对面讨论自己的职业生涯规划。

如果说各代人之间并无差异，那是矫枉过正。大家在消费模式上各不相同。比起婴儿潮一代，年轻人更愿意从新闻聚合网站BuzzFeed上获取资讯，但这并不必然转化为不同的工作态度。迪尔指出，对待工作，入职几年的千禧一代雇员比还在大学读书的同龄人态度更为传统。部分态度差异是跨世代的。在CEB最近一项调查中，51%的千禧一代受访者表示会在一年内跳槽，而有此打算的X世代和婴儿潮雇员分别为37%和18%。调查也发现，相比其他世代，千禧一代雇员更愿意寻求上司的反馈和听取意见。但这只是因为他们尚年轻，而非由于他们出生在哪个特定的世代。每个世代的年轻人换工作都会比年长者更频繁，因为他们还在寻觅最适合自己的工作。年轻人寻求反馈是因为要摸索门道。

切莫泛而化之

企业为千禧一代作出调整是对的。一家公司要生存，招募并留住下一波人才至为关键。但企业热情满满地迎合千禧一代之际，还要谨防被江湖郎中忽悠。要充分利用年轻员工的优势，实际上更明智的方法也许是少谈协作

和企业善举，而重视奖励个人表现，提供清晰的职业晋升路径。企业需要意识到，个人差异总是大于世代差异的，每一个年龄层的人都有内向和外向之分，优秀与平庸之别。但与此同时，企业也须明白，人类共性是超越个体及世代差异的。CEB及创新领导中心这类机构得出的研究数据中，最明显的是各世代劳动者的众多共同点。无论生于哪个年代，他们的需求大致一样：做有趣的工作，按劳取酬，有机会通过努力工作出人头地。■

Schumpeter

The enemy within

Rogue employees can wreak more damage on a company than competitors

EMPLOYEES are often said to be a company's biggest resource. It is equally true that they are its biggest liability. Scarcely a week goes by without a company falling victim to employees-turned-enemies-or-embarrassments. On July 20th Ashley Madison, a website for married people looking to have an affair, announced that it had been hacked. Noel Biderman, the company's chief executive, says that he thinks the attack was "an inside job". On July 6th HSBC fired a group of employees when it emerged that they had filmed themselves engaged in an "ISIS-style mock beheading" of an Asian colleague dressed in an orange jumpsuit.

The most familiar type of enemy within is the fraudster. The Economist Intelligence Unit, a sister organisation of *The Economist*, conducts a regular poll of senior executives on the subject of fraud committed by insiders. In 2013 the poll discovered that about 70% of companies had suffered from at least one instance of fraud, up from 61% in the previous survey. Fraud is often petty: a survey of British employees for YouGov in 2010 found that a quarter of staff eligible for expenses admitted to inflating claims. But fraud can also be more audacious and more harmful: think of former employees setting up rivals using stolen technology and purloined client lists.

Even more dangerous than the fraudster is the vandal. Thieves at least have a rational motive. Vandals are driven by a desire for revenge that can know no limits. David Robertson of K2 Intelligence, a company that specialises in corporate investigation, recounts the story of a British manufacturing company that was undergoing restructuring. A member of the information-technology department discovered that his name was on the list of people

whose services would no longer be required. He built a "backdoor" into the company's IT system from his home computer and set about wreaking damage—deleting files, publishing the chief executive's e-mails and distributing pornographic pictures.

Some enemies-within start out as star employees. A striking number of the worst corporate scandals in recent years have been the work of high-flyers who bend and then break the rules in order to please their bosses. Barings, a collapsed British investment bank, showered Nick Leeson with rewards before it discovered that he had produced his outsized results because he took outsized (and unauthorised) risks.

Other enemies-within are the very opposite of high-flyers. The HSBC execution squad are only the latest example of low-level employees who have either wittingly or unwittingly used the power of the internet to blacken their employer's reputation. In April 2009 two employees of Domino's, a fast-food chain, posted videos of themselves "abusing takeaway food". And in July 2012 a Burger King employee posted photos of himself online which showed him standing in a tub of lettuce in filthy shoes along with the caption "This is the lettuce you eat at Burger King".

One of the most effective ways for outsiders to damage a company is to strike up a relationship with an insider. This can sometimes be fairly crude: bribing a cleaner to replace a keyboard with a carefully-modified lookalike or swapping a USB stick for a virus-laden doppelganger. But it is often more sophisticated. Many of the biggest corporate disasters in recent years are likely to have involved collaborators. Security experts suspect that the hackers who stole the personal information of about 40m customers from Target, an American retail chain, in 2013 may have had help from insiders (the store refuses to comment).

What can companies do to reduce the threat from these wolves in sheep's

clothing? A lot depends on which particular sorts of wolves you are dealing with: traps that work for vandals may not work for fraudsters, for example. And even the best-managed companies are fighting an uphill battle. Information is getting harder to control. A single USB stick can contain more data than 500m typewritten pages. A mobile phone can be hijacked and turned into a listening device. People regularly log in with their electronic devices in crowded places where they can be watched, filmed or hacked.

Fifth column, three principles

Yet three precepts are always worth bearing in mind. The first is that firms need to focus on the people who have the greatest capacity to do harm—those who control the money and information. The more complicated companies become, the harder it is to identify where power really lies. But one thing is clear. The more dependent on information firms get, the more IT specialists can compromise the whole business. The least companies can do is to keep a careful watch on the IT department—and, if you're going to sack somebody from that team, do so immediately.

The second is that the human touch is still invaluable. Companies can certainly strengthen their hand by installing software that can identify anomalous behaviour or monitor e-mail, or by employing forensic accountants to double-check the accounts. But rogue employees are usually a step ahead of their employers: they will simply shift to text messaging if they think that their e-mails are being watched. Companies can probably do more by listening to company gossip. Corporate-security firms get some of their best results by using "spies" to hang around in the smoking room or go out for drinks after work.

The best way to fight the enemy within is to treat your employees with respect. And this third principle is where many firms fail. They may embrace the rhetoric that nothing matters more than their people, but too

many workers feel that nothing matters less. According to a recent survey by Accenture, a consultancy, 31% of employees don't like their boss, 32% were actively looking for a new job, and 43% felt that they received no recognition for their work. The biggest problem with trying to do more with less is that you can end up turning your sheep into wolves—and your biggest resources into your biggest liabilities. ■

熊彼特

内部敌人

相比竞争对手，流氓员工对公司的伤害更大

人们常说员工是一家公司最大的资源。同样，员工也的确是公司最大的累赘。几乎每个星期都有公司因为员工变成敌人或带来麻烦而受害。7月20日，一家帮已婚人士寻求婚外情的网站Ashley Madison宣称遭到黑客攻击。公司首席执行官诺埃尔·彼得曼（Noel Biderman）表示，他认为这次攻击是“内部所为”。7月6日汇丰银行开除了一群员工，因为公司发现他们自拍搞笑视频模仿“伊斯兰国（ISIS）式斩首”，其中一位亚洲职员身穿橙色囚衣。

内部敌人最常见的类型是骗子。《经济学人》的姊妹机构经济学人智库（the Economist Intelligence Unit）以内部人员欺诈行为为主题，对高管开展定期调查。2013年的调查发现约有70%的公司曾经被骗至少一次，比之前调查显示的61%有所上升。欺诈常是小打小闹：2010年舆观（YouGov）对其英国员工的调查发现，有资格报销费用的员工中有四分之一承认自己夸大了报销数额。但是欺诈也可能更加胆大妄为，造成更大的危害，例如前雇员用盗取的技术和偷来的客户名单成立竞争公司。

比骗子更危险的是蓄意破坏者。贼至少还有理性的动机，但蓄意破坏者一心报复，毫无底线。专注于企业调研的公司K2情报（K2 Intelligence）的大卫·罗伯森（David Robertson）描述了一家正在重组的英国制造公司内发生的故事。IT部门的一名员工发现他的名字在裁员名单上，于是设计了一个从自己家里电脑进入公司IT系统的“后门”，开始进行破坏：删除文档、将首席执行官的电子邮件公开，还发布色情图片。

有些内部敌人起初是明星员工。近年来最恶劣的公司丑闻有相当数量是杰出人士所为，为了取悦老板，他们肆意歪曲并违反规则。已经倒闭的英国投资银行巴林银行（Barings）曾对尼克·里森（Nick Leeson）赞誉有加，直到发现他有惊人的成果原来是因为未经授权冒了惊人的风险。

另一些内部敌人则恰恰相反，绝非飞黄腾达之辈。一些低级雇员有意或无意地利用互联网的力量诋毁雇主的声誉，汇丰行刑队只是最近的一个例子。2009年4月，连锁快餐店达美乐比萨（Domino's）的两名员工发布了自己"虐待外卖食品"的视频。2012年7月，汉堡王（Burger King）的一位员工将几张自拍照发到网上，照片里他穿着脏兮兮的鞋子，踩在一大桶生菜上，配上说明："这就是你们在汉堡王吃的生菜。"

外人想要破坏一家公司最有效的方法之一就是与内部人士里应外合。这种手段有时可能相当原始：贿赂清洁工把键盘换成精心改装过的类似物件，或者把U盘换成装满病毒的翻版。但通常情况下会更复杂。近年来企业遭受的最严重的灾难中有很多可能牵涉到与竞争对手勾结。安保专家怀疑2013年从美国零售连锁塔吉特（Target）盗取约四千万顾客个人信息的黑客可能有内鬼帮忙（对此该公司拒绝置评）。

公司要怎样做才能减少这些披着羊皮的狼带来的威胁？主要取决于你要应对的具体是哪种狼，例如对蓄意破坏者有效的陷阱可能对骗子无效。即便是管理最佳的公司也在打一场硬仗。信息越来越难控制，一个U盘能储存的数据超过5亿张打印稿。手机也可能被黑，成为窃听设备。在熙熙攘攘的地方，人们经常用电子设备登入网络，他们可能被监视、偷拍或遭黑客侵入。

第五纵队，三大原则

有三大戒律值得铭记于心。首先，公司需要关注那些最有能力造成危害的人，即管控资金和信息的人。公司变得越复杂，就越难确定权力究竟由谁掌控。但有一点很清楚，那便是公司越依赖信息，IT专家就越可能危及整个业务。公司至少应该密切注意IT部门，而且如果你打算炒掉该团队的某个人，务必速战速决。

第二，要加强监管，人际接触依然是无价之宝。公司当然可以安装识别异常行为或监控电子邮件的软件，或者雇用法务会计师复核账目，但流氓通常会比他们的雇主快上一步：一旦觉得自己的电子邮件被监视，他们就会转为发短信。公司通过倾听内部八卦可能会更有作为。负责企业安保的公

司让“间谍”在吸烟室周围晃荡，或者下班后去喝一杯，有时会拿到最好的信息。

对抗内部敌人的最佳方式是尊重你的员工，而这第三条原则很多公司都没有做到。它们可能会信奉这样的说辞：没有什么比员工更重要。但事实上，太多员工觉得什么都比自己重要。咨询公司埃森哲（Accenture）最近的一次调查显示，31%的雇员不喜欢自己的老板，32%正在积极地找新工作，43%觉得他们的工作没有得到一点认可。想要以更少的人力做更多的工作，面临的最大问题是最后你可能把你的羊变成了狼——你最大的资源变成了最大的累赘。■

European business and climate change

Walking the walk

Firms increasingly believe that saving the planet is good for business

SIX big European oil and gas firms called on June 1st for a globally co-ordinated price on carbon-dioxide emissions, to restrain the impact on the climate of burning fossil fuels. It was a bombshell, in its way. Five years ago no one would have expected the move: as producers of much of the world's dirty fuels, their industry was disinclined to join forces and advocate accelerating the switch to cleaner ones. "It is a sort of revolution," says Patrick Pouyanné, the boss of one of the six, Total. And it is not just the energy firms. As world leaders prepare to meet in Paris in December to produce an agreement on reducing greenhouse-gas emissions, attitudes towards climate change have altered profoundly among businesses of all kinds.

In 2009, when a global conference in Copenhagen failed to come up with a new agreement to replace the Kyoto protocol, many businessmen were not much worried about either the failure or global warming itself. They saw Europe's host of related regulations—along with a carbon-trading system of limited impact—as little more than a burden on firms' competitiveness. Three things have changed.

First, the price of renewable sources of energy—especially solar—has dropped dramatically, and their share in power generation is growing. Second, consumers care more about climate change than before. And third, investors—especially long-term ones such as pension funds—have woken up to the risks of owning firms with assets and business models likely to decrease in value as the world "decarbonises". Some are beginning to divest from the dirtiest fuels, such as coal (see next article), to invest in cleaner ones and to press for greener policies all round. "The cost of not doing

things is starting to be higher than the cost of doing them," says Paul Polman, chief executive of Unilever, an Anglo-Dutch consumer-products maker. "Our motives are not exactly altruistic," admits another European boss. "Our clients and stakeholders demand such initiatives."

All sorts of firms are changing their inputs and processes and designing products that spare the environment, while helping suppliers do the same. L'Oréal, a French cosmetics-maker, says its CO2 emissions fell by 50% between 2005 and 2014, even as its output rose by 22%. Its target for 2020 is a 60% reduction. To avoid contributing to deforestation, Unilever already buys all its palm oil (of which it is one of the world's biggest users) through an audited sustainability scheme, and by 2020 it plans to buy it from certified and traceable sources.

IKEA, a Swedish retailer, will have invested or committed to invest €1.5 billion ($1.7 billion) in wind and solar power by the end of 2015, and the firm and its charitable foundation have just pledged a further €1 billion to developing renewable energy and to helping people in places affected by climate change. In Italy 54% of medium-sized manufacturers interviewed by Mediobanca, an investment bank, and local chambers of commerce, said they were investing in green technologies in 2015, compared with 37% in 2010.

A big German energy utility, E.ON, is hiving off its renewables business from its old power-generation business to focus on the former. Enel, Italy's largest utility, has pledged to halt all new investments in coal, decommission fossil-fuel-powered plants in Italy and work towards carbon neutrality by 2050. Renault and BMW have been enthusiastic in promoting electric cars.

Kering, a French luxury-goods group, has pioneered an environmental profit-and-loss account to measure the impact of its business across its

entire supply chain. Sodexo, a French catering company, reckons that over half of the 34% of emissions the firm has pledged to cut by 2020 will come from its suppliers. Many businesses now use a shadow carbon price internally when allocating capital, to judge whether an investment will still make sense if and when carbon is dearer.

Firms say that besides savings from greater energy efficiency they gain less quantifiable benefits from an enhanced reputation, a motivated workforce and the like. But big, disruptive investments in new energy sources or industrial techniques may take years to justify their costs, if they ever do. Is greenery paying off?

Yes, broadly, argues Paul Simpson, the boss of CDP, a research outfit that collects environmental data on more than 5,000 firms worldwide. Those with published targets for cutting their CO2 emissions are more profitable, delivering a return on invested capital of 9.9%, compared with 9.2% for those with no targets, according to research published by CDP in May. The Low-Carbon 100 Europe index compiled by Euronext, a stock exchange, which includes the European firms with the lowest CO2 emissions in their respective industries, has risen by 60% since the end of 2010. This compares with a 45% rise in the broader STOXX Europe 600 index, from which its components were selected.

> *Green because good, not vice versa*

However, it could just as well be that green firms are more profitable not because they are green, but because they happen to be better run; and that their shares perform better because investors see greenness simply as a proxy for good management. The six European energy firms calling for an effective carbon price acknowledge that if the Paris conference succeeds in agreeing on one, it will add to their costs.

But at least, they said, it would provide a “clear road map” for their future

investment. The six are heavy on gas—it now accounts for around half of Total's output, for example, up from 35% ten years ago. So they are hoping that carbon-pricing would lead to a switch from coal to gas—which they say produces half as much CO2 as coal, for each unit of electricity generated from burning it. The overall impact of all this on profits would not be known for years, says Mr Pouyanné. But, like others in Europe's boardrooms, he has concluded there is no choice in the matter. ■

欧洲企业和气候变化

说做就做

企业越来越相信保护地球对生意有好处

欧洲六家大型石油天然气公司在6月1日发出号召，呼吁全球统一协调二氧化碳排放价格，以遏制燃烧化石燃料对气候的影响。某种程度上，这算是一则爆炸性的新闻。五年前，不会有人预想到它们会有这种举动。作为世界上绝大部分不洁燃料的生产商，他们当然不愿联合起来，倡导转向清洁能源。道达尔（Total）也在这六家公司之中，它的首席执行官帕特里克·博扬内（Patrick Pouyanné）说："这在某种意义上是一场革命。"采取行动的不只是能源公司。随着各国领袖准备于12月在巴黎举行的会议上签署协议减少温室气体排放，各行各业对气候变化的态度已经发生了深刻的变化。

2009年，当哥本哈根世界气候大会未能形成新协定以取代京都议定书时，很多商界人士无论对这一结果或全球变暖本身都不太关心。他们认为欧洲一系列相关法规以及影响力有限的碳交易体系不过是公司竞争力的一点小负担。但是自那以后，三件事情发生了变化。

第一，可再生能源特别是太阳能的价格已经大幅下降，在能源生产中的比重不断上升。第二，消费者比以往任何时候都更关注气候变化。第三，投资者，尤其是像养老基金这样的长期投资者，已经认识到所持有公司的资产和经营模式的价值有随着整个世界"去碳化"趋势而不断缩水的风险。他们当中的一些人已经开始将投资从煤炭等最肮脏的能源中抽离出来，转向更清洁的能源并迫切要求全方位的绿色政策。英荷合资的日用消费品制造商联合利华的首席执行官保罗•波尔曼（Paul Polman）说道："不作为的代价已经开始超过有所作为的代价了。"另外一位欧洲首席执行官承认："我们的动机并非毫无私心，我们的客户和股东要求我们采取这类举措。"

来自各个行业的公司都在变革他们的投入及生产流程，设计能够保护环境的产品，同时帮助供货商做同样的事情。法国化妆品制造商欧莱雅表示，

公司在2005到2014年间产量增加22%的同时，二氧化碳排放下降了50%。它的目标是到2020年减少60%的碳排放。为了避免加剧滥伐森林，联合利华已经通过一项经审计的可持续发展计划，用以采购所需的全部棕榈油（联合利华是全球棕榈油最大消费者之一），公司计划到2020年实现从获得认证的可追溯源头采购棕榈油。

到2015年底，瑞典零售商宜家开发风能和太阳能的投资额或承诺投资额总共将达到15亿欧元（17亿美元）。公司及其慈善基金刚刚做出承诺，将会追加10亿欧元的投资，开发可再生能源及帮助受气候变化影响的人们。在意大利，根据米兰投资银行（Mediobanca）和当地商会对中型制造企业的调查，54%的企业都表示他们在2015年投资了绿色科技，而2010年这一比例仅是37%。

德国大型能源公司意昂集团（E.ON）正在把它的可再生能源业务从旧的发电业务中剥离出来，主要专注于前者的经营。意大利最大的能源生产企业意大利国家电力公司（ENEL）承诺将会停止在煤炭方面追加新投资，关停其意大利境内所有燃烧化石燃料的发电厂，并力争到2050年实现碳中和。雷诺和宝马都对推广电动汽车兴趣浓厚。

法国奢侈品集团开云（Kering）开创了一个环境损益账户，用来衡量其业务对整个供应链的影响。法国餐饮公司索迪斯（Sodexo）承诺到2020年前削减其排放量的34%，并推算其中一半以上的减排将来自其供应商。现在许多公司在配置资本时，都在内部使用碳排放影子价格，以此判断如果碳排放更贵时某项投资是否仍有意义。

企业认为，除了提高能效带来的节余之外，他们还获得了不太可量化的好处，如声誉提高、员工更积极主动等等。但是，对新能源或工业技术的大笔颠覆性投资即便成本合理，也可能需要数年才能证明。环保能否取得回报？

广义上说，会的，调查机构CDP的老板保罗·辛普森（Paul Simpson）这样认为。CDP收集全球5000多家公司的环境数据。它5月公布的一项调查

显示，那些公布了削减二氧化碳排放量目标的公司盈利更多，已投资资本的回报率达9.9%，而没有这类目标的公司回报率为9.2%。由一家名为泛欧（Euronext）的证券交易所推出的低碳100欧洲指数（Low-Carbon 100 Europe index）包括了在各个行业里二氧化碳排放量最低的欧洲公司。该指数自2010年底以来已上升了60%。低碳100欧洲指数中的公司选自范围更广的欧洲斯托克600指数（STOXX Europe 600 Index），相比之下欧洲斯托克600指数只上涨了45%。

> *因为好才绿色，反之则不然*

不过，也有可能这些绿色公司的盈利更多并非因为它们环保，而是碰巧管理更佳，它们的股票表现更好是由于投资者简单地将环保视作管理水平高的代名词。六家欧洲能源公司之所以呼吁更有效的碳价格，是因为如果巴黎会议顺利达成协议定下价格，将会增加它们的成本。

但这些公司说，至少这为它们未来的投资提供了“清晰的路线图”。这六家公司的天然气业务庞大，例如，天然气如今约占道达尔产出的一半，而十年前只有35%。因此它们希望碳定价能带来由煤炭到天然气的转变，它们称天然气发一度电所产生的二氧化碳排放只有煤炭的一半。博扬内说，所有这些对利润的整体影响可能数年后才能知晓。但是，和欧洲其他公司的董事们一样，他的结论是在这件事情上没有选择的余地。■

Renewable energy

Banishing the clouds

To threaten fossil fuels, solar power must solve its intermittency problem

HOW far renewable energy can develop without further subsidy is one of the world's hottest questions. It will surely need to become a lot more economic if the world is to stop using fossil fuels by 2100, as rich-world leaders promised at the G7 summit in Germany in June.

Transforming the promising niche business of renewable energy into the engine of the world's economy is a daunting task. Hydroelectric generation can produce lots of power at low cost, but room for growth is constrained by environmental objections and a lack of dammable valleys in the right places. Tidal power is too untried, and so far looks too costly. Biomass (such as wood), like biofuels, will require a great deal of land to produce much energy.

Some see these drawbacks as a reason to plump for nuclear power, though its cost overruns make it unattractive. Others focus, therefore, on the two forms of renewable energy generation that have done best in recent years, solar and wind power. Growth rates are impressive—solar-energy generation grew by 38.2% last year, reckon statisticians at BP, an oil firm whose annual energy review came out in June. But the growth is from a very small base. Solar, wind and the like met 0.9% of global energy use a decade ago; that has risen to 3% now and will reach 8% by 2035, BP thinks.

To make that picture brighter, costs will have to plummet. Wind offers less scope for this (bigger windmills are more efficient, but costly to make and build). Solar is what most cheers the optimists. It can work at any scale from a modest panel placed on the roof of a house to a giant array. The plunge in costs in previous years (see chart) seems broadly to be

continuing. Steve O'Neill of REC, a maker of solar systems, says his costs are falling by 1% a month, thanks to cheaper ways of making silicon wafers and to economies of scale. The circuitry that goes with solar panels, and the cost of installation, are also getting cheaper. Consultants at McKinsey say the cost of installing a watt of solar generating capacity could halve over the next five years.

Solar is no longer just a creature of subsidies (such as the 30% investment-tax credit it gets in America, along with the right to feed spare power back into the grid at the retail price). In the sunniest parts of the world it competes well with natural gas, even where that fuel is very cheap.

But the cost of solar power is not just about the systems that households and businesses install. On cloudy days and at night, they need power from elsewhere: either from storage of some sort, or from the grid. But who is to pay for it? Backup generation, and the grid infrastructure across which it flows, become increasingly uneconomic as consumers generate more of their own power (and thus pay less to other providers). A recent report from the Massachusetts Institute of Technology notes that solar power's success therefore risks being self-limiting.

Better and cheaper batteries are one answer: surplus solar power generated while the sun shines can be drawn down when it is dark. But there is some way to go on this. Even the largest of the new generation of battery kits, the much-trumpeted Tesla Powerwall, costs $7,140 to install and stores only ten kilowatt-hours—not nearly enough to heat or cool a typical home.

Another option is thermal storage: using surplus power to heat or freeze water, which can then be used to warm or cool a building when needed. This is cost-effective, but only a partial solution. The stored energy cannot be easily transported, and heating and cooling are only part of consumers' power needs.

The real solution to intermittent power generation (whether solar or wind) is bigger and more flexible grids, with interconnections that cross corporate and international boundaries. The bigger the geographical area a power network covers, the greater the chance that sun or wind electricity generated in one place can be matched with demand elsewhere (though there would still need to be substantial spare capacity). But incumbent power companies may balk at investments that erode their pricing power.

There are parallels between the disruption that solar power threatens to cause in the electricity industry and the upheaval that America's shale drillers have already brought about in the fossil-fuel business. A study by Wood Mackenzie, a consulting firm, says solar's impact could indeed be "comparable" to that of shale gas.

But this very abundance of gas in North America—and perhaps elsewhere one day, if fracking gets cracking—means that except in the sunniest climes, solar power will face stiff competition from gas-fired power stations. Wood Mackenzie reckons that the unsubsidised capital cost of small-scale residential solar capacity will still be twice as costly as modern gas-powered generation by 2030. Larger, utility-scale solar arrays will be competitive by 2025, however.

Solar power has so far confounded its doubters. And whereas the cost of oil and gas can go up as well as down, solar's cost will only keep falling. But for it to keep increasing its share of electricity generation without causing a collapse in power markets, let alone for it to banish fossil fuels altogether, there will need to be significant progress in energy storage, and in building grids better suited to a world of intermittent sources of power. ■

可再生能源

拨云见日

若要对化石燃料形成威胁，太阳能必须解决它断续发电的问题

在没有进一步补贴的情况下可再生能源能发展到什么地步，这是全球最热点问题之一。如果要像富裕国家领袖6月在德国的G7峰会上所承诺的，全世界在2100年前要停用化石燃料，那么可再生能源必须变得比如今经济得多。

要把可再生能源这一颇具前景的利基产业变成世界经济的引擎是一项艰巨的任务。水力发电能够以低成本大量发电，但环保方面的反对声以及缺少可在适宜地点建造大坝的山谷都限制了它的成长空间。对潮汐发电的尝试还过少，目前看来也太过昂贵。像生物燃料这样的生物质能（如木头）需要大片土地才能生成大量能源。

因为这些限制，一些人认为应该选择核能，尽管成本超支令它失去了吸引力。另一些人因而把目光聚焦于在近年表现最佳的两种可再生能源：太阳能和风能。它们的增长速度很可观。英国石油公司（BP）6月发布了年度能源报告，其统计师估算太阳能发电去年增长了38.2%。不过这一增长的基数很小。十年前，全球使用的能源中0.9%是太阳能和风能这类可再生能源，目前这一比例已上升到3%，而英国石油公司认为到2035年将达到8%。

要让这一前景更可能实现，必须大幅削减成本。风力发电较难做到这一点（更大型的风力发电机更为高效，但造价昂贵）。太阳能是最让乐观主义者振奋的选择。从屋顶上的小块太阳能板，到巨大的太阳能板阵列，它能以任何规模运作。看起来前些年太阳能发电成本的大跌（见图表）基本上还会持续。太阳能系统制造商REC的史蒂夫·奥尼尔（Steve O'Neill）说，受益于更廉价的硅晶制造方法以及规模经济，他的生产成本每月下跌1%。太阳能板的电路系统和安装也在变得便宜。麦肯锡的咨询师说，未来五年里，安装一瓦特太阳能发电容量的成本可能减半。

太阳能已经不再只靠补贴维持（比如它在美国享有30%的投资税减免，以及能以零售价格把多余的电回售给电网），在地球上阳光最充沛的地方，它已经能和天然气一战高下，即使是那些天然气非常便宜的地区。

但是，太阳能的成本并不只是家庭和企业安装发电系统的成本。在阴天和夜间，这些用户需要来自其他地方的电力，或者来自某种形式的蓄电，或者直接来自电网。但谁来为这种间歇需求买单？随着消费者自己发电越来越多（因而支付给其他供电商的钱减少），后备发电以及这些备用电量流经的电网设施变得日益不经济。麻省理工学院近日的一份报告因此指出，太阳能发电的成功可能自我设限。

答案之一是依赖更好更便宜的电池：在阳光普照时生成的盈余电力存储到天黑后再使用。不过，在这方面还有一段路要走。即使是新一代电池组中最大型的、备受吹捧的特斯拉家用电力存储系统Powerwall，安装费用为7140美元，但仅能存储10度电，远不够为一个典型的住户供应冷暖气。

另一个选择是蓄热：用多余的电来加热或冷却水，然后在需要时拿来给一栋建筑物供应冷暖气。这很高效划算，但只是部分解决方案。蓄热难以被运输到其他地点，而冷暖气只是消费者电力需求的一部分。

对于断断续续的发电（不论是太阳能还是风能），真正的解决方案是更大更灵活的电网，实现跨企业和跨国界的互联。一个发电网络覆盖的地理面积越大，在一处生成的太阳能或风力发电越有可能用来匹配另一处的用电需求（虽然仍然需要充裕的备用产能）。不过，既有电力企业可能会对削弱自身定价权的投资项目犹豫不决。

美国的页岩气开采商已经给化石燃料产业带来了强震，这和太阳能可能给电力产业带来的颠覆具有相似性。咨询公司Wood Mackenzie的一项研究称，太阳能的冲击力或许确实能“比得上”页岩气的影响。

不过，北美地区页岩气的充足（可能有朝一日在其他地区也会如此，如果这些地方开始压裂采气的话）意味着除了日照最多的地区，太阳能将面对来自燃气发电站的激烈竞争。Wood Mackenzie估计，到2030年，小型居

家太阳能发电不计入补助的投资成本仍将是现代燃气发电的两倍。不过，更大型的、公用事业规模的太阳能板阵列到2025年会变得很有竞争力。

太阳能已经震慑了它的质疑者。而虽然油气的价格时升时降，太阳能的成本只会不断下跌。不过，如果太阳能要继续增加在发电中的占比却不引发电力市场崩溃，那么在蓄电和建造更适应断续发电的电网上都需要有重大进展——更不用说要把化石燃料完全踢出局了。■

Schumpeter

A very British business

Some lessons from the success of Britain's elite private schools

THEY are known, quaintly, as "public schools", though they are certainly not open to just anyone. Their names—Eton, Winchester, Harrow, Fettes—conjure up images of striped blazers and straw boaters, speech days and rugger matches. Be not deceived: for all their whimsiness, these are some of the world's most ruthless businesses. Britain's elite private schools are service-industry superpowers. They have increased their fees threefold in real terms since 1980 but still have parents beating at their doors. They have become thoroughly global: more than a third of their boarding pupils are foreign and the schools have established campuses in far-flung places such as Almaty, Kazakhstan (Haileybury) and Bangkok (Harrow) as well as more obvious ones like Singapore and Beijing.

The secret of their success is simple: they provide a first-class academic education, and a ticket to the best universities, in an age when the rewards for academic success are rising. Their exam results far outstrip those of state schools (though there is a debate over how much this is because of the selectivity of their intake). They bag two-fifths of the undergraduate places at Oxford and Cambridge, despite educating just 7% of children in Britain.

As David Turner writes in a new book, "The Old Boys", the private schools have engineered a turnaround comparable with anything seen in other businesses, albeit played out over decades. In 1945, a year after Britain introduced universal, free secondary schooling, the headmaster of Winchester, Canon Spencer Leeson, worried that parents would no longer pay fees when they "can get state-aided education of a rapidly improving quality…for nothing or next to nothing". In the egalitarian post-war mood, the private schools seemed like vestiges of an age of snobbery and privilege,

surely on their way to extinction.

From then on they had to compete with booming "grammar schools"—academically selective, state-funded institutions. After a slow start, the private schools responded to this new competition by raising their standards. And then, in the 1970s, just as they had pulled up their socks, the government kindly took the competition away, by forcing most of the grammar schools to become mixed-ability "comprehensives". (A few rebelled, and joined the ranks of the private schools instead.)

The publication of league tables of schools' exam results, from the early 1990s, provided another impetus for private schools to improve their performance, relative both to state schools and to each other. Many responded by systematically weeding out their weaker teachers. The turnaround has been especially dramatic in two areas. The private schools once disparaged science as "stinks and bangs"; and failed to lift girls' aspirations the way they did boys'. Today they are science powerhouses, and the proportion of private-school girls going on to university has risen from 9% in 1961 to 92% today.

Three management lessons can be drawn from the private schools' revival. The first is that "tradition" and "innovation" need not be mutually exclusive. The private schools have become slick at exploiting such things as their famous old boys (Shrewsbury school has a statue of Charles Darwin) to market themselves, even as they have modernised their curriculums. Like other durable institutions, they survive by constantly reinventing themselves. Eton's oldest classroom, which has been in continuous use since the 15th century, is now used, among other things, for Japanese lessons. Britain does not have a monopoly in such institutional reinvention: America's Ivy League universities have transformed themselves from bastions of WASP privilege (Princeton rejected a student simply for being black in 1939) into champions of multiculturalism. But it

is certainly very good at it: Ascot and Wimbledon have retooled themselves smoothly for the age of corporate hospitality and global money.

A second lesson is that competition, when combined with independent standard-setting and performance-measurement, can work wonders. For most of their history the private schools coasted along on snob appeal. The introduction of league tables forced them to prove that they delivered results. American Ivy League universities have likewise been prevented from resting on their laurels by the *US News and World Report* rankings. Business schools have been compelled to be a little more businesslike by the proliferation of MBA rankings.

The third insight is that insiders can make the best revolutionaries. The heads of the private schools were often men who had spent most of their lives inside them, except for a brief spell at university. But they nevertheless spotted a big business opportunity, from the 1980s, as the market for secondary education globalised along with everything else. British private schools have two advantages in this market: they teach in the world's de facto business language; and many are within striking distance of London, one of the world's great global cities. To some extent they are peddling old-fashioned snob appeal, but the schools' heads have grasped that the super-rich will only pay for snobbery if it is packaged with academic results: they want their children to mingle with the "right sort", but also want them to go on to Oxbridge.

Pay up, and play the game

Remarkable as their reinvention and revival have been, there is a risk that British private schools will become victims of their own success. Having raised their fees to such eye-watering levels (Eton charges more than £30,000 a year) and opened their doors to the children of the super-wealthy global elite, how can they continue to justify their charitable status and its accompanying tax breaks? And can they still claim to offer a traditional

British education when their classes are increasingly stuffed with the offspring of Russian oligarchs and Asian crony capitalists? The turnaround in Britain's private schools has required great business skill. Maintaining their success will require even greater acumen. ■

熊彼特

这门生意，纯正英国范儿

英国精英私立学校的成功带给我们的启示

很奇怪，它们被称作“公学”，尽管它们绝不是对任何人都敞开校门。它们的大名——伊顿（Eton）、温彻斯特（Winchester）、哈罗（Harrow）、费蒂斯（Fettes）——让人联想起条纹运动夹克、藤编平顶帽、授奖演讲日和英式橄榄球比赛。别被蒙蔽了：虽有无数奇思妙想，但它们是世界上最冷酷无情的企业。英国的私立精英学校是服务业的超级大国。按实值计算，1980年以来它们已将学费上涨了三倍，但家长们仍趋之若鹜。它们已经彻底全球化：三分之一的住读生来自国外，从偏远如哈萨克斯坦的阿拉木图（Almaty）（黑利伯瑞[Haileybury]），到曼谷（哈罗），再到更广为人知的地方如新加坡和北京，都建有分校。

成功的秘诀很简单：在学业成功的回报正在上升的时代，它们提供一流的学业教育，还有进入最好大学的门票。它们的考试成绩远超公立学校（虽然这在多大程度上应当归功于它们招生时的精挑细选还有争议）。尽管只有7%的英国孩子在这些学校接受教育，但他们包揽了牛津和剑桥五分之二的本科生席位。

正如大卫·特纳（David Turner）在新书《校友们》（The Old Boys）中所写，私立学校还是打了一场翻身仗，比得上其他行业的任何例子，尽管过程耗时几十年。1945年，即英国实施全面义务中学教育一年后，温彻斯特公学校长卡农·斯宾塞·利森（Canon Spencer Leeson）担心一旦“能获得政府资助的、质量迅速提升的教育，且是免费或几乎免费”，家长们将不会再付费上私立学校。战后平等主义的风潮下，私立学校似乎是一个势利和特权时代的遗毒，当然要走向灭亡。

从那时起，它们不得不与蓬勃发展的“文法学校”竞争，后者根据学业选拔招生，由国家资助。度过缓慢的起步阶段之后，私立学校决心通过提升标准来应对这场新竞赛。然而到了上世纪70年代，正当它们卷起袖子准备奋

起直追时，政府好意取消了竞赛，强迫大部分文法学校转为学生水平参差不齐的“综合学校”。（少数文法学校反抗，继而加入了私立学校的行列。）

上世纪90年代初，学校考试成绩排名开始公开发布，为私立学校提供了又一个动力来提高相对于公立学校和其他学校的表现。许多私立学校应对的方式是有组织地淘汰能力较弱的教师。形势在两个方面有了巨大的转变：私立学校以前蔑视理科，认为它“又脏又危险”，而且不像鼓励男生那样鼓励女生树立远大抱负。但今天的私立学校是理科强国，私立学校女生进入大学的比例从1961年的9%升至今天的92%。

从私立学校的复兴中可以总结出三条管理经验。第一是“传统”和“创新”无须相互排斥。私立学校在利用著名校友推销自己时手法娴熟（什鲁斯伯里学校[Shrewsbury school]为达尔文立了一座雕像），即使它们的课程设置已经现代化。像其他历久弥新的机构一样，它们通过不断重塑自己得以幸存。伊顿最古老的教室自15世纪以来一直在使用，现在的用途之一是上日语课。这样的机构再造并非英国独有，美国的常春藤联盟高校也把自己从享有精英群体（WASP）特权的堡垒（1939年普林斯顿大学曾拒收一名学生，只因他是黑人）变成了多元文化主义的捍卫者。但英国私立学校当然深谙此道：在这个殷勤待客、全球赚钱的时代，阿斯科特（Ascot）和温布尔顿（Wimbledon）已经顺利重装上阵。

第二条经验是，竞争加上独立的标准制定和绩效评估，能够创造奇迹。历史上大部分时间里，依靠对附庸风雅者的吸引力，私立学校一直顺风顺水。排名的引入迫使它们证明自己有拿得出手的成绩。同样，《美国新闻与世界报道》的大学排名也防止了美国常春藤联盟高校躺在功劳簿上止步不前。在MBA排名激增的情况下，商学院被迫表现得更加认真高效、管理得当。

第三条经验是内部人士能成为最好的革命家。除了上大学，私立学校的校长常常大半辈子都待在学校。尽管如此，他们仍发现了一个巨大商机，那就是自上世纪80年代起中等教育市场和所有其他事务一样走向了全球化。

英国私立学校在这个市场上有两大优势：它们的教学语言英语是事实上的世界商业语言；很多学校离国际大都市伦敦近在咫尺。一定程度上，它们还在兜售对附庸风雅的老派客户的吸引力。不过学校校长抓住了重点，超级富豪只会为有学业成绩包装的风雅买单：他们希望孩子跟“正确的人”相交往，但也希望孩子能上牛津剑桥。

付清学费，再继续游戏

尽管重铸和复兴不同凡响，英国私立学校仍有风险成为自身成功的牺牲品。学费已经涨到令人咂舌的程度（伊顿每年收费3万英镑），并且向全球精英富豪的孩子敞开了大门，它们怎么能继续证明自己慈善机构的地位正当有理，与之相伴的税收减免受之无愧？班上满是俄罗斯寡头和亚洲权贵资本家的后代，它们还能不能称自己提供的是传统英式教育？英国私立学校的翻身仗已经需要极高的商业才能，而维持它们的成功则需要更大的智慧。■

Universities

The world is going to university

More and more money is being spent on higher education. Too little is known about whether it is worth it

"AFTER God had carried us safe to New England, and we had builded our houses, provided necessaries for our livelihood, reared convenient places for God's worship and settled Civil Government, one of the next things we longed for and looked for was to advance learning and perpetuate it to posterity." So ran the first university fundraising brochure, sent from Harvard College to England in 1643 to drum up cash.

America's early and lasting enthusiasm for higher education has given it the biggest and best-funded system in the world. Hardly surprising, then, that other countries are emulating its model as they send ever more of their school-leavers to get a university education. But, as our special report argues, just as America's system is spreading, there are growing concerns about whether it is really worth the vast sums spent on it.

The American way

The modern research university, a marriage of the Oxbridge college and the German research institute, was invented in America, and has become the gold standard for the world. Mass higher education started in America in the 19th century, spread to Europe and East Asia in the 20th and is now happening pretty much everywhere except sub-Saharan Africa. The global tertiary-enrolment ratio—the share of the student-age population at university—went up from 14% to 32% in the two decades to 2012; in that time, the number of countries with a ratio of more than half rose from five to 54. University enrolment is growing faster even than demand for that ultimate consumer good, the car. The hunger for degrees is understandable: these days they are a requirement for a decent job and an

entry ticket to the middle class.

There are, broadly, two ways of satisfying this huge demand. One is the continental European approach of state funding and provision, in which most institutions have equal resources and status. The second is the more market-based American model, of mixed private-public funding and provision, with brilliant, well-funded institutions at the top and poorer ones at the bottom.

The world is moving in the American direction. More universities in more countries are charging students tuition fees. And as politicians realise that the "knowledge economy" requires top-flight research, public resources are being focused on a few privileged institutions and the competition to create world-class universities is intensifying.

In some ways, that is excellent. The best universities are responsible for many of the discoveries that have made the world a safer, richer and more interesting place. But costs are rising. OECD countries spend 1.6% of GDP on higher education, compared with 1.3% in 2000. If the American model continues to spread, that share will rise further. America spends 2.7% of its GDP on higher education.

If America were getting its money's worth from higher education, that would be fine. On the research side, it probably is. In 2014, 19 of the 20 universities in the world that produced the most highly cited research papers were American. But on the educational side, the picture is less clear. American graduates score poorly in international numeracy and literacy rankings, and are slipping. In a recent study of academic achievement, 45% of American students made no gains in their first two years of university. Meanwhile, tuition fees have nearly doubled, in real terms, in 20 years. Student debt, at nearly $1.2 trillion, has surpassed credit-card debt and car loans.

None of this means that going to university is a bad investment for a student. A bachelor's degree in America still yields, on average, a 15% return. But it is less clear whether the growing investment in tertiary education makes sense for society as a whole. If graduates earn more than non-graduates because their studies have made them more productive, then university education will boost economic growth and society should want more of it. Yet poor student scores suggest otherwise. So, too, does the testimony of employers. A recent study of recruitment by professional-services firms found that they took graduates from the most prestigious universities not because of what the candidates might have learned but because of those institutions' tough selection procedures. In short, students could be paying vast sums merely to go through a very elaborate sorting mechanism.

If America's universities are indeed poor value for money, why might that be? The main reason is that the market for higher education, like that for health care, does not work well. The government rewards universities for research, so that is what professors concentrate on. Students are looking for a degree from an institution that will impress employers; employers are interested primarily in the selectivity of the institution a candidate has attended. Since the value of a degree from a selective institution depends on its scarcity, good universities have little incentive to produce more graduates. And, in the absence of a clear measure of educational output, price becomes a proxy for quality. By charging more, good universities gain both revenue and prestige.

What's it worth?

More information would make the higher-education market work better. Common tests, which students would sit alongside their final exams, could provide a comparable measure of universities' educational performance. Students would have a better idea of what was taught well where, and

employers of how much job candidates had learned. Resources would flow towards universities that were providing value for money and away from those that were not. Institutions would have an incentive to improve teaching and use technology to cut costs. Online courses, which have so far failed to realise their promise of revolutionising higher education, would begin to make a bigger impact. The government would have a better idea of whether society should be investing more or less in higher education.

Sceptics argue that university education is too complex to be measured in this way. Certainly, testing 22-year-olds is harder than testing 12-year-olds. Yet many disciplines contain a core of material that all graduates in that subject should know. More generally, universities should be able to show that they have taught their students to think critically.

Some governments and institutions are trying to shed light on educational outcomes. A few American state-university systems already administer a common test to graduates. Testing is spreading in Latin America. Most important, the OECD, whose PISA assessments of secondary education gave governments a jolt, is also having a go. It wants to test subject-knowledge and reasoning ability, starting with economics and engineering, and marking institutions as well as countries. Asian governments are keen, partly because they believe that a measure of the quality of their universities will help them in the market for international students; rich countries, which have more to lose and less to gain, are not. Without funding and participation from them, the effort will remain grounded.

Governments need to get behind these efforts. America's market-based system of well-funded, highly differentiated universities can be of huge benefit to society if students learn the right stuff. If not, a great deal of money will be wasted. ■

大学

全世界上大学

越来越多的钱用于高等教育，对此是否值得却知之甚少

“上帝将我们安全带到新英格兰之后，我们建造了房子，为我们的生活准备了必需品，为敬拜上帝建起便利之所，设立了公民政府，接下来我们渴望且寻求的事情之一就是促进学习，并且延泽子孙万代。”1643年由哈佛学院（Harvard College）发往英国募集经费的第一本大学筹款宣传册这样写道。

美国对高等教育先行一步且持之以恒的热情使其拥有全世界规模最大、资金最充裕的大学体系。所以其他国家纷纷效仿，将本国越来越多的中学毕业生送入大学也就不足为奇了。但随着美式大学教育体系的流传，对于投入如此巨大的资金是否值得，人们的担忧日增。

美国模式

由美国创造的现代研究型大学是牛津剑桥式大学与德国式研究所的合体，如今被全世界奉为圭臬。高等教育大众化始于19世纪的美国，20世纪扩展到欧洲和东亚，现已普及到除撒哈拉以南非洲地区之外的几乎所有地方。在20年里，全球大学入学率，即大学生占适龄人口的比例，从14%上升到2012年的32%；与此同时，大学入学率超过一半的国家从5个增至54个。这一速度甚至超过对最终消费品如汽车等的需求增长。对学位的渴望可以理解：当下这是拥有一份体面工作的必要条件，也是进入中产阶级的敲门砖。

广义上说，有两种模式能够满足如此巨大的需求。一种是欧洲大陆的模式，由国家提供资金，全国大部分院校资源均等，地位相同。另一种是更加市场化的美国模式，私人和公共资助并行，办学出色且资金充裕的院校位于顶层，资金匮乏的则处于底层。

世界正朝着美国模式前进，向学生收取学费的国家和大学正在增多。而

且，政治家们意识到“知识经济”需要顶级的研究，因此公共资源正向少数享有特权的机构集中，打造世界一流大学的竞争变得愈加激烈。

就某些方面而言，这样很好。正是有了最优秀大学的许多发现，这个世界才更加安全、富裕和有趣。但是成本在增加。经合组织国家在高等教育上的花费为GDP的1.6%，而在2000年为1.3%。如果美国模式继续扩展，这一比例还将上升。美国在高等教育上的投入为GDP的2.7%。

如果美国在高等教育上的投入物有所值，那也不错。在科研方面可能是这样。2014年，全世界发表的论文被引用次数最多的20所大学中有19所属于美国。但就教育而言，情况不甚清晰。美国大学毕业生在国际数学和读写能力排名中成绩堪忧，且仍在下滑。针对学业成绩的最新研究表明，45%的美国学生在大学头两年毫无收获。同时，按实值计算，学费在20年间增长了近一倍。学生贷款接近1.2万亿美元，超过了信用卡债务和车贷。

这并不是说上大学对学生来说是一项糟糕的投资。在美国，一个学士学位平均仍有15%的回报率。然而尚不太清楚就社会整体而言，对高等教育持续增长的投资是否合理。如果大学毕业生赚得比非大学毕业生多是因为大学学习让他们的生产效率更高，那么大学教育将促进经济增长，社会应当对此需求更大。但大学生成绩之差却表明事实正相反，雇主的评价也证实了这一点。针对专业服务公司招聘情况的一项最新研究发现，这些公司从最知名的学府录用毕业生并不是因为他们可能学到些什么，而是因为这些院校严格的选拔程序。简而言之，学生花费巨资可能只是为了通过一个非常复杂而精密的筛选机制。

如果对美国大学的投资的确不值，那么何以如此？主要原因是高等教育的市场运转不佳，正如医疗保健市场一样。政府奖励大学做研究，所以教授们亦专注于此。学生们在院校里所求的是一张能打动雇主的文凭，而雇主们感兴趣的主要是求职者毕业院校的选拔机制。既然一所精挑细选的院校的学位价值在于其稀缺性，那么优秀的大学自然没有动力去培养更多的毕业生。在对教育产出缺乏明确衡量标准的情况下，价格成了品质的代名词，因而更高的收费让好的大学名利双收。

价值何在？

更多信息能够让高等教育市场更好地运转。和期末考试并行的平时测验能够为大学教育水平提供可比较的衡量标准。学生们更清楚各学校哪些课程比较好，雇主对求职者学业如何也更心中有数。资源会流向物有所值的大学而远离其他的学校。各院校会有动力提升教学水平，使用技术来降低成本。网络课程迄今为止未能实现其改革高等教育的承诺，今后将开始产生更大的影响。政府对于社会应该更多还是更少地投资高等教育将有更清醒的认识。

怀疑论者认为大学教育太过复杂，无法以这种方式衡量。诚然，要测试22岁的成人比测试12岁的孩子更难，但是许多学科都有一些核心内容，凡是上过这门课的大学毕业生都应该掌握。推而广之，大学应当能够展示它们教会了学生批判性思考。

有些政府和机构试图阐明教育的产出。几个美国州立大学系统已经为毕业生组织了平时测验。测试也在拉丁美洲拓展开来。更重要的是，经合组织也在尝试，此前它针对中等教育所做的国际学生评估项目（Programme for International Student Assessment，PISA）震撼了各国政府。经合组织想要测试课程知识及推理能力，从经济学和工程学开始，给各个院校和国家评分。亚洲国家的政府非常热衷于此，部分原因是它们相信对大学质量的衡量会帮助自己在市场上赢得国际学生。富裕国家失大于得，因而兴味索然，然而没有它们的资金和参与，计划仍将搁浅。

各国政府要支持这些尝试。如果学生真正学有所得，那么美国这一以市场为基础、资金充裕、大学高度差别化的体系将对社会益处良多。如若不然，大量的资金将被浪费。■

Combating illegal fishing

Dragnet

A new satellite-based surveillance system will keep a sharp eye on those plundering the oceans

THE *Yongding* is something of a ghost ship, disappearing and changing her name many times, along with her flag of registration. The 62-metre vessel was last spotted on January 13th in a marine conservation area in the Southern Ocean, blatantly hauling up outlawed gill nets laden with toothfish, a catch so prized that it is known as "white gold". Interpol is seeking information about who operates the ship and profits from its activities, as well as those of two accompanying vessels, *Kunlun* (pictured, landing a toothfish) and *Songhua*. In the vastness of the open ocean, policing vessels like *Yongding*, *Kunlun* and *Songhua* is hard. But it is about to get easier—for with just a few mouse clicks a satellite-based monitoring system, unveiled this week, will be able to compile a dossier of evidence about even the most clandestine fishing operations.

The scale of illegal and unreported fishing is, for obvious reasons, difficult to estimate. The Pew Charitable Trusts, an American research group, has nevertheless had a stab at it. It reckons that around one fish in five sold in restaurants or shops has been caught outside the law. That may amount to 26m tonnes of them every year, worth more than $23 billion. This illegal trade, though not the only cause of overfishing, is an important one. Stamping it out would help those countries whose resources are being stolen. It would also help to conserve fish stocks, some of which are threatened with extinction. It might even (if the more apocalyptic claims of some ecologists are well founded) slow down the journey towards a wider extinction crisis in the oceans.

A global game of hide and seek

The new monitoring system has been developed by the Satellite Applications Catapult, a British government-backed innovation centre based at Harwell, near Oxford, in collaboration with Pew. In essence, it is a big-data project, pulling together and cross-checking information on tens of thousands of fishing boats operating around the world. At its heart is what its developers call a virtual watch room, which resembles the control centre for a space mission. A giant video wall displays a map of the world, showing clusters of lighted dots, each representing a fishing boat.

The data used to draw this map come from various sources, the most important of which are ships' automatic identification systems (AIS). These are like the transponders carried by aircraft. They broadcast a vessel's identity, position and other information to nearby ships and coastal stations, and also to satellites. An AIS is mandatory for all commercial vessels, fishing boats included, with a gross tonnage of more than 300. Such boats are also required, in many cases, to carry a second device, known as a VMS (vessel monitoring system). This transmits similar data directly to the authorities who control the waters in which the vessel is fishing, and carrying it is a condition of a boat's licence to fish there. Enforcement of the AIS regime is patchy, and captains do sometimes have what they feel is a legitimate reason for turning it off, in order not to alert other boats in the area to profitable shoals. But the VMS transmits only to officialdom, so there can be no excuse for disabling it. Switching off either system will alert the watch room to potential shenanigans.

The watch room first filters vessels it believes are fishing from others that are not. It does this by looking at, for example, which boats are in areas where fish congregate. It then tracks these boats using a series of algorithms that trigger an alert if, say, a vessel enters a marine conservation area and slows to fishing speed, or goes "dark" by turning off its identification systems. Operators can then zoom in on the vessel and

request further information to find out what is going on. Satellites armed with synthetic-aperture radar can detect a vessel's position regardless of weather conditions. This means that even if a ship has gone dark, its fishing pattern can be logged. Zigzagging, for example, suggests it is long-lining for tuna. When the weather is set fair, this radar information can be supplemented by high-resolution satellite photographs. Such images mean, for instance, that what purports to be a merchant ship can be fingered as a transshipment vessel by watching fishing boats transfer their illicit catch to it.

As powerful as the watch room is, though, its success will depend on governments, fishing authorities and industry adopting the technology and working together, says Commander Tony Long, a 27-year veteran of the Royal Navy who is the director of Pew's illegal-fishing project. Those authorities need to make sure AIS and VMS systems are not just fitted, but are used correctly and not tampered with. This should get easier as the cost of the technology falls.

Enforcing the use of an identification number that stays with a ship throughout its life, even if it changes hands or country of registration, is also necessary. An exemption for fishing boats ended in 2013, but the numbering is still not universally applied. Signatories to a treaty agreed in 2009, to make ports exert stricter controls on foreign-flagged fishing vessels, also need to act. Fishermen seek out ports with lax regulations to land illegal catches.

Preserving Nature's bounty

One of the most promising ideas for using the watch room is that shops could employ its findings to protect their supply chains, and thus their reputations for not handling what are, in effect, stolen goods. Governments sometimes have reason to drag their feet about enforcing fisheries rules. Supermarkets, though, will generally want to be seen as playing by them.

The watch room's developers say they are already in discussions with a large European supermarket group to do just this.

The watch room will also allow the effective monitoring of marine reserves around small island states that do not have the resources to do it for themselves. The first test of this approach could be to regulate a reserve of 836,000 square kilometres around the Pitcairn Islands group, a British territory in the middle of the South Pacific with only a few dozen inhabitants.

The Pitcairn reserve, which may be set up later this year, will be one of the world's largest marine sanctuaries. By proving that the watch room can keep an eye on such a remote site, its developers hope other places with similar requirements will be encouraged to get involved.

The watch-room system is, moreover, capable of enlargement as new information sources are developed. One such may be nanosats. These are satellites, a few centimetres across, that can be launched in swarms to increase the number of electronic eyes in the sky while simultaneously reducing costs. Closer to the surface, unmanned drones can do the same. The watch room, then, is a work in progress. But in the game of cat and mouse that enforcing fishing regulations has become, it will give the cat an important advantage. ■

打击非法捕捞

天网恢恢

一套新型卫星监测系统将密切关注海洋掠夺者

永定号像艘鬼船，数次失踪又屡屡更名，旗帜注册地也变幻莫测。这条62米长的船最近一次出现是在1月13日，它在南冰洋的一片海洋保护区明目张胆地把装满南极美露鳕的非法刺网拉上岸。这种鱼类非常珍贵，被称作“白色黄金”。国际刑警正在调查这艘船由谁运营，谁从捕捞行动中获利，也在搜集另两艘同行船只昆仑号（见上图，船员正将一条南极美露鳕拉上船）和松花号的相关信息。在辽阔的公开海域要监管如永定号、昆仑号和松花号这样的船舶非常困难。不过有了本周亮相的卫星监控系统，这会变得更容易，只需轻点几下鼠标，就能将最隐密的捕捞作业取证留档。

非法及未报告捕捞的规模难以估计，原因不言自明。不过美国研究集团皮尤慈善信托基金（Pew Charitable Trusts）还是尝试去估算。它认为餐馆或商店里售卖的每五条鱼中就有一条属于非法捕获。这意味着每年可能有2600万吨非法捕捞，价值超过230亿美元。这种非法交易尽管不是捕捞过度的唯一原因，但也是重要因素。杜绝这一行为能够帮助那些资源被盗的国家，也有助于保护鱼类种群，其中有些已濒临灭绝。有些生态学家更发出末日警示，如果他们的主张理由充分，那么禁止非法捕捞甚至可以减缓海洋物种更大程度灭绝的危机。

全球捉迷藏游戏

新型监控系统由卫星应用弹射中心（Satellite Applications Catapult）和皮尤慈善信托基金合作开发。前者是英国政府扶持的一家创新中心，位于牛津附近的哈维尔。该系统本质上是一个大数据项目，汇集全世界成千上万只渔船的作业信息并交叉核对。其核心被开发者称为虚拟监控室，类似航天任务的控制中心。一面巨大的视频墙显示着世界地图，上面有一群群亮点，每个点代表一艘渔船。

用来描绘这幅地图的数据来自多个数据源，其中最重要的是船舶自动识别

系统（AIS）。它们就像飞机上携带的应答器，把船名、船位和其他信息广播给附近水域的船舶、岸台及卫星。300总吨及以上的所有商用船，包括渔船，必须配备AIS。且很多情况下这类船只还要求配备另一套工具，即船舶监控系统（VMS）。它将类似数据直接发送给渔船所处海域的监管部门，而配备这一系统是渔船获准在这些海域捕捞的条件之一。AIS制度的实施尚不完善，而船长有时的确自认为有正当理由将其关闭——以免提醒该海域其他船舶这里有利润丰厚的鱼群。但是VMS只发送给官方管理部门，因此没有借口禁用它。关闭两套系统中任何一个都会提醒监控室可能有猫腻。

监控室首先会将它认定正在捕捞的船只筛选出来，例如，它可以监测哪些船只在鱼群聚集的海域游弋。然后它会使用一系列算法追踪这些船只，假如某条船进入海洋保护区并且减速至捕捞速度，或者关掉识别系统以图逃避监测，系统就会发出警报。操作者随后可以将该船只放大显示，并要求提供更多信息以查明实情。不管什么天气，载有合成孔径雷达的卫星都能探测到船只位置。这意味着即便某艘船躲起来，其捕捞模式也能被记录。比如，之字形航行说明是金枪鱼延绳钓船。如果天气晴朗，雷达信息还可辅有高分辨率卫星照片。如果照片显示渔船将非法捕获转移到声称是商船的船只，则可判定商船是转运船。

现任皮尤基金非法捕捞项目总监，27岁的英国皇家海军老兵托尼·龙（Tony Long）中校指出，尽管监控室非常强大，其成功仍然依赖于政府、渔业部门和业界是否采用该技术并齐心协力。渔业部门要确保船舶不仅安装了AIS和VMS系统，并且能正确使用且不篡改记录。随着这一技术成本的下降，实现这一点应该会更容易。

此外，还应为每艘船配备终生使用的识别码，不因转手或注册国信息更改而改变。对渔船的豁免规定于2013年终止，但给其编号仍未在全球范围内实施。2009年协议的签署国也需要在港口对悬挂外国国旗的捕捞船实行更为严格的监管。捕捞者常寻求监管松懈的港口将非法捕获卸下。

保护自然恩赐

使用监控室最有前景的创意是商店可以利用这些结果保护其供应链，确保自己不经手非法捕获，从而维护其声誉。有时政府有理由在渔业法规执行上踯躅不前，而超市一般更希望显得遵纪守法。监控室的开发者说他们已经在和欧洲一家大型超市集团就此进行商谈。

有些小岛国家没有资源监控周围的海洋自然保护区，监控室也能有效地做到。这一方式的初次尝试可以管理皮特凯恩群岛（Pitcairn Islands）周围83.6万平方公里的保护区，皮特凯恩群岛是英属领土，位于南太平洋中心，只有几十人居住。

皮特凯恩自然保护区可能在今年晚些时候建成，成为世界上最大的海洋保护区之一。通过证实监控室能够观测如此遥远的地方，开发者希望鼓励有类似要求的其他地方也积极参与。

并且，随着新信息源的开发应用，监控室系统也能够扩展。其中一个信息源来自微型卫星。这些只有几厘米大的卫星可以成群发射，增加天空中电子眼的数量，同时也降低了成本。在靠近海面的区域，无人机同样能做到这点。因而监控室仍处在不断开发阶段。但是既然执行渔业法规已经成为猫鼠游戏，它会给猫带来重要的优势。 ■

Cash for residency

Indecorous leave to remain

Schemes that offer residence permits to big investors usually disappoint

"CITIZENSHIP must not be up for sale," said Viviane Reding, then a vice-president of the European Commission, last year. Residency, it seems, is another matter. Though not as brazen as the small Caribbean states that sell foreigners passports for a few hundred thousand dollars, roughly half of the members of the European Union now offer long-term visas to big foreign investors. America has done so since 1990; Britain since 1994. In 2012 and 2013 Greece, Portugal, and Spain piled in, hoping to succour their sickly economies.

Such visas do not come cheap. Britain just raised its price: would-be residents must now invest £2m ($3.1m). The Portuguese government offers one of the least expensive schemes, but its cut-price offering still involves putting €500,000 ($560,000) into property (see chart).

Despite the steep price tag, demand has been surging, thanks in part to Chinese millionaires. So far, 80% of visas granted under Portugal's scheme have gone to applicants from China. In 2014 90% of American investor visas were awarded to Chinese, up from 19% a decade earlier. There have been more Chinese applicants to the American scheme than there are visas available for two years running.

For such investors, the value of these visas will doubtless have risen in tandem with fears about China's economy. They offer an easy way to move abroad, or at least to safeguard that option, should things go wrong at home. Countries in Europe's "Schengen area", such as Portugal, hold a particular allure, as residents can travel between them visa-free.

The countries dispensing the visas, in turn, hope the associated investment will help stimulate the economy. But the schemes tend not to be big enough to have a dramatic impact: America's, for instance, accounts for less than 2% of all visas and brings in perhaps $5 billion—a drop in an $18 trillion economy. Moreover, the schemes are often ill-designed. In Britain, participants can invest in government bonds. Given how cheaply the government can borrow at the moment, the benefits to the economy are minimal.

In America, Singapore and France, would-be residents must invest in the private sector, which should boost the economy more directly. But there is scant evidence on how much economic activity they actually generate. American investors are required to create at least ten jobs, but they need not be highly paid, or even permanent. Madeleine Sumption of the Migration Observatory at the University of Oxford is sceptical. "The concern is that the really productive investments might have been made anyway, and the scheme could encourage investment in low-productivity jobs purely to jump through the bureaucratic hoops," she says.

The Canadian government became so disenchanted with its investor-visa scheme that it cancelled it altogether. It found evidence that investor immigrants on average had worse language skills than refugees, paid around C$200,000 ($160,000) less in income taxes than a typical skilled worker over a 20-year period, and failed to bring much new money into the country. Earlier this year it piloted a new scheme, in which participants must pay into a venture-capital fund that invests in Canadian startups. In February the Australian government also changed its scheme, pushing participants towards equity investments in Australian companies, rather than government bonds. Immigrants and innovation often go hand-in-hand, after all. ■

现金换居留权

永居签证，有失规矩

针对大手笔投资者的居留计划往往令人失望

“公民身份不得出售。”时任欧盟委员会副主席的维维安·雷丁（Viviane Reding）去年这样说过。居留权则似乎是另一回事。虽不像某些加勒比小国那样公然以几十万美元的价格向外国人出售护照，如今欧盟还是有约半数的成员国向外国投资大户提供长期签证。美国从1990年开始这样做，英国则始自1994年。在2012至2013年间，希腊、葡萄牙、西班牙相继效法，期望藉此补贴羸弱的经济。

此类签证并不便宜。英国刚刚上调了价格：如今要取得永居权，必须投资两百万英镑（310万美元）。葡萄牙政府的永居权计划算是价格最低的之一，但仍需要投资50万欧元（56万美元）在房产上（见图表）。

尽管标价不菲，需求却仍一路攀升，这部分要归功于中国的百万富翁。迄今，葡萄牙投资居留权计划所发出的签证中，80%由中国申请人获得。2014年，美国的投资签证有90%授予了中国人，十年前这一比例为19%。美国该类签证计划的中国申请人数量已超出了两年内可发放签证的总数。

随着中国经济状况堪忧，在这些投资者看来，此类签证的价值无疑将上升。万一国内形势不妙，这些签证提供了移居海外的便捷途径，或者至少保留了这条后路。欧洲的“申根区”国家，如葡萄牙，独具吸引力，因为其居民可在申根各国免签通行。

发放签证的国家则希望随之而来的投资有助刺激经济。但这些计划一般不足以带来显著效果：以美国为例，投资签证占所有签证的不到2%，所带来的投资额约为50亿美元，相对于该国高达18万亿美元的GDP 来说可谓沧海一粟。同时，这些计划往往设想不周。在英国，参与者可投资政府债券。但想想目前英国国债融资成本之低，就可知这对经济的助益微乎其微。

在美国、新加坡及法国，意欲投资居留的人士必须向私营部门投资，这本可以更直接地推动经济，但鲜有证据显示这实际能催生多少经济活动。投资美国的人士必须至少创造十个就业机会，但不必是高薪工作，甚至不必是永久职位。牛津大学移民观察站（Migration Observatory at the University of Oxford）的马德琳·萨姆欣（Madeleine Sumption）对此表示怀疑。“令人担心的是，真正的生产性投资已经有人在做，这些移民计划反而会鼓励人们投资创造低生产力的工作，纯粹为应付手续走过场。”

加拿大政府对自己的投资签证计划信心尽失，已将其完全撤销。它发现，投资移民的语言能力一般要比难民移民差，在20年里缴纳的所得税比一名普通技术移民少20万加元（16万美元），而且无法为国家带来多少新的投资。今年年初，加拿大试行了一项新计划，参与者必须向投资加拿大创业公司的风投基金注入资本。2月份，澳大利亚政府也修改了此类计划，把参与者推向澳大利亚的企业股权投资，而非投向政府债券。毕竟，移民与创新往往密不可分。■

Capital flight from China

Flow dynamics

Lots of money is escaping China's porous capital controls

THE man who calls himself Jack is a caricature of a small-time gangster. Sporting a chunky Louis Vuitton belt, a gold necklace and gold-rimmed sunglasses, he chomps on a Cuban cigar. He says he has come to a pawnshop across the street from the Ponte 16 casino in Macau, a gambling Mecca and former Portuguese colony that is administered separately from the rest of China, only for its fine *Cohibas*. But when asked for advice about how to exchange yuan held within China for foreign currency—a transaction officially limited by China's capital controls—he breaks into a laugh and flashes a Chinese bank card. "Just swipe it," he says. "However much money you have in your China account, you can transfer it here."

Macau's role as an illicit way station to move cash out of China, away from the government's prying eyes, is nothing new. In recent months, though, things have been busier than normal. Capital outflows were already on the rise because of worries about the economy. During the summer, after the stockmarket crashed and the government let the yuan weaken, they soared. Official data indicate that more than $150 billion of capital left China in August—a record (see chart).

Faced with this exodus, the government launched a crackdown on underground banks, which run money across borders and arrange for matching onshore and offshore transactions. Police raided Macau's pawnshops and arrested 17 people for laundering money. That appears to have slowed things down. When your correspondent visited pawnshops in Macau this week and asked whether they could help him shift 1m yuan ($157,000) out of China—three times what one can legally withdraw in a year—most demurred.

Still, a few said they would oblige, offering to pay the money out in stacks of Hong Kong dollars for a fee of only 3%. Jack, for his part, explains that it used to be easy to do big transfers in one go. Now, it is safer to break them up into smaller pieces to avoid attracting attention.

With its garish casinos and jewellery stores, Macau is the flashiest of the conduits for taking cash out of China. But there are plenty of others, some for much bigger transactions. Overpaying for imports, buying fake consultancy services and forging deals with foreign subsidiaries are all common. On Taobao, an online marketplace, it is possible to find vendors who offer cross-border currency trades.

The big question is how dangerous these outflows are for the economy. At the same time as cash has streamed out via the capital account, China has received vast inflows through its current account. In the first eight months of this year, for example, China registered a jaw-dropping $365 billion trade surplus.

That China's foreign-exchange reserves have still fallen is evidence that even more money has left through other channels. Straight arithmetic implies some $600 billion in outflows. This, however, is a gross simplification. A strong dollar exaggerates the fall in reserves, by devaluing assets in other currencies held by the central bank.

Moreover, much of what has been recorded as outflows under the capital account is not "hot money" of the kind passing surreptitiously through Macau. Many companies have simply chosen to hold onto foreign earnings in their Chinese bank accounts, rather than rushing to convert them as they did in the past, when yuan appreciation was a one-way bet. Accounting for this, Larry Hu of Macquarie Securities calculates that China's true capital outflows are less than half their implied volume, and less than its trade earnings. This, he drily notes, is not what a balance-of-payments crisis

looks like.

Nevertheless, the outflows have clearly rattled authorities, or they would not have intervened vigorously in recent weeks to defend the yuan. Some wonder how long China can sustain this intervention. The real threat would come if millions of households lost faith and decided to take their cash out of the country. In that respect, Macau's pawnshops are a worry. But even if underground banks are readily available, relatively few are willing to take the risk of using them. As long as that inhibition holds, China should be able to weather the capital flight. ■

中国资本外逃

流体动力学

大量资金正逃离中国松懈多孔的资本管制

这位自称杰克的男子像是漫画里的小混混。他系着宽大的路易威登皮带，戴着金项链和金边墨镜，大声嚼着一支古巴雪茄。他说他已经去过澳门十六浦娱乐场对面的一家当铺，只为了一品它的精品高斯巴雪茄（Cohibas）。澳门昔日曾是葡萄牙殖民地，如今是实行一国两制的博彩圣地。但是当被问起如何将留在中国的人民币兑换成外币时（这一操作受到中国资本管制的法定限制），他突然大笑起来，亮出一张中国的银行卡。“就刷这个，”他说，“甭管你在中国的账户上有多少钱，都能转到这里。”

利用澳门作为非法中转站，在远离政府监管的情况下将现金转移出中国，这么做并不新鲜。但是最近几个月，生意比平常更忙。出于对经济形势的担忧，资本外流已有增长。今夏，当股市暴跌、政府令人民币贬值之后，资本外流猛增。官方数据显示8月有1500多亿美元的资本流出中国，达历史新高（见图表）。

面对这样的大批外逃，政府开展了打击地下钱庄的行动，这些钱庄跨境运送资金并且安排撮合在岸和离岸交易。警方突袭了澳门的多家当铺，以涉嫌洗钱逮捕了17人，此举似乎缓和了事态发展。本周本刊记者去了澳门的当铺，问他们能否帮忙将一百万元人民币（15.7万美元）转移出中国，大部分人表示不行。一百万元是法律准许每人每年兑换额度的三倍。

但是，仍有少数人说他们能帮忙，可以用港币兑换那笔钱，只收3%的手续费。至于杰克，他解释说以前一次性做大笔转移很容易，但现在为了不引起注意，化整为零会更安全。

灯红酒绿的赌场、明艳亮丽的珠宝店，澳门是把现金输出中国最耀眼的渠道。但还有很多其他途径，有的能完成大得多的交易。为进口商品多付钱

款、购买捏造的咨询服务、伪造与海外子公司的交易都很常见。在网上集市淘宝上都可能找得到提供跨境货币兑换业务的卖家。

一大问题是这些资本外流对经济有多危险。在现金通过资本账户流出的同时，中国通过经常账户已经接受了巨额流入。例如，今年前八个月，中国的贸易顺差已达到触目惊心的3650亿美元。

中国的外汇储备仍有下降，说明甚至还有更多的钱已通过其他渠道外流。直接计算显示有约6000亿美元外流，然而这样计算太过简单化。强劲的美元让中央银行以其他货币持有的资产贬值，夸大了外汇储备的减少程度。

而且，在资本账户下被录作外流的资金有很多不是通过澳门暗中转走的那类"热钱"。很多公司简单地选择将外汇收入保留在中国的银行账户中，而不是像以前一样急着去兑换，那时人民币还是单边升值格局。考虑到这一点，麦格理银行（Macquarie Securities）的胡伟俊（Larry Hu）估算中国真正的资本外流量不到所显示数额的一半，少于贸易收入。他语气冷淡地指出，这看起来可不是一场国际收支平衡危机。

尽管如此，资本外流显然已经让中国当局紧张不安，不然他们不会在近几周大力干预，维护人民币汇率。有人怀疑中国这样的干预能坚持多久，如果千百万家庭失去信心，决定把现金带离中国，那才是真正的威胁。在这方面，澳门的当铺让人担忧，但即便有现成的地下钱庄，相对来说也很少有人甘愿冒险来使用它们。只要这种抑制作用始终存在，中国应当能熬过这场资本外逃。■

Luxury tourism

A place to lay your bread

The way that the rich travel is changing

AT THE Burj Al Arab hotel in Dubai, one of the world's most luxurious (pictured), guests can avail themselves of 24-carat gold iPads and caviar facials. The cheapest rooms cost $1,000 a night; those interested in the royal suite can expect to pay nearer $25,000. Such ostentation is not to everyone's taste. But it illustrates a trend: the way that the rich spend their money is changing.

Once, the well-heeled bought fancy stuff. Nowadays they spend more on things to do and see. A report last year by the Boston Consulting Group (BCG) found that of the $1.8 trillion spent on luxury goods and services worldwide in 2012, nearly $1 trillion went on "luxury experiences". Travel and hotels accounted for around half that figure.

This partly reflects the growing weight of rich folk from developing countries. Wealthy Chinese spend 20 days a year travelling for leisure, according to ILMT, a travel agency. The most popular destination was Australia, and nearly half made it as far as Europe. On average, affluent Americans went on holiday 3.9 times in 2014, says Resonance, a consultancy, up from 3 times in 2012. Around half travelled more than 1,000 miles (1,600km) for their most recent trip. They favoured Europe, especially Italy, Britain and France.

Antonio Achille of BCG says luxury consumers have distinct spending styles, depending on how old they are and whether they were born rich or became so later. The young and the recently affluent tend to buy visibly costly items that will impress their peers. Soft Living Places, an Italian luxury hotelier, recently filmed an advert to educate newly rich Russian

tourists. It offered such advice as “don’t show off by ordering the most expensive bottle of wine on the list.” By contrast, the longer someone has been rich, the more likely he is to value quality over ostentation.

When they travel, rich 20-somethings are drawn toward gregarious pleasures that can be shared on social media to make their friends jealous. But plenty also view holidays as a time to learn something and broaden their cultural horizons, says Chris Fair of Resonance. Though older travellers to India still frequent the Taj or Oberoi hotels, younger ones are more likely to plump for a homeshare—albeit a posh one. The established wealthy spend relatively more on travelling to five-star hotels.

Tapping into this more traditional market is not easy: in some respects, the luxury-hotel business has become commoditised. As the standard at the best establishments has risen, high-paying guests have come to expect a level of service that is ever harder to exceed. “There is only so much caviar and champagne you can throw at them,” says Milton Pedraza of the Luxury Institute, a consultancy. Opulent bathrooms, world-renowned chefs and state-of-the-art technology are now the norm at the poshest hotels.

So differentiation must come from more personalised service. Value is added by “being generous in small ways”, says Frank Marrenbach, the chief executive of the Oetker Collection, a luxury-hotel group. Attentive service means remembering customers’ every preference, either because they have visited before or because the hotel has gathered data from previous trips elsewhere. Equally important is knowing when to step back, says Mr Marrenbach, because for rich guests downtime is also a luxury. At Villa Stephanie, a spa the group runs in Germany, guests can flick a switch in their rooms that blocks all wireless signals to their phones and computers. (Fortunately for paupers who stay in cheaper joints, many of these devices already come with a handy off-switch.)

The established rich, because they own so much stuff, place a high value on doing or feeling something new. According to BCG, they claim to gain three times the emotional reward from an experience, compared with owning something with the same price tag. For luxury-travel retailers, this means that selling fancy add-ons to trips is one of the most lucrative parts of the trade.

Abercrombie & Kent, an upmarket travel agency, for example, arranged for its guests in Egypt to view Queen Nefertari's tomb, even though its doors had been sealed to the public for decades. In Moscow its clients can attend a private opening of the Kremlin grounds and have lunch with an ex-KGB agent who worked as a spy in London during the cold war. Even when shopping, the experience can matter as much as the acquisition. For some it is important not just to own a Burberry raincoat but also to have bought it from the brand's flagship London store.

The biggest concern of rich travellers, according to Resonance, is safety. As crime levels have fallen in cities such as London and New York, they have become more appealing to affluent visitors. Metropolitan travel is now as popular as traditional "drop-and-flop" resorts with well-off Americans, says Resonance. Hotels and tour operators catering to the rich must be able to prove their security credentials. Abercrombie & Kent owns its own "destination management companies" in many African and Asian countries, which can respond quickly to problems, including by evacuating guests caught up in Nepal's recent earthquake.

For the very richest travellers, there is another consideration. Many will go to extraordinary lengths to make far-flung destinations feel like home. Kevin Johnson has worked as a chief-of-staff and palace manager for several billionaires. Some of his employers would even take their favourite bed on their travels, he says. When arranging a holiday on a remote island, his bosses also insisted on their own IT infrastructure, often sending

someone ahead to install it. This was partly to ensure security, he says, but also to be sure they could watch their favourite television channels.

For the traveller who has everything, the familiar can be the biggest luxury of all. ■

奢华旅游业

放面包的地方

富人的旅游方式正在变化

迪拜卓美亚帆船酒店（the Burj Al Arab hotel）是全球最奢华的酒店之一（见图）。在这里，宾客可以尽享24K镀金iPad和鱼子酱面膜。最便宜的房间要1000美元一晚，那些对皇家套房感兴趣的人住一晚要付近25000美元。如此张扬不见得合所有人的胃口，但这也表明一种趋势：富人花钱的方式正在改变。

曾经，富人们爱买昂贵的高档玩意。现在他们把更多钱花在体验和观光上。波士顿咨询集团（BCG）去年的一份报告发现，2012年全球在奢侈品和服务上消费的1.8万亿美元中，近一万亿美元花在“奢侈体验”上。旅游和酒店住宿约占这一数字的一半。

这在一定程度上反映出来自发展中国家的富人比重增加。根据旅行社ILMT的数据，中国富人每年有20天时间旅游休闲。最受青睐的目的地是澳大利亚，同时近半数富人远赴欧洲。咨询公司Resonance发现，2014年美国富人平均度假3.9次，比2012年的3次有所上升。约一半人最近期的旅行行程超过1000英里（1600公里）。他们喜欢欧洲，尤其是意大利、英国和法国。

波士顿咨询的安东尼奥·阿西里（Antonio Achille）认为，奢侈品消费者有着独特的消费风格，取决于他们的年龄以及他们是生来富裕还是白手起家。年轻人和新贵们偏爱购买张扬的贵重物品，好给同伴们留下深刻的印象。意大利奢华酒店温柔乡（Soft Living Places）最近拍了一段广告教育俄罗斯的新富游客，给出的建议包括“别为了炫耀而点菜单上最贵的酒”。相反，富裕的时日越久， 就可能会更注重品质，不那么讲排场。

旅游时，20来岁的富人更乐于参加交际活动，因为可以在社交媒体上分享，让朋友眼红。但是Resonance的克瑞斯·费尔（Chris Fair）说，很多

人也将假日视为学习和增长文化见识的时机。尽管年长些的游客去印度时仍下榻泰姬陵（Taj）酒店或奥拜瑞（Oberoi）酒店，年轻人却更可能选择民宿——当然是时髦漂亮的那种。旅行时，老牌富人在五星级酒店上花费更多。

开发这一较传统的市场并不容易：在某些方面，奢华酒店行业已经商品化。现有最好的酒店已经提升了标准，付大价钱的客人已经开始期待一种日益难以超越的服务水平。“能砸给他们的也就这么多鱼子酱和香槟了。”咨询公司奢侈品研究院（the Luxury Institute）的弥尔顿·佩德拉萨（Milton Pedraza）说道。奢华的浴室、世界知名的大厨以及最先进的科技现已成为最时髦酒店的标配。

所以差别必须体现在更加个性化的服务上。奢侈酒店集团欧特家酒店系列（Oetker Collection）的董事长弗兰克·马伦巴赫（Frank Marrenbach）说，“小处的慷慨”为服务增值。贴心的服务意味着记住客人的每个喜好，无论是因为他们曾经入住过，还是酒店从他们之前在其他地方的行程中收集了数据。马伦巴赫说，同样重要的是知道何时该回避，因为对于富人来说，休息时间也是一种奢侈。斯蒂芬妮酒店集团在德国经营的一处温泉度假酒店里，客人只需轻拨房间里的开关就可屏蔽他们所有手机和电脑的无线信号。（幸运的是，对于住在便宜地方的穷人来说，很多这些设备已经配有便于关闭的开关。）

老牌富人因为已经拥有太多，所以非常看重体验或者感受新鲜事物。波士顿咨询的数据显示，与拥有同样价格的物品相比，他们认为从体验中能获得三倍的情感回报。对于豪华游零售商来说，这意味着在旅行中销售华丽的附属项目是这一行最赚钱的部分。

高端旅行社Abercrombie & Kent安排游客赴埃及参观奈菲尔塔利王后（Queen Nefertari）的陵墓，尽管几十年前起陵墓的大门就已对公众关闭。在莫斯科，它的游客可以游览克林姆林宫专属开放区，并与冷战时期在伦敦当过间谍的前克格勃特工共进午餐。即便是购物，体验也可以和购买同样重要。对有的人来说，重要的不只是拥有一件博柏利（Burberry）

风衣，还有从该品牌的伦敦旗舰店购入风衣的体验。

Resonance认为富裕游客最关心安全问题。随着伦敦和纽约等城市犯罪率下降，它们对富裕游客也更具吸引力。Resonance称，对美国富人而言，现在大都会旅游和传统的“丢下行李就疯玩”的度假地一样受欢迎。面向富人的酒店和旅行社必须能够证明它们的安保资质。Abercrombie & Kent在很多非洲和亚洲国家有自己的“目的地管理公司”，能够迅速对问题做出反应，包括在最近的尼泊尔地震中疏散被困的游客。

对于最富有的游客来说，还有另一层考虑。很多人不遗余力地让遥远的目的地有家的感觉。凯文·约翰森（Kevin Johnson）曾为多位亿万富翁做过幕僚长和豪宅管家。他说他的一些雇主在旅游时甚至连心爱的床也要带上。安排在偏远小岛度假时，他的老板们还坚持要用自己的IT基础设施，经常提前让人去安装。他说，这一方面是为了保证安全，但同时也是为了确保能看到自己喜欢的电视频道。

对于这些拥有一切的旅行者来说，最大的奢侈正是这种亲切感。 ■

The hotel industry

Life is suite

Hotel chains are thriving, for now, thanks to innovation and a bit of luck

THE 41-storey clock tower at Five Madison Avenue was once the domain of insurance clerks working for Metropolitan Life. Now, the building in New York is a swanky hotel, called the Edition, where beautiful people air-kiss in the lobby. The hotel sector has undergone a similar switch from toil to glitz of late. Arne Sorenson, boss of Marriott, an American hotel firm that owns the Edition brand, says that business has rarely been better.

The hotel industry ought to be in a worse state than a hung-over guest who has drained the minibar. The financial crisis caused commercial-property prices to collapse and rooms to remain vacant. Hotels have suffered relentless disruption from the internet. Online travel agents, such as Expedia, take hefty commissions for bookings and sharing-economy upstarts such as Airbnb offer a cheap alternative. Yet the large American and European hotel firms are thriving.

The industry's favoured measure of success, revenue per available room (RevPAR, revenue divided by rooms available in a given period), has climbed for the past five years in America, surpassing peaks in 2000 and 2007, according to Smith Travel Research. Meanwhile, money is pouring in from private-equity firms and Chinese and Middle Eastern investors, keen to take advantage of the growth. Properties worth $42 billion changed hands worldwide in the first half of 2015, a 56% jump over the same period last year, according to JLL, a property broker.

How have they done it? Hoteliers are nimbler and more resilient than they were two decades ago. For one thing, they own fewer hotels. Of the 4,942 hotels operated by InterContinental, a giant British firm, it owns just eight.

The “asset-light” approach brings in franchising and management fees. Investors like this, explains Smedes Rose of Citigroup, a bank, as the firms can concentrate on operations without worrying about seesawing property prices. And by leaving expensive upgrades to owners, they can pay more dividends.

Hotel firms have also broadened their base of customers in two ways. First, they have created a variety of lodgings for different travellers. The top five hotel companies have more than 60 brands between them, serving everyone from families to thrifty businessmen and health nuts. Second, the big chain hotels are courting more travellers around the world. International brands swiftly moved to control about half of the rooms in fast-growing markets such as China and India. Relinquishing property ownership has helped. Firms can speedily export their management model while local partners do the riskier work of building the hotels.

The downturn after the financial crisis proved the power of this transformation. Room prices and occupancy rates collapsed. But property owners suffered most while hotel firms continued to receive fees from them. A diverse selection of accommodation, at a wide variety of prices and in locations across the globe, helped hotel firms survive and then rebound.

What has recently supercharged the industry, however, is a stroke of luck—an unanticipated shortage of rooms in America. Investors expected success in emerging markets but slowing growth and a strong dollar are depressing revenues. In America, where the big firms still earn most of their profits, business is booming. The supply of new rooms grew slowly after the downturn. But demand has picked up along with the economy. Occupancy rates sank to a low point in 2009. They are now expected to reach a record high this year.

Investors have begun to wonder how long this can last. Shares in four of the

five largest hotel firms have slipped in recent months despite rumours of dealmaking. On July 30th InterContinental denied reports that it might buy Starwood, an American rival; its target is now reportedly Fairmont, another chain.

The foreboding reflects two threats. The first is cyclical. Demand moves quickly. Supply is sticky. This mismatch has helped hotels so far, but it could turn against them. Soaring demand is encouraging new building. By the time properties are finished and a slew of new rooms are available, demand may have ebbed. In the past, RevPAR has plummeted as supply has risen (see chart). Steven Kent of Goldman Sachs, another bank, argues that supply is poised to outpace demand.

The second, more structural threat is technology. The candid reviews on sites like TripAdvisor make controlling customers' views of hotel brands much harder, points out Mr Kent. Online travel agencies, such as Priceline and Expedia, want to win a bigger share of bookings. That worries hoteliers, who often pay commissions of 20% or more. Expedia's clout may grow—it is trying to buy Orbitz, a rival.

Room-sharing sites such as Airbnb are another menace. Hoteliers tend to shrug off such concerns by pointing out that Airbnb serves few business travellers, the main customers for hotels. But Airbnb offers not only low prices but access to more than 1.5m rooms, roughly double what InterContinental offers. The headaches from online travel agents, room-sharing sites and review websites will probably intensify as the three start to overlap. TripAdvisor, for example, now has a booking system and has bought four companies that specialise in renting homes online.

Faced with these challenges, hotel companies are adapting, yet again. Accor, a French firm, is trying to fight online travel agents by beefing up its own booking system and opening it to independent hoteliers. Hyatt, an

American firm, has invested in Onefinestay, a rival to Airbnb. Marriott has said it will go into partnership with TripAdvisor, using its booking platform to get more information about customers, so it can market to them more effectively.

Hotel firms' ability to change will keep being put to the test. They are helped by a simple fact—they are selling access to a physical product in a fixed location. As Mr Sorenson puts it, "a hotel room is one of the few things in the world that you cannot deliver to someone in a box." ■

酒店业

生活即套房

因为创新和一点运气，连锁酒店目前兴旺发达

位于麦迪逊大道5号41层楼高的钟楼曾是大都会人寿保险公司（Metropolitan Life）的员工上班的地方。现在，纽约的这栋建筑成了一家名为“艾迪逊（the Edition）”的奢华酒店，红男绿女在大堂里飞吻。酒店行业也经历了从辛劳到浮华的类似转变。拥有艾迪逊品牌的美国酒店管理公司万豪（Marriott）的老板阿恩·索伦森（Arne Sorenson）认为，该行业罕有比现在更好的光景。

酒店业的境况本应比喝光小酒柜里所有存货、宿醉未醒的客人还要糟糕。金融危机导致商业地产价格崩溃，房间始终空置。酒店已经被互联网无情颠覆，比如Expedia这样的在线旅行公司拿走了预订房间的高额佣金，而分享经济的新贵如Airbnb则提供了廉价的选择。但是，美国和欧洲的大型酒店管理公司却生意兴隆。

史密斯旅游研究公司（Smith Travel Research）指出，在美国，每间可供出租客房的营业收入（RevPAR，一定时间内总收入除以可供出租的客房数，是酒店行业最青睐的衡量成功的指标）过去五年中节节攀升，已超过2000年和2007年的峰值。与此同时，私募基金公司以及中国、中东的投资者大举注资，渴望在这一增长中分一杯羹。根据地产经纪仲量联行（JLL）的数据，2015年上半年价值420亿美元的房地产在全球易手，比去年同期增长了56%。

他们是如何做到的？酒店经营者比20年前更加灵活、更具弹性。首先，他们拥有的酒店数量更少了。英国巨头洲际酒店集团（InterContinental）经营着4942间酒店，但只拥有其中八家。这种“轻资产”的方式带来了特许经营费和管理费。投资者喜欢这样，花旗银行的史密德·罗斯（Smedes Rose）说道，因为公司可以专注于经营，而无需担心起伏波动的房地产价格。而且这样会把昂贵的酒店升级留给业主去完成，从而可以付给投资者

更多红利。

酒店企业还通过两种途径扩大了客户基础。其一，他们为不同的旅行者提供不同层级的住宿选择。全球最大的五家酒店管理公司旗下有60多个品牌，服务对象从家庭、节俭的生意人到养生狂人，无所不包。其二，大型连锁酒店正在向全世界越来越多的旅行者大献殷勤。国际品牌迅速占领中国和印度等快速增长的市场，控制了其中约一半的客房。放弃对房地产的所有权也有助力。公司能够迅速输出他们的管理模式，而由当地的合作伙伴去承担风险较大的酒店建造工作。

金融危机后的经济衰退证明了这种转变的影响力。房价和入住率暴跌，但损失最大的是房地产业主，酒店管理公司仍然可以向业主收取费用。奢俭由人、地点遍布全球，这样多种多样的住宿选择帮助酒店管理公司经受住了考验并且重焕活力。

不过，近来激励这一行业发展的是一丝运气——美国未曾预料到的客房短缺。投资者期望在新兴市场获得成功，但增长趋缓、美元坚挺，令收入每况愈下。在美国，这一行业正红红火火，大型酒店管理公司的大部分利润都来自于此。经济低迷后新客房的供应增长缓慢，但随着经济回暖，需求已经反弹。入住率在2009年跌至最低点，今年有望达到历史新高。

投资者已经开始思考这种状况能持续多久。尽管有交易传言，近几个月五大酒店管理公司中有四家的股价业已下滑。7月30日洲际酒店集团否认了要收购其美国对手喜达屋（Starwood）的报道。据称它现在的目标是另一家连锁酒店费尔蒙（Fairmont）。

不祥之兆源自两大威胁。第一是周期性。需求来得快也去得快，而供应则相对固定。到目前为止，这种不匹配对酒店有益，但也可能产生不利影响。需求飙升激励人们建造新楼，但当物业建成，有大量新客房可用时，需求可能已经减退。以往当供应增长时，每间可供出租客房的营业收入（RevPAR）就会大幅下跌（见图表）。另一家银行高盛集团的史蒂文·肯特（Steven Kent）表示，供应已随时可能超过需求。

第二是科技，这一威胁更具结构性。肯特指出，像猫途鹰（TripAdvisor）这类网站上的坦诚评价让人更难控制顾客对酒店品牌的看法。在线旅行公司如Priceline和Expedia都想赢得预订领域更大的份额。这让酒店经营者烦恼，他们通常要为此付出20%甚至更多的佣金。Expedia的影响力可能会增强，它正试图收购对手Orbitz。

Airbnb这类房间分享网站是另一大威胁。酒店经营者往往对这样的担忧表示不屑，理由是酒店的主要顾客即商务旅客极少光顾Airbnb。但是Airbnb提供的不仅是低价，还有超过150万间客房，大约是洲际集团可提供客房数的两倍。在线旅行公司、房间分享网站和点评网站带来的麻烦很可能越来越大，因为这三者已开始交叉。例如猫途鹰现在有了预订系统，而且收购了四家专门从事网上租房的公司。

面对这些挑战，酒店管理公司再一次努力调适。法国公司雅高集团（Accor）想与在线旅行社一决高下，方法是加强自己的预订系统并开放给独立酒店经营者。美国公司凯悦（Hyatt）已经向Airbnb的对手Onefinestay注资。万豪已宣布将与猫途鹰成为合作伙伴，利用它的预订平台获得更多客户信息，更有效地开拓市场。

酒店管理公司的应变能力将始终经受考验。不过一个简单的事实帮助了他们：他们售卖的是一个固定地点的实体产品的使用权。正如索伦森所说：“酒店房间是世上少有的几样你无法装在盒子里送货上门的东西。”■

Urbanisation

The great sprawl of China

How to fix Chinese cities

IN ANCIENT times, Beijing built towering city walls that helped to prevent undefendable sprawl. These days it builds ring roads, stretching built-up areas ever outwards. Near Langfang, a city halfway between the capital and its giant neighbour Tianjin, diggers dip their heads and cement mixers churn, paving the next circular expressway. When complete, the 900km (560-mile) Seventh Ring Road will surround Beijing at such a distance that most of it will run through the neighbouring province of Hebei, to which Langfang belongs, rather than the capital itself. Parts of it are 175km from Beijing's centre (see map).

The Seventh Ring Road (really the sixth, but for obscure reasons there is no First Ring Road) is emblematic of modern Chinese cities: giant, sprawling and dominated by cars. Even before it is completed in a year or two (and its use assessed), another, even longer, orbital is being plotted. Like many of China's infrastructure projects, the new road displays engineering prowess. The country's successes in urban planning are less evident.

Breakneck urban growth has propelled China's rise in the past three decades. Migration from the countryside has helped expand the urban population by 500m—the biggest movement of humanity the planet has seen in such a short time. Over half the population is now urban. Some live in the basements of apartment blocks, or in shacks built in courtyards. But Chinese cities have mostly avoided the squalor of many developing-world ones.

The result of this urban growth is not just that China has many large cities—more than 100 of them have more than a million people—but that

some are supersized. At the end of last year the government at last acknowledged the special nature of these, introducing the term "megacity" to describe those whose populations, including that of their satellite towns, exceed 10m. Of the 30 cities worldwide that match this definition, six are in China: Shanghai (23m), Beijing (19.5m), Chongqing (13m), Guangzhou (12m), Shenzhen (11m) and Tianjin (11m). A further ten Chinese cities contain 5m-10m people. At least one of these, Wuhan, will pass 10m within a decade.

China depends on its cities for economic growth and innovation. But it is failing to make the most of its largest conurbations. Medium-sized agglomerations of 1.5m-6.5m are outperforming bigger ones in terms of environmental protection, economic development, efficient use of resources and the provision of welfare, says McKinsey, a consultancy. Residents are beginning to question whether their quality of life, which for many has improved by leaps and bounds, will continue to do so. The giant cities are polluted, pricey and congested. Average travel speed in Beijing is half that in New York or Singapore.

Most of China's cities share the legacy of a central-planning mindset in which all life and work was centred on a single "work unit". Cities were "built as producer centres rather than consumer ones", says Tom Miller, author of "China's Urban Billion". Their planning focus was on industry; not commerce, services or even community. The work units are gone but the tradition of dehumanising architecture persists. Most new developments are built on giant blocks 400-800 metres long.

China has swapped its socialist dream for an American-style one of cars and sprawling suburbs. The number of cars has increased more than tenfold in the past decade, to 64m. The combination of superblocks and car-lust often adds up to a giant jam. Large blocks mean fewer roads to disperse traffic. Guidelines require a main urban road every 500 metres and

an eight-lane road every kilometre. In the case of Beijing, a ring and radial system was also created, with the aim of providing speedy road access in and out of town, bypassing city traffic and linking satellite towns. Not a bad idea, except that workplaces have remained concentrated in the centre. The expressways funnel traffic into gridlock.

The ill-defined ownership rights of farmers have encouraged the sprawl. Officials can expropriate rural land easily and at little cost. Doing so is far cheaper than redeveloping existing urban areas. Industrial land is heavily subsidised, so factories have remained in urban areas rather than move to cheaper sites on city outskirts. The amount of land classified as urban has more than doubled since 2000—40% of new urbanites became so when cities engulfed their villages.

Sprawl has resulted in populations becoming more thinly spread. China's megacities are less dense than equivalents elsewhere in the world (see chart). Guangzhou could contain another 4m people if it was as packed as Seoul in South Korea; Shenzhen could be larger by 5m. Extending outward takes a toll: slow commutes from far-flung suburbs increase fuel consumption and cut productivity.

Massive spending on infrastructure has hugely improved connections within and between cities. Since 1992 China has spent 8.5% of its national income on infrastructure each year, far more than Europe and America (2.6%) or India (3.9%). Yet city residents still complain. Subways are often built as engineering projects, with stops at set distances, rather than where people want them to be, says Sean Chiao of Aecom, an infrastructure firm. Buses, metros and rail networks are poorly integrated because separate agencies manage them.

Planners often ignore the needs of 200m or more residents who have no urban *hukou*, the household registration certificate that is needed for

access to public services. Cities therefore have inadequate hospitals, schools and affordable housing.

This year, however, the central government has started to downplay the importance of GDP growth in assessing the performance of local officials. That should free them to spend more money on making cities better places to live, rather than on laying concrete. Some cities now seek to limit car use. Beijing is mulling a congestion zone. To limit pollution and improve traffic flow, eight cities (including all megacities except Chongqing) cap the number of new licence-plates they issue. Several cities ban some drivers one day a week. Metro systems are fast multiplying: Beijing alone opened four new lines with 41 new stops in December.

More could be done. Parking in city centres remains far too cheap, and laws should be enforced to curb a habit of parking on pavements or traffic islands. Buses could be made to use the central lanes of broad boulevards. Bicycle-use should be encouraged by reintroducing once ubiquitous cycle lanes.

The World Bank says that, at 54%, China's degree of urbanisation is still well below the 70% expected of a country with its current income level per person. The flood of migrants will continue; by 2030 Chinese cities will contain more than 1 billion people. A change of thinking will be needed to make them better places to live in. ■

城镇化

中国大扩张

如何治理中国的城市

在古代，北京建造高耸的城墙来避免失控的无序扩张。如今，北京大建环路，市区继续向外延伸。廊坊市位于首都北京和邻市天津中间，这里的挖掘机和混凝土搅拌机正在紧张施工，铺设下一条环城高速。即将建成的北京七环总长为900公里（560英里）。这条环路离北京太远了，以致其大部分路段贯穿廊坊市所在的河北省，而不在首都范围之内。部分道路离北京市中心有175公里之遥（见地图）。

北京的七环（实际上是六环，北京没有一环路，原因不明）在规模庞大、扩张无序、汽车称霸的现代中国城市中具有代表性。在其预计完工前一两年（使用情况尚未评估），另一条更长的环路就已在规划之中。和中国众多的基础设施项目一样，这条新路展示了高超的工程技术。而中国在城市规划方面的成就却没有那么显著。

过去30年里，城市的高速发展是中国崛起的推动力。农民向城市迁徙使城市人口增加了五亿，这是如此短时间内地球上最大规模的一次人口流动。目前超过一半的中国人口居住在城市。一些人住在公寓楼的地下室或院子里搭建的棚屋内。不过，中国城市基本上避免了许多发展中国家城市肮脏污秽的现象。

这种城市发展的结果是中国不单拥有了众多大城市，包括100多个人口超过100万的城市，而且其中一些已达超大规模。去年底，政府终于承认了这类城市的特殊性，首次使用“超大城市”来形容这些连同卫星城在内人口超过1000万的城市。全世界符合此定义的30个城市里，中国占了6个，包括：上海（2300万）、北京（1950万）、重庆（1300万）、广州（1200万）、深圳（1100万）和天津（1100万）。此外，中国还有10个城市的人口在500万至1000万之间。其中至少有一个，即武汉，人口将在10年内超过1000万。

中国依靠城市来发展经济和创新，却未能充分发挥超大城市的作用。咨询公司麦肯锡指出，人口为150万至650万的中型城市在环境保护、经济发展、资源的有效利用和福利提供等方面的表现优于大型城市。在许多人的生活质量经历了跨跃式的改善之后，人们开始怀疑这一趋势能否继续。大城市普遍污染严重，物价高昂且拥堵不堪。北京的平均车速仅为纽约或新加坡的一半。

中国大多数城市都有中央计划经济思维模式的遗留问题，全部的生活与工作都围绕单一的工作单位。《中国十亿城民》（China's Urban Billion）的作者汤姆·米勒（Tom Miller）表示，城市是"作为生产中心而不是消费中心来建造的"，其规划重点是工业，而不是商业或服务业，更不是社区。如今工作单位已不复存在，但非人性化的规划传统仍在继续。大多数新项目建设的都基于边长400米至800米的巨大街区。

中国已将社会主义理想换成了以汽车和大郊区为特色的美国式梦想。过去十年，中国汽车总量达到6400万辆，增长超过十倍。超级街区加上对汽车的渴求往往导致严重拥堵。大型街区意味着道路减少，交通得不到分散。政策指导方针规定每500米要有一条市区主路，每一公里要有一条八车道的大道。以北京为例，环路加放射线的设计体系，目的是方便车辆快速进出城区、避开市内交通并连接卫星城。想法不错，只是工作区域仍然集中在市中心。交通顺着多条快速路形成的漏斗汇集，最终堵死。

农民土地所有权不明晰也助长了城市的扩张。政府用很小的成本就能轻而易举地征用农村土地，这远比重建现有城区来得便宜。工业用地得到大量补贴，所以工厂依旧留在城里而没有搬到市郊较便宜的地方。2000年以来，归入城区的土地面积已增加了一倍多，城市吞并周围村庄的过程中新产生的城市人口占了增量的40%。

城市扩展导致人口分布更加稀疏。中国超大城市的人口密度比世界其他同类城市要低（见图表）。如果要达到韩国首尔的城市密度，广州还能增加400万人口，而深圳还能增加500万。向外扩展亦有代价：郊区太远，通勤时间变长，会增加燃油消耗，降低生产率。

大量投资基础设施极大地改善了城市内部以及城市和城市之间的联系。1992年以来，中国每年国民收入的8.5%用于基础设施，远大于欧洲和美国（2.6%）或印度（3.9%）。但城市居民仍有怨言。基础设施公司艾奕康建筑事务所（Aecom）的乔全生（Sean Chiao）指出，地铁通常当作工程项目来修建，按照固定的距离而不是在人们希望的地方设立站点。由于不同的管理机构各自为政，公车、地铁和铁路等系统不能很好地互联互通。

规划者往往忽视二亿多没有城市户口的居民的需要，而户口是享受公共服务所必需的。因此，城市里的医院、学校和经适房都配套不足。

不过从今年开始，中央政府在评价地方官员的政绩时开始淡化GDP增长的重要性。这应该能让他们把更多的钱用于让城市变得更宜居，而不是一味大兴土木。现在一些城市设法限制车辆使用。北京正考虑设立一个拥堵区。为了限制污染并改善交通，八个城市（包括所有超大城市，重庆除外）已实施限牌政策。有些城市实行部分车辆每周限行一天。地铁网络正在快速发展：单单北京在去年12月就开通了4条新线路，新设41个站点。

能做的事情还很多。市中心的停车费太低了，而且应该通过加强执法来改变人们在人行道或交通岛停车的习惯。可以规定让公共汽车使用宽阔道路的中间车道。还应该恢复曾经无处不在的自行车道来鼓励人们多骑车出行。

世界银行表示，中国的城镇化率为54%，而在人均收入水平和中国相当的国家该比率一般为70%，因此差距仍然很大。移居城市的浪潮还将继续。到2030年，中国城市将容纳超过10亿人口。为使城市更加宜居，思维方式需要转变。 ■

Urban policy

How to shrink a city

Many cities are losing inhabitants. Better to manage decline than try to stop it

ONE of the biggest challenges for the world this century is how to accommodate the hundreds of millions of people who will flock to cities, especially in emerging economies. Coping with this human torrent will be fearsomely difficult—but at least the problem is widely acknowledged. That is not true of another pressing urban dilemma: what to do with cities that are losing people.

They are hardly unusual. Almost one in ten American cities is shrinking. So are more than a third of German ones—and the number is growing. Although Japan's biggest cities are thriving, large numbers of its smaller ones are collapsing. Several South Korean cities have begun to decline—a trend that will speed up unless couples can somehow be persuaded to have more babies. Next will come China, where the force of rapid urbanisation will eventually be overwhelmed by the greater power of demographic contraction. China's total urban population is expected to peak by mid-century; older industrial boom towns are already on a downward slope.

An abandoned street containing a rotting nursery or primary school is a sad sight. And declining cities have more than visual problems. Disused buildings deter investors and attract criminals; superfluous infrastructure is costly to maintain; ambitious workers may refuse to move to places where the potential clientele is shrinking. Where cities are economically self-sufficient, a smaller working population means a fragile base on which to balance hefty pension obligations. That is why Detroit went bust.

So it is unsurprising that governments often try to shore up their crumbling smaller cities. Japan recently announced tax cuts for firms that are willing

to move their headquarters out of thriving Tokyo. Office parks, art museums and tram lines have been built in troubled American and European cities, on the assumption that if you build it, people will come.

For the most part, they will not. Worse, the attempt to draw workers back to shrinking cities is misconceived. People move from smaller to larger cities in countries like Germany and Japan because the biggest conurbations have stronger economies, with a greater variety of better-paying jobs. The technological revolution, which was once expected to overturn the tyranny of distance, has in fact encouraged workers to cluster together and share clever ideas. Britain's productivity is pitiful these days but it is almost one-third higher in London than elsewhere.

Policies meant to counteract the dominance of big cities are not just doomed to fail but can actually be counter-productive. The most successful metropolises should be encouraged to expand by stripping away planning restrictions. If housing were more plentiful in the bigger conurbations it would be cheaper, and the residents of declining cities, who often have little housing equity, would find it easier to move to them. Rent controls and rules that give local people priority in public housing should go, too: they harm the poor by locking them into unproductive places.

A new kind of garden city

Even so, many people will stay stuck in shrinking cities, which will grow steadily older. Better transport links to big cities will help some. But a great many cannot be revived. In such cases the best policy is to acquire empty offices and homes, knock them down and return the land to nature—something that has worked in the east German city of Dessau-Rosslau and in Pittsburgh in America. That will require money and new habits of mind. Planners are expert at making cities work better as they grow. Keeping them healthy as they shrink is just as noble. ■

城市政策

如何应对城市萎缩

许多城市的居民正在流失。管理城市的衰退要比试图阻止它更好

本世纪全球最大的挑战之一就是如何容纳数以亿计即将涌入城市的人口，在新兴经济体中尤其如此。应对这洪水般的人流将异常困难，然而，至少这个问题已广为人知。另一个紧迫的城市困境却并非如此，那就是该如何应对人口正在流失的城市 。

这样的城市并不罕见。几乎十分之一的美国城市都在萎缩。超过三分之一的德国城市亦是如此，而且数量还在不断增加。虽然日本最大的城市欣欣向荣，大量小城市却正在解体。几个韩国城市已经开始衰退，除非能说服夫妻多生孩子，否则这一趋势将会加速。下一个将是中国，快速城市化的推力最终将不敌更为强大的人口收缩的势能。中国的城市人口总量预计将在本世纪中期达到顶峰；工业繁荣期间建设的老城镇已经在走下坡路。

弃用的街道上有座破败的幼儿园或小学，一派荒凉。但衰退的城市不单单只有外观上的问题。废弃的建筑吓走投资者，也吸引罪犯；过剩的基础设施维护费用昂贵；有抱负的劳工可能会拒绝搬到潜在客户正在萎缩的地方。城市在经济上能自给自足，然而，较少的工作人口意味着平衡巨额养老金债务的基础薄弱。这就是底特律破产的原因。

因此，政府经常设法挽救摇摇欲坠的小城市也就不足为奇了。日本最近宣布将对那些愿意将总部迁到繁华的东京之外的公司减税。人们在陷入困境的美国和欧洲城市里建起了办公园区、艺术博物馆和有轨电车线路。他们的假设是，只要建起来了，人们就会来。

而在大多数情况下，人们不会来。更糟糕的是，把劳动力吸引回到不断收缩的城市，这种尝试是错误的。在德国和日本等国家里，人们从较小的城市搬去较大的城市，原因是最大的都市圈拥有更强劲的经济，能提供更多类型、薪水更高的工作。人们曾预期技术革命会消除距离的障碍，实际上

它却鼓励劳动者聚集在一起，分享聪明点子。如今，英国的生产率低得可怜，但伦敦的生产率比其他地方几乎高出三分之一。

旨在抵消大城市优势的政策不仅注定要失败，实际上还会适得其反。应该鼓励最成功的城市通过消除规划限制进行扩张。如果大城市的住房更充足，房子就会更便宜，同时，那些通常没有多少房产、来自不断衰退城市的居民就会更容易搬到大城市。优先照顾当地人的租金管控和规定也该取消，因为它们把穷人锁定在贫瘠的地方，从而伤害了他们。

> *新型花园城市*

即便如此，很多人也会留在不断收缩、持续老化的城市。与大城市建立更好的交通联系将帮助一些城市。但许多城市不会复活。这种情况下，最好的策略是收购空置的办公室和住宅，拆掉它们，把土地还给大自然。这种办法在德国东部城市德绍罗斯劳（Dessau-Rosslau）和美国的匹兹堡都奏效了。这需要资金和新的思维习惯。让城市在发展过程中更好地运作，规划师是这方面的专家。使它们在收缩的同时保持健康，这一过程同样崇高。 ■

Infrastructure in the rich world

Building works

An historic opportunity to improve infrastructure on the cheap is in danger of being squandered

IT IS hard to exaggerate the decrepitude of infrastructure in much of the rich world. One in three railway bridges in Germany is over 100 years old, as are half of London's water mains. In America the average bridge is 42 years old and the average dam 52. The American Society of Civil Engineers rates around 14,000 of the country's dams as "high hazard" and 151,238 of its bridges as "deficient". This crumbling infrastructure is both dangerous and expensive: traffic jams on urban highways cost America over $100 billion in wasted time and fuel each year; congestion at airports costs $22 billion and another $150 billion is lost to power outages.

The B20, the business arm of the G20, a club of big economies, estimates that the global backlog of spending needed to bring infrastructure up to scratch will reach $15 trillion-20 trillion by 2030. McKinsey, a consultancy, reckons that in 2007-12 investment in infrastructure in rich countries was about 2.5% of GDP a year when it should have been 3.5%. If anything, the problem is becoming more acute as some governments whose finances have been racked by the crisis cut back. In 2013 in the euro zone, general government investment—of which infrastructure constitutes a large part—was around 15% below its pre-crisis peak of €3 trillion ($4 trillion), according to the European Commission, with drops as high as 25% in Italy, 39% in Ireland and 64% in Greece. In the same year government spending on infrastructure in America, at 1.7% of GDP, was at a 20-year low.

This is a missed opportunity. Over the past six years, the cost of repairing old infrastructure or building new projects has been much cheaper than normal, thanks both to rock-bottom interest rates and ample spare capacity

in the construction industry. Simon Rawlinson of Arcadis, an infrastructure consultancy, reckons building costs in Britain, for example, were 20% lower in the aftermath of the financial crisis. The market upheaval of recent weeks may delay the first post-crisis interest-rate rise in America by a few months, but construction costs have been rising in America and Britain, among other places, as their economies have strengthened and unemployment has fallen.

Investment in infrastructure can provide a tremendous boost to an economy. The most striking examples are in emerging markets: paving roads has helped double school attendance by girls in Morocco; improved sanitation has helped reduce child mortality in India by over 50%. But the impact in rich countries is also great. Standard & Poor's, a rating agency, reckons that the activity spurred by increasing government spending on infrastructure by 1% of GDP would leave the economy 1.7% bigger after three years in America, 2.5% bigger in Britain and 1.4% in the euro zone.

A few countries have stepped up spending: investment in infrastructure in Canada rose from 2.5% of GDP a year in 2000-06 to 3.3% in 2007-12. State governments in Australia have made their money go further by leading the early, riskier stages of projects and then privatising them once operational, freeing up capital for the next scheme. (As an extra incentive the federal government now even tops up states' proceeds from asset sales by 15% if they are reinvested in infrastructure.) In 2012, for example, Ontario Teachers' Pension Plan and Hastings, a fund manager, bought a 50-year lease on a recently completed desalination plant near Sydney from the government of New South Wales.

But many other governments have failed to follow suit. The so-called "Juncker Plan", which is supposed to mobilise €315 billion of mostly private investment in infrastructure in Europe, was announced with great fanfare last November; the website listing possible projects has yet to be launched.

Planning constraints play their part: it takes four years just to get the permits for the average European power project, according to McKinsey. Crossrail, a new train line running under London, was first mooted in 1974 but is not due to be completed until 2018. Despite the risk of white elephants such as Ciudad Real Central Airport in Spain, which closed only a few years after opening, politicians still tend to prioritise eye-catching schemes over duller but more practical ones. America's post-crisis stimulus package dedicated $8 billion to high-speed rail, but only $1.5 billion to small, worthwhile projects nominated by state governments.

Yet none of this should impede spending on maintenance, for which there is also a huge backlog. Mending leaking pipes, filling potholes and painting bridges is unlikely to lead to a popular uprising. There is also lots of scope for modernisation without undue disruption: adding a layer of plastic on top of an asphalt road can increase its lifespan by a third. Investments in technology can make better use of existing infrastructure without adding a brick. New digital monitoring systems, for example, have increased the capacity of Frankfurt Airport from 150,000 passengers a day to 200,000, by providing advance warning of impending bottlenecks.

Such repairs and improvements typically yield higher returns than more grandiose projects. They are also much quicker to initiate. Western politicians searching for a way to pep up growth in light of the current uncertainty about the health of the world economy need look no further. ■

富裕国家的基础设施

建筑有用

低价改善基础设施的历史机遇恐有被错失之虞

富裕国家中基础设施年久失修的状况，我们怎么说都不为过。德国三分之一的铁路桥梁已使用100年以上，伦敦逾半主要水管线也是如此。美国桥梁的平均寿命达42年，大坝则为52年。美国土木工程师学会（American Society of Civil Engineers）将全美大约1.4万座大坝评估为“高风险”，还将151,238座桥梁评定为“有缺陷”。这样摇摇欲坠的基础设施既危险又昂贵：每年，美国因城市公路交通拥堵而浪费时间和燃料的损失超过1000亿美元，机场拥堵则损失220亿美元，另外停电造成的损失为1500亿美元。

大型经济体俱乐部二十国集团（G20）的工商峰会（B20）估计，到2030年，全球累积需用于提升基础设施的开支将达到15万亿至20万亿美元。咨询公司麦肯锡测算，2007年至2012年，发达国家每年对基础设施的投资约为GDP的2.5%，而应该投入的比例为3.5%。总之，一些政府的财政状况饱受金融危机折磨，随着它们削减开支，问题正变得更加严重。欧盟委员会表示，欧元区2013年的总体政府投资（基础设施占了很大一部分）大约比危机前3万亿欧元（4万亿美元）的峰值降低了15%。降幅较大的是意大利、爱尔兰和希腊，分别为25%、39%和64%。同年，美国政府的基础设施支出占GDP的1.7%，为20年来的低点。

这就错失了一个机会。过去六年中，无论是维修老旧的基础设施，还是建造新项目，费用都比正常情况便宜得多，原因是利率触底以及建筑行业有大量闲置产能。基础设施咨询公司Arcadis的西蒙·罗林森（Simon Rawlinson）估计，例如在英国，金融危机后的建筑成本降低了20%。最近几周的市场动荡可能促使美国把危机后的首次加息推迟几个月，但随着经济转强以及失业率下降，英美等国的建筑成本已在上升。

基础设施投资可为经济体提供巨大推动力。最引人注目的例子来自新兴市场：铺路帮助摩洛哥女童的入学率翻倍；卫生条件改善帮助印度儿童死亡

率减少50%以上。但它对富裕国家的影响也很大。评级机构标准普尔估算，政府的基础设施支出每增加GDP的1%，其所刺激的活动三年后带来的经济增长分别是美国1.7%、英国2.5%和欧元区1.4%。

一些国家已经加大了支出：加拿大的基础设施投资从2000年至2006年间每年占GDP的2.5%，上升到2007年至2012年间的3.3%。澳大利亚各州政府的投资更进一步，它们主导了各种项目更具风险的早期阶段，而项目一旦投入运营就私有化，以释放资金用于其他项目。（作为额外激励，联邦政府现在甚至在州政府出售资产的收益上增加15%的拨款，只要收益再次用于投资基础设施。）例如，安大略省教师退休基金会（Ontario Teachers' Pension Plan）和海斯丁斯基金管理公司（Hastings）2012年从新南威尔士州政府手中取得了悉尼附近一家最近建成的海水淡化厂为期50年的租约。

但许多其他国家的政府未能效仿。于去年11月高调宣布的所谓"容克计划"本应调动以私人投资为主的3150亿欧元投入于欧洲的基础设施，但迄今罗列潜在项目的网站都还没有上线。规划限制起了作用：麦肯锡称，单单获得欧洲普通电力项目的许可证就需要四年。在伦敦地下运行的新铁路线Crossrail于1974年首次提出，但预计要到2018年才能完工。西班牙雷阿尔城（Ciudad Real）中心机场仅开放了几年就遭关闭。尽管有这类"大白象工程"的风险，政治家们仍倾向于优先考虑抢眼的、而不是乏味却更实用的方案。美国危机后的刺激计划将80亿美元投资于高铁，却只有15亿美元投资到州政府提出的有价值的小型项目。

然而，这些都不应该妨碍在维修方面增加开支，而维修方面也有巨大的积欠。修补漏水的管道、填充坑洞以及粉刷桥梁不可能导致民愤，也有很大余地进行现代化改造，而不会有过度的干扰：在柏油路面上加上一层塑料，使用寿命就可以延长三分之一。投资于技术可以更好利用现有的基础设施，而不用增加一砖一瓦。例如，新型的数字监控系统通过对即将来临的瓶颈提前预警，让法兰克福机场的日均客流量从15万名乘客增加到20万名。

这样的维修和改进比华而不实的项目通常回报更高，也启动更快。考虑到目前世界经济状况的不确定性，西方政客在寻找刺激增长的方法时无需舍近求远了。■

Reinsurance

Compacts of god

The market for risk is changing

INSURANCE only works if reinsurance works, those in the business say. An insurer that would face crippling losses if, say, a hurricane struck an island where it had covered lots of property against extreme weather, would typically insure itself against such an event with a reinsurer. But the $425 billion industry is under threat as insurers increasingly offload risk directly to capital markets instead. This month Warren Buffett, who has investments in reinsurance, dismissed it as a "fashionable asset class" whose prospects have "turned for the worse".

Two things have made life more difficult for reinsurers. First, as insurance companies merge into fewer, global players, the share of policies they seek to reinsure has declined rapidly over the past decade, says James McPherson of PwC, a consultancy. A Slovenian insurer that used to take out reinsurance against a big snowstorm, for example, no longer needs to do so if it is part of a global insurance firm that can offset the risk with unrelated policies in other parts of its portfolio. Technological advances and regulatory pressures have also made insurers better at understanding and controlling the risks on their books.

Second, there is now far more competition in the industry, as hedge funds and pension funds muscle in on reinsurers' turf. The most well-known way to invest is via "catastrophe bonds" issued by insurance firms, which pay regular interest unless a specified disaster occurs, in which case the issuer gets to keep the principal and use it to pay claims. Last year a record $8 billion of cat bonds were issued. Around $65 billion of "alternative" capital has now been pumped into the sector (see chart); Aon Benfield, a broker, expects that to reach $150 billion by 2018.

Investors are attracted by tax breaks, the relatively high yields on offer and the fact that returns are uncorrelated with other assets (Wall Street and the weather do not usually have much to do with one another). In a sign of the times BlackRock, an asset manager, and ACE, an insurer, have bypassed reinsurers altogether in a new joint venture.

Several reinsurers are working with the new money to offload some of their own risks: Everest Re issued around $1 billion of cat bonds last year, for example, while Hannover Re agreed €3 billion ($3.3 billion) of "collateralised reinsurance" deals, which are simpler, smaller cousins of cat bonds. Yet the new competition makes it harder for reinsurers to raise premiums. In the aftermath of hurricane Katrina in 2005, some reinsurers put their prices up by as much as 50-100%. In contrast, the string of expensive disasters in 2011, including the Tohoku earthquake and tsunami in Japan and the Christchurch earthquake in New Zealand, did not lead to a rise in market-wide premiums, despite costing the insurance industry $116 billion, much of it reinsured. Catastrophe reinsurance prices have fallen in seven of the past ten years. Willis, a broker, says that the price for protection against disasters—normally the highest-margin part of the business—fell by 10% last year on a like-for-like basis.

Some see the repackaging of risk in nifty new financial instruments as worryingly similar to the financial engineering that helped precipitate the credit crunch. In a new book, Paula Jarzabkowski of Cass Business School and her colleagues worry that ill-informed investors may be taking on risks they do not understand, and that the flow of capital could easily dry up if they suffer unexpected losses. Regulators fear that price wars might lead both conventional reinsurers and the upstarts to take on more risk than is prudent. The various alternative instruments remain largely untested, points out Brian Schneider of Fitch, a rating agency.

Distributing risk more widely, others retort, is no bad thing, particularly as

the industry consolidates into a few global firms. Supporters also point out that there is a natural limit on the growth of the market. Issuers of cat bonds only benefit in the event of an (inherently rare) natural disaster: that means there is little incentive for speculators to sell cat bonds as well as buy them. And cheaper reinsurance should cut the price of insurance for consumers too.

That may have consequences beyond the rich world. The developing world remains lamentably underinsured. Less than 1% of the estimated damage from the recent earthquakes in Nepal, for instance, was covered by an insurance policy, compared to 80% in the Christchurch earthquake, according to Swiss Re, a reinsurer. The more capital available for reinsurance, the faster the insurance market can grow in such places. Rather than fighting over crowded and shrinking markets in America and Europe, reinsurers would be wise to broaden their horizons—provided the pension funds don't get there first. ■

再保险

神之契约

风险的市场正在变化

行内人都说，只有再保险成功了，保险才会成功。如果一家保险公司为一个岛屿做了许多财产保险，假设有飓风袭击了这个岛屿，这家保险公司将面临严重的损失，所以一般会选择为此类事件投保再保险。不过，价值4250亿美元的再保险行业正受到威胁，因为保险公司日益向资本市场直接转移风险。上月，在再保险业有投资的沃伦·巴菲特说，这个“相当时髦的资产类别”的投资前景已经恶化。

两件事使得再保险公司的业务更加艰难。首先，正如咨询公司普华永道的詹姆斯·麦克弗森（James McPherson）所言，随着众多保险公司合并成数量更少的全球性企业，过去十年中，它们准备进行再保险的保单份额已经迅速下降。例如，斯洛文尼亚的一家保险公司过去需要办理再保险以防范暴风雪，如果现在它隶属于一家全球性的保险公司，就不再需要这么做，因为可以用母公司产品组合中其他部分的不相关保单抵消这个风险。技术进步和监管压力也让保险公司能更好地理解和控制自己账目上的风险。

其次，现在行业内竞争更加激烈，因为对冲基金和养老基金正在侵入再保险公司的地盘。最广为人知的投资办法是购买保险公司发行的“巨灾债券”。除非发生某种特定灾难，这种债券会定期支付利息。一旦灾难发生，发行人将扣留本金以支付索赔。去年发行的巨灾债券达到创纪录的80亿美元。大约650亿美元的“另类”资本已经注入再保险行业（见图表）。保险经纪公司怡安奔福（Aon Benfield）预计，到2018年该领域的“另类”资本将达到1500亿美元。

吸引投资者的是税收优惠和相对较高的收益，此外还有投资回报和其他资产没有关联这一点（华尔街与天气通常没有什么关系）。资产管理公司贝莱德（BlackRock）和保险公司ACE完全绕开了再保险公司，成立了一家新

的合资企业，成为新时代的标志。

少数几家再保险公司正与新贵合作，转移自己的一些风险。例如，艾弗再保险（Everest Re ）去年发行了约10亿美元的巨灾债券；汉诺威再保险（Hannover Re）达成了30亿欧元（33亿美元）的“抵押再保险”交易。抵押再保险与巨灾债券类似，只是更小更简单。然而，新的竞争让再保险公司更难提高保费。2005年“卡特里娜”飓风过后，一些再保险公司把费率足足提高了50%至100%。相比之下，2011年包括日本东北地区大地震、日本海啸和新西兰基督城地震在内的一连串损失惨重的灾害尽管令保险业损失了1160亿美元（大部分都购买了再保险），却并没有引起整个保险市场费率的上升。巨灾再保险的价格在过去十年中有七年都在下跌。保险经纪公司韦莱（Willis）表示，在同等比较基础上，预防灾害的价格去年下滑了10%，而预防灾害通常是业务中利润率最高的部分。

一些人认为，用漂亮的新型金融工具把风险重新包装，这种做法和那些加速了信贷危机的金融工程一样令人担忧。在一本新书中，卡斯商学院（Cass Business School）的保拉·加扎科维斯基（Paula Jarzabkowski）和她的同事们担心，不知情的投资者可能会承担他们不了解的风险，而如果他们遭受意想不到的损失，资本的流动也容易枯竭。监管机构担心，价格战可能会促使传统再保险公司和暴发户都不再谨慎，而是去承担更大的风险。评级机构惠誉的布赖恩·施奈德（Brian Schneider）指出，各种可供选择的工具总体上仍然未经考验。

其他人反驳说，更加广泛地分散风险并非坏事，尤其是在一个行业整合成几家全球性公司之时。支持者还指出，市场增长有个自然极限。巨灾债券发行人只有在自然灾害（本身十分罕见）发生时才会获益，这意味着投机分子缺少动力来出售和买入巨灾债券。同时，比较便宜的再保险也可以降低消费者投保的价格。

这可能对富裕国家以外的地区也产生影响。遗憾的是，发展中国家目前仍然保险不足。例如，据再保险公司瑞士再保险（Swiss Re）称，在最近的尼泊尔地震中，仅不到1%的估算损失投了保，而基督城地震中的这一比

例为80%。一个地方可供再保险使用的资金越多，其保险市场的发展就会越快。只要养老基金尚未捷足先登，再保险公司明智的做法是拓宽自己的视野，而不是争夺美国和欧洲拥挤不堪、日渐萎缩的市场。■

Rating agencies

Undue credit

Regulation is helping the very firms it is designed to tame

DAVID EINHORN, a hedge-fund manager, saw the financial crisis coming and made a fortune from it. But not all his predictions have been as prescient. Asked in 2012 about rating agencies, which, unlike him, had failed to discern the impending disaster, Mr Einhorn said, "It's a matter of time before they all disappear."

After all, the three big rating agencies, Fitch, Moody's and Standard and Poor's (S&P), had all judged Lehman Brothers a safe bet until the morning of the day it defaulted; they also gave high ratings to securities based on subprime mortgages that turned out to be toxic. "Deeply disappointing," was how Ray McDaniel, the boss of Moody's, described its performance.

In response, politicians vowed to change the industry beyond recognition. They handed the job of regulating them to new outfits: a special unit of the Securities and Exchange Commission (SEC) in America and the European Securities and Markets Authority in the European Union. A provision of America's Dodd-Frank financial-reform law, enacted in 2010, states that any requirements in regulation for a security to be rated should be expunged. For good measure, America's Department of Justice began investigating S&P for fraud, claiming it deliberately distorted its ratings to win more business.

The result? Rating agencies are thriving. Demand has been so strong, according to Bill Bird of FBR Capital Markets, a broker, that they have been able to raise their prices by about 4% a year since 2010. Revenues are at record levels. The shares of Moody's, the sole stand-alone agency, are up more than sixfold since 2009. Its board was not, apparently, so

disappointed by its poor performance during the crisis: it kept Mr McDaniel in the job and paid him $14m last year. S&P settled with the Department of Justice in February, paying $1.4 billion but not admitting any wrongdoing.

The main boost to the business has come from ultra-low interest rates, which have prompted a surge in bond issuance. Trying to sell a bond without a rating remains really hard, says Mr Bird; reselling one is even tougher. That is because investors cannot hope to assess the creditworthiness of the hundreds of thousands of bonds in circulation: at the end of 2013 S&P had ratings on 1.1m issues, Moody's on 900,000. Many big investors, such as CalPERS, an enormous public pension fund, do not allow those managing its money to invest in any unrated securities.

Scrapping legal mandates to have securities rated has also proved difficult. The SEC, for one, still stipulates what ratings the assets held by money-market funds should have, despite Dodd-Frank's injunction to the contrary. It has proposed changing this rule to make the use of ratings voluntary, but in a way that implies that the funds it regulates will continue to rely on them. By the same token, the Basel Committee, an international club of regulators which sets global rules for banks, still uses ratings to judge the quality of their assets.

The big three agencies, despite their dire record in the crisis, have maintained a near-lock on the market (see chart). A few smaller firms provide competition in certain niches, such as A.M. Best, for ratings of insurance firms, and Kroll, for ratings of commercial mortgage-backed securities. But in corporate bonds, the big three have a market share of over 90%.

The heavy regulation of rating agencies appears to be part of the problem. Far from damaging the incumbents' prospects, the rules seem to shield them from competition. To issue new ratings, a firm must qualify as a

"nationally recognised statistical rating organisation" (NRSRO)—a process several potential new rivals to the big three have struggled with. Since 2011, for instance, the SEC has been reviewing the application of R & R Consulting, a firm established by two former employees of big agencies. Rather than try to change ratings as infrequently as possible, the conventional approach, R&R constantly adjusts them in response to new economic data, changes in interest rates and the performance of the underlying assets. This innovation has been popular with clients, and drawn interest as far afield as China. But it seems to have flummoxed the SEC, says Ann Rutledge, a founding partner.

Another problem is the cost of becoming an NRSRO, which involves exhaustively documenting the methodology behind each rating and ensuring that commercial staff have not influenced the work of analysts. The activity of certain employees must be monitored even after they have left the company. Such cumbersome procedures favour incumbents, which can divide the cost of compliance among a bigger pool of customers.

According to James Gellert, the boss of RapidRatings, another new agency with barely 50 employees, becoming an NRSRO would double its operating costs. RapidRatings has nonetheless won business from investment firms and companies looking into the solvency of counterparties thanks to its innovative techniques. It crunches 73 ratios for every security it covers, adjusting for 24 industry models, to compute a rating. Updates are generated automatically as new financial information is disclosed.

Many of RapidRatings' clients use it precisely because it is not an NRSRO, says Mr Gellert, and so is not bound by the ossified systems that entails. It is not even bothering to apply for the title, which means its ratings cannot be used by money-market funds or banks, and do not pass muster with the likes of CalPERS. That cannot be the outcome that policymakers were hoping for when they dreamed of changing the industry beyond

recognition.

评级机构

过度信任

监管适得其反

对冲基金经理大卫·艾因霍恩（David Einhorn）察觉到金融危机一触即发，于是从中大赚一笔。但他的预言并非全都如此具有先见之明。2012年，他被问及为何评级机构没能像他那样洞悉灾难逼在眉睫，他说："评级机构消失殆尽是迟早的事。"

毕竟，直到雷曼兄弟违约的当天早上，惠誉、穆迪、标普这三大评级机构都还一直认为那是稳赚不赔的投资。它们对基于次贷的证券产品评级过高，后来证明这些产品贻害无穷。"深感失望"是穆迪的总裁雷蒙德·麦克丹尼尔（Raymond McDaniel）在描述公司表现时所用的字眼。

于是，政客们誓言要彻底改革这个行业。他们将监管职责授予新的部门：美国证券交易委员会的专设部门和欧盟的欧洲证券与市场管理局。2010年美国出台的《多德-弗兰克金融改革法案》申明，凡以评级作为证券监管参考的规则都应予以废除。此外，美国司法部还开始调查标普涉嫌欺诈一案，指其为招徕更多业务故意对评级造假。

结果呢？评级机构正在蓬勃发展。据券商"FBR资本市场"（FBR Capital Markets）的比尔·伯德（Bill Bird）称，市场对评级机构的需求强劲，以致其服务价格自2010年来每年上升4%。这些机构的收入达到历史新高。穆迪这家唯一完全独立的评级机构的股价自2009年来上升逾六倍。对于穆迪在金融危机中的不佳表现，公司董事会显然并不那么介怀：他们让麦克丹尼尔稳坐原位，去年还发给他1400万美元的薪水。今年2月，标普与美国司法部达成和解，支付了14亿美元，但不承认有任何不当行为。

评级机构的业务蒸蒸日上，推动力主要来自超低的利率促使债券发行激增。伯德表示，如果没有信用评级而想出售债券，在目前仍然非常困难，转售就更加不容易了。那是因为投资者不可能指望自己对千千万万流通中

的债券作信用评估。2013年底，标普评估了110万只债券，穆迪评估了90万只。许多大型机构投资者，如规模庞大的公共养老基金“加州公务员退休基金”（CalPERS），规定其资金管理者不能投资任何未经评级的证券。

要废止证券须经评级的法令也有困难。以美国证券交易委员会为例，它仍然规定货币市场基金持有的资产应该达到一定的评级，这与《多德-弗兰克法案》禁令相抵触。委员会提议修改此法则，把评级变为自愿进行，但这在一定程度上暗示了其监管的基金将继续依赖信用评级。同理，银行监管机构的国际组织“巴塞尔委员会”（Basel Committee）依然利用信用评级来判断资产质量，该组织制定银行业全球监管规则。

尽管三大评级机构在金融危机中表现拙劣，如今却仍然在市场上保持近乎垄断的地位（见图表）。一些规模较小的公司在某些利基市场给他们带来了竞争，比如以保险公司评级见著的A.M.Best，以及长于商业抵押担保证券评级的克罗尔债券评级公司（Kroll）。但在企业债券领域，评级三巨头占据了超过90%的市场份额。

对评级机构的严格监管似乎是问题之一。这些法规远没有损害现有霸主的发展前景，反倒好像保护了他们免受竞争威胁。某家公司要发表新评级就必须获得“国家认可统计评级机构”（NRSRO）的资格，而这一过程令评级三巨头的好几个潜在新对手颇费周折。举例来说，自2011年起，美国证券交易委员会一直在审查R＆R咨询公司（由两位大型评级机构的前员工创立的一家公司）的资格申请。传统上，评级一旦发布便尽可能少作改动，R＆R的做法却与此不同，他们会根据新的经济数据、利率变动及相关资产的表现而不断修正评级。这种创新深受客户欢迎，吸引了远在中国的客户。但该公司的创始合伙人安•拉特利奇（Ann Rutledge）表示，这似乎让美国证券交易委员会感到晕头转向。

另一个问题是取得NRSRO资格所需的成本。这一过程要求每个评级所用的方法详情全部记录在案，并要确保分析师的工作不受业务营销人员的影响。某些员工即便是在离职后行动仍须受到监控。这些繁琐的程序有利于既有评级机构，因为它们客户资源多，可以摊薄合规成本。

拥有不到50名员工的另一家新评级机构RapidRatings的老板詹姆斯·盖勒特（James Gellert）表示，获得NRSRO资格会令运营成本翻倍。尽管如此，得益于他们的创新技术，这家公司还是赢得了不少投资公司及希望了解交易对手偿付能力的企业的业务。为对其涵盖的每一只证券做出评级，RapidRatings会对73个比率进行运算，并根据24个行业模型做调整。评级会随着新一轮财务信息的披露而自动更新。

许多客户之所以选择RapidRatings恰恰是因为它并非NRSRO评级机构，所以不会受制于随之而来的僵化制度，盖勒特说道。该公司根本不愿劳神去申请这一资格，也就意味着其评级不能为货币市场基金或银行所采用，也不符合“加州公务员退休基金”这类机构投资者的要求。当初决策者们梦想为评级行业带来翻天覆地的变化，眼下这一切应该不是他们想要的结果吧。■

Local-government debt

Looking for ways to spend

Buried in debt, the government struggles to lure investors in local projects

THE Ensen Care old-age home, which is soon to open, knows its target market. A mah-jong table takes pride of place in its recreation room. Space has been made outside for tai chi practice in the morning and line dancing, much loved by Chinese pensioners, at dusk. Photos in glass cabinets depict the imagined lives of its prospective residents: grainy pictures of youths in Red Guard uniforms next to studio portraits with grandchildren in more prosperous later years.

Few homes for Chinese senior citizens have the pedigree of Ensen Care, a subsidiary of Legend Holdings, owner of Lenovo, one of the world's biggest computer manufacturers. The old-age home in Changzhou, a city of 4.7m west of Shanghai, is a pilot project designed to demonstrate what can be achieved when private investors provide public services. In exchange for a subsidised parcel of land, Ensen is building a hospital and a community centre, which it will transfer to the municipal authorities. The hope is that this model of public-private partnership (PPP) will help local governments bring projects to fruition without adding to their already sizeable debts.

If that is the idea, the old-age home testifies to the challenges not only of doing PPP deals in China but also, more broadly, of fixing shaky government finances. Ensen's managers thought that they had a good arrangement. With China's population ageing rapidly, demand for old-age care is rising. Plenty of companies want to break into the sector. But securing operating licences is difficult. By entering into a formal partnership with the local government, Ensen thought that the obstacles would melt away.

Yet in its first year the company had to submit 38 reports to municipal officials to obtain all manner of approvals. Then the city government asked it to pay taxes in advance, even before the home opened its doors, in order to boost depleted local coffers. Ensen had hoped for an investment return of 7% on the home. Now, one executive complains, 3% looks optimistic. He says that the company is unlikely to do big projects like this in future.

It is such experiences that make investors across China balk at the idea of teaming up with government. Local governments have over 1,000 PPP projects up for grabs, seeking to raise some 2 trillion yuan ($314 billion) in private-sector funding for roads, hospitals, power plants and more. Backers have been found for less than a fifth of them. Would-be investors have a long list of concerns, among them the unclear legal status of projects, poor financial prospects and government meddling. To plug the hole, provinces have even started to launch their own dedicated funds for investing in PPP projects. Yet that rather defeats the point, says Lin Caiyi of Guotai Junan Securities, a stockbrokers. Instead of public-private partnerships, they are fast becoming public-public.

The push for PPPs, such as they are, is part of a bigger effort to shore up the fiscal position of local governments. Public debt has soared since the global financial crisis of 2008, when the government unleashed a huge stimulus to boost growth. Much of this has not been borne by the central government, which portrays itself as a picture of fiscal rectitude. Instead, it has leant on provinces and cities to foot the bill. Local-government debts have more than doubled over the past five years, to 24 trillion yuan, equivalent to nearly two-fifths of GDP (see chart). By itself that sum would be manageable. Yet China's public finances look precarious when the corporate liabilities of state entities are added in, since many are implicitly guaranteed by the government. At more than 250% of GDP, China's total debt is unusually high for an emerging market, and its recent pace of increase is worrying.

Slowing the accumulation of debt has thus become a priority for China—including the contribution made by local governments. The authorities have cracked down on local governments' rampant use of off-balance-sheet entities. Technically, China's cities and provinces are barred from borrowing money. To get around the ban, they created thousands of arm's-length companies, known as local government financing vehicles, which were able to borrow. The popularity of these vehicles, operating in the vast grey space between China's private and public sectors, made it tough for the central government to keep tabs on the rapid rise in local debt—of which they account for nearly half.

But blocking this source of finance has contributed to a slowdown in the growth of local-government revenues at a time when other hoped-for sources of funds have underwhelmed. One hope was loan securitisation, with the government telling state banks to parcel loans together and sell them on, so supposedly freeing up space for new loans. Another was a roaring stockmarket that would allow indebted state companies to bring in new investors. Yet loan securitisation is proceeding slowly, and a collapsing stockmarket has shut off the possibility of new investors. Meanwhile, land sales, one of the biggest sources of local revenues, have fallen by nearly two-fifths this year.

Yet a pressing demand for investment remains. Even though China has spent a staggering 190 trillion yuan over the past five years on building homes, roads, factories, airports and more, it still has glaring gaps. China's capital stock per worker is just a quarter of South Korea's and a fifth of America's. Old people's care is one such shortfall. To reach the levels of provision of developed economies, China needs to double the 5.8m beds in its old-age homes. Other shortfalls include water pipelines, mass-transit systems, hospitals and low-income housing.

And so, in the context of a weakening economy, the government has started

to turn back towards debt. It is trying to make things a little cleaner this time. Instead of allowing local governments to use their shadowy financing vehicles again, it is giving central institutions a much bigger role. For instance, over the next couple of years China Development Bank and other government-controlled lenders in Beijing are expected to sell bonds worth more than 1 trillion yuan to invest in new construction. And the finance ministry has given provinces bigger quotas for selling bonds, while letting them swap some of their financing vehicles' debt for cheaper official bonds. It has also just pledged to provide more direct fiscal support for a softening economy.

Initially the ministry planned for a budget deficit of 2.3% of GDP for this year, but analysts now reckon that the deficit will be closer to 3%. Lian Ping of Bank of Communications predicts that infrastructure spending will soon accelerate, picking up some of the slack left behind by sluggish corporate spending. That would help keep growth near the 7% target which the government set for this year—though at the time it hoped that the growth would come from kick-starting private investment rather than falling back on public debt. ■

地方政府债务

建设投资求开源

政府债台高筑，地方项目难寻投资者

即将开业的安信颐和国际颐养中心很清楚自己的目标市场。其娱乐室的显眼位置摆放着一张麻将桌。室外设有场地供老人们早上练太极，傍晚跳广场舞，后者是中国退休老人非常喜欢的活动。玻璃柜里的照片展现了对目标住客人生的假想：模糊的旧照片里年轻人身穿红卫兵军装，旁边的影楼肖像照则是晚年生活更富裕时儿孙满堂的情景。

安信颐和是全球最大的计算机制造商之一联想集团的母公司联想控股旗下的子公司。中国的养老院很少拥有这样的优秀血统。该养老院位于上海以西、人口470万的常州，作为试点项目，探索私人资本投入发展公共服务的效果。为获得政府补贴地块，安信颐和正出资建设一家医院及一所社区中心，日后将转归当地市政府所有。这样做是希望"公私合作模式"（PPP）能帮助地方政府实现项目投资建设而不加剧已然沉重的债务负担。

如果这即是目标，那么这一养老院所体现的不仅是在中国开展PPP项目的挑战，更广泛来看，还有要纠正不稳定的政府财政的挑战。安信颐和的管理者以为自己一切考虑周到。随着中国人口迅速老龄化，养老护理的需求正在上升。许多公司希望打入这一市场，但要拿到营业执照不容易。通过与地方政府建立正式的合作伙伴关系，安信颐和以为障碍会迎刃而解。

但在头一年，该公司就要向市政府官员提交38份报告，以获取各式批文。随后，即使养老院还未开业，市政府就要求该公司提前缴纳税款，以填补虚空的地方财政。安信颐和本希望养老院能达到7%的投资回报率。如今，一位管理者抱怨说，3%已是乐观估计。他同时表示，公司未来不太可能再投资类似的大型项目。

正是这样的经历令中国各地投资者不愿与政府成为合作伙伴。各地方政府

共有超过1000个PPP项目招标，期望在私营部门筹募约两万亿元（3140亿美元）投入建设公路、医院、发电厂等设施，但其中只有不到五分之一找到了金主。意向投资方顾虑甚多，如项目的法律地位不明确、收益前景不佳，以及政府干预等问题。为堵住财政缺口，各省甚至已开始设立自己的PPP融资支持基金。但那有违初衷，券商国泰君安的林采宜说。那已不再是政府和私人资本合作，而是迅速变为政府和政府资本合作。

如此力推PPP项目是改善地方政府财政状况宏大举措的一部分。2008年全球金融危机以来，政府为促进增长推出大规模经济刺激计划，公共债务一路飙升。其中大部分不是由中央政府承担，而是靠省市政府来买单。中央政府以此给人以一副财政谨严的姿态。地方政府债务在过去五年翻了一倍还多，达到24万亿元，接近GDP的五分之二（见图表）。单纯这一债务总额是在可控范围之内的，但再加上国有企业的公司债务，中国的公共财政状况看起来就岌岌可危了，因为这些国企债务许多是由政府隐性担保的。作为一个新兴市场，中国超过GDP250%的总债务水平高得离谱，而且最近债务增长的速度也令人忧虑。

于是，减缓债务累积成为中国的首要任务，包括地方政府债务。当局严禁地方政府肆意利用资产负债表外实体作融资平台。表面上，中国的省市政府都不得举债。为规避禁令，地方政府建立了数以千计的独立公司，以这些可以借债的公司作为融资平台。这些融资平台在中国私营及公营部门之间的大片灰色地带中运作，其兴起使中央政府难以监控地方债务的急升，其中近半是这些公司的债务。

在其他资金渠道有负所望之际再限制这一融资来源，已令地方政府收入增长放缓。政府一度寄望以贷款证券化走出困境，让国有银行打包出售贷款，以此为新贷款腾出空间。它还曾寄望股市牛市会给负债累累的国有企业带来新投资者。但结果，贷款证券化进展缓慢，而股市暴跌关上了吸引新投资者的大门。同时，地方财政最大来源之一的卖地收入今年已下跌近五分之二。

然而，对于投资的迫切需求依然存在。尽管中国过去五年在住宅、道路、

工厂、机场等建设上已花费了惊人的190万亿元，但仍有巨大的缺口有待填补。中国的劳动力人均资本存量仅分别为韩国的四分之一和美国的五分之一。养老护理正是短板之一。要达到发达经济体的服务水平，中国需要把养老院床位从目前的580万张增加一倍。其他投资不足的领域还包括供水管线、公交系统、医院及保障性住房。

于是，在经济放缓的大环境下，政府开始求助于借债。这次要把事情变得更明晰。不再让地方政府利用影子融资工具，而是让中央机构发挥更大的作用。举例来说，未来几年，国家开发银行和其他在北京的政策性银行将预计出售价值超过一万亿元的专项建设债。财政部已调高各省发行债券的配额，也允许他们将融资平台的部分债务置换为成本更低的政府债券，同时也承诺为疲软的经济提供更直接的财政支持。

最初，财政部预计今年国家预算赤字占GDP比重为2.3%，但分析师现在估计这一数字将接近3%。交通银行首席经济学家连平预测，基建支出会马上加速增长，部分填补企业支出放缓的缺口。这将有助经济增长率接近7%，这是政府今年设定的目标——尽管当时政府寄希望于开启私人投资来驱动增长，而非重回公共债务的老路。■

Marketing in the digital age

A brand new game

As people spend more time on social media, advertisers are following them

EARLIER this year BMW advertised on WeChat, a popular messaging app in China with around 550m monthly users. But its ads were shown only to those whose profiles suggested they were potential buyers of expensive cars. Others were shown ads for more affordable stuff, such as smartphones. The campaign bruised a few egos. Some of those not shown the BMW ad complained, referring to themselves as *diao*, or (putting it politely) losers.

The carmaker's experience shows the complexities of advertising today, when it is so easy for dissatisfied customers to make their voices heard. But it was also an example of how marketing chiefs are struggling to find the right way to reach consumers on new digital platforms, where they are spending ever more of their time.

Not long ago social-media marketing was something that brand managers might ask their summer interns to deal with. Today it has become a pillar of the advertising industry. Social networks like Facebook, Twitter and LinkedIn have cultivated vast audiences: 2 billion people worldwide use them, says eMarketer, a research firm. Online advertising of all sorts continues to grow, and within that category, spending on social-media ads has gone from virtually nothing a few years ago to perhaps $20 billion this year (see charts).

Advertisers like social-media platforms because they gather all sorts of data on each user's age, consumption patterns, interests and so on. This means ads can be aimed at them with an accuracy that is unthinkable with analogue media. For example, Chevrolet, an American car brand, has sent

ads to the Facebook pages and Twitter feeds of people who had expressed an interest in, or signed up to test-drive, a competitor's vehicle.

Such fine-tuned targeting means that the distinction between advertising and e-commerce is becoming blurred. Facebook, Twitter, Instagram and other platforms are selling ads containing "buy now" buttons, which let users complete a sale on the spot. It is too early to tell how many consumers want such a convenience, but the social platforms foresee a future in which they get paid by advertisers to provide instant-shopping services that make the platforms more useful to their members, and get them to spend more time on them.

To wring the most out of the ability to target consumers precisely on social media, ad agencies are making big changes to their campaigns. Instead of creating a single, broad-brush message that will run across television, radio, print and outdoor, they are producing many variations on a theme, matching each to the subset of consumers they judge most likely to respond to it. Last month Lowe's, an American home-improvement retailer, ran a campaign on Facebook in which users were sent one of several dozen versions of its ad, depending on which part of their homes they had mentioned on social media.

The iterative nature of digital marketing has meant lots of work for ad agencies and public-relations firms. However, the brands that hire them must weigh the "production-cost trade-offs" that come with personalisation on social media, says Pete Blackshaw of Nestlé, a food manufacturer. "You can target too much."

Marketing chiefs also need to think through efforts to give their brands "online personalities". Twitter has been the main place where brands try to sound authentic and clever. When Apple announced its gold iPhone in 2013, Denny's, a restaurant chain, sent out a gently mocking tweet showing

a photo of its pancakes, which are "always available in golden". It seemed to go down well with consumers.

But in attempting to ride social-media trends, companies can easily fall flat on their faces. DiGiorno, a frozen-pizza maker, noticed that a number of people were using the hashtag "#WhyIStayed" on Twitter and sent out a jocular tweet that they had stayed for the pizza. It turned out that the comment thread was about domestic violence and why women remained in abusive relationships. DiGiorno took to social media again—this time to apologise.

In spite of such pitfalls, social platforms are likely to receive an ever larger part of marketers' budgets. But the digital-media business is still young and volatile, and it is hard to predict which social networks are destined to become the new-media equivalents of America's big four broadcast-TV networks. For a time, Twitter seemed to be the place to be for advertisers; more recently it has been dogged by management turnover and slowing user growth. Now Facebook is the favourite among marketing folk: it claims nearly five times as many users and nine times as much revenue as Twitter. Facebook has bought several nascent social-media services that might have grown to become challengers, such as Instagram, a photo-sharing app, and WhatsApp, a messaging app. It has been rolling out ads cautiously on Instagram, to see how users react, but has yet to start doing so on WhatsApp.

Some old media have yet to feel much pain from the loss of ad revenue to digital rivals. TV advertising has until now kept growing. But as time goes on, and as TV audiences both decline and shift to services that do not have ads, such as Netflix, the competition will be more keenly felt. However, social networks, and TV advertisers interested in switching to them, have yet to work out what is the optimal format for video ads. In 2012 Twitter acquired Vine, which lets people post six-second videos; several months

ago Periscope, an app for live video also owned by Twitter, was all the rage. Advertisers have experimented with both services, but as yet neither has taken off as a marketing medium.

It still makes sense for marketers to try these new services out, because there is something of a first-mover advantage in digital advertising. Brands that are early to use new platforms benefit disproportionately, explains Linda Boff, a marketing chief at General Electric, because their users have not yet become saturated with marketing messages.

The latest social platforms to get the attention of marketing types are a bunch of messaging apps, such as Snapchat (see box), WeChat and Kik, where young users send messages, photos and videos directly to friends. Brands are also starting to do more with Pinterest, where users can "pin up" images of things that appeal to them. It seems a fair assumption that users may want to buy the things they are pinning up, although the platform, which has 70m users, may never achieve the scale of Twitter (300m), let alone Facebook (1.5 billion).

Even if marketers master social media without coming across as clumsy, grating or intrusive, there will surely be a limit to how much advertising will shift to the platforms. Television ads are still great for reaching big audiences with simple messages. Print ads can lend brands an air of credibility (we would say that, wouldn't we?). Like fund managers, advertisers will always want a balanced portfolio. ■

数字时代的营销

品牌新游戏

人们在社交媒体上投入的时间越来越多，广告商正紧随其后

今年早些时候，宝马公司在微信上投放了广告，这一在中国广为流行的即时通讯应用每月拥有5.5亿活跃用户。但收到广告的只限于那些资料显示能买得起豪车的人，其他用户收到的则是智能手机之类更便宜商品的广告。这场营销活动伤害了一些人的自尊，没收到宝马广告的人有些抱怨，自称“屌丝”也就是失败者（更文明些的说法）。

宝马的经历显现了当下广告业的复杂性，因为如今不满意的客户要让自己的呼声被听到非常容易。但这也是一个案例，显示出营销主管们难以找到正确的方式，在消费者花费越来越多时间的新数字平台上触及目标。

不久前，社交媒体营销可能还是品牌经理让暑期实习生去处理的事情。今天，它已成为广告业的支柱。根据研究公司eMarketer的数据，像Facebook、推特和领英（LinkedIn）这类社交网络已经在全球范围内培养了近20亿人的庞大用户群。各种各样的在线广告持续增长，在这一大类中，社交媒体广告上的投入已经从几年前的几乎为零上涨到今年的200亿美元左右（见图表）。

广告商喜欢社交媒体平台，因为社交媒体能够收集用户各项数据，包括年龄、消费模式、兴趣等等。这意味着广告能有的放矢，精准度远非其他媒介所能比拟。例如，美国汽车品牌雪佛兰就曾在Facebook和推特上向对其竞争车型流露出兴趣或者报名参加试驾的客户推送过广告。

这种精确锁定意味着广告和电子商务之间的界限正在逐渐模糊。Facebook，推特、Instagram和其他平台推出的广告页面上都有“现在购买”按钮，用户可以即时购买。现在想知道有多少消费者欢迎这种便捷度还为时过早，但社交平台已经看到了通过为广告商提供即时购物服务来获得利润的未来，这能让用户感到这些平台更有用，让他们在上面消磨更多时

间。

为能在社交媒体上最大限度地精准锁定消费者，广告公司大大改变了他们的宣传攻势。与以往制作一条统一出现在电视、收音机、纸媒和户外的宽泛广告不同，广告公司现在就同一主题制作出多个差异化的版本，分别针对他们认为可能对其做出反馈的细分消费群。上个月，美国家居零售商劳氏公司（Lowe's）在Facebook上推出的广告有几十个版本，用户看到哪个版本取决于他们在社交媒体上曾经提到过他们家里的哪一块。

数字营销不断更迭的基本特性意味着广告公司和公关公司有着巨大的业务量。但是，按照来自食品生产商雀巢公司的皮特·布莱克肖（Pete Blackshaw）的说法，聘请广告和公关公司的品牌应当仔细权衡在社交媒体上进行个性化广告的"投入-产出比"问题。"你可能会定向过多。"

营销主管还需要思考如何能让自己的品牌具有"网络个性"。推特一直是各品牌试图塑造自己货真价实、优雅俏皮形象的首选之地。当苹果公司2013年宣布推出金色iPhone时，一家名叫Denny's的连锁餐饮店在推特上发送了一条略带调侃的推文，并展示了自家"永远都有金黄色"的煎饼。看上去消费者非常喜欢这则广告。

但是，在社交媒体时代努力成为弄潮儿的同时，各家公司也极易栽跟头。DiGiorno是一家冷冻批萨生产商。它注意到推特上有些人在用"#为什么我选择留下"这一主题标签，于是发送了一条诙谐的推文说他们是因为批萨才选择留下。后来发现这些评论帖子是关于家庭暴力以及为什么女性依然不从凌虐关系中走出。DiGiorno再次用起了社交媒体——这次是为了道歉。

尽管有这样的陷阱，社交媒体还是有可能获得营销商更多的预算份额。但数字媒体的生意依然在起步阶段，极不稳定，而且很难预测哪些社交网络能在新媒体时代发展到美国四大广播电视网络的规模。有段时间，推特似乎是为广告商而存在的，但最近它受到管理层更替以及用户增长放缓的困扰。目前，Facebook是营销人员的最爱：它声称其用户和收入分别是推特

的五倍和九倍。Facebook还收购了一些尚处在发展初期但有可能成长为对手的社交服务，比如照片分享应用Instagram和通讯应用WhatsApp。它一直在Instagram上小心翼翼地推送广告来试探用户的反应，但在WhatsApp上还未开始这样做。

一些传统媒体还没太多地感受到广告利润流失到数字化对手那里的痛苦。直到目前，电视广告仍然保持着增长。但随着时间的推移，电视观众数量减少以及观众选择像Netflix这样无广告的电视服务，竞争将会带来更多切肤之痛。但是，社交网络以及有志转向社交网络的电视广告商都还没有找到视频广告的最优形式。2012年推特收购了Vine，后者能让客户发布六秒视频；几个月前，同是推特旗下的流媒体直播应用Periscope风行一时。广告商在这两个平台上都做过实验，但迄今为止，还没有哪个能一举成为营销媒介。

尽管如此，营销商尝试这些新平台仍然合乎情理，因为在数字广告中存在着类似先发优势的规律。通用电气的营销主管琳达·博夫（Linda Boff）解释说，早期运用新平台的品牌的收益会远高于投入，因为平台用户还没有被营销信息完全淹没。

最近吸引营销业内人员注意力的社交平台是一些即时通讯应用，比如Snapchat、微信以及Kik。在这些平台上，年轻用户直接向朋友发送信息、照片以及视频。各大品牌也开始和Pinterest进行更多的合作，用户可以在这个应用中把自己喜欢的东西的图片张贴出来。推断用户有可能会购买他们所展示的东西看上去合乎逻辑，尽管这个平台七千万用户的规模可能永远也追不上拥有三亿用户的推特，更别提有15亿用户的Facebook。

即使营销商能玩转社交媒体，没给用户留下笨手笨脚、刺耳难看或者强行植入的印象，他们也应该对转移到社交平台上的广告业务量有所限制。电视广告仍然是将简单信息推送到大量观众眼前的上上之选，而纸媒广告则能让品牌带有一丝值得信赖的气息（我们当然会这么说，不是吗？）。就像基金经理一样，广告商永远都需要保持投资组合的平衡。 ■

VR and the future of computing

Awaiting its iPhone moment

Virtual reality is a promising technology, but will not go mainstream in its current form

IS IT vividly realistic—or is it still just vapid razzmatazz? Virtual reality (VR), a technology that flopped in the 1990s, is making a glitzy comeback. The dream of a headset that can immerse you in a detailed, realistic 3D world is now being pursued in earnest by a gaggle of startups and the giants of technology alike. Last year Facebook bought Oculus, the most prominent VR fledgling, for $2 billion. Mark Zuckerberg, Facebook's boss, says "immersive 3D content is the obvious next thing after video." Google supports VR in several of its products and is backing a secretive new company called Magic Leap. Microsoft, having missed the boat on smartphones, has developed an impressive VR system named HoloLens. Tech leaders have decided that VR could be the next big thing after the smartphone. Are they right?

The VR devices appearing in the next few months will focus on video-gaming, where VR is a natural fit. But the technology will eventually have many other uses: in data visualisation, education, communication and entertainment (including VR pornography, which is already starting to appear). Whether the 3D world is computer-generated or captured using special cameras, rendering it fast enough to seem realistic—and for it not to cause nausea—requires processing power, high-resolution screens and motion sensors. Happily, all those things can be found inside modern smartphones, which is making VR hardware cheaper to put together. Smartphones have also boosted VR thanks to adaptors that turn phones into basic headsets, the cheapest of which (devised by Google) are made of cardboard and cost $10. These cannot compete with high-end VR headsets, but they offer much of the experience for less than 5% of the price. Over the

past year this has led to a surge in the experimental production and consumption of VR content.

As well as hastening the rise of VR, smartphones provide an analogy for how the technology is likely to develop. VR today is where smartphones were in 2001. Back then it was clear that mobile phones, connected to the internet and armed with cameras and colour screens, were going to be important. Sure enough, people now use phones for everything from maps and music to payments and picture-sharing. But the strongest advocates of the smartphone revolution, such as Nokia, failed to anticipate how it would play out, with the result that others now dominate the new industry. The turning-point was Apple's iPhone. With its touchscreen and elegant apps, it set the model for the entire industry. VR has yet to have its iPhone moment. The idea is sound and the gear works, but today's chunky headsets are unlikely to conquer the mass market.

The future is a mixed picture

How might VR triumph? One intriguing possibility would be to overlay graphics onto reality rather than replace it entirely—a technique called mixed or augmented reality (AR). Architectural models will seem to stand on your desk and video-game aliens will jump out from behind your sofa. Microsoft's HoloLens is taking this approach. Magic Leap, meanwhile, is thought to be working on the technology for smaller and lighter AR headsets: people would sooner wear sunglasses and headphones than spend their day inside a motorbike helmet. AR could be the missing ingredient, just as the touchscreen was for the smartphone.

For the time being, VR remains a promising technology, worth watching closely, but still in a primitive incarnation. The offspring of today's VR systems will be ubiquitous in 2030, by which time current devices will look as clunky as the folding camera-phones of 2001 do today. If the smartphone is anything to go by, the rise of VR will wrong-foot incumbent technology

giants and turn obscure startups into household names. Sci-fi novelists have already sketched out a bewildering range of uses of AR, from head-up displays for soldiers to virtual jewellery that is drawn around the wearer by other people's headsets. Such fiction provides a helpful guide to the potential impact of this emerging technology which, like the internet and smartphone, promises to touch every field of human endeavour. Just not very rapidly. ■

虚拟现实和计算的未来

等待iPhone时刻

虚拟现实是一项前途大好的技术，但不会以目前的形态成为主流

它是逼真的写实吗，或者仍然只是一堆让人头晕目眩的无聊玩意？虚拟现实技术在上世纪90年代经历失败过后，正在耀眼地归来。现在，一批创业公司和技术巨头满怀热情地要让一个美梦成真：戴上一副眼镜和耳机，你就沉浸在细致入微、栩栩如生的三维世界中。去年Facebook花20亿美元收购了Oculus这家最吸引眼球的虚拟现实新生企业。Facebook的老板马克·扎克伯格说“沉浸式三维内容显然会是视频之后人们分享最多的内容”。谷歌在其多个产品中支持虚拟现实，并资助了一家神秘的新公司Magic Leap。错过了智能手机大潮的微软已经研发出令人印象深刻的虚拟现实系统HoloLens。技术领袖们都认同，虚拟现实可能是继智能手机之后的下一件大事。他们的预期对吗？

将在接下来数月中相继亮相的虚拟现实设备会聚焦于视频游戏这一虚拟技术最为自然的运用。但这项技术最终会有许多其他用途：数据可视化、教育、传播和娱乐（包括虚拟现实色情，已经开始出现）。无论三维世界是由计算机制作产生还是用特殊的摄像头捕捉，要让它呈现的速度足够快以获得逼真的效果，同时又不会让人头晕，需要处理能力、高分辨率屏幕和运动传感器。可喜的是，所有这些东西都已经能在智能手机中找到，这让虚拟现实硬件组合的成本更为低廉。智能手机也已经推动了虚拟现实的发展，这得益于一些设备把手机变成了基本的头戴装置，其中最便宜的设备（谷歌设计）用硬纸板制成，售价仅10美元。这些设备自然无法和高端虚拟现实头戴设备竞争，但它们用不到对方5%的价格提供了大部分相同的体验。过去一年中，这引发了虚拟现实内容制作和消费的大增。

除了加快虚拟现实的崛起，智能手机也为这项技术未来的发展可能提供了类比。今天的虚拟现实就是2001年的智能手机。在那时，人们很清楚，手机连上互联网和配备摄像头、彩色屏幕后会变得非常重要。果不其然，如今人们用手机做各种事：查地图、听音乐、付账、分享照片，不一而足。

但是，智能手机革命最坚决的倡导者，比如诺基亚，没能预期到这场革命会以怎样的场景呈现，结果被其他人抢占了这一新产业的主导地位。转折点是苹果的iPhone，凭借其触摸屏和精致的应用程序，它为整个行业树立了模板。虚拟现实技术还在等待自己的iPhone时刻。其创意很合理，装配也已能运作，但目前笨重的头戴设备不太可能征服大众市场。

前景纷纭

虚拟现实可能将如何大获成功？一个引人入胜的可能性是把图像叠加到现实上，而不是完全取代现实。这种技术叫混合现实或增强现实。建筑模型看起来好像耸立在你的书桌上，而电子游戏中的异形怪兽会从你的沙发后面突然跳出来。微软的HoloLens走的就是这个路线。与此同时，外界猜测Magic Leap正在研发更小更轻的增强现实头戴技术。人们会更快戴上太阳眼镜和耳机，而不是套着个摩托车头盔过一整天。增强现实可能是那个缺失的关键元素，就像触摸屏对智能手机的重要性一样。

目前，虚拟现实仍然是一项极具发展前景的技术，值得密切关注，但它还处在原始的初级阶段。今天的虚拟现实系统的子孙后代到2030年会无处不在，届时现在的设备看上去就如同今天回看2001年的翻盖手机那般笨拙落伍。如果说有什么可以从智能手机中借鉴的话，虚拟现实的崛起会把那些成熟的技术巨头打个措手不及，而将一些不为人知的创业公司变成耳熟能详的品牌。科幻小说家们已经描绘了琳琅满目的增强现实运用，从士兵使用的平视显示器，到可以看到别人身上佩戴着虚拟珠宝的头戴设备。这类科幻为这项尚在崛起中的技术的潜在影响提供了有益的向导。和互联网、智能手机一样，虚拟现实技术势将触及人类行为的每个领域，只是这一切不会很快实现。 ■

Cinemas

Just the ticket

As the film business changes, IMAX is determined to stay in the front row

WHEN Richard Gelfond, the boss of IMAX, goes to China, people sometimes ask for his autograph. That is because for the Chinese, watching films on a screen 20 metres high is still a novelty, and IMAX is the best-known brand in giant-screen cinemas. No one in Hollywood has yet asked for Mr Gelfond's autograph, but he is happier being a star abroad. China is now the world's second-largest cinema market. Its box-office receipts rose by 37% in 2014, to around $4.8 billion. Along with other emerging economies, it will drive the film industry's growth in the years ahead.

IMAX's roots are in museums and science centres, where audiences goggle at documentaries about sharks, dinosaurs and planets. Its fortunes were boosted when, in 2009, its cinemas did 3D screenings of "Avatar", a film about tree-hugging blue aliens. The film broke worldwide box-office records and introduced IMAX to millions more popcorn-chewers. Now, the company is in "the sweet spot of what is working well globally in the box office", says James Marsh of Piper Jaffray, an investment bank. The high-budget, high-octane blockbusters that Hollywood spews out these days are ideally suited to IMAX screens; and more than 55% of the company's 800 screens are outside America, mostly in high-growth markets.

IMAX's margins are more than double those of cinema chains such as AMC and Regal, because it does not bear the costs of owning theatres or employing ushers. It makes its money by selling or licensing its screens and other technology to cinema operators, and by taking a cut of their box-office receipts. It also makes money from studios by assuming the cost of remastering films so they look slick on its giant screens, in exchange for a slice of what the studios get from ticket sales. So, when films do well, IMAX

gets a piece of the action; when they bomb, its costs are limited.

Mr Gelfond may not get mobbed by film fans on Hollywood Boulevard, but his number is in every studio boss's Rolodex. The studios want their big-budget productions to be shown on the largest possible screens; and negotiations to get them into IMAX cinemas can start a year or more in advance, says Michael Burns of Lionsgate, a big studio. Sometimes producers will delay a film's release until it can get a good slot. This has happened with "Mission Impossible 5", whose debut has been postponed from December 2014 to July 2015.

Worldwide ticket sales are expected to hit a record this year, as the latest instalments of such well-known film franchises as James Bond, Star Wars and the Avengers light up the screens. But it has not been a smooth walk down the red carpet. Last year America had its lowest cinema attendance in two decades. With such sophisticated home-entertainment options on offer, "people need a reason to leave their house," says Mr Gelfond. Theatres are offering better food and plusher seats in return for higher ticket prices. To fill seats in quiet periods they are also offering new content, such as filmed operas, ballets and virtual museum tours. This month IMAX has been screening episodes of HBO's "Game of Thrones" television show.

As TV screens get bigger and sharper, and as streaming services like Netflix expand, cinemas may get an ever-shorter period of exclusivity before a film is made available for home viewing. So IMAX is hedging its bets: it plans to sell smaller versions of its screens for the homes of rich Chinese film buffs; and it is working on some sort of home-cinema technology (it won't say what) for the American market. Its bet is that some people will always be willing to pay more for a bigger picture. ■

电影院

票房利器

电影行业在变化，IMAX决心保持前列

IMAX的老板理查德·盖尔方德（Richard Gelfond）到访中国时，不时会有人找他签名。因为对于中国人来说，在20米高的银幕上看电影还是件新鲜事，而IMAX是巨幕影院中最知名的品牌。虽然在好莱坞还没人找盖尔方德要过签名，但他更乐意在国外被捧为明星。中国现在是世界第二大电影市场。其票房收入2014年增长了37%，达到约48亿美元。中国将同其他新兴经济体一起，推动今后几年电影产业的增长。

IMAX起源于博物馆和科学中心，观众们在那里瞪大眼睛观看讲述鲨鱼、恐龙和星球的纪录片。2009年当IMAX院线放映3D版《阿凡达》时，这部讲述三个热爱丛林的蓝色外星人的影片让它赚了个盆满钵满。该片打破了全世界票房纪录，还让数百万嚼着爆米花的观影者知道了IMAX。现在，投资银行Piper Jaffray的詹姆士·马尔什（James Marsh）说，这家公司"正处在上佳时期，在全球票房都如鱼得水"。好莱坞如今层出不穷的高预算、充满刺激的大片对于IMAX银幕来说非常理想；该公司800块银幕中55%设在美国以外，大多在高速增长的市场。

IMAX的利润是AMC和Regal等院线的一倍多，因为它无需承担拥有影院或雇用引座员的成本。它通过向电影院运营商出售或授权使用其银幕和其他技术来获利，也从院线的票房收入中分一杯羹。IMAX还帮制片公司承担重新处理影片的费用，使其在巨幕上看起来精致平滑，作为交换，它会从制片公司的票房收入中分得一块。因此，如果电影大卖，IMAX有它的一份分成；如果票房惨败，它的损失却有限。

盖尔方德在好莱坞星光大道上可能不会被影迷包围，但每个制片厂老板的名片夹里都有他的电话。制片公司希望自己的大制作能在最大的银幕上播放；大型制片公司狮门（Lionsgate）的迈克尔·伯恩斯（Michael Burns）说，将影片引入IMAX影院的商谈可能提前一年甚至更久就开始。

有时制片人会推迟影片上映时间，直到获得好的档期。《碟中谍5》正是如此，其首映从2014年12月推迟到2015年7月。

随着耳熟能详的影片如《007》系列、《星球大战》和《复仇者联盟》等纷纷上演续集，今年全球票房收入有望创下纪录。不过红毯之路并非一帆风顺。去年美国的影院上座率落至近20年来新低。家庭娱乐选择花样繁多，“让人们离开家得有个理由。”盖尔方德说道。影院改善了食品供应，座位也更豪华舒适，以收取更高票价。为了在无片上映的时候提高上座率，它们还提供新内容，如歌剧、芭蕾舞剧影片以及虚拟博物馆之旅。本月IMAX在播放HBO的电视剧《权力的游戏》（Game of Thrones）。

电视屏幕越来越大，也越来越清晰，Netflix之类的流媒体服务也在扩展，一部影片从电影院上映到进入家庭之间的时间差越来越短。因此IMAX正在做两手准备：计划向富裕的中国影迷销售较小版本的家用银幕；也在为美国市场研发某种家庭影院技术（它不肯披露是什么）。它赌的是有些人总是愿意花更多的钱在更大屏幕上看片子。■

Schumpeter

The scale-up nation

Israel is trying to turn its Davids into Goliaths

ISRAEL is rightly proud of its status as a startup nation. It boasts the world's highest concentration of high-tech startups per head. Almost 1,000 new firms are launched every year. But all this entrepreneurial activity is not creating enough jobs as the population grows: the share of people employed in the high-tech sector has declined from 10.7% of the workforce in 2006-08 to 8.9% in 2013. Startups also fail to solve another problem: the country's high retail prices, which are 20% higher for basic products than in other rich countries, according to the OECD, a think-tank.

It doesn't come as a surprise then that Israelis have become less interested in the super-abundance of startups and more in the scarcity of big successful companies. The startup nation not only has too few of them, it also has the wrong sort. The big firms that dominate the country's stock exchange are the opposite of startups: not laser-focused organisations, but lumbering business groups that could not compete outside Israel. Worse, Israel's startups rarely turn into big companies.

Only one Israeli firm ranks in the world's 500 largest companies by market cap, Teva Pharmaceutical Industries. This dismal performance, some Israelis explain, is the result of theirs being a small country surrounded by hostile powers. But other small countries are much better at producing successful multinationals (though they are admittedly blessed with friendlier neighbours). Denmark, for instance, has a smaller population than Israel (5.6m versus 8.3m) but three companies in the top 500. Sweden (9.7m) has nine. And Switzerland (8.2m) has 17.

For a better explanation, start with Israel's business statistics. It has one of

the world's most concentrated corporate sectors: 24 major conglomerates control nearly a quarter of the country's 596 listed companies and more than two-thirds of the total market capitalisation of those firms. These groups have various vices, including high debt, poor focus and pyramid-style ownership structures that allow a handful of people at the top to control a large number of subordinate companies. Predictably, growth of their earnings per share has been dismal: 2% on average in the case of companies listed on the Tel Aviv Stock Exchange.

Israel's economy was founded by a combination of socialist politicians, who believed in keeping the commanding heights of the economy in state hands, and pioneering business families, who went into lots of loosely related businesses. In the 1990s, as the socialist dream finally faded, the government privatised many of the state-owned companies. But in tackling the first problem it reinforced the second: privatisation proved to be a bonanza for family-owned conglomerates and some newcomers, such as Lev Leviev, an immigrant from the former Soviet Union, who had amassed his wealth in the diamond trade and took over one of the largest state-owned construction companies.

This would be less of a problem if Israel did not also have a disappointing record in turning startups into viable companies. Venture capital goes mostly to young startups: 80% of funds in Israel compared with 52% in America. Most entrepreneurs cash in at the earliest moment, rather than raising their brainchildren to adulthood. Israeli startups rarely go public, according to the Milken Institute, a think-tank: in 2002-12 only 9% of exits were IPOs (rather than being bought by a bigger firm). And those IPOs had an average size of just $32m. In America the respective numbers were 20% and $237m.

These early exits amount to selling the seeds before the tomatoes are ripe. It is also contributing to Israel's sense of vulnerability: the habit of exiting

early is reinforcing fears about inequality which already once, in 2011, exploded into huge demonstrations. Ordinary Israelis worry that young entrepreneurs are more interested in making fortunes than creating jobs—and hence are just as bad as the conglomerates, which are more skilful at extracting rents than providing services.

The country has started to tackle both sets of problems. In December 2013 its parliament passed the Business Concentration Act. To promote competition, it limits the use of pyramid structures and prohibits cross-holdings between financial and other firms. Although the legislation gave business groups years to comply, it has political heft behind it: the vote in the Knesset was unanimous. The law is likely to reshape Israel's economy profoundly, forcing big firms to focus on core businesses and creating opportunities for market entrants.

As for startups, a wide range of new policies is being discussed: reforming the stock exchange, in particular easing the listing requirements for startups and high-growth companies; introducing new types of visas to make it easier for foreigners to live in Israel; and ensuring that the new sovereign-wealth fund, which is being created on the back of royalties from the new natural gasfield off the Israeli coast, provides capital to high-growth startups.

No stopdown nation

As politicians are thinking about how to make life easier for them, entrepreneurs are starting to be more patient. Waze, a car-navigation service, for instance, waited a few years before it sold itself to Google in 2013 for $966m. Wix, which helps people create websites, turned down several acquisition offers and went public, again in 2013. And in 2014 Mobileye, which makes software that helps drivers avoid car accidents, raised $890m, a record for an Israeli company going public in America.

It is tempting to dismiss the talk of a “scale-up nation” as yet more hype. But the reforms and the recent exits show that one should not underestimate the country’s capacity for patience, one of its hidden secrets, in business as in much else. The Israelis laboriously laid the foundations of the high-tech boom by pouring money into elite universities and creating a clever system to attract venture capital. They will be equally painstaking at ensuring that the land of Davids can produce its share of Goliaths. ■

熊彼特

扩展的国度

以色列正试图将它的大卫转变成巨人歌利亚

身为创业国度，以色列理所应当感到自豪。它的人均高科技创业公司数在全世界首屈一指。每年约有一千家新公司成立。但随着人口增长，所有这些创业活动并没有创造足够的就业岗位：受雇于高科技产业的人员占全国劳动人口的比例由2006年至2008年的10.7%降至2013年的8.9%。创业公司也没能解决另一问题：该国居高不下的零售价格，据智库经济合作与发展组织（OECD）称，以色列的基本必需品比其他富裕国家贵20%。

因此不足为奇的是，以色列对过多的创业公司已经兴味索然，反而更关注稀缺的大型成功公司。这一创业国度只有寥寥几家大公司，而且品类不佳。主导该国股票市场的大公司与创业公司恰恰相反：不是专注集中的组织，而是笨重迟缓的商业集团，在以色列之外无法立足。更糟糕的是，以色列的创业公司极少能成长为大公司。

只有一家以色列公司跻身市值世界五百强之列，即梯瓦制药工业有限公司（Teva Pharmaceutical Industries）。有些以色列人解释，表现如此惨淡是因为以色列是被敌对势力环伺的小国。但其他小国在出产成功的跨国公司方面出色得多（诚然它们是托了友好邻邦的福）。例如，丹麦的人口比以色列少（560万对830万），但有三家世界五百强企业。瑞典（人口970万）有九家。而瑞士（人口820万）有17家。

为了更好地说明，先看看以色列的商业统计。它有世界上最集中的行业板块：24家大型企业集团控制了全国596家上市公司的近四分之一，占这些公司总市值的三分之二以上。这些集团有着种种恶习，如债台高筑、业务分散，且股权结构为金字塔形，使得顶端的少数人掌控大量的子公司。可想而知，其每股收益的增长始终惨淡：在特拉维夫股票交易所上市的公司平均每股收益增长率仅有2%。

以色列的经济是由一群社会主义政治家和进取的商业家族联合创立。政治家相信要将经济的制高点紧握在国家手中，而商业家族涉足了许多相关性不大的业务。上世纪九十年代，社会主义者的梦想最终消亡，政府将许多国有企业私有化。但是解决第一个问题也加剧了第二个问题：私有化为家族集团和一些新来者如列夫•列维夫（Lev Leviev）之流带来了滚滚财源。列维夫是来自前苏联的移民，他在钻石贸易中积累了巨额财富，并且接手了以色列最大的国有建筑公司之一。

如果以色列在扶植创业公司真正成长方面不那么令人失望，第二个问题也会不那么严重。风险资本大部分都投向年轻的创业公司：在以色列比例为80%，相对美国的52%。大多数创业者在第一时间套现，而不是将自己的智慧结晶抚养成人。以色列的创业公司很少上市。智库米尔肯研究所（Milken Institute ）称，2002年至2012年间，只有9%的创业公司通过成功上市而退出（而不是被大公司收购）。而这些IPO的平均规模只有3200万美元。在美国成功上市的公司有20%，平均融资规模2.37亿美元。

这些公司早早退出无异于涸泽而渔。这也导致了以色列的脆弱感：过早退出的习惯加深了人们对不平等的担忧，2011年正因如此才爆发了大规模游行示威。普通以色列人担心年轻的创业者对赚钱比创造就业更感兴趣，因此跟那些企业集团一样可恶，比起提供服务，它们抽租的本事可高明得多。

以色列已经开始着手解决这两类问题。2013年12月，以色列国会通过了经济集中法案。为了促进竞争，该法案限制了金字塔结构的使用，禁止金融公司和非金融公司交叉持股。这项立法虽然给了商业集团几年时间适应，但可见其背后的政治意义：法案在以色列国会获得了全票通过。这项法案可能会彻底重塑以色列经济，迫使大公司把重点放在核心业务上，为市场新进者创造机会。

对创业公司而言，一系列新政策正在讨论中：改革股票交易所，尤其是放宽对创业公司和高增长公司上市的要求；推行新型签证，方便外国人在以色列生活；确保新的主权财富基金为高增长创业公司提供资本，此基金由

以色列沿海新天然气田的使用费支持成立。

> *永不退步的国度*

政治家在思考如何让企业家过得更轻松时，企业家们也开始更加耐心。比如汽车导航服务位智（Waze）等了几年才于2013年以9.66亿美元被谷歌收购。帮助人们创建网站的Wix拒绝了几个收购邀约，也是在2013年选择上市。移动眼（Mobileye）开发的软件帮助司机避免车祸，2014年该公司募资8.9亿美元，创下以色列公司在美国上市的记录。

“扩展的国度”这样的说法很容易被视作夸夸其谈。但是一系列改革以及近来退出的创业公司表明，我们不应低估以色列坚忍的能力，这是它不为人知的秘密之一，无论是做生意还是做其他事情。以色列通过向一流大学注入资金并且创建一个智慧的系统吸引风险资本，不辞辛劳地为高科技蓬勃发展奠定基础。他们将同样艰苦努力，确保大卫之国也能创造出属于他们的巨人歌利亚。 ■

Israel's computer-security firms

Cyber-boom or cyber-bubble?

Internet security has become a bigger export earner than arms

ISRAEL'S arms exports fell last year. Cutbacks in the defence budgets of many Western countries pushed the global sales of Israeli weapons systems down to $5.7 billion, $1 billion less than in 2013. Unexpectedly, another security-related industry took up the slack. For the first time, the country sold more cyber-wares than arms. According to figures published recently by the cyber-task-force in the prime minister's office, in 2014 Israeli companies sold around $6 billion of internet-security software, equivalent to about a tenth of the entire worldwide sales of such stuff.

A big chunk of that came from Check Point, best known for its ZoneAlarm antivirus software for home computers, and a provider of a broad range of online-security products for business. Its revenues last year were $1.5 billion. But Israel is also producing lots of cyber-security startups. Last year eight of them were sold to foreign investors, for a total of $700m. In September CyberArk, which specialises in protecting firms against attackers who pose as system administrators and other insiders, had one of the year's biggest IPOs on the American NASDAQ market, and its current valuation is around $2 billion.

The number of Israeli cyber-security companies has doubled over the past five years to 300. Demand for their products has boomed, as businesses and governments everywhere have come to realise—often the hard way—that they need to protect themselves against hacking. And Israel has a good supply of experienced software engineers. They come mainly from two sources: first, employees of the 280 high-tech development centres in Israel owned by foreign multinationals, who have begun to strike out on their own; and second, the hundreds of people with suitable skills who leave the

Israel Defence Forces each year. The forces have for decades been developing their capabilities—both defensive and offensive—in cyber-warfare, and this policy is now paying a civilian dividend.

The many serious hacking incidents of recent years have shown that computer systems can be infiltrated through all sorts of channels, for instance through mobile devices, or by breaking into databases hosted by a third party in the online "cloud". Earlier software was able to detect known strains of computer viruses, but the rapid evolution of malware has, among other things, given rise to companies offering software that predicts where hackers may next attack and provides defences against them. Some of Israel's cyber-security startups have established themselves as market leaders.

Nevertheless, a few Israeli entrepreneurs worry that the cyber-startup boom may be turning into a bubble. "Every kid who leaves Unit 8200 [the Israeli forces' electronic-intelligence operation] thinks he's going to be a cyber-millionaire, and then some of the startups are immediately evaluated at $5m without having done anything," grumbles an Israeli venture capitalist. "There is a bit of a bubble vibe" to what is happening, says Yigal Erlich, one of the pioneers of Israel's venture-capital scene. "There could be a limit to this cyber-market. But on the other hand, for Israeli technology this is a perfect niche-market in which local companies can become world leaders."

Gadi Tirosh, the managing partner of JVP, a venture-capital fund based in Jerusalem and chairman of CyberArk, says that over the past two years his fund has examined nearly 300 startup projects in the cyber field but does not believe there is a bubble. "What we are seeing is an overnight evolution, which happened when the chief security officers of corporations around the world suddenly realised how vulnerable they are, and that the cyber-attack can come from anywhere, including from within...That fear is only

growing, and in the cyber-industry, that fear means money." To tap into the reservoir of technically experienced yet often financially naïve software engineers looking to enter the industry, JVP has set up a campus in the southern city of Beer Sheva, which serves as an incubator for startups.

The Israeli firms' main competitors are, unsurprisingly, mostly based in Silicon Valley, where the startup culture, and all the financing and advice that goes with it, is far stronger and longer-established. But the boss of one Israeli firm argues that it and its peers have a big advantage over their American counterparts: the "Edward Snowden factor". Since the former contractor to the US National Security Agency revealed how much American technology firms were co-operating with the agency, including putting "backdoors" in their software to allow surveillance, clients around the world are looking for "non-American security" for their data, the Israeli entrepreneur claims. Notwithstanding the very close relationship between American and Israeli intelligence, and the links that many Israeli cyber-security entrepreneurs have with their country's armed forces, the cyber-boss reckons that in many cases, "Israel is their only alternative." ■

以色列的计算机安全公司

网络大潮还是网络泡沫？

互联网安全技术出口创汇更胜贩卖军火

去年，以色列的军火出口出现下滑。许多西方国家削减了国防预算，令以色列武器系统的全球销售额下跌至57亿美元，较2013年减少了10亿美元。出乎意料的是，与安全相关的另一产业补上了这一缺口：该国的网络安全软件销售额首次超越军火。根据以色列总理办公室网络事务工作小组最近发布的数据，以色列公司在2014年售出约60亿美元的互联网安全软件，约占全球此类产品销售额的十分之一。

其中相当一部分来自以色列网络安全公司Check Point，其家用电脑防病毒软件ZoneAlarm最为人熟知。此外它也为企业提供众多网络安全产品。去年该公司营收为15亿美元。与此同时，以色列还在打造许多网络安全创业公司，去年就有八家这样的公司出售给外国投资者，售价共计7亿美元。软件公司赛博方舟（CyberArk）专事保护企业免受黑客伪装的系统管理员及其他内部人士所发起的攻击。去年9月，该公司在美国纳斯达克上市，成为当年最大规模的IPO之一，目前估值约为20亿美元。

在过去五年里，以色列的网络安全公司数量翻了一番，达到300家。其产品需求畅旺，因为各国企业及政府渐渐明白（往往是在吃过亏后），他们需要保护自己免受黑客的攻击。而以色列拥有大批资深软件工程师，他们主要来自两大源头：一是外资跨国公司在以色列建立的280个高科技研发中心的雇员，其中一些开始自立门户；二是每年成百上千从以色列国防军退役、具备合适技能的军人。军方几十年来一直致力拓展其在网络战争中的实力，兼顾防御及进攻，这一政策如今给民用事业带来了红利。

近年许多严重的黑客攻击事件已表明，计算机系统可以通过各种渠道被渗透攻击，比如通过移动设备，或是攻破由第三方“云”端托管的数据库。过去的软件只能检测出已知的计算机病毒，但恶意软件的迅速升级变种已催生安全公司推出各种新软件，可预测黑客下次会攻击哪里，从而提供防

护。以色列的一些网络安全创业公司已确立了其市场领导者的地位。

尽管如此，部分以色列企业家仍担心这股网络创业公司热潮会变成泡沫。“每个从8200部队（以色列军方从事电子侦察活动的部门）退役的孩子都觉得自己会成为网络富翁，然后，一些创业公司什么也没做就马上被估值500万美元。”一位以色列风险投资家抱怨。目前所见“有点泡沫的感觉”，以色列风险投资界的先驱之一依盖尔·埃利希（Yigal Erlich）说。“这一网络市场可能受到限制。但从另一方面来看，对以色列科技而言，这正是一个完美的利基市场，本土公司可由此跃升为世界领导者。”

JVP是总部设在耶路撒冷的一家风险投资基金公司，其执行合伙人加迪·特罗斯（Gadi Tirosh）同时也是赛博方舟的董事长。他表示，该基金在过去两年调查了网络领域近300个创业公司，不认为这里面存在泡沫。“我们看到这一夜之间发生的变化，是因为世界各地企业的首席安全官突然意识到他们的公司是那么不堪一击，网络攻击可以来自任何地方，包括来自内部……这种恐惧有增无减，而在网络行业，这种恐惧意味着金钱。”大批技术老练但往往在财务上天真的软件工程师想打入这个行业。为充分利用这些资源，JVP已在以色列南部城市贝尔谢巴（Beer Sheva）建立园区作为创业公司的孵化器。

毫无疑问，这些以色列公司的主要竞争者大多在硅谷，那里的创业文化以及与之相伴的融资和咨询服务都更强大悠久。但一家以色列公司的老板则认为自己的公司及国内同侪拥有可超越美国同行的一大优势：“爱德华·斯诺登因素”。这位企业家称，由于美国国安局的这位前承包商透露了美国科技公司与国安局的紧密合作，包括在其软件中安插“后门”方便政府监视，全球各地用户如今都在寻找保护自己数据的“非美国安全技术”。尽管美国和以色列情报机构关系密切，而且以色列许多网络安全企业家与该国军方有着千丝万缕的联系，这位网络公司老板仍认为，在许多情况下，“除以色列外，他们别无他选”。■

Streaming video

A business home run

Baseball's flourishing media division may have outgrown its parent

Last April, Home Box Office (HBO) turned a success into an embarrassment. Within a five-week period, two of the broadcaster's shows drew such large audiences that its online streaming service for subscribers collapsed. The firm could not afford further hiccups during its launch of HBO Now, an over-the-top (OTT) service that delivers shows via the internet to viewers without a cable-television package. To ensure reliable delivery, HBO turned to an unusual source: Major League Baseball (MLB), or more specifically its media-technology arm, MLBAM, which has become a leader in the video-streaming business.

It would be hard to design a better incubator for a live-video startup than baseball. Sports are the type of content that viewers are keenest on watching in real time, which has driven rights fees to record levels. MLB, whose new season opened on April 5th, holds 2,500 games per year—and thus produces far more content than other sports. Moreover, most of its games are only broadcast locally, and cannot be seen on TV by fans in other cities.

In the internet's early days, connections were too slow for live video. But by 2000 baseball's officials foresaw mass broadband, and its 30 teams launched MLBAM as a joint venture. They agreed to chip in $1m per club per year over the next four years. That proved unnecessary: thanks to the launch of MLB.tv, a subscription service that shows live games to viewers outside the teams' local markets, it only spent $77m before becoming profitable in 2003.

Next, MLBAM focused on improving quality and on complementary

software, such as online ticketing and an app for Apple smartphones. By the mid-2000s other content owners began to notice its technical prowess. It is far pricier and slower to build video architecture from scratch than to use MLBAM, which can withstand crushing demand loads, and authenticate and geo-locate viewers in milliseconds. In 2010 the firm began handling online distribution for ESPN, a sports network owned by Disney. In 2011 it powered the launch of TheBlaze, a conservative news channel. In 2013 World Wrestling Entertainment hired it to run a new OTT offering. In March Sony unveiled PlayStation Vue, which uses MLBAM to transmit television shows over game consoles.

Baseball has reaped a windfall from MLBAM: its $800m in revenue last year was 9% of the major leagues' total. Its growth could accelerate as streaming video gains ground. In March Twitter said it had acquired Periscope, which lets users share live footage from their phones. Businesses built on such "social streaming" could create a new category of customers. Although MLBAM is sure to attract competition, it enjoys strong barriers to entry. Since reliability is paramount in live video, content owners are willing to pay up for a provider with a proven record. And only a well-heeled rival could replicate its network of data centres—its capital spending has already exceeded $500m.

MLBAM's success has led analysts to ask whether its non-baseball services might fare better on their own. Wall Street banks have been encouraging it to go public since 2005, and Apple-watchers have identified it as an acquisition target, since its technology could help the tech giant secure exclusive content for Apple TV, an OTT service. Bob Bowman, MLBAM's head, insists that it is only pursuing minority investments from partners within its industry.

MLB has no interest in disrupting networks like ESPN, whose rights fees help keep it afloat. So its own subscription service, MLB.tv, meticulously

blanks out nationally broadcast and “in-market” games. This means that fans who want to watch their local teams must keep subscribing for pay-TV packages that include the sports networks.

However, streaming video could shift the balance of power between upstart OTT services and legacy cable providers. Thanks to MLBAM’s technology, numerous OTT platforms now carry the ESPN network. Sports fans may increasingly dump the cable firms’ expensive TV packages in favour of cheaper OTT ones. If so, cable firms may be relegated to mere “dumb pipes” providing only internet access, a business whose margins might easily be competed away. ■

在线视频

业务本垒打

职业棒球蒸蒸日上的媒体业务可能已超越母公司

去年4月，美国家庭影院公司（HBO）将成功变成了一场尴尬。在五周内，该公司播放的两部电视剧吸引了太多观众，提供给用户的在线视频服务因不堪重负而崩溃。HBO Now上线时可不能再出现这样的问题了。HBO Now是一项无需有线电视设备、通过互联网向观众播放节目的OTT（over-the-top）服务。为保证播放的可靠性，HBO求助于一位不寻常的伙伴：美国职业棒球大联盟（MLB），或者更具体地说，是它的媒体技术部门——已成为流媒体视频业务领头羊的MLBAM。

对于经营视频直播的创业公司，很难设计出一个比棒球比赛更好的孵化器了。体育运动是观众最热衷于实时观看的节目，这已经让转播费达到创纪录的水平。4月5日开始新赛季的职棒大联盟每年有2500场比赛，因此产生的节目比其他体育赛事多得多。而且，大部分比赛仅在本地播放，其他城市的球迷没法在电视上看到。

互联网初期，因网速太慢而无法实时播放比赛。但是到了2000年，棒球界的官员预见到了高速宽带的到来，职棒大联盟的30支球队组建了合资公司MLBAM。他们同意在此后四年中每家俱乐部每年出资一百万美元。结果证明毫无必要：付费服务MLB.tv的上线将比赛实况转播给球队本地市场之外的观众，令公司仅投资了7700万美元后即在2003年开始赢利。

之后，MLBAM专注于提升质量、增加配套软件，如网上票务以及为苹果智能手机提供应用。到2005年左右，其他内容所有者开始注意到它在技术上的非凡实力。从零开始打造一个视频体系要比使用MLBAM贵得多也慢得多。MLBAM能承受压倒性的需求负载，在毫秒间验证并定位观众。2010年公司开始处理迪士尼旗下的体育电视网ESPN的在线播放业务。2011年它为保守派新闻频道TheBlaze的上线提供助力。2013年世界摔角娱乐公司聘请它运作一项新的OTT服务。今年3月索尼推出PlayStation Vue，借

MLBAM通过游戏主机传输电视节目。

棒球业从MLBAM身上赚了个盆满钵满：去年收入达8亿美元，占职棒大联盟总收入的9%。随着流媒体视频不断流行，它可能还将加速增长。3月Twitter宣布已收购了Periscope，这款应用让用户用手机拍摄实时视频分享给他人。基于这类“社交流媒体”打造的生意可以创造出一类新型客户。尽管MLBAM肯定会面临竞争，但它仍从很高的准入门槛中获益。对视频直播来说，可靠性至关重要，因此内容所有者愿意付费给纪录良好的供应商。而且，对手必须花巨资才能复制这一数据中心网络，MLBAM的资本支出已超过5亿美元。

MLBAM的成功让分析师不禁发问，其非棒球服务如果自行发展是否会更胜一筹。华尔街的各家银行自2005年起一直鼓励它上市，关注苹果的人将MLBAM视为一个收购对象，因为它的技术能帮助科技巨头苹果确保其OTT服务Apple TV的内容独一无二。MLBAM的老板鲍勃·鲍曼（Bob Bowman）坚称它只想从业内合作伙伴那里获得少数投资。

MLB对颠覆诸如ESPN之类的电视网没有兴趣，因为正是ESPN的转播费让MLB保持盈利。所以它自己的付费服务MLB.tv小心翼翼地屏蔽了全国转播和“本地”比赛。这意味着想要观看当地球队比赛的球迷必须继续订购包括ESPN在内的付费电视节目。

不过，流媒体视频会改变OTT新贵服务与传统有线电视供应商之间的力量对比。有了MLBAM的技术，无数OTT平台现在搭载了ESPN电视网。越来越多的体育迷可能会抛弃有线电视公司昂贵的电视套餐，转向便宜的OTT服务。这样一来，有线电视公司可能会降级为仅仅提供互联网接口的“哑管道”，它们的利润会很容易在竞争中被挤掉。■

The dairy industry

Turning sour

As boom turns to bust, global milk prices slump

LITTLE over a year ago, New Zealanders were still talking about a "white-gold rush". Strong prices for milk were prompting sheep and cattle farmers to convert to dairy, and Chinese firms were coming in to buy up agricultural land and milk processors. Inevitably, influx has led to glut. Prices have fallen to their lowest in more than ten years (see chart). Farmers in France, Britain and Belgium have recently been staging protests against low milk prices, but few places are as badly affected as New Zealand, whose dairy industry produces a quarter of its export earnings.

On August 7th Fonterra, a co-operative owned by New Zealand farmers which is the world's largest dairy-export firm, said it expected to pay its members NZ$3.85 ($2.55) per kilogram of milk solids in the current season, ending in May 2016. That is less than half the record price of NZ$8.40 it was paying two years ago, and well below breakeven for many farmers.

There are three main reasons why the milk trade has turned sour. One is the economic slowdown in China, a giant market where demand for dairy produce had hitherto been growing strongly. Another is the abolition of the European Union's dairy-production quotas earlier this year, which is encouraging big producers in Germany, the Netherlands and elsewhere to boost their output and exports. A third is Russia's ban on EU produce, in retaliation for European sanctions, which is forcing those European farmers that had been selling to Russia to seek other markets.

Andrew Little, the leader of New Zealand's opposition Labour Party, says he fears prices will stay low, and that the industry's bankers will lose patience. If this leads to a lot of indebted farms being put on the market, many may

fall into foreign hands, especially Chinese and American ones—something New Zealanders would not welcome. As a stopgap, Fonterra is offering farmers a loan of 50 cents for each kilogram of solids they sell to the firm between June and December. The loan will be interest-free for the first two years, and the farmers have to pay it back only if and when the price recovers to NZ$6.

There have also been calls for Fonterra to suspend the twice-monthly online auctions of GlobalDairyTrade, a trading system it owns, which is used to set benchmark prices, until prices pick up. Fonterra's boss, Theo Spierings, has said he would like New Zealand to have something like Europe's price-intervention scheme, in which the EU buys farmers' stock when prices of milk powder, butter and other produce hit certain levels.

Some think Fonterra itself is the problem. Jacqueline Rowarth, professor of agribusiness at Waikato University, argues that it has concentrated too much on trying to be big and to dominate the dairy trade, instead of paying attention to consumer demand. Its market intelligence seems to have been weak: it appears to have underestimated the effects of China's slowdown on milk-powder stocks there, and the impact of ending EU quotas on European farms' exports. If it had given farmers more warning of the impending downturn, they might not be in such trouble now.

Both Fonterra and the government are urging farmers not to panic, and assuring them that demand for dairy produce will bounce back in a year or so. However, China is continuing to boost its domestic milk production, while taking advantage of Western sanctions to sell more produce to the Russians. For example, a huge farm with 100,000 cows is being set up in Mudanjian, a Chinese city near the border with Russia. With China's farms expanding, at a time of subdued domestic demand, and with European ones freed from production quotas, milk prices could slip further. That could make it impossible for some farmers in New Zealand and elsewhere

to carry on.

乳品行业

渐渐变酸

由盛转衰，全球牛奶价格暴跌

一年多点以前，新西兰人还在讨论“白金热”。牛奶价格坚挺，促使养羊和养肉牛的农民转向乳品业。中国公司进入新西兰，大量买进农业用地和牛奶加工厂。密集涌入不可避免地导致供大于求，奶价已降至十多年来最低点（见图表）。法国、英国和比利时的农民最近正抗议牛奶价格过低，但少有地方像新西兰那样受到如此严重的影响，乳品业占该国出口收入的四分之一。

8月7日，新西兰农民拥有的合作社集团、全球最大的乳品出口公司恒天然宣布，预计截止2016年5月，将以每千克3.85新西兰元（2.55美元）的价格向其会员收购这一季的乳固形物。这一价格不到两年前历史最高价8.40新西兰元的一半，对很多农民来说远低于保本价。

牛奶贸易为何会恶化，有三点原因。其一是中国经济趋缓，这一巨大的市场对乳品的需求在放缓之前始终强劲增长。其二是今年早些时候欧盟取消了乳制品产量配额制度，促使德国、荷兰和其他地方的大型生产商提升产量和出口量。其三是俄罗斯为报复欧盟制裁，禁止进口欧盟生产的乳制品，迫使原本出口到俄罗斯的欧盟农民寻求其他市场。

新西兰在野党工党的领袖安德鲁·利特尔（Andrew Little）说，他担心价格仍将处于低位，令这一行业的银行家失去耐心。如果这导致大批欠债农场被投放到市场，那么很多农场可能会落入外国人之手，尤其是美国和中国，这是新西兰人不愿看到的。作为权宜之计，从6月至12月，农民每卖给恒天然一千克乳固形物，恒天然就提供五毛钱的贷款。这笔贷款头两年免息，农民只需要在奶价恢复至6新西兰元时偿还。

也有人呼吁恒天然暂停在其交易系统GlobalDairyTrade上每两个月一次的网上拍卖，直至价格回暖。该系统被用来设定基准价格。恒天然的老板施

牧德（Theo Spierings）曾说，他希望新西兰能有类似欧洲的价格干预机制，当奶粉、黄油和其他产品的价格跌至某一水平时，欧盟会收购农民的库存。

有人认为恒天然自己就是问题所在。怀卡托大学（Waikato University）的农业经济教授杰奎琳·洛维斯（Jacqueline Rowarth）认为它太过专注于做大自己，掌控乳品贸易，而没有关注消费者的需求。它的市场情报看来也过于薄弱，似乎低估了中国经济放缓对该国奶粉库存的影响以及欧盟取消农场出口配额的影响。如果恒天然之前能更多警告农民衰退即将到来，他们可能不会像现在这般深陷困扰。

恒天然和新西兰政府都在敦促农民不要恐慌，向他们保证对乳制品的需求再过一年左右就会回弹。不过中国正不断提升国内牛奶产量，同时利用西方制裁，将更多产品卖给俄罗斯人。例如，在与俄罗斯接壤的中国城市牡丹江，一座拥有10万头奶牛的巨型农场正在建设中。随着中国农场不断扩张，而其国内需求一时不振，同时欧洲农民不再受产量配额所限，牛奶价格可能进一步下跌。这会让新西兰和其他地方的一些农民难以为继。■

China's motor trade

Driven to the brink

Slowing car sales are a threat to shaky dealerships

CHINA'S car market used to run like a high-revving engine. But after double-digit growth in much of the past decade, sales volumes have slowed dramatically. Barclays, a bank, recently revised its growth forecast for 2015 down from 8.5% to just 1.7%. Others think sales may even shrink. China's car dealers, mostly newcomers to the business and over-reliant on selling new cars for their livelihoods, are struggling to cope.

Carmakers frantically expanded their networks when sales were booming, and now China has a surfeit of dealers. By the end of 2014 some 26,400 had set up, according to Sanford C. Bernstein, a research firm, 60% more than in America, even though China's new-car sales are just 40% higher. Often, carmakers handed out franchises with little regard for the suitability of either the location or the dealers themselves. The German premium marques have done best at building an efficient network (see chart). But even their dealers are having to scrap among themselves for custom.

There has not yet been much consolidation of car retailing into larger chains of dealers. The 100 biggest dealership firms have just a fifth of total outlets; almost three-fifths are single-site operations, often run by a local entrepreneur with limited capital and even less idea how to flog motors. Most are powerless to resist carmakers stuffing their showrooms with surplus stock that requires heavy discounting. Chinese consumers' enthusiasm for haggling is only being reinforced as a result.

Chinese dealers have neglected the ancillary businesses, from insurance and loans to servicing and spares, that contribute much of their Western counterparts' profits, notes Jochen Siebert of JSC Automotive, a consulting

firm. Dealers lack the experience to trade the second-hand cars that are now flooding on to the market. Used vehicles account for 14% of profits at American dealerships but just 2% in Chinese ones.

Car dealerships' failure to grasp these opportunities has left them open for others to exploit. Independent service garages, not linked to a car dealer, are thriving. Motorists put off by the high prices that dealers try to charge for official replacement parts are flocking to stores that sell cheap copies. Websites for trading used cars are sprouting.

The low prices dealers are getting for new cars, and their failure to profit from sidelines, are forcing carmakers to bail them out. BMW, Audi, Volkswagen and Toyota have all given cash to their dealers this year to help cover losses. Carmakers are also belatedly helping them to develop after-sales services and used-car businesses. China's badly-assembled motor trade needs a complete overhaul. ■

中国汽车业

逼到悬崖边

汽车销售放缓对摇摇欲坠的经销商构成威胁

中国的汽车市场以往像高速引擎般运转。但在过去十年的两位数增长过后，销售量已大幅放缓。巴克莱银行最近修正了中国市场2015年的增长预测，增幅从8.5%下调至仅为1.7%。还有观点认为销售甚至会萎缩。中国的汽车经销商大多初涉此行，过分依赖新车销售，目前经营艰难。

行情畅旺时，汽车制造商疯狂扩展网络，而现在，中国汽车经销商已供过于求。研究公司盛博（Sanford C. Bernstein）的数据显示，截至2014年底，中国约有26,400家汽车经销商，比美国多60%，而中国的新车销售仅比美国高出40%。汽车厂商往往不管地点或经销商本身资质是否合适便发出特许经营权。德国豪华车品牌建立的销售网络最为高效（见图表），但就连他们的经销商也不得不互相争抢常客。

在中国汽车零售业，整合形成更大型经销网络的案例迄今并不多见。最大的100家汽车经销公司仅拥有全国汽车经销门店的五分之一；近五分之三的经销商只有一家门店，由资金有限、甚至不懂如何卖车的当地企业家运营。汽车厂商把剩余库存硬塞到展厅，他们大多无力反抗。而要卖出这些库存车就必须大幅打折，结果强化了中国消费者热衷讨价还价的习惯。

捷实汽车咨询公司（JSC Automotive）的约亨·西伯特（Jochen Siebert）指出，中国的汽车经销商一直忽略了包括车险、车贷、保养以至配件销售在内的配套业务。如今，大量二手车涌向市场，但经销商却缺乏这方面的交易经验。二手车占美国经销商利润的14%，但在中国仅为2%。

汽车经销商未能把握住这些机会，别人便乘机而入：与经销商没有任何关联的独立维保厂在中国遍地开花。经销商的高价原厂替换零件令车主却步，纷纷转投出售便宜副厂产品的店铺。二手车交易网站正在萌发。

经销商只能以低价销售新车，又无法从副业获利，迫使汽车厂商出手相助。宝马、奥迪、大众及丰田今年都向经销商发放补贴，帮他们弥补亏损。汽车厂商也在亡羊补牢，帮助经销商发展售后及二手车业务。装配不良的中国汽车业亟需彻底大修。■

The motor trade

Death of a car salesman

No one much likes car dealers. But changing the system will be hard

THE internet was supposed to do away with all sorts of middlemen. Yet house sales are mostly conducted by estate agents, and car sales are still finalised in cavernous showrooms that smell of tyres. Technology is diminishing the role of car dealers, however. Customers are using the internet for much of the process of choosing a new car, and are increasingly getting loans and insurance online rather than buying them from the dealer who sells them their car. Some carmakers are seeking ways to bypass dealers too.

In the motor industry's early days, a century ago, manufacturers tried selling their vehicles at the factory gate, in shops they owned themselves, by mail order and through travelling salesmen. But eventually they settled on a system of franchising, in which independent dealers mostly sell just one maker's models. Now, almost all of the 90m motor vehicles sold worldwide each year cross dealers' forecourts. In America, the second-largest car market, their total revenues reached $806 billion in 2014. China's car market, the largest, has rapidly come to resemble the West's, with all its faults.

Surveys show that car buyers find the experience of visiting a dealer boring, confrontational and bureaucratic, notes Nick Gill of Capgemini, a consulting firm. No wonder they try to avoid them. Ten years ago Americans visited five dealers before making a purchase, according to McKinsey, another consulting outfit, but now they visit 1.6 on average. The trend is similar elsewhere in the world. In many cases car buyers turn up having already decided which model and which options they require; and, having checked price-comparison websites, how much they will pay.

Almost all cars these days have decent performance and handling, so test drives are less important than ever. Styling and branding—things that can be assessed without visiting a dealer—figure more prominently in buyers' minds. The role of traditional car salesmen, geared for the hard sell, is waning.

What motorists do want, though, is someone to talk them through all the features that cars come with these days—entertainment systems, navigation services, automated parking and so on. Carmakers are beginning to respond. Since 2013 BMW, taking Apple Stores as its model, has been installing "product geniuses" in some larger showrooms, to talk potential buyers through its cars' features without pressing them to close a sale. Daimler Benz, another German premium carmaker, and even Kia, a mass-market South Korean firm, have begun similar initiatives.

Apple's softer sell, which stresses its products' design and whizzy features, helps to persuade customers to pay premium prices. Its selling methods have also succeeded in training customers to accept that the list price is the final price. In contrast, the motor industry has spent more than a century training buyers to expect haggling, followed by discounts. Yet customers say having to argue about the price is one of the things that puts them off dealers. Some firms are offering them ways to avoid it. Costco, a discount retailer, sold 400,000 new and used cars in America last year, using its buying power to get good deals, doing the haggling on behalf of motorists. Lexus, Toyota's premium brand, is experimenting with haggle-free pricing in a handful of its American dealerships.

Some dealers are experimenting with selling cars online, or opening temporary "pop-up" showrooms in shopping centres. Others are offering to bring cars to a potential buyer's home or workplace for a test drive. But the most controversial experiment is the one that Tesla, a maker of expensive electric cars, is trying: cutting out the dealers altogether and selling directly

to motorists. Two decades ago Ford and General Motors tried to revive this idea from the industry's early days, but they were deterred by resistant dealers and restrictive laws in some American states. The legislation, enacted in the 1950s to protect dealers from onerous terms that carmakers were trying to impose on them, is now being used to put the brakes on Tesla. It has battled to open stores in several states where direct sales are banned or restricted (see diagram). And it is winning most of its fights. New Jersey and Maryland recently overturned bans, though the struggle continues in Arizona, Michigan, Texas, and West Virginia.

In other countries, although carmakers face no legal hurdle to selling directly, they certainly would face resistance from their dealer networks. Nonetheless, Hyundai, Daimler Benz, BMW and Volvo have set up small experiments in Europe to sell cars through their company websites. Customers can use the sites to configure their new cars and pay a deposit. Volvo sold all 1,900 of a special version of a sports-utility vehicle it offered online last year, and it now wants to get its entire line-up for sale online by 2016. Daimler is mulling an expansion of pilot schemes in Hamburg and Warsaw. GM's premium Cadillac brand plans to open several test-drive centres and virtual dealerships across Europe.

In all these cases except that of Tesla, the final stage of the transaction is handled offline, by a dealer. Even so, such selling methods strengthen customers' relationships with carmakers, so they may steadily weaken the case for having dealers. This trend is set to be reinforced anyway, since most new cars will soon come with built-in mobile-internet connections that, among other things, will stream data directly to the manufacturer. By offering motorists such things as remote diagnostics and automatic updates to the software installed in their cars, the makers will have a ready-made excuse to stay in touch.

If carmakers did eventually cut out the middlemen, it could mean higher

profits for them, lower prices for buyers, or both. Daron Gifford of Plante Moran, a consulting firm, notes that the potential savings could run from a few hundred to a few thousand dollars per car. Since mass-market carmakers' margins are so slim, it could have a striking effect on their profitability.

Aside from the prospect of capturing the retail margin, and building direct links with buyers, carmakers' shareholders have another reason to support the idea of eliminating dealers. That is because many manufacturers have got into the bad habit of overproducing, and of using dealers' forecourts as dumping-grounds for their excess stock. In the trade it is called "channel-stuffing": manufacturers twist dealers' arms to take on their surplus cars, with a combination of juicy discounts and the threat of holding back more sought-after models. If cars were sold directly by the maker, and production were constantly tailored to match sales, the industry's fortunes could be transformed.

Dealers, predictably, are desperate to remain the source of new cars even though they often make little or no money flogging them. In Britain, typically two-thirds of revenues but less than a quarter of profits come from that part of the business. However, selling new cars is the engine that drives the rest of their business—finance, insurance, warranties and other aftermarket products. Buyers often bring their cars back for repairs and servicing. Trade-ins provide dealers with a stock of used cars, another important source of income. In America, such ancillaries helped dealers survive in the six years to 2011, when they were selling new cars at a loss.

Online firms are replicating these services and chipping away at dealers' local monopolies. Websites such as Edmunds and TrueCar in America, Carwow in Britain and Mobile.de in Germany let buyers quickly gather quotes from multiple dealers. Likewise, cheap insurance, finance and warranties are easy to find online. Motorists may get a better price for their

old cars from a site like webuyanycar.com in Britain than by doing a trade-in with a dealer.

But just as some tourists still like to buy package holidays, there may always be some motorists who prefer a one-stop-shop that provides everything, and some who prefer to buy face-to-face rather than over the internet. America's National Automobile Dealers' Association puts forward two other reasons why motorists are better off with things the way they are. First, it argues, the competition among dealers to sell any given model helps to keep the retail profit margin low—and if carmakers captured the retail margin for themselves, there is no guarantee that any of it would be passed on to customers. Second, when a model has to be recalled because of a safety problem, dealers have an incentive to contact owners of that model promptly, since they usually get paid by the carmaker to correct the fault.

In America especially, car dealers are a forceful lobby, and unlikely to remain silent if carmakers try cutting them out of the picture. But their grip on the industry is loosening. The all-purpose dealership, encompassing sales of new and used cars, finance, insurance, servicing and parts, once made sense. Now this business model is being squeezed. If car buyers take to online buying in large numbers, it may not be long before a mass-market carmaker follows Tesla's lead and tries to muscle aside the dealers. If customers are happy to buy direct from the manufacturer, lawmakers certainly should not stand in their way. ■

汽车业

汽车推销员之死

汽车经销商并不讨人喜欢，但改换体系谈何容易

人们原本以为互联网会消除一切中间人的角色，但如今房产买卖大多由地产中介经手，汽车销售仍是在充斥轮胎橡胶味的巨大展厅里敲定。不过，科技正在削弱汽车经销商的作用。现在，顾客选择新车的流程大部分在互联网上完成，也有越来越多人会在网上贷款及购买车险，而非从卖车的经销商那里一并购入。部分汽车厂商也正在想办法绕过经销商。

一个世纪前，汽车工业还处于襁褓期时，制造商就曾对卖车的地点和方式做过多番尝试——在工厂门口设点、在自营商铺内销售、设立邮购渠道、派人上门推销。而最终被采用的是一套特许经营体系，由独立经销商构成，他们大多只销售一家制造商的各款汽车。现在，全球每年售出9000万辆汽车，几乎全都经过经销商的展场。美国是全球第二大汽车市场，2014年那里的汽车销售总额达8060亿美元。中国的汽车市场规模位居世界之首，已迅速趋同于西方市场，连带其所有的缺陷。

凯捷管理咨询公司（Capgemini）的尼克·吉尔（Nick Gill）指出，调查显示购车人认为与经销商打交道沉闷无聊、充斥对抗、环节繁冗，也难怪他们想绕过经销商。根据另一家咨询公司麦肯锡的数据，十年前，美国人在购车前会走访五家经销商，而现在，该数字平均为1.6家。世界各地均呈现类似的趋势。许多时候，购车者来到展厅时已经确定了需要的车型及配置，而且也已在比价网站上查好了价格。现在几乎所有汽车均有不俗的性能及操控性，所以试驾已不再重要。在买家心目中，更重要的是外观造型及品牌形象，而这些特点无需到访经销商也可评估。为硬性推销而设的传统汽车销售员的作用正逐渐减弱。

而车主真正需要的是有人向他们介绍当今汽车配备的所有功能——娱乐系统、导航服务、自动泊车等等。汽车厂商正对此作出回应。自2013年，宝马便参考苹果零售店的做法，在一些大型展厅里安设“产品专员”，为潜在

买家介绍汽车的功能特性而不会催促他们完成交易。德国另一豪华汽车厂商戴姆勒-奔驰，甚至韩国针对大众市场的汽车公司起亚，也已开展类似的计划。

苹果的软性推销强调产品的设计及高科技功能，有助说服顾客为此付出高价。其销售方式也成功令顾客习惯于接受标价就是最终成交价。相反，汽车业一百多年的行规令买家惯于讨价还价，最后以折扣价购车。但顾客们表示，不喜欢汽车经销商的原因之一恰恰是必须议价。一些公司正提供服务为他们免去这一麻烦。折扣零售商好市多（Costco）去年在美国售出40万辆新车及二手车，它利用规模采购取得低价，代替车主完成议价过程。丰田的豪华品牌雷克萨斯正试验在多家美国经销商采用“一口价”的方式销售。

部分经销商正尝试在线售车，或在购物中心开设临时的“快闪”展厅。也有一些提供送车到家或工作地点让准买家试驾的服务。但最具争议的是高端电动车制造商特斯拉正在进行的试验：完全跳过经销商而向车主直销。20年前，福特和通用汽车曾试图恢复汽车业早期的这一销售模式，但受到经销商抵制，美国一些州的法律对此也有所限制，计划因而搁浅。这些立法始于上世纪50年代，目的是为保护经销商免受汽车厂商严苛条款的影响，如今正被用以刹停特斯拉。该公司奋力争取在直销被禁或受限的几个州（见图表）开店直营。它的大多数抗争都获得了胜利。新泽西及马里兰州最近推翻了禁令，但在亚利桑那、密歇根、得克萨斯和西弗吉尼亚，斗争仍在继续。

在其他国家，汽车厂商虽然无需面对限制直销的法律障碍，但仍难免要应对经销商网络的反抗。尽管如此，现代、戴姆勒-奔驰、宝马及沃尔沃均在欧洲开展了小规模试验，通过公司网站销售汽车。顾客可利用网站选配新车并交付定金。沃尔沃去年推出的一款特别版SUV共1900台，均在网上售出，而且该公司希望在2016年前把所有车型放到网上销售。戴姆勒正酝酿在汉堡和华沙扩展试验计划。通用汽车的豪华品牌凯迪拉克则计划在欧洲各地开设多个试驾中心和虚拟经销店。

上述例子中交易的最后一步均在线下由经销商完成（特斯拉除外）。即便如此，这样的销售方式加强了顾客与汽车厂商的关系，因此也将稳步削弱经销商存在的价值。无论如何，这一趋势必然加强，因为大部分新车的配置中即将包含内置移动互联网连接，可向厂商直接传送数据。通过向车主提供远程诊断及车载软件自动更新等服务，厂商大有借口与他们保持联系。

假如汽车厂商最终撇开了中间商，结果可能是他们的利润提高，或车价下降，或是兼而有之。咨询公司普兰特莫兰（Plante Moran）的达龙·吉福德（Daron Gifford）指出，每辆汽车因此节省的成本可能从几百至几千美元不等。由于大众市场汽车制造商的利润率非常低，这样的成本降低可能会显著提升其盈利。

除了获取零售利润并与买家建立直接联系的这一前景，汽车厂商的股东们还有另一个理由为去除经销商投出赞成票。那是因为许多厂商都有过度生产的坏习惯，然后用经销商的前院作堆放场，倾卸过剩库存，业内称之为“压货”：厂商为迫使经销商扛下过剩汽车而恩威并施，既开出诱人折扣，又威胁不予供应抢手车型。假如汽车由厂商直接销售，生产与销售始终匹配，汽车行业的命运可能改变。

正如所料，经销商正在拼命力保自己作为新车销售源头的地位，尽管其获利往往微薄甚至为零。在英国，汽车经销商通常有三分之二的收入来自售车业务，但只有不到四分之一的利润来自这一块。但销售新车是带动其他业务（车贷、车险、保修及其他售后产品）的火车头。买家常会回来维修保养汽车。以旧换新的业务为经销商获得二手车库存，成为其另一收入来源。在美国，这些副业帮助经销商们熬过了2006至2011年的艰难六年，期间他们一直亏本销售新车。

网络公司正在复制这些服务并逐步蚕食经销商的地方垄断优势。美国的Edmunds和TrueCar、英国的Carwow及德国的Mobile.de这类网站让买家迅速从多个经销商获得报价。同样，廉价的保险、贷款及保修服务信息均可在网上轻松获取。车主通过英国的webuyanycar.com这类网站出售旧车，

价格要好过在经销商那里以旧换新。

但正如部分游客还是喜欢跟团旅游一样，总会有一些车主宁愿选择提供所有服务的一站式门店，也有一些喜欢面对面交易而不愿在网上购车。美国全国汽车经销商协会（America's National Automobile Dealers' Association）还举出另外两个理由说明保持现状对车主有利。首先，该协会认为在销售特定车型时经销商之间的竞争有助于将零售利润率维持在较低水平，而假如汽车厂商自营零售，他们未必会把零售利润让渡给顾客。其次，当某款型号的汽车因为安全问题需要召回，经销商往往会立即联系车主修复缺陷，因为厂商会为此向他们付费。

汽车经销商在美国尤其是一个强大的游说团体，假如真被汽车厂商排挤在外，他们不太可能保持沉默。但他们对这一行业的掌控力正渐渐减弱。囊括新旧汽车、金融、保险、保养、零件销售的全面经销商模式曾经合情合理，如今这一商业模式正受到挤压。假如汽车买家大规模转投在线购车的怀抱，大众市场汽车厂商或许将很快紧随特斯拉的步伐，撇开经销商独自闯天下。如果顾客乐于从厂商处直接购车，立法者自然不应挡道阻挠。■

The sell-off in commodities

Goodbye to all that

A decade of bingeing on raw materials may leave an even longer hangover

IT WAS only a decade or so ago that Scotland was hit by the "Great Drain Robbery", the disappearance of 50 manhole covers in Fife. It gave an inkling of the emergence of a new era in commodity markets, spurred by insatiable demand from China. Scrap-metal prices—and so scrap-metal thefts—soared. Africa was over-run by Chinese engineers; Australia elected a Mandarin-speaking prime minister; and emerging markets from Argentina to Zambia relished the rising values of their farmland and mines. The boom was fanned by a weak American dollar, the currency in which most stuff that comes out of the ground is priced.

The gears have now gone into reverse. A resurgent dollar has hammered commodity prices: many have recently fallen below their levels of a decade ago. That is a fate not shared by other tradeable assets: not since the late 1990s have commodity prices been so weak compared with shares (see chart 1). The American economy is strengthening, but by no means enough to encourage thieves to filch bronze bells from Chinese temples to send as scrap to the United States. The impact of its recovery is dwarfed by slowing demand in China, which still consumes about half the world's metals such as iron, aluminium, and zinc.

The real curse for producers is over-supply in almost all raw materials. Yet they continue to act as if they are blithely unaware of it. Capital is still pouring into holes in the ground, creating a hangover that may last at least a decade. Jeff Currie of Goldman Sachs, a bank, says past cycles suggest it can take up to 15 years to work through the over-investment. "The world has just flip-flopped," he says.

Analysts point out that not all commodities act the same way. Coal prices started falling in 2011; crude oil hung on until mid-2014; agricultural prices hinge on the weather. But a generalised whiff of fear about China's economic prospects has re-emerged in recent weeks, partly caused by sliding stockmarkets and by the unexpected devaluation of the yuan last month. So far this year, almost all major commodities—energy, industrial metals and agriculture—have fallen in a 10-20% range, a fairly homogenous performance. What's more, the supply glut is being fed by three common factors. Cost-cutting has led producers to think they can bear the pain of falling prices for longer. Heavy hitters, whether OPEC princes or global miners, still yearn to increase market share. And funding is still available.

The cost cuts are part of a self-reinforcing downward spiral. Outside America, cheap currencies vis-à-vis the dollar have made domestic inputs, such as manpower, appear less pricey. Ironically, cheaper energy and steel help, too. In Australia, for example, Gina Rinehart, a mining tycoon, uses low costs to justify opening a $13 billion mine in the outback that is expected to produce 55m tonnes of iron ore a year—as much as America's annual output.

In the oil world, cost cuts have come from producers once thought likely to be wiped out by falling oil prices: shale producers. "Frackers" have slashed a third off their cost bases, and continue to pump enough black stuff to depress prices. Lower costs may give them a false sense of security about where prices will go: when crude prices temporarily ticked higher in America this spring, the number of drilling rigs rose for the first time since December. Shortly afterward prices fell again.

Among drilling titans, efforts to recoup market share from fracking upstarts can appear counterproductive. Led by Saudi Arabia, OPEC is pumping well above its 30m barrel-a-day quota, helping push crude prices to below $47 a barrel on August 19th, just about the lowest level since March 2009. But if it

intended to strangle American shale producers, its plan has backfired, instead pushing frackers to become more efficient. Meanwhile global miners such as BHP Billiton and Rio Tinto have continued to increase iron-ore production, despite plunging prices. Analysts say they are trying to drive higher-cost competitors in China and elsewhere out of business.

Funding avenues have not closed down, however. Tomás Gutiérrez of Kallanish Commodities, an industry watcher, notes that in China steel output has only recently peaked. Yet rather than facing bankruptcy, many inefficient steel producers are limping along thanks to local-government support. Their surpluses are exported, adding to the pressure on global steel prices (see chart 2).

In the oil industry Goldman's Mr Currie says that, unusually, high-cost output, such as Canada's tar sands, is owned by oil majors with strong balance-sheets. Though they have cut spending, it may take longer to shut down entire projects.

Eventually stresses will manifest themselves more violently. Small shale producers may find themselves in a pickle unless prices stop falling. Deutsche Bank notes that energy companies account for about one in six of America's high-yield borrowers. It believes American crude prices below $55 a barrel may push them into financial distress. OPEC has its own invalids, such as Venezuela, Nigeria and Libya.

But the latest leg down in crude prices may not yet have run its course. Saudi Arabia, the all-important swing producer of the cartel, is deaf to talk of a cutback. Earlier last month it raised $5 billion to offset flagging oil income. America's summer driving season is ending. If an Iran nuclear deal is ratified by America's Congress this month, once-embargoed oil will start flowing. Glencore, an Anglo-Swiss miner and commodities trader, reported whopping losses on August 19th. Its boss, Ivan Glasenberg, has railed

against rivals unwilling to throttle back production and decried “prices that are still not making any sense”.

If these are daunting headwinds, they are not unusual. When prices fall far enough for long enough, output does eventually decline, as it started to do with nickel last year. In the meantime, big mining and oil firms will take over smaller ones and shut down their weakest assets. Then another decades-long cycle can start. ■

大宗商品跌价

告别那一切

原材料市场十年狂欢或致宿醉更久

大约十年前，苏格兰发生“下水道大劫案”，法夫（Fife）的50个井盖不翼而飞。中国市场需求膨胀，刺激全球商品市场踏入新时代，从这一事件可窥见端倪。金属废料价格飙升，相关盗窃案件也因而激增。非洲到处是中国工程师；澳大利亚选出会讲普通话的总理；从阿根廷到赞比亚的新兴市场乐见农田矿井价值上涨。美元疲弱更助长了这股兴旺之势，因为地里产出的原料大部分以美元定价。

现在形势已经逆转。美元重新走强，重创大宗商品价格，其中许多近期已跌破十年前的水平。其他可交易资产的命运有别于此：自上世纪90年代以来，对比股市，大宗商品价格从未显现如此疲态（见图表1）。美国经济向好，但绝不足以刺激盗贼窃取中国寺庙的铜铃作为废料卖往美国。其经济复苏的威力抵不过中国需求放缓的影响。中国仍是铁、铝、锌这类金属的消耗大国，约占全球消费总量的一半。

对生产商而言，真正的诅咒是几乎所有原料都供过于求。但他们毫无知觉，一派无忧无虑的样子。资金仍不断投入到地下的矿洞之中，诱发持续可能至少十年的宿醉。高盛银行的杰夫·柯里（Jeff Currie）说，过往周期显示，可能需要长达15年的时间才能走出过度投资的阴影。“这世界刚刚翻了个个儿。”他说。

分析师指出，并非所有大宗商品的表现都是如此。煤炭价格在2011年开始下跌；原油价格则在2014年中之前都保持坚挺；农产品价格取决于天气。但最近几周，议论再起，普遍忧虑中国经济的前景，部分因其股市暴跌及人民币上月突然贬值所致。今年截至目前，几乎所有主要大宗商品（能源、工业金属、农产品）的价格均下跌了10%至20%，表现相当一致。而且，三个普遍因素继续加剧着供应过剩的局面。成本的降低让生产商认为他们可以在更长时间里承受跌价之痛。无论是欧佩克的王子还是全球矿业

大亨，这些重量级生产商仍渴望提升市场占有率，而且融资渠道仍然对他们敞开。

削减成本是恶性循环自行加重的原因之一。在美国以外，相对于美元较为廉价的货币令国内的投入如人力显得相对便宜。讽刺的是，能源和钢铁价格下降也带来了同样效果。比如在澳洲，矿业大亨吉娜·莱因哈特（Gina Rinehart）以成本低廉为由，投资130亿美元在内陆开采一处矿山，预计每年产出5500万吨铁矿石——相当于美国一年的产量。

在石油领域，削减成本的是页岩油生产商，而他们一度被认为会因油价下跌而破产。页岩油生产商已削减了三分之一的成本，并继续开采出大量石油，足以压低价格。低成本或许令他们对价格走势产生了虚假的安全感：今年春天，美国原油价格短暂攀高，钻机数目自去年12月以来首次增加。不久之后，价格再次下跌。

钻油巨头为从页岩油暴发户手上抢回市场份额所做的努力可能适得其反。以沙特阿拉伯为首的欧佩克日产油量远高于配额的3000万桶，促使原油价格跌至2009年以来最低水平，8月19日的报价为每桶不足47美元。如果欧佩克本意是藉此扼杀美国页岩油生产商，结果却事与愿违，反而令页岩油商们变得更高效。同时，全球矿业巨头，如必和必拓（BHP Billiton）及力拓（Rio Tinto）无视跌价，继续增产铁矿石。分析师认为，他们是想以此将中国及其他地区成本较高的对手挤出局。

然而，融资渠道仍未关闭。行业观察组织“卡兰尼什大宗商品”（Kallanish Commodities）的托马斯·古铁雷斯（Tomás Gutiérrez）指出，中国的钢产量最近才到达顶峰。但许多低效的钢铁生产商并未走向破产，而是依靠当地政府的支持继续蹒跚前行。它们的过剩产品出口国外，令全球钢材价格进一步受压（见图表2）。

高盛的柯里说，石油行业的情况有所不同，像加拿大油砂这样的高成本生产通常掌握在财务状况稳健的大型石油公司手中。虽然他们已经削减了开支，但可能要等更久才会关闭整个项目。

最终，压力将猛烈爆发。小型页岩油生产商会发现自己身处困境，除非价格止跌。德意志银行指出，在美国的高收益借款人中，能源公司占了约六分之一。该银行认为，美国原油价格若低于每桶55美元，也许会把能源公司推向财务危机。欧佩克也有自己的病弱成员，比如委内瑞拉、尼日利亚和利比亚。

但原油价格的新近跌势也许还没走完最后一程。欧佩克最重要的“生产调节者”沙特阿拉伯对于减产的呼声充耳不闻。上月初，该国募得50亿美元用来弥补石油收入疲弱造成的缺口。美国的夏日驾车出游季即将结束。假如伊核协议本月在美国国会通过，曾被禁运的石油将开始流转起来。英瑞合资的矿业公司及大宗商品交易商嘉能可（Glencore）在8月19日公布了惊人亏损。其老板伊凡·格拉森博格（Ivan Glasenberg）抨击对手不愿减产，又指责“价格仍不合理”。

这一切可能犹如迎头烈风，但并不出奇。当价格跌势足够大，为时足够长，产量最终会下降，正如镍产量去年开始出现的变化。同时，大型矿业公司及油企将接管小型企业，并关闭其最薄弱的资产。然后，另一个长达十数年的周期将可以启动。■

Free exchange

The bigger, the less fair

The growing size of firms may help to explain rising inequality

SINCE its publication last year, Thomas Piketty's "Capital in the Twenty-First Century" has ignited a furious debate about inequality in the rich world. He focuses on the increasingly unequal distribution of wealth, and pays less attention to the growing disparity in wages over the past three decades. Yet that disparity is ballooning, too: in America, for instance, the best-paid 1% of workers earned 191% more in real (ie, inflation-adjusted) terms in 2011 than they did in 1980, whereas the wages of the middle fifth fell by 5%. Similar trends can be observed all over the world, despite widely varying policies on tax, the minimum wage and corporate pay.

The standard explanation says that technology plays a big role: modern economies require more skilled workers, raising the pay premium they can demand. A new paper* by Holger Mueller, Elena Simintzi and Paige Ouimet adds a new and intriguing wrinkle to this: the rising size of the average firm. Economists have long recognised that economies of scale allow workers at bigger firms to be more productive than those at smaller ones. That, in turn, allows the bigger firms to pay higher wages. This should not, in theory, cause a rise in inequality. If the chief executive and cleaner at a larger firm are both paid 10% more than their counterparts at a small firm, the ratio between their wages—and thus the overall level of inequality—should remain the same.

But the paper shows that the benefits of scale are not shared equally among all workers. Using data on wages at British firms, they divide workers into nine groups according to how skilled they are. Over time, they find that the proportional difference in wages between the groups grows as firms get bigger. This trend is driven entirely by a rising gap between wages at the top

compared with the middle and bottom of the distribution. As the authors note, this is very similar to the trend in income inequality in America and Britain as a whole since the 1990s, when pay for low and median earners began to stagnate (see chart).

The authors suggest two possible explanations. First, larger firms should find it easier to automate tasks than smaller ones, and may therefore find it easier to resist demands for pay rises from relatively unskilled workers who could be replaced by machines. In addition, entry-level workers in the middle of the income distribution may be willing to accept lower pay from big firms since in the long run the chances of winning a promotion are greater than at small firms.

Top hogs

The benefits of size are thus enjoyed only by the most senior workers at a firm, who can extract a bigger premium for their skills and experience. A cleaner at a single shop does the same sort of work as those at a large chain. But managing a multinational firm such as Walmart requires a different—and much rarer—set of skills than that required to run a corner store. Over time this pushes up the salaries of the top brass at Walmart compared with corner-shop managers.

The authors find that the relationship between the growth in the size of companies and the level of inequality holds across the rich world. They looked at data from 1981 to 2010 on wages and the size of largest firms for 15 countries in the OECD, a club mostly of rich countries. The relationship between rising levels of income inequality and the size of firms was strong.

This effect is particularly noticeable in America and Britain, where firms have grown rapidly in recent decades. In America, for instance, the number of workers employed by the country's 100 biggest firms rose by 53% between 1986 and 2010; in Britain the equivalent figure is 43.5%. On the

other hand, in places where the size of firms has not changed much, such as Sweden, or where it has shrunk, such as Denmark, wage inequality has grown much less. Part of what is perceived as a global trend towards greater disparity in wages may actually be the result of the biggest firms employing a greater share of workers.

Another new paper**, which looks at manufacturing in America, China and India from 1982 to 2007, suggests that the trend towards bigger firms is only likely to accelerate. Big firms' higher productivity, it argues, raises the barriers to entry for new—and presumably smaller—competitors. Larger factories are more productive than smaller ones, so bigger firms can entrench their position over time. That will skew the income distribution even more. There is plenty of evidence across America and Europe that startup rates for companies are falling, allowing the biggest firms to get bigger unhindered by competition. Since the financial crisis, higher barriers to entry in the form of limited access to capital has caused the number of new businesses to collapse.

Not all economists see this as a dreadful thing. After all, bigger firms have much higher investment rates than smaller ones, which helps to fuel growth throughout the economy. The preponderance of small firms in such places as Greece, Italy and Portugal, seems to be one of the factors holding those economies back.

But if governments wish to reverse the inequality big firms foment, reforms to the labour market are unlikely to do the trick. Instead, they will have to spur competition by reducing barriers to entry for smaller firms, most notably by improving their access to credit. That should reduce income inequality and boost economic growth at the same time.

Voters dislike the growing inequality of incomes, and often agitate for redistributive policies to reverse it. Yet too much crude redistribution can

be counterproductive in that it tends to dampen economic growth. The link between firm size and inequality suggests a better option. By boosting competition, policymakers can please both populists and economists at the same time.

* H. Mueller, E. Simintzi and P. Ouimet, “Wage inequality and firm growth”, LIS Working Paper 632 (March 2015).

** A. Bollard, P. Klenow and H. Li, “Entry costs rise with development”, SCID Working Paper 518 (December 2014). ■

自由交流

越大越不公平

公司规模越来越大可能有助于解释不平等加剧

托马斯·皮凯蒂（Thomas Piketty）的《21世纪资本论》自去年出版以来引发了一场关于富裕世界不平等现象的激烈争论。他专注于研究财富分配越来越不均衡的问题，较少关注过去30年间持续扩大的工资差距。但是这种不平等也在膨胀：比如在美国，按实值（通货膨胀调整值）计算，工资最高的1%就业者在2011年所挣的工资比他们在1980年赚到的增加了191%，而收入居中的五分之一就业者的工资降低了5%。世界各地都能看到类似的趋势，尽管税收、最低工资和企业薪酬的政策差异很大。

对此的标准解释是科技起了很大的作用：现代经济体需要更多的熟练工人，令他们能要求加薪的幅度增加。霍尔格·穆勒（Holger Mueller）、埃琳娜·史明兹（Elena Simintzi）和佩奇·维梅特（Paige Ouimet）合著的新论文*为这一说法增加了一条新颖且耐人寻味的解释：一般公司不断扩大的规模。经济学家早就认识到，规模经济使得大公司的员工比小公司的员工生产率更高。这继而使得大公司能够支付更高的工资。理论上这不应该导致不平等的加深。如果一家大公司的首席执行官和清洁工的薪酬比一家小公司内相同职位的人都高出10%，那么这两种职位的工资比率，以及整体的不平等水平，应当保持不变。

但是文章指出，公司规模扩大带来的好处并没有在所有员工身上均等体现。作者选用了英国公司的工资数据，根据技术水平将其员工分为九组。一段时间以后，他们发现随着公司规模的扩大，各组之间工资的比例差值越来越大。这一趋势完全是因为最高工资与中间及底端工资的差距越来越大而造成。作者指出，这一点与上世纪90年代以来英美两国收入不平等的总体趋势非常相似，低收入和中等收入者的薪酬开始停滞不前（见图表）。

作者给出了两种可能的解释。其一，大公司应该比小公司更容易实现任务

自动化，因此可能更容易拒绝相对不熟练的工人提出的加薪要求，因为可以用机器取代他们。此外，收入处于中间层的入门级工人可能更愿意接受大公司较低的薪酬，因为从长远来看赢得晋升的机会比在小公司更大。

顶层饕餮

因此公司里只有最高层的员工享受到了规模扩大所带来的好处，他们凭借自身技能和经验能获取更大幅度的加薪。一家店铺里的清洁工和一家大型连锁店的清洁工做的工作一样。但是管理像沃尔玛这样的跨国公司和经营一家街角杂货店所需的技能不同，且前者远为难觅。久而久之，与街角杂货铺的经理相比，沃尔玛高层的薪酬因此得到提升。

作者发现在整个富裕世界，公司规模增长和不平等水平之间都存在这种关联。他们研究了1981年到2010年经合组织15个成员国的工资和最大公司的规模，经合组织是主要由富裕国家组成的俱乐部。研究发现，收入不平等不断上升的水平和公司规模之间的关系非常紧密。

在美国和英国，近几十年公司发展迅猛，这一效应尤为明显。例如在美国，全国前一百大公司雇佣的员工数在1986年到2010年间增加了53%；在英国这一数字为43.5%。另一方面，在公司规模变化不大的地方，如瑞典，或者公司规模缩小的国家，如丹麦，工资不平等状况的增长少得多。越来越大的工资差距被认为是全球性趋势，其实部分原因可能是大公司雇佣了更大比例的员工。

另一篇新文章**研究了1982年至2007年美国、中国和印度的制造业，认为公司规模越来越大的趋势只可能加速。文章指出，大公司更高的生产率提高了新的、想必也是较小的竞争者入市的门槛。大工厂比小工厂生产率更高，因此随着时间推移，大公司能稳固它们的地位。而这将进一步扭曲收入分配。在美国和欧洲有大量的证据表明公司创业率正在下降，这样一来大公司没有竞争阻力，越变越大。金融危机以来，获得资金的渠道有限，推高了市场准入的门槛，导致新企业数量暴减。

不是所有的经济学家都觉得这是件可怕的事。毕竟大公司的投资率比小公

司高得多，这有助于推动整个经济体的增长。在希腊、意大利和葡萄牙等国，小公司占主体似乎也是阻碍这些经济体发展的因素之一。

但是如果政府希望扭转由大公司引发的不平等状况，改革劳动力市场不太可能凑效。政府必须通过降低小公司的准入门槛来刺激竞争，最显著的方式是提升它们获得贷款的能力。这应该会在减少收入不平等的同时促进经济增长。

选民们不喜欢收入不平等越来越大，常常要求实行再分配政策以扭转局面。但是简单粗糙的再分配往往会抑制经济增长，从而可能适得其反。公司规模和不平等程度之间的联系提供了一个更好的选择。通过促进竞争，政策制定者能够同时取悦民粹主义者和经济学家。

*H.穆勒（H. Mueller）、E.史明兹（E. Simintzi）和P. 维梅特（P. Ouimet），《工资不平等和企业成长》（Wage inequality and firm growth），卢森堡收入研究所（Luxembourg Income Study, LIS）工作论文 632（2015年3月）

** A.博拉尔德（A. Bollard），P.科莱诺（ P. Klenow）和H.李（H. Li，音译），《入市成本随发展而增加》（Entry costs rise with development），斯坦福大学国际发展研究中心（Stanford Center for International Development, SCID）工作论文518（2014年12月） ■

The process of invention

Now and then

Patent records reveal that the way inventions are made has changed over the years

IN THE 19th century, inventors were heroes. The likes of Stephenson, Morse and Goodyear were the shock troops of the Industrial Revolution. Their ideas helped drag humanity from agrarian poverty to manufactured plenty. These days, though, inventor-superstars, while not absent, are fewer and farther between.

That may, in part, be because the process of invention has itself changed since the 19th century. There is no let-up in the growth of the number of patents issued each year, but the introduction of fundamentally new classes of technology seems rarer now than it was in the past. Information technology has certainly transformed the present day. But railways, the electric telegraph, photography, fixed-line telephony, the automobile and the chemical and steel industries each, separately, brought about transformations as big as anything IT has wrought so far. Perhaps the process of invention really was more heroic in Victorian times.

To have an impression that something has changed is not, however, to prove that it really has. For that you need data. And, in a paper just published in the *Journal of the Royal Society Interface*, Youn Hyejin of Oxford University and her colleagues have provided some.

Invention can come about in two ways. Thomas Edison's light bulb, for example, was not so much the product of a metaphorical light-bulb moment of discovery as of the bringing together of pre-existing components—an electricity supply, a heated filament, a vacuum and a glass envelope. None of these things was novel in the 1870s, but in Edison's hands the combination became a patentable invention. In contrast,

William Shockley's transistor, invented 70 years later, involved a lot of new physics that Shockley and his colleagues had to work out for themselves. Both devices changed the world, though (Shockley's was the foundation on which IT was built). And together they exemplify the two sorts of novelty that exist, in differing proportions, in any successful invention: discovery and recombination.

Dr Youn has looked at the balance between these things, and how it may have changed. She drew her data from the United States Patent and Trademark Office (USPTO)—not a perfect indicator of inventiveness, but probably a fair proxy for it. The authorities there sort patent documents into groups based on common subject matter. To do so, they classify the various technologies responsible for an invention's novelty using an elaborate arrangement of codes.

Each subject grouping in USPTO's scheme includes a major component called a class and a minor one called a subclass. A class distinguishes one technology from another. Subclasses delineate processes, structural features and functional features of the technology in that particular class. A class-subclass pair—say, 136/206 for class 136 (batteries: thermoelectric and photoelectric) and subclass 206 (solar energy type)—is a unique code, and every patent is identified by at least one such code. The office has records of these codes going back to 1790. Overall, those records cover 474 classes and more than 160,000 codes. Only when a patent proposal arrives that cannot be slotted into the existing classification is a new one created.

When Dr Youn and her colleagues examined the patent office's files they found that nearly half the patents issued by the United States during the 19th century were for single-code inventions. These days, by contrast, nine-tenths are for inventions that combine at least two codes. The number of codes and the number of patents both grew exponentially, at the same rate, until the 1870s (about the time of Edison's light bulb; see chart). After that,

the growth rate of new codes fell off dramatically, and that of new patents slightly. The introduction of new combinations of codes has, however, continued to expand in step with the number of patents awarded. That suggests invention now proceeds mainly by recombining existing technologies and chimes with the idea that inventions were, in some sense, more fundamental in the past than they are today.

This combinatorial explosion no doubt partly reflects the fact that the number of possible combinations grows faster than the number of codes they are based on. But that it has actually happened had not, previously, been demonstrated.

What remains to be seen is whether biotechnology will change things. Most inventions up until now have been based on physics or chemistry. Today's understanding of biology, though, is roughly where that of the physical sciences was in the 19th century. Biology is therefore ripe to yield a clutch of new patent classes—possibly for things (neurological computers? furniture grown from seed?) as unimaginable to present-day folk as the telephone would have been to a soldier at the battle of Waterloo. Then, perhaps, a new generation of heroic inventors will emerge. ■

发明的过程

现在与过去

专利记录显示，这些年来发明的方式已经改变

在19世纪，发明家是英雄。史蒂芬森（Stephenson）、摩尔斯（Morse）和固特异（Goodyear）等人是工业革命的先锋。他们的奇思妙想把人类从农耕社会的贫困带入到工业时代的富足。如今，超级发明家尽管仍有出现，但确实更为稀少了。

这一方面可能是因为19世纪以来，发明的过程本身已经改变。每年专利授予数量的增长并没有放缓，但现在全新技术的引入似乎比过去更为罕见。信息技术无疑改变了当代。但是，铁路、电报、摄影、固定电话、汽车、化工和钢铁中的任何一个行业所带来的转变都能和信息技术迄今带来的转变相媲美。在维多利亚时期，或许发明的过程确实更有英雄气概。

然而，印象中事情改变了并不证明它真的变了。这需要用数据说话。在英国皇家学会期刊《界面》（the *Journal of the Royal Society Interface*）刚发表的一篇论文中，牛津大学的尹慧真（音，Youn Hyejin）及其同事提供了一些数据。

发明的产生可以有两种方式。例如，爱迪生发明的灯泡与其说是灵光一闪而横空出世的产物，倒不如说是电源、加热丝、真空环境和玻璃外壳这些业已存在的部件相组合的结果。这些物件在19世纪70年代都不新奇，但在爱迪生的手上，它们组合成了一项专利发明。相比之下，70年后威廉·肖克利（William Shockley）发明晶体管时，他和同事就不得不自己解决大量的物理学新难题。不过，这两种装置都改变了世界（肖克利的发明奠定了信息技术的基础）。它们一起代表了两类创新：发现与重组。所有成功的发明都同时包含这两类创新，只是比例不同。

尹博士研究了这两类创新之间的平衡，以及这种平衡可能已经改变的情况。她的数据来自美国专利商标局（USPTO）。这还不是创造性的完美指

标，但很可能是一个不错的替代。美国专利商标局按照共同的主题给专利文件分类。为此，他们用精心设置的代码来给成就一项创新的各种技术分类。

美国专利商标局的分类体系里，每个主题分类都包括称为大类的主要部分和称为子类的次要部分。大类把不同的技术区分开。子类则描述某个特定大类里技术的过程、结构特点和功能特点。大类加上子类组成一个独特的代码，每种专利至少由一个这种代码来识别。比如说，136/206就是指第136大类（电池：热电和光电）中的第206子类（太阳能）。该局从1790年开始使用这套代码记录。总的来说，这些记录包括474个大类和16万多个代码。只有当收到的专利提案不能归入现有分类时，才会创建一个新的分类。

尹博士和同事们研究美国专利商标局的档案时发现，美国19世纪授予的专利中，将近一半的发明用单个代码表示。相比之下，现在十分之九的发明是至少两个代码的组合。19世纪70年代（大概就是爱迪生发明灯泡的时间；见图表）之前，代码和专利的数量都以同样的速度迅速增长。在那之后，新代码的增长率急剧下降，新专利的增长率则略微下滑。然而，代码新组合数量的增加与授予专利数量的增长保持同步。这说明，现在的发明主要通过重组现有技术来实现。这种情况符合以下想法——在某种意义上，过去的发明比现在更有基础意义。

毫无疑问，代码组合的激增一定程度上反映了这样的事实：代码所能产生的组合的数量增长速度快于代码本身的增加。这一现象实际早已发生，但之前一直没有被展示出来。

可以拭目以待的是，生物技术能否改变这一情况。迄今为止，大多数发明都以物理或化学为基础。然而，现在对生物学的理解大概相当于19世纪对物理学的理解水平。因此生物学的发展正当其时，能产生一批新的专利大类（神经计算机？由种子长成的家具？）。这些发明对于今天的人们来说是难以想象的，就像滑铁卢战役中的士兵无法想象电话会被发明一样。到时候，也许新一代的英雄发明家会横空出世。■

Economic and social justice

Mind the gap

Anthony Atkinson, the godfather of inequality research, on a growing problem

CONTEMPORARY books on inequality are divided into those published "BC", or before "Capital in the Twenty-First Century" by Thomas Piketty, or "AP", for after Piketty. The 44-year-old French economic historian's study of rising wealth and income inequality, which first came out in French in August 2013, caused a storm when it was published in English seven months later and became an international bestseller. The book did an excellent job of focusing people's minds on the subject. It also set the lines of empirical battle and even offered a possible remedy: a global tax on wealth. If Mr Piketty whetted the public's appetite for discussions of inequality, he also made it far more difficult for subsequent authors to say something new and original about it.

That is unfortunate for Sir Anthony Atkinson, a British economist who has now written his own book. Sir Anthony, who is 70, has been working on inequality and poverty for more than four decades. He was an academic mentor to the young Mr Piketty and they worked together on building an historical database on top incomes.

Mr Piketty's book sprawled over more than 600 pages, laying claim to the intellectual traditions of David Ricardo and Karl Marx and serving up a neat, all-encompassing (if controversial and widely challenged) theory of long-run inequality. Wisely, Sir Anthony has chosen a more digestible approach; "Inequality" is quieter, shorter and more direct. Whereas Mr Piketty offered long ruminations on Honoré de Balzac, Sir Anthony's is a crunchy book that analyses policy discussions in detail but avoids dullness, thanks to its unapologetic support for aggressive government intervention.

In the event, Sir Anthony is more radical than Mr Piketty; he calls for robust taxation of the rich whom he reckons have got off easily over the last generation (see chart). But that's not all. He believes government should meddle in markets in all sorts of ways to influence the distribution of economic rewards. Sir Anthony's recommendations are a throwback to the 1960s and 1970s, when trade unions were a dominant force in politics and the state was seen as a much-needed check on markets. Even the most egalitarian economists, such as Mr Piketty, are reluctant to recommend employment guarantees and wage controls. Sir Anthony is not. And if his arguments are not always wholly convincing, he may nonetheless succeed in shifting the debate.

"Inequality" begins with a clear statement of the harm done by rising income gaps: they unfairly punish those who suffer bad luck. They undermine economic growth and social cohesion. Perhaps most importantly, inequality in economic resources translates directly into inequality in personal opportunity. Wealth generates comfort even when it isn't being spent; the rich enjoy the fact that they are insured against future hardship or could use their wealth in future to satisfy personal or professional goals.

The book then turns to the data and describes a familiar distributional picture. Inequality across rich countries was high before the two world wars of the 20th century. It fell to striking lows after 1945 and then began growing again around 1980 (see chart). Rising income inequality is a feature of most rich countries, especially America and Britain, and parts of the emerging world, including China. Sir Anthony is not interested in outlining any fundamental economic rules. Instead he carefully walks the reader through the ways that different forces have pushed incomes apart historically.

In America, for instance, incomes at the top of the scale began pulling away

from the rest quite soon after 1945. Yet household inequality—taking account of taxes and transfers—did not rise until what Mr Atkinson calls the "Inequality Turn" around 1980. Several factors contributed to this, including changes for women and work. After the second world war, when female labour-force participation grew rapidly, high-earning men tended to marry low-earning women; the rising numbers of working women reduced household inequality. From the 1980s on, by contrast, men and women tended to marry those who earned like themselves—rich paired with rich; rising female participation in the workforce exacerbated inequality.

If I were a rich man

Sir Anthony dwells on one class of contributory factors above all others: the subtle (and not-so-subtle) ways the rich are able to influence government policy in order to protect their wealth. When governments prioritise low inflation over low unemployment, or low taxes over investment in infrastructure or education, they are responding to the preferences of the rich.

Rising top incomes (and stagnant low ones) are partly caused by long-running trends like globalisation and technological change. But people should not take those trends, or their consequences, as given, he argues. Government plays an important role in shaping the direction of technological change; autonomous vehicles, which may eliminate millions of jobs for less-skilled workers, owe critical technologies to research sponsored by the American government. A government in which workers' voices rang louder might, instead, have directed research funding into factory technologies that complement the skills of blue-collar workers.

The state should be conscious of its role in the innovation process, Sir Anthony says, and take account of its effects on income distribution. In particular, it ought to invest in human capital—in education and training—and emphasise the advantages of human interaction in the

administration of public services. The ability to file tax returns online is a boon to the rich, but the need to file benefit applications online may be a burden to the poor. Employing people to help the poor understand what they need to do to obtain benefits, for example, would mitigate the unbalanced effect of technology in two ways, he says: by reducing the socially isolating effect of technology on those applying for benefits, and by creating public-sector jobs.

Sir Anthony believes that the responsibility of the state goes well beyond investing in training. He outlines 15 proposals that would boost egalitarianism, including setting a minimum wage and a suggested maximum at a multiple of the minimum. He would reinvent social security as a basic "participation income" paid to all those deemed to be contributing to society (through work in the market or public service). And he would provide guaranteed employment, in the public sector if necessary, to those who want it. He reckons that if willing workers can be given useful tasks (like guiding the poor through benefit applications), then it should not matter whether the employment provides skills valued by the private sector—or indeed, whether the worker ever goes on to take a non-public job.

The radicalism of the author's policy proposals makes it tempting to write them off. Some deserve to be. Putting distributional concerns front and centre in competition or innovation policy is a good way to raise the cost of goods and services, from broadband access to home goods, for the very low-income households that Sir Anthony is trying to help. Deregulating telecoms may lead to reduced employment in the affected firms, but poor households that enjoy cheap mobile services as a result might nonetheless be grateful. His instinct to limit the power of entrenched interests to manipulate markets is a good one, but it often strays into a broad distrust of markets in general, which is not.

The author does not mind speaking uncomfortable truths. Among them: that the comfort and opportunity provided by wealth matter just as much as the consumption that wealth affords; that holding down a job may not be enough to provide most workers with a standard of living that keeps up with economic growth; and that economic power helps protect itself in subtle and pervasive ways which might well demand an interventionist government response. Sir Anthony's answer might not be the right one. But if his book reminds the reader how far out of fashion the policies of the post-war decades have fallen, it also conveys how skewed the economy of today might look to an observer from the not so distant past—or, perhaps, from the not so distant future. ■

经济与社会正义

小心差距

不平等问题研究教父阿特金森一席谈

论述社会不平等问题的当代书籍以托马斯•皮凯蒂（Thomas Piketty）的《21世纪资本论》为里程碑，分为前后两个纪元。这位44岁的法国经济史学家对财富增长与收入不均问题的研究论著最早在2013年8月以法语发表，七个月后译成英文出版，引发轰动，随即成为全球畅销书。该书成功地将众人的视线聚焦到不平等问题上，举出实证论辩，甚至提出可能的解决方案，认为征收全球性财产税或可解决问题。如果说皮凯蒂激起了公众对贫富不公的热议，他也令后来论述此问题的作者难出其右。

对最近完成论著的英国经济学家安东尼•阿特金森爵士（Sir Anthony Atkinson）来说，那是不幸的。现年70岁的安东尼爵士致力研究不平等及贫困问题长达40多年。他是皮凯蒂年轻时的学术导师，两人曾合作建立社会顶层收入人群的历史数据库。

皮凯蒂的那本论著洋洋洒洒600多页，号称承袭了大卫•李嘉图（David Ricardo）和马克思的思想传统，就长期不平等现象提出深入浅出、兼容并包（但有争议性，广受质疑）的一套理论。安东尼爵士则明智地选择了更易理解的方式，《不平等：我们能做什么？》（Inequality: What Can Be Done?）一书更低调、简洁、直接。皮凯蒂长篇大论地反思剖析巴尔扎克，而安东尼爵士这本干脆利落的著作详细分析了政策讨论，却不令人感觉沉闷，这要归功于它毫不回头地支持政府积极干预。

结果，安东尼爵士要比皮凯蒂更激进。他呼吁加强对富人的征税，认为上一代富人太轻易地逃避了税收（见图表）。不止于此，他还认为政府应以各种方式干预市场，对经济报酬的分配施加影响。 安东尼爵士的建议是对上世纪六七十年代做法的回归，当时的工会组织是一大政治主导力量，认为市场亟须政府干预。即使最讲求平等主义的经济学家如皮凯蒂，也不愿推荐采用就业保障和工资管制这类措施。安东尼爵士则不然。尽管他的

论断不能完全令人信服，倒可能成功让这场辩论转向。

《不平等：我们能做什么？》一书开宗明义地点出了收入差距不断扩大带来的危害：运气不佳的人们受到不公平的惩罚。经济增长及社会凝聚力均受到破坏。也许最重要的是，经济资源的不平等会直接转化为个人发展机会的不平等。财富即使未被花费，已能产生安逸和舒适感；富人乐享其成，自知未来无艰难困苦之忧，也可在将来利用财富满足个人或职业上的目标。

该书接着用数据描绘出一幅人们并不陌生的财富分配图景。20世纪两次世界大战之前，富裕国家贫富不均的情况普遍严重。1945年后，收入差距跌至惊人低位，在1980年前后再次攀升（见图表）。收入不平等是多数富裕国家的一大特征，尤其是美国和英国，而包括中国在内的部分新兴国家也是如此。安东尼爵士无意描画什么基本的经济规则，相反，他带领读者仔细地回顾了历史上不同力量是如何施加作用从而拉开收入差距的。

比如在美国，顶层收入人群在1945年后很快就开始抛离其他人，但家庭收入的不平等（综合考虑到税收和转移支付）却没有增加，直到1980年左右才发生安东尼所说的“不平等转向”。这里面存在几个促成因素，包括女性和就业方面的变化。二战后，女性加入劳动力市场的人数激增，高收入男性倾向与低收入女性结合，职业女性人数的增加减轻了家庭收入不平等的程度。相比之下，从八十年代开始，人们倾向于和收入相当的对象结婚，即富人与富人结合，如此女性就业人数上升反而加重了收入不平等。

我若为富翁

在所有促成因素中，安东尼爵士着力论述了其中一类：富人采取隐晦的（及不甚隐晦的）手段来影响政府政策以保障自己的财富。当政府优先追求低通胀而非低失业率，又或是以低税政策为重、基建投资或教育为次，实际都迎合了富人的心愿。

顶层收入的不断增长（及底层收入的增长停滞）在一定程度上是由全球化及科技变革这些长期趋势造成的。但是，他指出，大家不要以为那些潮流

或其结果是理所当然。政府在影响科技变革的走向上扮演着重要角色，例如无人驾驶汽车的推出可能会令数以百万计的低技术劳动者丢掉饭碗，而其关键技术的研究正是由美国政府资助。相反，如果工人的话语权更强，更能影响政府的话，也许科研经费就会投放到研发能够辅助蓝领工人技能的生产技术上。

安东尼爵士说，政府应该意识到自己在创新过程中所起的作用，并考虑它对收入分配产生的影响。政府尤其应该投资于人力资本（教育及培训），并强调人际互动在公共事务管理中所发挥的优势。能在网上报税对富人而言是福音，但福利申请要在网上完成对穷人来说可能是一种负担。他举例说，雇用人员来帮助穷人了解如何获取福利救助可以从两方面减轻科技带来的不平衡影响：一方面减轻科技对福利申请者造成的社会隔离感，另一方面创造了公共部门的就业职位。

安东尼爵士认为政府的责任远不止投资于技术培训。他简述了15个促进平等的方案，包括设立最低工资，并建议以此标准的一定倍数作为工资上限。他提出要把社会保障重塑为一种基本的“参与性收入”，支付给所有被认为对社会有贡献（通过在私营部门或者公共服务部门的工作）的人。另外，他建议向有需要的人士提供就业保障，必要时在公共部门内设置职位。他认为，只要愿意就业的劳动者能获得有益的工作（如指导穷人按程序申请社会福利），该岗位能否提供私营部门看重的技能无关紧要，甚至这些劳动者是否有转入私营行业工作的那一天也不重要。

作者的政策建议颇具激进主义色彩，容易遭人置之不理。某些建议的确可以忽视。把分配问题置于竞争或创新政策的前沿及核心，很容易提高商品及服务（从宽带服务到家庭用品）的成本，并对安东尼爵士想要扶持的低收入家庭产生影响。开放电信管制也许会导致受影响的公司裁员，但贫困家庭因此可以享受到更低廉的移动服务，而可能心存感激。作者本能地认为需要限制既得利益者对市场的操控，这一直觉是好的，但又往往迷失演变为对市场的全面怀疑，这并非好事。

作者不介意尽吐逆耳真言，其中包括：相比金钱提供的消费力，财富带来

的安逸感和机会同样重要；对大部分劳动者而言，有一份工作并不代表生活水平能跟上经济增长水平；经济力量会以无孔不入的隐晦方式作自我保护，也许需要政府的干预。安东尼爵士的解决方案不一定正确，但如果说该书提醒了读者战后几十年的政策到现在已经是多么的不合时宜，那么它同时也传达出，相比不那么遥远的过去，目前的经济有多么失衡——也许，从不那么遥远的未来回头审视，同样也是如此。■

Social isolation

With a little help from my friends

Poverty is about who you know as much as what you earn

"I LIKE money and nice things, but it's not money that makes me happy. It's people," says one woman in a World Bank survey. She's not alone: research has found that social integration is more important for well-being than income, and also decreases poverty. Loneliness, conversely, can be deadly: one study found it did more damage to health than smoking. This week, policymakers from 40 countries met in Colombia to ponder ways to measure deprivation that take account of more than just income, including isolation. Several Latin American countries are devising or have already adopted such "multi-dimensional" measures of poverty.

Income can be a misleading measure of need because poor people end up living in different degrees of hardship depending on their intangible resources. Having strong social bonds eases financial deprivation. Friends and relatives can lend money, pool risk, mind children and bring news of job openings. Researchers from the London School of Economics found that when a group of Bangladeshi women were given business training and free livestock, not only did they move up the income ladder, but their friends' lot improved too. A year later the friends' consumption had risen by almost 20%, and they claimed to have become savvier about business as well.

The downside is that not having the right friends can cement hardship. The more concentrated the poverty, the less helpful social networks tend to be. In Atlanta, living in a poor neighbourhood decreases the chance of having a friend with a job by almost 60%, and of having a friend who had been to university by over a third. A global survey conducted in 2014 by Gallup, a polling firm, found that 30% of people in the poorest fifth of their country's

population had nobody to rely on in times of need, compared to 16% of the richest fifth. It is doubly unfortunate, then, that poor people are often socially excluded precisely because they are poor. Chileans and Venezuelans see poverty as a bigger cause of discrimination than gender or ethnicity, according to researchers from Oxford University.

Several countries have experimented with schemes that connect lonely old people and deprived youth. Germany, for instance, has built "multi-generational" community centres where older visitors get computer coaching from teenagers. With luck, these connections will help: one American study found that in poor neighbourhoods, three-quarters of jobholders found work through friends. Perhaps Germany's centres will furnish income as well as company. ■

社会隔离

获得朋友的一点帮助

贫困不只因为你赚钱少，也和你的圈子有关

“我喜欢钱和好东西，但让我快乐的不是钱，而是人。”在接受世界银行调查时，一位妇女这样回答道。她并不是唯一这么觉得的人。研究表明，要感到幸福，融入社会比收入多少更为重要，而且融入社会还能减少贫困。相反，孤独可能致命：一项研究发现，它比吸烟更危害健康。来自40个国家的政策制定者6月齐聚哥伦比亚，思考衡量贫困的方法，他们考虑的不仅是收入，还包括隔绝。一些拉丁美洲国家正在设计或已经采取这种“多维”的贫困衡量标准。

用收入来衡量需求可能会产生误导，这是因为穷人各自拥有的无形资源令他们最终生活在不同程度的困苦之中。拥有强大的社会关系会缓解财务上的匮乏。亲朋好友可以借钱、分担风险、帮忙照看孩子，还能带来职位空缺的信息。伦敦政治经济学院的研究人员发现，孟加拉的一群妇女在接受商业培训并领取免费分发的牲畜之后，不仅自己的收入上升了，其友人的境况也有所改善。一年后，其朋友的消费上升了将近20%，这些人声称自己在商业上也变精明了。

不利的一面是，没有合适的朋友可能会加剧苦况。贫困越集中，社会网络的帮助往往越小。在亚特兰大，如果生活在贫穷社区，拥有一位有工作的朋友的机会将减少近60%，拥有一位上过大学的朋友的机会将减少三分之一以上。民意测验公司盖洛普（Gallup）2014年开展的一项全球调查发现，各国最贫穷的五分之一人口中，有30%的人在遭遇困难时求助无门。而与之相比，在最富有的五分之一人口中，这一比例为16%。此外，穷人往往正是因为贫穷而被社会排斥，这更是雪上加霜。牛津大学的研究人员称，智利和委内瑞拉人认为，相比性别或种族，贫穷是引起歧视的更主要原因。

几个国家已经试行了将孤寡老人与贫困青年对接的方案。例如，德国已建

成“多代屋”社区中心，在那里老年人可以获得青少年提供的计算机辅导。幸运的话，这些关系将有所帮助：美国一项研究发现，在贫民区中，四分之三的就业人员是通过朋友找到工作的。或许德国的社区中心将同时带来收入和陪伴。 ■

Inequality and housing

Through the roof

Rising house prices may be chiefly responsible for rising inequality

THERE are lots of critics of "Capital in the Twenty-First Century", Thomas Piketty's study of increasing inequality in the rich world. Few have been as effective, however, as Matthew Rognlie, a 26-year-old graduate student at the Massachusetts Institute of Technology, who first took Mr Piketty to task in a 459-word blog post last year. On March 20th he presented a paper that expanded on the flaws he sees in Mr Piketty's book.

Mr Piketty argues that over the long run the rate of return on wealth exceeds economic growth. Over time, this relationship increases inequality as the share of national income going to those who own capital (the rich) rises, while the portion going to labour (everyone else) falls. He also argues that the return on capital in recent history has been remarkably stable, even as economic growth has fallen, and that this trend will continue in the future.

Mr Rognlie has three main criticisms of all this. Several commentators have pointed out that the rate of return from capital should decline in the long run, rather than remaining high as Mr Piketty maintains, owing to the law of diminishing returns. Mr Rognlie expands on this, arguing that Mr Piketty has an inflated idea of the current return. Modern forms of capital, such as software, depreciate faster in value than equipment did in the past: a giant metal press might have a working life of decades whereas a new piece of database-management software will be obsolete in a few years at most. This means that returns from wealth may not necessarily be growing in net terms, since a rising share of the gains that flow to the owners of capital must be reinvested.

Second, Mr Rognlie finds that higher returns to wealth have not been distributed equally across all investments. The return on assets other than housing has been remarkably stable since 1970. In fact, surging house prices are almost entirely responsible for growing returns on capital.

Third, the idea that workers' share of wealth can continue to decline rests on the assumption that it is easy to substitute capital (ie, robots) for workers. But if lots of the capital in question is tied up in houses, then this switch would be far harder than Mr Piketty suggests.

Mr Rognlie has critics of his own. He appears to underestimate the role that changing technology plays in widening inequality (by making it simpler to substitute capital for labour, for instance, or by concentrating jobs in expensive cities). But his observation that it is homeowners in particular, rather than rentiers generally, who are grabbing a larger share of the pie is important. For one thing, homeowners are a much bigger and more lovable group than hedge-fund managers. Moreover, if housing is the biggest source of rising inequality, then the wealth tax Mr Piketty advocates is the wrong response. Policymakers should instead try to reduce the planning restrictions which, by inhibiting new construction, allow homeowners to earn such big returns on their assets.

Just how inconvenient Mr Rognlie's argument is for Mr Piketty's overarching narrative is a matter of perspective. The celebrated French economist certainly did not make housing wealth the central theme of his bestselling book. But a story in which a privileged elite uses its political clout to create economic rents for the few (albeit through the planning system) fits Mr Piketty's argument to a tee. ■

不平等和房产

涨到爆棚

飙升的房价可能是不平等加剧的主因

托马斯·皮凯蒂（Thomas Piketty）研究富裕国家不平等加剧的《21世纪资本论》引发了大量批评，但很少像麻省理工学院26岁的研究生马修·荣利（Matthew Rognlie）的批评那样有力。荣利在3月20日提交的一篇论文详述了他认为该著作存在的问题。

皮凯蒂已经众所周知的观点是长期而言财富的回报率超出经济成长。随着全国收入中流向资本拥有者的份额增加、而流向劳工阶层（或者说除资本拥有者以外的所有其他人）的份额减少，这种关联日趋加剧了不平等。他指出近几十年资本收益非常稳定，尽管经济成长减缓。这一趋势未来还将持续。

对此，荣利有三大反驳。一些评论家已指出，受回报率递减规律的制约，长期而言资本回报率应该会减少，而不是皮凯蒂所认为的保持高水平。荣利则进一步指出皮凯蒂对于当前的回报率言过其实。他认为，现代的资本形式比如软件的贬值要比从前的设备快得多，比如一台大型金属冲压机可以工作几十年，而一套数据管理软件最多几年就淘汰了。因此财富的回报不必定净增，因为资本拥有者所获收益中有更大一部分须用于再投资。

其二，荣利发现，更多财富所带来的更高回报并没有在所有投资中均等分布。自1970年以来，除房产以外的资产回报非常稳定，而飙升的房价几乎是资本回报增长的全部原因。

第三，他指出，认为工人的财富份额会继续下降的观点基于一种假设：用机器人等资本取代工人很容易。但是，如果大量资本和房产捆绑，那么这种转变会比皮凯蒂所以为的难得多。

荣利自己也受到了批评。他低估了日新月异的技术发展在不平等中扮演的

角色。举例而言，技术会让资本更容易取代工人，也让职位更集中在昂贵的城市。但是，荣利指出是业主这个特定群体而非食利者这个广泛群体正在抢得蛋糕的更大份，这一观察非常重要。首先，业主这个群体比对冲基金经理这个队伍要大得多也讨人喜欢得多。再则，如果房屋是不平等加剧的最大原因，那么皮凯蒂提倡的富人税就是错误的解决方案。政策制定者应该转而减少区域规划限制。这种限制遏制了新建筑项目，从而让屋主得以从其资产中获得如此大的回报。

要说荣利的观点究竟给皮凯蒂笼统的叙述带来了多大的麻烦，这只是个角度问题。皮凯蒂这位著名的法国经济学家当然没有把房地产资产作为他那本畅销书的核心主题。但是，在荣利的叙事中，一个特权精英团体利用其政治影响力来为少数人创造经济租金（虽然是通过计划系统实现的），这恰恰呼应了皮凯蒂的观点内核。■

Teaching economics

The demand side

The economics curriculum is evolving, but too slowly for some

"I DON'T care who writes a nation's laws, or crafts its advanced treatises, if I can write its economics textbooks." So said Paul Samuelson, an American economist who more than achieved his aim by producing a bestseller. But debate swirls around the teaching of the dismal science—nowhere more so than in Britain.

When the financial crisis hit in 2007-08, many economics students found themselves ill-equipped to think about what had gone wrong in the economy or how to fix it. Although researchers in top universities had studied financial panics, their work had not filtered down to the lecture theatre. Undergraduate courses focused on drier stuff, imparting a core of basic material that had not changed much for decades.

As a result, aspiring economists struggled to analyse burning issues such as credit crunches, bank bail-outs and quantitative easing. Employers complained that recruits were technically able but could not relate theory to the real world. Graduates' knowledge of economic history—crucial during the crisis, given its parallels with the Depression of the 1930s—was especially lacking.

Students became dissatisfied, too. Groups such as Rethinking Economics, a London-based network of student reformers, emerged to challenge the conventional wisdom of the classroom. At Manchester University, a student revolt led to plummeting satisfaction scores, driving the economics course down the league table.

Teachers have now responded. University College London has introduced a

new curriculum, the result of a project led by Professor Wendy Carlin. The old textbooks had things the wrong way round, Ms Carlin says. They taught concepts like supply and demand in an abstract way and then illustrated them with simple examples, such as the market for apples and oranges. By contrast, the new material challenges students to consider real-world topics from the outset. The section on labour supply begins with the history of real wage growth. The new course also acknowledges the limitations of basic models: the trade-off between efficiency and fairness is mentioned early, for instance. Students consider only the first in most introductory courses elsewhere.

Though Ms Carlin and her colleagues are overhauling teaching methods, the content of the course remains fairly mainstream. That irks those who think the financial crisis has posed a more fundamental challenge to the subject. Rethinking Economics wants curricula to cover heterodox schools of thought. For example, mainstream economic models rely heavily on the concept of equilibrium—a state in which nobody has an incentive to change their behaviour. Critics say this is never reached in the real world, so is a flawed starting point. They want more philosophical discussion about how best to approach economics, and point to Leeds, Greenwich and Kingston universities as models of how to do this.

Two rather different questions have been posed. One asks whether courses do a good job of equipping students with the most important insights from mainstream academic research. The other asks whether young economists should learn more than just today's favoured approach. It would be odd if curricula departed radically from the academic consensus. But perhaps mainstream theory must catch up with its students. ■

经济学教学

需求面

经济学课程正在进步，但对一些人来说仍然太慢

“假如我能够为这个国家写经济学教科书，我才不关心是谁起草国家的法律，或撰写其高深论文呢。”曾经发表上述感言的美国经济学家保罗·萨默尔森（Paul Samuelson）结果写了一本经济学畅销书，大大完成了自己的目标。但围绕这门沉闷学科教学的讨论仍在继续，其中英国最甚。

2007至2008年金融危机爆发之时，经济学专业的学生想要分析经济出了什么问题，怎么解决这些问题，却束手无策。尽管顶尖院校的学者已经研究过金融恐慌现象，但他们的研究并没有渗透到教学中。大学本科课程集中在比较枯燥的内容上，传授的核心基础内容几十年来都没怎么变过。

结果，胸怀抱负的经济学家吃力地分析着信贷紧缩、银行救助和量化宽松等紧迫问题。雇主们抱怨说，新职员虽有技术能力，却不能理论联系实际。毕业生尤其缺乏经济史方面的知识，而这种知识在本次危机中至关重要，因为它和上世纪三十年代的大萧条有许多相似之处。

学生也心生不满。总部位于伦敦、名为“反思经济学”（Rethinking Economics）的学生改革者网络等团体不断兴起并挑战教学中的传统观点。曼彻斯特大学的学生反抗运动导致满意度得分直线下降，经济学课程在排行榜上的位次也随之下跌。

目前教师已作出回应。由温迪·卡林（Wendy Carlin）教授牵头的一个项目也取得了成果，伦敦大学学院（University College London）引入了一门新课程。卡林认为旧的教科书本末倒置了。用抽象的方式来讲供给和需求等概念，然后用苹果和橙子市场这样的简单例子来说明。相比之下，新教材从一开始就要求学生思考现实世界的话题。劳动力供给这个章节开篇就介绍实际工资增长的历史。新课程还承认基本模型存在局限性，比如说，它较早就论述了效益和公平的权衡取舍。而在别处，学生们在入门课

阶段只考虑效益。

虽然卡林和同事正在彻底改革教学方法，但是课程内容仍然相当主流。这激怒了一些人，他们认为本次金融危机对学科提出了更根本性的挑战。“反思经济学”希望课程能涵盖非主流经济学派。比如说，主流经济模型严重依赖“均衡”的概念，在这种状态下，没人有动力改变自己的行为。批评者认为现实世界中这种状态永远不能实现，因此这个出发点是错误的。他们想就如何最好地学习经济学进行更多的哲学讨论，而且认为利兹、格林威治和金斯顿等大学是这方面的楷模。

这里提出了两个颇为不同的问题。首先，课程能否很好地让学生具备来自主流学术研究最重要的洞察力。其次，年轻的经济学家除了当红理论之外是否应该涉猎更多。如果课程彻底背离学术共识，那当然会很奇怪了。但或许，主流理论必须要跟上学生们的步伐。 ■

Economics evolves

A long way from dismal

Microeconomics powered by data is shaping tech firms. This trend has lessons for macroeconomics

IN THE world of economics, macroeconomists have had all the kudos. As designers of economy-wide models, they provide the house-price and interest-rate forecasts that fuel dinner-party talk. Many hold power, twiddling the dials of tax and spending in finance ministries, or shifting the monetary levers at central banks. Others grab the riches that banks and hedge funds offer. The natural order is, however, changing. Not only have macroeconomists been embarrassed by a decade of failed predictions, but they are also losing their edge. For anyone starting out in economics, the future is micro.

Microeconomists are a humble bunch. Rather than seeking a unified theory of everything, they hone in on a particular area, often a single type of market or firm, and try to find out how it works. But technology is lending them clout. Armed with vast data sets produced by tech firms, microeconomists can produce startlingly good forecasts of human behaviour. Silicon Valley firms have grown to love them: by bringing a cutting-edge economist in house, they are able to predict what customers or employees are likely to do next.

Take SmarterTravel, a subsidiary of TripAdvisor, a travel company. When a user lands on its website an economist-designed algorithm kicks into action. Data, including the time taken between clicks, help predict whether the user is a browsing time-waster or a potential buyer. The site is adjusted in milliseconds—browsers see more adverts, buyers a simpler site to focus on their purchase—to maximise profit. Other outfits sell their ability to predict. Any firm worried about staff retention can let hiQ Labs' team delve

through its records to spot individual employees most at risk of leaving or being poached. The head of HR can target those staff accordingly.

Rather than taking supply and demand as a given, the new breed of microeconomist helps nudge the two into line. In the early days of Airbnb, an online market for home rentals, its economists pored over customer data to spot market weaknesses. Costly enhancements, including professional photographs of every listing, are rigorously tested to make sure they work before being rolled out. The company also guides users uncertain about the right rate to charge for a listing. At Uber, a taxi service, prices surge during peak hours, pulling more drivers onto the road. At Poynt, a Silicon Valley startup offering a new type of cashless payment, an economist was included in the product-design team. Microeconomists no longer just study how existing firms work, they help design new ones.

> *Blessed is the geek*

There are lessons here. The shift from bean-counter to revenue-earner makes the new microeconomics lucrative. Tech giants like Google, Facebook and LinkedIn all hire economists. It means those drawn to the subject by the urge to understand the crisis or the lure of Wall Street might be better off shifting track, twinning economics with coding rather than trading.

Established macroeconomists would do well to pay attention. They should start by being much more careful about data. Silicon Valley economists obsess over how the numbers they use are collected, and would not accept something as old-hat as GDP (see Free exchange). Second, they should tone down the theorising. Macroeconomists are puritans, creating theoretical models before testing them against data. The new breed ignore the whiteboard, chucking numbers together and letting computers spot the patterns. And macroeconomists should get out more. The success of micro is its magpie approach, stealing ideas from psychology to artificial

intelligence. If macroeconomists mimic some of this they might get some cool back. They might even make better predictions. ■

经济学在发展

远离沉闷

由数据驱动的微观经济学正塑造着科技公司。这一趋势可供宏观经济学借鉴

在经济学的世界里，宏观经济学家曾经独领风骚。作为整体经济模型的构筑者，他们预测房价和利率，为人们在餐桌上增加谈资。他们当中很多人大权在握，微调财政部的税收和支出，或者调节中央银行的货币政策。而另外一些人则紧攥着银行和对冲基金提供的大量财富。然而，自然秩序正在变化。宏观经济学家们不仅因为十年来预测屡屡失准而尴尬不堪，同时也正在失去他们的优势。对于刚踏入经济学领域的人来说，未来的方向是微观经济学。

微观经济学家是一个卑微的群体。他们不为所有现象寻求统一的理论，而是精于某个特定领域，通常是某一类型的市场或公司，试图揭示其运转原理。但现代科技让他们扬眉吐气。有了科技公司提供的大数据，微观经济学家对人们的行为做出了惊人的准确预测。硅谷的公司越来越青睐他们：将一位最前沿的经济学家招致麾下，他们就能预测出消费者或者员工下一步可能的动向。

以旅游服务公司TripAdvisor的子公司SmarterTravel为例，用户一点开其网站，一项由经济学家设计的算法就开始启动。各种数据，包括两次点击鼠标间隔的时间，都有助于预测该用户究竟是随便看看、打发时间还是潜在的买家。网站会在数毫秒内做出调整——浏览者会看到更多的广告，而买家则会看到一个更为简单的网页，以他们的选购为重点——从而达到利润最大化。其他公司会出售自己的预测能力。任何一家担心员工流失的公司都可以请hiQ Labs的团队通过深入研究公司记录，找出最有可能离职或者被挖走的员工。人力资源总监就可以针对他们做工作。

新一代微观经济学家不再将供需视为既定，而是想办法令二者协调一致。Airbnb是一个民宿出租的网上市场，公司早期聘请的经济学家通过仔细研读客户数据来发现市场弱点。网站昂贵的升级，包括每一条出租信息展示

的专业图片，在推出之前都经过严格的测试以确保能达到效果。公司还会在房主不确定应当收费多少时给予指导。出租车服务优步（Uber）会在高峰期提高打车价格，促使更多的司机上路服务。Poynt是推出新型无现金支付终端的一家硅谷创业公司，其产品设计团队中就有经济学家。微观经济学家不再只是研究已有的公司如何运作，而是帮助设计未来的公司。

> *极客皆有福*

启发是显而易见的。从精打细算到创造利润，角色的转变让新生代微观经济学家获利颇丰。科技巨头，比如谷歌、Facebook和LinkedIn都聘请了经济学家。这意味着那些想弄懂经济危机或者受华尔街的吸引而进入这一学科的人最好转变思路，同时驾驭经济学和编程，而不是经济学和交易证券。

已有所建树的宏观经济学家最好处处留心。首先他们应该对数据更加慎重。硅谷的经济学家们非常执着于自己使用的数据是如何收集来的，他们可不会接受诸如GDP这样陈旧的概念。其次，宏观经济学家应当淡化理论色彩。他们像是清教徒，没有用数据检测就创建理论模型。新生代完全不理会白板推演，他们把数据收拢后丢给电脑去找规律。最后，宏观经济学家应当多走出去。微观经济学家的成功就在于其“拿来主义”，从心理学到人工智能博采众长。如果宏观经济学家能在这些方面学着去做，他们还能抢回些风头，甚至有可能做出更好的经济预测。 ■

Buttonwood

Advancing, not retreating

Forecasts of the decline of capitalism are premature

BIG crises can lead to big political upheavals. Think of the Depression and the subsequent rise of fascism in Europe and the New Deal in America. What is remarkable about the financial crisis of 2008 is the limited nature of the reaction.

Protest parties of the left and right have gained ground, but only in Greece have they gained power. The biggest policy change has been the introduction of quantitative easing, a technical shift that arouses few passions on the street.

This lack of action is a source of frustration on the left, for whom 2008 seemed to herald capitalism's collapse. Some, including Paul Mason, the author of a new book called "Postcapitalism", still hold out that hope. They view the "sharing economy", in which outright ownership of goods is less important (think car clubs and "freecycled" furniture), as a sign of capitalism's impending demise. Jeremy Rifkin, in his book "The Zero Marginal Cost Society", talks about "the internet of things, the collaborative commons and the eclipse of capitalism".

However, if you define capitalism as the interaction of individuals with a market economy, the system is advancing, not retreating. New-economy websites such as Airbnb and Etsy allow people to earn money in new ways—renting out their homes while they are on holiday, or selling arts and crafts. In the past, homeowners might have struggled to find renters and hobbyists to find buyers; aggregator websites make the task much easier.

It is true that some of these new websites undermine existing business

models, just as file-sharing wrecked music-publishing companies. But investors expect most of these companies to be profitable eventually, judging by the valuations they attract. Google started as a free internet-search business but has found a way to monetise its reach. The move from an economy based on physical goods to one based on software and intellectual property seems to be allowing higher returns on capital than before. The internet has been in wide use for 20 years or so, and corporate profits are close to a post-war high as a proportion of American GDP.

By reducing the cost of information, the internet kills some business models. But not all. New models will appear and people will always be willing to pay for products that convey status, whether luxury watches or fast cars or branded clothing. They can stream music for nothing, but people will spend vast sums to hear rock bands play live.

Another new-economy effect is that the old idea of lifetime employment is fading. More people will follow "portfolio careers", switching from one employer, or even industry, to another as the economy changes. This will require them not just to learn new skills as they age, but to monitor the economy for new opportunities.

Many more people are likely to be self-employed, offering services to a wide range of customers. In a sense, they will be artisans, not employees. Activities such as sales, marketing and accounting—matters that salaried employees leave in the hands of specialist colleagues—will become the responsibility of the individual. Such workers will have to be more, not less, sensitive to the market economy than the typical office drone.

And then there are pensions. Two decades ago, many workers could rely on a paternalistic system under which companies provided a retirement income linked to their final salary. New private-sector workers merely build up a savings pot, which they must use to see them through their retirement

years as best they can.

In Britain this pot used to be converted into an annuity, a guaranteed income for life, another paternalistic solution. Instead, Britons must now guess at their likely longevity, calculate their spending over two decades or more while allowing for the effect of inflation, decide on the asset allocation for their funds, assess the merits of rival providers and adjust for the impact of their fees. These are decisions that might defeat the brightest hedge-fund manager. Again, people will have to be more sensitive to the minutiae of the markets than in the past.

It could be that this process will turn workers in a left-wing direction; they will demand more government protection from the economic cycle. But things may shift the other way. New-economy pioneers may be socially liberal, but their economic views tend to the libertarian right. The individuals who sell stuff on eBay, or run bed and breakfasts, are capitalists too, even though they may not think of themselves that way. And they tend not to like more government regulation, or higher taxes on their earnings. ■

梧桐

不退反进

资本主义衰亡论，为时过早

大危机可能导致政治上翻天覆地的变化。例如上世纪30年代的经济大萧条，法西斯主义随之在欧洲崛起，美国则推出罗斯福新政。2008年金融危机的特别之处是，大家反应有限。

或左或右的各反对党派都有所获益，但只有希腊的反对党夺得了政权。政策上最大的变化是引入了量化宽松，而普罗大众对这一技术性转变反应冷淡。

如此乏力的反应令左翼人士备感失望，对他们来说，2008年似乎预示着资本主义的崩溃。有些人仍抱有这样的希望，其中包括新书《后资本主义》（Postcapitalism）的作者保罗·梅森（Paul Mason）。他们视“共享经济”为资本主义行将就木的信号，在这种新兴经济里，商品的绝对所有权不再那么重要（想想拼车以及把旧家具“免费循环回收”的做法）。杰里米·里夫金（Jeremy Rifkin）在其著作《零边际成本社会》（The Zero Marginal Cost Society）里谈到“物联网、协同共享，以及资本主义的消亡”。

然而，如果资本主义的定义是个人与市场经济的互动，那么这个体系如今并没有消退，反而更进了一步。像Airbnb和Etsy这样的新经济网站给人们创造了新的赚钱途径——在自己出外度假时把房子出租，或出售艺术创作和手工艺品。过去，业主可能不容易找到租客，业余艺术家也难以找到买家，聚合式网站让这件事变得轻松多了。

的确有一些这样的新网站颠覆了现有的商业模式，正如文件共享对音乐出版公司的冲击。但投资者期望这些新公司最终能够盈利，看公司所获估值便知。谷歌一开始只从事免费的互联网搜索业务，但如今也在所覆盖的领域中找到了“钱”途。从基于实物商品的经济转变到基于软件和知识产权的

经济，似乎能让资本回报比以前更高。互联网的普及使用已有约20年，现在企业利润占美国GDP的比重接近战后高位。

通过减低信息成本，互联网把部分商业模式赶上绝路，但并非全部。新模式将出现，但人们总愿意为彰显身份地位的产品买单，无论那是奢华手表、超级跑车，还是名牌服饰。人们愿意免费收听在线音乐，但也愿意花大钱去听摇滚乐队的现场表演。

新经济的另一效应是终身雇佣的这一旧观念正在淡化。更多人将步入“组合职业”生涯，随着经济大形势的变化在各个雇主甚至各个行业间跳转。这使得他们不仅需要不断学习新技能，而且要紧贴时代的经济脉搏，发掘新机遇。

更多人可能成为自雇人士，为各种各样的客户提供服务。从某种意义上说，他们将成为工匠而非雇员。销售、市场营销及会计这类工作本来在受薪雇员中都是留给专业同事完成的，但将来会成为自雇人士的职责。比起普通公司雇员，这类劳动者难免要对市场经济更敏感。

然后还有养老金的问题。20年前，许多劳动者可以依赖一种家长式体制，依靠公司提供的与最终薪金挂钩的退休金。新式私营部门的劳动者则只能靠退休储蓄精打细算地过退休后的日子。

在英国，以往这种退休储蓄可以转成一份养老年金，可以保证有生之年的收入，这是另一种家长式的解决方案。而现在，英国人必须估计自己的寿命，计算在未来20年或更长的日子里的开销（还要考虑通胀因素），决定基金的资产配置，评估众多金融经纪商的收费与品质优劣。要做这些决策，最聪明的对冲基金经理可能也会犯愁。同样，人们必须要比过去更灵敏地感知市场的风吹草动。

这一过程也许会让劳动者转投左派的怀抱，他们将要求政府提供更多保护，让他们免受经济周期的影响。但情况也可能相反。新经济的开拓者也许是社会自由主义者，但其经济观却倾向于自由主义右派。在eBay上卖东西或经营民宿的人也是资本家，虽然他们自己可能不这么认为，而且他们

往往不喜欢政府多加监管或对其收入提高征税。■

Buttonwood

More Kirk than Spock

Behavioural economics has made headway, but still has a long way to go

CAB drivers have good days and bad days, depending on the weather or special events such as a convention. If they were rational, they would work hardest on the good days (to maximise their take) but give up early when fares are few and far between. In fact, they do the opposite. It seems they have a mental target for their desired daily income and they work long enough to reach it, even though that means working longer on slow days and going home early when fares are plentiful.

Human beings are not always logical. We treat windfall gains differently from our monthly salary. We value things that we already own more highly than equivalent things we could easily buy. Our responses to questions depends very much on how the issue is framed: we think surcharges on credit-card payments are unfair, but believe a discount for paying with cash is reasonable.

None of these foibles will be a surprise to, well, humans. But they are not allowed for in many macroeconomic models, which tend to assume people actually come from the planet Vulcan, all coolly maximising their utility at every stage. Over the past 30-40 years, in contrast, behavioural economists have explored the way that individuals actually make decisions, and have concluded that we are more Kirk than Spock.

In his new book "Misbehaving: The Making of Behavioural Economics", Richard Thaler describes his struggles to persuade mainstream economists of all this. The results of behavioural research were at first dismissed as trivial, or the consequences of unrealistic laboratory experiments. It was argued that in the real world, ordinary people might not always think

straight but that the professionals who make the big decisions would. Mr Thaler shows neatly, however, that the coaches and owners of professional American football teams, for instance, make consistent errors in the yearly "draft" to pick new players, placing far too much emphasis on their first choices.

Asking people how they actually behave has been seen as a bit lowbrow. As Mr Thaler writes: "To this day, the phrase 'survey evidence' is rarely heard in economic circles without the necessary adjective 'mere', which rhymes with sneer." Milton Friedman, an economist, argued that a theory should not be judged on the realism of its assumptions, but rather on the accuracy of its predictions.

In a lovely passage, Mr Thaler recounts his attempts to explain the prevailing economic theory on savings to a room full of psychologists. "The psychologists remained stunned in disbelief," he writes, "wondering how their economics-department colleagues could have such wacky views of human behaviour."

Politicians, however, did take notice. The British government, for one, set up a behavioural-insights team to make policy more effective. It is now accepted that the way choices are offered does affect decisions, such as asking people to opt out of, rather than into, pension schemes or organ donation. The effect on take-up is substantial, which should not be the case if individuals were perfectly rational.

This "nudge" approach works elsewhere. Fixing parking tickets to car windows with bright orange stickers (rather than a piece of paper under the windscreen-wiper) attracts the attention of passing cars and makes drivers less inclined to park illegally, because the risk of being caught seems higher. Writing to delinquent taxpayers and telling them that most fellow-citizens have paid up makes them more likely to cough up, too.

At the microeconomic level (the actions of firms and individuals), the behavioural school is now well-established. Mr Thaler is president of the American Economic Association this year and his successor, Robert Shiller, is another behaviouralist. But the school has struggled to make progress in the field of macroeconomics (the behaviour of the whole economy). Rather like the division between quantum physics and classical physics, it is not clear that it can be reconciled with mainstream theory. As Mr Thaler writes of behavioural theories, they "do not make easily falsifiable predictions and the data are relatively scarce". It is hard to run lab-style experiments on whole economies: how can you have a control?

Surely, however, given the failure of most economists to predict the financial crisis, an attempt should be made to incorporate behavioural insights at the macro level. Mr Thaler has one suggestion: give people tax rebates in increments, rather than one-off payments, and they are more likely to spend them than save them. It is a modest start but, for bright young economists, this field is the way to go. ■

梧桐

感性更多，理性更少

行为经济学有所进展，但依然长路漫漫

的士司机有好日子，也有坏光景，依情况而定。天气好坏或者有没有大型会议这样的重要活动对他们的生意影响甚大。如果的士司机完全理性，他们会在好日子里努力工作（以最大化收益），在生意清淡时早点下班。但事实上，他们的行为恰巧相反。他们心里似乎对每天希望收入多少已设定一个目标，每天工作达到此目标即可，哪怕这意味着在不景气的日子里延长工作时间，或者在生意红火时提前收工。

人类并不总是理性。我们对意外之财和自己每个月的薪水态度截然不同。自己已经拥有的东西和同等价值可以轻易买到的东西，我们更为珍爱前者。我们对问题的回应很大程度上取决于问题的呈现方式：我们觉得用信用卡支付时加收附加费用不公平，但却认为现金支付的折扣合情合理。

当然对人类来说，这样的缺点再正常不过。但在很多宏观经济学的模型中，这些缺点却无立足之处，因为这些模型倾向于假定人类都来自瓦肯星（Vulcan），在任何时候都冷酷地追求效用最大化。与之相反，在过去的30到40年间，行为经济学家探索个人在真实生活中如何做出决定，得出的结论是：我们更像《星际迷航》里的柯克舰长那般富有情感，而不像史波克那样纯粹理性。

理查德·泰勒（Richard Thaler）在新书《非理性行为：行为经济学的形成》（Misbehaving: The Making of Behavioural Economics）中，描述了他试图说服主流经济学家的艰辛历程。行为研究的发现一开始被斥为是琐碎的，或者是脱离真实的实验室产物。有人辩称，在现实中普通人或许不会总是逻辑清晰，但做重大决定的专业人士会始终保持理性。然而，泰勒清楚地表明专业人士也会持续犯同样错误，例如，每年美国职业橄榄球队的教练和老板在挑选新人的“选秀”时总是在第一选择上着力过多。

探讨人们在现实中的行为一直以来被认为档次不高。正如泰勒所写：“时至今日，经济学圈子里很少见到‘调查证据’一词前面不加上必备的形容词‘仅仅’，讥讽意味显而易见。”经济学家米尔顿·弗里德曼（Milton Friedman）认为评价一种理论不应基于其假设的真实程度，而应当以其预测的准确程度为准绳。

在一段有趣的描述里，泰勒回忆了他试图对一屋子心理学家解释主流经济学关于储蓄的观点。“心理学家瞠目结舌，完全不能相信，”他写道，“他们感到诧异，他们经济系的同事们怎么会对人类行为有这么古怪的看法。”

然而，政治家们却给予了重视。比如，英国政府设立了一个行为研究团队来制定更有效的政策。人们现在普遍认同这一观点：给出选项的方式会影响选择的结果，例如让人们选择退出而不是加入养老金计划或器官捐献。结果是人们选择参与的比例大幅提升，如果每个人都是完全理性的话，情况断然不会如此。

这种“灵活推动”模式在其他地方也奏效。用鲜亮的橙色贴纸将违停罚单贴在车窗上（而不是放在雨刮下面）能够引起过往车辆的注意，使司机违章停车的可能性降低，因为被抓住的风险看起来更高。写信给拖欠税款的人，告诉他们大多数公民都已缴税，可能更容易迫使他们打开钱包，补齐税款。

在微观经济层面（即公司和个人行为层面），行为学派已经站稳脚跟。泰勒是美国经济学会今年的主席，他的继任者罗伯特·席勒（Robert Shiller）也是一位行为经济学家。但这一学派在宏观经济学（即整体经济行为）领域却蜗步难移。与量子物理学和经典物理学之间的分野不同，目前尚不清楚行为经济学能否与主流理论实现对接。正如泰勒描述行为主义理论时所说的，“它们不做可轻易证伪的预测，且数据相对匮乏。”对整体经济进行实验室实验非常困难：你怎么可能控制这样的实验呢？

然而确实应当承认，既然大多数经济学家未能预测出金融危机，至少应当尝试将行为主义的观点应用于宏观层面。泰勒有一个建议：采用分期递增

的方式给予人们税收返还，而不是一次性付清，人们更有可能将这些钱用于消费而不是存起来。这是一个简单的开头，但是对于年轻聪颖的经济学家来说，这个领域不失为一个好的方向。■

Innovation

Time to fix patents

Ideas fuel the economy. Today's patent systems are a rotten way of rewarding them

IN 1970 the United States recognised the potential of crop science by broadening the scope of patents in agriculture. Patents are supposed to reward inventiveness, so that should have galvanised progress. Yet, despite providing extra protection, that change and a further broadening of the regime in the 1980s led neither to more private research into wheat nor to an increase in yields. Overall, the productivity of American agriculture continued its gentle upward climb, much as it had before.

In other industries, too, stronger patent systems seem not to lead to more innovatioN. That alone would be disappointing, but the evidence suggests something far worse.

Patents are supposed to spread knowledge, by obliging holders to lay out their innovation for all to see; they often fail, because patent-lawyers are masters of obfuscation. Instead, the system has created a parasitic ecology of trolls and defensive patent-holders, who aim to block innovation, or at least to stand in its way unless they can grab a share of the spoils. An early study found that newcomers to the semiconductor business had to buy licences from incumbents for as much as $200m. Patents should spur bursts of innovation; instead, they are used to lock in incumbents' advantages.

The patent system is expensive. A decade-old study reckons that in 2005, without the temporary monopoly patents bestow, America might have saved three-quarters of its $210 billion bill for prescription drugs. The expense would be worth it if patents brought innovation and prosperity. They don't.

Innovation fuels the abundance of modern life. From Google's algorithms to a new treatment for cystic fibrosis, it underpins the knowledge in the "knowledge economy". The cost of the innovation that never takes place because of the flawed patent system is incalculable. Patent protection is spreading, through deals such as the planned Trans-Pacific Partnership, which promises to cover one-third of world trade. The aim should be to fix the system, not make it more pervasive.

The English patent

One radical answer would be to abolish patents altogether—indeed, in 19th-century Britain, that was this newspaper's preference. But abolition flies in the face of the intuition that if you create a drug or invent a machine, you have a claim on your work just as you would if you had built a house. Should someone move into your living room uninvited, you would feel justifiably aggrieved. So do those who have their ideas stolen.

Yet no property rights are absolute. When the benefits are large enough, governments routinely override them—by seizing money through taxation, demolishing houses to make way for roads and controlling what you can do with your land. Striking the balance between the claim of the individual and the interests of society is hard. But with ideas, the argument that the government should force the owners of intellectual property to share is especially strong.

One reason is that sharing ideas will not cause as much harm to the property owner as sharing physical property does. Two farmers cannot harvest the same crops, but an imitator can reproduce an idea without depriving its owner of the original. The other reason is that sharing brings huge benefits to society. These spring partly from the wider use of the ideaitself. If only a few can afford a treatment, the diseased will suffer, despite the trivially small cost of actually manufacturing the pills to cure them. Sharing also leads to extra innovation. Ideas overlap. Inventions

depend on earlier creative advances. There would be no jazz without blues; no iPhone without touchscreens. The signs are that innovation today is less about entirely novel breakthroughs, and more about the clever combination and extension of existing ideas.

Governments have long recognised that these arguments justify limits on patents. Still, despite repeated attempts to reform it, the system fails. Can it be made to work better?

Light-bulb moment

Reformers should be guided by an awareness of their own limitations. Because ideas are intangible and innovation is complex, Solomon himself would find it hard to adjudicate between competing claims. Under-resourced patent-officers will always struggle against well-heeled patent-lawyers. Over the years, the regime is likely to fall victim to lobbying and special pleading. Hence a clear, rough-and-ready patent system is better than an elegant but complex one. In government as ininvention, simplicity is a strength.

One aim should be to rout the trolls and the blockers. Studies have found that 40-90% of patents are never exploited orlicensed out by their owners. Patents should come with a blunt "use it or lose it" rule, so that they expire if the invention is not brought to market. Patents should also be easier to challenge without the expense of a full-blown court case. The burden of proof for overturning a patent in court should be lowered.

Patents should reward those who work hard on big, fresh ideas, rather than those who file the paperwork on a tiddler. The requirement for ideas to be "non-obvious" must be strengthened. Apple should not be granted patents on rectangular tablets with rounded corners; Twitter does not deserve a patent on its pull-to-refresh feed.

Patents also last too long. Protection for 20 years might make sense in the pharmaceutical industry, because to test a drug and bring it to market can take more than a decade. But in industries like information technology, the time from brain wave to production line, or line of code, is much shorter. When patents lag behind the pace of innovation, firms end up with monopolies on the building-blocks of an industry. Google, for instance, has a patent from 1998 on ranking websites in search results by the number of other sites linking to them. Here some additional complexity is inevitable: in fast-moving industries, governments should gradually reduce the length of patents. Even pharmaceutical firms could live with shorter patents if the regulatory regime allowed them to bring treatments to market sooner and for less upfront cost.

Today's patent regime operates in the name of progress. Instead, it sets innovation back. Time to fix it. ■

创新

解决专利问题迫在眉睫

创意推动经济。今天的专利体系是一种陈腐的奖励方式

1970年美国通过扩大农业方面的专利范围，认可了作物学的潜力。专利意在奖励发明创造，所以本应激励进步。但是，尽管提供了额外保护，这一变化以及20世纪80年代专利范围的进一步扩大既没有在小麦领域引入更多私人研究，也没有带来产量增长。总的说来，美国农业的生产力继续缓缓提升，几乎和之前一样。

在其他行业也是一样，更强的专利体系看来并未引发更多创新。单单这一点已经令人失望，却还有证据显示出更糟糕的情形。

专利的目的是传播知识，要求持有人把他们的创新向大众展示，但常常力不能及，因为专利律师是含糊其辞的大师。相反，这一体系创造出了一种寄生生态，专利囤积商和防御型的专利持有者居于其间，他们的目标是限制创新，或者至少百般阻挠，除非他们能分得一杯羹。之前一项研究表明，新进入半导体行业的企业不得不花费高达2亿美元向现有企业购买许可证。专利本应促进创新爆发，相反，它们却被用来锁定现有持有人的优势。

专利体系十分昂贵。一项长达十年的研究估算，如果没有因专利权形成的一时垄断，2005年美国在处方药上2100亿美元的花费可能会节省四分之三。如果专利权能带来创新和繁荣，那么还可算是物有所值，然而现实并非如此。

创新推动了现代生活的丰富多彩。无论是谷歌的算法还是囊胞性纤维症的新疗法，都证实了“知识经济”中“知识”的力量。因为专利制度的缺陷而导致创新无法实现，这样的损失不可估量。专利保护正通过一些协议向全球扩展，例如酝酿中的跨太平洋伙伴关系协议（Trans-Pacific Partnership）将覆盖全球三分之一的贸易。目标应当是修正这一体系，而不是让它遍及

四方。

英式专利

一个极端的答案是废除所有专利权。的确，在19世纪的英国，本刊偏向这一选择。但是废除专利权与人们的直觉背道而驰：如果你开发出一种药或者发明了一台机器，你对自己的成果自然有所有权，就像你造了一栋房子那样，要是有人不请自来搬进你的客厅，你理所当然地会觉得愤愤不平。那些创意被偷的人也是一样。

然而财产权并非毫无限制。当利益足够大时，政府通常会凌驾其上，例如通过税收来敛财，为修路而拆除房屋，控制你能在自己的土地上做什么。在个人主张和社会利益之间很难取得平衡。但说到创意，认为政府应当迫使知识产权所有者与他人分享的说法尤其有道理。

原因之一是与分享实体财产相比，分享创意对产权所有人造成的伤害没那么大。两个农民无法收获同一片庄稼，但模仿者不必从所有者那里剥夺原版，也能复制出一个创意。原因之二是分享创意会给社会带来巨大的利益。这在一定程度上源自创意本身被更广泛地应用。如果只有少数人能负担得起一种治疗手段，那么患者会经受痛苦，尽管实际上能够治愈他们疾患的药物制造成本甚低。分享也带来更多创新，因为创意是叠加发展的，发明依靠的是之前的创造性进步。没有布鲁斯就不会有爵士乐，没有触摸屏就不会有iPhone。种种迹象表明今天的创新与其说是全新的突破，不如说是已有想法的巧妙组合及延伸。

这些论点充分说明了专利的局限，政府对此早有认识。但尽管多次尝试改革，这一体系还是力有不逮。能不能让它更好地运作？

灵光一闪

改革者应当意识到自己的局限性，以此为引导。因为创意是无形的，而创新错综复杂，就连智慧之王所罗门也会觉得很难对相互矛盾的主张做出裁决。资源不足的专利局官员和穿着考究的专利律师会一直是死对头。日久经年，这一体制可能会成为游说和诡辩的牺牲品。因此一个清晰、不拘小

节的专利体系好过一个精巧但复杂的体系。无论是对政府还是对发明而言，简单都是优势。

目标之一应当是击溃专利囤积商和创新阻碍者。研究发现有40%到90%的专利从来没有被持有人利用或授权。专利应当直截了当地规定："要么使用，要么放弃"，如果发明没有进入市场就算失效。专利权也应当更易挑战，无需通过一宗成熟的诉讼完成，同时应当减轻在法庭上推翻专利权的举证责任。

专利应当奖励那些从事重大、前沿创新工作的人们，而不是那些为一些细枝末节提交专利申请的家伙。创意须"非显而易见"的要求必须得到贯彻。苹果公司不应该因圆角矩形平板而获得专利，Twitter的"下拉刷新"也不值得成为一项专利。

专利有效期也过于长久。20年的保护期在制药行业也许还说得过去，因为试验一种药品并把它投入市场可能需要十几年时间。但是在信息技术这样的行业里，从创意到生产，或到写出程序代码的时间要短得多。如果专利落后于创新的步伐，部分企业最终会垄断该行业的基础技术。比如谷歌从1998年起获得一项专利，在搜索结果中对网站排序时可根据有其他多少个网站连接到这一网站为指标。这里，一些额外的复杂性不可避免：在快速发展的行业里，政府应当逐渐缩短专利的有效期。即使制药公司也应该可以接受更短的专利有效期，只要监管机构允许他们更快将疗法推上市，以便缩小前期成本。

今天的专利体系以进步的名义运作，但其实它阻碍了创新。修正迫在眉睫。■

Class and family in America

Minding the nurture gap

Social mobility depends on what happens in the first years of life

THE most important divide in America today is class, not race, and the place where it matters most is in the home. Conservatives have been banging on about family breakdown for decades. Now one of the nation's most prominent liberal scholars has joined the chorus.

Robert Putnam is a former dean of Harvard's Kennedy School of Government and the author of "Bowling Alone" (2000), an influential work that lamented the decline of social capital in America. In his new book, "Our Kids", he describes the growing gulf between how the rich and the poor raise their children. Anyone who has read "Coming Apart" by Charles Murray will be familiar with the trend, but Mr Putnam adds striking detail and some excellent graphs (pictured). This is a thoughtful and persuasive book.

Among the educated elite the traditional family is thriving: fewer than 10% of births to female college graduates are outside marriage—a figure that is barely higher than it was in 1970. In 2007 among women with just a high-school education, by contrast, 65% of births were non-marital. Race makes a difference: only 2% of births to white college graduates are out-of-wedlock, compared with 80% among African-Americans with no more than a high-school education, but neither of these figures has changed much since the 1970s. However, the non-marital birth proportion among high-school-educated whites has quadrupled, to 50%, and the same figure for college-educated blacks has fallen by a third, to 25%. Thus the class divide is growing even as the racial gap is shrinking.

Upbringing affects opportunity. Upper-middle-class homes are not only

richer (with two professional incomes) and more stable; they are also more nurturing. In the 1970s there were practically no class differences in the amount of time that parents spent talking, reading and playing with toddlers. Now the children of college-educated parents receive 50% more of what Mr Putnam calls "Goodnight Moon" time (after a popular book for infants).

Educated parents engage in a non-stop Socratic dialogue with their children, helping them to make up their own minds about right and wrong, true and false, wise and foolish. This is exhausting, so it helps to have a reliable spouse with whom to share the burden, not to mention cleaners, nannies and cash for trips to the theatre.

Working-class parents, who have less spare capacity, are more likely to demand that their kids simply obey them. In the short run this saves time; in the long run it prevents the kids from learning to organise their own lives or think for themselves. Poor parenting is thus a barrier to social mobility, and is becoming more so as the world grows more complex and the rewards for superior cognitive skills increase.

Mr Putnam's research team interviewed dozens of families to illustrate his thesis. Some of their stories are heart-rending. Stephanie, a mother whose husband left her, is asked if her own parents were warm. She is "astonished at our naïveté". "No, we don't do all that kissing and hugging," she says. "You can't be mushy in Detroit...You gotta be hard, really hard, because if you soft, people will bully you." Just as her parents "beat the hell" out of her, so she "whups" her own children. She does her best, but her ambitions for them go little further than not skipping school, not becoming alcoholic and not ending up on the streets.

At every stage, educated families help their kids in ways that less educated ones do not or cannot. Whereas working-class families have friends who

tend to know each other (because they live in the same neighbourhood), professional families have much wider circles. If a problem needs solving or a door needs opening, there is often a friend of a friend (a lawyer, a psychiatrist, an executive) who knows how to do it or whom to ask.

Stunningly, Mr Putnam finds that family background is a better predictor of whether or not a child will graduate from university than 8th-grade test scores. Kids in the richest quarter with low test scores are as likely to make it through college as kids in the poorest quarter with high scores (see chart).

There are no obvious villains in this story. Mr Murray suggested that the educated classes preach the values they practise by urging the poor to get married before they have children. But the record of those who tell other people how to arrange their love lives is hardly encouraging. Both George W. Bush and Barack Obama preached the virtues of responsible fatherhood, to no obvious effect.

Mr Putnam sees "no clear path to reviving marriage" among the poor. Instead, he suggests a grab-bag of policies to help poor kids reach their potential, such as raising subsidies for poor families, teaching them better parenting skills, improving nursery care and making after-school baseball clubs free. He urges all 50 states to experiment to find out what works. A problem this complex has no simple solution. ■

美国的阶层和家庭

小心育儿鸿沟

社会流动性取决于人生的最初岁月

如今，美国最重要的分化在于阶层而非种族，其中最至关紧要之处在家庭。保守派已经对家庭破裂的问题喋喋不休长达数十年。现在，一位最杰出的自由主义学者也加入了这一阵营。

罗伯特·帕特南（Robert Putnam）曾任哈佛大学肯尼迪政府学院院长，也是《独自打保龄》（Bowling Alone）一书的作者，这本影响深远的著作感叹了美国社区资本的衰落。在新书《我们的孩子》（Our Kids）中，他描述了富人和穷人在抚育子女方面日渐扩大的鸿沟。读过查尔斯·穆雷（Charles Murray）的《正在分裂》（Coming Apart）的人对这一趋势会有所了解，但帕特南提供了更惊人的细节和出色的图表（见图）。这是一本思想深刻且令人信服的著作。

在受到良好教育的精英中，传统家庭模式依然兴盛。具有大学学历的女性非婚生育率不到10%，仅仅高于1970年的数字。相比之下，在2007年，仅有高中学历的女性的非婚生育率达65%。种族对此也有影响。具有大学学历的白人女性非婚生育率仅为2%，而具有高中或以下学历的非裔美国人中这一数字为80%，对比鲜明，但自上世纪七十年代以来这些数字都没有太多变化。然而，高中学历白人女性的非婚生育率已经翻了两番，达到50%，而在受过大学教育的黑人女性中这一数字则下降了三分之一，为25%。因此，即使种族差距在缩小，阶层分化却仍在加剧。

养育条件影响人生机遇。中上层家庭不仅更为富裕稳定（身为专业人士的父母都有体面的收入），也更善于养育子女。上世纪七十年代，在父母用于陪伴孩子交谈、阅读和游戏的时间上，各阶层并没有实际差异。现在，父母受过大学教育的小孩所拥有的“晚安月亮”时间比一般小孩多50%。帕特南所说的“晚安月亮”源自一本亲子畅销书《Goodnight Moon》。

受过良好教育的父母乐于和孩子进行不间断的苏格拉底式对话，帮助他们完善心智，从而能明辨是非真伪，分清智慧愚钝。这是很累人的工作，共担这样的责任可以增强伴侣间的信赖，更不用说一起应付诸如清洁工、保姆和看戏剧的车费等开支了。

劳工阶层的父母没有太多余力进行此类教育，他们更可能要求孩子一味服从。从短期看，这节省时间；但从长期看，这妨碍了孩子学习自我组织生活和独立思考。因此，贫穷家庭的养育方式会阻碍社会流动性，随着世界日益复杂，优秀的认知能力会带来更多回报，这种阻碍会更加严重。

为了证明他的论点，帕特南的研究小组访问了几十个家庭。有些家庭的故事令人心碎。斯蒂芬妮（Stephanie）是一位被丈夫抛弃的单身母亲。但被问到她的父母是否温情时，她对“我们的天真大吃一惊”。“没有，我们从来没有过亲吻、拥抱这些事，”她说，“在底特律，你不能那么多愁善感……。你要强硬，非常的强硬，如果你是个软蛋，别人就会欺负你。”就像她父母经常痛打她一样，她也这样管教自己的孩子。她竭尽所能地照顾他们，但她对孩子们的期望不过是不要逃学、不要酗酒、不要流落街头。

在每个阶段，教育程度较高的家庭提供给孩子的一些帮助是受教育少的家庭所忽略或力所不及的。劳工阶层家庭的朋友都互相熟识（因为他们都住在邻近社区），相比之下，专业人士家庭的交际圈要广得多。如果需要解决问题或者打通关卡，他们总有朋友的朋友（可能是律师、精神病医生和公司高管）知道如何处理或者向谁求助。

令人震惊的是，帕特南发现，相比八年级的考试得分，家庭背景能更好地预测一个孩子能否从大学毕业。最富裕的四分之一家庭中考试分数较低的孩子，和最贫穷的四分之一家庭中分数较高的孩子读完大学的可能性是一样的（见图表）。

在这个故事里没有谁是明显的坏人。穆雷建议教育程度高的阶层宣扬他们践行的价值观，说服穷人避免未婚生子。但从过往记录来看，对人们如何安排感情生活的告诫从来效果不佳。布什和奥巴马都推崇身为人父的责任

感，但没有明显效果。

帕特南没有在穷人中看到“振兴婚姻的清晰路径”。他转而建议采取一系列政策来帮助贫穷家庭的孩子充分开发其潜力，例如提高对贫穷家庭的补贴，教给他们更好的育儿技能，改善幼儿园护理，以及提供免费的课后篮球俱乐部。他敦促美国所有50个州都开展实验，摸索出行之有效的方法。如此复杂的问题没有简单的解决之道。■

Free exchange

Poverty's long farewell

The goal of ending poverty by 2030 is worthy but increasingly out of reach

AN UNWIELDY forum, the United Nations struggles to get nations to agree to firm targets, let alone achieve them. So it is deservedly proud of having already met its goal of halving the share of people living in extreme poverty by the end of this year, compared with the level of 1990. In fact, the milestone was reached five years early. In 1990, 36% of the world's population lived in abject poverty. By 2010 this was down to 18%. In absolute terms, the number of those in such desperate straits has fallen from 1.9 billion to about 1 billion today.

This conspicuous success has set the stage for a more audacious target: the complete elimination of extreme poverty by 2030. The World Bank has already declared this to be its objective and the UN is expected later this year to make it the cornerstone of its new development agenda. The goal is a good one. But the economic outlook for developing countries has dimmed since 2013, when the World Bank first settled on it. That, unfortunately, will make the deadline much harder to meet. On current trends it is likely to be missed, possibly by a wide margin.

Bottom up

"Ending poverty" has a very specific definition in the World Bank's book. It does not mean hoisting everyone into the middle class, far less eliminating relative poverty (in the absence of perfect equality, some will always be poorer than others). Rather, it means that no one should be living on less than $1.25 a day, in 2005 dollars, adjusted both for inflation and to take account of the lower cost of living in the countries concerned. That figure, which has become a widely accepted yardstick of abject deprivation, was

first derived by taking an average of the poverty lines—the minimum income needed to satisfy basic needs—of 15 of the world's poorest countries.

It is also important to note that the World Bank has built some slack into its target. Success will be declared so long as no more than 3% of the world's population subsists on less than $1.25 a day. This reflects the assumption that "frictional poverty" will persist for many years: economic volatility and political trouble will, from time to time, knock citizens of poor countries back below the poverty line. Yet even with this leeway, there is reason to be pessimistic about hitting the target by 2030.

The case that this goal is feasible rests on extrapolations from the economic performance of the past few decades. One approach is to assume that the global poverty rate continues to fall by roughly one percentage point a year, as it has since the 1980s. That would take it below 3% before 2030. If that sounds a little crude, a second method involves simulating the effects of a range of growth rates. The poverty target would be achievable as long as consumption per person in developing countries increases by around 4% a year, roughly the pace it has achieved since 1999.

Yet recent research from the World Bank itself casts doubt on both of these approaches.* The first projection—that poverty can keep declining by one percentage point a year—is the easiest to dismiss. The chart shows the distribution of spending by people in the developing world in 1990 and in 2011. In 1990 there was a big bulge of people spending just less than $1.25 a day. It took a relatively small boost from growth to lift this group over the threshold. But the people in the bulge are now largely out of extreme poverty; it will take ever-increasing amounts of growth to raise those lower down the scale to the same level. Most of the people still in penury live in countries with chronically weak economies or belong to marginalised groups, suggesting that it would be unrealistic to expect steady advances in

their welfare.

The second projection (based on sustained 4% growth in consumption per person) does take the existing distribution of global poverty into account. But Nobuo Yoshida, Hiroki Uematsu and Carlos Sobrado of the World Bank have pointed out three other flaws. First, the projection assumes that population growth is even across developing countries, when in fact it is higher in the poorest countries than in more prosperous spots. Second, it assumes uniform growth in consumption, but growth rates in the poorest countries, particularly in sub-Saharan Africa, are slower. Third, it assumes constant levels of inequality, when growth in developing nations often comes with increased inequality.

By making country-specific forecasts for growth, demography and inequality, the researchers calculate that the global poverty rate will be 8.5% in 2030—well short of the dream of ending poverty in the next 15 years. In its new "Global Economic Prospects" report, the World Bank acknowledges the challenge. Its baseline scenario puts the global poverty rate at 5% in 2030.

Better outcomes are, of course, possible. A measure of political and economic stability in the poorest countries would, presumably, work wonders. Moreover, Christoph Lakner, Mario Negre and Espen Beer Prydz, also of the World Bank, note that it has laid out two goals. One is to end poverty. The other is to "share prosperity" by promoting income growth for the poorest 40% in every country in particular. The latter goal supports the former. If developing countries sustain their growth, and the income of the bottom 40% of their populations increases two percentage points faster every year than the overall average, the global poverty rate would fall to 2.7% by 2030.

Such outsized gains for the lower tiers of society would, as they write, be

“unprecedented, and most likely unrealistic”. Even so, recognising that this is the best route towards ending poverty is useful. Economic growth is the most powerful weapon in the fight against poverty but, by itself, is insufficient. Governments should also pursue policies that help the poor disproportionately, such as investment in rural infrastructure and health care. The world may not eliminate utter deprivation by 2030, but it can give itself the best chance of so doing.

* Sources cited in this article can be found at www.economist.com/poverty15

自由交流

贫困久难别

在2030年前消除贫困的目标是适宜的，却日益可望不可及

联合国是个庞大的论坛，要让各国就明确的目标达成一致都十分吃力，更遑论实现这些目标了。因此，联合国的确值得骄傲，它已成功地实现了在今年年底之前把极端贫穷人口比例比1990年减少一半的目标。事实上，这个里程碑在五年前已经实现。1990年，世界人口的36%生活在赤贫中。到2010年，这一比例降至18%。从绝对数来看，赤贫人口数量已从19亿降至现在的10亿左右。

这个引人瞩目的成就为下一个更加大胆的目标做好了铺垫：到2030年完全消除极端贫穷。世界银行已经宣布了这个目标，预计今年晚些时候联合国将把该目标确立为新发展议程的基石。目标是好的。但是自2013年以来，发展中国家的经济前景变得暗淡，当时世界银行刚确定了这个目标。遗憾的是，这让如期达成目标变得困难了许多。按当前进展来看可能无法达成目标，而且可能差得很远。

> *自下而上*

世界银行对“消除贫困”有明确的定义。它不是说要把所有人都提升为中产阶级，更不是要消除相对贫困（在无法确保完全平等时，总会有人比别人穷），而是意味着，以2005年美元的价值计算，并考虑通胀以及相关国家生活成本较低的因素后，没有人的生活费应该少于每天1.25美元。这个数字作为极端贫穷的标准被广泛接受，它最初来自世界上15个最贫穷国家贫困线的平均值，即满足基本需求的最低收入。

世界银行在设定上述目标时留有余地，注意到这一点也很重要。只要世界上每天生活费少于1.25美元的人口不超过3%，就算成功。这反映了“摩擦性贫困”将持续多年的假设：经济波动和政治动乱会不时将穷国的公民打回贫困线以下。然而，即使有这个回旋余地，也有理由对2030年前实现目标持悲观态度。

之所以认为这个目标能够实现，是根据过去几十年里的经济表现所得出的推断。一种方法是假设全球贫困率继续以一年约一个百分点的速度下降，自上世纪80年代起趋势一直如此。这样2030年之前将能够降到3%以下。如果这个方法听上去有点粗略，第二种方法则需要模拟一系列增长率的影响。只要发展中国家人均消费每年增长4%左右，即从1999年起大致保持的速度，消除贫穷的目标就可以实现。

但是，世界银行最新的研究使人们对这两种方法都产生了怀疑。贫困率能保持每年下降1%的第一个预测最容易被推翻。上图说明了1990年和2011年发展中国家居民开支分配的情况。1990年，大量居民的开支刚好低于每天1.25美元。只要有相对较小的经济增长推动，这些人就能跃升到贫困线之上。但这一大批人现在已总体摆脱极端贫穷，而要把那些更穷的人提升到同一水平就需要持续的经济增长来拉动。大多数仍身陷赤贫的人生活在经济长期疲软的国家，或者属于边缘人群，这些都说明，期望他们的福利得到持续提升并不现实。

建立在人均消费持续增长4%基础上的第二个预测确实把目前全球贫困的分布情况考虑在内。但世界银行的吉田信生（Nobuo Yoshida）、植松大辉（Hiroki Uematsu）和卡洛斯·萨布拉多（Carlos Sobrado）指出了三个其他错误。第一，该预测假设各个发展中国家的人口增长是平均的，而实际上最穷的国家比更富的国家人口增长率高一些。第二，它假设消费增长是一致的，但最贫穷的国家，尤其是撒哈拉以南非洲，消费增长率更低一些。第三，它假设不平等的水平是恒定的，然而发展中国家的经济增长往往伴随着不平等的加剧。

通过对各国的经济增长、人口构成和不平等进行分别预测，研究人员计算出2030年全球的贫困率将达8.5%，与未来15年内消除贫困的梦想相距甚远。世界银行新的《全球经济展望》报告承认了这一挑战，它按照基准情形得出的2030年全球贫困率为5%。

当然，出现更好的结果也是可能的。最穷国家一定程度上的政治和经济稳定很可能会创造奇迹。此外，同属世界银行的克里斯托夫·拉克纳

（Christoph Lakner）、马里奥·内格雷（Mario Negre）和埃斯彭·比尔·普里兹（Espen Beer Prydz）指出该机构制定了两个目标。其一是消除贫困。其二是“共享繁荣”，方法是尤其要促进每个国家最穷的40%人口的收入增长。后一个目标支持前一个。如果发展中国家能持续增长，而且其40%底层人口比总人口的年均收入增长快两个百分点，那么到2030年，全球贫困率将降至2.7%。

社会底层获得如此大幅度的增长，就如这几位世行专家所言，是“前所未有，而且很可能不切实际”的。即使如此，承认这是消除贫困的最佳途径也有作用。经济增长是与贫困作斗争最强有力的武器，但是，光靠经济增长还不够。各国政府还应该奉行向穷人倾斜的扶助政策，例如，对农村基础设施和医疗保健系统进行投资等。到2030年，世界或许未能消除赤贫，但是，它能给自己这么做的最好机会。

本文引用的资料可参见www.economist.com/poverty15■

Finance

The money trap

A perceptive book on the need for financial reform

WHAT is the finance sector for? This vital question is all too often forgotten in the debate about the debt crisis of 2008 and its aftermath; it certainly seemed to be forgotten by bankers in the build-up to the debacle. But if the world is to avoid future banking collapses, or at least limit their economic impact, people need to think clearly about the issue.

John Kay's new book, "Other People's Money", does the job; it should be read by everyone concerned with preventing the next crisis. The early books after the crash, like Andrew Ross Sorkin's "Too Big to Fail", analysed how the collapse unfolded in minute detail; Mr Kay, an academic and columnist for the *Financial Times*, takes the longer and broader view.

In doing so, he skewers the pretensions of the finance sector and questions whether its high rewards reflect its true economic contribution. Barely a page goes by without an acute observation or pithy aphorism. "A country can be prosperous only if it has a well-functioning financial system, but that does not imply that the larger the financial system a country has, the more prosperous it is likely to be," he writes. "It is possible to have too much of a good thing."

The purpose of the financial sector is to process payments, extend credit and capital to business, to manage savings and to deal with economic risks. But the sector has become dominated by trading, with assets changing hands faster than humans can blink. This frenetic activity has had little to do with the needs of the real economy. "People who applaud traders for providing liquidity to markets are often saying little more than that trading facilitates trading," he writes. "An observation which is true, but of very

little general interest."

The constant exchange of all these pieces of paper should not logically result in net profit for the finance sector as a whole, let alone the economy. When profits do occur, they require the taking of risk. All too often this trading resembles tailgating on the motorway—a high-risk strategy that works most of the time but occasionally ends in a devastating crash. Skewed incentives mean traders are rewarded for pursuing short-term profits; the cost of their mistakes will be borne by shareholders or, ultimately, taxpayers.

A further problem is that the finance sector is, by its nature, an intermediary. Banks channel money from savers to borrowers; fund managers invest on behalf of their clients. This agent-principal relationship has to rely on trust if it is to work. But the subprime mortgage debacle of 2007 showed the problems that arise from a long chain of intermediaries who cared little about the credit quality of the loans they were passing on. "People who traded mortgage-backed securities knew about securities, but very little about mortgages, and less about houses and homebuyers," Mr Kay writes. Smarter people have been employed in finance in recent decades, using more sophisticated technology, but the quality of intermediation has got worse.

So what is to be done about this? The authorities responded to the crisis with minutely detailed regulation, such as the voluminous Dodd-Frank act in America. But Mr Kay says there are already far too many regulations, not too few. The problem is the structure of the industry itself. "We need some of the things that Citigroup and Goldman Sachs do, but we do not need Citigroup and Goldman Sachs to do them," he writes. Instead of vast conglomerates, what is needed are focused institutions; banks that take deposits, for example, should be limited in the assets that they hold. Intermediaries who handle other people's money should be held to high

standards of customer care, and subject to civil and criminal penalties. These penalties should fall on individuals, not corporations, which tend merely to pass on the cost to shareholders.

Above all, the finance sector should be judged on the same basis as other industries; if an activity is unprofitable without taxpayer support, it should not occur. “Our willingness to accept uncritically the proposition that finance has a unique status has done much damage,” the author wisely says. Let us hope those in authority will listen. ■

金融

金钱陷阱

一本颇有见地的书阐述了金融改革的必要性

金融业是干什么的？人们在讨论2008年债务危机及其余波时，经常忘了这个至关重要的问题。当然，似乎银行家们在危机的累积阶段也把这个问题忘得一干二净。但是，如果全世界要避免银行业重蹈崩溃的覆辙，或者至少限制崩溃所带来的经济影响，人们就需要认真思考这个问题。

约翰·凯伊（John Kay）的新书《别人的钱》（Other People's Money）正是为回答这个问题而写。那些关心如何防止下一场危机的人们都应该看看这本书。金融危机之后早期出版的一些书，比如安德鲁·罗斯·索尔金（Andrew Ross Sorkin）的《大而不倒》（Too Big to Fail），详细分析了危机如何形成。而《金融时报》的专栏作家、学者凯伊在其新书中的眼光更长远，也更开阔。

他一针见血地揭开了金融业的虚伪面具，质疑它的高收益是否反映了它对经济真正的贡献。书中几乎每一页都充满了敏锐的观察或精辟的警句。“一个国家只有拥有一个运转良好的金融体系才可能繁荣富强，但这并不意味着一个国家的金融体系越庞大，这个国家就越有可能繁荣，”他写道，“有时也可能是好东西多过了头。”

金融业的功能是处理支付、给予商业贷款和资本、管理储蓄以及应对经济风险。但现在这个行业已经被交易主宰，资产易手之快让人眼花缭乱。这种疯狂的交易和真正的经济需求其实关联甚小。“大家说操盘手为市场注入了流动性，对此赞许有加，其实这无非是在说交易促进了交易，”他写道，“观点无可厚非，但对社会意义不大。”

从逻辑上说，这些资产凭证的频繁倒手整体上并不能为金融业带来净利润，更不用说整体经济。而如果确实产生了利润，风险也就随之而来。这种交易往往就像在高速公路上紧盯车：这种策略风险极高，大多数时候能

够奏效，可一旦出事，结局就是毁灭。扭曲的动机使得交易者因追求短期利润而获得回报；而他们的错误则由股东，或者说最终由纳税人来买单。

一个更深层次的问题是金融业究其本质是中介机构。银行将钱从储蓄者融通到借贷者手中，基金经理代表他们的客户进行投资。这种代理-委托关系运作的基础是信任。但2007年的次贷危机表明，中介机构对经手的贷款信用质量不甚在意，一层又一层的中介形成长链，最终问题重重。“交易住房按揭债券的人了解债券，但不怎么懂按揭，更不了解房产和购房者”，凯伊写道。最近几十年，金融业的就业人员越发聪明，他们使用更为精巧复杂的技术，但是其媒介职能的品质却越来越差。

对此人们能够做点什么呢？官方应对危机的办法是细致入微的监管，比如美国连篇累牍的多德-弗兰克法案（Dodd-Frank act）。但是凯伊认为目前的监管措施是太多而非太少，真正的问题是这个行业本身的结构。他说道：“我们需要花旗和高盛的一些做法，但是我们不需要由花旗和高盛来实施这些做法。”我们需要的是专注的机构，而非大型财团：比如说，吸取存款的银行所持有的资产应该受到限制。中介机构处理他人的资金，应该被要求在客户关怀方面达到高标准，并承担民事和刑事责任。民事和刑事惩罚应落实到具体的个人，而非企业，因为后者会将代价转移到股东身上。

总而言之，评价金融行业的标准应该和其他产业一样。如果一件事情没有纳税人的支持就无法盈利，那么我们就不应该做这件事。作者非常睿智地指出：“我们不加辨别地接受这样一个理念，即金融业享有独特的地位，这为祸甚烈。”让我们期望当政者会倾听这样的声音。■

Schumpeter

From alpha to omega

Conglomerates are back in fashion, but only the best will thrive

FEW management fashions have waxed and waned quite as dramatically as that for conglomerates. From the 1960s to the 1980s business gurus praised conglomerates such as ITT of America and Hanson Trust of Britain as the highest form of capitalism. Today they routinely dismiss them as bloated anachronisms. Companies should stick to their knitting; investors should minimise risk by investing in a portfolio of companies rather than backing corporate megalomaniacs. Peter Lynch, an investment guru, talks about "diworsification". Stockmarkets routinely apply a sizeable "conglomerate discount" to diversified companies.

To judge by last week's events, the mood has shifted again. Warren Buffett has been steadily and almost single-handedly restoring the popular appeal of conglomerates. And the positive reception given to the latest deal by his investment vehicle, Berkshire Hathaway, shows how he has succeeded. On August 10th the group said it would buy Precision Castparts, a maker of aerospace components, for $37 billion, in the biggest deal in Berkshire's 50-year history. Mr Buffett boasts of running a sprawling conglomerate that is "constantly trying to sprawl further".

Later that day Google announced a big reorganisation in which, in effect, it admits to being a conglomerate. Larry Page and Sergey Brin, its founders, will run a holding company called Alphabet. Google's original business—internet search and advertising—will be the largest subsidiary; its "moon-shot" projects, such as those to create driverless cars and extend human lifespans, will become separate companies within the group. A tech blogger has quipped that Alphabet is "Berkshire Hathaway for the Burning Man crowd". Indeed, Mr Page has acknowledged that he looks to Berkshire

as a model of how to run an increasingly diversified company.

Google's transformation into a conglomerate is being driven by two things: technology and cash. The company believes that information technology will transform all manner of established industries, from transport (driverless cars) to education (online courses) to homebuilding (smart thermostats and the like). This means that the company has to put its fingers into all sorts of pies. Google also has a growing cash pile that gives it the luxury to make bets on all sorts of other projects, such as creating artificial meat or delivering internet access through a network of balloons, that might come to nothing or might change the world.

Other tech billionaires are diversifying, each in his own way. Jeff Bezos's Amazon is investing in server farms and drones. He also personally owns the *Washington Post*. Mark Zuckerberg's Facebook is investing in virtual-reality equipment. Elon Musk, the boss of Tesla, an electric-car maker, has separate companies that are investing in space travel and solar-energy systems. They are treading a well-trodden path: General Electric became a conglomerate because Thomas Edison, its founder, was obsessed by electricity's capacity to transform the everyday world. GE produced its first electric fans in the 1890s and then went on to develop a full range of electric heating and cooking devices before becoming an industrial and financial behemoth.

Berkshire's steady evolution into a conglomerate is based on a different idea: that success lies in applying a consistent set of criteria when choosing acquisitions and managing them thereafter. They must be low-risk, easy for Mr Buffett and his team to understand, already be well-run and enjoy a strong market position. Mr Buffett, and his long-term partner Charlie Munger, have repeatedly demonstrated their genius for spotting and buying hidden gems. They also have a talent for giving those companies the right combination of guidance and freedom. They provide long-term capital that

lets them ride out market volatility or short-term declines: Mr Buffett says that his ideal holding period is "forever". But the duo do not intervene too much: their empire of more than 300,000 employees is overseen by a team of just 24 at head office.

If GE's core competence is no longer finding new uses for electricity, it is perhaps its ability to select, train and promote general managers. Among other successful conglomerates, Koch Industries—whose interests run from oil and gas to finance, fertilisers and cattle ranching—has a secret sauce with two main ingredients: meritocracy and operational efficiency. Charles Koch, its boss, has organised the company on the principles of democratic capitalism, as laid out in his book, "The Science of Success". Workers can earn more than their bosses. High-school-educated farm boys from Kansas can rise faster than Ivy League MBAs.

The good, the bad and the discounted

The number of companies that command revolutionary technologies or brilliant management skills is limited. Many conglomerates are anachronistic and bloated: the emerging world in particular is teeming with companies that do lots of things badly rather than a few things well, and which make up for their incompetence by courting politicians. And even the best conglomerates have to engage in a constant fight with flab. GE is trying hard to focus on a few industrial sectors (for example by buying chunks of Alstom, a French rival) and to get rid of other businesses such as NBCUniversal and GE Capital (of which it sold another chunk last week). Around 60% of the group's sales in 2001 came from businesses that it has since got rid of.

But it is now clear that you should not apply the same conglomerate discount to all diversified groups. There are now more examples than ever of a new breed of high-performing conglomerates that bear little relation to the bloated dinosaurs of old. Some possess managerial talents that allow

them to achieve rapid growth in an era of stagnation. Others are led by multi-talented entrepreneurs with the ability to revolutionise old industries by applying new technologies. Focused companies may still be safer bets for many investors. But the best conglomerates have the patience and skills to end up changing the world. ■

熊彼特

从阿尔法到欧米茄

企业集团再度风行，惟最强者方能开枝散叶

少有哪种管理风潮能像大型企业集团那样经历极具戏剧性的兴衰跌宕。从上世纪60年代到80年代，商业大师们盛赞美国ITT和英国汉森信托这类大型企业集团，认为这是资本主义发展的极致。如今，他们经常批评这些机构臃肿过时。企业应专注自身核心业务，投资者应分散投资不同公司，实现风险最小化，而非支持那些独揽天下的庞大企业集团。投资大师彼得·林奇（Peter Lynch）提出“多样恶化”（diworsification）一说。股市也通常对多样化经营的企业做出相当大程度的“集团化折价”。

从上周的事件看来，氛围再次转变。巴菲特一直支持企业集团模式，几乎凭一己之力恢复了大众对企业集团的信心。他是如何做到的？对于其投资载体伯克希尔·哈撒韦公司（Berkshire Hathaway）的最近一次交易外界反响积极，可以揭示个中奥秘。8月10日，该集团表示将以370亿美元收购航空零部件制造商“精密机件公司”（Precision Castparts），这是伯克希尔公司成立50年来最大的一笔交易。巴菲特为经营这一“不断尝试进一步扩展”的庞大企业集团而自豪。

当天稍晚些时候，谷歌宣布了一项大型重组计划，实际等于承认已变身为企业集团。其创始人拉里·佩奇（Larry Page）和谢尔盖·布林（Sergey Brin）将管理名为“字母表”（Alphabet）的控股公司。谷歌的原有业务（互联网搜索及广告）将成为其最大子公司；创制无人驾驶汽车及延长人类寿命的这类“疯狂”项目则由集团内的不同公司负责。一位科技博主打趣说，字母表公司是“为火人节的狂欢大众而设的伯克希尔公司”。的确，佩奇也承认他视伯克希尔公司为经营日益多元企业的典范。

谷歌转变为企业集团由两方面推动：科技及资金。谷歌相信，信息技术将彻底改变现有各行各业，包括交通运输（无人驾驶汽车）、教育（在线课程）以至住宅建筑（智能恒温器及类似设备）。这意味着该公司必须涉足

各个领域。同时，谷歌资金日益雄厚，有能力在各类项目上豪赌一把，例如研制人造肉或以气球组成的网络提供互联网接入服务，无论它们最终是付诸东流还是改变世界。

其他科技富豪也在以各自的方式实现多元化经营。杰夫·贝索斯（Jeff Bezos）的亚马逊正投资开发服务器农场及无人机。他本人还拥有《华盛顿邮报》。扎克伯格的Facebook则在投资开发虚拟现实设备。电动车制造商特斯拉的老板埃隆·马斯克（Elon Musk）拥有多家公司，分别投资于太空旅行及太阳能系统。他们正循着一条不乏先行者的道路前进：通用电气当年发展为企业集团是因为其创始人爱迪生深信电力能改变人们的日常生活。19世纪90年代，通用电气生产了首批电风扇，然后继续开发出一整套电热及烹调设备，最终成为工业及金融巨头。

伯克希尔公司稳步发展为企业集团则是基于另一理念：要获得成功，就要在选择收购对象及之后的管理上运用贯彻始终的准则。这些被收购的公司必须风险低、容易为巴菲特及其团队了解、经营现状良好、市场地位强大。巴菲特和他的长期合作伙伴查理·芒格（Charlie Munger）一再显现独到慧眼，能够沙里淘金，并成功收购。在对这些企业管与放的拿捏上，他们也把握得恰到好处。他们提供长期资本，使这些公司安然度过市场波动或短期衰退：巴菲特说，他心目中最理想的持有期是“永远”。但这两人并不过多插手具体业务：他们的帝国拥有超过30万名员工，由总部仅24人的团队管理。

说到通用电气的核心竞争力，假如不再是为电力寻找新用途，那么也许应该是选拔、培训及提升总经理的能力。成功企业集团中，科氏工业集团（Koch Industries，其业务涉及油气、金融、化肥、畜牧业）的秘方包含两大主料：唯才是用和高效运营。该公司老板查尔斯·科克（Charles Koch）以民主资本主义的原则建构公司，正如他在《做大私企》（The Science of Success）一书中所描绘的。员工可以比上司赚得多；高中毕业的堪萨斯农家男孩可以比常春藤名校毕业的MBA晋升得更快。

好的、坏的、打折的

掌握革命性科技或卓越管理技能的公司数量有限，许多大企业集团既不合时宜又架构臃肿。新兴国家尤其充斥着这样的企业：并不专注做好几件事，而是涉足广泛又每每败阵，而且会拉拢政客来掩饰自己的无能。即使最优秀的企业集团也须始终谨防“虚胖”。通用电气正努力专注在几个工业领域的发展（如收购法国对手阿尔斯通的大部分业务），同时剥离NBC环球（NBC Universal）及GE金融（GE Capital，上周出售了其中又一部分）等其他业务。2001年，该集团约60%的销售来自于此后被剥离的业务。

但显而易见的是，如今已不能把同样的集团化折价标准用于所有多元化经营的企业。现在，新型高绩效企业集团远多于从前，它们完全不同于旧日大而无当的“恐龙式”企业。其中一些拥有能让公司在逆境中高速增长的管理能人，其他一些则由多才多艺的企业家所领导，他们能应用新科技来变革旧产业。专精一艺的企业可能仍是许多投资者的安全押注，但最强的企业集团拥有最终改变世界所需的耐性和技能。■

Alibaba

Clicks to bricks

The Chinese online giant is looking for new sources of growth

"IN FIVE years, we will sell one trillion dollars." That is the bet that Jack Ma, the chairman of Alibaba, made with American businessmen on a recent trip to Chicago. The Chinese firm is already the world's biggest e-commerce outfit. But now Mr Ma thinks he can more than double the volume of sales on his firm's online-sales platforms by 2020.

First, he must win over investors. The firm's shares have fallen sharply from their peak of $119 late last year, though at around $74 they remain above the $68 price at which they (or rather, shares in a "variable interest entity" linked to Alibaba, and registered in the Cayman Islands) were floated last September. On August 12th Alibaba unveiled its latest results. Its quarterly revenues grew by 28% year on year to 20.2 billion yuan ($3.3 billion), and profits rose by 23% to 10.6 billion yuan. Yet investors were still disappointed. The firm now plans to spend up to $4 billion on buy-backs to bolster its share price.

Part of the reason that profit growth was not stronger is that Alibaba is investing heavily in such growth areas as the mobile internet. Promisingly, its quarterly revenues from mobile services, of 8 billion yuan, represent a year-on-year leap of 225%. They now make up half of the firm's total e-commerce revenues from China, up from just 19% a year earlier. With economic growth cooling in China's big cities, the firm is making a big push to develop e-commerce among rural consumers. China has relatively few bricks-and-mortar shops per head of the population compared with other large economies. Studies show people outside its big cities are ready to spend a higher share of their incomes on online shopping, and Alibaba aims to tap into their desires.

It is also seeking more e-commerce customers beyond China's borders. Earlier this month it said Michael Evans, a Canadian banker who used to work at Goldman Sachs, would take charge of its international efforts. Macy's and Costco, two big American retailers, have already agreed deals to use Tmall Global, one of Alibaba's online platforms, to sell goods to Chinese shoppers with fewer delays and customs hassles than they had previously faced, since they can now use Alibaba's bonded warehouses in China's free-trade zones.

The warehouses are one aspect of Alibaba's evolution from being an "asset-light" firm. China's woefully inefficient logistics network, which acts as a brake on e-commerce growth, has forced the firm to get its hands dirty. Two years ago it organised Cainiao, a consortium that runs a digital platform linking more than a dozen logistics providers, 1,800 distribution centres and more than 100,000 dispatch points.

Now, Alibaba is investing in bricks and mortar too, to keep pace with rivals. One of its competitors, JD, has taken an "asset-heavy" approach to e-commerce akin to Amazon's in America. JD has spent a fortune developing warehouses and logistics networks. This month, it announced a 4.3 billion yuan investment in Yonghui Supermarket, a big grocery chain, to boost its "online to offline" (O2O) offering, in which customers choose and pay for goods online but collect them from, or have them delivered by, a shop. Two other Chinese online giants, Tencent and Baidu, have already struck big O2O deals with Dalian Wanda, a big shopping-centre operator.

This week Alibaba followed suit by making a $4.6 billion investment in Suning, one of China's largest electronics retailers. Suning will open an online storefront on Tmall, selling home appliances and gadgets, product areas in which JD has bested Alibaba.

The deal will not only let shoppers pick up and return their online

purchases at Suning's stores. It also means that Suning's delivery network, which reaches every corner of China, will join the Cainiao logistics platform, considerably strengthening it. Cainiao now hopes to offer deliveries in as little as two hours. Suning may also suffer less from "showrooming", in which shoppers examine products in its shops but buy them online from another retailer.

Alibaba is also ploughing ahead with cloud computing. Its business, Aliyun, is China's largest cloud provider. So far, smaller Chinese firms are making less use of cloud services than counterparts elsewhere. Alibaba is planning a vast expansion of Aliyun, by offering prices that will tempt even the most frugal of small entrepreneurs. Having already invested heavily in cloud services aimed at Chinese firms, it intends to spend another $1 billion taking Aliyun global.

The biggest future prize for Mr Ma could be online finance, though shareholders in Alibaba's listed entity may not see all the profits. Ant Financial, a related private company controlled by Mr Ma, houses all of the group's financial initiatives. Alipay revolutionised online payments by using escrow, which helped buyers and sellers overcome distrust. With some 120m daily transactions, Alipay is miles ahead of the rival payment offering from Tencent.

Ant Financial's online money-market fund, Yu'E Bao, had roughly 600 billion yuan in assets at the end of June. Ant has also made more than 400 billion yuan of microloans. Though the firm requires no guarantee or collateral, it reports a default rate of below 2%. Ant is headed for a public flotation soon, and analysts think it may be worth up to $50 billion.

Since Alibaba has so much data on the online transactions and other activities of consumers, it is often a better judge of their creditworthiness than the banks. Several countries, including Singapore, are using Sesame,

Alibaba's credit-scoring system, for such things as whether to approve visa applications—so too are Chinese dating websites.

Perhaps the most intriguing look into Alibaba's future involves a deal struck in July with Unilever. The European consumer-products giant saw its sales in China fall by 20% in the last quarter of 2014. Now Alibaba's online marketing-services outfit, Alimama, will tap into its parent's vast consumer database to help Unilever do digital marketing, reach rural consumers and bolster cross-border sales.

In all, Alibaba is developing from a shopping platform into a broad-based provider of online services. Its ambitions will require heavy investment. Some ventures may fail. Others may have their wings clipped by Chinese regulators (their suspension of Alibaba's online-lottery business was one reason for the group's slow revenue growth in the past quarter). Investors will grumble about the costs involved and the profits deferred. Still, if even some of these big bets pay off, Mr Ma's trillion-dollar dream just might come true. ■

阿里巴巴

从虚到实

中国网络巨头正在寻找新的增长源

“五年内，我们的销售额将达一万亿美元。”这是阿里巴巴董事局主席马云最近在芝加哥与美国商界会面时放出的豪言。这家中国公司已经是世界上最大的电子商务企业。而现在，马云认为到2020年，他能让旗下网上销售平台的销售额翻一倍还多。

首先，他必须争取投资者的支持。该公司的股价已从去年年底119美元的峰值大幅下滑至74美元，虽然仍高于去年9月阿里巴巴（确切地说，是注册于开曼群岛、与阿里巴巴相关联的一家“可变利益实体”）上市时的68美元。8月12日，阿里巴巴公布最近业绩。其季度收入同比增长28%至202亿元（33亿美元），利润为106亿元，上升了23%。但投资者仍然感到失望。公司现在计划花费多至40亿美元回购股票，以推高股价。

利润增长不够强劲的原因之一是阿里巴巴在一些增长领域投资巨大，例如移动互联网。其移动业务的季度收入达80亿元，同比跃升225%，势头大好。这部分业务已占该公司中国电子商务业务总收入的一半，而一年前这一数字还只有19%。随着中国大城市的经济增长降温，阿里巴巴正积极开拓农村电子商务市场。与其他大型经济体相比，中国的人均实体商店数量相对较少。研究显示，在中国，大城市以外的人们愿意花费更多收入在网上购物，而阿里巴巴正投其所好，开发市场。

该公司也正在拓展中国境外的电子商务客户。本月初，公司宣布曾就职高盛的加拿大银行家迈克尔·埃文斯（Michael Evans）将负责其国际业务。美国两大零售商梅西百货（Macy’s）和好市多（Costco）已同意利用阿里巴巴的网上平台之一“天猫国际”向中国消费者销售商品，物流将比以往更快捷，海关手续也更简便，因为现在他们可以使用阿里巴巴在中国各个自由贸易区内的保税仓库。

这些保税仓库是阿里巴巴从一家“轻资产”企业向前发展进化的一个方面。中国可怜低效的物流网络制约了电子商务的增长，迫使阿里巴巴亲力亲为。两年前，公司组建了联合企业菜鸟网络，运营汇聚十数家物流供应商的数字平台、1800个配送中心和超过10万个快递点。

现在，阿里巴巴也正在投资实体资产，追赶对手的步伐。竞争者之一京东采取了与美国亚马逊类似的“重资产”电子商务模式，在拓展仓储和物流网络上花费巨大。8月，京东宣布向大型连锁超市永辉超市投资43亿元，以提升其“线上到线下”（O2O）业务，即顾客在网上选货，在线支付，但到店自提或由商店送货上门。中国另外两大网络巨头腾讯和百度则已与大型购物中心运营商大连万达谈妥了宏大的O2O计划。

8月10日，阿里巴巴也随之向中国最大的电器零售商之一苏宁投资46亿美元。苏宁将进驻天猫，开设旗舰店销售家电及电子产品，这些正是京东一直领先阿里巴巴的产品领域。

这一合作不但令消费者可在苏宁门店提货或退货，而且意味着覆盖中国每个角落的苏宁配送网络也将融入菜鸟物流平台，令其实力大增。现在菜鸟希望提供短至两小时的配送服务。对苏宁来说，这也将减少顾客在门店“只逛不买”对公司的伤害（顾客到店里挑选商品，最后却在网上通过另一家零售商购买）。

阿里巴巴也在推进云计算业务。它旗下的阿里云是中国最大的云服务提供商。到目前为止，相比其他地区，中国的小型企业较少利用云服务。阿里巴巴正在酝酿大幅拓展阿里云服务，降低价格，吸引哪怕是最精打细算的小企业。除了投入巨资针对中国企业提供云服务，阿里巴巴还计划另外斥资10亿美元为阿里云开拓全球市场。

马云未来最大的收益可能来自网上金融业务，但阿里巴巴上市实体的股东们未必能享有所有这部分的利润。集团所有金融业务由马云控股的关联私营公司“蚂蚁金服”执掌。支付宝提供第三方交易支付担保，帮助买家和卖家取得互信，彻底变革了网上支付。支付宝目前日交易量达1.2亿笔，将对

手腾讯的支付服务远远甩在后面。

截至今年6月底，蚂蚁金服的在线货币市场基金余额宝拥有约6000亿元资产。蚂蚁金服也已投放超过4000亿元的小额贷款。虽然该公司放贷无须担保或抵押，但据称违约率低于2%。蚂蚁金服已在准备上市，分析师认为其估值可能高达500亿美元。

由于阿里巴巴拥有消费者在线交易及进行其他活动的大量数据，往往能比银行更好地判断消费者的信用。包括新加坡在内的多个国家已开始利用阿里巴巴的信用评级系统芝麻信用作为签证审批等事务的参考，中国的婚恋网站也在利用这一系统。

展望阿里巴巴的前景，最引入入胜的也许是7月该公司与联合利华达成的合作协议。该欧洲消费品巨头去年第四季度在华销售额下跌了20%。如今，阿里巴巴的在线营销平台“阿里妈妈”将挖掘其母公司庞大的消费者数据库，帮助联合利华做数字营销，开拓农村消费市场，并加强跨境销售。

总而言之，阿里巴巴正从一个购物平台发展为业务广泛的在线服务提供商。其雄心壮志需要大量投资的支持，某些冒险或许会失败，另一些或许会受制于中国的监管机构而折翼（阿里巴巴的网上彩票业务被叫停是造成集团上季度收入放缓的一个原因）。投资者将埋怨因此而损失的成本及递延的利润。然而，这些大赌注即便只有部分赌赢，马云的万亿美元梦想便足可成真。■

Lotte's succession

A whole Lotte drama

A fraternal feud over inheritance fires up South Koreans and regulators

THE recent performance of the Lotte Giants, one of a dozen baseball teams belonging to South Korea's *chaebol*, its family-owned conglomerates, has been uninspiring. But when the team's chief executive resigned last week, it was to distance himself from the "disgrace" of another turf war: a jostle for succession at the team's parent group between his two cousins, the sons of the Lotte *chaebol*'s nonagenarian founder and chairman, Shin Kyuk-ho.

His business empire has operations in South Korea (where it is the fifth-biggest conglomerate) and Japan, and combined assets of $96 billion—and it is the last of the *chaebol* to be managed by its founder. Mr Shin began Lotte as a chewing-gum business in post-war Japan. In 1967 he took the business home, where Park Chung-hee, South Korea's then dictator, was offering tax breaks and perks for foreign investors. From its base in Seoul, Lotte Korea moved into fast food, hotels, amusement parks, department stores and cinemas.

The group's controlling companies, however, remained in Japan, and for years Mr Shin's sons have shared the spoils geographically: Shin Dong-joo, the eldest, managing its unit in Japan; and Shin Dong-bin, the youngest, overseeing Lotte Korea's 74 affiliates (which account for four-fifths of the group's business) and the group's operations in other countries.

Each is now vying for the other's patch. Rivalries over inheritance are common enough at South Korea's family-run firms: Chaebul.com, which tracks them, says that roughly half of the 40 biggest have been embroiled in disputes over founders' succession plans. The difference this time, says Chung Sun-sup, its chief analyst, is that a son has appointed himself heir.

In January the board of directors at Lotte Holdings, which in effect controls the group from Japan, dismissed Shin Dong-joo, then its vice-chairman, from all executive posts. It looked like their father was paving the way for Shin Dong-bin to succeed him; and last month the younger brother was made chairman of Lotte Holdings. But on July 27th the founder, elder son at his side, said he was firing all the firm's board members, including his younger son. The next day Shin Dong-bin gathered Lotte directors to mount a counter-coup, demoting his father to an honorary position at Lotte Holdings.

Accusations have flown. Shin Dong-bin says his older brother was preying on their father's frailty, forcing his hand. Shin Dong-joo produced a letter and an audio recording of a conversation with his father suggesting he was the rightful heir. He also claims his brother hid from his father large losses at Lotte's Chinese unit. Both have appeared on television to stake their claim. On August 11th Shin Dong-bin made his second public apology for the squabbling this month. In a live television address (pictured) he pledged to improve transparency at the group and assured viewers that "Lotte belongs to Korea".

An "unmanaged scandal" of this scale is unusual, says Jun Sung-in of Hongik University in Seoul, even by the standards of fractious *chaebol* families. It is intense because "the stakes are high and the arena is small": securing the chairmanship of Lotte Holdings at a forthcoming shareholder meeting. That firm is thought to have a near-absolute stake in Hotel Lotte, the de facto holding company of Lotte Korea.

South Koreans' goodwill towards the *chaebol* has been tested recently. Misbehaviour by prominent scions of business dynasties has caused outrage, as have internal restructurings that appear to benefit the founding families but disadvantage outsiders. Lotte has a particularly woolly structure. The country's Fair Trade Commission says its 416 circular

shareholdings account for over 90% of all those at South Korean firms. According to Chaebul.com, Shin Kyuk-ho uses these to control the Lotte group through a minuscule 0.05% stake (Lee Kun-hee, the ailing chairman of Samsung, has 2.24% of his group).

At last week's press conference Shin Dong-bin vowed to eliminate at least four-fifths of these cross-shareholdings; to push for a listing of Hotel Lotte; and to switch Lotte Korea to a holding-company structure. The finance minister, Choi Kyung-hwan, had given warning that state agencies would scrutinise Lotte's "opaque ownership structure and cashflow" if necessary; the Fair Trade Commission and the Financial Supervisory Service have already begun investigations. The Federation of Small Business Owners, a 7m-strong lobby, has launched a boycott of Lotte products; some shopkeepers say they may refuse to accept Lotte credit cards.

This is in part because all the talk of ownership structures has ignited nationalist sentiment. The Shins use Japanese names and speak halting, accented Korean. Many South Koreans have learned that Lotte is, in effect, controlled from Japan just at the moment when they are celebrating 70 years of being freed from Japanese occupation. In a show of patriotism for the anniversary, Lotte made much of a huge South Korean flag that it displayed (at a cost of $100,000) on the unfinished Lotte World Tower in Seoul. The skyscraper, soon to be the tallest in the country, has been beset by safety issues. South Koreans have grumbled that Lotte is trying to conceal its problems with their national flag. ■

乐天继承风波

一场闹剧

兄弟争产惹怒韩国民众及监管当局

乐天巨人队是由韩国财阀（家族企业集团）拥有的十几支棒球队之一，最近该球队表现不甚理想。然而其首席执行官于上周辞职，却是为了避免因卷入另一场争夺战而“蒙羞”：球队所属集团内，他的两位表兄，也就是乐天集团如今90多岁的创始人兼董事长辛格浩的两个儿子正在上演争产戏码。

辛格浩的商业帝国在韩国（为韩国五大企业集团之一）和日本均有业务，资产总值合计为960亿美元，而且是最后一家仍由创始人管理的财阀。辛格浩当年在战后日本创立乐天，生产口香糖。1967年，他回韩国发展业务，当时的独裁者朴正熙向外国投资者提供税收优惠及补贴。在首尔建立总部后，韩国乐天集团的业务拓展至快餐、酒店、游乐场、百货商店及电影院等领域。

但集团的控股公司仍在日本，而且多年来，辛格浩的儿子们一直分管不同的区域市场：长子辛东主管理日本公司；次子辛东彬管理韩国乐天集团的74家附属公司（占集团业务的五分之四）及集团在其他国家的业务。

两人现在互抢对方地盘。韩国家族企业闹争产稀松平常：追踪财阀企业的网站Chaebul.com表示，在韩国40家最大的家族企业中，约有一半曾因创始人的继任计划发生过争议。而这一次与众不同的是，其中一个儿子把自己指定为继承人，网站的首席分析师钟孙燮（Chung Sun-sup，音译）说道。

今年1月，位于日本、事实上控制整个集团的乐天控股公司董事会辞退了当时的副会长辛东主，解除其所有管理职务，貌似是父亲为次子辛东彬继位铺路。上月，这位弟弟被选为乐天控股的会长。但在7月27日，乐天创始人在长子的陪同下宣布要解雇公司所有董事，包括其次子。第二天，辛

东彬召集乐天董事谋划“反政变”，把他的父亲降级到乐天控股内的一个名誉职务。

指责满天飞。辛东彬说哥哥利用老弱的父亲，强其所难。辛东主出示一封信及一段与父亲对话的录音，表示自己是合法继承人。他又声称，弟弟向父亲隐瞒了乐天中国的业务大面积亏损的事实。两兄弟均亮相电视，言之凿凿宣示权利。8月11日，辛东彬为本月的争吵作第二次公开道歉。在电视直播的演讲中（如图），他承诺提高集团运作的透明度，并向观众保证“乐天属于韩国”。

即使以财阀家族派系斗争的标准来看，如此规模的“失控丑闻”也不寻常，首尔弘益大学（Hongik University）的全圣寅（Jun Sung-in，音译）表示。争夺激烈是因为“牵涉的利益大，而擂台小”，目标是在即将召开的股东大会上争得乐天控股的会长之位。据称，该公司对韩国乐天集团的事实控股公司乐天酒店（Hotel Lotte）拥有近乎绝对控股地位。

韩国人对财阀企业的好感近年来经受多番考验。商业王朝的显赫子孙屡屡出现不当行为，引起众怒，企业内部重组偏袒创始家族而牺牲圈外人利益的事例也为人诟病。乐天集团的结构尤其错综复杂。韩国公平贸易委员会表示，乐天有416个循环持股架构，占韩国企业所有交叉持股的90%以上。据Chaebul.com的数据，辛格浩正是利用这些手段，得以凭藉0.05%的微小股份（身体欠佳的三星会长李健熙拥有三星集团2.24%的股份）来控制乐天集团。

上周的新闻发布会上，辛东彬誓言将清除至少五分之四的交叉持股，推动乐天酒店上市，并把韩国乐天转变为控股公司结构。韩国财政部长崔炅焕已警告，政府部门在必要时将对乐天的“不透明所有权结构及现金流”进行审查；公平交易委员会及金融监管服务局已开展调查。拥有700万会员的强大游说团体“韩国小商工人联合会”已在抵制乐天产品；部分店主表示或许会拒绝接受乐天信用卡。

这在某种程度上是因为有关所有权结构的争论点燃了民族主义情绪。辛氏

父子用的是日本名，说的是结结巴巴带口音的韩语。许多韩国人现在才知道乐天实际由在日本的公司控制，而此刻正值韩国庆祝从日据解放70周年之际。为显示纪念光复的爱国热忱，乐天在首尔尚未完工的乐天世界大厦上挂出一面巨大的韩国国旗（花费10万美元）。这栋即将成为韩国最高建筑的摩天大楼一直备受安全问题的困扰。韩国人抱怨说，乐天正企图挥舞国旗来掩饰自身的问题。■

LG

Plucky contender

A South Korean underdog is making a bold bet on OLED technology

AN EXECUTIVE at Samsung, asked recently what he thought of LG, his company's domestic arch-rival, said with a wry smile that customers for electronic goods will always want to have a second, third or fourth choice, but that his competitor does not have the engineers, the technology, the budget or the leadership to be number one in most types of gadget. There was a time when LG was the local champion. In 1959 Lucky Goldstar, as it was then called, produced South Korea's first radio and, soon after, its first electric fan and telephone. By 1970 it was selling the country's first fridges, televisions and air conditioners. Yet now it beats its old adversary in selling only one type of appliance, washing-machines, and is struggling to recover the ground it has lost.

Samsung has emerged in recent years as one of the world's dominant makers of microchips and smartphones. Last year its electronics businesses, including display screens, had almost four times as much revenue, and almost 15 times as much operating profit, as LG's equivalent divisions. LG was once big in semiconductors, but was arm-twisted by the government into exiting the business as the country's industries were restructuring after the Asian financial crisis of 1997-98. It was once far ahead in selling mobile handsets, too.

Kim Dae-won, author of a study of the two firms' strategies, explains that Samsung sealed its lead when it decided in 2009 to introduce a new range of premium-priced smartphones in direct competition with Apple's iPhone. LG's initial reaction was just to bring out a new version of its earlier hit, the more basic Chocolate phone. As a result, while its rival went on to enjoy fat profits from the smartphone boom, LG Electronics suffered two

years of heavy losses in its handsets business. In 2010 its boss resigned, to be replaced by a member of LG's founding Koo family.

Following its belated entry into making smartphones, LG now has less than 5% of the world market, whereas Samsung has about a quarter. The field is getting more crowded, with the entry into the business of Chinese firms such as Lenovo, Huawei and Xiaomi, and Micromax of India. But LG continues to invest heavily in developing upmarket models such as its G4, launched earlier this year, which has a high-specification camera and an optional stitched-leather back.

Shin Moo-young, a former manager at both firms, is sceptical that such gimmicky features will do the trick, and likens the future of LG's mobile business to the "sad decline into oblivion" of HTC, a once-prominent Taiwanese handset-maker. Though it is early days, some analysts recently downgraded their expectations for the G4's sales, whereas Samsung's latest model, the Galaxy S6, seems to be doing fine.

Faced with the difficulty of catching up in smartphones, and increased competition from low-cost rivals in domestic appliances, LG is betting heavily on some emerging technologies, in the hope of shaking off its also-ran status. In particular, since 2013 it has been making televisions with organic light-emitting diode (OLED) displays. These displays produce notably crisper pictures than even top-of-the-range liquid-crystal displays (LCDs). However, large OLED panels are costly and fiddly to make. Production yields (the ratio of flawless displays to duds) are depressingly low.

Last year LG said it had made a breakthrough in a mass-production technique for big displays, and it now says it is achieving yields of up to 80%. When it launched the first version of its 55-inch curved-screen OLED television in 2013 it cost $15,000 but now the latest version of that model

can be bought for about $2,500 on Amazon.com, around the price of a similar, top-end LCD set. Later this year it will open a second OLED factory, and it is considering a third.

The thin, lightweight OLED displays, which do not need a backlight, are allowing LG to experiment with transparent, rollable, foldable and curved screens. LG is now the world's biggest maker of large displays of all kinds; in a decade its display business has more than tripled its revenue, to 26.4 trillion won ($26.3 billion) last year. As for smaller displays, it expects that within five years up to 40% of the world's smartphones will have flexible OLED screens. LG already has a strong position selling LCD screens to Apple for its mobile devices. DisplaySearch, a market researcher, says LG has the biggest share (over 90%) of the global market for smartwatch panels, mostly on the back of sales to Apple.

These days cars are increasingly stuffed with electronics, and LG is also taking advantage of this trend. It is one of the world's four main suppliers of display screens to global carmakers. It supplies electric-car batteries to 13 of the world's 20 largest automotive brands, including Renault-Nissan, which has the broadest range of battery-powered cars. Last December LG sealed a partnership with Mercedes-Benz to work on camera systems for automated driving. LG is also using OLED technology to create bendable, energy-efficient light panels.

Screen test

But big OLED TVs are the area in which it is taking the biggest punt. Samsung is still investing heavily in its display division, though it is being more cautious than LG in rolling out large-screen OLED TVs. Sony and Panasonic of Japan have abandoned a proposed partnership to mass-produce them. As a result, LG is emerging for the first time in a long while as the leader in a particular component, says Shaun Cochran of CLSA, a stockbroker.

However, in a sense the lack of competition makes things harder for LG. It is having to work alone to create a market for such appliances by getting retailers and consumers to take an interest in them. LG is thought to be enduring heavy losses on its OLED TVs, and is a long way from seeing a return on the $3 billion it is said to have invested in production facilities since 2010. And even if consumers the world over fall in love with ultra-slimline, crystal-clear OLEDs, LG's advantage might not last. Samsung would surely throw its vast resources at trying to catch up. In the one area of technology in which LG earns a gold star, keeping it will not be easy. ■

LG

勇敢的竞争者

韩国失意企业大胆押注OLED技术

三星一位高管最近被问及如何看待公司的国内宿敌LG，他揶揄一笑，说道，顾客们总希望有第二、第三或第四个选择，但LG在工程师、技术、预算、领导力上均有欠缺，无法成为大部分电子产品的首选品牌。曾几何时，LG是本地霸主。1959年，当时名为乐喜金星（Lucky Goldstar）的LG公司生产了韩国第一台收音机，不久又在国内首次推出电风扇和电话。到了1970年，该公司率先在韩国推出冰箱、电视和空调。但如今，LG在销量上能打败老对手的就只有一类家电——洗衣机。该公司正在努力收复失地。

三星最近几年冒升成为全球芯片和智能手机的主导制造商之一。去年，包括显示屏在内，其电子产品业务的收入几乎是LG相应部门的四倍，营业利润几乎达15倍。LG曾拥有规模宏大的半导体业务，但1997年至1998年亚洲金融危机后，韩国国内产业重组，LG迫于政府压力退出了半导体市场。它在手机市场也一度遥遥领先。

对两家公司的战略做过研究的金大元（Kim Dae-won，音译）解释道，三星的制胜一击在2009年，它决定推出全新高价智能手机系列，与苹果iPhone正面对决。LG最初的回应只是把之前热销的功能机“巧克力手机”升级推出新版。结果，眼睁睁看着对手趁着智能手机大热坐享丰厚利润，LG电子的手机业务却连续两年严重亏损。2010年，其首席执行官辞职，由始创LG的具氏家族成员接任。

在智能手机制造上进场太晚的LG目前占全球份额不到5%，而三星占了约四分之一。随着联想、华为、小米这些中国公司及印度的Micromax加入竞争，这一市场变得愈发拥挤。但LG继续砸重金研发高端机型，例如今年初推出的G4，带高规格摄像头，另可选配皮革缝制的后盖。

在这两家公司都担任过管理职务的申武荣（Shin Moo-young，音译）不太相信这类花哨设计能管用。他提到曾经风靡一时的台湾手机制造商HTC那“悲哀的消亡”，说LG的手机业务的未来也去之不远了。虽然现在下定论还为时过早，但一些分析师最近下调了对G4的销量预期，而三星的最新机型Galaxy S6看起来行情不错。

前要苦追智能手机市场份额，后有国内家电低成本对手的进逼，想要摆脱陪跑地位的LG正投入巨资押注在一些新兴技术上，特别是自2013年开始生产的有机发光二极管（OLED）显示屏。这些显示屏的画质甚至比顶级液晶显示屏（LCD）还要清晰。但大型OLED面板的制造成本高昂，过程繁琐，生产良率（无瑕疵屏幕占全部产品的比率）低得令人沮丧。

去年，LG表示在量产大型显示屏上取得了技术突破，据称目前良率高达80%。2013年LG推出首款55英寸弧形OLED屏幕电视机，售价为15000美元，如今该型号电视机的最新版在美国亚马逊网站上的售价约为2500美元，与同类高端液晶电视机价格相仿。今年晚些时候，LG的第二家OLED工厂将投产，第三家已在规划中。

轻薄的OLED显示屏不需要背光源，LG可由此试验研发透明、可卷起、折叠及弯曲的屏幕。LG现在是各类大尺寸显示屏的全球最大制造商。十年来，其显示屏业务收入已增长了两倍多，去年达26.4兆韩元（263亿美元）。至于小尺寸显示屏，LG估计五年内全球40%的智能手机将使用柔性OLED屏幕。LG向苹果销售移动设备屏幕，已经拥有强势的市场地位。市场研究公司DisplaySearch表示，LG占据了智能手表面板全球市场的最大份额（超过90%），主要仰仗苹果这一金主。

现在汽车配备的电子设备越来越多，LG也在抓紧利用这一趋势。LG是全球汽车制造商的四大显示屏供应商之一，同时向世界最大的20个汽车品牌中的13个供应电动车电池，其中包括生产电动汽车车型最多的雷诺-日产。去年12月，LG与梅赛德斯-奔驰签署合作协议，着手研发用于无人驾驶的摄像系统。LG也在利用OLED技术创制可弯曲的节能灯板。

屏幕筛选

不过，LG押注最大的是大屏幕OLED电视。三星仍在投入巨资发展显示屏业务，但在推出大屏幕OLED电视上比LG审慎。日本的索尼和松下已放弃了合作量产大屏幕OLED电视的计划。因此，在经过了很长一段时间后，LG首次成为生产某一特定零部件的领军者，券商里昂证券（CLSA）的肖恩·科克伦（Shaun Cochran）说道。

然而，从某种角度看，缺乏竞争对LG来说反而加大了发展难度。它必须单打独斗来开发这类家电的市场，赢取零售商和顾客的青睐。据说LG自2010年以来在OLED电视生产设备上投资了30亿美元，而据估计目前其OLED电视机业务亏损严重，回报遥遥无期。而即使全球消费者爱上画质如水晶般清晰的超轻薄OLED屏幕，LG的优势也可能难以持久。三星肯定会投入巨量资源迎头赶上。在唯一赢得先机的技术领域上，LG要保持领先地位也并不容易。■

The future of the City

A chance of showers

Financiers in London are always predicting their industry's demise. This time, they may be on to something

UPON joining a panel mulling new regulations for London's financial industry in 2010, Martin Taylor was confronted with "an operatic chorus" of bankers threatening to move elsewhere if oversight became too strict. Moneymen from all sorts of firms told the former boss of Barclays, a big British bank, that they were on the verge of decamping to Switzerland, apparently a paradise of low taxes and sympathetic regulators, safely beyond the reach of the European Union's banker-bashing. "The City", for centuries a mainstay of the British economy, risked losing its status as the centre of global finance, and with it hundreds of thousands of jobs. It wasn't until Mr Taylor learned that the financiers of Zurich and Geneva were simultaneously threatening to relocate to London that his concerns eased somewhat.

The grandees of the City are often accused of crying wolf, pretending that their industry is about to be devoured by taxes and regulation when in fact they are just trying to protect profits. In recent months, the same chorus that greeted Mr Taylor has joined a new crescendo, complaining of everything from a new tax surcharge on banks' profits to London property, which is apparently too expensive even for finance types. Above all, the doom-mongers point to Britain's prospective departure from the EU, the subject of a referendum to be held by the end of 2017. Are their concerns any more plausible this time?

The City appears to be in rude health—and for good reason. Only New York, which is bigger but less international, can credibly be said to rival it. Its trading day spans the planet, making it possible to buy bonds from Asian

firms in the morning and sell them to American pension funds in the afternoon. Its workforce is well educated and speaks the world's de facto business language. Britain's flexible common-law system is so popular that it is used even in contracts drafted far beyond its borders. The country is more open to trade and capital than most, and London is a more exciting place to live than mooted rivals such as Frankfurt and Singapore.

Rule, Britannia

London's trading floors dominate the selling of bonds and currencies: twice as many dollars are exchanged there as in America and twice as many euros as in the euro zone. A fifth of cross-border lending is booked in Britain, more than anywhere else in the world. The City boasts more foreign banks than any other financial centre, but banking is just one of its elements. Managers based in London control 18% of the world's hedge-fund assets and 13% of private-equity funds—much less than America's share, but double the proportions of 2001. Over 500 foreign companies are listed on the London Stock Exchange, more than on any other venue.

The financiers are supported by a dense network of professionals: London is teeming with lawyers, accountants and consultants of all stripes. Around 8% of Britain's economic output comes from finance. It generates net exports of $95 billion, almost three times the size of the American industry's, according to TheCityUK, a lobby group. That is useful for a country with a big current-account deficit.

Regulation has tightened in London since the financial crisis—but it has everywhere else too. Though bits of the regulatory set-up are stern, the British government has recently sent some conciliatory signals. It has tried to mollify big multinational lenders based in London with changes to the bank levy, an expensive and ill-conceived tax on their global balance-sheets. It will be halved, and applied only to local operations. The unspoken aim is to stop HSBC and Standard Chartered from moving to

Asia, as they have threatened.

Anyway, other financial centres have their flaws. “If you want to speak to the entire Frankfurt financial sector, you can gather them in a large ballroom,” one policymaker quips dismissively. Paris suffers from France’s leftist politics: François Hollande, its president, declared while campaigning that “the world of finance is my enemy.” Brevan Howard, a hedge fund that noisily moved traders to Switzerland in 2010, is quietly sending them back to London, not least because some found Geneva insufferably dull.

New York is too far from Asia and too focused on its domestic market; its regulators also have a particular penchant for levying multi-billion dollar fines. Hong Kong suffers from its small size: if HSBC did move there, its balance-sheet would be nine times the territory’s GDP. Shanghai looks destined to grow but cannot thrive while investors struggle to get money in and out of China. Singapore is also expanding, but for the time being remains focused on Asia.

Yet the City is not as impregnable as all this suggests. It has lost chunks of its business in the past. Bits of insurance have largely relocated to Bermuda and other warm spots. Fund-management is gravitating to Dublin and Luxembourg. Switzerland continues to attract private-banking clients, despite no longer offering banking secrecy. Big firms of all sorts have moved their back-office and IT staff to other places, both within Britain and beyond. Last year Deutsche Bank startled the City by moving some trading to Birmingham, two hours north-west, to cut costs.

Moreover, the City faces several unique challenges. For one thing, even the shrinking bank levy (which is being cut only gradually) still makes certain activities unnecessarily expensive. Dealing in government bonds, say, is not all that risky but swells a bank’s balance-sheet in a way the levy

punishes. To begin with, that may simply prompt banks to set up brass-plate subsidiaries in tax-friendly jurisdictions, to process deals consummated in London. But in time the consequences will grow. "If you move balance-sheet out of somewhere, eventually you move people. Regulators in the new location insist on it," says Jim Cowles of Citigroup, a bank.

The bonds that unbind

That will compound the problems of the City's biggest business: the trading of bonds and currencies. This has been shrinking since the crisis, although whether for cyclical or structural reasons is unclear. It has also generated a series of scandals and giant fines, many for misconduct that took place in London. City traders rigged currency markets and fiddled LIBOR, a benchmark interest rate (the "L" stands for London). JPMorgan Chase, another bank, lost $6 billion at the hands of an employee called the "London Whale". Regulators have even blamed the 2010 "flash crash" of American equities on a London-based day trader (he denies it).

The world over, banks' trading operations are in retreat. But that is a particular problem for the City, since it has long dominated the business. The other main bit of investment banking—helping firms issue debt or equity and buy one another—is smaller in London than America, since European firms tend to turn to banks, not capital markets, for finance. It has also been growing more slowly because of Europe's economic weakness (see chart 1).

Meanwhile, the sorts of financial institutions that are growing to fill the gaps left by banks—asset managers, insurers, sovereign-wealth funds and other "buy-side" firms—are far less attached to London than the banks. They can be based anywhere, and are: PIMCO, a bond giant, is headquartered in Newport Beach, a Californian backwater. All have presences in London, but not the deep roots of the banks. If bank bosses

follow through on their periodic pledges to locate staff near their clients on the buy-side, jobs will flow elsewhere.

The commodities business illustrates the problem. It was once part-and-parcel of investment banks' operations, sitting alongside currency and bond-trading desks. But regulation forced many of the banks to spin these units off, shifting them from the sell-side to the buy-side. Before long, much of the activity had moved to Switzerland, which had long been home to a few big commodity brokers.

The centre of financial gravity is shifting, too. As Asia grows richer and its markets gain heft, companies there will presumably chafe at the use of intermediaries half a world away. A trader in Singapore or Shanghai will seem the obvious option.

The opprobrium for bankers that is now commonplace in the West is much rarer in Asia, in part because the region dodged the worst of the financial crisis (although it did have one of its own, in 1997-98). Bankers cannot help but notice the difference in attitudes. Within hours of HSBC announcing it was considering leaving London, Hong Kong's central bank declared that it would take a "positive attitude" to any attempt to relocate there. Such enthusiasm is unthinkable in London. The only financiers who command politicians' affections there are the "fintech" entrepreneurs intent on pinching business from banks. As shallow as it may seem, the sudden shortage of invitations to Downing Street and knighthoods for services to finance rankles with even Masters of the Universe.

In previous centuries, finance houses used to base themselves in London because they were British. But the biggest British banks have become relative minnows in recent years (see chart 2). Nowadays the City is to finance what Wimbledon is to tennis: a British venue where foreigners usually dominate. Access to Europe is what attracted foreign firms in the

early 1990s: Margaret Thatcher's "Big Bang" had deregulated Britain's financial markets just as new European rules made it possible for firms based in London to do business anywhere in the EU. That makes the big threat to the City, the prospect of "Brexit", especially worrisome.

City bosses tend not to intervene in politics. Yet a striking number of them have spoken up in favour of continued membership of the EU (the City has few Eurosceptics). Their biggest fear is that firms based in London will lose "passporting" rights, whereby they can do business throughout the EU while being supervised only by British regulators.

In theory, a departing Britain might negotiate a treaty with Europe which retained such privileges. In practice, that is wishful thinking. As it is, other EU members relish imposing rules that the City dislikes. "Without a seat at the table, Britain would get skewered by France and Germany, both of which delight in hobbling the City whenever they can," says one seasoned lobbyist. A survey by CSFI, a think-tank, found that only 42% of City workers imagined that, post-Brexit, firms based in London would get access to European markets on "broadly satisfactory terms".

In the worst-case scenario, Britain would have to negotiate access for its financial firms country by country. EU regulators would doubtless seek to throttle the flow of money to what would be seen as an offshore financial centre. Pressure might be placed on European pension funds, say, to manage their investments within the bloc. At the very least, certain activities, such as the settlement of transactions denominated in euros, would evaporate.

Brexit would make attracting the best employees difficult too. City bosses already gripe about the difficulty of getting work permits for migrants from outside the EU. Brexit would probably strip current and future European employees, of which the City has many, of the right to work in Britain. The

immigration system that would replace the current one has yet to be devised, but it would not be as liberal.

Advocates of Brexit talk up the advantages of escaping from meddling European rules on finance. In one or two respects—notably the caps on bankers' pay imposed over British objections—that would be a plus. But Britain has lost its taste for "light touch" regulation thanks to the crisis. If anything, it now adapts edicts from Brussels to make them even more stringent.

Polls suggest that Britain will opt to remain in the EU. Banks are unlikely to start shifting functions as long as that remains the case. "It's not like people are taking their kids out of school," says Mr Cowles. But reports abound of firms that had been considering setting up shop in London, but are holding off until after the referendum.

Should Britain remain within the EU, and the world economy improve, the City's prospects would doubtless begin to look much better. A resurgence in trading of bonds and currencies, which many expect when global interest rates begin to rise, would help London regain some vim. So, if successful, would European regulators' efforts to get local firms to finance themselves with fewer bank loans and more bonds and equity. Moreover, London's greatest asset has long been its ability to adapt, finding new ways of making money in changed circumstances.

But the City's ability to adapt would be tested by a shock as deep as Brexit. Meanwhile, the most sought-after jobs in banking today—drumming up money for Silicon Valley tech outfits or advising Asian conglomerates about which firms to buy—are ones from which the City is largely excluded. "The thing about the boy who cried wolf," one adviser to banks points out, "is that he ends up getting eaten." ■

金融城之未来

或有阵雨

伦敦金融家们每每预言行业的衰落。这次，可能真被他们言中

2010年，马丁·泰勒（Martin Taylor）参与酝酿伦敦金融业的新监管法规，他面对的是银行家们的“齐声咏叹”：他们威胁，如果监管变得过于严苛，就要搬去别处。各类机构的金融专家向英国大型银行巴克莱（Barclays）的这位前任老板说，他们都快要转到瑞士去，那里税赋低且监管宽松，欧盟要教训银行家也鞭长莫及，俨然是一片天堂之境。数百年来作为英国经济支柱的“伦敦金融城”（The City）濒临丧失其全球金融中心的地位，数以几十万计的职位也将随之流失。直至泰勒了解到苏黎世和日内瓦的金融家们也同时威胁要搬到伦敦来，他的担忧才有所缓解。

金融城的显贵们常被指责高喊狼来了，装出一副金融业快要被税赋和监管吞噬的模样，实际上只是想保护利润而已。曾在泰勒耳边奏起的那番合唱在近几个月飙至新高。他们抱怨一切，从对银行利润开征的新附加税，到连金融企业也难以承受的伦敦物业价格。除此之外，危言耸听的一派还指出英国有可能脱离欧盟。2017年底英国将就此进行公投。这次，他们的担忧是否更合理？

金融城似乎强健非凡，此中理由充分。只有纽约（规模更大，但国际化程度次之）堪与匹敌。伦敦的交易日横跨各个时区，人们可以在早上从亚洲公司购入债券，然后在下午卖给美国的养老基金。其从业人员受过良好教育，使用英语（事实上已成为全球通用的商务语言）。英国灵活的普通法体系广受欢迎，以至在国外起草的合同也常选用这一体系。在对待贸易和资本的态度上，英国比大部分国家开放。而且就生活而言，伦敦也比法兰克福和新加坡这些对手城市更加多姿多彩。

> *统领，大不列颠*

伦敦的交易所在债券及货币交易市场占据主导地位：其美元交易量是美国的两倍，欧元交易量是欧元区的两倍。五分之一的跨境贷款在英国境内申

请，超过全球其他任何地方。金融城内的外资银行比其他金融中心都多，而银行业只是其构成元素之一。伦敦的基金公司控制着全球18%的对冲基金资产及13%的私募基金，虽比美国的份额少得多，但相比2001年，这一数字已经翻倍。500多家外资公司在伦敦证券交易所上市，超过其他任何交易所。

一个密集的专业人士网络为金融家提供支持：伦敦有各类律师、会计师和咨询顾问，可谓人才济济。英国约有8%的经济产出来自金融业。据游说团体TheCityUK的数据，英国金融业净出口达950亿美元，几乎是美国工业净出口的三倍。对于一个拥有庞大经常项目赤字的国家而言，这很有用。

金融危机以来，伦敦已收紧监管，但其他地区也是如此。虽然有些监管制度颇为严厉，英国政府最近还是发出了一些和解信号，修改了此前对银行全球资产负债表征收高额税赋的欠妥规定，试图安抚总部设在伦敦的大型跨国银行。该税收将被减半，而且只对本地营运部分征收。虽未明言，背后的目的实为阻止汇丰银行及渣打银行真像它们所威胁的那样将总部迁至亚洲。

话说回来，其他金融中心也不无缺陷。“想和法兰克福金融界的全体人士对话？一个大宴会厅就能装下他们所有人。”某位决策者轻蔑地打趣道。巴黎则受到法国左翼政治的影响：其总统奥朗德在竞选活动中曾宣称“整个金融界都是我的敌人”。 2010年，对冲基金布勒旺-霍华德资产管理公司（Brevan Howard）曾大张旗鼓地把交易员调至瑞士，现在却悄悄把他们调回伦敦，原因之一是他们觉得日内瓦无比沉闷。

纽约离亚洲太远，而且过于专注美国国内市场，此外其监管机构动辄对企业罚款数十亿美元。香港受制于市场规模太小：如果汇丰银行真把总部迁到那里，其资产负债表上的数字将是该地区GDP的九倍。上海看来势将壮大，但由于投资者资金尚难以自由进出中国，还无法高飞。新加坡也在扩展，但暂时仍只专注亚洲市场。

然而，凡此种种并不意味着金融城就固若金汤。过去一段时间，伦敦已丢

掉了很多业务。部分保险业务已基本转移至百慕大和其他温暖地带。基金管理公司则转向都柏林和卢森堡。瑞士继续吸引私人银行客户，尽管已不再提供保密银行服务。各类大公司已将其后台部门及IT人员从伦敦迁至英国其他地区或国外。去年，德意志银行为削减成本，把部分交易业务突然从金融城迁至伦敦西北两小时车程的伯明翰，令伦敦金融界愕然。

此外，金融城还面对不少独特挑战。一方面，即使缩减银行税（只是逐步下调），还是让某些业务活动变得莫名昂贵。比如说，买卖政府债券并无太大风险，但银行的资产负债表会因而膨胀，从而招致税收。首先，这可能会促使银行在税率较低的司法辖区设立子公司来处理在伦敦达成的交易。而随着时间推移，后果将愈加严重。“如果你把资产负债表挪至别处，最终人员也要转移。新地点的监管者会坚持这样的要求。”花旗银行的吉姆·考尔斯（Jim Cowles）说道。

解除绑定

债券及货币交易所面对的问题将因此加剧，这是金融城最大的业务。其规模自金融危机以来一直缩减，虽然不清楚这是出于周期性还是结构性原因。业内也爆发连串丑闻及巨额罚款事件，其中许多是针对在伦敦发生的不当行为。金融城的交易商操纵货币市场及伦敦同业拆借利率（LIBOR，L代表伦敦）。另一银行摩根大通在被称为“伦敦鲸”的一名员工手上损失了60亿美元。监管机构甚至把2010年美国股市的“闪电崩盘”归咎于伦敦的一名日间交易员，但他否认指控。

全球各地的银行交易业务都在缩减。对金融城而言，这尤其成问题，因为它长期主导这一领域。投资银行的另一主要业务是帮助公司发行债券或股票，并助其兼并收购。在这方面，伦敦的规模比美国要小，因为欧洲企业一般倾向于向银行而非资本市场寻求融资。欧洲经济疲软令这方面的业务增长变得更加缓慢（见图表1）。

同时，因填补银行业务缺口而趁势增长的其他金融机构（资产管理公司、保险公司、主权财富基金及其他“买方”投资公司）对伦敦的依赖远小于银行机构。它们可以设在任何地方，而且事实正是如此：债券巨头PIMCO的

总部设在加州名为纽波特海滩（Newport Beach）的闭塞小城。虽然它们都设有派驻伦敦的分支，但不像银行机构那般扎根深厚。银行老板们不时承诺把员工转移至靠近买方客户的地点，如果真要兑现，就业职位将流失到其他地方。

大宗商品交易业务说明了问题。这曾是投资银行业务的重要构成部分，可与货币及债券交易比肩。但监管规则迫使许多银行拆分了这些部门，从卖方转为买方。没过多久，这类交易活动的大部分便转移到瑞士，那里一直是几家大宗商品大型经纪公司的基地。

金融活动的重心也在转移。随着亚洲日渐富裕，市场日益举足轻重，那里的企业将不愿再遥隔半个地球寻求金融中介。新加坡或上海的交易商将成为当然之选。

银行家如今在西方普遍背负污名，但在亚洲，这种情况远为少见，部分原因是该地区躲过了这场最严重的金融危机（但1997年至1998年亚洲经历了自己的一场危机）。银行家难免会觉察到这种态度上的差别。汇丰银行宣布考虑迁离伦敦，数小时后，香港金管局就表示将持“积极态度”对待银行机构把总部迁至香港的举措。此番热情在伦敦是无法想象的。在伦敦，唯一获得政客青睐的金融业者是那些意图从银行手上抢夺业务的“金融科技”企业家。金融精英们突然不再是唐宁街的座上宾，也不再因服务金融业而被封爵，尽管看似肤浅，但这些“宇宙主宰者”确实因此而耿耿于怀。

在过去几个世纪，金融机构选择立足伦敦是因为自己本身是英国公司。但最近几年，最大的一些英国银行相比之下已成弱旅（见图表2）。如今，金融城之于金融界就好比温布尔登之于网球界：这是英国的场地，但通常被外国人称霸。上世纪90年代初，进入欧洲市场的机会吸引了外资公司涌入伦敦：撒切尔夫人的“金融大爆炸”改革放开了英国的金融市场，同时欧洲推出新规则，允许总部在伦敦的公司到欧盟任何地点从事业务。英国退出欧盟的前景将大大威胁到金融城的地位，如此看来，情况尤其堪忧。

金融城的老板们倾向于不干预政治。但当中已有数目惊人的一批人高调表

示赞成英国继续留在欧盟（金融城内疑欧派很少）。他们最大的忧虑是总部在伦敦的公司会丧失“通行”权利——可在欧盟各处开展业务而只受英国监管机构的规管。

理论上，英国真要退出欧盟，可能会与欧洲商讨签订条约保留这样的特权。而实际上，那只是一厢情愿。事实上，其他欧盟成员最乐于施加金融城不喜欢的规则。“没了议事席位，英国将受到法国和德国的攻击，两国就喜欢伺机给金融城施加阻力。”一位资深说客说道。智库组织CSFI的一项调查发现，金融城的金融从业人员中只有42%相信，英国退出欧盟后，总部设在伦敦的公司可按“大致令人满意的条款”进入欧洲市场。

最坏的情况下，英国将被迫与各国逐一谈判，为金融机构争取准入权。欧盟监管机构无疑会阻止资金流向已被视为离岸金融中心的英国。欧洲的养老基金或将迫于压力要在欧盟区域内管理其投资。至少，某些商业活动将从英国蒸发，比如以欧元计价结算的交易。

英国退出欧盟也令金融机构难以吸引最优秀的员工为其效力。金融城的老板们已在抱怨很难替欧盟以外地区的移民申请工作许可。退出欧盟可能会剥夺当前及将来欧洲雇员在英国工作的权利，而金融城的欧洲雇员人数众多。取代当前移民体系的新法则尚待制订，但将不如现行的规则自由。

提倡英国退出欧盟的人士大谈金融业逃脱欧洲法规干预的好处。在一两个方面（特别是对银行家薪酬的限定，当时遭到英国反对）的确会带来实惠，但英国已因金融危机放弃了“低干涉”的监管态度，如今甚至借鉴布鲁塞尔的法规，将令监管更为严格。

民意调查显示英国会选择留在欧盟。只要情况不变，银行是不会贸然移走业务的。“这不是把孩子从学校里接走那么简单。”考尔斯说道。但报道称，大量考虑在伦敦开设业务的公司现在都持观望态度，待公投后再作决定。

假如英国留在欧盟，而全球经济改善，金融城无疑前景大好。许多人估计，当全球利率开始上升，债券及货币交易将复苏，伦敦会重现活力。欧

洲监管机构努力促使本地公司减少银行借贷，更多以债券及股票融资，若此举成功，同样有利伦敦金融城焕发生机。再者，伦敦最大的优点在于灵活应变，能在时势变换中寻到赚钱的新法门。

但像“退出欧盟”这样的沉重打击将考验金融城的应变力。同时，金融城基本无缘参与当今银行业内最抢手的美差（为硅谷高科技公司集资或给亚洲的大集团建议收购哪些公司）。一位银行业咨询顾问指出：“那个高喊狼来了的孩子最终还是会被吃掉。”■

Schumpeter

Stuck on the runway

Indian manufacturing peaked in the mid-1990s. Can its decline be reversed?

INDIA is not the place most people would expect to find precision engineering. Yet Guillaume Capato is on the shop floor of the Mahindra Aerospace factory, an hour's drive from Bangalore, explaining the complexity of an aluminium halter, used to reinforce the fuselage on a jet aircraft. Formed from a single piece of metal into a U-shape using a press, each side is of a different size and shape and drilled with holes of varying dimensions so that the part will precisely match all the other bolt holes around it. The halter is accurate to an exacting degree: it only makes sense to add weight to an aircraft's structure if it also adds strength. That principle is lost in India, where the weight of regulation has sapped the strength of manufacturing.

Mahindra Aerospace is the sort of modern, jobs-rich enterprise that Narendra Modi, India's prime minister, probably had in mind when he launched his "Make in India" drive a year ago. Components produced here must meet the strict standards of the global aircraft industry. In June the firm, an offshoot of a family business better known for rugged SUVs, won a landmark order from Airbus. Mr Capato, who worked at the European planemaker for 14 years, helped set up the factory two years ago. It is full of spiffy kit—from giant ovens for heat-treating metals to fluorescent light chambers to help check for scratches (a tiny nick means a part is junked). Each bit of equipment requires a matching skill. Mr Modi wants more of this and has criss-crossed the world pitching the idea of manufacturing in India. It is a tough sell. The share of manufacturing in the economy peaked in the mid-1990s. It will take more than the glad-handing of world leaders to revive it.

The roots of the malaise go back to 1991, when India opened up markets for goods to competition, including from imports, but left its "factor" markets for land, labour and capital unreformed. Indian-based factories suddenly needed to be bigger and better-equipped to compete in a global market. But the cost of capital, high in inflation-prone India, was forced still higher because of the trouble banks had in pursuing deadbeat borrowers through clogged courts. Complex laws made it tricky to acquire farmland for industry or infrastructure. Baffling labour laws, written largely in the 1940s, piled onerous regulations on manufacturers. Because they made it hard to lay off workers, few were hired.

For these reasons the standard-bearers for post-liberalisation India have not been widget-makers but capital-light IT-services companies such as Tata Consultancy Services, Infosys and Wipro, untroubled by India's factory laws or congested ports. Such brainwork cannot provide for all the 1m, mostly unskilled, youngsters who join India's labour force each month. More factories would help. But India let its industrial base wither while China was busy building one. And export-led growth is now a harder trick to pull off, not least because global trade has slowed to a standstill. Meanwhile India is stuck in heavy industries, such as steel, that are chronically oversupplied.

There are beams of light amid the gloom. Mahindra shows that Indian manufacturers can break into a prestigious global supply chain. The firm entered the aerospace business in 2006 when it acquired Plexion Technologies, an engineering-design outfit. It soon spied an opportunity in orders for single-aisle passenger jets, which were mounting fast at Airbus and Boeing. This was the sort of bet a family-owned firm could make: a steep upfront investment but with a steady long-term payoff for a job well done. After two more acquisitions it signed a technology-transfer agreement with Aernnova, a supplier to Airbus based in Spain. The factory near Bangalore was built in ten months. Land was no problem, says Arvind

Mehra, boss of Mahindra Aerospace. The state of Karnataka offered a choice of business-ready sites with room to expand from its land bank. The firm is building links with colleges to ensure a supply of skilled workers. The factory layout is designed to diffuse know-how. Specialist engineers sit in a glass cabin at its centre so that advice to—and feedback from—the shop floor flows freely.

Prime factories

Optimists point to this and other high-profile investments in India. Foxconn, a Taiwanese contractor that is the biggest private-sector employer in China, recently announced plans to open as many as a dozen mega-factories in India by 2020. In March, Ford opened a 400-acre car factory in Gujarat, the business-friendly state run for 13 years by Mr Modi before he became prime minister. Last month the state of Telangana granted approval for a new factory to Micromax, an Indian handset-maker. BMW and Mercedes are using more components from local firms for their Indian-assembled saloons. Volvo says it will soon sell Bangalore-made buses in Europe for the first time. A fast-growing local market of 1.25 billion people is a big draw. Transport costs should encourage manufacturers who wish to serve Indian consumers to shift production there. Even Mahindra Aerospace indirectly benefits from local demand. A large order received by Airbus, its prized client, is from Indigo, India's leading low-cost airline.

Yet for all these bright spots, it is hard to imagine a manufacturing renaissance in India without significant reforms to make factories easier to set up and run. Mr Modi has pledged to vault into the top 50 countries in the World Bank's ease-of-doing-business rankings (India is 142nd). But his reform programme has stalled. His government has been forced to abandon changes to a land-acquisition bill in the face of protests. A bill to put in place a nationwide goods and services tax, to replace a myriad of state and federal levies, remains stuck. A plan to streamline India's labour laws is

bitterly opposed by trade unions. The problems that have weighed on Indian manufacturing since the 1990s remain. Until they are tackled, successes like Mahindra's aircraft venture will remain all too rare. ■

熊彼特

卡在跑道上

印度制造业在上世纪90年代中期曾登峰造极。现今是否能扭转颓势？

大多数人不会指望印度从事精密工程。然而，在距离班加罗尔一小时车程的马辛德拉航空（Mahindra Aerospace）工厂车间内，纪尧姆•卡帕多（Guillaume Capato）正在解释用来加固飞机机身的一块铝制吊架的复杂性。这是用压力机挤压一块金属制成的U形吊架，每一面的尺寸形状都不一样，而且钻有不同尺寸的螺孔，与该零件周围的其他螺孔精密配合。其制造精密度堪称严苛：在给飞机的架构上增加重量时要能同时提高强度，这样才合乎情理。但在印度，这一原则已经丢失，因为这里的监管重压已经削弱了制造业的强度。

印度总理莫迪在一年前力推"印度制造"运动，马辛德拉航空大概正是当时他构想的那类提供大量工作职位的现代化企业。在这里制造的组件必须符合全球航空业的严格标准。马辛德拉公司是以生产结实的SUV汽车而著称的家族企业，该公司旗下的马辛德拉航空在今年6月破天荒地从空客赢得了订单。在这家欧洲飞机制造公司工作了14年的卡帕多两年前帮助建立了马辛德拉航空的工厂。工厂内，从用作金属热处理的巨型熔炉到检视刮痕的荧光室（一道微小凹痕足以令整个零件报废），全都是现代化设备，同时每一台设备都需要具备相应的技能才可操作。莫迪希望有更多这样的企业，他奔走全球，宣扬印度制造的理念，但步履艰难。制造业占印度经济比重最大是在上世纪90年代中期，要重振往日的雄风，只靠各国领导的热情款待是不够的。

衰落之源可追溯至1991年，当时印度放开商品市场，容许包括来自进口产品的竞争，但未改革土地、劳动力及资本这些"要素"市场。印度的工厂突然要扩大规模、更新设备才能在全球市场上一争高下。在通胀高企的印度，资金成本已经很高，而由于银行通过案件堆积的法庭向赖账者追债十分艰难，资金成本再被推高。法律条文复杂，令投资者难以购入农地作为工业或基建之用。令人费解的劳工法大部分于上世纪40年代制定，给厂商

带来繁重的监管，令其难以解雇工人，所以他们只雇用很少的工人。

由于这些原因，印度后自由化时代的旗手不是轻工产品制造厂商，而是像塔塔咨询服务公司、Infosys、Wipro这样的轻资产IT服务公司，它们不受印度工厂法律或拥堵港口的影响。印度每月新增100万劳动力，其中大部分是缺乏技能的年轻人，上述这类脑力工作无法解决他们所有人的就业问题。工厂数目增加会有帮助。在中国正忙于打造工业基地之时，印度却听任自己的工业基地萎缩。以出口为导向的经济增长愈发难以实现，很大程度上源于全球贸易已放缓到停滞的程度。同时，印度深陷重工业无法抽身，例如长期供过于求的钢铁业。

黯淡中仍有希望之光。马辛德拉的例子表明印度厂商也可打入顶尖的全球供应链。该公司在2006年收购了工程设计机构Plexion技术（Plexion Technologies），藉此步入航空制造业。当时空客及波音的单通道客机的订单增长迅速，公司随即从中觅得机会。这是一个家族企业可以下的那类赌注：前期投资巨大，如果项目顺利完成则有长期稳定的回报。在完成两宗并购后，马辛德拉与空客的西班牙供应商Aernnova签订了技术转让协议。十个月里，班加罗尔附近的那家工厂建成。马辛德拉航空的老板阿尔温德·梅赫拉（Arvind Mehra）说，土地不是问题。卡纳塔克邦（Karnataka）政府从其土地储备中向该公司提供了宜于建厂的地块，并且旁边还有扩展空间。该公司正与高等院校建立联系，以保证高技术员工的供应源源不断。工厂在布局上特别考虑了实用技术的传授，专家工程师坐镇工厂中心的玻璃隔间内，意见及反馈可在车间内自由流通。

一场欢喜一场空

乐观主义者以马辛德拉及其他在印度的高调投资项目为例证。台湾外包制造商富士康是目前中国最大的私营雇主，该公司日前宣布2020年前将在印度开设多达12家大型工厂。今年3月，福特在古吉拉特邦（Gujarat）开设了占地400英亩的汽车厂。该邦对企业友好，莫迪在成为印度总理前曾在此担任首席部长达13年。上月，泰伦加纳邦（Telangana）政府批准印度手机制造商Micromax在邦内兴建一座全新工厂。宝马和奔驰在其印度组装的轿车上更多地使用了本地公司生产的零部件。沃尔沃表示很快将首次把

在班加罗尔生产的客车售往欧洲。印度拥有12.5亿人口，这一市场增长迅速，产生了巨大的吸引力。运输成本问题会促使想要服务印度消费者的外国厂商把生产移到本地。就连马辛德拉航空也间接从本地需求中获益，其尊贵的客户空客所获的一大订单正是来自印度领先的低成本航企靛蓝航空公司（Indigo）。

然而，尽管有这些亮点，如果印度不大加改革，简化设立及经营工厂的法规，仍难想象该国制造业能够复兴。莫迪曾立誓带领印度跃进世界银行营商便利度排行榜前50名（目前印度排在142位），但其改革项目停滞不前。迫于抗议，他的政府已经放弃了对一份土地征用法案的修订。一项草案计划实施全国性商品及服务税，以取代印度各邦及中央名目繁多的税赋，但至今没有进展。简化印度劳工法的计划也受到工会的强烈反对。印度制造业自上世纪90年代以来承受的重压依旧存在，除非这些问题得到解决，否则像马辛德拉航空这样的成功案例仍将寥寥无几。■

Asian currencies

Plunging like it's 1998

The rupiah and ringgit plumb depths unseen since the Asian financial crisis

NOT since Bill Clinton was president and Barack Obama was a law professor with a sideline in local politics have the beaches of Bali and Langkawi looked so inviting to Americans. Four years ago, a dollar fetched just over 8,500 Indonesian rupiah, and just under three Malaysian ringgit. Today a dollar is worth nearly 14,000 rupiah and almost four ringgit. Both currencies hit 17-year lows this summer, and kept falling (see chart).

In one sense, Indonesia and Malaysia are far from unique: declining commodity prices, the slowdown in China and the growing likelihood of an interest-rate rise in America have combined to make 2015 a miserable year for emerging-market currencies. Brazil and Russia are in recession, sending the real and the rouble falling. Turkey, with its slowing economy, huge current-account deficit and growing political instability, has seen the lira decline steeply; the Chilean, Colombian and Mexican pesos have all drooped.

But in Asia the rupiah and ringgit lead the race downwards, having fallen by 8.4% and 9.8% against the dollar this year—much further than the Thai baht (6.4%) and the Philippine peso (2.2%). Their problems are exacerbated not just by the Indonesian and Malaysian economies' heavy dependence on commodities, but also by political ructions in both countries.

Start with commodities. The halving of oil prices over the past year has harmed Malaysia, which depends on oil for about 30% of its revenue. Indonesia is a net importer of oil, but other commodities still comprise around 60% of its exports—a worry, given that *The Economist*'s commodity index, which excludes oil, has declined by almost 20% over the past year.

Thailand and the Philippines, in contrast, both have sizeable advanced manufacturing sectors: their top exports are computers and electronic components.

China's slower growth and waning appetite for commodities have also been a drag on Malaysia and Indonesia. China is the top destination for exports from the Philippines too, but remittances from the millions of Filipinos working abroad have helped prop up domestic demand, thus cushioning the blow of falling income from exports.

Indonesia's current-account deficit and the big share of its government debt in foreign hands will make it particularly susceptible to capital outflows in the event of a rate rise in America. (Foreigners also own a lot of Malaysia's debt.) Even more worrying, much Indonesian borrowing, both corporate and sovereign, is dollar-denominated, meaning that as the rupiah falls the cost of debt service rises.

In response to these woes, Indonesia has fallen back on protectionism, as usual: in July it imposed import tariffs on a range of consumer goods, including coffee, cars and condoms. Despite much talk from the president, Joko Widodo, about upgrading his country's infrastructure, little has been done. He came into office nearly a year ago with great promise, but some investors have started to wonder whether he is up to the job of pushing through the reforms his country desperately needs.

As for Malaysia, its foreign reserves look set to drop below $100 billion, depriving it of a much-needed buffer, and suggesting the government may have tried to prop up the ringgit. The woes of its prime minister, Najib Razak, who for months has been trying to dispel allegations of corruption, may intensify investors' jitters.

The question now, for both countries, is how long the pain will last. Many

predict that commodity prices will rebound; fewer predict when. In the meantime, depreciation should make their exports more competitive, but low commodity prices seem to be offsetting that gain. Indonesia is growing at the slowest pace since 2009. The falling currencies in both places are also stoking inflation. Whenever the Fed gets around to raising rates, these ailments will presumably worsen. ■

亚洲货币

如1998年般暴跌

印尼卢比和林吉特跌至亚洲金融危机以来新低

巴厘岛及兰卡威的海滩很久没有如此吸引美国人了，类似情形要回溯到很久以前，那时美国总统还是克林顿，奥巴马只是在地方政坛历练的法律教授。四年前，1美元仅可兑换8500印尼卢比或不到3马来西亚林吉特。今天，1美元可兑换接近14,000印尼卢比或将近4林吉特。今年夏天，两国货币跌至17年来新低，而且跌势不减（见图表）。

在某种意义上，印尼和马来西亚的情况并无太多独特之处：大宗商品价格下跌、中国市场放缓、美国加息可能性日渐提高，这些因素综合在一起，致使2015年成为新兴市场货币的悲情之年。巴西和俄罗斯经济陷入衰退，令雷亚尔和卢布下跌。土耳其经济放缓，经常项目赤字庞大，政局又渐趋不稳，使里拉跌势陡峭。智利、哥伦比亚及墨西哥的比索也均现颓势。

但在亚洲，印尼卢比和林吉特的跌势位居前列，今年兑美元汇率分别下跌了8.4% 和9.8%——远大于泰铢（6.4%）和菲律宾比索（2.2%）的跌幅。印尼及马来西亚在经济上高度依赖大宗商品，而且国内政治纷争不断，令其货币下跌加剧。

先来看看大宗商品价格。去年油价腰斩，对约有30%收入依赖石油的马来西亚已构成损害。印尼是石油净进口国，但其他大宗商品仍占其出口的60%左右，考虑到《经济学人》的大宗商品指数（不包括石油）在过去一年已下跌近20%，该国情况令人担忧。相比之下，泰国和菲律宾拥有规模较大的先进制造业：两国出口最多的商品是计算机和电子元件。

中国增长放缓，对大宗商品的需求减弱，也拖累了马来西亚和印尼。中国也是菲律宾的最大出口目的国，但数百万在海外工作的菲律宾人往家里的汇款有助推高国内需求，从而缓冲了出口收入下降带来的冲击。

印尼的经常项目赤字庞大，政府债券很大部分由外国人持有，一旦美国加息，印尼尤其容易发生资本外流。（外国人也持有大量马来西亚国债。）更令人担心的是，印尼的大部分债务，包括企业和主权债务，都以美元计价，这也就意味着，随着印尼卢比的贬值，偿债成本会攀升。

为应对这些危机，印尼一如往常重拾保护主义：7月，印尼对包括咖啡、汽车和避孕套在内的一系列消费品征收进口关税。尽管总统佐科·维多多（Joko Widodo）多番强调要改善本国基建，但雷声大雨点小。他上任已近一年，当初令人满怀希望，但现在，部分投资者开始怀疑他能否胜任推动国内亟需的改革。

至于马来西亚，其外汇储备看似将跌破1000亿美元，将难以提供急需的缓冲，同时也表明该国政府也曾企图撑起林吉特。马来西亚总理纳吉布·拉扎克（Najib Razak）连月来忙于化解贪污指控，他的困境也许会使投资者的忧虑加剧。

对于这两个国家而言，目前的问题是痛苦将持续多久。许多人预测大宗商品价格将反弹，但少有人预测何时可以反弹。在此期间，贬值会令其出口更具竞争力，但获益又似乎被低廉的大宗商品价格所抵消。印尼如今的增长速度是自2009年以来的新低。两国货币贬值也给通胀火上浇油。一旦美联储决定加息，这些疾患将很可能进一步恶化。■

Buttonwood

Material difficulties

Falling commodity prices and emerging-market equities are bad omens for the world economy

FIVE years ago, two views were fairly common. The future belonged not to the sluggish, ageing advanced economies but to the emerging markets. Furthermore, those economies had such demand for raw materials that a "commodity supercycle" was well under way and would last for years.

Commodity prices peaked in 2011, and have been heading remorselessly downwards ever since. Their decline of more than 40% so far is a huge bear market; had it happened in equities, the talk would be of calamity and collapse.

News coverage in the Western media tends to view the decline in commodity prices as a benign phenomenon, as indeed it is for countries that are net importers. But it is not good for commodity exporters, many of which are emerging markets. That helps explain why emerging-market equities have had only one positive year since 2011, and have underperformed their rich-country counterparts by a significant margin in recent years (see chart). The latest sign of trouble came in China, where the Shanghai Composite fell by 8.5% on July 27th.

The growth rate of emerging economies is likely to slow in 2015 for the fifth consecutive year, according to the IMF. Of the BRICs, Brazil and Russia will see their output decline this year, while China is slowing. Only the Indian economy is set to accelerate. Developing economies were boosted in the first decade of the 21st century by the rapid expansion of Chinese demand, as the world's most populous country underwent an investment boom. This was good news for commodity exporters; China comprises almost half

of global demand for industrial metals. But the fall in commodity prices indicates that Chinese demand has slowed in recent years. It also shows that high prices did their job, by bringing forth new sources of supply, such as shale oil and gas.

At the same time, China has shifted its manufacturing industry from the assembly of components made abroad to the creation of finished products from scratch. This has hit other Asian economies. Emerging-market exports are down 14% over the past year in dollar terms. In terms of volume, they continued to grow, but only by 1.1%, according to Capital Economics. Such anaemic growth is becoming a trend. World trade, which was expanding faster than global GDP before the financial crisis, is no longer even keeping pace: last year, it grew by 3.2% while GDP advanced 3.4%.

China's investment boom may also have created a problem of overcapacity in manufacturing, leading to pressure on profit margins in the corporate sector. The latest figures show that the profits of China's industrial companies were 0.7% lower in the first half of the year than in the same period of 2014. Chinese producer prices dropped by 4.8% at an annual rate in June, the 40th consecutive month of decline. The effect may be spreading to Asian competitors: the purchasing managers' indices for the manufacturing sector in Indonesia, South Korea and Taiwan all pointed to declines in output in June.

The big question is whether this weakness tells us anything about the global economy. Will the Federal Reserve be acting unwisely if it pushes up interest rates later this year, as markets concluded it would after its meeting in July? On July 9th the IMF cut its forecast for global growth this year from 3.5% to 3.3%. That would be only marginally lower than last year's rate of 3.4%, but it would still be the most sluggish performance since 2009.

Government bond yields are another indicator of economic sentiment. When they decline, it is a sign that investors are worried about the outlook for growth. Although ten-year yields have recovered from their lows of late January, they are still well down on their levels of a year ago—half a point or so lower in the case of Canada and much of Europe.

Given the background, this does not seem the most obvious time for the world's leading central bank to be tightening monetary policy. Of course, the Fed is supposed to focus on domestic conditions, not the international environment. But higher American rates will probably mean a stronger dollar, and thus tighter monetary policy for countries that peg their currencies to the greenback. And it will create a problem for economies with lots of dollar debt. Several emerging-market currencies are already at multi-year or record lows.

The hope is that the signs of a slowdown will prove mistaken. The IMF expects both the global growth rate and that of emerging economies to pick up in 2016. Perhaps it will be right. Unfortunately, it has often been over-optimistic in the past. ■

梧桐

实质性困难

大宗商品价格和新兴市场股市双双下跌是全球经济的不祥之兆

五年前，有两种观点相当普遍。一是未来将不属于萧条、暮气沉沉的发达经济体，而属于新兴市场。再者是，这些新兴经济体对原材料非常渴求，“大宗商品的超级周期”已经开始并将持续多年。

大宗商品价格于2011年见顶，之后持续下跌，迄今跌幅已超过40%，形成一个巨大的熊市。如果这种情况出现在股市，人们谈论的将是灾难和崩溃。

西方媒体的新闻报道往往认为大宗商品价格下跌是一种好现象，对净进口国而言确实如此。但大宗商品出口国多为新兴市场，价格下跌对它们来说并不是一件好事。这有助于解释为何2011年以来，新兴市场的股市只有一年表现积极，而且近几年的表现大幅落后于富裕国家（见图表）。最新的麻烦迹象出现在中国，上证综指7月27日下跌了8.5%。

据国际货币基金组织分析，新兴经济体2015年的增速可能连续第五年放缓。金砖四国中，巴西和俄罗斯今年产出将出现负增长，中国也正在放缓，只有印度的经济增长可能会加速。21世纪的前十年，中国需求的迅速增长推动了发展中经济体的增长，这个世界上人口最多的国家当时经历了一次投资热潮。这一热潮对大宗商品出口国是利好，中国占了全球对工业金属需求的将近一半。但是，大宗商品价格的下跌表明中国的需求近年来已经趋缓。它还表明高企的价格催生了新的供应，如页岩油和天然气。

同时，中国的制造业已经从组装国外生产的零部件转型为从零开始制造成品。这一转型冲击了亚洲其他经济体。按美元计算，过去一年里新兴市场的出口额下跌了14%。凯投宏观（Capital Economics）称，尽管新兴市场的出口量还在增长，但增幅仅为1.1%。这种疲弱增长正成为趋势，金融危机前，世界贸易比全球GDP增长更快，如今甚至跟不上后者的步伐：去年

贸易增速为3.2%，而GDP增长了3.4%。

中国的投资热潮或许也导致了制造业产能过剩的问题，给企业界造成了盈利压力。最新数据显示，中国工业企业今年上半年的利润比2014年同期下跌了0.7%。今年6月，中国生产者价格指数下降了4.8%，已经是连续第40个月下滑。这一影响可能会扩散到亚洲的竞争对手：印尼、韩国和台湾6月的制造业采购经理人指数（PMI）均有下滑。

重要的问题是，这种疲软状况是否向我们揭示了全球经济的状态。如果美联储按照7月会议后的市场预期，在今年晚些时候进行加息，是否明智？7月9日，国际货币基金组织把它对今年全球经济增长的预期从3.5%下调到3.3%，仅略低于去年的3.4%，但仍将是2009年以来最低迷的表现。

政府债券收益率是经济信心的又一个指标。收益率下跌说明投资者对增长心存担忧。尽管美国十年期债券的收益率已从1月下旬的低点有所恢复，但仍远低于一年前的水平，也比加拿大和欧洲大部分地区的收益率低0.5个百分点左右。

考虑到这一背景，此刻似乎并不是世界最重要的那些央行收紧货币政策最合适的时机。当然，美联储应该关注国内情况，而不是国际环境。然而，美国利率较高可能使美元走强，货币盯住美元的国家也会因此收紧货币政策。它还将为那些有大量美元债务的经济体带来麻烦。几个新兴市场的货币已经处于多年或者历史低点。

希望经济放缓的迹象会被证明是错误的。国际货币基金组织预计全球以及新兴经济体2016年的增长率会有起色。也许它是正确的，但遗憾的是，该组织过去往往过于乐观。■

If autonomous vehicles rule the world

From horseless to driverless

Overturning industries and redefining urban life, self-driving cars promise to be as disruptive and transformative a technology as the mobile phone

SHORTLY after Thomas Müller eases his Audi A7 into the flow of highway traffic heading towards Shanghai, a message on the dashboard indicates that "piloted driving" is now available. Mr Müller, an Audi engineer, presses a button on the steering wheel and raises his hands. The car begins to drive itself, the steering wheel eerily moving on its own as the traffic creeps over a bridge towards the city centre.

This is, admittedly, a limited form of autonomy: the car stays on the same road, using cameras and a "LiDAR" scanner to follow the lane markings and maintain a constant distance from the vehicle in front. But this is how the world's carmakers see the future of self-driving technology: as driver-assistance features that gradually trickle down from luxury vehicles to mass-market cars, just as electric windows and power steering did before them. Autonomous driving will, in this view, make motoring less stressful—drivers "arrive more relaxed", says Mr Müller—but people will still buy and own cars just as they do today.

For a different vision of the driverless future, visit Heathrow airport outside London, and head to a "pod parking" area. Transfers between the car park and terminal are provided by driverless electric pods moving on dedicated elevated roadways. Using a touchscreen kiosk, you summon a pod and specify your destination. A pod, which can seat four people, pulls up, parks itself and opens its doors. Jump in, sit down and press the start button—the only control—and it drives you to your destination, avoiding other pods and neatly parking itself when you arrive, before heading off to pick up its next passengers.

Like riding in the autonomous Audi, travelling by pod is thrilling for the first 30 seconds—but quickly becomes mundane. The difference is that self-driving vehicles that can be summoned and dismissed at will could do more than make driving easier: they promise to overturn many industries and redefine urban life. The spread of driver-assistance technology will be gradual over the next few years, but then the emergence of fully autonomous vehicles could suddenly make existing cars look as outmoded as steam engines and landline telephones. What will the world look like if they become commonplace?

The switch from horse-drawn carriages to motor cars provides an instructive analogy. Cars were originally known as "horseless carriages"—defined, like driverless cars today, by the removal of a characteristic. But having done away with horses, cars proved to be entirely different beasts, facilitating suburbanisation and becoming symbols of self-definition. Driverless vehicles, too, will have unexpected impacts. They will look different. Early cars resembled the carriages from which they were derived, and car design took some years to escape its horse-drawn past. By the same token, autonomous vehicles need look nothing like existing cars. Already, Google's futuristic pods are on the public roads of California, and some concept designs, liberated from the need to have steering wheels and pedals, have seats facing each other around a table.

Autonomous vehicles will also challenge the very notion of car ownership. Cars are among the most expensive things most people own, yet they sit idle, on average, 96% of the time. That is justified by the convenience of having access to a car whenever you need it. These days, however, you can summon a car at will using a smartphone app for a taxi service, car-sharing scheme or rental provider. Google reckons that shared, self-driving taxis could have utilisation rates of more than 75%. If so, a much smaller number of cars would be needed to move the same number of people around. "There will be fewer cars on the road—perhaps just 30% of the cars we have

today," predicts Sebastian Thrun, a computer scientist at Stanford University and a former leader of Google's self-driving-car project.

The idea that autonomous vehicles will be owned and used much as cars are today is a "tenuous assumption", says Luis Martinez of the International Transport Forum, a division of the OECD, a think-tank. Fleets of self-driving vehicles could, he says, replace all car, taxi and bus trips in a city, providing as much mobility with far fewer vehicles. An OECD study modelling the use of self-driving cars in Lisbon found that shared "taxibots" could reduce the number of cars needed by 80-90%. Similarly, research by Dan Fagnant of the University of Utah, drawing on traffic data for Austin, Texas, found that an autonomous taxi with dynamic ride-sharing could replace ten private vehicles. This is consistent with the finding that one extra car in a car-sharing service typically takes 9-13 cars off the road. Self-driving vehicles could, in short, reduce urban vehicle numbers by as much as 90%.

Driven to tears

All this would be transformational for carmakers. They would end up selling autonomous vehicles to fleet operators, rather than to individual drivers. The value in carmaking will shift from hardware to software and from products to services, says Mr Martinez. That would shake existing carmakers, just as smartphones upended Nokia and Kodak. Already, high-tech newcomers such as Google, Uber and Tesla are muscling in.

Yet car-industry executives gamely insist that many people will still want to own their own vehicles and that the popularity of leasing means the industry has already moved to a service model. It sounds a lot like wishful thinking, if not denial.

Carmaking is not the only industry that faces upheaval. So does car insurance—worth $198 billion a year in America alone—as cover switches from millions of consumers to a handful of fleet operators. In February

three big American insurers, Cincinnati Financial, Mercury General and Travelers, noted in their SEC filings that driverless cars threaten to disrupt their business. Similarly, LKQ, a car-parts firm, pointed out in its filing that fewer cars on the road, and fewer accidents, could reduce its sales.

Automation would, more obviously, be bad news for taxi drivers. A study by Columbia University found that a fleet of 9,000 autonomous vehicles could replace all 13,000 taxis in New York. Passengers would spend less time waiting, and would pay less per mile, because paying drivers is the biggest cost for taxi operators. No wonder Uber is keen on driverless vehicles. "When there is no other dude in the car, the cost of taking an Uber anywhere becomes cheaper than owning a vehicle," observed its boss, Travis Kalanick, last year. Uber's first test vehicle was recently spotted on the streets of Pittsburgh.

Other workers stand to lose as well. Rio Tinto, a mining giant, is already using 53 self-driving lorries across three of its sites in Australia. The first self-driving truck licensed for testing on public highways, built by Daimler, hit the road in May. America's 3.5m truck drivers sustain workers in other businesses, too, such as motels and restaurants. The current arguments over Uber, Lyft and other ride-hailing services (which at least still require drivers) may seem like a picnic compared with the opposition to driverless vehicles.

Safety first

But self-driving cars would also have enormous benefits. Today 94% of car accidents are due to human error, according to America's National Highway Traffic Safety Administration, and the three leading causes are alcohol, speeding or distraction. Accidents kill around 1.2m people a year, reports the World Health Organisation, equivalent to a 9/11 attack every day.

Driverless cars cannot drink alcohol, break the speed limit or get distracted

by a text message, so accidents should occur much less often. Google's driverless vehicles have driven 1.8m miles (2.9m kilometres) in the past six years, and have been involved in 12 minor accidents, none of which caused injury and none of which was the car's fault. A study by the Eno Centre for Transportation, a non-profit group, estimates that if 90% of cars on American roads were autonomous, the number of accidents would fall from 5.5m a year to 1.3m, and road deaths from 32,400 to 11,300.

Once self-driving vehicles become available, some places will probably ban ordinary cars on safety grounds, starting with city centres, resorts, business parks and campuses. A report on self-driving cars from Morgan Stanley predicts that attitudes will quickly shift from "I don't want to share the road with robots" to "I don't want to share the road with other human drivers". People in Google's home town of Mountain View, California, are now used to seeing its prototype vehicles on the streets. Some even complain that they drive too timidly, waiting for pedestrians to finish crossing, for example, to the annoyance of drivers revving behind them. Strikingly, nobody seems to be scared of them.

As well as being safer, self-driving vehicles would make traffic flow more smoothly, because they would not brake erratically, could be routed to avoid congestion and could travel close together to increase road capacity. A study by Texas A&M University estimates that 90% penetration of self-driving cars in America would be equivalent to a doubling of road capacity and would cut delays by 60% on motorways and 15% on suburban roads. And riders in self-driving vehicles would be able to do other things. Morgan Stanley calculates that the resulting productivity gains would be worth $1.3 trillion a year in America and $5.6 trillion worldwide. Children, the elderly and the disabled could gain more independence (one of Google's videos shows a blind man doing errands in an autonomous car).

With cars in constant use, much less parking space would be needed.

Parking accounts for as much as 24% of the area of American cities, and some urban areas have as many as 3.5 parking spaces per car; even so, people looking for parking account for 30% of miles driven in urban business districts. By liberating space wasted on parking, autonomous vehicles could allow more people to live in city centres; but they would also make it easier for workers to live farther out. If you can sleep on the journey a longer commute becomes feasible, notes Mr Fagnant, who foresees a "simultaneous densification of cities, and expansion of the exurbs".

The bumpy road ahead

Even though they will have fewer crashes, self-driving cars are sure to be held to a higher standard than human drivers when they are involved in accidents. They will present "new types of crash scenarios", says Mr Martinez. When faced with an unavoidable impact, should self-driving vehicles try to minimise injuries to their own passengers, or minimise harm overall? Autonomous vehicles bring to life questions from the domain of experimental philosophy, or "trolleyology": its theoretical ethical dilemmas involving runaway vehicles seem suddenly all too relevant.

At the very least, says Mr Martinez, regulators will demand that the algorithms that make such judgments should be audited, and their decision processes rendered transparent. Some self-driving vehicles are already fitted with "black boxes" to facilitate investigation of accidents. Regulators will face difficult questions about the legal liability of carmakers and fleet operators.

Car-lovers would doubtless mourn the passing of machines that, in the 20th century, became icons of personal freedom. But this freedom is illusory. The empty roads seen in car advertisements are not most people's experience of driving. In a driverless future, people will come to wonder why they tolerated such a high rate of road deaths, and why they spent so

much money on machines that mostly sat unused. A world of self-driving vehicles may sound odd, but coming generations will consider the era of car ownership to have been much stranger. ■

当自动驾驶汽车统治世界

从无需马匹到无需司机

颠覆多个行业，重新定义都市生活，一如手机，自动驾驶汽车将是一项具有颠覆性与变革性的技术

就在托马斯·穆勒（Thomas Müller）开着他的奥迪A7轻松汇入通往上海的高速路车流后不久，仪表盘上的一条信息显示现在可以开启“自动驾驶”了。奥迪工程师穆勒按下方向盘上的一个按钮，抬起了双手。汽车开始自动驾驶，当车流缓缓开上通往市中心的一座桥时，方向盘诡异地自己转动着。

无可否认，这是一种有限的自主驾驶模式：汽车保持行驶在同一条道路上，用几个摄像头和一个LiDAR扫描器跟着车道标记前行，与前面的车辆保持固定的距离。但这就是全世界汽车制造商眼中自动驾驶技术的未来：充当司机的辅助，逐渐从豪华车辆扩展到大众车型，就和从前电动车窗和转向助力系统的推出一样。这样看来，自动驾驶会让开车不那么紧张。穆勒说，司机能“更轻松地到达目的地”。但是人们还是会和现在一样购买和拥有汽车。

要欣赏未来无人驾驶的另一番风景，可以到伦敦城外的希斯罗机场看看“豆荚车停车场”。这个停车场到航站楼之间的旅客输送由无人驾驶的电子豆荚车完成，它们行驶在专用高架车道上。通过一台有触摸屏的服务终端，你可以招来豆荚车并指明目的地。一辆可乘坐四个人的豆荚车就会前来，自己停好，打开门。你上车，落座，按下开始键，这是唯一的控制键，豆荚车就会把你送到目的地，同时避开其他豆荚车。并且在你到达后、接下一车旅客前，它会干脆利落地自己停好。

像乘坐自动驾驶的奥迪一样，坐上豆荚车的头30秒让人兴奋，但很快就变得平常单调。区别在于，那些能够被随意呼来唤去的自动驾驶车辆可以做的不只是让驾驶变得更轻松，它们势必会颠覆很多行业，重新定义都市生活。今后数年，辅助驾驶技术将逐步推广，但全自动驾驶车辆的出现会突

然让现在的汽车显得像蒸汽机和固定电话一样过时。如果它们变得随处可见，世界会变成什么模样？

从马车到汽车的转变提供了颇具启迪性的参照。汽车最初被称作“不用马拉的马车”，正如现在的无人驾驶汽车，用某个特征的移除来定义。但是，去掉了马匹，汽车证实自己是完全不同的野兽，促进了郊区化，成为个人自我定义的象征。无人驾驶汽车也将产生不可预料的影响。它们的样子会不同以往，正如早期的汽车模仿它们所起源的马车而造，多年后汽车的设计才摆脱了马拉车的影子。同样，自动驾驶汽车的模样可以跟现在的车完全不同。谷歌未来派风格的豆荚车已经行驶在加州的公路上，并且因为不再需要方向盘和踏板，在有些概念设计中座椅围着一张桌子相对而设。

自主驾驶汽车还将挑战汽车所有权的概念。汽车是大多数人拥有的最昂贵的物品之一，但是96%的时间里汽车都处于闲置的状态。但因为有车就可以享受随时用车的便利，所以买车仍然具有合理性。不过，现在你可以使用智能手机上的打车应用、拼车计划或通过租车公司来随意叫车。谷歌认为共享的自动驾驶出租车会有超过75%的利用率。这样一来，同样数量的人四处移动，却只需要数量少得多的汽车。塞巴斯蒂安·特龙（Sebastian Thrun）预计，“路上的车会更少，可能只有目前的30%。”他是斯坦福大学的计算机科学家，也曾任谷歌自动驾驶汽车项目的负责人。

智库经合组织的下属机构国际交通论坛（the International Transport Forum）的路易斯·马丁内斯（Luis Martinez）说，认为自动驾驶车辆的拥有量和使用率会和今天的汽车一样是“缺乏根据的假设”。他认为无人驾驶汽车可以代替城市里所有的汽车、出租车和公共汽车，用少得多的车辆达到同样的运输能力。经合组织开展了一项研究，模拟在里斯本使用自动驾驶汽车的情况，结果发现共享的“出租车机器人”可以把所需的汽车数量减少80%至90%。与此类似，犹他大学的丹·法格纳特（Dan Fagnant）从德州奥斯丁市的交通数据中发现，一辆灵活分享的自动驾驶汽车能代替十辆私家车。这与另一项研究结果一致，即汽车分享服务里的一辆车通常可替代路上的9到13辆车。简而言之，自动驾驶车辆可以让城市里的汽车数

量减少90%。

> *热泪盈眶*

对于汽车制造商来说，这一切将会是转折性的。他们最终可能会把自动驾驶车辆卖给车队运营商，而非个人。马丁内斯认为汽车制造的价值将从硬件转到软件，从产品转到服务。这将撼动现有的汽车制造商， 正如智能手机颠覆了诺基亚和柯达。这已然发生，新加入这个领域的高科技公司如谷歌、优步和特斯拉正强势来袭。

不过，汽车行业的高管勇敢地坚称很多人还是会想拥有自己的汽车，而租车的流行说明这一行业已经转向服务模式。这话听起来，很像是拒绝接受事实，最起码也是一厢情愿。

汽车制造业不是唯一面临剧变的行业。随着汽车保险的覆盖对象从数百万消费者转向少数几个车队运营商，汽车保险业同样面临大动荡。该行业单单在美国一个国家的年销售额就达1980亿美元。2月，美国保险业三大巨头辛辛那提金融（Cincinnati Financial）、墨邱利通用（Mercury General）和旅行者（Travelers）在向美国证券交易委员会呈报的文件中指出，无人驾驶汽车有颠覆它们业务的危险。同样，汽车配件公司LKQ在呈报文件中指出，路上车辆越少，交通事故越少，它的销售额可能会随之减少。

更显而易见的是，自动化对出租车司机来说是个坏消息。哥伦比亚大学的一项研究发现，9000辆自动驾驶汽车组成的车队能代替纽约全部13,000辆出租车。乘客等车时间会更少，每英里车费会更低，因为司机的工资是出租车运营商最大的成本。难怪优步如此热衷于无人驾驶汽车。该公司的老板特拉维斯·卡兰尼克（Travis Kalanick）去年说：“要是车里没有别人，随时叫一辆优步的成本怎么都比自己拥有车更低。”优步第一辆试验车近期已在匹兹堡街头出现。

其他行业的员工也必输无疑。矿业巨头力拓（Rio Tinto）已经在澳大利亚的三个矿场使用了53辆自动驾驶卡车。由戴姆勒生产的首辆自动驾驶货车

已获准在高速公路上试行，5月已经上路。美国350万卡车司机还供养着其他行业比如汽车旅馆和餐馆里的员工。相比无人驾驶汽车将招来的反对，目前关于优步、Lyft和其他打车服务（至少还需要司机）的争论可能只是小菜一碟。

安全第一

但是自动驾驶汽车也可能带来巨大的好处。美国国家公路交通安全管理局的数据表明，目前94%的车祸缘于人为失误，排在前三位的肇事原因是酒驾、超速和分心。据世界卫生组织统计，交通事故每年导致约120万人死亡，相当于每天发生一次911袭击。

无人驾驶汽车不会饮酒，不会超速，也不会被一条短信分神，所以会更少发生交通事故。谷歌的无人驾驶汽车在过去六年已经行驶了180万英里（290万公里），共卷入12起轻微事故，但无一导致受伤，也无一错在汽车。非营利组织伊诺交通中心（the Eno Centre for Transportation）的研究估算，如果美国道路上90%的汽车为自动驾驶，那么交通事故的数量将从每年550万起降至130万起，死亡人数将从32,400人降至11,300人。

一旦有无人驾驶汽车可用，市中心、度假地、商业区和校园等一些地方可能会出于安全原因禁止普通汽车进入。摩根士丹利的一份关于无人驾驶汽车的报告预测，人们的态度将很快从“我不想和机器人分享道路”转变为“我不想和其他人类司机分享道路”。在谷歌的故乡加州山景城，那里的人们现在已经习惯了谷歌的原型车在街道上来来往往。有些人甚至抱怨自动车开得太战战兢兢，比如等着行人横穿马路，让后面的司机心焦。值得注意的是，似乎没人害怕这些无人车。

自动驾驶汽车不但会更安全，还会让交通更顺畅，因为它们不会随意猛踩刹车，却会规划路线避免拥堵，还会紧挨着行驶以增加道路容量。德克萨斯农工大学（Texas A&M University）的一项研究估算，如果自动驾驶汽车在美国的普及率达到90%，就相当于道路容量扩大了一倍，并且能够使高速公路和郊区道路上的延误分别减少60%和15%。自动驾驶车辆里的乘客还可以做些其他事情。据摩根士丹利估算，每年由此获得的生产力在美

国将价值1.3万亿美元，全球为5.6万亿美元。儿童、老人和残疾人可以更加独立自主（谷歌的一个视频显示了一位盲人乘坐无人驾驶汽车去办事）。

因为汽车在不断使用中，所以需要的停车位减少了。停车区域占美国城市面积的24%，有些市区要为每辆车提供3.5个车位。即便如此，在闹市区人们还是要开很长的距离寻找车位，这占到总里程的30%。自动驾驶汽车把浪费在停车上的空间解放出来，让更多人能够在市中心生活，但同时也让员工可以住得更远而不失便利。法格纳特指出，如果可以在旅途中睡觉，那么通勤路程更远也是可行的。他预测“城市密度将会更大，与此同时远郊地区将会扩展”。

> *前路崎岖*

尽管撞车会更少发生，但一旦涉及事故，对待自动驾驶汽车的标准肯定要比人类司机更高。它们会呈现“新型事故场景”，马丁内斯说。当碰撞无可避免时，自动驾驶汽车是应该尽量减少对自己车上乘客的伤害，还是减少事故的总体伤害？自动驾驶汽车让实验哲学（或称“失控电车困境”）的难题变成了现实：失控电车所面对的理论上的道德困境一下子变得关系重大。

马丁内斯说，至少，监管机构应该要求做出此类判断的算法通过审核，其判定过程应该透明。一些自动驾驶汽车已经装上了“黑匣子”来方便事故调查。关于汽车制造商和车队运营商的法律责任，监管机构将面对困难的议题。

汽车爱好者无疑将哀悼手动驾驶汽车的逝去，在20世纪，它们是个人自由的象征。但这种自由只是幻象。汽车广告中道路总是很空旷，然而大多数人驾车时的体验都并非如此。在无人驾驶的未来，人们可能会奇怪，为什么他们曾接受如此之高的交通事故死亡率，为什么他们会为大多时候闲置不用的汽车花费不菲。自动驾驶汽车的世界听来古怪，但未来的几代人会认为过去私人拥有汽车的时代更为奇怪。■

Buttonwood

Let's get fiscal

A new book from a prescient economist

WHAT is the Japanese word for *Schadenfreude*? For much of the late 1990s and early 2000s, Western economists and politicians were happy to lecture the Japanese government about the mistakes it made in the aftermath of its asset bubble. But six years after the collapse of Lehman Brothers, the investment bank whose demise triggered the financial crisis, many Western economies are still struggling to generate decent growth. Their central banks are being forced to keep interest rates close to zero. Yields on government bonds in Europe, as in Japan, have sunk to record lows. Some economists are talking of a new era of "secular stagnation".

A new book* from Richard Koo of the Nomura Research Institute argues that the West has made glaring errors too. "We are experiencing not only an economic crisis but also a crisis in economics," he writes. "Most economists failed to predict the current crisis and the economics profession itself has fallen into a state of complete disarray in its attempt to answer the question of what should be done."

Mr Koo argues that the 2008 downturn was what he dubs a "balance-sheet recession". This occurs when the private sector has borrowed heavily to invest in assets (particularly property); when asset prices decline, the nominal value of the debt remains. Cutting interest rates helps a bit (by reducing the cost of servicing the debt) but it does not persuade people to borrow more money, because they are still trying to repair their balance-sheets. "Private sectors in most countries in the West today are minimising debt or maximising savings in spite of zero interest rates, behaviour that is at total odds with traditional theory," he writes.

This makes monetary policy much less effective. The policy of quantitative easing (QE), the creation of money to buy assets, succeeded in expanding the balance-sheets of central banks but did not push up bank lending or boost the amount of money circulating among companies and consumers. That explains why QE has not resulted in the hyperinflation that some feared and also, in Mr Koo's view, why QE has not been very effective.

Instead, governments should have focused on fiscal policy. There was a burst of stimulus in 2009 but, alarmed by the size of their deficits, governments started to cut back too quickly. They should have paid attention to the examples of Japan in 1997 (or America in 1937) when premature fiscal tightening derailed recoveries.

Whereas most outsiders think Japanese fiscal policy was a failure, Mr Koo argues it was an enormous success. Japan's GDP never fell below its pre-bubble peak despite an 87% fall in commercial-property prices and a corporate rush to repay debt. Without its fiscal deficits, Japan could have suffered a Great Depression; instead its unemployment rate never rose above 5.5%.

Since 2008, Western politicians have worried too much about the perception that public spending can be wasteful and that big deficits would lead to soaring bond yields. Governments could hardly misallocate resources that would otherwise be unemployed. The real recovery from the Great Depression came with the fiscal stimulus engendered by the second world war, when no one complained that governments were wasting money on armaments and air-raid shelters. And yields would have stayed very low even without QE because the private sector was saving so much.

In Europe, there has been a lot of focus on structural reform: changes to the supply side of the economy that can boost its growth rate. But Mr Koo argues that focusing on structural reform in a balance-sheet recession is

like treating a patient for diabetes when he also has pneumonia: the reforms take too long to work.

Mr Koo's case, which he first made in "The Holy Grail of Macroeconomics", a book published in 2008, has been strengthened by intervening events. However, there are some points that he glosses over. A side-effect of QE is that asset prices have risen sharply in value; that should have repaired corporate and personal balance-sheets but the private sector is still not borrowing. Why not? And he probably does not take the arguments for secular stagnation seriously enough: deteriorating demographics and sluggish productivity growth are important. Growth in the rich world has been slowing for decades. Even politicians with the wisdom of Solomon might have struggled in the circumstances.

* "The Escape From Balance Sheet Recession and the QE Trap: A Hazardous Road for the World Economy", published by John Wiley ■

梧桐

让我们从财政入手

一位有先见之明的经济学家的新作

日语里“幸灾乐祸”怎么说？上世纪90年代末到本世纪初的大部分时间里，西方经济学家和政治家总是乐于指责日本政府在其资产泡沫破裂后犯下的种种错误。但是在雷曼兄弟破产引发金融危机六年后，西方许多经济体仍然很难有可观的增长。西方经济体的中央银行被迫将利率维持在接近于零。欧洲政府债券的收益像日本一样已经跌至历史最低。有些经济学家称这是一个“长期增长停滞”的新时代。

野村综合研究所（Nomura Research Institute）的辜朝明（Richard Koo）所著新书*认为西方也犯了一些明显的错误。“我们不仅在经历经济危机，也在经历经济学的危机，”他这样写道，“大多数经济学家没能预料到这次经济危机，而在试图回答应该做什么这一问题上，经济学专业本身也陷入完全混乱的状态。”

辜朝明认为2008年的经济衰退正符合他提出的“资产负债表衰退”。私营企业大举借债用于资产（尤其是不动产）投资；资产价格下跌时，债务的名义价值不变。削减利率降低了偿债成本，起到了一点作用，但是并没有说服人们借更多的钱，因为他们还在努力修复资产负债表。辜朝明写道:“尽管利率为零，当今西方大部分国家的私营部门仍在尽量减少债务或增加储蓄，这种行为与传统理论背道而驰。”

这大大减弱了货币政策的效力。量化宽松（QE）政策，即创造货币以购买资产，成功扩充了中央银行的资产负债表，但既没有促进银行借贷，也没有增加公司和消费者之间的资金流。这解释了为何量化宽松没有导致有些人担忧的恶性通货膨胀，但是，在辜朝明看来，这也是量化宽松效果有限的原因。

相反，政府本应该专注于财政政策。2009年曾涌现过一轮刺激方案，但是

出于对财政赤字增长规模的担忧，各国政府过早开始削减投放。它们应当看看日本1997年的例子（或者1937年的美国），当时过早的财政紧缩打乱了经济复苏的步伐。

大多数外国人都认为日本的财政政策是失败的，但辜朝明却认为它是一项巨大的成功。尽管商业地产的价格下跌了87%，公司又急于偿还债务，但日本的GDP从未低于泡沫前的峰值。要是没有财政赤字，日本可能会遭受一场“大萧条”。相反，它的失业率从未超过5.5%。

从2008年起，西方政治家已经太过担心公众认为公共支出会浪费，巨额赤字会导致债券收益率飙升。没有政策刺激，资源本身就被闲置，因此政府很难错配资源。大萧条之后真正的复苏来自因二战而产生的财政刺激，当时没有人抱怨政府把钱浪费在武器装备和防空洞上。即便没有量化宽松收益，因为私营部门储蓄很多，债券收益率仍会维持在非常低的水平。

在欧洲，人们颇为关注结构性改革：通过改变经济供给来推动经济增长。但是辜朝明认为在资产负债表衰退时关注结构性改革就好比治疗一个同时患有肺炎的糖尿病人：改革要很久才能起效。

辜朝明的这番见地初见于他2008年出版的著作《大衰退》［原名《宏观经济学的圣杯》（The Holy Grail of Macroeconomics），中文译本更名］。近年来的种种事件印证了他的论述，但是他也忽略了一些其他观点。量化宽松的副作用是资产价格大幅上扬；这本应该修复公司和个人的资产负债表，但是私营部门仍然不借钱。这是为什么？而且他很可能没有认真考虑过长期增长停滞的论断：日益恶化的人口结构和缓慢的生产力增长非常重要。富裕世界的增长几十年来都在放缓。即便有所罗门王［Solomon，译注：圣经记载犹太历史上最伟大的君王，智慧、博学之王］的智慧，政治家们在这种境况下可能也要苦苦挣扎。

*《逃离资产负债表衰退及量化宽松陷阱：世界经济前路危机四伏》（The Escape From Balance Sheet Recession and the QE Trap: A Hazardous Road for the World Economy），约翰•韦利出版社（John Wiley）出版 ■

Wind power

Need a weatherman

Though wind generation is growing fast, much remains wrong with the industry

ROW after giant row of wind turbines marches towards the snowy peaks of the Tian Shan range, harvesting energy from the air. On a blustery July day in Xinjiang in China's far west, it is hard to stand upright beside the structures, each 90m (nearly 300 feet) high. China is better known as a land of coal and smog, but it is now increasing the generation of electricity from renewable sources faster than any other country, with more than 100 gigawatts a year of installed generating capacity from wind, a third of the world's total (see chart). In future, wind power will be a vital source of renewable energy. If it can integrate large-scale wind generation into its electricity network, China will be an example for other countries.

By many counts wind generation in China is a success story. Over the past decade generating capacity has increased tenfold, while the cost of building wind farms has fallen. Three of the world's top ten turbine manufacturers are Chinese. The industry has not suffered from the boom-and-bust nature of China's solar industry, the world's biggest, which sharply increased production of panels even as global prices plummeted, with plenty of dodgy financing and dirty manufacturing processes along the way.

Wind power has tripled its share of China's electricity generation since 2010, to 3% of the total. If that still seems puny, it is enough to power 110m Chinese homes. And fast growth is likely to continue for a long while. The prime minister, Li Keqiang, says that by 2030 China must cut its emissions of carbon dioxide per unit of GDP to 60-65% of the levels prevailing in 2005. Wind projects will be crucial to meeting the target; coal now generates nearly two-thirds of China's electricity.

Wind power is clean and safe. It uses far less water than fossil-fuel generation. It is much cheaper to build and run than hydroelectric or nuclear power. And while local communities in other countries often oppose wind turbines littering their pleasant lands, the Chinese government rarely gives a fig about local feeling (or conserving local ecosystems). Besides, most of China's wind blows in places where few Chinese live.

That has also been a problem, however. The windiest parts of China are Gansu and Xinjiang provinces in the north-west and west, and Inner Mongolia in the north, far from the huge population and industrial centres down the eastern seaboard. Expanding China's electricity grid has lagged far behind the construction of wind farms. Huge arrays were built only to have to wait for ages to be plugged in to the grid. Even once they were connected, much electricity leaked out of transmission lines. And the grid proved unable to cope with surges in electricity whenever the wind blew.

China has resolved many of these problems. For instance, new wind farms now get connected faster. Yet, despite improvements, the grid still struggles to cope with fluctuating loads. In the first three months of the year 19% of electricity was wasted, according to the National Energy Administration, up from 12% in the same period last year. The operators of a wind farm at Dabancheng in Xinjiang say it runs at full capacity only about half of the time.

The quality of Chinese-made turbines has improved greatly since the early models. But even today maintenance of the newer machines falls short. Chronically poor servicing in China means many farms operate below capacity. That is another area for improvement.

Yet much deeper change is needed if China is greatly to increase its share of wind energy, says Kaare Sandholt of the China National Renewable Energy

Centre, a think-tank in Beijing. Without it, he reckons, investment in wind may not make economic sense.

The biggest challenge is ensuring a stable supply of electricity in both zephyrs and howling gales. At the moment China uses wind power to supplement a highbaseload of dirty but dependable coal. The test will be how large a share of its supply it can generate from a fluctuating source. China's vast size ought to work to its advantage. If one part of the country is windless, another may be enjoying a stiff breeze generating electricity that feeds the same grid. If China can create a highly connected national grid, it will become a model for green energy use elsewhere.

Yet infrastructure plans focus too much on short-term fixes. In order to carry electricity from distant windmills to the energy-hungry east, China is constructing 27 ultra-high-voltage transmission lines by the end of 2020. Nine have already been completed, including an 800-kilovolt line from Xinjiang to Zhengzhou, more than 2,000 kilometres (about 1,240 miles) away in east-central China. Such giant lines perpetuate the dependence on a large, reliable baseload—usually a fossil fuel—because they channel huge amounts of electricity to a limited number of places rather than into a flexible, more integrated grid that connects many points. Such an interconnected grid would allow supply to flow from different sources to anywhere electricity is needed, creating a steadier base. It would deal better with bottlenecks in supply—when there is lots of wind, for instance. Denmark has shown the potential, by connecting to the grids of neighbouring countries. As a consequence, it is able to meet two-fifths of its electricity consumption from wind power.

Too few incentives exist in China to increase flexibility in energy supply. Both power generators and the grid are owned by the heavy-handed state. Creating a market in energy would help. More than a decade ago the government separated the function of generation from distribution, but

plans to free up pricing stalled. In March the State Council called for "urgent" reform to the power sector, advocating the increased use of pricing and competition. But it gave few details about how or when such measures might be introduced.

A market in electricity would be welcome. It would not increase the role of wind power or other renewables in itself. But it would reward flexibility by paying generators more when demand is high, meaning that coal-fired power would come online mainly when prices rose (today generators are paid regardless of demand). The trouble is that reforms would be fiendishly complicated to introduce, and would disturb entrenched interests and power bosses. Industry outlook: moderate to poor. ■

风能

需要天气预报员

虽然风力发电发展迅速，该产业仍有很大的问题

一排又一排巨型风力涡轮机向着天山山脉的雪峰挺进，从空气中获取能量。7月里的一个大风天，在中国遥远的西部地区新疆，站在每个90米高（近300英尺）的涡轮机旁，你会被吹得东倒西歪。中国是一个以煤炭和烟尘污染而为人熟知的国度，但现在这里可再生能源发电的增长速度超过了其他任何国家。该国一年的风力发电装机容量超过100吉瓦，占全球总量的三分之一（见图表）。未来，风能会成为可再生能源一个至关重要的组成部分。如果中国能把大规模的风力发电整合进它的电网中，将为其他国家树立典范。

从许多衡量方式看，中国的风力发电都是一个成功故事。过去十年，发电容量增加了10倍，建造风力发电场的成本已经削减。全世界十大涡轮机制造商中三家来自中国。中国的风能产业不像它的太阳能产业那样遭受大起大落。中国拥有全球最大的太阳能产业，即使在全球价格暴跌时仍然急剧增加太阳能电池板的产量，过程中涉及大量可疑的融资和肮脏的制造工艺。

自2010年以来风力发电在中国发电中的占比增加了两倍，达到3%。这个数字看起来可能仍然微不足道，但已经足以为1.1亿户中国家庭供电。在很长一段时间里，这一快速增长的势头应该还会持续。中国总理李克强说，中国在2030年前必须把每单位GDP的碳排放量从2005年的水平减少60%到65%。要实现这个目标，风力发电项目是关键。目前煤电占中国发电的近三分之二。

风力发电清洁又安全，消耗的水远少于化石燃料发电，建造和运营成本又远低于水力发电或核电。而尽管其他国家的地方社区常常反对在他们风和日丽的土地上杂乱建盖风力涡轮机，中国政府很少把地方民众的感受当回事（也不会顾及保持地方生态系统）。当然，在中国，风大的地区大多人

烟稀少。

但这也是个问题。中国风力最强的地区是西北和西部的甘肃、新疆以及北部的内蒙古，这些地方远离东部沿海的庞大人口和工业中心。中国电网的扩展速度远远滞后于建设风力发电场的速度。巨大阵列的涡轮机已经建造起来，但何时并网发电却遥遥无期。即使它们接入电网，在传输的过程中还会泄漏损耗大量的电。同时，电网也已被证实无法应对起风时发电量的骤增。

中国已经解决了许多这类问题。比如，新建风力农场的并网速度已经加快。然而，尽管有这些进展，电网仍难以应对波动的发电量。根据国家能源局的数据，今年头三个月，19%的发电量被浪费，相比去年同期的12%又有增加。新疆达坂城一座风力农场的经营者称，该农场只有约一半的时间会满负荷运行。

中国制造的涡轮机相比最初的机型质量已有大幅提升。但即使是较新的机器也缺乏维护，长期维修不足导致中国许多风力农场达不到满负荷运转。这又是另一个需要改进的方面。

不过，北京智库国家可再生能源中心的单国瑞（Kaare Sandholt）指出，如果中国要显著增加风能的占比，则仍需要做出深入得多的改变。如果没有这些改变，对风能的投资可能不再经济。

最大的挑战是确保在微风徐徐和狂风大作之时都能稳定供电。目前，中国用肮脏但可靠的煤炭提供高基底负荷，用风力发电作为补充。面临的考验将是它能从一个起伏不定的发电来源中获得多大比例的供电。中国幅员辽阔，这是有利条件。如果某个地区无风，另一个地区却可能正刮着大风从而可以向同一个电网供电。中国若能够创建一个高度连接的国家电网，它将成为其他地区绿色能源使用的模板。

但是，这里的基建计划太过聚焦短期调整。为了把电力从偏远农场运载到耗能巨大的东部地区，中国正在建造27条超高压输电线，预期在2020年底前全部建成。其中有九条目前已经完工，包括一条800千伏输电线，从新

疆通往2000多公里（约1240英里）外的中东部城市郑州。如此巨大的输电线将永远无法摆脱对庞大、可靠的基底负载——通常是某种化石燃料——的依赖，因为它们是把大量电力传输到几个有限的地点，而不是传输到一个灵活、连接许多点的集合式电网。一个互相连接的电网能够让电力从不同的源头流向任何需要电的地方，从而创造出一个更为稳定的基底负荷。比如，它能更好地解决风力丰沛时的供电瓶颈。丹麦在这方面已经显示出潜力，它把邻国的几个电网连接在一起，用风能满足了该国五分之二的用电量。

中国增加供电灵活性的动力太少。发电站和电网都属国家所有而受到严格管控。创建能源市场会有帮助。十多年前中国政府把发电和配电分离，但自由定价计划却搁浅了。今年3月，国务院呼吁对电力行业实施“紧迫”改革，提倡更多地利用定价和竞争机制，但并未提及何时及如何推出这类举措的具体信息。

一个电力市场会受到欢迎。它本身并不会增加风力发电或其他可再生能源所扮演的角色，但它会奖励灵活度：当用电需求高时，它会支付给电力公司更多钱，这意味着煤电厂主要会在电费上涨时向电网供电（目前，向电力公司支付的价格和需求量无关）。困难在于这些改革的推出将极为复杂，它们将给既得利益者和电业老板们带来冲击。电力产业的前景平平甚至惨淡。■

Renewable energy

Puffs of hope

Wind and solar energy are increasingly competitive. But a lot has to change before they can make a real impact

ON THE afternoon of July 25th renewable generators fulfilled about 78% of Germany's domestic demand. Such a remarkable figure, combined with news of booming wind industries in America and China, might lead you to think that the renewables revolution is more or less victorious, with the world moving forward into the broad, sunlit—and windy—uplands of copious clean energy. Alas, this is not the case.

In some places wind turbines and solar cells are now a cheaper way of generating electricity than fossil fuels are. And in a lot of others subsidies and regulatory requirements encourage their use regardless. But despite this progress, bought at great expense, renewables other than hydropower still provide less than 3% of the world's energy. The impressive growth of wind power lags behind the rate that the International Energy Agency (IEA), a Paris-based intergovernmental think-tank, suggests is necessary for the world to have a good chance of limiting global warming to less than 2°C. That two-degree scenario requires the world to generate 11 times more wind power by 2050, and 36 times more solar power. And it requires a big helping of new nuclear power, too. If, like German Greens and many others, you would rather do without that helping hand, the requirement for further renewables becomes yet more far-fetched.

The most equitable and straightforward way to move towards more low-carbon energy would be a global system of steadily escalating carbon taxes. In the absence of such an enlightened policy, though, there are other ways to encourage the spread of renewables.

Removing subsidies around the world on fossil fuels is one of them. Another is increasing public investment in low-carbon energy research. Research into renewable energy, storage systems and energy transmission accounts for only about 1% of government R&D spending in rich countries. This has meant that the renewables boom of the past decade, especially in the case of wind, has been mostly a come-as-you-are affair: big subsidies for the deployment of today's technology but very little spent on tomorrow's.

The design of electricity markets matters, too. The best way to finance renewable energy is by creating predictable demand, which attracts institutional investors. That usually means long-term fixed-price contracts, allocated by auction. These schemes are working well, particularly in emerging markets, where all extra power is welcome. In mature ones renewables need to displace existing capacity, which is trickier.

Grids in

There are further problems to overcome. Germany's record-breaking afternoon was a windy one in the north of the country, where most of the turbines are, and a sunny one in the solar-cell-covered south. Such happy coincidences have obverses—dark, windless winter evenings—that need to be planned for. This requires a balance of storage capacity, backup power and interconnections between electric grids.

In places like Scandinavia and Brazil hydroelectric and wind power work well together. Gas-fired power stations, cheap to build and comparatively low in their emissions, are also good. But it is hard to get people to build gas-fired power stations that will not be used very much—which in markets with a lot of renewables is their inevitable fate. In Germany the renewables boom has paradoxically seen gas edged out by cheaper but much dirtier lignite.

Provision for backup capacity has to be part of any policy that gives renewables a large role. So do technology and pricing regimes that make it easy for people and industry to use less power when the grid is running on fossil fuels and more when the wind is up and the sun shining. And those grids themselves need attention; renewables benefit from big grids that can bring electricity from distant sunny and windy places.

A policy of expanding and interconnecting grids typically works against the interests of some producers, by eroding the ability of incumbents to extract rents. It also gives politicians less scope to interfere with their national and local energy systems. But it is vital if renewables are to flourish. ■

可再生能源

希望之风

风能和太阳能的竞争力日增，但它们若要真正产生影响还需要很多改变

7月25日下午，可再生能源发电满足了德国国内约78%的用电需求。这是一个多么了不起的数字，加之从美国和中国传来的有关风力发电迅速发展的新闻，你可能会认为可再生能源革命已经差不多吹响了胜利的号角，世界正迈向清洁能源那阳光普照、大风劲吹的辽阔高地。可惜，事实并非如此。

在某些地方，风力涡轮机和太阳能电池已经成为比化石燃料更廉价的发电方式。而在其他许多地方，无论贵或便宜，补贴和监管规定都在鼓励使用这类能源。尽管巨大的花费换来了这些进展，除水力发电以外的可再生能源仍然只贡献了全球能源的不足3%。风力发电虽有了可观的增长，但根据总部位于巴黎的政府间智库国际能源署（IEA）的建议，若要比较有把握地把全球变暖的幅度限制在2℃以内，风能的发展速度还不够快。要达到2℃的目标，全球在2050年前的风力发电量需要在现有基础上增加11倍，太阳能发电量要增加36倍，此外还需要新增核电设施大力相助。如果像德国绿党和其他许多人那样，宁可不求助于核能，那么对可再生能源的需求量就变得愈发遥不可及了。

转向低碳能源最公平又直接的方式是建立一个稳步提升碳排放税的全球系统。不过，在这类开明政策缺失的情况下，仍有其他方法来推广可再生能源。

在全球各地取消化石燃料补贴就是方法之一。另一个办法是增加对低碳能源研究的公共投资。对可再生能源、蓄电系统和能源传输的研究只占了富裕国家政府研发支出的约1%。也就是说，过去十年中可再生能源尤其是风能的迅速发展，在很大程度上只是一种随遇而安。大笔补助花在了部署现有的技术上，但对于未来的技术却投入甚少。

对电力市场的设计也很重要。可再生能源的最佳融资方式是创造可预测的需求来吸引机构投资者。这通常意味着通过拍卖分配长期固定价格的合同。这类机制目前运作良好，尤其在新兴市场，那里所有的剩余电力都受到欢迎。但在成熟市场，可再生能源需要替代现有的发电能力，情形就变得更复杂棘手。

接入电网

还有其他问题需要克服。在德国那个创纪录的下午，该国的北部也就是大部分风力涡轮机所在的地方大风劲吹，而南部太阳能电池广布的地区阳光普照。这样愉快的巧合有其反面——黑暗、无风的冬季夜晚。必须为这样的日子做好准备，这需要在蓄电能力、储备电力和电网互联上达成平衡。

在斯堪的纳维亚和巴西等地，水力发电和风力发电协作良好。造价低廉、碳排放相对较少的燃气发电站也是不错的选择。但是，如果燃气发电站的使用率低，就很难吸引人们去投建它，这在有大量可再生能源的市场必定会如此。在德国出现了一个和可再生能源的繁荣自相矛盾的变化，燃气发电被更便宜但肮脏得多的褐煤发电所排挤。

任何让可再生能源扮演重大角色的政策都必须兼顾储备能力，以及技术和定价机制，让民众和产业在电网消耗化石燃料时减少用电，在刮风和有日照时增加用电。这些电网本身也需要改造。大型电网能够调用来自日照丰富、风力充足的遥远地区的发电，有利于可再生能源的普及。

让电网扩展、互联的政策通常会和一些生产商的利益相悖，因为这会削弱现有生产商牟利的能力，也会让政客更难干涉全国和地方的能源系统。然而，可再生能源若要蓬勃发展，这种做法至关重要。 ■

Demography

Baby love

There are good and bad ways to prop up a country's population

A FEW years ago Singaporeans were treated to a song urging them to get busy for the sake of the nation. "I'm a patriotic husband, you my patriotic wife, lemme book into ya camp and manufacture life," went the ditty, accompanied by a video depicting a thrusting cartoon heart. This being Singapore, a stern caveat was appended: "Only financially secure adults in stable, committed, long-term relationships should participate."

Some poor countries fret about excessive fertility. A typical woman in Niger, for example, will have seven babies. But birth rates have fallen so fast as the world has grown richer that many places now have the opposite problem. The fertility rate is 1.1 in Hong Kong, implying that each generation its population will fall by roughly half. In Japan, Italy and Germany it is 1.4 or less. As populations age and shrink, governments wonder: who will pay taxes or look after the elderly?

The cheapest and best way for rich countries to rejuvenate their populations would be to allow more immigration. Migrants need not be coaxed into being, and can start work straight away. However, an influx large enough to save, say, South Korea from demographic collapse would be politically unfeasible. Hence many rich countries (and some middle-income ones like Iran and Turkey) are trying to persuade their citizens to procreate more enthusiastically.

Plenty of environmentalists object, arguing that fewer people would be better for the planet. Maybe so, but people matter too, and countries with wildly different fertility rates can reasonably have different policies. Too sudden a population crunch can be excruciatingly painful. Just ask the

Greeks, whose disastrous unfunded pension system was weakened by a fertility rate of 1.3, or China's legions of only children, who will one day have to support their more numerous parents.

Many liberals argue that the state should keep its nose out of family matters, but in practice this is hard. Simply by creating pension systems paid for out of general taxation, governments have drastically reduced the private incentive to have children—who were once the best security parents had in their dotage. A more useful question is which baby-boosting policies work.

Many do not. Nagging videos, even saucy ones, are probably ignored, as are medals for heroic childbearing (plenty of Soviet-era ones can be found on eBay for a few dollars). Subsidies that governments offer to encourage births are often pocketed by people who would have had children anyway. And evidence from Europe suggests that longer parental leave does not encourage couples to have more children—though it has other good effects, such as making fathers into better parents.

Nurseries for nippers

The thing that seems to boost fertility most is subsidised child care. By cutting the cost of combining work and motherhood, this encourages both. Subsidised nurseries were pioneered in France, a country that has worried about national vigour ever since it was thrashed in the Franco-Prussian war of 1870. It has been rewarded with one of the highest fertility rates in Europe. Cheap nurseries have also helped boost Quebec's birth rate from one of the lowest of all Canadian provinces to one of the highest.

Few rich countries will ever go back to a fertility rate of 2.1, the magic number which means that the population remains stable. And persuading women in southern Europe or East Asia to have more sprogs will be especially hard. Birth rates there have fallen so far and so fast that they may

never bounce back. Countries like South Korea are stuck in a cultural bind: women fought their way into university and good jobs, but family life is far less egalitarian. Many women face a stark choice between an interesting career or a life making bulgogi and tempura.

Yet a culture can change, and the state can nudge it. Creating lots of good, subsidised nurseries would signal that women can keep pursuing a career, if they want to, even after having children. That would be good for women, good for productivity and good for the public coffers. ■

人口学

舐犊之情

支撑起一国人口的方法有优有劣

几年前，新加坡人曾听闻一首歌曲，催促他们为国家而行动起来。“我是一位爱国的丈夫，你是我爱国的妻子，让我入住你的营地，一起创造生命吧”，歌曲这样唱道，与之相配的视频展示了一颗冲劲十足的卡通心。毕竟是在新加坡，视频末尾还追加了一条严正的附加说明：“只有经济条件良好、且双方关系长期稳定、相互忠诚的成年人才应参加”。

一些穷国为过度生育而苦恼。例如，通常一位尼日尔妇女会有七个孩子。但是，随着世界变得更富裕，出生率已迅速下降，现在许多地方面临截然相反的问题。香港的生育率为1.1，这意味着每一代人的人口会比上一代减少大约一半。在日本、意大利和德国，生育率为1.4或更低。随着人口老化与萎缩，各国政府都开始困惑：将来谁来纳税和照顾老人？

要让富国人口保持年轻而有活力，最便宜且最有效的办法就是接纳更多移民。在生育方面，移民不需要连哄带劝，并且能马上开始工作。然而，大量吸纳移民，例如多到足以防止韩国发生人口崩溃的程度，在政治上或许并不可行。因此，许多富国（以及一些中等收入国家，如伊朗和土耳其）正设法说服它们的公民更积极地生儿育女。

对此，许多环保主义者并不赞成，他们认为人口少些对地球更好。或许确实如此，但人也很重要。而且，生育率迥异的国家可能政策不同，这也合乎情理。人口收缩过于突然会极其痛苦，只要问问希腊人或中国人就知道了。在希腊，失败的养老金系统资金缺乏，更被1.3的生育率削弱；而在中国，独生子女们某天必须赡养他们为数多得多的父辈。

许多自由主义者认为，国家不应干预家庭事务，但事实上这很难。仅仅通过创建由普通税收支付的养老金系统，政府已大幅削弱了个人的生育动机——曾几何时，儿女被认为是父母晚年最好的保障。一个更值得解答的问

题是，哪些促进生育的政策行之有效。

许多政策都不奏效。唠叨的视频，甚至荤段子视频，就和英雄母亲奖章（很多前苏联时代的这类奖章用几美元就能在eBay上买到）一样可能被忽略。政府为鼓励生育而提供补贴，但奖励往往为那些早就计划好要生孩子的人所得。欧洲的经验表明，较长的产假并未鼓励夫妇多生孩子，尽管有其他好处，比如使父亲更加称职。

托儿所

最能提高生育率的政策似乎是儿童保育补贴。通过减轻兼顾工作和育儿的负担，儿童保育补贴政策对这两者均有所促进。最早对托儿所进行补贴的是法国，自1870年普法战争惨败以来，该国一直为民族活力而担忧。法国的收获是其生育率现已处在欧洲领先的位置。低廉的托幼费用也帮助魁北克把出生率从加拿大所有省份的最低之列提升至最高之列。

几乎没有富国能再恢复到2.1的生育率，这个神奇的数字意味着人口能保持稳定。在南欧和东亚，要说服妇女多生小孩将会特别困难。在这些地方出生率已经下降太多、太快，可能永远不会反弹。韩国等国陷入了一个文化困境：妇女努力进入大学获得好工作，但在家庭生活中则要面对诸多的不平等。摆在许多妇女面前的严峻选择是：追求有趣的职业，还是每天烹制韩式烤肉和天妇罗。

然而，文化可以改变，而且国家能够推动这种改变。多开办优质的托儿所并提供补贴将能发出这样的信号：如果女性愿意的话，就算有了孩子，她们也可以追求事业。这对女性、生产力和公共财政都将大有裨益。■

If the yuan competes with the dollar

Clash of the currencies

The yuan's rise will challenge America, but not before China changes

WHEN will the yuan rival the dollar? Many in China think it only a matter of time. Chen Yulu, a leading economist, says it will take 15 years. Wei Jianguo, deputy head of a major think-tank, puts it at 20. Officials are more circumspect: currency internationalisation will be a long process, its pace determined by the market, says Zhou Xiaochuan, the central-bank governor. Outside China, opinions are more divided. Some think the yuan is already on the verge of displacing the dollar in Asia; others predict it will never get there.

What difference would it make if China's currency did vie with the dollar for global pre-eminence? Scholars have looked for clues in the transition from the pound to the dollar, but that took place around the middle of last century in a very different context. The dollar and the pound were both convertible into gold at fixed rates, making the leap of faith for those switching from one to the other much less of a risk. Today, reserve currencies are not backed by gold. Their value is more slippery—a function of supply and demand.

What is more, the shift from the pound to the dollar reflected a passage of economic power, one that had started many decades earlier, between two allies with shared democratic values and economic ideas. China's leaders talk of the yuan's internationalisation in peaceful terms. A more diverse monetary system will breed financial stability for the world, they say. But China's rise poses a bigger threat to America than America's did to Britain. For all the paeans to mutually beneficial development, China is a possible adversary, governed by an autocratic regime with a statist approach to the economy.

Some in China thus take a darker view of how competition between the yuan and the dollar will play out. Song Hongbing, author of "Currency Wars", a conspiracy-laced series of books, foresees America fighting the yuan every step of the way. That has been shown to be wrong, so far. Over the past five years China has built a network for yuan-trading around the world, and America has not tried to thwart it. But a glimpse of the potential for conflict came last year when America tried, unsuccessfully, to persuade its allies to stay out of the Asian Infrastructure Investment Bank, launched by China. America is pushing for a Pacific trade deal that excludes China. And it is striking that among the many yuan-trading hubs established by China, from London to Singapore, the one glaring hole in the network is New York.

America has good reason to worry about the yuan. Its emergence as a credible alternative to the dollar would undermine a cornerstone of American power. Sanctions against Iran and North Korea have had bite because of the dollar's centrality to global finance. Some 45% of all cross-border transactions are denominated in dollars. So any bank with international business needs access to the American banking system, to clear payments or manage cash. And for that it needs an American licence, which means it had better heed the sanctions. China knows how potent this is. In 2013, after America hit North Korea's main foreign-exchange bank with sanctions, Bank of China stopped serving its North Korean client. In 2012, at the height of American pressure on Iran, China grudgingly cut imports of Iranian oil.

The dollar's political leverage will dissipate as the yuan goes global. China is already close to launching a system for processing cross-border yuan payments. Although described blandly as a platform for facilitating transactions, its consequences could over time be far-reaching. It will allow banks and companies to move money around the world on a financial superhighway delinked from the dollar.

America will find it far harder to track who is using the China International Payment System (CIPS) and for what. The threat of exclusion from the American financial system will start to lose its force. And China would have a new tool to propagate its way of thinking. When heads of state meet the Dalai Lama, the Tibetan spiritual leader regarded by China as a separatist, they may find their banks placed on the CIPS blacklist. This tactic would damage the yuan's standing if used too liberally, but the mere threat of punishment might be enough for China to get its way.

A global yuan would also win China more respect. China has shown that it wants to be seen as a good citizen of the world at times of trouble. In 1997-98, during the Asian financial crisis, and in 2008-09, during the global one, it locked the yuan in place against the dollar. This reassured other countries that it would not use depreciation as a crutch for its economy. As international use of the yuan increases, China will be in a position to do more, by serving as backstop to the global financial system.

Yuan-upmanship

When Lehman Brothers collapsed in 2008, the Federal Reserve provided emergency swap lines to banks around the world. If a crisis hits in two decades' time, China could play a similar role. It is assembling the framework to lend such support by establishing currency swaps with many nations, from Argentina to Russia.

The economic consequences of the yuan's rise would be momentous. The "exorbitant privilege" that goes with being the issuer of the dominant currency would ebb for America. Because there is so much demand for dollar assets—more than 60% of all global central-bank reserves are held in dollars—America and companies based there can sell bonds for higher prices than they could otherwise. Since bond yields move inversely to prices, this means it costs less for Americans to borrow—so it is easier for the government to fund its deficits and for firms to raise money.

How much is this exorbitant privilege worth? Researchers found that yields on American ten-year treasury bonds were as much as a percentage point lower in the early 2000s thanks to the dollar's status. America is also able to issue all its debt in dollars. The currency mismatch that often triggers debt crises in smaller economies is thus off the cards; the Federal Reserve can simply print more dollars to pay off the government's liabilities. The benefits add up to $100 billion a year for America, estimates the McKinsey Global Institute.

But there are also downsides. Demand for the dollar as a reserve asset means the currency is stronger than it would otherwise be, making it harder for American exporters to compete. McKinsey found this lops as much as $60 billion off GDP. Net, America still gains 0.3-0.5% of GDP a year thanks to the dollar's status.

When the yuan rivals the dollar, China will eat into this pie. Investors from other countries might sell off dollar assets since they would have alternatives in the yuan; this would drive up American interest rates and weaken the economy. Researchers have shown that the Fed can mitigate but not fully counteract this effect by buying the bonds sold by foreigners. The upshot is that America would have to work harder to retain the confidence of global investors, perhaps leading it to rein in government debt.

But the changes required of China would be even more dramatic. In his account of how the dollar remained the world's pre-eminent currency despite being at the centre of the global financial crisis, Eswar Prasad, an economist at Cornell University, explains that its strength resides in America's institutions. Deep financial markets, a robust legal system and a generally transparent political process underpin the dollar. Faith in these make America and its currency a haven.

China would have to build a similar complement of institutions to

persuade investors that the yuan is as reliable. It would need to make its currency truly convertible, stop intervening in its exchange rate and build a big, liquid, transparent bond market. Heavy-handed intervention to prop up stocks when they recently crashed shows how far China is from developing a mature financial system. China would also, like America, need proper rule of law. This would require allowing courts to go against the wishes of the Communist Party, something unthinkable for now. And through all this, China needs to keep its economy marching forward. Stagnation would undermine the yuan's appeal.

If China somehow accomplishes all that, a global monetary system with multiple poles could in theory engender greater economic stability. America and China might compete to make their respective currencies more attractive by demonstrating sound fiscal and monetary policies. The exorbitant privilege would become an extraordinary responsibility. But there would also be new risks—"more room for friction and accidents", says Alan Wheatley, editor of a recent book about reserve currencies. With the dollar's status in doubt, there might be damaging uncertainty about where to turn for a safe harbour when the next financial tsunami strikes.

How likely is any of this to happen? The dollar has a huge incumbent's advantage. Political gridlock in Washington risks chipping away at that, as might excessive use of the sanctions that reserve-currency status allows America. Much will depend on Chinese policy. The key is to make China's financial system as deep, open and trusted as America's. That is a long-term project, but China can speed things up a little with specific policy changes—for instance, lowering barriers to foreign investment in its bond market.

China's record over the past five years, when it began to promote yuan internationalisation, is impressive. The share of Chinese cross-border trade settled in yuan rose from nothing in 2009 to 22% last year. It is now the

fifth-most-used currency for international payments. The IMF is debating whether to adjust its special drawing right, a basket of reserve currencies, to include the yuan. Still, this is a far cry from its rivalling the dollar. Some 50 central banks have invested reserves in yuan, but only in small amounts. Foreigners hold $200 billion in Chinese stocks and bonds; they have 80 times more—$16 trillion—in American securities. For now, the yuan is a bit player on the global stage. But at the start of the 20th century, so was the dollar. ■

若人民币与美元争锋

货币冲突

人民币崛起将对美国构成挑战，但前提是中国做出改变

人民币何时才能成为美元的对手？在中国，许多人认为这只是时间问题。知名经济学家陈雨露说，这需要15年。一家大型智库的副理事长魏建国认为是20年。官员们则更为谨慎，央行行长周小川表示，货币国际化将是一个漫长的过程，其速度由市场决定。中国以外，关于此问题更是众说纷纭。有人认为人民币在亚洲已接近取代美元的地位，也有人预言说那将永远无法实现。

假如中国的货币真能与美元一争高下，抢占全球主导地位，那会带来什么变化？学者们尝试在全球主导货币从英镑向美元过渡的历史中探寻启示，但那毕竟发生在上世纪中期，背景与现在完全不同。当时，美元和英镑均可按固定汇率兑换成黄金，因此从英镑转用美元这种信仰的转变，风险并不大。但现在，储备货币并无黄金作后盾，其价值波动更大，由供求决定。

更重要的是，从英镑到美元的转变反映的是两个盟国之间经济霸权的过渡，它们具有共同的民主价值及经济理念，这种过渡在几十年前就已经开始。中国领导人则以平和姿态谈论人民币的国际化，他们提出，更多元化的货币体系将有助于全球金融稳定。但中国崛起对美国构成的威胁要比当年美国对英国的影响大。尽管高歌互惠互利，但专制政权统治、崇尚以国家主义管控经济的中国确有可能成为美国的敌手。

因此，中国部分人士把人民币与美元之间的竞争看得尤为悲观。满纸阴谋论的《货币战争》系列丛书的作者宋鸿兵预计，美国将会步步狙击人民币。截至目前来看，这并未成真。过去五年，中国已建成人民币的全球交易网络，美国没有加以阻挠。不过在去年，中国牵头筹建亚洲基础设施投资银行，美国试图劝阻盟国加入，虽未能成功，但隐隐透出一丝火药味。美国正力推一项跨太平洋经贸合作协议，中国被排除在外。从伦敦到新加

坡，中国在全球建立了为数众多的人民币交易中心，但令人惊讶的是，纽约却不在其中，成为该版图上一个刺眼的缺口。

美国有充分的理由担心人民币的进逼。人民币作为美元的可靠替代品而崛起，将削弱美国国力的一大基石。由于美元在全球金融的中心地位，美国对伊朗及朝鲜的制裁才得以发挥效力。约有45%的跨境交易以美元结算，所以凡拥有国际业务的银行都须接入美国的银行体系以结算交易或管理资金。为此它们须向美国申请许可，也意味着最好依从美国的制裁措施。中国深知其中厉害。2013年，在美国对朝鲜主要外贸银行实施制裁后，中国银行停止了对朝鲜客户的服务。2012年，在美国打压伊朗的风口浪尖时期，中国极不情愿地削减了对伊朗石油的进口。

随着人民币走向全球，美元的政治影响力将逐渐减弱。中国即将推出处理人民币跨境支付的系统。虽然该系统被轻描淡写成只是一个方便交易的平台，但随着时间推移，势必产生深远影响。银行和企业可通过这一与美元脱钩的金融高速公路跨境调动资金。

美国将发现，追踪中国国际支付系统（CIPS）的用户及其行动目的要难得多。以排除出美国金融体系作威胁也将开始失去作用。中国将有一套新的工具来传播其思维方式。假如某国家元首会见被中国视为分裂分子的西藏精神领袖达赖喇嘛，他们或许会发现本国的银行被拉入CIPS的黑名单。滥用这一手段当然会损害人民币的地位，然而中国也许只需威胁做出惩罚，一切便可如愿以偿。

人民币国际化也将令中国更受尊重。中国已摆出姿态，希望被视为乱世中的好公民。1997年至1998年的亚洲金融危机及2008年至2009年的全球金融危机期间，中国锁定了人民币兑美元汇率。此举向其他国家保证了中国不会依靠本币贬值来支撑经济发展。随着人民币在国际上的使用增加，中国将成为全球金融体系的支柱，发挥更大的作用。

人民币更胜一筹

2008年雷曼兄弟垮台后，美联储向全球的银行提供了紧急换汇额度。假如

20年后危机再现，中国可能会扮演类似的角色。中国正在搭建框架，通过与阿根廷、俄罗斯等国建立货币互换机制来提供这样的支持。

人民币崛起将带来重大经济影响。美国作为主导货币发行国而享有的“过度特权”将难以为继。因为对美元资产的需求庞大（全球央行外汇储备中60%为美元），美国政府和公司可藉此以更高价格出售债券。而债券收益率与价格成反比，这令美国人的借贷成本更低，所以无论是政府填补赤字还是公司筹措资金都更容易。

这一“过度特权”价值几何？研究人员发现，本世纪初，由于美元的地位，美国十年期国债收益率下降了一个百分点之多。美国也可以全部以美元发行国债，因此不会出现小型经济体因货币错配而引发债务危机的情况；美联储只要多印美钞来偿还政府债务即可。据麦肯锡全球研究院（McKinsey Global Institute）估计，这一特权给美国带来的好处每年合计达一千亿美元。

然而也存在弊端。美元作为储备资产的需求大，意味着美元变得过于强势，令美国出口商竞争更艰难。麦肯锡发现，这令美国GDP每年损失600亿美元之多。但扣除损失，美国每年仍有0.3%至0.5%的GDP要归功于美元的主导地位。

一旦人民币可与美元争锋，中国将会从中分得一杯羹。因为可以选择人民币资产作为替代，其他国家的投资者也许会抛售美元资产，这将推高美国的利率，削弱其经济。研究人员表示，美联储可以购入外国人抛售的债券，但这只能缓解而无法完全抵消冲击。最终，美国必须加倍努力挽回全球投资者的信心，也许会因此收紧政府债务。

但中国需要做出的改变将会更大。为何美元在深陷全球金融危机之际仍能保持全球主导货币的地位？康奈尔大学的经济学家斯瓦尔·普拉萨德（Eswar Prasad）解释说，其优势基于美国的体制。深厚的金融市场、健全的法律体系，加上基本透明公开的政治决策过程，令美元基础稳固。对这一切的信心令美国及其货币成为投资者的避风港。

中国必须建立类似的一整套体系来说服投资者，让他们相信人民币同样可靠。中国将需要让其货币真正可自由兑换，停止干预汇率，并建立流动、透明的大型债券市场。最近中国股市暴跌后政府强力干预托市的行动表明，中国距离成熟的金融体系还有很长的路要走。中国还要像美国那样实现彻底的法治，这将要求法庭能够违逆共产党的意愿。目前，这仍然不可想象。而且在做到这些的同时，中国还要能保持经济向前迈进，若有停滞，人民币的吸引力将被削弱。

假如中国以某种方式达成这一切，造就出一个多极的全球货币体系，理论上世界经济会变得更稳定。美国和中国或许会通过展现稳健的财政及货币政策而令各自的货币更显吸引力。“过度特权”将变为非凡的责任。但也会有新的风险——“更易产生摩擦和意外事件”，艾伦·惠特利（Alan Wheatley）说道。他最近编辑了一本关于储备货币的著作。随着美元地位成疑，人们会担心下一次金融海啸来袭时不知往何处寻觅安全避风港，这份不确定性后果堪虞。

这一切发生的可能性有多大？美元拥有巨大的在位优势。华盛顿的政治僵局会削弱这一优势，美国自恃储备货币国的地位而滥用制裁，也有风险。更重要的是中国的政策，其关键在于中国的金融体系要变得像美国的那样深厚、开放、可信，那将是一个长期的项目。但通过具体的政策改革，中国可以将这一进程加快一些，比如，降低外国投资进入债券市场的门槛。

过去五年，中国开始推动人民币国际化，成果令人瞩目。中国跨境贸易中，以人民币结算的份额从2009年的零上升至去年的22%。现在，人民币已成为国际支付的第五大常用货币。国际货币基金组织正在讨论是否调整其特别提款权，把人民币纳入这一篮子储备货币中。但论与美元争锋，其程度还相去甚远。约有50家央行已持有人民币作为储备，但数量甚微。外国人持有的中国股票及债券总值两千亿美元，而他们对美国证券的持有量是这一数目的80倍之多，达16万亿美元。就目前来看，在全球舞台上人民币还只是个小角色。不过，在上世纪初，美元也是如此。■

Cuba and Iran

When the sanctions come off

Foreign businesses eye new frontiers. But many obstacles lie in their way

IF THE lobbies of Tehran's more expensive hotels are any guide, the rush is already on. Six months ago they sported only the odd Chinese businessman. Now they are alive with Westerners jostling for deals. Trade delegations have started to arrive. First off the mark after Iran struck a nuclear deal with world powers earlier in July was Germany's vice-chancellor, Sigmar Gabriel, who took a group of executives to Iran's capital on July 18th.

In Havana, too, hotels are bustling. Even before America and Cuba opened embassies in each other's countries on July 20th, bookings were up. Ever since the two announced a rapprochement late last year, Cuban-born American lawyers have been arranging business trips to the Cuban capital for their best clients, with the added promise of fine rum, cigars and tropical nostalgia. American businesses are eager to catch up, having long watched Canadian, Spanish and other firms steal a march.

This unusual conjuncture of two long-isolated countries heading back into the commercial mainstream is good for consultants, too. At the start of the year ILIA Corporation, a Tehran advisory firm jointly run by a German and an Iranian, had no foreign companies on its books. By April it had three; it now claims 18. At American law firms, meanwhile, experts on other areas are being drafted into the Cuba teams to handle the workload. Pedro Freyre of Akerman, one of those firms, sums up the mood: "Oh my gosh. My phone has not stopped ringing. It's been insane."

All the activity notwithstanding, the initial rush to reconnoitre Cuba and Iran will slowly but surely give way to a more measured approach for most.

It will be months, if not years, before the sanctions on both countries will be lifted. Even then foreign firms will face big obstacles to conducting business, let alone making profits.

The Cuban and Iranian economies are starkly different: one is a tiny island lying off the tip of Florida, the other a Middle Eastern power sitting on an ocean of oil. The type of sanctions on the two countries differ, too. Those against Cuba apply almost exclusively to Americans. In the case of Iran, they also bind non-American entities. European and Asian banks that do business with Iran without official approval, for instance, risk seeing their accounts shut down.

But Cuba and Iran do have one thing in common: they are developed enough that they could thrive once the restrictions are lifted. Iran in particular ought to be able to attract much more foreign direct investment, given its size (see chart). Many other countries targeted by sanctions are more chaotic and have less well-educated populations, and are thus "not poised for a growth spurt once sanctions come off", says Gary Hufbauer of the Peterson Institute for International Economics.

Some early moves in Cuba have been promising. Charter airlines have done a good trade ferrying the 12 categories of Americans (excluding tourists) now allowed to travel to the island. And tapping into Cuba's booming private rental market, Airbnb executives say some 2,000 people have listed space in their homes via the online agency, charging up to ten times the average $25 monthly salary per rental.

As befits the larger economy, opportunities in Iran are grander. "Few countries have such immediate investment requirements," says Rocky Ansari, a commercial lawyer and business analyst in Tehran, who estimates Iran's pent-up need at over $1 trillion. In the next five years the country needs an estimated $230 billion-$260 billion of investment in oil and gas,

according to analysts. Infrastructure badly needs an overhaul. Iran Air, starved of investment since the Islamic Revolution in 1979, wants to buy several hundred planes.

Some green shoots with foreign roots are already in place. Debenhams, a British chain of department stores, has several outlets across Iran, including one on a main thoroughfare in Tehran. Boeing is back bidding for business, and after an earlier round of sanctions relief in November 2013, is again selling spare parts. "Click here to apply for a franchise in Iran," reads the website of McDonald's, a fast-food chain.

In both countries, however, chickens are yet to hatch, let alone get turned into nuggets. Big food companies are hungry to enter Cuba, but the embargo prohibits them from using American banks to get letters of credit in order to make the deliveries. Even industries with permission to trade with Cuba, such as agriculture, medicine and telecoms, find obstacles in their way. The biggest is finance. Though the Obama administration removed Cuba from its "state-sponsor-of-terrorism" list in April, easing restrictions on banking, the response has been slow. On July 21st Stonegate Bank in Florida became the first American bank to set up a correspondent account in Cuba, allowing financial transactions between the two countries.

Similarly, even if the Iran nuclear deal passes Congress, the Islamic Republic still has to implement 11 related measures, and a plethora of sub-clauses. A dispute over any one of them could "set everything kicking off again," fears a businessman travelling from London to Tehran. A 65-day "snapback" mechanism to reimpose sanctions if the deal is breached will discourage banks from again transacting with their Iranian counterparts. As long as they hold back, much of Iran's $100 billion in oil revenues held abroad will remain there.

Jon Epstein, a lawyer at Holland & Knight in Washington, DC, says his advice to clients is not to try and be the first American firm into Cuba, but to give themselves a five-year horizon for entering the market. He believes that the experience there—more than half a year of ups and downs—has been a useful reality check that businesses are now applying to Iran. "At this stage we're only talking of potential sanctions relief," says Nigel Kushner, a British lawyer advising firms on Iran.

The biggest obstacle to post-sanctions growth may be the two countries' own governments. Cuba's embrace of private enterprise has been halting, to put it kindly. Authorities have been slow to vet foreign-funded projects in the Mariel special economic zone; only five have been approved in the past 18 months. Cuban bureaucrats are fanatically risk-averse and inscrutable. "It's not knowing the 'who' to approach and the 'how' to go about it that's the problem," says Thomas Goodman of the Cohen Group, a consultancy.

In Iran Mohammad Javad Zarif, the foreign minister, presented the nuclear deal to parliament as a triumph. But behind his smiles a host of problems dog the economy. Iran ranks 130th on the World Bank's table of easiest countries for business. Its absence from the International Centre for Settlement of Investment Disputes, a World Bank-run commercial-arbitration service, give investors pause. Corruption is rife, and revisions to an old commercial law are bogged down in parliament.

For all his election promises, President Hassan Rohani has barely begun to tackle the vested interests that relished sanctions as a form of protectionism that kept competition out of the market. The Revolutionary Guards control huge swathes of the economy. "Ali Khamenei [the Supreme leader] sees globalisation as a national-security threat, and wants the Revolutionary Guard as the economy's shock-absorber" against such forces, says Ali Alizadeh, a political analyst in London. Lifting sanctions will open

the door to investors. But only if the rulers in Havana and Tehran want reform will economies be transformed. ■

古巴和伊朗

脱离制裁时

外企眼热新疆域，但前路荆棘遍布

一股淘金热已然上演，从德黑兰那些高级酒店的大堂可见一斑。六个月前，那里只有零星的中国商人光顾。如今，来谈生意的西方商人济济一堂，热闹非凡。贸易代表团纷纷抵达，抢先一步的是德国。继伊朗与世界各大国在7月中旬达成核协议后，德国副总理西格马尔·加布里尔（Sigmar Gabriel）率领一批企业高管于7月18日抵达伊朗首都。

在哈瓦那，酒店里的宾客同样熙来攘往。美国和古巴定于7月20日互设大使馆，在这之前，酒店预订已节节上升。两国去年年底宣布恢复友好关系之后，古巴裔美国律师们已开始组织最好的客户到古巴首都作商务考察，还以上等朗姆酒、雪茄、热带怀旧风情作招徕。眼见加拿大、西班牙等国企业长久以来占尽先机，美国公司也急于趁势赶超。

两个长期被孤立的国家非比寻常地同返主流商业世界，这对咨询公司而言确是好事。由一名德国人和一名伊朗人在德黑兰共同经营的咨询公司ILIA在年初时还没有外企客户，到4月份有了三家，现在已经拥有18家。同时，美国的律师事务所内，古巴业务团队都忙得不可开交，需要借调其他业务领域的专才来帮忙。其中一家律师事务所Akerman的佩德罗·弗雷拉（Pedro Freyre）这样形容工作氛围：“天啊，我的电话响个不停，简直要忙疯了。”

尽管活跃如此，对大部分人而言，到古巴和伊朗侦察商机的这股急先锋必定会逐步转为更为审慎的行动。对两国制裁的全面解除将要等待数月甚至数年，即便到那时候，外企开展业务仍将面临巨大的障碍，更别说盈利了。

古巴和伊朗的经济截然不同：一个是与佛罗里达州南端相对的小岛，另一个是坐拥无尽石油的中东强国。两国面对的制裁类型也不同。针对古巴的

制裁基本只涉及美国人，但在伊朗，非美国实体的活动也受到约束。例如，欧洲和亚洲的银行如果未经官方批准而与伊朗进行交易，则有被关闭账户的风险。

但古巴和伊朗的确有一个共同点：两者已具备一定发展基础，只要限制取消，即可蓬勃增长。伊朗市场庞大（见图表），尤其有望吸引更多的外国直接投资。其他受到制裁的许多国家局势更乱，受良好教育的人口更少，所以“制裁结束后也不会呈现井喷式增长”，彼得森国际经济研究所（Peterson Institute for International Economics）的加里·赫夫鲍尔（Gary Hufbauer）说道。

在古巴，一些投资先行者行情看涨。目前有12类美国人（游客除外）获允前往古巴，接载这些美国人的包机航空公司业务畅旺。Airbnb则打入古巴蓬勃的私人租赁市场，其高管表示，已有约2000人通过这一在线中介出租自家的空置房间，租金最高达平均月薪（25美元）的十倍。

伊朗的经济规模更大，相应地，那里的机遇也更加广阔。“少有国家对投资的需求如此迫切。”德黑兰的商业律师及商务分析师洛奇·安萨里（Rocky Ansari）说道。他估计伊朗被压抑的投资需求超过一万亿美元。据分析师估计，在未来五年，该国油气业需要2300亿至2600亿美元的投资。基础设施亟需大修。1979年伊斯兰革命以来一直苦于投资无门的伊朗航空公司如今计划购入几百架飞机。

一些外资新芽已经萌发。英国连锁百货商店德本汉姆（Debenhams）已在伊朗各地开了多家分店，其中一家设在德黑兰的一条主街上。波音重回伊朗参与竞标，而且早前一轮减轻制裁协议在2013年11月达成后，波音已再次对伊朗销售飞机零部件。连锁快餐店麦当劳则在其网页上写着“点击此处申请在伊朗开设加盟店”。

但是，在这两个国家，小鸡尚未孵出，更遑论下出金蛋。大型食品公司急欲打入古巴，但贸易限制使它们无法利用美国的银行获取买方信用证以出口货物。即便是如农业、医药及电信等获批与古巴进行交易的行业也遭遇

障碍。最大的问题还是金融。虽然奥巴马政府在4月份把古巴从“支持恐怖主义国家”的名单中剔除，放宽对银行业务的限制，但反响迟缓。7月21日，佛罗里达州的石门银行（Stonegate Bank）成为在古巴设立代理账户的首家美国银行，使两国之间可以进行金融交易。

同样，即使伊朗的核协议在国会通过，该伊斯兰共和国仍要推行11项相关措施，还有一堆子条款。从伦敦前往德黑兰的一位商人担心，只要其中一项引发争议都可能“让一切重来”。假如伊朗违反协议，国际社会可在65天内恢复制裁措施，这项“折返”机制同样令外资银行踌躇却步，不敢与伊朗的银行交易。假若银行一直退缩不前，伊朗在海外一千亿美元的石油收入仍将无法流回国内。

华盛顿特区霍兰德·奈特律师事务所（Holland & Knight）的律师乔恩·爱泼斯坦（Jon Epstein）表示，美国客户不应争先进军古巴，而应对进入该市场作五年规划。他相信，在那里获得的经验（超过半年的起起落落）是有用的实战测试，可以检验适用于伊朗市场的业务。“在现阶段，我们说的只是制裁有可能缓解。”奈杰尔·库什纳（Nigel Kushner）说道，他是为投资伊朗的企业提供咨询的一名英国律师。

后制裁时代经济增长的最大障碍也许是两国政府本身。说得好听一点，古巴拥抱私人企业时一直犹犹豫豫。当局对马里埃尔经济特区（Mariel special economic zone）的外资项目迟迟不作审批：过去18个月内仅有5个项目被批准。古巴官员们极度厌恶风险，而且心思莫测。“不知道该和‘谁’打交道，以及该‘怎样’去做，这是问题所在。”咨询机构科恩集团（Cohen Group）的托马斯·古德曼（Thomas Goodman）说道。

在伊朗，外长穆罕默德·贾瓦德·扎里夫（Mohammad Javad Zarif）把这份核协议作为胜利成果向议会提交。但在他的笑容背后，一系列问题仍困扰着该国经济。伊朗在世界银行的宜商国家排名中名列第130位，而且该国未加入世界银行设立的商业仲裁机构“国际投资争端解决中心”，令投资者望而生畏。贪腐横行，修订旧有商业法的议案在议会毫无进展。

尽管竞选之时许下种种承诺，伊朗总统哈桑·鲁哈尼（Hassan Rohani）至今还未着手改变既得利益者垄断的局面。制裁措施被视为阻止市场竞争的一种保护主义，深得这些既得利益者的欢心。革命卫队控制着伊朗经济的大片领域。“哈梅内伊（最高领导人）视全球化为国家安全大敌，并希望革命卫队充当经济的减震器”来对抗这些力量，伦敦一位政治分析师阿里·阿里扎德（Ali Alizadeh）说道。解除制裁将为投资者打开一扇大门，但唯当哈瓦那和德黑兰的统治者们愿意改弦更张，经济的面貌才会改天换地。■

Military aircraft

Battle joined

Three of the world's biggest defence companies are locked in a contest that could reshape the industry

WITHIN the next few months, the biggest defence contract for what will probably be many years to come will be awarded by the US Air Force, to build a new long-range strike bomber. The B-3, as it is likely to be named, will be a nuclear-capable aircraft designed to penetrate the most sophisticated air defences. The contract itself will be worth $50 billion-plus in revenues to the successful bidder, and there will be many billions of dollars more for work on design, support and upgrades. The plan is to build at least 80-100 of the planes at a cost of more than $550m each.

The stakes could not be higher for at least two of the three industrial heavyweights that are slugging it out. On one side is a team of Boeing and Lockheed Martin; on the other, Northrop Grumman. The result could lead to a shake-out in the defence industry, with one of the competitors having to give up making combat aircraft for good.

After the B-3 contract is awarded, the next big deal for combat planes—for a sixth-generation "air-dominance fighter" to replace the F-22 and F-18 Super Hornet—will be more than a decade away. So Richard Aboulafia of the Teal Group, an aviation-consulting firm, believes it will be hard for the loser to stay in the combat-aircraft business. If Northrop were to miss out, its investors may press for it to be broken up. If Boeing were to lose, Mr Aboulafia thinks it may seek to buy Northrop's aircraft-building business, to ensure it gets the job after all. The production line in St Louis that makes Boeing's F-18 (the US Navy's mainstay fighter until it starts to get the carrier version of the new F-35 in numbers) is due to close in 2017. If Northrop were to depart the field, that could leave Lockheed Martin as the only

American company with the ability to design combat planes, and thus the biggest winner of the three.

Usually in a contest of this kind, particularly this close to its end, a clear favourite emerges. Industry-watchers rate this one as still too close to call. That is partly because the degree of secrecy surrounding what is still classified as a "black programme" has remained high. Only the rough outlines of the aircraft's specification have been revealed. It will be stealthy, subsonic, have a range of around 6,000 miles (9,650km) and be able to carry a big enough payload to destroy many targets during a single sortie. The best clues to what it will look like are from earlier "flying wing" design concepts the aircraft-makers have displayed, and from the shrouded "mystery plane" that Northrop showed in a recent television commercial (pictured). But most of all, picking a winner is hard because both competitors are highly credible—and each has different strengths.

Boeing and Lockheed first joined forces in 2007 to build what was then known as the Next-Generation Bomber—a project cancelled two years later because its excessive technological ambition was causing costs to soar. They decided to team up again in 2013 to prepare for a new request for proposals that the air force quietly released last summer. Boeing is the team leader and will build the aircraft if their bid is successful; Lockheed will take the main responsibility for its design.

That should be a winning combination. Boeing is as good as it gets when it comes to the efficient construction of large aircraft, and has painfully and expensively acquired expertise in carbon-fibre composites as it developed its 787 Dreamliner, a civil airliner. Lockheed can draw on its "skunk works", an autonomous design team that works on radical new aircraft technologies; and on its experience developing radar-beating stealth technologies for the F-22 and F-35 fighter planes.

Northrop, on the other hand, built the revolutionary B-2 stealth bomber that entered service in the early 1990s. It was conceived as a deep-penetration nuclear bomber at the height of the cold war. But when the Soviet Union dissolved, the need for America to have 132 of the planes went with it. Only 21 were eventually built, leading the programme into a "death spiral" in which declining orders pushed up the unit price of an aircraft to absurd levels. Once its development, engineering and testing costs were added, each B-2 ended up costing more than $2 billion. But it was hardly Northrop's fault that the cold war ended sooner than expected. The plane it built has since proved its capabilities in numerous conflicts, from Kosovo to Libya.

Updated versions of the once-radical technologies that made the B-2 so expensive (both to buy and to operate) will find their way into the new bomber. Another possible advantage for the air force in choosing Northrop is that it might be better able to focus on the programme. Boeing is not only grappling with its hugely demanding, and rapidly expanding, civil-aviation business; it is also struggling to deliver the K-46 tanker plane by the target date of 2017. (It snatched that big order from a consortium of Northrop and Airbus, after protesting at the air force's initial decision to award it to its rivals.) Lockheed, for its part, also has its hands full ramping up production of the late and over-budget F-35.

The target for the plane to come into operation is the mid-2020s—if possible, even earlier. In part this is because of fast-emerging new threats and in part because the average age of America's current bomber fleet, consisting of 76 geriatric B-52s, 63 B-1s and 20 B-2s, is 38 years. Keeping such ancient aircraft flying in the face of metal fatigue and corrosion is a constant struggle: just 120 are deemed mission-ready. None of these, except the B-2s, can penetrate first-rate air defences without carrying cruise missiles—and the missiles are of little use against mobile targets.

In the kind of one-sided wars that America and its allies fought in the years after the September 11th 2001 attacks, such deficiencies were not a problem. But during that period China, in particular, has invested heavily in "anti-access/area-denial" (A2/AD) capabilities. These include thousands of precision-guided missiles of increasing range that could threaten America's bases in the Western Pacific, and any carriers sailing close enough to shore to launch their short-range tactical aircraft. Critics of the huge F-35 programme (the Pentagon is planning to buy 2,457 aircraft at a cost of around $100m each) argue that its limited range was a growing problem even before it entered service. A new long-range bomber that can penetrate the most advanced air defences is thus seen as vital in preserving America's unique ability to project power anywhere in the world.

If getting the new bomber into service fast is a priority, so too is keeping the price low enough to be able to build it in sensible numbers, and thus keep it safe from political ambush. Budget caps imposed by Congress in 2013 have ushered in a decade of defence-spending austerity, and the B-3 will be the first major weapons system to be designed and produced in this new era.

To stay on budget and avoid the risk of having its orders cut, the programme will have to rely on technologies adapted from earlier projects; and any temptation to "gold-plate" its specification with showy but not strictly necessary features will have to be resisted. The B-3 will be a bit smaller than the B-2, and be able to use the same engines as the F-35. The option of being able to fly the bomber pilotlessly, by remote control, seems to have been dropped, as have some highly sophisticated surveillance sensors that were proposed earlier.

The risk of this cautious approach is that the new bomber might quickly lose its technical edge if faced with new threats or relentlessly improving air-defence systems (thanks to ever faster processors and sensors). But this danger is being seen off in two ways. The first is by designing the planes

with what the Pentagon's acquisitions chief, Frank Kendall, describes as an "open architecture and modular approach", in which companies will compete to provide future upgrades that can be easily plugged in as and when needed. The other is that, despite its stealthiness, the B-3 will be fully connected to a range of "off-board capabilities", such as electronic countermeasures and the collection of targeting data, provided by other aircraft and orbital reconnaissance satellites, instead of having to carry everything on board.

In keeping with the secrecy surrounding the plane, neither of the two competing teams is prepared to discuss their bids or why they should prevail in any detail. Such reticence may not survive the awarding of the contract. Although the air force is striving to make its decision as protest-proof as possible, neither Boeing nor Northrop is likely to take defeat quietly. Northrop is still smarting from Boeing's lobbying triumph over the K-46 tanker programme, in which a plane that many military analysts considered superior ended up losing.

The Pentagon likes to share work around so as to ensure there is continued competition for contracts to provide military gear, especially complex ones such as this. In the case of the B-3 it has explicitly ruled out taking such concerns into account when choosing between the two contenders. That may be because it realises that whichever it selects, it will deal a devastating blow to the other. The days when America had a choice of combat-plane suppliers are coming to an end. ■

军用飞机

加入战斗

世界三大防务公司激战尤酣，此战可能重塑军火行业

今后数月里，美国空军将对可能是未来多年内最大的国防合同进行招标，建造新一代远程打击轰炸机。该轰炸机可能会被命名为B-3，能够携带核武器，穿透最先进的防空体系。合同本身将给中标者带来500多亿美元的收入，而且还会追加数十亿美元用于设计、支持和升级。美国空军计划建造至少80到100架此种战斗机，每架造价超过5.5亿美元。

三大军火巨头正为此杀得难分难解，对其中至少两家而言，这一战的重要性无与伦比。一边是波音和洛克希德·马丁（Lockheed Martin）；另一边则是诺斯洛普·格鲁曼（Northrop Grumman）。结果可能导致国防工业的一次洗牌，三巨头之一将不得不永远放弃制造作战飞机。

B-3合同授予后，作战飞机的下一宗大单——取代F-22和F-18超级大黄蜂的第六代“空中霸主战斗机”——将是十几年以后的事了。因此航空咨询公司蒂尔集团（Teal Group）的理查德·阿波拉弗亚（Richard Aboulafia）认为，此次竞争中的输家很难在作战飞机行业中继续生存。如果诺斯洛普错过机会，投资者可能会迫使其分拆。如果波音竞争失利，阿波拉弗亚认为它可能会设法购买诺斯洛普的飞机制造业务，以确保无论如何都能获得这一订单。波音位于圣路易斯的F-18生产线将于2017年关闭，F-18是美国海军批量装备新型F-35战斗机舰载版之前的主力战斗机型。如果诺斯洛普离开这一行业，洛克希德·马丁将成为美国唯一一家有能力设计作战飞机的公司，并由此成为三巨头中最大的赢家。

一般来说在这样的竞赛里，尤其是在收官阶段，谁是赢家会有明显的端倪。但业内观察家认为这次竞争对手之间的差距太小，仍然很难判断。一方面是因为这一计划被归为“黑色项目”，保密程度依然很高，至今只透露了飞机的大致规格。新一代的战机将具备隐身能力，可以亚音速巡航，作战航程约6000英里（9650公里），载弹量足以在单次出动时摧毁多个目

标。关于其外观的最好线索是飞机制造商之前展示的“飞翼”设计理念，以及诺斯洛普在最新电视广告上展示的幕布笼罩下的“神秘飞机”（如图）。但最重要的是，选出赢家非常困难，因为所有的竞争者都信誉卓著，且各有所长。

波音和洛克希德早在2007年就首次合作，打造当时所谓的“下一代轰炸机”。但因技术上野心过大导致成本飙升，这一项目两年后被取消。2013年它们决定再度联手，为空军去年夏天悄悄发布的新需求准备计划书。波音是团队领头人，如果竞标成功，波音将会负责制造，洛克希德则会主要承担设计工作。

这应当是强强联手。波音在高效制造大型飞机方面名至实归，在研发民用机型787梦想飞机（dreamliner）时耗尽心力，花费不菲，掌握了碳纤维复合材料技术。洛克希德则可利用它的“臭鼬工厂”，这是一个自主的设计团队，专攻高精尖航空器技术。洛克希德还可仰仗它为F-22和F-35战斗机研发反雷达隐形技术的经验。

而另一方，诺斯洛普曾制造了革命性的B-2隐形轰炸机。B-2于上世纪90年代早期正式服役。在冷战高峰时期，它被认为是一种具备核打击能力、可大纵深侵入敌后的攻击轰炸机。苏联解体后，美国对132架此类战机的需求也随风而去。最终只制造了21架，导致项目陷入“死亡漩涡”，订单不断减少，将飞机单价推至不可思议的高度。如果算上研发、工程造价和测试成本，每架B-2的最终成本超过20亿美元。但是冷战结束得比预期早并不是诺斯洛普的错，它制造的飞机在之后从科索沃到利比亚的数次战争中都证明了自身的实力。

一些尖端技术曾让B-2无论是售价还是使用成本都高不可攀，这些技术加以更新后可以应用于新一代轰炸机。空军选择诺斯洛普另一个可能的优势是它或许能更专注于该项目。波音不仅要应对其要求高、扩张快的民用航空业务，还要努力在2017年的目标日期前交付K-46空中加油机。在抗议空军最初将订单交给对手的决定后，波音从诺斯罗普和空客组成的联盟手中夺下了这一业务。而洛克希德也忙于加快建造进度延误且预算超标的

F-35。

新一代战斗机开始服役的目标时间是本世纪20年代中叶，如有可能甚至还会更早。一方面是因为迅速出现的各种新威胁，另一方面是因为美国现役轰炸机的平均服役时间已达38年，其中包括76架陈旧的B-52、63架B-1、20架B-2。让这样老旧的飞机在金属疲劳和腐蚀的情况下飞行，是一场无休止的痛苦挣扎：只有120架战机被认为能够执行任务。而除了B-2，其他机型都无法穿透一流的防空系统，除非携带巡航导弹——但导弹在对付移动目标时几乎没什么用。

在2001年911袭击之后的历次战争中，美国及其盟友都占据压倒性的优势，这样的不足不是什么问题。但是同一时期，特别是中国，在“反介入/区域阻遏”（A2/AD）能力的建设上投资巨大。这包括成千上万枚精确制导导弹，其射程不断提高，能威胁到美国在西太平洋的基地，以及需要接近海岸来起降短程战术飞机的航空母舰。F-35大型项目（五角大楼计划以单价1亿美元购买2457架）的批评者们认为它有限的作战航程在未服役之前就已是一个日益严重的问题。因此，要保持美国独有的向世界任何角落投放武力的能力，能穿透最先进防空系统的新一代远程轰炸机被视作重中之重。

如果说争取新一代轰炸机尽快服役是首要目标，那么控制价格以确保可以生产合理数量的飞机也需要重点考虑，这可以避免项目遭受政治伏击。2013年国会公布的预算上限昭示着国防支出进入紧缩时代，而B-3将成为这个新时代设计生产的首个大型武器系统。

要想不超出预算，避免订单削减的风险，该项目必须依赖由以往项目改造而成的技术。同时必须抵制诱惑，禁止使用华而不实、严格说来并非必需的功能为其规格“镀金”。B-3将会比B-2小一点，配备和F-35相同的引擎。能够通过遥控实现无人驾驶的选项似乎已被放弃，早先提议的一些非常复杂的监控传感设备也同样被搁置。

这样谨慎的做法也有风险，在面对新的威胁或者持续不断改良的防空体系

时（拜更快的处理器和传感器所赐），新一代轰炸机可能会很快丧失技术优势。但是这种威胁正通过两种途径消除。第一是如五角大楼采购负责人弗兰克·肯德尔（Frank Kendall）所述，以一种“开放架构及模块方式”设计飞机，各公司能相互竞争，在需要时提供能被方便加入的升级改进。另一方面，尽管是隐形机，B-3仍将全面配备一系列“机外能力”，如电子对抗和目标数据收集，这些功能将由其他战机和轨道侦察卫星提供，而不是全部装载在飞机上。

为了对这一机型严加保密，竞争团队任何一方都不打算谈论自己的投标，抑或是他们凭什么能过人一筹的任何细节。这样的沉默可能熬不到合同授予之时。尽管美国空军正尽力让自己的决定无懈可击，但波音也好，诺斯洛普也罢，都不可能默不作声地接受失败。诺斯洛普还在为波音游说K-46加油机项目取得的胜利耿耿于怀，诺斯洛普的飞机当时被许多军事分析家看好，却仍以失败告终。

五角大楼喜欢将工作分摊，确保提供军事装备的合同中仍有持续的竞争，尤其是像这次一样的复杂合同。但在此次B-3的案子中，面对二选一的抉择，它已经明确表示不会做这样的考虑。这或许是因为它意识到无论选中哪一方，都会对另一方造成毁灭性的打击。美国能选择作战飞机供应商的时代行将终结。■

Rolls-Royce

Hitting turbulence

A rethink is needed at the world's second-largest jet-engine maker

FOR a firm best-known for building engines to make things go forward fast, Rolls-Royce appears to have stopped dead in its tracks. On July 6th, the day after a new boss, Warren East, started work, it was forced to issue another profit warning—the fourth in 18 months. Having made £1.6 billion ($2.5 billion) of pre-tax profits last year, it now expects £1.4 billion, give or take £75m, this year. Unsurprisingly, investors' and analysts' grumbles about the firm's strategy are getting louder.

Under Mr East's predecessor, John Rishton, Rolls had been trying to diversify away from making aircraft engines. Building other equipment for use on land or sea, it was hoped, would help maintain profits, even in lean years for aviation. It was also hoped that shifting investment into these areas—which have produced greater returns on capital than jet engines—would boost the firm's profitability.

But analysts fear that this strategy is no longer working. The various profit warnings have revealed that all areas of the business are underperforming. At first the firm blamed defence cuts for a fall in demand for its military-jet engines. Then, Rolls said the weak oil price, and deteriorating economic conditions, were hurting demand for its power-generation turbines and marine engines. Now the civil-aviation division is also in trouble, according to the latest profit warning. Although demand for new planes is buoyant, Airbus's delays in producing a new version of its A330 long-range jet are having a knock-on effect on Rolls, whose Trent 7000 engine was designed specially for it.

Some analysts are arguing that Rolls's constituent businesses would do

better if they were split apart. Selling or spinning off the smaller land-and-sea division might boost the value of the rest by up to 20%, according to Rami Myerson of Investec, a bank. This is because investors say they would prefer to risk their money on a firm focused on aerospace than on one that has various distractions.

The company insists that these headwinds are temporary, and that its £76 billion order book should replenish its profits after 2016. But an increased focus on aviation may well be sensible, not least because of the weakness of oil prices. Cheap jet fuel, and thus cheap air tickets, mean that worldwide air-passenger numbers will grow by an average of 4.7% a year for the next 20 years, says Clearwater International, a finance outfit—and this will mean lots of demand for jet engines. At the same time, the weakness of crude prices will depress demand for the marine engines and other equipment that Rolls makes for offshore oil-and-gas firms. With oil futures for 2020 trading as low as $70, cheap oil no longer looks like a blip.

Focusing more on its jet-engine business would also help Rolls build economies of scale. At present, over 70% of the world's jet engines are made either by GE alone or by CFM International, GE's joint venture with Snecma of France. Rolls-Royce is in a distant second place. Fixed costs are rising: it can now cost more than $1 billion to develop a new engine model, so size is increasingly important.

The industry also seems to be moving towards a model in which, instead of each type of commercial aircraft coming with a choice of engines from competing manufacturers, the enginemakers are being offered exclusivity, in return for contributing towards the development costs of a new plane. This means the plane and engine are made for each other, optimising their performance. But such deals also make it easier for bigger firms to corner the market.

Some analysts think Rolls—which specialises in building engines for long-haul "wide-body" planes—should perhaps merge with a rival, such as GE or Pratt & Whitney, which is strong in making engines for smaller, "narrow-body" aircraft. But such a deal would be unlikely to get permission from the British government, which still owns a "golden share" in Rolls.

Instead, in May the firm said it was looking for a partner with which to build engines for the next generation of narrow-bodies, due to be developed in the 2020s. Short of a merger, such an alliance makes sense. ■

罗尔斯·罗伊斯

遭遇湍流

世界第二大喷气发动机制造商需要反思

发动机推动事物快速前进，而作为一家以发动机制造著称于世的公司，罗尔斯·罗伊斯自身看来却已停滞不前。7月6日，也就是它的新老板沃伦·伊斯特（Warren East）上任的第二天，公司被迫又一次发布盈利预警。这已是18个月里的第四次。罗尔斯·罗伊斯去年的税前利润为16亿英镑（25亿美元），现在它预计今年的利润为14亿英镑，并可能上下偏差7500万英镑。毫无意外，投资者和分析人士对公司战略的抱怨越加强烈了。

在伊斯特的前任约翰·雷世顿（John Rishton）执掌公司时，罗尔斯·罗伊斯曾尝试多元化经营，不仅生产航空发动机，也生产其他用于陆地或海上的设备，寄望在航空业不振时仍可帮助维持盈利。将投资转向这些领域获得的资本收益比生产航空发动机高，因此罗尔斯·罗伊斯也希望此举能够提高公司的盈利能力。

但分析人士担心这样的策略已不再可行。屡次盈利预警已经表明罗尔斯·罗伊斯在所有的业务领域都表现不佳。一开始，该公司将军用飞机发动机需求的下降归咎于国防开支削减。之后它又称疲软的油价和不断恶化的经济环境损害了对其涡轮发电机和船用发动机的需求。最新的盈利预警显示如今民用航空部门也处境艰难。虽然对新飞机的需求看涨，但空客新型A330远程客机的生产延期拖累了罗尔斯·罗伊斯，因为后者的遄达7000发动机就是为该机型特别设计的。

有些分析人士认为罗尔斯·罗伊斯的各部分业务如果分拆会更好。天达银行（Investec）的拉米·迈尔森（Rami Myerson）称，卖掉或剥离较小的陆海部门可能会让公司余下部分的价值提升多达20%。这是因为投资者说他们宁愿在一家专注于航空领域的公司上试运气，而非一家心有旁骛的公司。

罗尔斯·罗伊斯则坚称这些困境只是暂时的，2016年以后公司760亿英镑的订单应该会重振利润。但是，更专注于航空业很可能是明智之举，尤其考虑到油价疲软的因素。金融机构清水国际（Clearwater International）认为，便宜的航空煤油将带动机票价格下跌，意味着今后20年全球航空乘客的数量每年将平均增长4.7%，而这也预示着对喷气发动机的需求会很大。同时，罗尔斯·罗伊斯还为海上油气公司生产船用发动机和其他设备，原油价格疲软将抑制对这些设备的需求。2020年交易的石油期货价格已低至70美元，廉价石油看来不再是昙花一现。

更专注于喷气发动机业务也将有助于罗尔斯·罗伊斯打造规模经济。目前，全球超过70%的喷气发动机由GE独立生产或由GE与法国斯奈克玛（SNECMA）的合资公司CFM国际（CFM International）生产。罗尔斯·罗伊斯虽位居第二，但规模相去甚远。固定成本在增长：现在研发一款新型发动机要耗费10多亿美元，因此规模越来越重要。

这一行业似乎也向着这样一个模式发展：不再是每种类型的商用飞机都从相互竞争的制造商提供的发动机中选出一款。相反，发动机制造商会参与研发某个新机型，并因为贡献了研发成本而获得这款机型发动机的独家供应权。也就是说，飞机和发动机为彼此量身定制，从而优化了整体性能。但这类合同也会让大公司更容易垄断市场。

有些分析人士认为，罗尔斯·罗伊斯专门为长途“宽体”飞机制造发动机，可能应同擅长为较小的“窄体”飞机制造发动机的GE或普惠（Pratt & Whitney）这样的对手合并。但这样的合并不太可能得到英国政府的批准，它仍持有罗尔斯·罗伊斯的“黄金股”。

不过5月罗尔斯·罗伊斯称正在寻求合作伙伴，共同为下一代窄体飞机制造发动机，预计本世纪20年代开发完成。合并不成，这样的联手不失为明智之举。■

Latin America's economies

Learning the lessons of stagnation

As memories of galloping growth fade, it is time for tough thinking about the future

IN JUNE 2006 Luiz Inácio Lula da Silva, then Brazil's president, went to Itaboraí, a sleepy farming town nestled where the flatlands beside Guanabara Bay meet the coastal mountain range. He announced the building of Comperj—the Rio de Janeiro petrochemical complex, a pharaonic undertaking of two oil refineries and a clutch of petrochemical plants. With forecasts of 220,000 new jobs in a town of 150,000 people, Itaboraí geared up for a boom.

Today it is almost a ghost town. Its straggling main street adjoins an unopened shopping mall and is punctuated by a score of blocks of flats and office towers, one with a heliport on the roof, all finished in the past few months and all plastered with "for sale" signs. "A lot of people bet on this new El Dorado in Itaboraí and it didn't happen," says Wagner Sales of the union of workers building Comperj.

What did happen? Private firms that were supposed to join Petrobras, the state-controlled oil giant, in investing in the petrochemical plants took fright when a shale gas boom in the United States slashed costs for their competitors there. Lula and his successor, Dilma Rousseff, burdened Petrobras with developing new deep-sea oilfields as a monopoly operator while also adding three other refineries. A corruption scandal and plunging oil prices hit the company hard. Comperj has been reduced to one small refinery; its completion date has been pushed back to mid-2016.

Luiz Fernando Guimarães, the secretary of economic development for the municipal government, reckons there are 4,000 empty offices in the town. Two years ago the mayor set out to re-market Itaboraí as a logistics centre.

But its trump card—location near the meeting-point between a new motorway round Guanabara Bay and the main coastal highway—was wasted because the federal government of that "darned Dona Dilma", as Mr Guimarães calls the president, has failed to build the last stretch to the town.

Itaboraí's plight is echoed, albeit less dramatically, across Latin America. The rise in the prices of commodities—minerals, oil and grains—brought about by China's industrialisation unleashed a golden decade for the region (or more accurately for the commodity-exporting countries of South America). Growth averaged 4.1% in the decade to 2012. In its train came a social transformation: 60m were lifted out of poverty, and the middle class swelled.

Now the good times are over. Latin America's economy is screeching to a halt; it managed growth of just 1.3% last year. This year's figure will be only 0.9%, reckons the IMF, which would mark the fifth successive year of deceleration (see chart 1). Not only has this surprised most forecasters, but Latin America has slowed more than any other emerging region. Many reckon it now faces a "new normal" of growth of just 2-3% a year. That would jeopardise recent social gains; already the fall in poverty has halted.

So what has gone wrong? Did Latin America squander its boom? An immediate explanation for the slowdown is the fall in the region's terms of trade—the ratio of the price of its exports to the price of its imports. Having risen threefold between 2003 and 2011, commodity prices fell somewhat thereafter before plunging sharply last year. Since 2011 investment in the region's economies has slowed; the IMF finds that it is closely correlated with commodity prices. Financial markets have responded accordingly, with the region's main currencies depreciating by an average of 20% against the dollar since mid-2014 and most stockmarkets in the doldrums. The impending hike in the United States Federal Reserve's policy rate will

raise borrowing costs.

An end to expansion

In the past such abrupt reversals tended to cause panic and capital outflows. This time is at least partly different. Better macroeconomic policies, such as floating exchange rates and lower public debt, have allowed many countries to adjust smoothly. Chile, Colombia and Peru, which have handled their affairs responsibly, are still growing, but much more slowly. (So is Bolivia, whose leftist government has been relatively prudent.) Mexico, Central America and the Dominican Republic, which are net importers of commodities, are set to do better than average in the coming years.

Worst hit are countries that bungled their policies, to varying degrees. After an inflationary fiscal splurge, Brazil faces an inevitable adjustment: its economy will shrink by 1.2% this year according to the government, and unemployment is surging. Argentina is enduring prolonged stagnation and double-digit inflation. Venezuela faces a painful contraction of 7% this year and inflation of 95%, says the IMF. On the black market its currency has halved in value against the dollar since January.

"The boom was not completely wasted, but neither was it completely capitalised on," Guillermo Perry and Alejandro Forero of the University of the Andes in Bogotá conclude in a recent paper. Most of its proceeds went on a consumption binge and imports. By contrast Asia's expansion has been powered by manufactured exports, investment and infrastructure spending, increasing its potential for future growth.

But Latin America's traditionally low investment levels did increase. Stronger and better-regulated banks and public finances and higher levels of international reserves meant that the region sailed through the great recession of 2008-09 with only a brief downturn. Yet that success went to

the politicians' heads. Many were too slow to withdraw the fiscal stimulus they applied. With the partial exception of Chile and Peru, no government now has scope to mitigate the slowdown through monetary or fiscal policy.

To return to faster growth, Latin America must address its chronic structural weaknesses. Put simply, it exports, saves and invests too little, its economies are not diversified enough and too many of its firms and workers are unproductive.

To make matters worse, the rise of China, and of the emerging world generally, over the past 15 years has exacerbated some of these problems, the World Bank concluded in a report published in May. China reinforced Latin America's role as a commodity exporter while the relative weight of its manufactured exports diminished, the bank found. That is partly because of Latin Americans' low savings rate (under 20% of GDP, compared with 30% in South-East Asia). The region has relied on drawing in foreign savings, which meant that its currencies appreciated during the boom more than they might otherwise have done, rendering many non-commodity businesses uncompetitive.

In the 1990s Latin America began to diversify its exports, selling a bigger variety of products. But that has reversed since 2000. Only a small and declining percentage of the region's exports are of "complex" (ie, knowledge-intensive) products. This matters. Ricardo Hausmann, a Venezuelan economist at Harvard, has found a close correlation between the diversity and complexity of exports and subsequent economic growth. The problem Latin America faces, says Mr Hausmann, "is the things that could be there and are not". Latin Americans "seldom talk about technology and innovation, so there are no new industries to take over from commodities".

Put another way, Latin America's problem is its failure to join what

economists call “global value chains”—which are in fact mainly regional. Modern industry needs elaborate supply chains with parts coming from several different countries, but they are often neighbouring ones. Some 72% of the “foreign value-added” in exports from European countries is intra-regional, in other words it originates in other European nations; the equivalent for East Asia is 56% and for South America only 30%, according to the World Bank (see chart 2). Only Mexico is plugged in to these value chains, thanks to its economic integration with the United States.

Don’t stick to your knitting

The productivity gap between Latin America and the rest of the world has been widening. According to the Inter-American Development Bank (IDB), Latin America’s total factor productivity (the efficiency with which labour and capital work together) was slightly over half the level in the United States in 2010, compared with almost three-quarters in 1960. Over the same period, East Asia has narrowed the gap from around half to a third.

Why are Latin Americans so relatively unproductive? Take Alejandro Valladares’s business, in a quiet street in Huaycán on the eastern edge of Lima, Peru’s capital. In a large room of bare cinder-block walls on the ground floor of his house, Mr Valladares has a score of knitting machines. He makes around 12,000 pairs of baby socks a month. He sells them locally, but also to Panama. He employs four of his children and two other workers. It makes them a living but not much more. What prevents growth? Chinese competition, says Berta Valladares, one of his daughters. Sales were better 15 years ago, she says. Orders have risen recently, but only because the family has accepted lower margins.

Expanding would require more capital, adds Mr Valladares. He cherishes his British Bentley Komet knitting machines, bought second-hand from factories; but the technology predates the second world war. He has no more space in his house. After falling behind on loan repayments, he sold

his cars and sends goods to market by taxi. He doesn't do business with banks any more. "I want a quiet life," he says. His daughter dreams of studying business or getting a job that would train her in computerised production. But she must combine her work with care for two children.

Latin America has large modern companies, some of which have evolved into successful multinationals. But the typical Latin American business resembles the Valladares workshop, lacking scale, technology and professional management.

There are several reasons why Latin American firms find it hard to be more productive. Andrés Velasco, who was Chile's finance minister, stresses the lack of competition in what, Brazil and Mexico apart, are smallish national markets. Achieving greater scale is vital for raising productivity, and that means going abroad. But despite much talk about integration Latin America is still quite protectionist. Growing beyond the region is hard, given South America's location. As Mr Velasco points out, exporters in Germany or China have 20% of the world economy within fair proximity (less than 3,000km); their Chilean counterparts have no such advantage. So global value chains may be out of reach. "To sell to Asia you have to sell the whole product, not part of it," he says.

Another old explanation for low productivity is that half of Latin Americans work in informal non-registered businesses, which struggle to obtain technology and capital; such firms compete unfairly with legal ones and make their tax burden bigger. Santiago Levy of the IDB believes that some governments have encouraged the informal economy by setting up non-contributory pensions and free health insurance alongside traditional contributory social insurance schemes that tax formal employment.

Informality is in part a consequence of baroque regulation which adds to business costs. Piero Ghezzi, Peru's production minister, laments that one

of the country's few industrial estates, in Tacna on the Chilean border, has no tenants although it offers exemption from corporate income tax; that is because the procedures to set up there are so complicated. He is deploying a small team of "de-bureaucratisers" to try to sweep away regulatory obstacles.

No through road

An even more powerful brake on productivity is the region's lack of roads, ports and so on. While China invests 9% of its GDP in infrastructure and India 6%, Latin America manages just 3%, according to CAF, a development bank. Lack of money is no longer the main problem: countries such as Chile, Colombia and Peru have mobilised private finance for infrastructure. Rather, it is the difficulty of building anything. Take Peru, the fastest-growing of Latin America's bigger economies over the past ten years. Between 2005 and 2013 the government awarded contracts for 62 infrastructure projects worth $15 billion. But only 55% of the money has been spent, says Gonzalo Prialé, a lobbyist.

Drive south from Lima and the motorway stops in the booming, chaotic farming town of Chincha, which can take an hour to traverse. A contract to build a bypass was signed in 2005, but governments have failed to expropriate the necessary land. Then there are the permits required before you start pouring concrete. Environmental impact studies take three years on average, says Mr Prialé. A 1,100km gas pipeline in the south of the country needs 4,102 separate permits. In May Peru's Congress passed a law to speed this process, but its effectiveness remains to be seen.

Shoddy roads and public transport have dire effects in big cities. Latin Americans often face a daily two-hour commute each way in overcrowded buses. Many, like the Valladares family, opt to set up their own, not-very-productive business on their doorstep. Santiago is the only big Latin American capital with a metropolitan transport authority. Lack of urban

planning means that firms often find it hard to get land onto which they can expand.

A third traditional explanation for low productivity is an ill-educated workforce. Latin America has made huge strides in expanding educational coverage. But the quality of teaching in schools is poor: the eight Latin American countries that participated in the PISA international tests of 15-year olds all came in the bottom third of the ranking. Some economists caution that schooling is no panacea; there is little evidence directly linking more education to higher productivity. They point to the danger that sociology graduates will drive taxis—unless governments try to stimulate the demand for, as well as the supply of, better-qualified workers.

Pisco sweet and sour

Battle through Chincha and 100km further on you arrive in Ica. There, in a low building at the entrance to the town, amid vineyards, stands the Centre for Agroindustrial Technological Innovation. Founded by the government in 2000 with Spanish aid and private support, it has helped to raise productivity in Peru's grape, wine and pisco industries. It advises farmers, for a fee, and offers them the services of a small research laboratory and a model distillery.

Since 2000 output of grapes per hectare has more than doubled. Peru is now the third-biggest exporter of table grapes to China; annual production of pisco, a grappa-style brandy, has risen from 1.8m litres to 7.8m, says Pedro Olaechea, a winemaker who chairs the centre's board. Peruvian pisco, an ancient product, is starting to gain a global name. Mr Ghezzi, the production minister, has plans for several more such technology centres, starting with leather goods, forestry and dairy products.

Latin America has traditionally been poor at innovation. Its spending on research and development as a share of GDP is less than half that in

developed countries. Farming is a shining exception. In Brazil, agriculture "is the only sector that has put technology at the heart of its business," says José Roberto Mendonça de Barros, an economist in São Paulo. The latest innovation, pioneered by Enalta, a firm in upstate São Paulo, is called "precision farming" and involves installing sensors in farm machinery to control planting and fertiliser use, boosting productivity. Almost half the farmers in Mato Grosso have adopted the technology, says Mr Mendonça de Barros. He expects agribusiness to grow by 2.5% this year, even as the rest of Brazil's economy contracts.

Extracting more value from natural resources by applying technology is part of Latin America's future. But the region also needs to develop new businesses, in industry and services. The IDB, in an influential report last year, called for "productive development policies", in which governments try to foster such new enterprises.

Heavy-handed industrial policies have often failed in Latin America. Comperj in Itaboraí is just the latest example. The new approach calls for a lighter touch, to provide things—from training in specific skills, to new roads, or grants for innovation—whose absence may deter private investment. For example, Costa Rica's investment agency helped to develop a surgical-devices industry by persuading an American firm to set up a sterilising service. Start-Up Chile offers a grant and visa to would-be tech entrepreneurs from around the world. It has survived, with tweaks, a change of government. The new administration realised it was a global brand; although few foreigners set up lasting businesses in Chile, local participants learned from their risk-taking approach. "We realised it was a very powerful tool to change the culture," says Eduardo Bitrán of Corfo, Chile's economic-development agency.

Over the past 15 years only one Latin American country has become an important node in the world trading system, notes Augusto de la Torre, the

World Bank's chief economist for the region. Mexico has joined global value-chains, diversified its exports and moved into more complex products. And yet Mexico's economic growth (averaging 2.4% a year for 20 years) and productivity have disappointed.

One theory is that Mexico has too many monopolies, especially in services: the reforms undertaken by Enrique Peña Nieto, the president, may remedy that. Others cite a weak legal culture and contract enforcement, and violent crime, as factors that deter investment. The underlying problem is the gulf in productivity between large modern companies, mainly in the north of the country, and small, informal producers and the south.

The same goes for other countries. "The problem of Latin America is that it has not been able to replicate its better-performing regions nationally," says Mr Hausmann. Doing so requires better transport, the upgrading of skills, more competition and the spread of technology.

During the commodity boom, many governments could ignore that challenge. They can't any longer. ■

拉美经济

停滞教训领悟中

高速增长成往事，正是痛思未来时

2006年6月，时任巴西总统的路易斯·伊纳西奥·卢拉·达席尔瓦（Luiz Inácio Lula da Silva）到访伊塔博拉伊（Itaboraí，以下简称“伊市”），那是瓜纳巴拉湾（Guanabara Bay）与沿海山脉之间平原中一个沉寂的农业小城。他宣布在此开启Comperj项目，建造里约热内卢石化综合工业区（Rio de Janeiro petrochemical complex）。这是一个包含两个炼油厂及一组石化厂的工程壮举，当时预测将在这个15万人口的小城创造22万个新职位。伊市盛景在望，跃跃欲试。

今天，那里几乎是一座鬼城。散乱延伸的主街毗邻着一家未开张的购物中心，公寓楼、写字楼三三两两矗立街旁，其中一栋大楼的屋顶建有直升机停机坪。所有这些建筑都在过去几个月里完工，全都涂上了“出售”的标识。Comperj项目的工会代表瓦格纳·萨莱斯（Wagner Sales）说：“许多人押注伊市会成为新的黄金国，但这一切并没发生。”

那么，发生了什么？一些私人企业原本要和巴西国有石油巨头巴西国家石油公司（Petrobras，以下简称“巴石油”）联手投资Comperj项目兴建石化厂，但美国页岩气产量大涨后，这些企业眼见在美国的竞争对手成本大减，临阵退缩了。卢拉和他的继任者迪尔玛·罗塞夫（Dilma Rousseff）让巴石油独自开发深海新油田，还外加其他三个炼油厂，令其不堪重负。腐败丑闻及油价暴跌重创了巴石油，Comperj项目被压缩为只剩一个小型炼油厂，完工日期也被推后至2016年中。

伊市政府的经济发展局局长路易斯·费尔南多·吉马良斯（Luiz Fernando Guimarães）估计目前城中有4000个空置的办公室。两年前该市市长计划把伊市定位为物流中心，大加推广。但该市的王牌优势（地处瓜纳巴拉湾畔新公路与沿海主干高速公路的交汇点附近）却被白白浪费，原因是“该死的迪尔玛女士”（吉马良斯对现任巴西总统的称呼）领导的联邦政府没

有建成接驳到伊市的最后一段道路。

与伊市相似的困境在拉丁美洲比比皆是，尽管不一定如此突出。中国工业化进程推高了矿产、石油及谷物这些大宗商品的价格，造就了拉美地区（更准确地说是出口大宗商品的南美国家）的黄金十年。截至2012年的十年间，该区经济年均增长率达4.1%。社会转型随之而至：6000万人摆脱贫困，中产阶级壮大起来。

如今好景不再。拉美经济发展戛然而止，去年增长率仅为1.3%。据国际货币基金组织估计，今年的数字将低至0.9%，成为持续减速的第五年（见图表1）。不仅这一点令大部分预测者感到惊讶，而且拉美的经济放缓程度比其他任何新兴市场更甚。许多人认为，该区域已经进入了年增长率仅为2%至3%的“新常态”。低增长率将危及到近年社会发展的成果，而脱贫的趋势已经止步不前。

到底出了什么问题？是否拉美荒废了好年景？其经济放缓的直接原因是该地区贸易条件指数（即出口价格与进口价格的比率）的下跌。2003年至2011年间，拉美的大宗商品价格上升了三倍，之后逐渐回落，去年更大幅骤降。自2011年起，区内经济体投资放缓，国际货币基金组织认为这与大宗商品价格密切相关。金融市场也随即做出反应，自2014年中以来，区内主要货币兑美元平均贬值20%，拉美各地股市低迷。美联储政策利率上调在即，将推高借款成本。

扩张结束

过去，如此突然的逆转往往会引起恐慌，导致资本外流。这次，至少有部分不同。宏观经济政策更完善，如推行浮动汇率以及把公共债务维持在较低水平，许多国家因而可以平稳调节。严谨应对的智利、哥伦比亚、秘鲁目前仍保持经济增长，但速度减慢许多。由相对审慎的左翼政府执政的玻利维亚也是如此。作为大宗商品净进口国的墨西哥、中美洲及多米尼加在未来几年将有高于平均水平的表现。

最受打击的是出现不同程度政策失误的那些国家。巴西在一轮财政挥霍导

致通货膨胀后，面临无可避免的调整。该国政府估计今年经济将收缩1.2%，同时失业率正在飙升。阿根廷经济持续陷于停滞，通胀高达两位数。国际货币基金组织表示，委内瑞拉今年面临困局，经济将萎缩7%，通胀则高达95%。自1月以来，其货币兑美元的黑市汇率已下跌一半。

“当日的兴旺虽没有全然浪费，但也未被充分利用。”波哥大安第斯大学（University of the Andes in Bogotá）的吉列尔莫·佩里（Guillermo Perry）及阿莱汉德罗·弗雷罗（Alejandro Forero）在最近一篇论文中总结道。好日子的大部分收益投向了消费狂潮与进口产品。相比之下，亚洲的经济扩张则是以制成品出口、投资及基建开支为动力，未来增长潜力得以提升。

但拉美向来处于低位的投资水平确实提高了。银行及公共财政更为强健，得到更有效的监管，外汇储备水平提高，这一切使得该地区安然度过了2008至2009年的大衰退，只出现了短暂低迷。但政客们被这胜利冲昏了头脑，许多人迟迟不撤回当时实施的财政刺激政策。除智利和秘鲁外，如今区内没有哪国政府可以通过货币或财政政策来减缓衰退。

要重返较快的增长，拉美必须解决长期存在的结构性弱点。简单来说，拉美的出口、储蓄及投资水平太低，经济不够多元化，大多数企业及工人欠缺效率。

更糟糕的是，过去15年来中国及新兴世界全面崛起，加剧了其中的一些问题，世界银行在5月发表的一份报告里这样总结道。报告发现，中国增强了拉美作为大宗商品出口地的地位，同时，拉美制成品出口的相对权重减轻。原因之一是拉美的低储蓄率（不足GDP的20%，相比之下，东南亚的数字为30%），该地区一直依赖吸收外国储蓄，导致其货币在高增长期过度升值，削弱了非大宗商品产业的竞争力。

在上世纪90年代，拉美开始实施出口多元化，销售更多种类的产品。但自2000年起，形势发生了逆转。该地区的出口仅含少量“复杂”（即知识密集型）产品，且所占比例还不断下降。这一点不容轻视。哈佛大学的委内瑞

拉籍经济学家里卡多·豪斯曼（Ricardo Hausmann）已发现，出口产品多样性及复杂程度与随后的经济增长密切相关。他认为，拉美面对的问题“在于本来该有的东西实际没有出现”，拉美人“甚少谈及科技和创新，因而没有新工业能接班大宗商品行业”。

换句话说，拉美的问题是它没能加入经济学家所说的“全球价值链”，而实际上该价值链大体上是地区性的。现代工业需要精密配合的供应链，零件往往来自相邻的多个不同国家。欧洲国家出口产品的“外国附加价值”中约72%来自经济区内部，换言之，这一附加值源自其他欧洲国家。根据世界银行数据（见图表2），东亚的相应数字为56%，而南美仅为30%。只有墨西哥得益于与美国实现经济一体化而接入这些价值链。

> *莫抱残守缺*

拉美与全球其他地区的生产率差距一直在扩大。据泛美开发银行（IDB）的数据，2010年，拉美的全要素生产率（除劳动力及资本之外其他要素的效率）为美国水平的一半略多，上世纪60年代时则为近四分之三。同一时期，东亚已缩小差距，从约为一半减至三分之一。

为什么拉美人相比之下如此低效？以亚历杭德罗·瓦拉达雷斯（Alejandro Valladares）的生意为例。他的厂房建在秘鲁首都利马东郊华坎（Huaycán）一条安静的街道上。在他家一楼那煤渣砖墙未加粉刷的大房间内，瓦拉达雷斯放置了一组针织机。他每月生产约1.2万双婴儿袜，在本地销售，也销往巴拿马。他雇用了自己的四名子女和两名工人。这解决了他们的生计问题，但仅此而已。是什么阻碍了发展？来自中国的竞争，他的女儿伯塔·瓦拉达雷斯（Berta Valladares）说道。她表示，15年前他们的生意比现在好，最近订单有所增加，但只是因为他们以较低的利润率接单。

扩大规模需要更多资本，老瓦拉达雷斯补充道。他很珍惜自己从工厂买来的二手英国Bentley Komet针织机，但那已是二战前的技术了。他家中已经没有更多空间。因急需还款又周转不灵，他卖掉了自己的车，现在用出租车送货到市场。他不再和银行打交道。“我需要平静的生活。”他说。他

女儿的梦想是修读商科或得到训练自己从事电脑化生产的工作机会，但她必须兼顾工作和照顾两名子女。

拉美不乏大型现代化企业，其中已有一些发展为成功的跨国企业。但典型的拉美企业都类似于瓦拉达雷斯的作坊，缺乏规模、技术及专业管理。

拉美企业难以提高生产力有多方面原因。智利财政部长安德烈斯·贝拉斯科（Andrés Velasco）强调，原因在于除巴西和墨西哥外的拉美各国国内市场偏小，缺乏竞争。实现更大规模是提高生产力的关键，这意味着向国外拓展市场。尽管一体化之说已甚嚣尘上，但拉美依然是保护主义相当浓厚的地区。碍于南美的位置，拉美企业要扩展至区域外甚是艰难。贝拉斯科指出，德国或中国出口商面对的全球市场有20%在合理距离内（少于3000公里），但智利的出口商没有这样的优势。因此，对智利而言，全球价值链可能遥不可及。“要销往亚洲，你得销售整个产品，而不只是一部分。”贝拉斯科说道。

对低生产率另一种老调重弹的解释是拉美有一半的人在非正规注册的企业中工作。这些企业要获得技术和资金都成问题，它们与合法企业不公平竞争，加重了合法企业的税务负担。泛美开发银行的圣地亚哥·利维（Santiago Levy）认为，除了对正规就业征税建立传统缴费型社会保险制度外，一些政府还加设非缴费型养老金和免费医疗保险，这鼓励了非正规经济的发展。

庞杂繁冗的监管加重了企业运作成本，也是它们选择非正规经营的原因之一。秘鲁生产部部长皮耶罗·盖齐（Piero Ghezzi）哀叹道，秘鲁与智利接壤的边境塔克纳（Tacna）建有国内为数不多的工业园区之一，尽管国家提供免征企业所得税的优惠，但因为所涉程序太复杂了，目前还是没有公司进驻园区。他正在部署一个“去官僚程序”小组，尽力扫除监管障碍。

此路不通

掣肘生产力的更强大阻力源于区内缺乏道路、港口等设施。拉丁美洲开发银行（CAF）的数据显示，中国把GDP的9%投入于基建，印度是6%，而

拉美仅为3%。缺乏资金已不再是主要的问题：智利、哥伦比亚、秘鲁等国家已动员民间融资投入基建。问题在于，在区内建什么都难。以过去十年拉美较大经济体中增长最快的秘鲁为例，在2005年至2013年间，政府签署了总值150亿美元的62个基建项目合同，但只有55%的资金真正花了出去，说客贡萨洛·普里亚勒（Gonzalo Prialé）说道。

开车从利马南行，到了喧闹杂乱的农业小镇钦查（Chincha），高速公路戛然而止，接着穿越这个小镇可能要花上一个小时。2005年政府曾签下工程合同，在此修建绕道公路，却未能成功征地。然后是开工前必须拿到的各种许可证。环评一般耗时三年完成，普里亚勒说道。在秘鲁南部修建一条长1100公里的输气管需要申请4102个不同的许可证。今年5月，秘鲁国会通过了一项法律加快这一进程，但作用如何仍有待观察。

差劲的道路及公交设施在大城市造成了可怕的后果。拉美人每天上下班往往是搭乘拥挤不堪的公交车，单程就得挤两小时。许多人会像瓦拉达雷斯家族那样，选择在家门口做起不甚高效的自家生意。圣地亚哥是拉美唯一设立了城市交通管理局的大都市。缺乏城市规划意味着企业难以获取扩大经营所需的用地。

低生产率的第三个传统解释是劳动力的受教育程度低下。拉美在扩大教育覆盖面上已取得重大进展。但教学质量不尽人意：国际学生评估项目（PISA）对全球15岁学生的测试结果显示，八个参与测试的拉美国家表现均排名后三分之一。一些经济学家警告称，学校教育并非灵丹妙药，没有充分证据显示教育与生产率直接正向关联。他们指出，除非政府在加大提供高素质劳动力的同时努力刺激相应需求，否则只怕社会学系的毕业生将来要去开出租车。

皮斯科酒，既酸也甜

颠簸通过钦查，再走100公里就是伊卡（Ica）。镇口一片葡萄园中有一座矮楼，坐落其中的是“农工技术创新中心”。该中心由秘鲁政府在西班牙和民间资金的支持下于2000年成立，为提高秘鲁的葡萄、葡萄酒、皮斯科酒的生产效率提供了帮助。中心为农民提供有偿咨询以及一间小型研究实

验室和一座示范酒厂的相应服务。

自2000年以来，这里每公顷土地的葡萄产量翻了一倍多。秘鲁目前是向中国输出鲜食葡萄的第三大出口国，皮斯科酒（一种渣酿白兰地）的年产量已从180万升提高至780万升，该中心的主席佩德罗·奥莱切亚（Pedro Olaechea）说道。他本身是一名酿酒师。秘鲁皮斯科酒这种古老的产品如今逐渐享誉全球。秘鲁生产部部长盖齐已计划加盖多所这样的科技中心，以皮革制品、林木和奶制品打头阵。

拉美历来不善创新，其研发支出占GDP比重不及发达国家的一半，但农业却是一个耀眼的例外。在巴西，农业“是唯一以科技为核心的产业”，圣保罗一位经济学家何塞·罗伯托·门多萨·德巴罗斯（José Roberto Mendonça de Barros）说道。最新一项科技是由圣保罗北部一家公司Enalta开创的“精准农作”（precision farming），涉及在农业机械上安装传感器来控制种植及施肥，从而提高生产率。马托格罗索州（Mato Grosso）近半数的农民已采用这项技术，门多萨·德巴罗斯说。他估计今年农业会实现2.5%的增长，尽管巴西经济的其余部分正在收缩。

应用技术从自然资源中提取更大价值是拉美未来希望的一部分，但该地区还需要在工业及服务业中打造新企业。泛美开发银行去年在一份重要报告中呼吁政府推行“生产力开发政策”，努力培育这样的新企业。

大刀阔斧的产业政策在拉美往往难以奏效。伊市的Comperj项目就是最新的一个例证。新模式需要更轻巧的手法，提供吸引私人投资不可或缺的东西——特定技能训练、新建公路、创新补贴。例如，哥斯达黎加的投资促进机构成功游说一家美国企业到当地设立消毒服务公司，推动了外科手术器械行业的发展。智利政府推出的“创业智利”（Start-up Chile）项目提供资助及签证，吸引全球有志创建科技企业的人才。即使智利政府经历了改选，该项目也得以保留，只是作了些许调整。新政府意识到这是个全球品牌。虽然没多少外国人在智利建立起持久的业务，但本地参与者却从他们的冒险做法中有所领悟。“我们意识到这是个改变文化的强有力工具。”智利经济发展署（Corfo）的爱德华多·比特兰（Eduardo Bitrán）说道。

过去15年，只有一个拉美国家成为世界贸易体系中的重要节点，世界银行拉美区首席经济学家奥古斯托·德拉·托雷（Augusto de la Torre）说道。墨西哥加入了全球价值链，出口实现多样化，产品也更为复杂。然而，墨西哥的经济增长（20年来每年平均2.4%）和生产率均令人失望。

一种理论认为是因为墨西哥有太多垄断经营，尤其是在服务业。墨西哥总统恩里克·培尼亚·涅托（Enrique Peña Nieto）推行的改革或许能弥补这个问题。其他人则指出墨西哥法律氛围及合同执行意识薄弱，加上暴力犯罪问题，都是阻碍投资的因素。而最根本的问题是，主要设在北部的大型现代企业和在南部的小型非正规生产者之间存在着生产率上的巨大鸿沟。

其他国家也是如此。“拉美的问题在于它一直无法把表现较佳的地区经验复制推广到全国范围内。”豪斯曼说。要做到这一点，需要改善交通、提升技能、增加竞争、普及技术。

大宗商品市场兴旺之时，许多政府可以对这些挑战视而不见，如今则再不可如此了。■

The world economy

Stuck in the middle

Emerging markets are being squeezed by America's recovery and China's slowdown

TURMOIL has become a commonplace of financial markets in recent summers. This one is no different. An unexpected devaluation of the yuan this week fuelled fears about the state of China's economy, setting off falls in commodities and emerging-market currencies. Stockmarkets in Europe and America wobbled. Copper hit a six-year low; oil is below $50 a barrel; Malaysia's currency is at its lowest level since the Asian crisis in 1998. Even Canada is flirting with recession.

No single factor can explain everything that is going on. But two countries, and the relationship between them, provide a framework for understanding these gyrations. America is still the world's biggest economy and sets the tone for interest rates and currencies globally. China has been the fastest-growing big economy by a distance. These two behemoths are pulling in different directions. America's recovery is gradually gathering pace, while China's economy is slowing sharply. This divergence is causing trouble, particularly for those emerging markets which have lived the high life on China's investment boom and on a flood of cheap credit from America. And there is worse to come.

Start with America, where GDP has picked up after a wobbly first quarter and all signs point to more solid growth. Employers, excluding farms, added 215,000 people to the payroll in July, a hefty increase in line with the recent monthly trend. The jobless rate is inching down towards 5%.

Healthy growth in the world's largest economy is good news. But it is bringing closer—perhaps as soon as September—the moment when the Federal Reserve raises interest rates for the first time in almost a decade.

That prospect has pushed up the dollar, which has risen by 15% against its trading partners in the past two years. And it has squeezed emerging markets in two ways. First, capital is drawn towards higher-yielding American assets, rather than being invested at home; and, second, corporate borrowers in the developing world face currency risk on the $1.3 trillion of dollar-denominated bonds they have issued since 2010. According to the Bank for International Settlements, the heaviest such borrowers are in China itself, Brazil, Russia, Mexico and South Korea.

As America's economy gathers steam, China's is losing it. Alarming figures published this week showed an 8% fall in Chinese exports in July and a 5.4% drop in factory-gate prices. Output prices have fallen for 41 straight months, a symptom of overcapacity in much of China's heavy industry. Some of the slowdown in China's economy is both inevitable and welcome, reflecting as it does the transition from an investment-led economy to a consumption-centred one. But for many emerging markets it is painful nonetheless.

The impact of China's slowdown is greatest for commodity producers, from Brazil to South Africa. But it is not confined to them. GDP growth in Singapore, a bellwether of the world economy, has slowed to below 2%, the lowest rate for three years. Surveys of purchasing managers suggest factory output is contracting in Taiwan and Korea. Even inflation-prone India, which is far less tied to China than its neighbours are, is feeling the pinch. Its steelmakers moan about a surge of cheap Chinese imports. The relentless downward pressure on factory-gate prices in China forces industry in neighbouring countries to follow suit or lose market share.

The divergence between America and China has also complicated the relationship between them. Until this week, the yuan's loose peg to the dollar meant that it had been aping the greenback's ascent even as its own economy has slowed: China's trade-weighted exchange rate has risen by

more than 10% since the start of 2014. Hence fears that this week's devaluation presages a determined effort to drive down the value of the yuan to benefit Chinese exporters—and squeeze other emerging markets all the more.

Those fears are overblown. The government in Beijing is not about to start a currency war. The initial 2% devaluation of the yuan only undid the previous ten days' worth of appreciation in trade-weighted terms. The changes made by the Chinese central bank to the exchange-rate regime were designed in part to strengthen the role of market forces in determining the value of the yuan. Fear of capital outflows makes policymakers wary of sustained depreciation.

> *A feeling that something ain't right*

Similarly, the Fed's rate-setters will not want to act too abruptly. They care about the strength of the dollar. The yuan's fall this week prompted declines in other Asian currencies against the greenback. Having readied the markets for an increase this year, it may now be hard for the Fed to back away. But the turmoil this week makes it more likely that the rate-setters will move as gently as they can. That is some comfort for emerging markets, but not much. The lodestars of the global economy are moving apart, spelling more trouble ahead. ■

世界经济

进退两难

美国经济复苏，中国经济趋缓，新兴市场腹背受敌

近几年的夏天，金融市场的动荡已变得司空见惯，今年也别无二致。本周人民币意想不到的贬值加剧了人们对中国经济状况的担忧，引发大宗商品下跌、新兴市场货币贬值。欧洲和美国的股市动荡不安；铜价跌至六年来最低；油价低于每桶50美元；马来西亚货币跌至1998年亚洲金融危机以来最低水平。就连加拿大也处于衰退的边缘。

没有哪个单一因素能解释所有这一切，但两个国家以及它们之间的关系为理解这些震荡起伏提供了框架。美国仍然是世界上最大的经济体，为全球利率和货币走向定下基调；中国已经成为增长最快的大型经济体，但距美国仍有差距。这两个庞然大物正朝着不同的方向发力，美国经济复苏的步伐正渐渐加快，而中国的经济正大幅放缓。这一分歧带来了麻烦，尤其是对那些新兴市场而言，它们的好日子依赖于中国的投资热潮，和来自美国大量的低息贷款。然而更糟的还在后面。

先说美国，在经历了第一季度的动荡后，美国的GDP有所回升，种种迹象表明增长更加稳固。不包括农场主在内的雇主们在7月新创了21.5万个工作机会，这一强劲增长符合最近的月度趋势，失业率缓慢下降至5%。

全球最大经济体的健康增长是好消息，但这进一步拉近了美联储近十年来首次加息的时刻，最快可能在9月。这一预期推高了美元，在过去两年美元兑其贸易伙伴货币已经升值了15%。这在两方面挤压了新兴市场：其一，资本被美国的高收益资产所吸引，而不是投资于本国；其二，发展中世界的借债企业面临汇率风险，它们自2010年起已发行了1.3万亿以美元计价的债券。国际清算银行指出，最大的借款人来自中国、巴西、俄罗斯、墨西哥和韩国。

一面是美国经济蓄势待发，一面却是中国经济尽显疲态。本周公布的数据

令人震惊，7月中国出口额下降8%，成品出厂价下跌5.4%。工业品价格已连续41个月下跌，这是中国很多重工业产能过剩的征兆。中国经济在某些方面趋缓不可避免。这也是可喜的，表明经济的确在从以投资为主导向以消费为中心转变。但是对很多新兴市场来说，它们将为此备受煎熬。

受中国经济放缓影响最大的是从巴西到南非的大宗商品生产商，但还不限于它们。在被视为全球经济风向标的新加坡，GDP增速已减缓至2%以下，创三年来最低。对采购经理的调查显示台湾和韩国的工厂产出正在萎缩。就连容易通货膨胀的印度也感受到了切肤之痛，虽然该国比起其邻国来与中国的关联度低得多。印度钢铁制造商对廉价中国钢铁的进口激增叫苦不迭。中国出厂价下跌的无情压力迫使邻国工业界纷纷效仿，否则就会失去市场份额。

中国与美国的差异也让两国间的关系更加复杂。直到本周前，人民币一直大致盯住美元，这意味着之前即便中国经济已放缓，人民币仍跟随美元升值。 自2014年开始，中国的贸易加权汇率已上涨了10%以上。因此对本周人民币贬值的担忧主要是担心这预示着中国决心通过压低人民币价值让中国出口商获益，从而进一步挤压其他新兴市场。

这些担忧夸大其词。中国政府并不打算打一场货币战。变动首日人民币2%的贬值只不过抵消了之前十天贸易加权汇率的升幅。一定程度上，中国央行对汇率制度的改变旨在加强市场力量在决定人民币价值中所起的作用。资本外流的担忧会让政策制定者警惕持续贬值。

> *略感蹊跷*

同样，美联储的利率制定者也不想操之过急，他们关心的是美元的优势。本周人民币贬值引发了亚洲其他货币兑美元的贬值。既然已经令市场为加息做好准备？美联储现在可能很难放弃。但本周的动荡更可能会使得这些利率制定者尽量小心行事。这给了新兴市场一丝安慰，但并不多。全球经济的两大引擎正分道扬镳，未来可能会有更多麻烦。■

Financial markets

The Great Fall of China

Fear about China's economy can be overdone. But investors are right to be nervous

ONCE the soundtrack to a financial meltdown was the yelling of traders on the floor of a financial exchange. Now it is more likely to be the wordless hum of servers in data centres, as algorithms try to match buyers with sellers. But every big sell-off is gripped by the same rampant, visceral fear. The urge to sell overwhelms the advice to stand firm.

Stomachs are churning again after China's stockmarket endured its biggest one-day fall since 2007; even Chinese state media called August 24th "Black Monday". From the rand to the ringgit, emerging-market currencies slumped. Commodity prices fell into territory not seen since 1999. The contagion infected Western markets, too. Germany's DAX index fell to more than 20% below its peak. American stocks whipsawed: General Electric was at one point down by more than 20%.

Rich-world markets have regained some of their poise. But three fears remain: that China's economy is in deep trouble; that emerging markets are vulnerable to a full-blown crisis; and that the long rally in rich-world markets is over. Some aspects of these worries are overplayed and others are misplaced. Even so, this week's panic contains the unnerving message that the malaise in the world economy is real.

> *Scoot first, ask questions later*

China, where share prices continued to plunge, is the source of the contagion. Around $5 trillion has been wiped off global equity markets since the yuan devalued earlier this month. That shift, allied to a string of bad economic numbers and a botched official attempt to halt the slide in Chinese bourses, has fuelled fears that the world's second-largest economy

is heading for a hard landing. Exports have been falling. The stockmarket has lost more than 40% since peaking in June, a bigger drop than the dotcom bust.

Yet the doomsters go too far. The property market is far more important to China's economy than the equity market is. Property fuels up to a quarter of GDP and its value underpins the banking system; in the past few months prices and transactions have both been healthier. China's future lies with its shoppers, not its exporters, and services, incomes and consumption are resilient. If the worst happens, the central bank has plenty of room to loosen policy. After a cut in interest rates this week, the one-year rate still stands at 4.6%. The economy is slowing, but even 5% growth this year, the low end of reasonable estimates, would add more to world output than the 14% expansion China posted in 2007.

China is not in crisis. However, its ability to evolve smoothly from a command to a market economy is in question as never before. China's policymakers used to bask in a reputation for competence that put clay-footed Western bureaucrats to shame. This has suffered in the wake of their botched—and sporadic—efforts to stop shares from sagging. Worse, plans for reform may fall victim to the government's fear of giving markets free rein. The party wants to make state-owned firms more efficient, but not to expose them to the full blast of competition. It would like to give the yuan more freedom, but frets that a weakening currency will spur capital flight. It thinks local governments should be more disciplined but, motivated by the need for growth, funnels credit their way.

Fears over China are feeding the second worry—that emerging markets could be about to suffer a rerun of the Asian financial crisis of 1997-98. Similarities exist: notably an exodus of capital out of emerging markets because of the prospect of tighter monetary policy in America. But the lessons of the Asian crisis were well learned. Many currencies are no longer

tethered but float freely. Most countries in Asia sit on large foreign-exchange reserves and current-account surpluses. Their banking systems rely less on foreign creditors than they did.

If that concern is exaggerated, others are not. A slowing China has dragged down emerging markets, like Brazil, Indonesia and Zambia, that came to depend on shovelling iron ore, coal and copper its way (agricultural exporters are in better shape). From now on, more of the demand that China creates will come from services—and be satisfied at home. The supply glut will weigh on commodity prices for other reasons, too. Oil's descent, for instance, also reflects the extra output of Saudi Arabia and the resilience of American shale producers. Sliding currencies are adding to the burden on emerging-market firms with local-currency revenues and dollar-denominated debt. More fundamentally, emerging-market growth has been slowing since 2010. Countries from Brazil and Russia have squandered the chance to enact productivity-enhancing reforms and are suffering. So has India, which could yet pay a high price.

The rich world has the least to fear from a Chinese slowdown. American exports to China accounted for less than 1% of GDP last year. But it is hardly immune. Germany, the European Union's economic engine, exports more to China than any other member state does. Share prices are vulnerable because the biggest firms are global: of the S&P 500's sales in 2014, 48% were abroad, and the dollar is rising against trading-partner currencies. In addition, the bull market has lasted since 2009 and price-earnings ratios exceed long-run averages. A savage fall in shares would spill into the real economy.

Ageing bull

Were that to happen, this week has underlined how little room Western policymakers have to stimulate their economies. The Federal Reserve would be wrong to raise rates in September, as it has unwisely led markets

to expect. Other central banks have responsibilities, too. Money sloshing out of emerging markets may try to find its way to American consumers, leading to rising household borrowing and dangerous—and familiar—distortions in the economy. So Europe and Japan should loosen further to stimulate demand.

Monetary policy is just the start. The harder task, in the West and beyond, is to raise productivity. Plentiful credit and relentless Chinese expansion kept the world ticking over for years. Now growth depends on governments taking hard decisions on everything from financial reforms to infrastructure spending. That is the harsh lesson from China's panic. ■

金融市场

中国大跌

对中国经济的忧虑可能过度，但投资者确应感到紧张

曾经，金融危机这部大片的配乐是金融交易所大厅里交易员的大喊大叫。如今，因为买卖双方是由算法来匹配，其配乐更可能是数据中心里服务器的嗡嗡作响。但是，每一次大规模抛售都被同样本能、狂乱的恐惧所笼罩。要抛盘的急切压过了坚持下去的忠告。

中国股市经历了自2007年以来单日最大跌幅，人们的胃又免不了一阵翻腾绞痛。甚至连中国的官方媒体也把8月24日称为“黑色星期一”。从南非兰特到马来西亚林吉特，新兴市场货币全线下跌。大宗商品价格跌至1999年以来的最低谷。暴跌还传染至西方市场。德国DAX指数相比高点下跌超过20%。美国股市亦遭受重创：通用电气的股价一度跌幅超过20%。

富裕世界的市场已经部分恢复了镇定。但三大恐慌仍在延续：担心中国经济深陷困境、新兴市场面对全面危机不堪一击、富裕世界市场的长期反弹已告终结。这类担忧的一些方面是杞人忧天，另一些则张冠李戴。但即使如此，本周的恐慌仍透露出令人不安的信息——世界经济的低迷已然成真。

> *先开溜，再追问*

股价不断跳水的中国是此次传染病的源头。自从本月早些时候人民币贬值以来，全球股市已蒸发掉了约5万亿美元。这一转变，加上一连串难看的经济数据，以及政府劳而无功的救市行动，加剧了人们对全球第二大经济体经济硬着陆的担忧。出口一直在下降。股市在6月达最高点后已下跌逾40%，更甚于互联网泡沫破灭时期的跌幅。

但预言灾难的人还是太过极端了。对中国经济而言，楼市远比股市重要。房地产贡献了GDP的四分之一，其价值支撑着银行系统。过去几个月里，房价和成交量都更加健康。中国的未来依赖于它的消费者而非出口商，并

且其服务业、收入和消费韧性十足。即便最坏的情况发生，央行仍有足够的空间放宽政策。本周利率下调后，一年期利率仍保持在4.6%。经济虽然放缓，但即使按最保守的估计，今年只增长5%，中国为世界总产出带来的增长也会比2007年中国公布的14%要多。

中国并没有陷入危机。然而，它从计划经济平稳过渡到市场经济的能力遭到了前所未有的质疑。中国政策制定者的能力曾一直饱受赞誉，也让身藏隐疾的西方官僚羞愧万分。但在他们拙劣且散乱的救市行动之后，其声名大打折扣。更糟糕的是，改革计划可能会沦为政府对市场自由化担忧的受害者。中共想要提升国企的效率，却又不愿意让它们经受全面竞争的洗礼；它想要给人民币多一点自由，又担心人民币疲软会引发资本外逃；它认为应当加强对地方政府的财务约束，但是在增长需求的驱动下，又为其获得信贷大开方便之门。

对中国的担忧也加深了第二层担心，即新兴市场可能会再度上演1997至1998年的亚洲金融危机。的确存在相似性：因为预期美国货币政策将要紧缩，新兴市场的资本明显外流。但是人们对亚洲金融危机的教训已铭记在心。很多货币不再是固定汇率而是自由浮动。大多数亚洲国家坐拥大量外汇储备和经常账户盈余。它们的银行系统也不再像以前那样依赖国外债权人。

如果这种担忧是夸大其词，其他忧虑却不是。中国经济趋缓拖累了如巴西、印度尼西亚和赞比亚等新兴市场，这些国家依赖铁矿石、煤和铜矿的开采（农产品出口国的状况相对较好）。从现在起，中国创造的更多需求将来自服务，而这些需求在国内就可以满足。出于其他原因，过剩的供给还会压低大宗商品的价格，比如，原油价格下跌也反映出沙特阿拉伯的增产以及美国页岩气生产的韧性。不断贬值的货币加重了新兴市场一些企业的负担，它们以本国货币结算收入、以美元结算债务。更加根本的是，新兴市场的增长从2010年起就一直在放缓。从巴西到俄罗斯，各国浪费了启动改革、提高生产率的机会，如今备受煎熬。印度也是如此，并可能将因此付出高昂的代价。

富裕世界是最不担心中国增速放缓的。去年美国对华出口不到GDP的1%。但是它们也并非对此完全免疫。德国是欧盟经济的发动机，它的对华出口比欧盟其他成员国都要多。股价也易受影响，因为最大的公司的业务都已全球化：标准普尔500指数2014年的销售额48%来自国外，而且，相对于其贸易伙伴的货币，美元正在升值。此外，2009年以来的持续牛市造成了高于长期均值的市盈率，股价暴跌会影响到实体经济。

> *牛市转衰*

如果真的发生了上述情况，本周的事件已经证明西方的政策制定者已经没有多少可以刺激经济的政策空间了。美联储9月加息可能是个错误，因为它已经令市场有所预期，这一点并不明智。其他国家的央行也有责任。从新兴市场外逃的资金或许想在美国的消费者那里找到出路，这将导致家庭借贷上升，以及大家都很熟悉的危险的经济扭曲。所以欧洲和日本应当继续采取宽松政策，刺激需求。

货币政策只是个开始，西方乃至全世界面临的更艰巨任务是提升生产率。充足的信贷和中国持续不断的扩张让世界勉强运转了数年，而现在，增长取决于政府在从金融改革到基建开支的各类问题上做出艰难抉择。这是我们从中国的恐慌中学到的惨痛教训。■

Foreign firms in Argentina

Waiting for Cristina to go

Targeted by the president, foreign companies are leaving or scaling back

ARGENTINA has never been a simple place for foreign companies to operate in. Inefficiency and inflation have plagued the country for decades. That crises occur every dozen years is accepted as fate. Recently, however, government hostility has made doing business even harder.

Cristina Fernández de Kirchner, the country's president, has a habit of bashing foreign firms: she has blamed Shell for forcing her to devalue the peso; she has threatened to slap an American printer, RR Donnelley, with terrorism charges; and she has accused American Airlines of being in cahoots with the creditors that led Argentina to default in July. "Vultures with turbines," she called the airline.

Yet it is a series of tax raids that has foreign firms on edge. In late November Argentina's tax agency, AFIP, accused HSBC, a bank, of helping over 4,000 Argentines evade taxes. Earlier that month AFIP announced that it had suspended Procter & Gamble's operations in the country for allegedly overbilling $138m in imported hygienic products to avoid taxes and get dollars out of the country.

P&G since seems to have resumed its business in Argentina. It declined to say whether it had reached a settlement with the AFIP. "Except the agency and the company itself, no one knows what P&G did or didn't do," says Santiago Zebel, who heads the tax-law programme at Torcuato di Tella University. "But we do know that AFIP has dual incentives: like all tax agencies, it aims to collect dues, but it also tries to ensure dollars aren't leaving the country."

Since 2011 companies have been unable to send their profits freely out of the country. Ms Fernández imposed this clamp, along with draconian currency controls, to stem capital flight. She also restricted imports, requiring firms to export goods equivalent in value to anything they imported. To bring in its cars, for instance, BMW has exported rice.

Ms Fernández's plan has failed: currency reserves have plummeted to $29 billion, from $52 billion in 2011. But the measures, along with the price distortions created by having multiple exchange rates and inflation running at 40%, have turned Argentina into one of the world's worst places to operate a company. It ranks 124th in the "business environment" category in the 2014 Global Innovation Index of Cornell University—below countries such as Ukraine and Mali.

In response, some foreign firms have fled the country. According to Desarrollo de Negocios Internacionales, a consultancy, 40 foreign companies have left or frozen their operations since 2011, including Elektra, a Mexican electronics retailer, British Gas and luxury brands such as Calvin Klein and Cartier. Last year Vale, a Brazilian mining giant, pulled out of a $6 billion potash project and has since left the country. In November Carolina Herrera, a clothing brand, announced it would also close its shop due to the difficulty of getting products into the country.

Of the companies that have stuck around, many have scaled back their operations. In last August Farm Frites, the world's second-largest french-fries maker, sold 60% of its Argentine assets. General Motors recently announced it would suspend importing cars into Argentina from Brazil. Foreign direct investment in the first half of this year was minus $55m, compared with $5.9 billion in the same period in 2013.

Some firms have come up with creative ways to cope. American Airlines recently stopped selling tickets in Argentine pesos more than 90 days

ahead of a flight—to limit its exposure to inflation or a potential devaluation. A subsidiary of Ford recently bought an olive-oil factory, ostensibly both to grease its import channels and also limit its stock of Argentine currency.

Asked what his firm was doing with excess pesos, an executive of another foreign car firm just laughed. “You think in this environment we’re making much of a profit?” His strategy is simple: “Make it to next year.” This attitude seems common among the firms that have not already left. In October 2015 Argentines will elect Ms Fernández’s successor. All three of the leading candidates are reputed to be more business-friendly than she has been. But until one of them takes office, foreign businesses in Argentina are in for a rough ride. ■

外资在阿根廷

等待克里斯蒂娜卸任

由于总统的打压，外国公司正在撤离或缩小规模

阿根廷从来不是外国公司能舒服顺当经营的地方。过去的几十年里，效率低下和通货膨胀横行肆虐。每十多年就会有一次危机，人们认为这是天意。然而最近，政府的敌对行为让生意更加难做了。

阿根廷总统克里斯蒂娜•费尔南德斯•德基什内尔（Cristina Fernández de Kirchner）有抨击外国公司的习惯：她谴责壳牌迫使她令比索贬值；威胁要打击美国印刷厂商当纳利集团（RR Donnelley），指控其从事恐怖主义；指控美国航空（American Airlines）和债权人串通，致使阿根廷于2014年7月债务违约。她把美国航空称为“长着涡轮机的秃鹫”。

然而，让外国公司惴惴不安的是一系列税务突击检查。阿税收机构AFIP于去年11月底指控汇丰银行帮助4000多名阿根廷人逃税。11月早些时候，AFIP宣布暂停宝洁在阿业务，原因是该公司涉嫌为避税和向境外转移美元而虚增进口卫生产品价格总计1.38亿美元。

宝洁之后似乎已恢复在阿业务，但拒绝透露是否已与AFIP达成和解。托尔夸托迪特拉大学（Torcuato di Tella University）税法课程主任圣地亚哥•泽贝尔（Santiago Zebel）说：“除了AFIP和宝洁自己，没人知道该公司做了或没做什么。但我们明确知道AFIP有两个动机：它和其他税务机构一样，要收税，但也要限制美元外流。”

从2011年起，公司盈利无法自由汇出。费尔南德斯强制实行这一限制和严苛的外汇管制，目的是阻止资本外逃。为限制进口，她还规定公司必须出口与进口等值的产品。例如，宝马为了在阿销售汽车而出口了大米。

费尔南德斯的计划失败了：外汇储备从2011年的520亿美元跌至290亿美元。但是这些措施，再加上由多个汇率并行和高达40%的通胀所导致的价

格扭曲已让阿根廷变成世界上最难做生意的地方之一。在美国康奈尔大学2014年全球创新指数的“商务环境”一项中，阿根廷名列第124位，排在乌克兰和马里等国之后。

作为回应，一些外国公司已选择逃离该国。据顾问公司“国际业务发展公司”（Desarrollo de Negocios Internacionales）说，2011年以来已有40家外国公司离开或暂停业务，其中包括电子产品零售商墨西哥电气集团（Elektra）、英国天然气公司（British Gas）以及诸如CK（Calvin Klein）和卡地亚（Cartier）等奢侈品牌。由于进口产品太难，服装品牌卡罗琳娜•埃莱拉（Carolina Herrera）去年11月也宣布将关闭其在阿的店铺。

坚持留下的那些公司很多都缩小了业务规模。世界第二大薯条生产商法姆瑞特（Farm Frites）去年8月份出售了60%的在阿资产。通用汽车（General Motors）最近宣布将暂缓从巴西向阿根廷进口汽车。2014年上半年的外商直接投资为负5500万美元，与之相比，2013年同期的数据是59亿美元。

一些公司则想出了富有创意的对策。美国航空最近停止了用阿根廷比索出售90天后的机票，以此限制通胀或潜在贬值的影响。福特的子公司最近收购了一家橄榄油工厂，显然是为了增加出口的选择以扩大进口，同时花掉过多的比索。

另一家外国汽车公司的一位高管在被问到公司怎样处理多余的比索时，只是笑了笑。“这种环境下你还以为我们能赚到钱吗？”他的策略很简单：“熬到明年吧。”这种态度在尚未撤出的公司里似乎很普遍。2015年10月阿根廷即将选出费尔南德斯的继任者。与她相比，三位领先的候选人据说都对商业更为友好。但在其中一位上任之前，在阿的外国公司前路仍然坎坷。

Gender and education

Nature plus nurture

Girls do better than boys in school and university. But both can still improve—sometimes for surprising reasons

STENDHAL once wrote that all geniuses who were born women were lost to the public good. At least in the rich world, that wasteful truth has been triumphantly overcome. More than half of new graduates in the OECD club of mostly rich countries are now female. In several the share is around 60%. Former male redoubts such as medicine and law have increasingly been captured by women. Indeed, elite American colleges are widely suspected of admitting male applicants with lower grades, to even up the numbers. Yet despite this monumental advance, prejudices continue to hamper girls—and boys, too. Happily, neutralising them, at least within schools, should be much easier than reversing centuries of patriarchy.

Educational results still seem to support the old idea that male and female intellectual capabilities differ. An analysis by the OECD of PISA tests for 15-year-olds in 60-odd countries turns up some eerily similar patterns. Girls trounce boys in literacy, but boys do better in mathematics. Boys do less homework and are more likely to fail in all subjects. The courses that both sexes choose at university mirror their earlier strengths at school. Women dominate in education, health, arts and humanities; men lead in computing, engineering and physics.

All this might suggest that intellectual differences are hard-wired, with women abler and more assiduous, but men better at the exact sciences. A closer look at the data reveals a new version of Stendhal's lament: that much ability, both male and female, is wasted because of tenacious stereotypes.

One startling fact uncovered by the OECD number-crunchers is that, when teachers mark a reading test without knowing who took it, the gender gap shrinks by a third. Most of the world's teachers are now women, who find it easier to spot ability when it appears in their own likeness. They give better marks, perhaps unconsciously, to the punctual, orderly and neat: fine qualities that society associates with girls, but which are not the same as reading and understanding a text. Poor grades damage motivation and mean that pupils are put in lower ability groups, so that biased assessments turn into self-fulfilling prophecies. Falling behind in literacy, as boys disproportionately do, is particularly worrying, since reading is needed to learn anything else. The solution is simple: whenever possible, school tests should be made anonymous.

Sometimes it makes sense to go with the grain. Young boys are more likely to read when the topic is zombies or superheroes; older ones prefer newspapers or comic books. So make them all available. More often stereotypes get in the way: if girls believe they cannot do sums and boys think that books are sissy, neither will do as well as they could. Pupils live down to low expectations or pick up subtle cues about gender differences. In maths, for instance, when female teenagers are asked how confident they feel about solving an abstract equation, they rate their chances almost as highly as boys. But when the question involves calculating a car's fuel efficiency, many balk.

> *Easy on the carburettors*

The most encouraging finding is that gender gaps can be narrowed as attainment rises across the board. Even more important than rooting out hidden bias is improving education for all. Boys in countries with the best schools read better than girls elsewhere. In Shanghai hardly any youngsters, of either sex, fail in everything, and girls are almost as good at maths as their male classmates—and far ahead of boys elsewhere. Had

there been a Mrs Stendhal, she would have smiled. ■

性别与教育

先天加培养

在中小学与大学，女生比男生学业更优。但他们都可以更进一步——原因有时出乎意料

司汤达曾写道：“生而为女人的所有天才为公益所湮没。”如今，这一描述人才埋没的真理至少在发达国家已经被成功推翻。在主要由富裕国家组成的经合组织俱乐部中，刚刚走出校园的毕业生超过一半是女性。在某些国家，这一比例达到约60%。以前属于男性的阵地如医学和法学也已逐渐被女性占领。人们甚至普遍怀疑，美国的顶尖大学是否为了平衡性别比例而以更低的分数招收男性申请者。尽管有这些里程碑式的进步，但偏见依然困扰着女生——也同样困扰着男生。值得高兴的是，消除这些偏见，至少在学校范围内，比逆转几个世纪以来的男权制度要容易得多。

学校教育的实际情况似乎一直支持一个传统的观念，即男性和女性在智力能力上有差异。经合组织在60多个国家对15岁学生进行国际学生能力评估计划（PISA）测试，分析结果呈现出某些让人不安的类似规律。女生在读写上远超男生，但男生数学成绩更好。男生作业做得较少，且各门功课不及格的可能性更大。两种性别在大学所选课程反映出他们先前各自在学校的优势。女性主导教育、健康、艺术和人文学科；男性在计算机、工程和物理学中更有优势。

所有这些似乎都表明性别间的智力差异是先天性的：女性更能干、更用功，而男性更擅长精确科学。对数据进一步的研究能让我们对司汤达的哀叹有新的解读：不管男性女性，其很多能力都被顽固的成见摧毁了。

经合组织的数字分析师发现了一个让人惊讶的事实：当老师为阅读试卷打分而不知道应试者是谁时，性别之间的分数差缩减了三分之一。目前世界上大多数老师都是女性，她们更容易发现学生身上与她们类似的能力特点。也许在无意间，她们会给守时、有序和整洁的学生更高的分数。这些都是社会认同的女生优秀品质，但却与阅读和理解一篇文章所需的能力不

同。分数低会摧毁积极性，意味着学生被归入低能力群体，这样一来，偏见性评估变成了自证预言。广泛出现在男生身上的读写能力落后情况尤其让人忧心忡忡，因为读写是学习其他所有事物的基础。解决方案很简单：只要可能，学校测试应当采用匿名制。

有时候，顺其自然不无道理。小男孩喜欢看僵尸和超人题材的书，年纪稍大点的喜欢报纸或者漫画。所以不妨让他们就看这些书。刻板印象常常会坏事：如果女孩子认定她们学不好算术，男孩子认为阅读没有男子气概，他们就无法做好本来可以做好的事情。学生要么因为人们的期望值低而自暴自弃，要么接受了性别差异的各种微妙暗示。比如，当女孩子被问到她们对解出一道方程式有多大信心时，她们认为自己成功的可能性和男孩子是一样的。但是当问题涉及到计算汽车的燃油效率时，她们很多就退缩了。

> *慢慢来*

最鼓舞人心的发现莫过于随着教育水平的全面提高，性别差异可以缩小。比根除潜在的偏见更为重要的是提升教育水平。在一些国家，好学校里的男生阅读水平超过其他地方女生的水平。在上海，不管男孩女孩，几乎没有人所有课程都不及格，女生和男生的数学几乎一样好——远远超过其他地方的男生。如果有一位司汤达夫人，她一定会报之以微笑。■

Free exchange

Costly comparison

Price-comparison websites should help lower prices. But left unchecked, they may raise them

AT FIRST glance, price-comparison websites are an example of capitalism at its best. Savvy consumers can use them to hunt down the best available deal for insurance, electricity or a mortgage. Firms providing such items, terrified of losing customers, feel an obligation to improve their offerings all the time. But recent theory and practice suggest the reality is more complex: comparison sites are simultaneously friends and foes of competition.

In 1971 Peter Diamond, an American economist, showed that even small "search costs", such as the time it takes to walk down the street to see what is on offer at a rival shop, can seriously undermine competition on price. Industries in which it is much harder to compare offerings and switch providers can expect sky-high prices and profits. In the past, this problem was acute in the insurance market. Many consumers, on discovering their insurance was running out, would lazily renew with their existing provider. The hassle of comparing competing offers, and the need to maintain coverage without interruption, hindered competition. That allowed firms to hike prices for existing customers.

Today, things are very different. Comparison sites have made shopping around and switching insurers a matter of just a few minutes' effort. In the British car-insurance industry, about a quarter of all sales, and more than half of new business, flows through them. That has caused fierce competition on price and eviscerated profits. In 2011 Towers Watson, a consultancy, in a note entitled "Why aren't we making money?", said that "unnecessary" price competition following the rise of comparison sites in

Britain had cost insurers £1 billion ($1.5 billion) a year.

Consumers should celebrate that; the firms' losses are their gains. But there is a catch. Comparison sites, whether for insurance or something else, introduce a new layer of costs, including their own splashy advertising campaigns. In theory, competition in the market for comparison sites ought to keep those costs down. But in a recent paper, David Ronayne of Warwick University argues that consumers often lose out from comparison sites. They earn a commission for each shopper who uses them to buy insurance. That referral cost is incorporated into the price the consumer ends up paying. If the increased costs outweigh the saving the comparison enables, consumers end up worse off.

For instance, suppose some consumers are loyal to a single comparison site, and do not use any others to compare prices. The lucky website can crank up its referral fees, safe in the knowledge that insurers must pay up if they want access to its captive market. Those fee hikes are then passed on to consumers in the form of higher premiums. In effect, consumers are taxed for their loyalty—just as they were before comparison sites were invented. Mr Ronayne argues that this problem can only be avoided entirely if consumers go to the trouble of checking every site.

These worries are not just theoretical. In 2014 Britain's competition regulator found that some comparison sites were using their contracts with retailers to ban them from offering cheaper prices elsewhere. That weakened rivals' incentive to cut fees, because prices on their site could not fall (which would help them gain market share). By keeping prices similar, the contracts also reduced the incentive for consumers to search on multiple sites, thus helping sites retain their users.

Weaker incentives to lower commissions means weaker incentives to lower costs, too. That might explain why comparison websites advertise so

heavily, and sometimes offer free gifts to those who use them. In a recent paper, Ben Edelman of Harvard Business School and Julian Wright of the National University of Singapore argue that when a site knows that the prices merchants provide through it will always be the cheapest available, it cranks up investment in attracting customers, safe in the knowledge that the merchants and ultimately consumers will bear the cost.

The anti-competitive contracts are now banned, at least in Britain. But another competition investigation involving price comparison has sprung up. In April the European Commission alleged that Google (whose chairman, Eric Schmidt, is on the board of *The Economist*) had been abusing its dominant position in the market for search by artificially promoting its own comparison site, Google Shopping, in its search results. If most consumers were to rely on Google to compare prices, the search giant would, in theory, be able to attract hefty commissions.

| *Searching for search*

How can you ensure the market for price comparison is competitive? Asking consumers to check multiple websites defeats the point of using them. One solution is to have only one site, but regulate it as a public utility. Alternatively, the government could run the site itself—much as the American government now runs comparison websites for health insurance under Obamacare.

But creating good search and comparison sites is hard, and governments are unlikely to do a good job of it. The Obamacare websites were riddled with problems on launch. Much better to acknowledge that consumers will always have to do some comparison themselves to "keep the system honest", argues Tony Curzon-Price of Britain's Competition and Markets Authority.

Websites that compare the comparison sites can help, although it is easy to

see how they could fall prey to the same problems. Any firm with captive users, be it a comparison site, a search engine, or a social-media platform, can charge a high price for access to the eyes of its customers. For all their innovation, internet middlemen are not unlike supermarkets, which help people select purchases by bringing lots of items to one spot for comparison. Shoppers would never imagine that a single store had the lowest price on all the items they need. They should not believe any website does, either. ■

自由交流

昂贵的比价

比价网站本应促成低价，但若放任自流，或将推高价格

乍看之下，比价网站是资本主义的优势发挥到极致的例子。精明的消费者可以用这些网站找到最划算的保险、电力或按揭产品。供应这些产品的公司惟恐客源流失，时刻感到需要提供更优惠的产品。但最近的理论及实例显示，现实情况更为复杂：比价网站既促进竞争，又限制竞争。

1971年，美国经济学家彼得·戴蒙德（Peter Diamond）指出，即便是很小的“搜索成本”也会严重削弱价格竞争，比如走到街的那一头看看另一家店的价格。而在一些行业，顾客货比三家和更换供应商要比这麻烦得多，其中的企业由此可以开出天价，尽享高额利润。过去，这一问题在保险市场尤为严重。许多消费者在发现保险快到期时都会和原来的保险公司续保。比较各家保险商的产品是件麻烦事，加上顾客希望保障不中断，竞争因而被抑制。这使得保险公司可以对现有顾客加价。

如今情况大为不同了。自从有了比价网站，货比三家之后更换保险公司也就是几分钟的事。英国汽车保险业约四分之一的销售及超过一半的新增业务经由这些比价网站达成。这导致了激烈的价格竞争，使得利润大减。2011年，咨询公司韬睿惠悦（Towers Watson）在题为“我们为何不赚钱”的简报中指出，随着比价网站在英国蔚然成风，“不必要”的价格竞争令保险公司每年损失10亿英镑（15亿美元）。

消费者应该欢呼雀跃，因为企业的损失正是他们的获益。然而这里有一个陷阱，无论是保险还是其他产品的比价网站都引入了新一层的成本，包括这些网站声势浩大的广告活动。理论上，比价网站之间的市场竞争应当可以压低这类成本。但华威大学（Warwick University）的戴维·罗内因（David Ronayne）最近发表的论文认为，消费者往往会因为比价网站而遭受损失。对于每个从这些网站购买保险的顾客，网站都从中赚取佣金。这一转介成本实际上被加到了产品的价格之中，最终还是由消费者买单。

如果这部分增加的成本高于从比价网站获得的优惠，消费者反而将得不偿失。

举例来说，假设部分消费者只忠于某一个比价网站而不用任何其他同类网站来比较价格。这家幸运的网站就可以调高其转介费用，深知保险公司为抢得由其垄断的客户资源，必定愿意支付高价。这部分增加的费用会以更高保费的形式转嫁给消费者。结果，消费者因为忠诚而支付了高价——就和比价网站出现之前的情况一样。罗内因认为，唯有消费者不怕麻烦，愿意到每个比价网站上遍寻一番，才能彻底避免这个问题。

这些担忧不仅仅是理论上的。2014年，英国的竞争监管机构发现，一些比价网站与零售商签订合约，禁止他们在别家网站上提供更低的价格。这就减少了对手网站降低转介费用的动力，因为其网站上的产品价格不能降低（而降价才能帮助其争取市场份额）。这些合约使得不同网站上的价格相近，因而也削弱了消费者浏览多个网站的意愿，从而让比价网站更能够留住现有用户。

下调佣金的意愿减少，则降低成本的动力也减退。这也许能解释为什么比价网站会如此花大钱做广告，有时还向用户赠送礼品。哈佛商学院的本·埃德曼（Ben Edelman）和新加坡国立大学的朱利安·赖特（Julian Wright）最近合撰的一篇论文指出，当一家比价网站知道商家通过它提供的价格永远是最低的，它就会在吸引顾客上加大投入，因为它笃定商家——最终是消费者——会担负起这一成本。

这种反竞争合约如今已被禁止，至少在英国是如此，但又出现了另一桩涉及比价竞争的调查。今年4月，欧盟委员会指控谷歌（其董事长埃里克·施密特为《经济学人》董事会成员）滥用自己在网络搜索市场的支配地位，在搜索结果中人为推广其比价网站“谷歌购物”（Google Shopping）。如果大部分消费者都依赖谷歌来比价，理论上，这一搜索巨头将能赚得巨额佣金。

比了再比

如何确保比价市场的竞争性？如果让消费者查看多家网站，实在有悖使用这些网站设立的初衷。一个解决方法是只要一个比价网站，但把它当作公共机构来监管，或者由政府直接运作，就像奥巴马医改实施后，医疗保险比价网站如今由美国政府运作一样。

但要打造优质的搜索及比价网站实属不易，政府不太可能胜任。奥巴马医改下的比价网站推出后问题层出不穷。英国竞争及市场管理局（Britain's Competition and Markets Authority）的托尼·寇松-普莱斯（Tony Curzon-Price）认为，还不如干脆承认，消费者终须自己作一番比较以"确保系统诚信"。

对比价网站作比较的网站会有帮助，但显而易见，它们也会发生同样的问题。任何拥有死忠用户的公司，无论是比价网站、搜索引擎还是社交媒体平台，都可以向寻求其用户资源的商家开出高价。尽管有所创新，互联网中间商其实和超市并无不同，都是把众多产品放到同一地点让人们比较，帮助他们挑选购物。购物者从不会指望自己要买的所有物品都以最低价出现在同一家店里。同样道理，他们也不该相信在任何比价网站上会有这般好事。■

Free exchange

Hidden in the long tail

Consumers reap the benefits of e-commerce in surprising ways

WHEN commerce began to move online, economists predicted two big benefits for consumers. Prices would become lower and more uniform. And the selection available to consumers would increase.

Identifying those benefits has been challenging. Online prices have proved to be surprisingly diverse. And while the selection of products online is indeed vast, many are niche products such as self-published books for which demand is scant to non-existent. E-commerce is still a net plus. But papers presented at this year's meeting of the American Economic Association demonstrate that its value arises in ways that economists did not foresee, and that are not easily captured by measures such as GDP.

Consider used books. Glenn Ellison and Sara Ellison of the Massachusetts Institute of Technology (MIT) collected prices on 335 titles and found that on average, the typical title sold for $17.80 online, 50% more than in stores. Paying more for an identical product would normally leave you worse off, not better. But in this case, the Ellisons argue the opposite is true: higher prices are a sign that buyers are being better matched to books they want.

For example, only a few bookshops might carry an out-of-print title such as "The Reign of George III, 1760-1815", published in 1960 by Oxford University Press. They may never be visited by the readers most keenly interested in that book, who are scattered around the country (or beyond). By posting its inventory online, all those readers are now added to the potential demand for the store's copy. Higher demand translates into higher prices which clearly makes the bookseller better off. But so is the reader since without the internet he would not have found the book. One of the authors some

years ago bought a 30-year-old academic tome on pharmaceuticals online that the MIT library didn't have. She paid $20 and upon arrival, saw that it had $.75 written in pencil inside the front cover, then erased. It had "evidently been languishing on the shelf of some used book store for years, and not a single customer…was willing to pay even $.75."

These benefits are less likely to hold for easy-to-find, commoditised products; online prices of popular, usually in-print, books were less dispersed and closer to offline prices.

Rare used books are an example of a "long tail": a vast expansion in variety. But since the newly available products are often of niche interest only, the aggregate benefit to consumers is small. For example, since a minority of artists account for the vast majority of music sales, the fact that songs available for digital download tripled between 2000 and 2010 might not be a big deal: most of those new songs may be by marginal artists of no great interest.

Joel Waldfogel of the University of Minnesota believes this understates the internet's contribution. The demand for cultural products is much harder to predict than for conventional products such as shoes or soda. Seasoned publishers have only a vague idea what book, film or song will be a hit. A major record label can sign only a fraction of the artists available, knowing full well it will unwittingly reject a future superstar.

Thanks to cheap digital recording technology, file sharing, YouTube, streaming music and social media, however, barriers to entry have been dismantled. Artists can now record and distribute a song without signing to a major label. Independent labels have proliferated, and they are taking on the artists passed over by major labels. Hit songs are still a lottery, but the public gets three times as many lottery tickets.

This seems at odds with the collapse in recorded music revenue since 2000 which suggests declining, not rising, music industry output. Mr Waldfogel says that is misleading: because of piracy, revenue understates how much music the public has really consumed. He calculates the quality of songs recorded since then has been either stable (based on the number that made it onto critics'"best-of" lists) or significantly improved (based on the pattern of sales and airplay). This is corroborated by the success of indie-affiliated bands such as Arcade Fire and Mumford & Sons. Indie labels' share of the Billboard top 200 selling albums grew from 13% in 2001 to 35% in 2010. Mr Waldfogel and a coauthor reckon that tripling the selection of songs available has produced 15 times as much benefit for consumers than tripling the selection of a more predictable product.

That prices do not properly capture the benefits of online commerce is reinforced by a paper examining the search behaviour of users on eBay. Such people are often assumed to know what they want and ruthlessly pursue the lowest possible price for it. But a paper by Tom Blake of eBay, Chris Nosko of the University of Chicago and Steve Tadelis of the University of California at Berkeley, paints a more nuanced picture. They followed 500,000 eBay users chosen randomly on one particular day, and found just 16% of their searches resulted in a purchase. Users seemed to find browsing almost costless, since they were willing to conduct an additional search to achieve an average saving of just 25 cents. Moreover, many searchers were not trying to get a better price for one product but to explore different products. A user who typed in "opera DVDs" examined offers of Puccini, Verdi, Wagner and Bizet before returning and purchasing the Puccini.

This, the authors reckon, suggests price savings are but a small part of the value users derive from search; some of the value comes from what they learn while searching. Mr Tadelis speculates many users actually enjoy online searching, much as many people enjoy window-shopping at bricks-and-mortar outlets. This is clearly a problem for mainstream economics,

which generally assumes search costs make people worse off, not better. It also underlines how far away measures like GDP are from capturing the benefits of the internet.

* Studies cited in this paper can be found at www.economist.com/ecommerce15 ■

自由交流

藏在长尾里

消费者从电子商务中获益的方式出人意料

当商务开始移到网上，经济学家预测消费者将获得两大好处：价格会变得更低更统一；消费者的选择会增加。

这些好处难以确认。事实证明网上价格千差万别。而尽管网上确实有广阔的产品选择，其中许多是小众产品，比如自助出版的图书，人们对这些书的需求很少，甚至没有。电子商务仍只是个附加物。不过，在今年的美国经济学会会议上发布的论文显示，其价值发生在经济学家未能预见之处，也不易被GDP这类衡量数字捕捉。

以二手书为例。麻省理工学院的格兰·埃里森（Glenn Ellison）和萨拉·埃里森（Sara Ellison）收集了335本书的售价，发现一本典型的书在网上的平均售价为17.8美元，比在书店的售价高50%。就一模一样的商品支付更多钱，这通常会让人们的生活水平变糟而不是变好。但在这一案例中，研究者认为情况恰恰相反：更高的价格显示购书者更可能找到自己想要的书。

比如，可能只有零星几家书店还出售牛津大学出版社1960年版的《乔治三世的统治，1760-1815》（The Reign of George III, 1760-1815）这样的绝版书。对这本书最有兴趣的人散布在全美各地（或更广），他们可能永远不会在书店里找到它。如果书店把它的库存书目放到网上，这些感兴趣的读者都可能成为这本书的潜在买家。更大的需求转化为更高的价格，这显然让书店的日子更好过了。但读者也一样，因为如果没有互联网，他就不会发现这本书。论文作者之一多年前在网上买了一本30年前出版的医药学巨著，麻省理工的图书馆里都没有这本书。她花了20美元。书送达时，她看到封面内页依稀可见曾用铅笔写过0.75美元，后来被擦掉了。这本书“显然在某家二手书店的书架上积了多年的灰，而没有一个顾客愿意花仅仅0.75美元买下它”。

这些好处不大适用于那些容易找到、大宗商品化了的产品。畅销纸质书在网上的售价差别不那么大，更接近线下价格。

稀有二手书是“长尾”的一例。“长尾”意指品种的巨大扩张。但因为那些最新出现的产品通常只拥有小众市场，它们给消费者带来的总体益处小。举例而言，由于少数艺术家贡献了音乐销售的绝大部分，尽管可供数字下载的歌曲数量在2000年到2010年间增加了两倍，这可能并没什么大不了：那些新歌可能大多来自影响力不大的边缘艺术家。

明尼苏达大学的乔尔·瓦尔德福格尔（Joel Waldfogel）认为这低估了互联网的贡献。相比鞋子或汽水这类常规产品，文化产品的需求更难预测。哪些书、电影或歌曲会大卖，即使老练的出版商也拿不准。一家大唱片公司只能签下极少数歌手，虽然他们非常明白这么做无意间就会把一个未来的超级巨星拒之门外。

而得益于低廉的数字录音技术、文件分享、YouTube、在线音乐和社交媒体，进入的门槛已经被拆除。艺术家们如今无需签约大公司就能录制和发行歌曲。独立唱片公司激增，接纳了被大唱片公司错失的艺术家。畅销金曲的诞生仍如同博彩，但现在民众手里有了三倍数量的彩票。

这似乎与唱片销售自2000年来暴跌的实情相悖。这个数字显示音乐工业的产出是下降而非上升了。瓦尔德福格尔说这是误导：因为盗版，这一收入数字没有真实反映公众实际听了多少音乐。据他统计，自那时以来录制的歌曲质量稳定（根据那些进入乐评人“最佳”榜单的歌曲来看）或显著改善（根据销售和播放的模式来看）。隶属独立唱片公司的乐队如拱廊之火（Arcade Fire）和蒙福之子（Mumford & Sons）的成功提供了佐证。独立唱片公司在“Billboard 200大专辑榜”上的占比从2001年的13%增至2010年的35%。瓦尔德福格尔和一名联合作者估计，相比把更可预测产品的选择增加两倍，把歌曲数量增加两倍对消费者产生的益处达15倍之多。

价格不能恰当体现网络商务的好处。这在一篇观察eBay用户搜索习惯的研究论文中再度得到印证。人们通常假设这些人知道自己想买什么然后毫不

留情地寻求最低价格。但eBay的汤姆·布莱克（Tom Blake）、芝加哥大学的克里斯·诺斯科（Chris Nosko）以及加州大学伯克利分校的史蒂夫·泰德利斯（Steve Tadelis）在论文中描绘出更细微的图景。他们跟踪了某天在eBay上随机选择的50万用户，发现其搜索中只有16%最后下了单。用户似乎认为浏览是零成本的，因为他们愿意为平均只节省25美分而多搜一次。此外，许多搜索者并不是在为某件产品查找更便宜的价格，而是在查看不同的产品。一个用户在搜索框中键入“歌剧DVD”，他查看了普契尼、威尔第、瓦格纳和比才，最后回过头来购买了普契尼。

作者们认为，这显示用户们从搜索中获得的价值中，省钱只是一小部分；有些价值来自他们在搜索过程中了解到的信息。泰德利斯猜测很多用户实际上喜欢网上搜索，就像许多人喜欢在实体批发店里只看不买一样。这显然给主流经济学找了麻烦，因为主流经济学基本假设搜索成本让人们的境况变糟而不是变好。这也表明像GDP这样的测量数字远远无法反映互联网的益处。

* 此论文引用的研究可参见 www.economist.com/ecommerce15 ■

E-commerce in South-East Asia

Home-field advantage

The global online-shopping giants may not find it easy to conquer the region

TROPICAL rain pounds on the roof of a cavernous warehouse near Jakarta, Indonesia's capital. Inside, youngsters in orange T-shirts haul around clothes, luggage and electrical goods for Lazada, an e-commerce firm, which has just moved in. The 12,000 square metre space is three times the size of the depot it has vacated, but it already looks full. Three years ago Lazada's entire stock filled a storeroom the size of a studio flat, recalls Magnus Ekbom, its twenty-something boss in Indonesia.

Internet shopping accounts for less than 1% of all purchases in South-East Asia—a region twice as populous as America, where the proportion is nearly 10%. But surging smartphone use and a broadening middle class mean the market is set to multiply; perhaps fivefold by 2018, reckons Frost & Sullivan, a consulting firm. Since it launched in 2012 Lazada has laid claim to six South-East Asian countries, largely unchallenged by e-commerce giants such as Amazon of the United States, Alibaba of China and Rakuten of Japan. It may soon have to fight them for its territory.

Lazada was created by Rocket Internet, a Berlin-based investor and incubator that cranks out startups designed to dominate emerging markets. Rocket still holds a 24% stake, though Lazada has now raised more than $600m from investors including Tesco, a British grocer, and Temasek, a Singaporean sovereign-wealth fund. These deals appear to value it at about $1.3 billion, which could well make it South-East Asia's dearest technology firm.

Like other Rocket companies, Lazada is run by a gaggle of young European expatriates, plucked from finance and consulting. It seems ready to

stomach years of losses. In the first half of 2014—the only recent period for which results are available—it lost $50m before interest, tax, depreciation and amortisation, on revenues of $60m.

Again like other Rocket companies, its critics say it is just a copycat, in this case a mere clone of Amazon. Lazada's bosses say such charges underestimate the sophistication and gumption required to succeed in places such as Thailand, Indonesia, the Philippines and Vietnam. Online marketing is trickier there than in America or Europe, because locals use a much wider variety of search and social-media sites. The region's diversity means constant tweaking of online portals to suit local languages and cultures. It also means battling a hotch-potch of customs rules.

By far the biggest challenges are payment and delivery. Fewer than one in ten South-East Asians has a credit card, and those that do have them tend not to use them online, for fear of fraud. So a big chunk of Lazada's customers prefer to pay in cash when their goods arrive, which requires more sophistication from delivery partners. Postal services are often sluggish and unreliable—especially in the vast archipelagos of Indonesia and the Philippines—and local logistics firms are still unused to handling high volumes of small packages. About a third of Lazada's orders are delivered by its own fleet of vans and motorbikes, which now serve more than 80 South-East Asian cities.

Lazada's rapid growth has started to rouse competitors, including the big conglomerates whose shopping centres dominate the region's retail markets. On February 25th Lippo Group launched MatahariMall, a new e-commerce venture, in partnership with the Matahari chain of department stores, in which Lippo owns a stake and which are anchor tenants of some of Lippo's shopping centres.

Messaging services and web portals are turning to e-commerce to boost

their profits. In February, Line, a popular messaging app owned by Naver of South Korea, started selling groceries in Thailand. Last October Softbank, a Japanese internet and telecoms conglomerate, and Sequoia Capital, an American investor, put $100m into Tokopedia, a sort of Indonesian eBay.

But the most serious threat to Lazada comes from the overseas e-commerce giants. After Lazada was set up, Indonesia passed a law banning further foreign investment in e-commerce firms which hold their own inventory (Tokopedia does not)—but politicians have recently talked of repealing it. Amazon has begun offering free delivery to big-spending South-East Asian shoppers who don't mind waiting for wares shipped from America. In February Alibaba opened an Indonesian outpost of Aliexpress, which helps shoppers import goods from Chinese manufacturers. In May it took a 10% stake in Singpost, Singapore's state postal service—perhaps in preparation for a more vigorous assault.

Max Bittner, Lazada's overall boss, thinks it would take time for these firms to replicate his firm's local knowledge and delivery networks. One of his priorities is to expand relationships with suppliers and manufacturers in China, the better to compete with the bottomless catalogue of cheap products which Alibaba, in particular, could bring to the region. South-East Asia may still prove big and diverse enough for several large e-retailers to co-exist—but investors will spill a lot of red ink finding out, thinks Paul Srivorakul of aCommerce, which processes online orders for consumer brands and retailers. "It could be a bloodbath," he says. ■

东南亚的电子商务

主场优势

全球网购巨头可能会发现要征服这一地区并不容易

热带暴雨敲打在雅加达附近一个像洞穴一般的仓库的屋顶。里面，穿着橙色T恤的年轻人在为刚进驻的电子商务公司Lazada搬运衣服、箱包和电器产品。这里占地12,000平方米，是这家公司刚搬离的仓库的三倍大，但看起来已经装得满满当当了。Lazada在印尼的老板、二十来岁的马格纳斯·埃克波姆（Magnus Ekbom）回忆说，三年前自己全部的库存所需的库房仅有一套一居室公寓房大小。

在东南亚，网上购物的比例不到所有消费的1%。该地区的人口是美国的两倍，而在美国这一比例接近10%。不过这里智能手机使用的激增以及逐渐成长的中产阶级意味着这一市场将成倍增长。据弗若斯特沙利文（Frost & Sullivan）咨询公司估算，到2018年可能增至五倍。自2012年创立以来，Lazada已进入六个东南亚国家，基本上尚未受到网购巨头的挑战，包括美国的亚马逊、中国的阿里巴巴和日本的乐天（Rakuten）等。很快它可能就将不得不为捍卫领地而跟这些巨头开战。

Lazada由Rocket Internet创立，后者是一家总部位于柏林的投资公司和孵化器，打造有志于主导新兴市场的创业公司。尽管Lazada现在已募资六亿多美元，投资者包括英国杂货商特易购（Tesco）和新加坡主权财富基金淡马锡（Temasek），但Rocket仍持有24%的股权。在这一系列交易后，公司估值看起来已达到约13亿美元，很可能是东南亚最贵的科技公司。

像Rocket打造的其他公司一样，Lazada由一群年轻的欧洲人运营，他们来自金融和咨询行业。它似乎准备好忍受几年的亏损。2014年上半年也是最近唯一有业绩可公布的时期，未计利息、税费、折旧及摊销，公司亏损五千万美元，而收入为六千万美元。

和获得Rocket支持的其他公司一样，Lazada也被批是山寨版。批评者说它

完全克隆亚马逊。Lazada的老板们说这些指责低估了在泰国、印尼、菲律宾和越南这样的地方获得成功的复杂度和所需的进取心。在那里，网上营销比在美国或欧洲更加棘手，因为当地人使用的搜索和社交网站更加多元。东南亚的多样化意味着门户网站要不断调整以适应当地的语言和文化，也意味着要与大杂烩般的海关规定奋战。

目前为止最大的挑战是付款和配送。持有信用卡的东南亚人不到十分之一，就算有信用卡的人也不太用它来网购，因为害怕欺诈。所以Lazada的客户中有很大一部分更愿意到付现金，这对配送合作伙伴的要求就很高。邮政服务通常缓慢又不可靠，在印尼和菲律宾的众多岛屿上尤其如此，当地的物流公司尚没有能力处理大批量的小包裹。Lazada的订单有三分之一由公司自己的货车队和摩托车队配送，目前可送达80多个东南亚城市。

Lazada的迅速发展已经开始让竞争对手觉醒，包括拥有支配东南亚零售市场的购物中心的大型企业集团。2月25日力宝集团（Lippo Group）与太阳（Matahari）百货连锁合作创立的全新电子商务公司太阳商城（MatahariMall）开业 。太阳百货连锁中有力宝的股份，且是力宝旗下一些购物中心的主要租户。

信息服务和门户网站正在转向电子商务以提升利润。2月，韩国Naver旗下一款颇受欢迎的简讯应用Line开始在泰国出售食品杂货。去年10月，日本互联网和电信企业集团软银和美国投资公司红杉资本对Tokopedia投资一亿美元。Tokopedia可以说是印尼的eBay。

但是Lazada面临的最严重威胁来自海外的电子商务巨头。Lazada创立之后，印尼通过了一项法律，禁止外资进一步投资自身拥有库存的电子商务公司（Tokopedia没有），但是政治家们最近已在谈论废除这一规定。亚马逊已经开始向高消费的东南亚购物者提供免费配送，这些人不介意等待货物从美国运来。2月阿里巴巴开辟了全球速卖通的印尼前哨，帮助顾客从中国制造商那里进口货物。2014年5月，阿里巴巴购入新加坡国有邮政服务商新加坡邮政10%的股权，或许正在准备一场更猛烈的进袭。

Lazada的大老板马科斯·比特纳（Max Bittner）认为这些公司需要一段时间才能复制他的公司所拥有的本地知识和配送网络。他的工作重点之一是扩展与中国的供应商和生产厂家之间的关系，以便更好地与无穷无尽的廉价商品竞争——阿里巴巴尤其能将这样的商品带到这一区域。东南亚可能仍然足够大和多样化，几大电子零售商能够共存，但是为消费者品牌和零售商处理网上订单的公司aCommerce的保罗·斯里佛拉库（Paul Srivorakul）认为，投资者要洒下血本才能找到答案。他认为：“这会是一场血战。”■

Schumpeter

Valley of the dudes

Tech firms can banish sexism without sacrificing the culture that made them successful

ON MARCH 27th the California Superior Court gave Ellen Pao a chance to test one of Silicon Valley's most cherished pieces of wisdom—that failure is a wonderful pedagogic opportunity. Ms Pao lost her case for sexual discrimination against her former employer, Kleiner Perkins Caufield & Byers, a venture-capital firm. But she succeeded in turning a spotlight on sexism in tech: the Valley has talked about little else since her trial began, and two other discrimination cases, against Facebook and Twitter, were launched while it was under way.

Silicon Valley likes to think of itself as the very embodiment of meritocracy. Its heroes are brainy entrepreneurs such as Peter Thiel and Mark Zuckerberg, who transform IQ points into dollars. More than half of its firms are founded by immigrants. However, the spirit of meritocracy fades when it comes to the female sex (as it also does in respect of some racial minorities). Silicon Valley has its share of high-profile women, such as Yahoo's Marissa Mayer, Facebook's Sheryl Sandberg and Hewlett-Packard's Meg Whitman. Yet about half of America's publicly traded technology companies, including Twitter, have all-male boards. Women's share of jobs in software and computing fell from 34% in 1990 to 27% in 2011. An analysis by the Kauffman foundation, which studies entrepreneurship, found that of high-technology firms created in 2004, only 1% were founded by women.

The venture-capital business, where Ms Pao tried to make her career, is the Valley's most macho corner. A study by Babson College showed that the proportion of female partners in American venture capital-firms declined

from 10% in 1999 to 6% in 2014. A survey by *Fortune* magazine found that only 4.2% of the partners of the 92 most successful firms are female.

The dearth of female tech leadership is partly a question of supply. In 1985 American universities awarded 37% of their undergraduate degrees in computer and information sciences to women; by 2010 it had fallen to just 18%. Yet in most other areas of higher education, women have made strong gains. There are now 140 women graduating from university for every 100 men. The number of women taking MBAs has increased fivefold since the 1970s. And in American schools, girls have reached rough parity with boys in physics, mathematics and biology.

This suggests another explanation for the shortage of talent: culture. Critics of Silicon Valley argue that it is a boys' club—not only dominated by men but shaped by male-bonding rituals. It may be truer to say that it is two boys' clubs rolled into one—the frat-boy club of moneymen and the geek club of computer programmers. The jury in Ms Pao's case were apparently not moved by her testimony that, among other "small indignities", women were excluded from a dinner with Al Gore on the excuse that they "kill the buzz". But it produced a slogan that high-tech women can rally behind. The Valley is in danger of being caught in a self-reinforcing cycle: a study by Paul Gompers of Harvard Business School shows that female venture capitalists underperform their male colleagues by about 15% when there are only a few of them, but that the difference disappears when their numbers increase and they receive formal mentoring.

Some in the Valley had begun to make efforts to solve its sexism problem even before Ms Pao filed her suit. Microsoft's Satya Nadella, Facebook's Mark Zuckerberg and Intel's Brian Krzanich had all made public commitments to diversity and appointed executives charged with improving it at their firms. Maxine Williams, Facebook's head of global diversity, is reforming its recruitment systems in a drive to eliminate bias.

Mr Krzanich has pledged that his company will be "fully representative of the diversity of the country's available talent" by 2020. Ms Sandberg has led a campaign to encourage women to "lean in" at work—that is, not to be shrinking violets.

However, Ms Pao's case has added urgency to the problem. Silicon Valley companies are busy recruiting human-resources advisers to make sure that they are not caught out in future legal cases. (For its part Kleiner Perkins acknowledged on hearing the verdict that, "There is no question that gender diversity in the workplace is an important issue.") The question is not whether the Valley will take on the problem in the coming years but how well it does so.

Box-ticking is not enough

The biggest risk is that the Valley's leading figures simply outsource the problem to a bunch of "diversity consultants". However brilliant such folk are at identifying unconscious biases and concocting quota schemes, they may have little grasp of the virtues that turned the Valley, for all its faults, into the world's greatest centre of wealth creation. The danger is that if the job is left entirely to such outsiders, they will come up with a bureaucratic, box-ticking exercise that stifles the Valley's creativity; or a public-relations makeover that does little to advance women's chances.

Boardrooms in many other industries have realised the strong business argument, as well as moral case, for giving women equal opportunities. What makes this a genuinely knotty problem in the Valley—one that needs the full attention of the tech industry's leaders—is that venture-capital partnerships, like the tech startups they back, often work best when they are run by a tight-knit group of partners. At the moment, most such circles are all-male, and as Ms Pao appears to have found, notwithstanding the verdict in her case, it is difficult for females to break into them. It is a lot harder to recruit the first woman to such a group than the second, third or

fourth. The Valley's testosterone-infused culture needs to change so as to address this, without losing the *esprit de corps* that seems essential to success. That cannot be beyond the Valley's massive brains. As this column noted recently, there is a war for talent among tech firms; neglecting half of the potential talent base is foolish. ■

熊彼特

男人谷

挥别性别歧视，无碍成功文化，科技公司有两全之法

失败乃美妙的学习契机——这是硅谷最受珍视的智慧之一。3月27日，美国加州高级法院让鲍康如（Ellen Pao）得到了验证这一说法的机会。鲍康如控告前雇主风投公司凯鹏华盈（Kleiner Perkins Caufield & Byers）性别歧视，以败诉告终。但她成功地令科技公司的性别歧视问题受到关注：自其案件开审以来，硅谷对此热议不断，别无他谈，期间又出现两宗分别指控Facebook和Twitter歧视的案件。

硅谷自视是奉行精英选拔机制的典范。其英雄人物是彼得·泰尔（Peter Thiel）和马克·扎克伯格（Mark Zuckerberg）这些能将智商转化为美元的聪明企业家。硅谷过半的公司由移民创立。但是，一说到女性（或某些少数族裔），精英选拔的精神便黯然失色。硅谷不乏备受瞩目的女性人物，比如雅虎的玛丽莎·梅耶尔（Marissa Mayer）、Facebook的雪莉·桑德伯格（Sheryl Sandberg）及惠普的梅格·惠特曼（Meg Whitman）。但美国约半数上市科技公司的董事会成员全部为男性，Twitter也在其中。女性在软件及计算机行业所占的职位份额从1990年的34%下降至2011年的27%。研究企业家文化的考夫曼基金会（Kauffman foundation）的一项分析发现，2004年成立的高科技公司中只有1%由女性创建。

鲍康如想要一展拳脚的风投行业是硅谷里最大男子主义的领域。巴布森学院（Babson College）的研究显示，美国风投公司女性合伙人的比例从1999年的10%下降至2014年的6%。《财富》杂志的一项调查则发现，92家最成功公司的合伙人里，仅有4.2%为女性。

科技公司领导层缺乏女性的踪影，一部分原因是供应不足。1985年美国高校获计算机及信息科学本科学位的毕业生中，女性占37%；到2010年该数字下降为18%。但在高等教育的其他大多数领域中，女性所占比例大幅增加。如今，大学毕业生的男女比例为100：140。自上世纪70年代，女性就

读MBA课程的人数增加了五倍。美国的学校里，女生在物理、数学和生物课程上的表现基本与男生不相伯仲。

这表明人才短缺有另一原因：文化氛围。硅谷的批评人士认为这是个男子俱乐部——不但由男性主导，而且处处是称兄道弟的男人帮文化。可能更准确地说，硅谷是两个男子俱乐部合二为一的产物——投资家兄弟会与程序员极客俱乐部。鲍康如在案件中作证时表示，别的“小侮辱”不说，公司高管与阿尔·戈尔（Al Gore，前美国副总统）共进晚宴时，女性完全被排除在外，借口是她们“扫兴”。但陪审团明显不为所动。然而，此案为高科技行业的女性从业人员提供了一面团结呐喊的旗帜。硅谷有可能陷入一种自我强化的怪圈：哈佛商学院的保罗·冈珀斯（Paul Gompers）所做的一项研究显示，女性风投家在女同事不多的情况下会比男同事的绩效低15%，而当女员工增加并得到正式指导时，此前的男女绩效差异会消失。

在鲍康如发起诉讼前，硅谷一些人士已着手解决性别歧视的问题。微软的萨帝亚·纳德拉（Satya Nadella）、Facebook的马克·扎克伯格（Mark Zuckerberg）和英特尔的布莱恩·科再奇（Brian Krzanich）均已公开承诺用人多元化，并任命高管负责在公司内对此做出改善。Facebook的全球多元化总监玛克辛·威廉姆斯（Maxine Williams）正在改革其招聘体系以消除歧视偏见。科再奇则承诺公司将在2020年前“完全体现国内可用人才的多元性”。桑德伯格发起过运动，鼓励女性在职场“挺身向前”，不再羞怯畏缩。

然而，鲍康如的案件令问题更显紧迫。硅谷各家公司正忙着聘请人力资源顾问审视问题，确保日后不会卷入法律纠纷。（凯鹏华盈在听取判决后也承认“职场上性别多元化无疑是个重要问题”。）疑问不在于硅谷未来是否会采取行动解决问题，而在于会做得多好。

只画诺不够

最大的风险是，硅谷的领军人物只是把问题外包给一群“多元化事务顾问”。无论这些顾问在辨别无意识歧视和炮制人才配额计划上多么精明能干，但对于是什么因素推动硅谷成为世界最大的财富创造中心（尽管它有

各种缺陷），他们可能知之甚少。若完全交予外人处理，最怕他们会弄出一套逐项打勾画诺的官僚做法，扼杀硅谷的创意生机；又或者只加以公关包装，对提升女性职场机会少有助益。

许多其他行业的董事会都意识到了给予女性平等机会所具有的商业利益及道德价值。这一问题之所以在硅谷成为棘手难题（需要高科技行业领袖充分重视），是因为风投合伙人公司正如他们投资的科技创业公司一样，需要由关系紧密的一群合伙人运营才有最佳表现。而目前，这样的小圈子大多全由男性构成。尽管鲍康如败诉，但正如她所发现的那样，女性难以打入这些圈子。首个女性突围而入是最难的，后面的人要进入就相对容易了。硅谷的雄性文化必须做出改变以应对这一问题，但又不能失去要取得成功必不可少的“团体精神”。这应该不会难倒硅谷的众多天才。正如本专栏最近指出的，高科技公司正在爆发人才争夺战，忽视掉潜力人才中的“半边天”实属不智。■

Inside Silicon Valley

Empire of the geeks

Silicon Valley should be celebrated. But its insularity risks a backlash

THE English have Silicon Fen and Silicon Roundabout, the Scots have Silicon Glen. Berlin boasts Silicon Allee, New York Silicon Alley. But the brain of the tech world is the ecosystem in and around San Francisco. Silicon Valley's entrepreneurs and innovators, technologists and moneymen are busy revolutionising nearly every aspect of the global economy.

A place named for its skill in making silicon-packed semiconductors is transforming how firms make decisions, people make friends and protesters make a fuss. Startups touch more people, more quickly than ever before. Airbnb, a seven-year-old firm that helps people turn their homes into hotels, operates in 34,000 towns and cities around the world. "On-demand" firms like Uber are changing what it means to be an employee. Just as the big platforms like Google, Facebook and Apple benefit from "network effects", because each new user makes the service more valuable for all the others, so the Valley's success as a venue to launch, fund, staff and sell a technology firm is feeding on itself.

As a result, American capitalism has a new hub in the west. Wall Street used to be the place to seek fortunes and make deals; now it is increasingly the Valley. The area's tech companies are worth over $3 trillion. Last year one in five American business-school graduates piled into tech. Jamie Dimon, the boss of JPMorgan Chase, has warned of mounting competition for Wall Street. Goldman Sachs recently held its annual shareholder meeting in San Francisco.

The enormous, disruptive creativity of Silicon Valley is unlike anything

since the genius of the great 19th-century inventors. Its triumph is to be celebrated. But the accumulation of so much wealth so fast comes with risks. The 1990s saw a financial bubble that ended in a spectacular bust. This time the danger is insularity. The geeks live in a bubble that seals off their empire from the world they are doing so much to change.

Silicon lining

The American economy would be hit hard by a repeat of the financial shock that followed the dotcom crash in 2000. With the NASDAQ index near its record high, this is a common fear. Fortunately, although money and talent are pouring into the Valley, there is not yet much danger of a disastrous bust. That is because tech companies today not only have more robust business models than their dotcom predecessors did (ie, many actually make money), but they also rely on a smaller group of financial backers.

Today's firms are staying private for longer. Tech firms that went public in 2014 were on average 11 years old; back in 1999 they waited only four years before listing their shares. Tapping wealthy investors means risk is borne by people who can afford to take losses. It is easy to lament the decline of the publicly listed company (though even when founders do list they keep a tight rein), but if tech firms fall short of their promises, ordinary investors are less likely to see their wealth destroyed.

Staying private allows entrepreneurs to avoid the headaches that come from being quoted: the nuisance of activist investors, the drudgery of compliance, the vision-crushing ritual of quarterly reporting. In theory, a coterie of investors is better than an anonymous multitude of shareholders at making sure managers act in the interests of all a firm's owners.

But staying private has risks, too. One is that firms under no obligation to make public a full set of audited accounts will remain veiled from the scrutiny of analysts and short-sellers and so act irresponsibly. America's

tech "unicorns"—firms that have reached a valuation of more than $1 billion—are worth around $300 billion between them. The danger that some of this capital is being misallocated is high.

The other risk is that a charmed circle with great wealth becomes cut off from everyone else. For a group rewriting the rules for industry after industry, that is a special danger.

The empire of the geeks draws its strength from a culture of techno-evangelism that enables entrepreneurs to rethink old systems and embrace new ones. Many denizens of the Valley believe that tech is the solution to all ills and that government is just an annoyance that still lacks an algorithm. So far the public's relationship with the tech titans has been mostly harmonious. Consumers enjoy their taxi-hailing apps, music streaming and voice-recognition software.

Yet cracking open established industries inevitably results in conflict. Uber is the firm most embroiled in controversy, whether facing licensed taxi-drivers on the streets or demands from its own drivers in the courts. European regulators are also scrutinising firms like Facebook and Google for everything from antitrust concerns to data protection. And American regulators are reportedly looking at whether Apple has abused its clout in the music business.

Critics are often from industries wanting to protect their privileges; the geeks' aggressive behaviour is sometimes part of the creative destruction that leads to progress. But that is not the only source of anger. Silicon Valley also dominates markets, sucks out the value contained in personal data, and erects business models that make money partly by avoiding taxes. There is a risk that global consumers will feel exploited and that the effects of a shrinking tax base will infuriate voters. If the perception takes root that enormous profits from exploiting data and avoiding taxes are crystallised

in the fortunes of a few people living on a patch of ground near San Francisco, then there will be a backlash.

> *Mind the techlash*

The Valley's firms are hardly the only ones to push against taxes and regulation. They are free to operate as they like within the law. But they risk becoming targets because they are so global. They should remember that the law can change. If they want a seat at the table when it does, they need to be part of the markets they sell into, not isolated from them. Even private firms run by geniuses need a licence from society to operate.

At its best Silicon Valley is an expression of iconoclastic freedom and creativity. It would be a terrible shame if it became an unpopular and remote manifestation of elitism. ■

硅谷之内

极客帝国

硅谷值得称道，但偏狭之心或招致抗议

英格兰有硅地（Silicon Fen）和硅盘（Silicon Roundabout），苏格兰有硅峡（Silicon Glen），柏林有硅街（Silicon Allee），纽约有硅巷（Silicon Alley）。但科技世界的大脑在旧金山，由城内及周边的产业生态系统构成。硅谷的企业家、创新者、技术专才及金融家正忙于革新全球经济的几乎每个方面。

这个以制造硅基半导体产品而得名的地方正在改变公司制定决策、人们结交朋友，以及示威抗议的方式。相比以往任何时候，创业公司如今能更快地接触到更广泛的人群。创建仅七年的Airbnb帮助人们把私宅变为酒店来对外出租，运作覆盖全球3.4万个城镇。像优步这样的“按需服务”公司正在改变“雇员”的含义。谷歌、Facebook和苹果这类大型平台从“网络效应”中得益，因为每加入一个新用户都可令其他用户享受到更高价值的服务。同样，硅谷汇聚众多科技公司，它们在这里启动、融资、揽才、被收购，优势循环周而复始。

结果，美国资本主义在西部有了一个新中心。华尔街曾经是寻觅财富、达成交易的焦点所在，如今硅谷日益有后来居上之势。该地区的高科技公司市值合计超过三万亿美元。去年，美国的商学院毕业生有五分之一投身科技行业。摩根大通的老板杰米·戴蒙（Jamie Dimon）已提醒华尔街当心竞争升级。高盛最近将其年度股东大会移至旧金山举行。

硅谷巨大的颠覆性创造力有别于19世纪伟大发明家的任何天才创想。其胜利值得欢呼，但巨额财富积累如此之快，其中也有风险。上世纪90年代，一场金融泡沫以砰然破裂告终。这一次的危险源自一种偏狭的状态。硅谷极客们生活在自己那科技帝国的大气泡中，与他们极力改变的大众世界相隔绝。

硅谷防护层

2000年互联网泡沫爆破后的金融震荡如果再度来袭，美国经济将深受打击。随着纳斯达克指数接近历史高位，市场普遍有此担忧。幸好，虽然资金和人才持续涌入硅谷，但灾难性崩盘的危险并不大。因为如今的科技公司相比其前辈，不但商业模式更稳健（许多公司确实能赚到钱），融资来源范围也更小。

现在，公司保持私有的时间更长。2014年上市的科技公司平均已成立11年；而1999年时，科技公司成立仅四年便已上市。向富裕投资者融资意味着风险会落在有能力承受损失的人身上。人们易生感叹，觉得现在上市的科技公司越来越少（即便上市，创始人仍紧握控制权），但这种情况下，如果科技公司的表现有负承诺，普通投资者不大会眼睁睁看着财富毁于一旦。

保持私有可让企业家避开上市带来的头痛问题：维权投资者的滋扰、合规经营的繁文缛节、破坏长远规划的例行季度报告。理论上，相比一大群无名股东，一小批投资者更能确保公司经营符合所有者的利益。

但保持私有也有风险。其一，公司若无义务公开经审计的全盘账目，也就躲开了分析师及卖空者的审视，因而行事不负责任。估值超过10亿美元的公司被称为“独角兽”，而美国此类高科技公司的市值合计约达3000亿美元，其中部分资金被滥用的风险很高。

另一风险是拥有巨大财富的小圈子会变得偏狭离群。对改写了一个又一个行业规则的硅谷极客而言，这一危险尤其之大。

极客帝国以科技福音文化为力量源泉，令企业家们反思旧系统，接受新体制。很多硅谷客相信，科技是一切弊病的解药，政府只是一道烦心的难题，有待算法解构。迄今，大众与科技巨头的关系大致融洽。打车应用、音乐流媒体及语音识别软件深受消费者喜爱。

然而，对旧有行业的冲击无可避免地会导致冲突。优步是最受争议的一家公司，既面对持牌出租车司机的抗议，又有旗下司机将公司告上法庭。欧

洲监管机构也在审查Facebook和谷歌这类公司从反垄断到数据保护等方方面面的问题。据称美国监管机构正在检视苹果公司是否在音乐行业滥用其影响力。

批评的声音往往来自那些急于保护自己特权的产业。极客们的激进之举有时正是引领进步的创造性颠覆的一部分，但这并非触动怒火的唯一源头。硅谷也在垄断市场，榨取个人数据中的价值，建立以逃税赚取部分利润的商业模式。这样一来，全球消费者可能会感觉被剥削利用，而税基收窄也可能激怒选民。通过利用数据及避税赚取巨额利润，财富却仅为生活在旧金山附近谷地的小部分人所有，如果这样的观点扎根在大众心中，必然会激起强烈的反弹。

> *小心科技反弹*

硅谷的公司绝非唯一挑战税务制度和监管法规的企业。它们在合法范围内可以随意运作，但因为它们极具全球性，所以容易成为目标。它们应该记住，法律可能改变，如果想要在法律改变后仍有一席之地，就必须成为目标市场中的一份子，而非孤立其外。即便是由天才打理的私企也需要社会的认同才能运作经营。

全盛之时，硅谷象征着打破常规的自由和创意。如果它沦为不受欢迎而又超然于世的精英主义的代表，那将极为可惜。■

Tyremaking

Apollo's mission

An efficiency-obsessed Indian company takes on the world

PERHAPS there is a little-known rule of thumb in manufacturing that the quieter the plant, the bigger the profits. Take Apollo Tyres' factory in Limda, in the Indian state of Gujarat. The busiest of its three production halls noisily cranks out 18,000 car tyres a day. By contrast, the one where it makes smaller quantities of giant "off the road" tyres for mining and construction vehicles is like a library. The varying demands of coal pits, bauxite mines and limestone quarries require tyres that are custom-built, which means fat margins.

Buyers of such tyres are willing to pay a premium for products whose reliability saves them money in the longer run. Even a tiny deviation from the customer's specifications can lead to costly wear and tear. Precision also helps to keep Apollo's raw-materials bill slim. A 1% reduction in scrap on its biggest tyre, which is a whopping 3.5 metres tall, saves 35kg of expensive rubber.

Apollo began without great fanfare in 1972, but it is now a big noise in the global tyre industry. It has an annual turnover of $2.2 billion from seven factories in three continents. Like other emerging-market companies, Apollo has bought businesses in rich countries to dilute its dependence on its home market and to bolster its brands and technology. The proposed takeover of Pirelli, an Italian tyremaker, by ChemChina is the latest example of this wider trend. In many such cases the developing-country buyer has much to learn from, but little to teach, the business it has bought. But Apollo claims it has given as well as taken. Its operations are efficient by world standards, and after it bought Vredestein Banden, a Dutch tyremaker, in 2009, it widened profit margins at its factory.

This success in Europe came after Apollo had made a false start in its globalisation. In 2006 it bought the southern African business of Dunlop, a tyremaker with British origins. For a while this seemed a shrewd buy. Then South Africa's economy was hit hard by financial crises in the rich world. Power cuts and strike-prone car unions have made it harder for car-component makers there to compete with a wave of cheap Chinese imports. And the deal offered only a limited gateway to new markets, because Apollo's use of the Dunlop brand was restricted to Africa. So in 2013 Apollo sold its rights to the brand to Sumitomo Rubber of Japan (which owns rights to it in some other places). It kept two former Dunlop plants in Zimbabwe, but has since closed one in South Africa.

Vredestein looks a better fit. The deal gave the firm a recognised name in Europe and meant it could match more efficiently the portfolio of brands offered by global tyre giants, such as Michelin and Firestone. It broadened Apollo's product range to include high-performance car tyres. And by bringing Apollo closer to drivers in car-mad places such as Germany, it has helped to sharpen the firm's research and development, says Apollo's boss, Neeraj Kanwar. The company now sells 1m Indian-made tyres a year in Europe.

In contrast, the purchase in 2008 of Jaguar Land Rover (JLR) by Tata Motors, another Indian firm, has resulted in few spillovers for the parent's operations. JLR is run at arm's length and is highly profitable. But whereas Vredestein has been a bridgehead for Apollo's products in Europe, Tata's cars have made few inroads there.

Nor did JLR seem to need any advice from Tata on how to run its plants in Britain. But Apollo had much to teach Vredestein about efficiency. At the Limda plant there is a visible zeal for Japanese-style *kaizen*, continuous small improvements that add up to significant gains. Apollo runs contests to spur its workers to come up with cost-saving ideas; trophies for the best

ones are on display. Such enthusiasm may have infected Vredestein, a century-old firm that had perhaps lost vigour. “Suddenly you’re part of a pool of seven other units,” says Mr Kanwar. Only then do flaws became apparent. For instance, materials wastage at the Dutch plant was more than 4% of inputs, compared with an industry norm of less than 1%.

In conquering Europe, Apollo has not neglected India. In the same year it bought Vredestein it invested $500m at its Chennai plant to meet growing demand from Indian lorry-makers. Ford’s new factory in the Gujarati city of Sanand is the latest of several new Indian car plants that will bolster demand for Apollo’s products. But these days sales in India provide just 55% of Apollo’s profits. Its ambitions are global, as demonstrated by Mr Kanwar’s decision to move his office to London in 2013. The company will open a €475m ($510m) factory in Hungary in 2017, to serve European carmakers. After that, he says, there may be a plant in Thailand, to cater to the promising South-East Asian market. Before long, Apollo will be circling the planet. ■

轮胎制造

“阿波罗”任务

一家热衷于效率的印度公司承载着世界

或许人们并不知道制造业有一个经验总结：厂房越安静，利润越高。以印度古吉拉特邦（Gujarat）里姆达镇（Limda）的阿波罗轮胎有限公司（Apollo Tyres）为例，它最为繁忙的三个生产车间噪音最大，每天产出18000条汽车轮胎。形成鲜明对比的是，生产采矿和建筑工程车辆所用的大型“非道路”轮胎的车间每天产量较少，安静得像图书馆。煤矿、矾土矿和石灰岩矿场的不同需求意味着它们需要的轮胎必须定制。这能带来丰厚的利润。

这类轮胎的买家愿意花大价钱换取安全可靠的产品，这样从长远看更为经济。轮胎偏离用户要求的规格哪怕只有一点点，都会导致代价高昂的磨损。精确的制造同样也能帮助阿波罗在原材料上控制成本。其生产的最大轮胎高达3.5米，制造过程中1%废品的减省，就能节约35公斤高价的橡胶。

阿波罗公司1972年起步时并未大肆宣传，但如今已是国际轮胎业的重要力量。公司位于三大洲的七家工厂每年营业额达到22亿美元。和其他新兴市场的企业一样，阿波罗公司通过收购富裕国家的业务减少对国内市场的依赖，增强自身品牌和技术。中国化工集团公司即将完成对意大利轮胎生产商倍耐力（Pirelli）的收购，是这一广泛趋势的最新例证。在很多类似的案例中，发展中国家的收购者要从收购对象那里学习的东西很多，可传授的东西很少。但阿波罗公司称自己既吸收，又给予。按照国际标准，阿波罗的运营非常高效，2009年收购荷兰轮胎制造商弗雷德（Vredestein Banden）之后，阿波罗提升了所收购工厂的利润率。

刚踏上全球化之路时，阿波罗也曾犯过错误，之后才有了在欧洲的成功。2006年它买下创立于英国的轮胎厂商邓禄普（Dunlop）在非洲南部的业务。一时间看起来是桩划算的买卖，但之后南非经济遭受了富裕世界金融

危机的重创。断电加上倾向经常罢工的汽车工会，使得当地的汽车配件生产商很难与从中国涌来的便宜进口货竞争。而且这一交易提供的通往新市场的途径也很有限，因为阿波罗仅限在非洲使用邓禄普品牌。于是2013年阿波罗将品牌使用权卖给日本住友橡胶工业株式会社（该会社还拥有此品牌在其他一些地方的使用权）。它在津巴布韦保留了两家原属邓禄普的工厂，但之后关闭了南非的一家。

弗雷德看起来是更合适的收购对象。这桩交易让阿波罗在欧洲有了一个广为人知的名字，意味着它能够更有效地与米其林、风驰通（Firestone）等全球轮胎巨头的品牌组合竞争，并将阿波罗的产品范围扩展到高性能汽车轮胎。阿波罗的老板尼拉杰·卡瓦（Neeraj Kanwar）说，通过将阿波罗引入像德国这样汽车发烧友云集的地方，有助于提升公司的研发。该公司目前在欧洲一年卖出一百万条印度产轮胎。

相比之下，2008年另一家印度公司塔塔汽车（Tata Motors）对捷豹路虎的收购为母公司运作带来的溢出效应很小。捷豹路虎的运营相对独立，且利润颇高。但是弗雷德已成为阿波罗产品在欧洲的桥头堡，而塔塔的汽车在当地影响甚微。

至于如何在英国运营工厂，捷豹路虎似乎也不需要塔塔的任何建议。但阿波罗可以教给弗雷德许多如何提升效率的经验。在里姆达工厂里明显可见对日本式“改善”（kaizen）的热忱，即持续不断的小改进累积成显著的收益。阿波罗开展竞赛，激励员工想出节约成本的好点子；奖给金点子的奖杯被公开展示。这样的热情可能感染了弗雷德这家或许已失去活力的百年老店。“突然间你就成了与七家工厂联合经营的一部分。”卡瓦说道。直到这时缺陷才凸显出来，例如荷兰工厂的材料浪费超过投料的4%，而业内标准低于1%。

征战欧洲的同时，阿波罗没有忽视印度。收购弗雷德的同年，它在清奈（Chennai）工厂投资5亿美元，以满足印度卡车制造商不断增长的需求。福特设在古吉拉特邦萨纳恩德市（Sanand）的新厂是印度最近几家新建车厂之一，将提振对阿波罗产品的需求。但目前印度市场的销售仅贡献了阿

波罗利润的55%。该公司的雄心是全球的，恰如卡瓦2013年决意将办公室搬到伦敦所展现出来的。为服务欧洲的汽车制造商，该公司2017年将投资4.75亿欧元（5.1亿美元）在匈牙利建厂。他还表示，之后可能会在泰国设厂，以迎合前景广阔的东南亚市场。不久的将来，阿波罗将环绕全球。

Oil in Latin America

The good oil boys club

Latin America's oil firms need more foreign capital, but a historic auction in Mexico shows that investors can be hard to attract

IT SHOULD have been a day of high excitement. A public auction on July 15th marked the end of a 77-year monopoly on oil exploration and production by Pemex, Mexico's state-owned oil company, and ushered in a new era of foreign investment in Mexican oil that until a few years ago was considered unimaginable.

The Mexican government had hoped that its first-ever auction of shallow-water exploration blocks in the Gulf of Mexico would successfully launch the modernisation of its energy industry. In the run-up to the bidding, Mexico had sought to be as accommodating as its historic dislike for foreign oil companies allowed it to be. Juan Carlos Zepeda, head of the National Hydrocarbons Commission, the regulator, had put a premium on transparency, saying there was "zero room" for favouritism.

When prices of Mexican crude were above $100 a barrel last year (now they are around $50), the government had spoken optimistically of a bonanza. It had predicted that four to six blocks would be sold, based on international norms.

It did not turn out that way. The results fell well short of the government's hopes and underscore how residual resource nationalism continues to plague the Latin American oil industry. Only two of 14 exploration blocks were awarded, both going to the same Mexican-led trio of energy firms. Officials blamed the disappointing outcome on the sagging international oil market, but their own insecurity about appearing to sell the country's oil too cheap may also have been to blame, according to industry experts. On

the day of the auction, the finance ministry set minimum-bid requirements that some considered onerously high; bids for four blocks were disqualified because they failed to reach the official floor.

The private sector often has a better understanding of subsea prospects than the public sector, but Mexico's wariness about fully ceding control may have prevented the government from understanding the true value of the blocks. "They are still having trouble letting go of the old mindset of full control, rather than letting the market decide," says one industry executive. One of the two blocks awarded to the winning consortium (comprising Mexico Sierra Oil and Gas, Dallas-based Talos Energy and London-based Premier Oil) was more hotly contested than the government expected; four groups offered well above the government-mandated minimum.

Because of historical sensitivities, Mexico awarded rare profit-sharing contracts between the state and private firms, rather than fully confer ownership of oil reserves to the private sector. It also required a level of corporate guarantee to cover spillages that went beyond international norms. Its potential ability to rescind contracts has alarmed some oil companies, too, lest their wells be expropriated without compensation in the future.

Mexico's auction comes at a time when other Latin American countries—even socialist Venezuela—are rethinking their gut hostility to foreign oil firms, though still hesitantly. Falling prices have played havoc with regional investment plans, and have made the benefits of embracing a dose of private-sector efficiency look more attractive. With capital scarce, the competition for foreign investment has increased.

Pemex has cut its capital expenditure by $4 billion, or around 12%, this year, to $23.5 billion; figures for the next four years are, ominously, "under revision". Mexico desperately needs to plug that shortfall to sustain oil

production. Petrobras, Brazil's state-owned giant, said last month it would slash its capital expenditure by more than a third over the next five years, to $130 billion. Investment this year in Colombia, once a darling of the mid-cap oil industry, will be half last year's level, says Ivan Cima of Wood Mackenzie, an energy advisory firm.

Cutbacks will only exacerbate the region's stagnation in oil output. Mr Cima says Colombia will fail to pump 1m barrels per day (b/d) this year. Continuing a decade-long losing streak, Mexico's production, which was recently hit by two rig fires, has fallen to 2.27m b/d this year, well below government projections at the start of the year (see chart).

The biggest shock came in late June when Petrobras, plagued by a corruption scandal and huge debts, cut a whopping 1.4m b/d off its forecast for 2020. Venezuela, the largest producer and only OPEC member in the group, is also pumping substantially less than it had originally forecast. Pedro Joaquín Coldwell, Mexico's energy minister, wryly notes that in the 1990s, OPEC and non-OPEC countries such as Venezuela and Mexico hammered out sensitive agreements to push up prices by curbing output. Now the cuts are coming all by themselves.

This dismal collective performance is a blot on Latin America's credibility. The rot started in Venezuela in the early years of this century when Hugo Chávez, its late leader, turned PDVSA, a world-class state oil company, into a piggy bank for his free-spending populism, and then scared off foreign investors. After he took power, oil production fell by about a third, although for many years the effect was disguised by high prices. Now its energy officials are travelling cap-in-hand to places like Russia, China and India to beg for investment.

Brazil has also morphed from a potential energy superpower into a virtual pariah. When Petrobras discovered massive oil reserves in subsalt layers of

rock deep beneath the Atlantic Ocean in 2007, Brazil's government hoped the country would become one of the world's top five oil producers. But efforts to sustain Petrobras's home-team advantage, such as requiring it to hold a minimum 30% stake and serve as the lead operator on subsalt discoveries, have scared off many foreign partners.

In an effort to woo them back, boost oil production and increase royalties, Brazil's Senate is analysing a draft bill to loosen these obligations on Petrobras. But Dilma Rousseff, the president, and members of her party remain opposed on patriotic grounds. She could veto it even if it does pass Congress.

Mexico's first auction experience suggests that half-hearted liberalisation is not good enough to attract scarce capital. In coming weeks, Mexico will launch the bidding processes for deepwater fields that will be of most interest to the oil majors and for "farm-outs" in which Pemex will set up joint ventures with private firms. It will need to apply lessons from its first flop to attract more interest. Its challenge is to show that it is playing by the rules of a modern, open oil market, rather than a prickly Latin American one. If it is the former, the days of falling production should be numbered, and the region's oil industry will have a better model to follow. ■

拉美的石油

好油兄弟帮

拉美油企需要更多外国资本，但墨西哥的一次历史性拍卖显示投资难求

这本该是激昂振奋的一天。7月15日，一场公开拍卖会标志着墨西哥国有的国家石油公司（Pemex）垄断该国石油勘探及生产77年的历史宣告终结，外资进入墨西哥石油业的新时代到来。仅仅几年前，这还被认为是天方夜谭。

墨西哥政府曾希望，这次破天荒拍卖墨西哥湾浅水勘探区块能够成功开启其能源产业的现代化进程。墨西哥素来反感外资油企，但在投标准备期内也尽可能对它们友好包容。墨西哥监管机构国家油气委员会（National Hydrocarbons Commission）的负责人胡安·卡洛斯·塞佩达（Juan Carlos Zepeda）强调透明度，声称偏袒徇私的“空间为零”。

去年，当墨西哥原油价格超过每桶100美元（如今约为每桶50美元）之时，政府俨然富矿在握，言谈乐观。参照国际惯例，政府预测可售出四至六个勘探区块。

事实却不然。结果远不如政府所愿，凸显了资源民族主义的残余影响力仍然困扰着拉美的石油产业。14个勘探区块中只售出了两个，且均为同一财团所得，由墨西哥牵头的三国能源企业组成。拍卖结果令人失望，政府官员将其归咎于国际石油市场疲软。但业内专家表示，官员担心因以过低价格出售国家石油资源而担责，可能也是问题所在。拍卖当天，财政部定下最低投标要求，有些人认为要求过高过繁；四个区块的竞标申请因为没有达到官方设定的最低限价而被取消资格。

私营部门往往比国营部门更了解海底石油勘探的前景，但墨西哥不愿完全让出控制权，这份戒心也许妨碍了政府认清这些区块的真正价值。一位业内高管说：“他们仍然难以摆脱想要全权控制的旧思维，而不是让市场来决定。”拍出的两个区块中，有一个的竞争比政府预期的激烈，四家竞标

财团开出的条件远高于政府的最低要求。中标财团由墨西哥塞拉石油与天然气公司（Mexico Sierra Oil and Gas）、美国达拉斯的塔洛斯能源（Talos Energy）和英国伦敦的石油公司Premier Oil组成。

由于历史敏感性，墨西哥并没把石油储藏的所有权完全授予私企，政府只是与私企签订少见的利润分成合约。企业还被要求保证承担溢油风险，担责程度超过国际惯例。此外，政府有权撤销合同，这也吓退了一些油企，他们担心将来自己的油井会被政府无偿征用。

墨西哥拍卖油田之时，其他拉美国家正在反思它们对外资油企本能的敌视情绪，甚至连推行社会主义政策的委内瑞拉也是如此，尽管仍带着些迟疑不定。油价下跌已经严重破坏了区域内的投资计划，也使得引入一些私企高效运作的利好之处变得更有吸引力。资本稀缺的情况加剧了对外国投资的争夺。

墨西哥国家石油公司今年的资本支出削减了40亿，至235亿美元，减幅约为12%；未来四年的数字“正被修订”，这是一个不好的征兆。墨西哥亟需堵住缺口，维持石油产量。巴西的国有巨头巴西国家石油公司（Petrobras）6月表示将在未来五年大幅削减资本开支至1300亿美元，减幅超过三分之一。能源咨询公司伍德麦肯兹（Wood Mackenzie）的伊万·西玛（Ivan Cima）预测，曾被中型石油企业视为宠儿的哥伦比亚，今年吸引到的投资将只有去年的一半。

投资缩减只会加剧该地区石油产出停滞不前的状况。西玛表示，今年哥伦比亚的石油日产量将低于100万桶。墨西哥产量连续十年下滑，最近更因两个钻井发生大火而遭重创，今年石油日产量已下降至227万桶，远低于政府在年初的预测（见图表）。

最令人意外的是，备受贪腐丑闻及巨额债务困扰的巴西石油公司在6月底宣布将2020年的日产量预测调低140万桶，数量惊人。区内最大的产油国及唯一的欧佩克成员国委内瑞拉的产量也比原先预测的大为减少。墨西哥能源部长佩德罗·霍阿金·科德威尔（Pedro Joaquín Coldwell）语带讽刺

地指出，上世纪90年代，委内瑞拉和墨西哥这些欧佩克和非欧佩克国家敲定了一系列敏感协议，通过限产来推高油价。现在不用限制就自己主动减产了。

如此惨淡的整体表现是拉美公信力的一个污点。腐败始于委内瑞拉，其已故领导人查韦斯在本世纪初将世界级国有油企委内瑞拉国家石油公司（PDVSA）变为自己的储蓄罐，用以挥霍金钱大搞民粹主义，吓走了外国投资者。他上台后，该国石油产量下跌了约三分之一，只是多年来高企的油价掩盖了这一影响。如今，委内瑞拉的能源部官员要奔赴俄罗斯、中国、印度等地毕恭毕敬地乞求投资。

巴西原本有望成为能源超级强国，如今则基本沦为贱民。2007年，巴西石油公司发现大西洋海底深处的盐下层石油储量巨大，巴西政府藉此希望该国能跻身全球五大产油国之列。但是，它为了保住巴西石油公司的主场优势而制定的要求吓跑了不少外国合作伙伴，比如必须由巴西石油公司主导勘探盐下层的运作并至少持有30%的股份。

为劝回这些投资者、增加石油产量、提高开采权收入，巴西参议院正在讨论一项法案草案，考虑放松有关巴西石油公司的这些要求。但巴西总统罗塞夫与其政党成员出于爱国的立场反对这一法案。即便国会通过法案，她也可能否决。

墨西哥的首轮拍卖经验显示，半心半意的自由化不足以吸引稀缺资本。未来几周，墨西哥将对石油巨头们最感兴趣的一系列深海油田启动招标流程，并推出“勘探权转让”项目，让私营公司竞标与墨西哥国家石油公司建立合资企业。要吸引更多关注，墨西哥必须从第一轮拍卖的失败中汲取教训。其挑战是要显示自己遵循的是现代开放石油市场的规则，而非拉美那套棘手的规矩。若为前者，产量下跌的日子将屈指可数，区内石油业将有更佳的模式可循。■

Brazilian construction firms

Knock 'em down, build 'em up

Government cuts and a bribery scandal will prompt a shake-out in the industry

IN 2014 Brazilian builders had a bumper year. Stadiums had to be ready in a dozen cities for the football World Cup in June, airports spruced up to welcome foreign visitors, and roads built to whisk them to venues. In Rio de Janeiro work was beginning in earnest on preparations for the Olympic Games it will host in 2016. President Dilma Rousseff was seeking re-election, and boosted the federal government's infrastructure spending in the run-up to October's tightly contested poll. Construction firms' revenues had already been rising by 11% a year, in real terms, for the past ten years.

However, in September a police investigation found that some of this growth was thanks to padded contracts that at least six of Brazil's biggest construction firms, with combined domestic revenues of 19 billion reais ($8.8 billion) in 2013, had for years been signing with Petrobras, the state-controlled oil giant, in exchange for kickbacks to politicians. Around 30 construction executives are now awaiting trial on charges of corruption or money-laundering, including the boss of UTC Engenharia, Brazil's seventh-biggest builder. Credit to the industry evaporated. Several firms, including OAS and Galvão Engenharia, respectively the third- and sixth-largest, defaulted on some of their debt and have sought bankruptcy protection.

Uncertainty surrounding the police dragnet is affecting the entire industry. The assumption, right or wrong, is that everyone is embroiled, says a senior banker. Bosses of untainted companies gripe about everyone being tarred with the same brush. Marco Rabello, the chief financial officer of Norberto Odebrecht, Brazil's industry leader, which has not suffered any accusations, admits that "image" is currently the industry's biggest problem.

Making things worse, Ms Rousseff, having scraped by in the election, is now having to make drastic cuts to close a yawning budget deficit. Her flagship "Growth Acceleration Programme" of infrastructure improvements has been slashed. Brazilian companies of all kinds are bracing for a recession: investing in new buildings is the last thing on their bosses' minds. Odebrecht's domestic order book will be thin this year, Mr Rabello admits.

It is not all doom and gloom, however. For one thing, many big construction firms have been reducing their dependence on government contracts—and indeed on Brazil. Just 6% of Odebrecht's revenue now comes from the Brazilian public sector; nearly three-quarters is generated abroad. It is part of a consortium which, earlier in May, won a $1.9 billion contract to build Panama City's second metro line. Geographic diversification, together with low debt and net cash of 1.5 billion reais, helps explain why Standard & Poor's has maintained Odebrecht's credit rating one notch above the Brazilian government's.

At home, too, there is promise. Companies that weather the Petrobras storm will be well-placed to snap up market share from battered rivals. In particular, points out Frederico Estrella of Tendências, a consulting firm, well-run, midsized companies may pounce on a chance to join the big league. In May it emerged that C.R. Almeida, a second-tier construction firm, is eyeing stakes in airport projects, including some still under construction, owned by UTC Engenharia and OAS.

So far, foreign construction giants are not rushing in to fill the void left by collapsing domestic ones. They first want to see how the Petrobras probe plays out, says the local boss of one such firm. Some, like OHL of Spain, have quit Brazil in recent years, exasperated by its impenetrable tax system, suffocating bureaucracy and onerous local-content requirements. After its name was mentioned in reports of the police investigation, Skanska of

Sweden accelerated its plans to quit (it denies wrongdoing). Other foreign firms have been scaling back. Bechtel, an American giant, used to have about half a dozen big projects on the go at any one time in Brazil. Now it is down to just one: an extension of Rio's metro.

Brazil still needs plenty of roads, railways and other public works. The World Economic Forum ranks it 107th out of 144 countries on the quality of its infrastructure. And although the government and its agencies, such as the BNDES, the national development bank, have tightened their purse-strings, investment banks and private-equity firms are setting up funds to back public works.

Chinese money is on the way, too. On a visit to Brazil in May, Li Keqiang, China's prime minister, signed commercial agreements worth $53 billion, including a number linked to infrastructure. On top of that, ICBC, a Chinese state bank, pledged to funnel $50 billion to Brazilian roads, railways, power grids and the like. Chinese lenders are keen to invest in these, even though China's ambitious construction firms, like other foreign builders, have in the past had their fingers burned trying to break into Brazil's heavily regulated market. Those Brazilian firms which survive the current shake-out can look forward to a recovery in orders, with little foreign competition to trouble them. ■

巴西建筑公司

打击一批，壮大一批

政府开支缩减，一桩贿赂丑闻，带来一场行业重组

巴西建筑商在2014年度过了红火的一年。十几个城市的体育场必须建成以迎接当年6月的世界杯；各地机场整饬一新，迎接外国游客；新修的马路承载着游客向比赛场地飞驰而去。里约热内卢开始热火朝天地准备举办2016年奥运会。迪尔玛·罗塞夫总统正寻求连任，为冲刺10月份竞争激烈的投票，她提高了联邦政府在基础设施上的支出。按实值计算，建筑公司的营收在过去十年已经实现了年均11%的增长。

然而，去年9月警方在一次调查中发现，这些增长的一部分源于至少六家国内大型建筑公司与国有石油巨头巴西石油股份有限公司（Petrobras）之间的虚假合同。这六家公司2013年的国内总收入高达190亿雷亚尔（88亿美元）。数年来，它们在与巴西石油的合同中为部分官员牟取回扣。现在大约有30名建筑公司高管因涉嫌腐败或洗钱面临审讯，其中包括巴西第七大建筑商UTC Engerharia的老板。对建筑工程业的授信已经取消。包括第三和第六大建筑商OAS和Galvão Engenharia在内的几家公司无法偿还其部分债务，已经寻求破产保护。

警方彻查的结果未定，整个行业已大受影响。一位资深银行家说，人们假定圈内所有人都牵涉其中，无论这种假定是对是错。那些没有劣迹的公司老板们抱怨说现在人人都被当成一丘之貉。巴西建造业的龙头企业诺贝尔托·奥德布雷赫特建筑公司（Norberto Odebrecht）没有受到任何指控，其首席财务官马可·拉贝洛（Marco Rabello）承认“形象”是当下建筑行业最大的问题。

更糟糕的是，在大选中以微弱优势胜出的罗塞夫现在为减少庞大的财政赤字不得不大幅削减开支。她主推的旨在改善基础设施的“增长提速计划”面临搁浅。巴西所有行业的公司都做好了迎接衰退的准备：兴建大楼成了老板们最不可能考虑的投资。拉贝洛承认，今年奥德布雷赫特的国内订单会

少得可怜。

但是，事情也并非全然悲观。首先，很多大型建筑公司对政府合同乃至巴西国内市场的依赖已经减少。奥德布雷赫特的收入中目前仅有6%来自巴西公共部门，近四分之三源自海外。通过与其他公司组成联合体，该公司在5月早些时候赢得了一份价值19亿美元的合同，修建巴拿马市的地铁二号线。地域多元化、负债低、净现金达15亿雷亚尔，这些因素解释了为何标准普尔对奥德布雷赫特的信用评级比巴西政府还高出一个等级。

国内也有希望。一些公司在巴西石油公司的腐败丑闻风暴之后处在更有利的位置，可以从备受打击的对手那里抢夺市场份额。趋势咨询公司（Tendências）的弗雷德里科·埃斯特拉（Frederico Estrella）指出，特别是那些运转良好的中型公司或许能抓住机遇，跻身大公司之列。5月，人们发现二线建筑公司C.R. Almeida已经盯上了机场项目这块肥肉。这些项目原本属于UTC Engenharia 和OAS，部分还在建设之中。

截至目前，国外建筑巨头还未蜂拥而入，填补国内大鳄们倒塌后留下的空白。一家外国公司的本地老板说，他们在观望巴西石油公司的案件如何收场。一些外国承建公司，比如西班牙OHL集团，近年来由于无法忍受巴西死板的税收体系、严苛的官僚主义以及繁复的地方法规，已经退出巴西。瑞典的斯堪卡建筑公司（Skanska）在被警方调查报告提及后，加快了退出的步伐（该公司否认有任何违规操作）。其他一些外国公司也在缩减业务规模。美国业内巨头柏克德（Bechtel）过去在巴西始终保持有五六个大型项目同时开展，如今只剩一个：里约地铁的扩建工程。

巴西仍然需要修建大量公路、铁路和其他公共设施。世界经济论坛在144个国家的基础设施质量排行中将巴西排在107位。尽管政府及官方机构比如巴西国家发展银行（BNDES）紧缩开支，但投资银行和私募股权公司正在设立基金，为公共设施工程提供资金。

来自中国的资金也正在路上。中国总理李克强5月访问了巴西，签署了价值530亿美元的合同，其中一些和基础设施相关。除此之外，中国国有银

行中国工商银行承诺向巴西公路、铁路、电网及类似工程注资500亿美元。中国的贷款机构对此类项目的兴趣非常浓厚，尽管雄心万丈的中国建筑公司在过去几年和其他国家的建筑商一样，在尝试打入严格管制的巴西市场时大受挫折。在外界竞争干扰甚微的情况下，那些在这次行业重组中存活下来的巴西建筑公司可以开始憧憬订单数量恢复了。■

Schumpeter

Sex in the boardroom

Claims that women manage differently from—or better than—men are questionable

ONE by one, the glittering prizes are falling to women. General Motors, IBM, PepsiCo, Lockheed Martin and DuPont are among a couple of dozen giant American companies with female bosses. Oxford University is about to follow the footsteps of Harvard and appoint its first female leader; and next year the United States may elect its first woman president. Women still have an enormous way to go: the *New York Times* points out that more big American firms are run by men called John than by women. But the trend is clear: women now make up more than 50% of university graduates and of new hires by big employers.

Will this growing cadre of female bosses manage any differently from men? Forty years ago feminists would have found the very question demeaning. Pioneers such as Margaret Thatcher argued that women could and would do the same job as men, if given a chance. But today some management scholars argue that women excel in the leadership qualities most valued in modern firms. Some ask whether the financial crisis would have been as bad had Lehman Brothers been Lehman Sisters, given research suggesting a link between testosterone levels and risk-taking.

Supporters of this position are fond of quoting two studies by McKinsey, in 2007 and 2008, of large groups of managers in a variety of businesses. The consulting firm found that five "leadership behaviours" are seen in women more frequently than in men: people-development; setting expectations and rewards; providing role models; giving inspiration; and participative decision-making. It argued that such behaviours are particularly valuable in today's less-hierarchical companies. By contrast, the two that men were found to adopt more often than women sound rather old-fashioned:

control and corrective action; and individualistic decision-making.

Those who say women are better suited to taking charge of today's companies also lean on two other arguments. The first is that women are better at "androgynous" management—that is, combining supposedly "male" and "female" characteristics into a powerful mixture. This is particularly valuable in businesses undergoing great upheaval, which need a combination of command-and-control and caring-and-sharing. The second is that women differ from men not so much in their leadership styles as in the values that they bring to the job. They are much more influenced by compassion and fairness than men.

McKinsey's studies rest on taking snapshots of managers' opinions and scoring them. But opinions about management are in a constant flux; and managers tend to tell interviewers what they think they want to hear. The argument that women are better at managing androgynously is a bit more plausible—though the data to support this are scant. The final argument, about the human values women bring to the job of leadership, has the best supporting evidence. Around the world women are more likely to vote for parties that place a higher value on compassion than men. American private companies run by women lay off significantly fewer workers than ones run by men. *Fortune* 500 companies with more women on their boards donate more to charity. However, even when it resonates, the claim that women make better leaders needs to be weighed against three considerations.

The first is that lumping women bosses together obscures the huge differences between them. There are plenty of female bosses who are as hard-headed as any male. After Harriet Green took charge of Thomas Cook, a struggling travel business, she got rid of 2,500 staff and cut senior management posts by one-third. Jill Abramson, the first female editor of the *New York Times,* was removed for "arbitrary decision-making", a

"failure to consult" and "inadequate communication". Even if women as a whole are more compassionate than men, that is no guarantee that a highly selected group of women, such as those who reach the top of companies, are also more compassionate.

That leads to the second consideration: that both male and female managers are perfectly capable of adapting their leadership styles to meet changing circumstances. Male managers are increasingly embracing a collaborative approach to leadership, as they adapt to a society that has become less deferential. In a 2013 study of 917 managers in Norway—a country that has led the way in female-friendly policies, from board quotas to public child care—Anne Grethe Solberg, a sociologist, concluded that: "Men and women don't have different styles of leadership."

Vive la difference?

The third, and main, problem with the argument that women do a better job in running a company is the lack of solid evidence that putting more women into senior jobs improves a business's performance. Several early studies in this field found that companies with more women in their executive suites and on their boards had better financial outcomes. But more recent research has cast doubt on this. A study of a large sample of American firms by Renee Adams and Daniel Ferreira, two economists, found that: "The average effect of gender diversity on firm performance is negative." A large study of the influence of diversity on group performance in companies, by Hans van Dijk, a Dutch academic, and two colleagues, found that gender diversity has no overall effect. Two studies of public companies in Norway, following legislation requiring them to give at least 40% of board seats to women, found that increasing the number of women had a negative effect on profits.

Those arguing that women leaders are different, and better, may have the best of intentions. But they are piling flimsy evidence on dubious argument

to produce politically correct hokum. In some societies such claims risk reinforcing stereotypes about the sort of job that women are “good for”. The only enlightened policy for selecting leaders is to judge people purely on their individual merits. Anything else is just prejudice in disguise.

熊彼特

董事会里的性别问题

说女性管理企业和男性有所不同或者比男性更好，这种观点很可疑

一个接一个，闪耀的光环正落到女性的头上。通用汽车、IBM、百事、洛克希德·马丁和杜邦等几十家美国巨头企业的现任老板都是女性。牛津大学即将跟随哈佛大学的脚步，任命第一位女校长；明年，美国可能选出该国历史上首位女总统。女性仍然有很长的路要走：据《纽约时报》指出，美国大公司中，光是名叫约翰的男老板就比女老板的总数多。但趋势一目了然：在大学毕业生和大公司新聘的职员中，女性人数已经超过一半。

由女老板组成的骨干队伍在不断扩大，她们对企业的管理与男性会有任何不同吗？40年前，女权主义者会觉得这样的问题很贬低人。玛格丽特·撒切尔这类先锋曾主张，如果给予女性机会，她们能胜任也愿意做与男性同样的工作。但今天，一些管理学者认为，在现代企业最为重视的领袖特质上，女性更胜一筹。一些人发问，既然研究显示在男性荷尔蒙和冒险之间存在关联，那么如果雷曼兄弟不是雷曼兄弟，而是雷曼姐妹，金融危机还会那么糟吗？

这种观点的支持者喜欢引用麦肯锡在2007年和2008年对来自各行各业的大批管理人员所做的两次调查。这家咨询公司发现，有五种“领导行为”在女性身上较之男性更为常见：人才发展、设定预期和奖赏、以身作则、灵感启迪、共同决策。该公司认为，这类行为在今天等级分化减少的企业中尤为宝贵。相比之下，男性比女性更常采用的两种行为听起来非常老派：控制和校正、个人化决策。

那些认为女性更适合掌管当今企业的人还倚赖另两个观点。首先是女性更擅长“双性化”管理，即把一般认为属于“男性”或“女性”的特征合并成一种强大的混合物。在正经历巨变的企业中，这尤其有用，因为这些企业需要指令控制型和关怀分享型的结合。其次，女性和男性在给他们的工作带去价值上的差异要多过他们在领导风格上的差异。同情心和公平公正对女性

的影响远多过对男性的影响。

麦肯锡的研究基于主管的观点简述并给它们打分。但是，人们对于管理的观念在不断变化，而管理者往往会对提问的人说一些他认为对方想听到的答案。女性更擅长双性化管理的观点听起来似乎更有道理些，但并没有多少数据支撑。最后一个论点即女性给领导职位带来了人性化价值这一点有最好的证据支持。世界各地的女性都比男性更有可能把选票投给那些更有恻隐之心的政党。由女性运营的美国私营企业的裁员人数显著少于男性运营的企业。财富500强公司中，那些董事会中有更多女性成员的公司给出的慈善捐款更多。不过，即使如此，女性是更好的领导这一说法还需要考量三点。

首先，把所有女老板归为一类人模糊了她们之间巨大的差异。许多女老板和男性一般强硬。哈丽雅特·格林（Harriet Green）接管陷入困境的托马斯库克旅游集团（Thomas Cook）后，裁掉了2500名员工，把高级主管职位减少了三分之一。《纽约时报》首位女主编吉尔·艾布拉姆森（Jill Abramson）因为“独断专行”、“不征询意见”和“沟通不足”遭撤换。即使女性作为一个整体比男性更有同情心，却并不能保证一个高度筛选后的女性团体——比如那些爬到企业最高位的人——也更心慈手软。

这导向了第二个观察：男性和女性主管都很善于调整自己的领导风格来适应变化的环境。男性主管正在适应一个不再那么讲究恭敬顺从的社会，他们日益采纳协作的领导方式。2013年，社会学家安妮·格蕾特·索尔贝格（Anne Grethe Solberg）在一项对挪威917名主管的调研中总结道：“男性和女性的领导风格并无不同。”从董事会中的女性比例到公共儿童保健等等，挪威在女性友好政策上都走在世界前列。

差异万岁？

认为女性能更好地运营企业这种观念存在的第三个、也是主要的问题，是缺乏可靠证据显示让更多女性进入管理层会改善一个企业的业绩。在这个方面，几个早期的研究发现，管理层和董事会中有更多女性的企业有更好的财务业绩。但较近期的研究对此提出了质疑。经济学家勒妮·亚当斯

（Renee Adams）和丹尼尔·费雷拉（Daniel Ferreira）对一大批美国企业展开的调查发现，“性别均衡化政策对企业表现的平均效果是负面的。”荷兰学者汉斯·范戴克（Hans van Dijk）及其两位同事就多元化对企业团队表现的影响展开了一项大型调研，结果发现性别均衡化总体而言无甚效果。在挪威立法要求该国公营公司把至少四成的董事席位给予女性后，两项调查发现，增加的女性董事数量给这些公司的利润带来了负面影响。

那些辩称女性领导人有所不同或表现更佳的人可能出于好意。但他们把不可靠的证据堆叠于含糊其辞的观点之上，生成政治正确的陈腔滥调。在一些社会中，这类说法可能让那些女性“擅长”某些工种的成见更变本加厉。在挑选领导人时，唯一明智的策略是纯粹以个人优缺点来做评判。除此以外，任何方法都是偏见的伪装。■

Jardine Matheson

Return to China

A grand old trading house seeks a new propellant

EACH day on the dot of noon, a former naval artillery piece is fired from a platform at the eastern end of Causeway Bay in Hong Kong. Pulling the trigger is one of the 430,000 employees of Jardine Matheson, a British-run and family-owned conglomerate with interests in retail, property and carmaking. The ceremony harks back to Jardines' origins in the 1830s as an intrepid tea-and-opium trader, and is usually attended by a gaggle of tourists. It is an oddly public display by a firm that otherwise prefers to pass unnoticed.

Over the past decade few Asian conglomerates have performed as consistently as Jardines. Propelled by a well-timed expansion into South-East Asia, the group's revenues have risen by about 18% annually since 2005. As the chart shows, the performance of its main listed vehicle since Britain's handover of Hong Kong to China in 1997 has been strong even compared with that of two other successful "hongs" with roots in colonial times: Swire and Hutchison Whampoa. (The latter has just merged with Cheung Kong, another of Li Ka-shing's companies, to form CK Hutchison.) It is a sharp contrast to Jardines' sickly state at the turn of the millennium, when some of its investments in Britain had done poorly, and its future was unclear following the Hong Kong handover. The question is whether, now that Asian growth rates have fallen, it can find new ways to grow.

Jardines owns Mandarin Oriental, a chain of hotels, and its companies run some Asian branches of Pizza Hut, KFC and IKEA. It said last month that it would open the first Pizza Huts in Myanmar, bringing a slice of modern civilisation, such as it is, to the long-isolated Burmese. But most of its profits come from only three of its firms. Hongkong Land's property

portfolio includes many valuable sites in the territory's central business district. Dairy Farm, a retailer with interests across East and South-East Asia, owns among other things the Wellcome, Giant, Cold Storage and Hero supermarket chains. Jardines' crown jewel is Astra, an Indonesian vehicle-maker and palm-oil producer, in which it began building a stake in 2000 and which it now controls. Astra accounts for roughly half of the group's revenues, and its stellar growth helped underlying profits at the group's two main listed vehicles—Jardine Matheson Holdings and Jardine Strategic—roughly to triple in the five years to 2010.

It seemed a gamble at the time, but in retrospect buying into Astra was a far-sighted bet on Indonesia—a sprawling country of 250m people that continues to fox many multinationals—just as aftershocks from the Asian financial crisis had made its firms look cheap. Analysts say Jardines seems a more disciplined investor than others: it tends to buy small chunks of companies in a fairly narrow range of industries, before expanding its ownership of the spriteliest ones. By contrast with their peers at Swire, executives at Jardines prefer not to get involved with the day-to-day running of their subsidiaries, concentrating instead on broad strategy. They pay good money for companies that are already well-run: Gerald Wong, an analyst at Credit Suisse, says many of the group's firms are "best in class".

Keeping it in the family

Jardines' run of success until recently bought the group respite from once-fiery battles with outside investors over the Keswick family's continuing control. Ben Keswick, its managing director, is a descendant of one of the firm's Scottish founders. The Keswicks are among the last of a once-crowded field of upper-class British families who run firms set up by their Georgian and Victorian forebears.

The family are said to train their youngsters energetically, but not to coddle princelings who disappoint. Networks built during generations of

hobnobbing have probably helped the Keswicks to spot and seize opportunities more swiftly than competitors. But keeping the family at the helm has required controversial contortions. In the mid-1990s, amid fears of what might follow after the handover of Hong Kong, Jardines switched its Asian stockmarket listings from there to Singapore. In the early 2000s some shareholders waged a noisy yet unsuccessful campaign to unwind a convoluted corporate structure that helps to keep the Keswicks in control.

There was much less fuss when the issue arose again last year, as new rules in Britain prompted the group to downgrade its London listing from "premium" class to "standard" (an indication of compliance with regulatory and governance standards). However, the agitation could return if a recent flattening of Jardines' profit growth starts to look permanent. In the past few years its food businesses have been hit by rising wages and increased competition. A bigger concern is Indonesia's slowing economy. The end of a commodity boom has reduced demand for the cars and agricultural and mining machinery which Astra produces. The largest impact, though, has come from the plummeting rupiah. In March it reached a 17-year low against the American dollar, in which Jardines compiles its accounts.

Recent acquisitions may help Jardines to return to growth. In April it spent $615m acquiring a 25% stake in Siam City Cement, a Thai firm, perhaps hoping that Thailand's military government will get going on some big, long-promised public-works projects. But lately its biggest bets have been in mainland China. At the start of 2014 the group took a 20% stake in Zhongsheng, a Chinese car dealer, for $731m. Last summer Dairy Farm paid $925m for a one-fifth stake in Yonghui, a chain of supermarkets. That was Jardines' biggest acquisition by value in at least a decade.

Bulking up in China pleases analysts who worry that Jardines has become overexposed to Indonesia. The risks are not just to do with the weakness of the Indonesian economy or the prickly nationalism of its government;

campaigners worried about the environmental impact of Astra's palm-oil plantations in Indonesia have lately taken to demonstrating outside Jardines' Mandarin Oriental hotels around the world. Last month Astra promised to stop clearing forest to make way for plantations.

Well-read Chinese will be aware that Jardines' 19th-century founders lobbied hard for Britain to wage the first Opium War against China, over its attempt to curb imports of the drug by Jardines and other traders. But any lingering animosity—from that, or from the war of words that preceded the firm's move to Singapore—does not appear to have held up Jardines' recent big deals on the Chinese mainland. And the group has proved deft at navigating economic nationalism in Indonesia, where Astra is considered a local success story. Jardines' long history is far more an asset than a liability, thinks Jonathan Galligan, an analyst at CLSA, a stockbroker: "They don't make the same mistakes twice." ■

怡和集团

回到中国

著名老牌洋行寻求新的推动力

每日正午，位于香港铜锣湾东角平台上一座原属海军的大炮都会准时鸣响。拉响礼炮的是怡和集团（Jardine Matheson）43万名雇员中的一位。怡和集团是一家英国人经营的家族企业集团，业务遍及零售、地产和汽车制造。这一仪式可以追溯到怡和发迹的19世纪30年代，那时它还是一家生猛的茶叶和鸦片贸易商。如今常有一大群喧闹的游客前来观看这一仪式。如此怪异的公开展示与怡和低调的姿态很不搭调。

过去十年几乎没有几家亚洲企业集团有怡和这样稳定的财务表现。怡和适时向东南亚扩张，自2005年起收入年增长约18%。如图表所示，自从1997年英国将香港移交给中国后，怡和旗下主要上市公司的表现始终强劲，即便与另两大起源于殖民时期的成功洋行太古集团（Swire）及和记黄埔（Hutchison Whampoa）相比也毫不逊色。（后者刚刚与李嘉诚旗下另一家公司长江实业合并，成为长江和记。）这与怡和在世纪之交时的羸弱表现形成了鲜明对比，彼时它在英国的投资经营惨淡，而移交后在香港的前途又不甚清晰。问题是，既然亚洲增长率现在已经下降，怡和是否能够找到新的发展方式。

怡和拥有文华东方连锁酒店，还有几家公司经营着必胜客、肯德基和宜家在亚洲的部分门店。上个月，怡和表示它将在缅甸开设第一家必胜客。这将为长久以来与世隔绝的缅甸人带去一丝现代文明，尽管不过尔尔。其实怡和的大部分利润仅来自旗下三家公司。香港置地（Hongkong Land）的房地产投资组合覆盖了该地区中央商务区众多高价地段。零售商牛奶国际（Dairy Farm）的业务遍布东南亚，旗下拥有惠康超市（Wellcome）、巨人（Giant）、冷藏公司（Cold Storage）、Hero连锁超市和其他品牌。怡和皇冠上的宝石是雅特（Astra），一家印尼的汽车制造商及棕榈油生产商，怡和自2000年起买进其股份，目前已取得控股地位。雅特贡献了集团几乎一半的收入，它出色的增长为集团两大主要上市公司怡和控股及怡

和策略打下了基础，从2005至2010年的五年间这两大公司的利润增至原来的近三倍。

当时受到亚洲金融危机的余波影响，亚洲的公司看来价格较低，怡和买进雅特在那时似乎是个赌博，但回想起来却是在印尼投下的一个有远见的赌注。至今这个有着2.5亿人口的庞大国家仍然让许多跨国公司困惑不已。分析人士称怡和看起来比其他投资者更有条不紊：它倾向于先小批量买进很窄的几个行业范围内公司的股票，然后增持控股其中最具生机的公司。与太古集团的同行相比，怡和的高管不喜欢参与子公司的日常运营，而是着眼于广泛的战略。他们付大价钱买那些已经经营良好的公司。瑞士瑞信银行（Credit Suisse）的分析师杰拉德·王（Gerald Wong）说怡和集团的很多公司都是“业内翘楚”。

以家为本

怡和至今的成功运营为集团赢得了喘息的时间，集团曾经与外部投资者就西泽克（Keswick）家族继续控股的问题展开激战。董事总经理本·西泽克（Ben Keswick）是公司一位苏格兰籍创始人的后裔。西泽克家族是曾经熙熙攘攘的英国上流家族中仅存的硕果之一，这些家族经营着他们祖先在乔治王朝和维多利亚时代创立的公司。

据说这一家族正大力培养年轻一代，却不会娇惯那些让人失望的太子党。几代人亲密交往建成的人脉可能有所帮助，让西泽克家族比其他竞争对手更敏捷地找准并抓住了机会。但要维持家族对集团的控制需要一些受争议的手段。上世纪90年代中叶，出于对香港回归后前途的担忧，怡和将其亚洲的上市公司从香港转移到新加坡。本世纪初，一些股东掀起了一场声势颇大但徒劳无功的活动，试图改变该集团复杂的企业架构，而正是这一架构帮助西泽克家族保持着控股地位。

去年英国的新规定促使该集团将它在伦敦上市的股票从“高级类”降为“标准类”（表示符合监管和公司治理标准），架构的问题再度浮现，只是引发的纷扰要少得多。但如果怡和近来的利润增长趋平成为常态，骚动可能会重燃。过去几年，它的食品业务受到工资上涨和竞争加剧的打击。更大的

担忧是印尼经济的放缓。一轮大宗商品繁荣期的结束降低了人们对雅特生产的汽车、农用机械和矿山机械的需求。然而，最大的影响来自印尼盾暴跌。3月，印尼盾达到17年来兑美元的最低点，而怡和正是以美元编制会计报表。

最近的收购可能会帮助怡和重回增长态势。4月，它以6.15亿美元收购了泰国公司暹罗水泥（Siam City Cement），可能是寄望泰国军政府会开始上马一些早已承诺的大型公共工程项目。不过不久前它把最大的赌注押在了中国大陆：2014年伊始，集团以7.31亿美元买下了中国汽车销售商中升公司20%的股份；去年夏天，牛奶国际斥资9.25亿美元购入连锁超市永辉五分之一的股份，这是怡和至少十年内出价最高的一次收购。

在中国的扩张令那些担忧怡和在印尼投入过度的分析人士欢欣不已。风险不仅来自于印尼经济的疲软或是印尼政府敏感棘手的民族主义。因为担心雅特在印尼的棕榈油种植园影响环境，反对人士最近在世界各地的怡和东方文华酒店门口举行示威游行。上个月，雅特承诺停止为开辟种植园而砍伐森林。

博览群书的中国人会记得怡和19世纪的创始人极力游说英国对中国发动第一次鸦片战争，因为中国试图禁止怡和与其他贸易商进口鸦片。但是任何挥之不去的仇恨——无论是对鸦片战争还是对公司迁至新加坡之前的口诛笔伐——看来都没有阻挡怡和最近在中国大陆的大手笔。在印尼，这一集团游弋于经济民族主义之外，的确长袖善舞，雅特在当地被视为一个成功样板。券商里昂证券（CLSA）的分析师乔纳森·加利根（Jonathan Galligan）认为，怡和的悠久历史更多地是一种财富而非负担，“他们不会两次犯同一个错误。”■

Bioengineering

Towards a body-on-a-chip

The first organ chips are coming to market and, regulators permitting, will speed up drug testing and reduce the use of laboratory animals

IN A recently opened laboratory just north of London, an experiment is under way to discover how the liver will respond to an new drug. Normally such a test would be carried out on liver cells cultured in rows of dishes or—as regulators require before approving a drug for clinical trial—in animals such as rats or dogs. But this experiment uses a small device about the size of a smartphone. It contains a miniature liver made from human cells and promises more reliable results. It is one of the first commercial versions of what bioengineers call an organ-on-a-chip.

The liver chip, named Quantum-B, was made by CN Bio, a firm spun out of the University of Oxford and now based in Welwyn Garden City. Quantum-B is designed to help researchers find a cure for hepatitis B, a viral infection of the liver. Other groups coming up with miniature organs include, in America, the Wyss Institute at Harvard University, whose devices include a lung-on-a-chip (pictured), and the University of California, Berkeley, which has a heart-on-a-chip. Chips replicating the kidney, intestine, muscle, fat, bone and skin are also being developed.

Subject to regulators, such devices have the potential to slash the use of laboratory animals in drug testing. Animals are not necessarily good analogues for humans because of fundamental differences in biology. Testing on tissue in a dish can likewise prove unreliable because its cells often stop working. The more realistic data promised by organs-on-a-chip could accelerate drug development and allow researchers to carry out experiments too risky for human volunteers.

Moreover, by linking different chips together, researchers can study how reactions in one organ affect another. A drug that produces beneficial results in treating heart disease, for instance, might be metabolised by the liver in a way that has toxic results. Indeed, with enough organs-on-a-chip, the twinkle in the eye of some scientists is that one day it might be possible to create the equivalent of a body-on-a-chip.

Organ finder

Most organ chips are made out of a synthetic material, such as a polymer. This might be transparent for viewing the cells through a microscope. (Some are made with photolithographic processes similar to those used for computer microchips—which is how they got their name.) The chips contain minute structures to which cultured human cells are attached. Given the right conditions, the cells will naturally arrange themselves as they would in the body and start to behave as if they were there. A technique called microfluidics is used to shuttle a blood-mimicking fluid along channels and tiny pipes, bringing sustenance to the cells.

The chips do not contain complete organs, just the smallest colonies of cells necessary to replicate the function of one. CN Bio's liver chip, which is based on work carried out in partnership with Linda Griffith and her colleagues at the Massachusetts Institute of Technology (MIT), uses tiny "scaffolds" to hold cells from donated organs which, for various reasons, were deemed unsuitable for transplant. The cells can be kept frozen until required.

The scaffolds are placed into small wells and fed with a suitable fluid along the channels. After a few days spent settling down, the cells are ready for work and are infected with hepatitis B. As the human form of the disease can be replicated only in primates, dozens of chimpanzees would otherwise be required for just one experiment. Each liver chip, however, contains 12 tiny livers, so it can be used to conduct several tests at the same

time. A prototype chip with 36 livers is also under development, says David Hughes, CN Bio's chief technology officer.

The company will license the technology to other laboratories and provide tests for researchers. The price for a basic toxicity test starts at around $22,000. That might seem expensive, but even a straightforward study in rats can take a month or more and cost over $50,000; a more complex analysis can exceed $1m. This is why whittling down thousands of candidate substances to bring a new drug to market can run up a bill of over $1 billion.

What makes organ chips potentially so effective in drug testing is that they create not just the biochemical environment necessary for the cells to thrive but also the physical one. For a liver-on-a-chip this means getting the fluid mechanics of the artificial blood supply just right. Previous studies have shown that the way fluids flow across the surface of a cell can affect its ability to function.

Other cells may require a mechanical action. Harvard's lung-on-a-chip, for example, needs to "breathe". To do that the device is constructed from two microfluidic channels, one above the other, within a flexible plastic material. The channels are separated by a porous membrane which is lined on the top with epithelial cells derived from human lung alveoli, and on the bottom with endothelial cells from blood vessels. The top channel brings air to the membrane and the bottom one contains a bloodlike fluid. Applying an alternating vacuum to either side of the structure stretches and relaxes the cells, just as in the chest of a person breathing.

The lung chip was developed by Donald Ingber, widely regarded as a pioneer in the field, and his colleagues at Harvard. The lung-chip, which is about the size of a plug-in USB stick, is being commercialised by a company called Emulate. When exposed to bacteria in the air channel, the device has

been found to react as a human lung would if it were infected. Inflammation and fluid accumulation in the lung can also be studied.

The Berkeley heart-on-a-chip has a central chamber in which the heart cells are packed together, with microfluidic channels acting as blood vessels. The Berkeley researchers, led by Kevin Healy and Anurag Mathur, say that within 24 hours after the heart cells are placed into the chamber they begin beating on their own at 55-80 beats per minute. After about a week this becomes steady enough for tests to begin. Exposed to standard heart drugs, say the researchers, the heart chip responds in the same way a full-sized human heart would.

The Berkeley and Emulate researchers use human induced pluripotent stem cells, which are adult stem cells that can be coaxed back to their embryonic state and then encouraged to become many different types of tissue. This use of stem cells in organ chips raises the possibility of a device that represents an individual patient—a patient-on-a-chip, if you like. In this case all the tiny organs would be derived from a single person: tests could then be carried out on the device to find what combinations of drugs and dosages work best for that patient.

So far, researchers are still trying to get just a small handful of different organs to work on a chip. But DARPA, a research agency of America's defence department, is keen on having ten organs on a body chip. The military interest comes from a desire to have treatments available for nuclear and biological incidents. It is nigh on impossible to experiment with such drugs on human guinea pigs. DARPA and America's National Institutes of Health are funding $32m of research into a body-on-a-chip at MIT, in collaboration with other research groups, and $37m on a similar project at Harvard's Wyss Institute.

There remains a number of hurdles to overcome, according to a review of the technology by Dr Ingber and Sangeeta Bhatia, of the Koch Institute at MIT, published last year in *Nature Biotechnology*. The plastic that some chips are made from needs to be improved because it can absorb certain compounds, including drugs, and that might sway test results. For organs linked together, the researchers say, a "universal blood substitute" is needed. This would be a single culture medium that could support all tissues, as blood does.

Organ chips will need to be mass produced. In collaboration with researchers working for Sony BioSciences in Austria, Emulate says it has found a material which avoids the absorption problem and would allow its chips to be made in their millions. What that material is, so far, remains a closely guarded secret. Emulate also says it can automate the operation of its chips so that they can be used by non-specialists.

It may be a decade or more before organ chips reduce the use of animals in laboratories to any large degree. And some biomedical research might not readily yield to being modelled on a chip at all—complex immune responses in the body, say, or the action of drugs on the nervous system. Yet as the technology improves and becomes better understood, conservative regulators should gain enough confidence in the new technology to start replacing some mandatory animal testing with organ chips. ■

生物工程

向芯片人体演进

首批器官芯片即将进入市场，如果获得监管机构批准，将加速药物测试，减少动物实验

伦敦北部新开设的一个实验室里正在进行一项实验，测试肝脏对一种新药的反应。通常这样的测试会在几排培养皿中的肝细胞上实施，或者像监管部门在批准某种药物做临床测试前所要求的那样，在大鼠或狗这类动物上测试。但这一实验使用一种和智能手机一般大小的小设备。它包含了一个由人体细胞制造的微型肝脏，承诺测试结果更为可靠。这是生物工程师们称之为芯片器官的第一批商用版本之一。

这个名为量子-B的肝脏芯片由CN Bio研制，这家源自牛津大学的公司总部位于韦林花园市（Welwyn Garden City）。量子-B用于帮助科研人员找到治愈乙肝这种肝脏病毒性感染的方法。其他推出微型器官的研究团队包括美国的哈佛大学威斯研究所（Wyss Institute）和加州大学伯克利分校，它们分别研制出了带有芯片肺的设备（见图）和芯片心脏。复制肾脏、肠道、肌肉、脂肪、骨骼和皮肤的芯片也在研制中。

若获得监管部门批准，这类设备有可能让药物测试中的动物实验大为减少。动物不一定是很好的人体模拟物，因为两者的生物特性有根本差异。同样地，在培养皿中的组织上做测试可能也不可靠，因为它的细胞常常停止运作。芯片器官承诺带来更可靠的数据，可以加快药物研发，让科研人员能开展对人类志愿者来说太过冒险的实验。

此外，通过把不同的芯片连接在一起，科研人员能够研究一个器官的药物反应如何影响另一个器官。比如，对治疗心脏病有正面疗效的药物可能会在肝脏代谢的过程中产生毒副效果。实际上，有了足够多芯片器官后，一些科学家冀望某天能创造出芯片身体。

创造器官

大部分器官芯片由聚合物这类合成材料制成，可能呈透明状，这样就可通过显微镜观察细胞。（其中一些用光刻制造，类似制造计算机微芯片所用的方法——这是它们之所以被叫做器官“芯片”的原因。）这些芯片包含微型结构，上面附着培养生成的人体细胞。在恰当条件下，这些细胞会像在人体内那样自然地进行自我排列和开启运作。微流控技术被用于在通道和微管道内输送模拟血液的液体，把养料带给细胞。

这些芯片并不包含完整的器官，而仅仅复制某个器官发挥功能所需的最小细胞集群。CN Bio的肝脏芯片使用微型“支架”来放置源自捐献器官的细胞，这些器官因为各种原因被认为不适合移植。这些细胞可以保持冷冻直至需要使用时。这一芯片基于该公司和麻省理工学院的琳达·格里菲思（Linda Griffith）及其同事们的研究。

支架被放入小的井状装置中，沿着通道灌满合适的液体。细胞经过数日“安顿”后，就可以开始工作了。它们被感染上乙肝病毒。由于人类乙肝病毒只能在灵长类动物上复制，因此原本一项实验中就需要用到几十只黑猩猩。但每个肝脏芯片包含12个微型肝脏，这样它可以同时开展几项测试。CN Bio的首席技术官戴维·休斯（David Hughes）说，一个带有36个肝脏的原型芯片也在研制中。

该公司会把技术授权给其他实验室，为科研人员提供药物测试。一个基本毒性测试约2.2万美元起步。听上去可能很贵，但即使是在大鼠身上的一个简单研究可能就要花一个月或更久，耗资超过5万美元。一个更复杂的分析可能超过100万美元。这是为何剔除成千上万种候选材料来让一种新药问世可能要耗费超过10亿美元。

之所以器官芯片可能在药物测试中如此有效，是因为它们不单单创造出了细胞茁壮成长所需的生物化学环境，还复制出了物理环境。在芯片肝脏上，这意味着需要正确设置供应人工血液的流体力学。过往研究已经显示，液体流过细胞表面的方式会影响细胞发挥功能。

其他细胞可能需要机械作用。比如，哈佛大学的芯片肺需要“呼吸”。为此，这个设备在一个有弹性的塑料材料中建构了两个微流体通道，一个通道在另一个上方，中间由一层多孔薄膜隔开。沿着薄膜上方铺陈着源于人体肺泡的上皮细胞，薄膜下方是血管内皮细胞。上方通道把空气带给薄膜，下方通道包含类似血液的液体。在这个结构的任何一侧运用交替的真空呼吸，会让细胞伸展或放松，就像人在呼吸时肺内部的情形。

肺芯片由哈佛大学的唐纳德·因格贝尔（Donald Ingber）及其同事研发。因格贝尔被广泛视为该领域的先驱。这块芯片和一个插入式U盘差不多大小，由一家名为Emulate的公司研制商业化产品。当这一设备暴露于空气通道中的细菌时，研究人员发现它能像被感染了细菌的人的肺那样作出反应。也可以用它来研究肺炎和积液。

伯克利大学的芯片心脏有一个中央心室，心脏细胞在那里堆积，用微流体通道模拟血管。由凯文·希利（Kevin Healy）和马瑟·安拉格（Anurag Mathur）领军的研究人员称，心脏细胞被放入心室的24小时内开始自行跳动，每分钟跳动55到80次。大约一周后，这种状态变得足够稳定而可以展开测试。研究人员说，当接触标准心脏病药物时，这块心脏芯片的反应方式就和一颗完整的人体心脏一样。

伯克利大学和Emulate公司的科研人员使用人类诱导多能干细胞。这些成年干细胞能被诱导回到胚胎状态，而后被引导形成许多不同类型的组织。在器官芯片中使用这类干细胞，会让一个设备更有可能代表单个病人——若你喜欢，也可以叫它“芯片病人”。在这种情况下所有微型器官会来自同一个人，然后可以在这个设备上展开测试，看看怎样的药物和剂量组合对这名病人的疗效最好。

截至目前，研究人员还在尝试让少数几个不同的器官在一个芯片上运作。但美国国防部高级研究计划署（DARPA）热衷于在一个人体芯片上运作十个器官。军方有这样的兴趣是因为他们想为核生化事件准备好可能的疗法。而几乎没有可能在人类白老鼠上展开这类药物测试。该署和美国国家卫生研究院为麻省理工学院和其他研究团体合作开展的芯片人体研究提供

3200万美元的资助，同时向哈佛大学威斯研究院一个类似项目提供3700万美元资助。

> *寻找新血液*

因格贝尔博士和麻省理工学院考克研究所（Koch Institute）的桑吉塔·巴蒂亚（Sangeeta Bhatia）去年在《自然生物科技》期刊上发表了一篇针对这类技术的评审文章，提到尚有一些障碍需要克服。制造一些芯片的塑料材料需要改进，因为它可能吸收包括药物在内的某些复合物，从而影响测试结果。而对于连在一起的器官，两位研究人员说，需要一种"通用的血液替代品"。它应该是一种单一的培养媒介，能支持所有组织，就像血液那样。

器官芯片需要大规模生产。Emulate公司称，它和奥地利的索尼生物科学（Sony BioSciences）的研究人员合作，发现了一种可以避免吸收复合物的材料，并可以让它的芯片实现以百万件计的量产。至于这种材料是什么，至今还是个严守的秘密。该公司还说，其芯片可以实现自动化操作，这样非专门人员也能使用。

器官芯片若要以任何较大的规模替代动物实验，可能需要十年或更久。而一些生物医药研究可能根本无法直接在一个芯片上建模，比如复杂的人体免疫反应，或者药物对神经系统的作用。但是，随着技术不断改进，以及人们对它的理解增加，保守的监管机构应该会对新技术积攒起足够的信心，开始用器官芯片取代某些强制性的动物测试。■

China and commodities

Cornering the markets

How China continues to reshape the world of commodities

THE world's biggest consumer of commodities is no longer just an insatiable buyer of everything from coal to gold. A richer, slower-growing and choosier China is becoming an exporter as well as importer. It is also using its clout to change the way commodities are traded, bringing markets closer to home and drawing up rules that suit its needs instead of those of producers and Western financiers.

This week, for example, Chinese regulators gave the go-ahead for foreigners to trade crude-oil futures in Shanghai. When that starts—probably by November—it will be the first time that outsiders have been allowed to buy and sell a listed Chinese futures contract. This is part of a clear plan to change the way commodities are traded, says Owain Johnson of the Dubai Mercantile Exchange (DME). The exchange in Dalian, a port through which many commodities enter China, has become the biggest trading centre for iron ore in the world in less than two years. Shanghai has developed big markets in nickel and copper.

Many expect more gold trading to move to China too. Allegations of rigging have rocked the current hub, in London. China—the world's largest producer of bullion—announced on June 26th that it would launch a yuan-denominated gold contract in Shanghai by the end of the year. China is reaching "critical mass" in its influence on commodity prices," says Grant Sporre of Deutsche Bank.

This is a much more sophisticated way of wielding clout than in the past. An attempt by China in 2010 to corner the market in rare earths—17 exotic metals used in tiny quantities in many modern devices—failed

spectacularly. China, which at the time produced 97% of the ores for rare earths, banned exports in the hope of bringing the business of processing these deposits onshore. But rare earths proved not so rare: companies elsewhere revived old mines and ramped up production; by late 2011 prices had plunged.

The goal now is to seize control of price formation. The main global benchmark for crude oil, Brent, relies on data compiled by price-reporting agencies about deals done during a short "window" in the middle of the trading day. State-controlled Chinese oil companies have been playing an increasingly active role in that process, but from the Chinese government's point of view, bringing the trading closer cuts costs and reduces the impact of events in faraway places from which the country imports little oil. "They ask: 'Why should a Norwegian oil workers' strike affect our economy?'" says Mr Johnson.

As the world's biggest importer, China wants its own benchmark instead, based on transparent and comprehensive data, priced in its own currency and governed by its own laws. The Shanghai oil-futures contract aims to achieve that goal.

As exchanges in mainland China grow, rivals are feeling the squeeze. The Shanghai Futures Exchange is impeding efforts by Hong Kong Exchanges and Clearing to expand its metals-trading business, following the acquisition of the London Metal Exchange in 2012. In March the Shanghai exchange threatened to sue its Singaporean counterpart for copying a futures contract.

Several obstacles lie ahead, however. Outsiders will not be keen to bear the exchange-rate risk of trades denominated in yuan. The security of the English legal system in case of disputes will be hard to match. Confidence has been dented by a scandal involving Chinese commodity warehouses, in

which metals were used as collateral for letters of credit to get around foreign-exchange restrictions.

China is putting a fresh imprint on commodity markets in other ways too. As its economy slows and investment gives way to consumption as the mainstay of growth, the country's needs are changing. Demand for primary products used mainly in housing and infrastructure—coal, iron ore, steel and aluminium—is slowing. China has already hit "peak coal" (consumption is falling, amid worries about air pollution); peak steel is not far off, with growth of only 1-3% likely after a dip last year. Even copper is fading a bit. Consumption used to grow faster than GDP, notes Colin Hamilton of Macquarie, a bank; now it lags. A related headache is that China, once a sponge for raw materials, is becoming an exporter of things like stainless steel and aluminium, thanks to cheap and abundant power, growing technological nous and a glut of smelting capacity.

Instead, exporters must look to other commodities for growth. Richer Chinese consumers are stoking demand for dairy products, meat, chocolate and jewellery. That has an effect both on those items directly and on the commodities used to produce them. While imports of iron ore wane, for example, demand for soyabeans, which are used mainly to feed livestock, continues to grow rapidly (see chart). That is partly because China has paved over lots of soya farms, but mainly because meat consumption is up.

Yet it is not certain that this trend will persist. The average Chinese already consumes more calories than the global average, and almost 85% of the American level. A healthy switch from pork to chicken would actually cut demand for agricultural commodities, notes Capital Economics, a consultancy. Hershey, a big confectionery company, has had to trim its forecasts for sales growth in China.

Whether China adopts old Western habits or opts for thriftier and healthier

ones will shape the commodities industry. But its impact on trading is even more immediate. As every good capitalist knows, the customer is always right. China is using its buyer's clout to ensure that commodities are traded the way it wants. ■

中国和大宗商品

驾驭市场

中国如何继续重塑大宗商品世界

世界上最大的大宗商品消费者不再只是一个贪得无厌的买家，从煤炭到黄金一切照单全收。一个更为富裕、增长放缓、更加挑剔的中国不再仅是进口国，也在成为出口国。中国还在运用自己的影响力改变大宗商品的贸易方式，让市场更贴近本土，制定适合自己而不是生产商和西方金融人士需求的规则。

例如，本月中国监管机构为外商在上海交易原油期货开了绿灯。真正开始运行可能要到11月，这将是中国第一次允许外商买卖上市的中国期货合约。迪拜商品交易所（Dubai Mercantile Exchange, DME）的欧文·约翰逊（Owain Johnson）认为这是改变大宗商品贸易方式的清晰计划中的一部分。很多大宗商品通过大连港进入中国，当地的商品交易所在不到两年时间内就成为世界上最大的铁矿石交易中心。上海则已发展成为镍和铜的大型交易市场。

很多人期待更多黄金交易能转移到中国。伦敦是目前的交易中心，但其地位因被指幕后操作而受到撼动。中国这一全球最大的黄金生产国于6月26日宣布，年底前将会在上海启动人民币黄金定盘价。德意志银行（Deutsche Bank）的格兰特·斯波尔（Grant Sporre）说："中国在大宗商品价格上的影响力正在接近'临界点'。"

这种施加影响力的方式比过去更为老练高明。2010年中国曾试图垄断稀土市场，即17种少量用于诸多现代化设备的稀有金属，结果以惨败收场。当时中国生产的稀土矿占全球97%，为了将这些矿产的加工业转移到本土，中国禁止了稀土出口。但事实证明稀土并不那么稀有：其他地方的公司重开旧矿，提高了产量；到2011年底，稀土价格暴跌。

现在的目标是掌控价格形成。报价机构依据交易日中一个短暂的"窗口"期

所完成的交易编撰出数据，而国际原油市场主要的基准布伦特原油价格正是基于这些数据得出。中国的国有石油公司在这一过程中扮演了愈加积极的角色，但是从中国政府的角度来看，将交易移至国内既削减了成本，也减少了遥远地方突发事件的影响，而中国从这些地方进口的石油很少。约翰逊说："他们会问：'凭什么要让挪威石油工人的罢工影响我们的经济？'"

作为全球最大进口国，中国希望有自己的基准，基于透明、全面的数据之上，以自己的货币定价，由自己的法律监管。而上海原油期货合约正是为此目标而设。

随着中国大陆交易中心不断发展，竞争对手们感受到了压力。香港交易所于2012年收购了伦敦金属交易所之后，想要扩展其金属交易业务，但却受到上海期货交易所的阻挠。3月，上交所威胁要起诉新加坡交易所复制他们的一项期货合约。

但是前进的路上仍然有障碍。外商不会愿意承担由人民币结算带来的汇率风险。在解决争端时英美法系的安全性也难以企及。中国大宗商品仓库涉嫌运用金属当作信用证抵押以绕开外汇限制，这样的丑闻令业界信心受到打击。

中国正用其他方式在大宗商品市场上留下新的印记。随着经济放缓、消费取代投资成为增长的主要支柱，国家的需求正在发生变化。对包括煤炭、铁矿、钢铁和铝在内的初级商品的需求正在降低，这些商品主要用于住房和基础设施建设。中国已经达到了"煤炭峰值"（人们对空气污染忧心忡忡，消耗量正在下降），钢铁峰值的到来也为期不远，自去年下降之后目前仅有1%到3%的增长。就连铜的需求也有微降。麦格理银行（Macquarie）的科林•汉密尔顿（Colin Hamilton）指出，中国的消费增长曾经超过GDP增长，现在却落后了。与此相关的一个问题是，中国曾一度是原材料的吸纳国，现在成了不锈钢和铝等商品的出口国，这得益于廉价而丰富的电力资源、不断提升的科技实力和供过于求的熔炼产能。

作为替代，出口国必须指望其他大宗商品实现增长。富裕起来的中国消费

者对乳制品、肉类、巧克力和珠宝的需求正不断提高。这不仅直接影响到这些商品，也影响到生产这些商品的原料。例如，虽然铁矿石的进口在下降，但对主要用来饲养家畜的大豆的需求却在持续快速增长（见图表）。部分原因是中国大量减少了大豆种植，但更主要的原因是肉类消费在增加。

但这一趋势能否持久却不能肯定。中国人均卡路里消耗量已经超过世界平均水平，几近美国平均水平的85%。咨询公司凯投宏观（Capital Economics）指出，从吃猪肉为主到吃鸡肉为主的饮食转变实际上会削减对农产品的需求。糖果巨头好时（Hershey）已被迫调低对中国市场销量增长的预期。

中国是会沿用西方的旧习还是选择更俭省健康的生活习惯？这将会塑造整个大宗商品产业，但它对交易的影响则更为直接。每位优秀的资本家都知道，顾客永远是对的。中国正在运用其作为买家的影响力来确保大宗商品按照自己希望的方式交易。■

Open-source health apps

Kitted out

How to volunteer yourself as a citizen laboratory rat

PEOPLE living with Parkinson's disease have good days and bad ones. Researchers do not really understand why. Nor do they understand the strengths and weaknesses of existing treatments for Parkinson's—nor even the unmet needs of people who have the disease. The same is true of other chronic illnesses, from Alzheimer's to diabetes to heart disease. Those researchers might understand better, though, if they were able to track the day to day symptoms of large numbers of people who suffer these conditions.

Smartphones, and other mobile devices worn or carried almost continuously by many, offer a way to do so. They are packed with sensors, particularly accelerometers and GPS tracking devices, which can record movement and exercise. Apple's new watch, announced this week, measures its wearer's heart rate and can supposedly work out whether he is standing, sitting or going up or down the stairs. Moreover, such devices can easily be linked by Bluetooth to other bits and pieces, such as Fitbits or Pebble watches, that the user is wearing—and even to high-tech versions of good old bathroom scales. Specific pieces of equipment such as portable blood-analysis kits can also be linked to phones. A plethora of data are thus available, if someone were able to record and interpret them.

In the past, this has been expensive to do. Anyone wishing to create apps for the task would have had to hire a costly team of coders. But that has now changed. This week Apple—in an announcement a little more *sotto voce* than that of its watch—introduced the world to a suite of software called the ResearchKit, which will make it possible to create scientific apps that work with its mobile devices more easily and cheaply. The ResearchKit is

"open source", meaning anyone who wants to will be able to use it to design data-collecting apps that take advantage of the features of those devices. Because it is open source, people will be able to customise and share code, which will encourage innovation.

Todd Sherer, head of the Michael J. Fox Foundation, a charity concerned with Parkinson's disease that has worked on one of the first apps to use the ResearchKit, says another crucial part of the system is that it lets scientists streamline the process of obtaining informed consent for their research. Potential participants can watch a video and answer questions about what they understand the research entails before they are allowed to sign up.

The app the Fox foundation has been working on, known as "mPower", is intended to find ways of tracking the symptoms of Parkinson's. It can measure someone's finger-tapping on an iPhone's screen, to detect inconsistencies in rhythm. The phone's accelerometer studies gait and balance while the user is walking. Its microphone can help detect minute fluctuations in his voice. All of these data provide information on his well-being.

> *App-lause from the gallery*

There is also an app for diabetes, called GlucoSuccess, developed by the Centre for Assessment Technology and Continuous Health, in Boston. This keeps track of physical activity and helps those with diabetes to record their food intake and glucose values. And Asthma Health, devised by LifeMap Solutions, a firm in New York, tracks an asthmatic's symptoms and lets him avoid places with poor air quality.

In all these cases the apps are being used for long-term research, but also offer participants insights into their condition. This will make research more of a two-way process, with benefits for everyone. Diabetes patients will be able to see their best and worst glucose days, and work out how

these may be related to their food consumption or exercise regimes. Those with Parkinson's disease might be able to recognise better the signs and symptoms of their illness. Asthma sufferers could gain insight into what is triggering their attacks.

Although mPower, GlucoSuccess and AsthmaHealth are not yet intended for use by doctors, patients will probably soon be rolling up in surgeries with their iPhone data. In the short term that might not be particularly helpful. In time, though, when the apps move out of the research phase, they should be able to generate data that doctors really can use, and which could thus form part of someone's health record.

One criticism of this approach is that iPhone users are hardly a random sample of humanity. They are usually wealthy and well-informed, and are probably more fastidious about their health than many other people. This is true, but a lot of research is already conducted on non-representative parts of the population—university students, for example. Such is the reach of smartphones that it is likely ResearchKit will attract larger and more diverse groups of people than these. The world needs laboratory rats, and the affluent will do as well as anyone. ■

健康类开源应用

配备完成

如何自告奋勇成为实验室小白鼠

帕金森症患者的病情时好时坏。研究人员并不明了真正原因，也不了解帕金森病现有疗法的优缺点，甚至连患者有何需求未被顾及也不清楚。老年痴呆症、糖尿病、心脏病等其他慢性疾病的情况也一样。不过，要是那些研究人员能追踪大量患者的日常症状，他们或许能更好地了解这些病症。

许多人几乎时刻随身携带的智能电话及其他移动设备为此提供了可行之道。这些设备满载传感器，尤其是加速度计及GPS跟踪装置，能记录人们行动和锻炼的信息。苹果公司发布的新款手表能测量佩戴者的心率，并应该能由此计算出此人是处于站立、安坐还是上下楼梯的状态。而且，这些设备可以简单地通过蓝牙与用户穿戴的其他各式小设备连接起来，例如Fibits或者Pebble的智能手表，甚至连接上高科技版的浴室秤。像便携式血液分析装置这类专门设备也可以跟手机连接起来。大量数据可由此而得，如果人们能记录并诠释它们。

在过去，这一直是成本高昂的事。谁想开发应用来完成此类任务就必须聘请昂贵的编程团队。但如今情况已改变。苹果公司向世界宣布推出一套名为ResearchKit的软件包（其发布比苹果手表略低调些），令开发与其移动设备适配的科研应用变得更简单便宜。ResearchKit为“开源软件”，意味着只要愿意谁都能用它来设计出利用移动设备的功能收集数据的应用。因为是开源软件，人们可以按需定制、分享代码，这将鼓励创新。

迈克尔·福克斯基金会（Michael J. Fox Foundation）是关注帕金森病的一个慈善组织，它已抢先着手利用ResearchKit开发应用。其主席托德·舍尔（Todd Sherer）表示，该系统的另一关键是能帮助科学家简化研究获得知情同意的流程。有意参与者要先观看一段视频介绍并回答有关研究所涉事项的问题，最后方可签署参加。

福克斯基金会正在开发的应用“mPower”想办法追踪记录帕金森症的各种症状。它能衡量某人在iPhone屏幕上的手指点击动作，探测是否存在节奏不一的情况。用户行走时，手机的加速度计会研究其步幅和平衡度。手机麦克风可有助检测用户声音的微小波动。所有这些数据提供了反映用户身体状况的信息。

> *大众掌声献应用*

还有一个名为“GlucoSuccess”的糖尿病应用，由波士顿的“评估科技及持续健康中心”开发。该应用追踪用户的身体活动，帮助糖尿病患者记录食物摄入量和血糖值。而由纽约公司LifeMap Solution创制的一款名为哮喘健康（Asthma Health）的应用则可追踪哮喘症状并让用户避免去往空气质量不佳的场所。

所有这类应用都为长期研究服务，同时也帮助用户深入了解自己的身体状况。这将使研究变得更双向，惠及每一个人。糖尿病患者将可追踪自己血糖值的起伏，找出这与饮食或运动情况之间的关联。帕金森症患者或许能更好地辨别病症预兆及症状。哮喘病人可对触发病状的因素有所了解。

虽然mPower、GlucoSuccess和AsthmaHealth 并未考虑供医生使用，但不久后患者们很可能会带着他们iPhone中的数据就诊。短期内这可能没特别大的用途。但假以时日，当这些应用走出研发阶段，其生成的数据就应该可以真正为医生们所用，并因而可成为人们病历档案的一部分。

对这一方法有一种批评，认为iPhone用户群绝非一组随机人口样本。他们通常富有而消息灵通，在个人保健方面很可能比其他人更讲究。确实如此，但现在已有许多研究在非代表性人群身上进行，比如大学生。智能手机的覆盖面让ResearchKit很可能在未来吸引到比这更大更广的用户群体。世界需要小白鼠，众人皆可当，富人又何妨。■

3D printing

Entering the jet age

Aircraft engines may soon be built one layer at a time

ADDITIVE manufacturing, as it is known to those who use it—or 3D printing, as the rest of the world more poetically calls it—is unlikely to replace the metal bashing of mass production anytime soon. But for bespoke applications, even those that must meet tough engineering requirements, or "tolerances", it may oust more traditional methods surprisingly quickly. Building a machine's components a layer at a time means that complicated shapes can be made more easily than by starting with a lump of metal and removing what is not needed. There is also far less waste.

The latest straws in the wind come from the world's antipodes. In Britain Rolls-Royce, a large engineering firm, is testing the technique for making parts of commercial-jet engines. In Australia a group of researchers at Monash University, in Melbourne, has built an entire, albeit small, such engine this way.

Rolls-Royce's plan is to use 3D printing to construct the front bearing housing of its Trent XWB-97 engines. The bearing housing includes 48 aerofoil vanes which guide air into the jet's compressor. It is 1.5 metres in diameter, measures half a metre from front to back, and is made of an alloy of titanium and aluminium.

Engineers in Rolls-Royce's additive-manufacturing division, led by Neil Mantle, have been making experimental bearing housings for the Trent using a version of 3D printing that employs a beam of electrons to melt layers of powdered alloy. The melted alloy then solidifies and adds to the growing structure. On-the-ground tests are encouraging, but proof will

come when a plane powered by the tweaked Trents takes off—which the firm hopes to try out later this year.

The Monash device, put on display in the closing days of February at the Australian International Airshow, is what is known as an auxiliary power unit. It generates electricity rather than thrust and is used, among other things, to help start an aircraft's main engines. It works, though, on the same principles as a jet that is designed to propel an aircraft.

Wu Xinhua of Monash's Centre for Additive Manufacturing (pictured, with a disassembled version of the engine) and her colleagues based their power unit on a model built by Safran Microturbo, a French firm with which they are collaborating. They used a laser, rather than an electron beam, to do the melting. The result—whose components are made from titanium, nickel and aluminium alloys—is 60cm long and 40cm in diameter when assembled, and weighs 38kg. Whether it works has yet to be determined, but a test is planned.

Like Rolls-Royce, Safran does not intend to print entire engines routinely. Some parts, such as the central shaft, remain easier to make by standard "subtractive" manufacturing. But both firms' interest shows that a technology which was, not so long ago, regarded by many as a bit of a toy, really is now ready for some heavy-duty work. ■

3D打印

打入喷气机时代

飞机引擎或许很快将层层打印而成

业内人士所谓的“增材制造”（Additive manufacturing）——或是大众口中更为诗意的“3D打印”——不太可能在短期内取代规模生产中的锻打铸造。但对定制用件来说，即使在必须符合严格工程指标亦即“公差”的情况下，3D打印也可能以迅雷不及掩耳之势取代传统方法。一台机器的零部件被一层一层地打印出来，这意味着在制造复杂形状时，比拿一大块金属切削掉不需要的部分要更容易。废料也大大减少。

最新发展来自世界两端。在英国，大型工程企业罗尔斯·罗伊斯公司（Rolls-Royce）正在测试用这种技术制造商用喷气发动机的零件。而在澳洲，墨尔本莫纳什大学（Monash University）的一组研究人员已经运用这种方法制造出这样一台引擎，虽小但完整。

罗尔斯·罗伊斯公司的计划是利用3D打印来构建其遄达（Trent）XWB-97发动机的前轴承箱。该轴承箱包括引导空气进入飞机压缩机的48片翼型叶片。轴承箱直径为1.5米，前后长度为半米，由钛铝合金制成。

罗尔斯·罗伊斯公司增材制造部门的工程师由尼尔·曼托（Neil Mantle）率领，一直在用3D打印为其遄达引擎制造试验轴承箱。这一方式采用电子束层层熔化合金粉末，熔融合金固化后逐层累加，逐渐成型为完整结构。地面测试的结果令人鼓舞，但最终还是要看飞机搭载经优化调整的遄达引擎是否成功升空，公司希望今年晚些时候进行尝试。

2月末，澳大利亚国际航展上展示了一台“莫纳什设备”。这是一台被称为辅助动力组件的装置，能发电，但不产生推力，有众多用途，包括可辅助启动飞机的主发动机。其工作原理却和推动飞机的喷气发动机一致。

莫纳什大学增材制造中心的吴新华（见图，放在她面前的是该引擎的拆解

版本）与同事们以其合作单位法国公司“赛峰微透博”（Safran Microturbo）的一款引擎为基础，制造了自己的这款动力装置。他们以激光束而非电子束来熔化合金。装置的组件由钛、镍、铝合金制成，整体装配完成后长60厘米，直径40厘米，重38公斤。装置可用与否仍待鉴定，目前测试已在计划中。

跟罗尔斯·罗伊斯公司一样，赛峰集团没有打算把打印作为制造整个引擎的常规方式。部分零件，如中心轴，还是以标准的“减材”制造方式做起来更简便。不过，这两家公司的兴趣表明，这种在不久前还被很多人视为儿戏的技术如今已可用于某些重要工作。■

Investing in airports

Flying high

Why buying airports has taken off

IMAGINE owning a shopping centre that your customers are forced to stay in for several hours. Better yet, everyone who visits is relatively rich, and many are in a giddy holiday mood. Now imagine that the number of these special shopping centres is strictly regulated, giving you a near-monopoly. On top of this you get paid a fee per visitor. No wonder buying airports has become something of an investment fad.

Though potentially lucrative, airports tie up a lot of capital, which is why governments around the world are selling them. Some are being listed on stockmarkets, others sold to private investors. The Japanese government is selling 30-40-year concessions to run some of its airports. France is flogging its regional airports: it sold a 49.9% stake in Toulouse airport to a Chinese-led consortium in December. Investors include pension funds, sovereign-wealth funds, infrastructure specialists and private-equity houses.

What sets airports apart from most investments in infrastructure is their dual income stream: they bring in money both on the aeronautical side (landing fees, contracts with carriers) and from passengers (parking, shopping, hotels). If you own a toll road and traffic dwindles, there's not much you can do. But with an airport there are lots of levers to pull, such as cutting capital costs, firing staff and upping the price of parking. "We love them because they pay a steady income for our retirees, protect against inflation and are a diversifier," says Andrew Claerhout of the Ontario Teachers' Pension Plan (OTPP), which is an investor in four European airports including Birmingham and Copenhagen. Best of all is the bonus that comes from being a monopoly. Returns from well-run airports tend to

be in the double digits, markedly higher than more boring assets like bridges.

One way to boost profits is to increase the number of passengers who can be herded through the buildings. Investors including OTPP and Macquarie, a bank, as well as the Belgian government, recently helped to upgrade Brussels airport by linking the European and international terminals, thus centralising security and shopping. Ardian, an investment firm that owns a stake in Luton airport, near London, helped to convince the local train company to increase London-bound services during rush-hour. It also removed a bottleneck at security by opening more lanes and hiring "smiling people" in yellow T-shirts to point passengers to the shortest queue. An upgrade of the terminal, aimed at increasing the number of passengers from 12m to 18m a year, is next.

When an airport has been in public hands, the non-aeronautical parts of the business have often been especially neglected. Buyers often invest in good parking (ie, under a roof and close by), which can become one of the biggest single sources of income. But not all airports are created equal. Those serving capital cities tend to be safer bets, with a steady supply of visitors, come rain or shine (unlike holiday destinations). Ensuring the airport is not dominated by a single carrier is another golden rule, as this makes it vulnerable to strikes or bankruptcy. Buying a stake in an airport of which the government owns a controlling share is risky, as public and private interests are not always aligned.

Europe is currently the hub for airport investing, accounting for more than half of all deals since 2011, according to Preqin, a data firm. That compares to 15% in Asia, 14% in Australasia and 9% in America. But European valuations are reaching dizzying altitudes: Ljubljana airport was sold last year to Fraport, a German airport specialist, reportedly for a lofty 20 times annual earnings. Michael Burns of PwC, a consultancy, points out that the

number of passengers is growing twice as fast at many Asian and African airports. By 2020 Indonesian airports will have more traffic than British ones, predicts PwC. More adventurous investors may end up flying long-haul. ■

投资机场

展翅高飞

为何买机场开始流行

想象一下，你拥有这样一座购物中心，你的顾客被迫要在那里逗留几个小时。还有更好的事：进商场的每个人都相对富有，而且很多人在度假，心情亢奋。现在，想象这类特别的购物中心的数量受到严格管控，你拥有近乎垄断的地位。除此之外，每来一个顾客，你都会得到一笔费用。怪不得买机场会变成某种投资时尚了。

尽管有利可图，但机场捆绑了大量资金，因此世界各地的政府都在出售它们。一些正在股市挂牌，另一些卖给了私人投资者。日本政府正在出售该国部分机场三四十年期的特许经营权。法国正在出售地方机场：去年12月它把图卢兹机场49.9%的股权卖给了一个中资牵头的财团。投资者包括养老基金、主权财富基金、基础设施运营商和私募股权机构。

机场有别于其他基础设施投资的特点是它们有双重收入来源：不仅来自航空这一块（着陆费、与航空公司的合约），也来自乘客（停车、购物、旅店）。如果你拥有一条收费公路，当交通量减少时，你能做的不多。但若你拥有一个机场，你有很多种调整方式，比如削减资本支出、裁员、涨停车费。“我们喜欢机场，因为它们给我们的退休工人带来了稳定的收入，它们能抵御通胀，分散风险，”安大略省教师退休金计划的安德鲁·克莱豪（Andrew Claerhout）说。这家机构投资了四座欧洲机场，包括伯明翰机场和哥本哈根机场。投资机场最大的好处是垄断经营带来的红利。运转良好的机场的回报往往是两位数字，明显高于那些运作更单调的资产如桥梁。

提升利润的方法之一是增加会在机场内的各个建筑间穿梭的乘客数量。包括安大略省教师退休金计划和麦格里银行（Macquarie）在内的投资者以及比利时政府最近帮助升级了布鲁塞尔机场：把它的欧洲航站楼和国际航站楼连接起来，由此让安保和购物都集中化。投资公司Ardian持有位于伦

敦附近的卢顿机场的股份，它协助说服了地方铁路公司增加了高峰时段开往伦敦的车次，还增设了更多安检通道，雇用身穿黄色T恤的“微笑人员”把乘客指引到最短的队伍，由此消除了安检拥堵。下一步是升级航站楼，争取把乘客数量从每年1200万增至1800万。

过去，当机场落入公众投资者手中时，非航空的商业业务尤其常遭忽视。买家经常会投资便利的停车场（在室内，且就在附近），它可能成为最大的单一收入来源之一。但并非所有机场生来相同。那些服务首府城市的机场往往是更安全的投资，它们有更稳定的客流，不论晴天雨天（不像度假目的地）。确保机场不被某一家航空公司主导是另一条金科玉律，这可以防止因罢工或破产而受影响。入股那些政府控股的机场有风险，因为公共和私人的利益并不总是一致。

欧洲目前是机场投资的中心地带。根据数据公司Preqin统计，欧洲机场占了自2011年以来全部并购交易的一半多，相比之下，亚洲占15%，大洋洲占14%，美洲占9%。但欧洲机场的估值高得令人晕眩：卢布尔雅那机场（Ljubljana）去年卖给了德国机场运营商Fraport，据称售价高达其年收益的20倍。咨询公司普华永道的迈克尔·伯恩斯（Michael Burns）指出，相比欧洲的机场，许多亚洲和非洲机场的乘客数量增速是两倍之多。普华永道预测，到2020年，印度尼西亚的机场交通流量会超过英国的机场。那些更爱冒险的投资者可能要长途旅行了。■

Medical testing

Young blood

Theranos, an ambitious Silicon Valley firm, wants to shake up the market for medical testing

IN ARIZONA, Independence Day will come a day early this year. On July 3rd a new law will allow anyone to order a laboratory test, with no need to see a doctor. Tests for sexually transmitted diseases, pre-diabetes, vitamin levels and fertility will be on the menu. A cholesterol test can be had for $2.99. The company that lobbied for the legal change, and hopes to benefit most from it, is Theranos, a young and ambitious blood-analytics company from Palo Alto in Silicon Valley.

Theranos is already providing cheap, quick and easy tests—some with a three-hour turnaround—at clinics it is opening inside branches of Walgreens, a big pharmacy chain. The first clinics are in Phoenix, Arizona and in its Californian home town. Many tests can be done on just a spot of blood from a finger prick. The rest use only a tiny paediatric needle and, again, require only a small amount of blood. Theranos, led by Elizabeth Holmes, a charismatic young university drop-out (see next article), believes its technology can bring about a global revolution in diagnostics, an important albeit unglamorous corner of medicine.

Much attention has been showered on Theranos, partly thanks to its supposed $9 billion valuation, a figure based on reports that the privately owned company has raised more than $400m from selling shares to investors. Debbie Wang, an analyst at Morningstar, an investment-research firm, says that "it is not clear what sort of assumptions have been built into that valuation".

The most fundamental assumption, clearly, is that Theranos is poised to

disrupt a huge business. In America, tests costing around $60 billion are run each year, most of them either in hospitals' own labs or outsourced to specialist testing firms; and makers of test equipment enjoy sales of $25 billion (out of a global equipment market worth $56 billion a year).

Theranos both makes kit and runs tests. As yet it has only a tiny share in testing and is not selling kit. In the equipment-making business, a handful of long-established firms together hold more than half of the global market, led by Roche and Abbott (see chart). In America and Europe the market seems mature, says Mickel Phung of Decision Resources, a data-analysis firm, but there is much growth potential in emerging markets with growing populations and increasing spending on health.

As for the testing market, an important question is to what extent Theranos is a threat to the "reference" laboratories to which hospitals and doctors' surgeries outsource many tests. In America this market is a near-duopoly between LabCorp of North Carolina and Quest Diagnostics of New Jersey. Each offers a broad range of perhaps 3,000-4,000 different tests, but each depends heavily on the technology it buys from the equipment-makers. Thus far Theranos only offers about 250 tests, and aspires to 1,000. But its test technology is all home-grown.

Besides their range, LabCorp and Quest, both stockmarket-listed and worth $12 billion and $10 billion respectively, have other advantages. They are well embedded in the American health-care ecosystem, and have national networks of laboratories and collection services. Theranos's central laboratory capacity is tiny, only 5% of LabCorp's, reckons Morningstar. Whereas Silicon Valley firms based on digital technology, such as Facebook and Uber, can quickly achieve global scale, Theranos's growth now depends on building its network of laboratories and opening new testing centres—in other words, it has to attain scale the old-fashioned way.

The alliances that Theranos is beginning to form with big companies in other parts of the health-care system should give its established rivals some pause for thought. Pfizer and GlaxoSmithKline have used Theranos to run blood tests on patients undertaking drug trials, since its tests can be taken many times a week. In March it announced an alliance to provide test services for Cleveland Clinic, a chain of hospitals and health centres.

As regards selling tests directly to patients, so far Theranos has clinics in only 40 Walgreens branches; and Nimesh Jhaveri, an executive at the chain, emphasises that their alliance is in "pilot mode". Though Arizona is liberalising, elsewhere in America there is a patchwork of regulations on whether consumers can order their own tests. In some places it is allowed, or at least not explicitly forbidden. In others it is permitted with limitations. Some states ban it, though testing firms sometimes sidestep the rules by employing an in-house doctor to rubber-stamp each order.

It is possible that much of Theranos's growth will come from expanding the market for testing rather than by taking business off established firms. It may do so not only by encouraging consumers to take tests on their own initiative, but by making it more likely that they will comply when their doctors ask them to go for testing. Because of the cost, the fear of big needles and the delay in getting results, patients often fail to take the tests they are told to.

Despite concerns about taking testing out of the hands of physicians, experience with over-the-counter self-testing kits, particularly for HIV, has shown that increased access brings more frequent testing. Patients with positive results have tended to see a doctor and start their treatment sooner than they might otherwise.

New areas of testing are opening up, to which Theranos could, in principle, apply its technology. In "companion diagnostics", for example, a blood

sample is analysed to see if a patient is suitable for a particular drug. "Molecular diagnostics" looks for such things as gene sequences that betray the presence of a cancer or infection.

However, the more attractive the diagnostics market looks, and the stronger the case for modernising it, the more competition Theranos itself is likely to get, from firms old and new. LabCorp recently announced that it will also allow consumers to bypass doctors and order its tests online. A startup from Arizona, HealthTell, is developing a number of diagnostic tests that, like Theranos's, need only a single drop of blood. For some types of test, there will be competition from makers of increasingly sophisticated home-testing kits.

It is not clear how much Theranos can rely on patents to protect it from competition. Ms Holmes personally holds many patents but the company says little about the technology incorporated into its tests. Intellectual-property lawsuits have hitherto been less common in the diagnostics business than in other technology-based industries: companies have usually found it easier to come up with a new way to conduct a test than to challenge a rival's patent in court. However, as Theranos becomes a bigger challenger to established firms, it could find itself spending more time in the company of patent lawyers. Last year it won the first infringement case brought against it. The challenging patent-holders abandoned their claim and agreed to bring no further suits for five years.

The investors who have pumped money into Theranos presumably have a clearer idea than outsiders about such things as the strength of the company's patent protection and the applicability of its technology to new areas of testing. It is clear that there is much potential for doing a broader range of tests, more often, more cheaply and with less trypanophobia. But there is a long road ahead to get to Theranos's vision of the future of testing. And it is unlikely to arrive there alone. ■

医学检测

新鲜血液

野心勃勃的硅谷公司Theranos想要撼动医学检测市场

在亚利桑那州，今年的独立日要提前一天了。7月3日，一项新法规将允许任何人到实验室做检测，而无需通过医生申请。可做的检测包括性传播疾病、前驱糖尿病、维生素水平和生育能力等。胆固醇检测仅需2.99美元。这项法规变更的幕后推手，也就是有望从中获利最多的公司叫Theranos，是一家位于硅谷帕洛阿尔托（Palo Alto）的血液分析公司，年轻但野心勃勃。

Theranos已在大型连锁药店沃尔格林（Walgreens）的分店里开设小诊所，并已开始通过它提供廉价、快捷且简便的检测服务，有些检测只需3小时就可以拿到结果。首批诊所位于亚利桑那州的凤凰城和Theranos的老家加州。很多检测仅需扎手指采集几滴血就可完成。其余的也只需用一根很小的儿科用针，并且也只需要很少量的血液。Theranos的老板伊丽莎白·福尔摩斯（Elizabeth Holmes）是一位年轻而魅力四射的大学辍学生，她相信公司的技术会给诊断业带来全球革命，这是医学领域一个重要却单调乏味的角落。

Theranos赢得了大量关注，原因之一是它90亿美元的估值。这一数字是根据有报道称这家私人公司已出售股份筹集了4亿多美元而算出。投资研究公司晨星（Morningstar）的分析师黛比·王（Debbie Wang）说：“目前还不清楚这一估值基于什么样的假设。”

显而易见，最基本的假设是Theranos有可能颠覆的领域存在着巨大商机。在美国，每年用于医学检测的费用约为600亿美元，大部分在医院自己的实验室进行，或者外包给专业检测公司；检测设备的制造商销售额达250亿美元（全球设备市场一年价值560亿美元）。

Theranos既生产试剂盒也开展检测。但现在它在检测市场中的份额还微不

足道，而且尚未售卖试剂盒。在设备生产这一行，以罗氏（Roche）和雅培（Abbott）为首（见图表）的几家历史悠久的公司总共把持着一半以上的全球市场。数据分析公司“决策资源”（Decision Resources）的米克尔·蓬（Mickel Phung）说，美国和欧洲的市场看来已经成熟，但新兴市场人口日渐增多，医疗费用逐渐上涨，有很大的增长潜力。

说到检测市场，一个重要的问题是Theranos在多大程度上对“基准”实验室构成威胁。目前医院和医生诊所将很多测试外包给基准实验室。在美国，这个市场几乎由两大寡头垄断，分别是北卡罗来纳的LabCorp和新泽西的Quest Diagnostics。这两家公司都提供范围广泛的服务，大概有三四千种不同检测，但它们都主要依赖购自设备生产商的技术。迄今为止，Theranos仅提供约250种检测，期望未来能达到1000种。但它的检测技术均是自主研发。

除了服务范围之外，LabCorp和Quest还有其他优势：它们都是上市公司，市值分别为120亿美元和100亿美元。它们已经很好地嵌入到美国医疗保健生态系统之中，而且拥有全国性的实验室和采集服务网络。晨星认为，Theranos中央实验室的能力很小，只有LabCorp的5%。尽管基于数字技术的硅谷公司如Facebook和优步能够迅速达到全球规模，但Theranos目前的增长仍然依靠建设实验室网络和开办新的检测中心。换言之，它不得不通过传统方式扩大规模。

Theranos开始和医疗保健系统内其他领域的大公司结成联盟，这样的联手应当引起那些老牌对手驻足反思。辉瑞和葛兰素史克已经采用Theranos对进行药物试验的患者做血液检测，因为它的检测能在一周内反复多次进行。3月，Theranos宣布与克利夫兰诊所（Cleveland Clinic）这家连锁医院及医疗中心结盟，为其提供检测服务。

至于直接为病人提供检测，Theranos至今仅在40家沃尔格林分店设有诊所。该连锁店的一位高管尼梅施·加维立（Nimesh Jhaveri）强调它们的联手尚在“试点阶段”。尽管亚利桑那州要解禁了，美国其他地区对于消费者是否能够自行要求检测仍有形形色色的规定。有的地方允许，或至少没

有明令禁止。有的地方虽然允许但有限制条件。有的州则禁止这种做法，尽管检测公司有时会雇一名专职医生，例行公事般地批准每次检测，以此规避法规。

可能Theranos的增长更多会来自拓展检测市场，而不是从老牌公司手上抢生意。它不仅会鼓励消费者自己主动做检测，还会让他们尽可能听从医生的要求去做测试。由于顾虑花费、害怕大针管，以及检测报告延迟等原因，患者常常放弃医生要求他们做的检测。

尽管有人担心这会从医师手中抢走检测的生意，但非处方自测试剂盒的经验表明，渠道越多，检测会越频繁，在艾滋病病毒（HIV）上尤其如此。检测呈阳性的患者倾向于更早就医。

新的检测领域正在开放，Theranos原则上可以在这些领域应用它的技术。例如在“伴随诊断”中，血样分析可以了解患者是否适合使用某种特定药物。“分子诊断”寻找的则是显露出癌症或感染迹象的基因序列等等。

但是，诊断市场看起来越吸引人，要将其现代化的理由越有力，则Theranos自己要应对的竞争就更激烈——既来自老公司也来自新公司。LabCorp最近宣布它也可以让消费者绕过医生，在网上下单检测。亚利桑那州的一家创业公司HealthTell正在开发一些诊断检测方法，像Theranos一样，只需要一滴血。对有些测试而言，竞争来自产品日渐精良的家庭自测试剂盒制造商。

目前还不清楚Theranos能在多大程度上依靠专利来应对竞争。福尔摩斯个人拥有很多专利，但公司对于其检测涉及的技术甚少提及。比起其他以技术为基础的行业，诊断方面的知识产权诉讼到目前为止还较为少见：公司常常发现，想出新方法进行测试比在法庭上质疑对手的专利权更容易。不过，随着Theranos对老牌公司的挑战日增，它可能会发现自己和专利律师一起耗费的时间越来越多了。去年，Theranos打赢了第一个指控它侵权的官司。提出质疑的专利持有者放弃了控诉并且同意五年内不再提起诉讼。

对于这家公司的专利保护优势，以及把技术应用到新检测领域的能力等

等，把钱投给Theranos的投资者想必比外人看得更清楚。显而易见，在更广泛的领域做更频繁、更便宜且更少针头恐惧症的检测，潜力很大。但是要达到Theranos对未来检测的愿景，前路仍然漫漫。而且不太可能孤身抵达。■

Embedded computers

Hacking the planet

The internet of things is coming. Now is the time to deal with its security flaws

COMPUTER security is tricky. Just ask America's Office of Personnel Management: on July 9th it admitted that hackers had purloined the sensitive personal information of 22m government employees. Or Anthem, a big insurance firm which reported in January that 80m customer records had been stolen. Or the National Security Agency, which in 2013 suffered the biggest leak in its history when Edward Snowden, a contractor, walked out with a vast trove of secret documents.

Unfortunately, computer security is about to get trickier. Computers have already spread from people's desktops into their pockets. Now they are embedding themselves in all sorts of gadgets, from cars and televisions to children's toys, refrigerators and industrial kit. Cisco, a maker of networking equipment, reckons that there are 15 billion connected devices out there today. By 2020, it thinks, that number could climb to 50 billion. Boosters promise that a world of networked computers and sensors will be a place of unparalleled convenience and efficiency. They call it the "internet of things".

Computer-security people call it a disaster in the making. They worry that, in their rush to bring cyber-widgets to market, the companies that produce them have not learned the lessons of the early years of the internet. The big computing firms of the 1980s and 1990s treated security as an afterthought. Only once the threats—in the forms of viruses, hacking attacks and so on—became apparent, did Microsoft, Apple and the rest start trying to fix things. But bolting on security after the fact is much harder than building it in from the start.

> *Pay up, or the fridge gets it*

The same mistake is being repeated with the internet of things. Examples are already emerging of the risks posed by turning everyday objects into computers. In one case a hacker found he could remotely control the pump that dispensed his drugs. Others have disabled the brakes and power-steering on new cars. Cyber-criminals are a creative lot. In the future a computerised washing machine or fridge might be subverted to send out spam e-mails, for instance, or to host child pornography; or a computerised front door might refuse to let you in until you hand over a bitcoin ransom.

Three things would help make the internet of things less vulnerable. The first is some basic regulatory standards. Widget-makers should be compelled to ensure that their products are capable of being patched to fix any security holes that might be uncovered after they have been sold. If a device can be administered remotely, users should be forced to change the default username and password, to prevent hackers from using them to gain access. Security-breach laws, already in place in most American states, should oblige companies to own up to problems instead of trying to hide them.

The second defence is a proper liability regime. For decades software-makers have written licensing agreements disclaiming responsibility for any bad consequences of using their products. As computers become integrated into everything from cars to medical devices, that stance will become untenable. Software developers may have to agree to a presumption of how things should work, for instance, which would open them to legal action if it were breached. It is never too early for insurers, manufacturers and developers to begin to thrash out such issues.

Third, companies in all industries must heed the lessons that computing firms learned long ago. Writing completely secure code is almost impossible. As a consequence, a culture of openness is the best defence,

because it helps spread fixes. When academic researchers contacted a chipmaker working for Volkswagen to tell it that they had found a vulnerability in a remote-car-key system, Volkswagen's response included a court injunction. Shooting the messenger does not work. Indeed, firms such as Google now offer monetary rewards, or "bug bounties", to hackers who contact them with details of flaws they have unearthed.

Thirty years ago, computer-makers that failed to take security seriously could claim ignorance as a defence. No longer. The internet of things will bring many benefits. The time to plan for its inevitable flaws is now. ■

嵌入式计算设备

入侵地球

物联网时代日近，处理安全漏洞正当时

计算机安全是个棘手问题。问问美国人事管理局（Office of Personnel Management）吧，该机构在7月9日承认2200万政府雇员的敏感个人信息被黑客窃取。或者问问大型保险公司Anthem，它在1月公布其8000万客户记录被盗。还有美国国家安全局，它在2013年遭遇了史上最大的泄密事件，项目外包商爱德华·斯诺登（Edward Snowden）携带其大量机密文件出逃。

不幸的是，这一问题还会更加棘手。计算机已从桌面被装进了人们的口袋，如今更是嵌入到汽车、电视、玩具、冰箱、工业套件等各种各样的设备中。网络设备制造商思科估计目前联网设备达150亿台，到2020年这一数字可能攀升至500亿。设备联网的支持者们信誓旦旦，说一个充斥着联网计算机和传感器的世界将无比便利高效。他们称之为“物联网”。

计算机安全人员则将其称之为一个正在酝酿的灾难。他们担心，生产联网部件的公司匆匆把产品推出市场，并未汲取互联网早年的教训。上世纪八九十年代的大型计算机公司对安全问题后知后觉。只有当电脑病毒、黑客攻击这类威胁显而易见时，微软、苹果等公司才着手补救。但相比防患于未然，亡羊补牢要难得多。

> *付钱，否则冰箱被黑*

物联网正在重蹈覆辙。把日常物品变为计算设备的风险已经浮现。在一个案例中，一名黑客发现他可以远程控制自己的药泵，影响输药剂量。还有黑客曾让新车的刹车和转向系统失灵。网络罪犯是富有创意的一批人。举例来说，将来电脑化的洗衣机或冰箱可能会被篡改程序，用来发送垃圾邮件或存放儿童色情内容。又或者，电脑联网的房门会要挟你交出比特币赎金，否则不让你进门。

三个手段有助于让物联网变得不那么脆弱。首先要建立一些基本的监管标准。应该要求部件制造商确保产品在出售后发现的安全漏洞也能通过补丁修复。如果一台设备可以被远程管理，必须强制用户更改默认用户名及密码，以防黑客利用默认设置进入系统。已经在美国大多数州实施的安全漏洞法规应当责成公司坦承问题，而非隐瞒。

第二道防线是建立妥善的赔偿责任制度。几十年来，软件厂商一直在许可协议中对使用其产品的任何不良后果列出免责条款。随着计算机被集成到从汽车到医疗设备的各式产品之中，这样的立场将变得站不住脚。举例而言，软件开发人员可能不得不接受对产品使用常态的假定，一旦违背假定，他们会面临法律诉讼的风险。保险公司、制造商及开发人员还是尽早开始研究解决这些问题为妙。

第三，各行各业的公司都必须重视计算机公司早已领受过的教训。编写万无一失的代码几无可能。所以，开放的氛围是最好的防范，因为这有助于传播补救方案。曾有学术研究人员联系大众汽车的一家芯片供应商，称发现了其遥控车钥匙系统的一个漏洞。大众汽车却以申请法院禁令等方式回应。斩杀信使是行不通的。事实上，谷歌等公司现在会提供金钱奖励，或称“漏洞报告奖励（bug bounties）”，吸引黑客告知公司他们发现的漏洞详情。

30年前，未能正视安全问题的计算机厂商尚可托辞无知。如今借口不再。物联网将带来众多好处。规划应对其不可避免的缺陷，现在正是时候。■

Health care

Bedside manners

Small data from patients at home will mean big cost savings

IN 2008 Jordan Shlain treated an elderly patient with pneumonia. He was worried about her, so he gave her his mobile number—but she didn't use it, and ended up in intensive care. This set Dr Shlain thinking about how to follow up with patients; his simple solution was a daily phone call and a spreadsheet to record the data. One day another patient in his San Francisco surgery remarked, "Dude, you need to turn this into software." He did, and earlier this year Cedars-Sinai Health System, a hospital operator in Los Angeles, adopted a patient-feedback system developed by the firm he set up, Healthloop.

Doctors can use Healthloop to send their patients questions about their condition, by e-mail, text or smartphone app. Its software then works out when intervention by a doctor or nurse is needed. It is efficient and patients like it. These days the idea of finding value in health data is very much in vogue but most attention is being showered on the promise of "big data", in which giant databases on genomics, population health and treatment are crunched in the hope of discovering medical insights. But there is also a great deal going on to improve treatments and outcomes through this sort of "small data"—the collecting and processing of modest amounts of information from an individual patient.

Small data has been used for years, to great effect, in home monitoring. Philips, a Dutch technology company, has long sold versions of its Lifeline medical-alert pendant (pictured). Besides letting its users—generally the frail elderly—call for help, its devices can now detect automatically if they have fallen, and can also monitor their drug compliance. One million patients are using it.

As it gets ever easier to squeeze sensors and processors into small devices, their makers are thinking up all sorts of new ideas for patient monitoring. Liat Ben-Zur of Philips says the company is working with some European hospitals on a home device that will track the heart rate, blood pressure, heart variability and sleep patterns for patients with chronic obstructive pulmonary disease. Similarly, a startup in Chicago, PhysIQ, is developing a chest strap that measures respiration rate and heart rate to monitor patients who have cardiac disease, to alert their doctors to any problems before they get serious.

Such ideas offer the prospect of respectable profits for their inventors. But the financial benefits of being able to monitor and receive data from patients in something like real time will be much greater for hospitals and health insurers, who stand to save substantial amounts by intervening earlier. This is especially so given that relatively small groups of patients with chronic conditions account for a disproportionate share of health costs. In America, for example, only 1% of patients account for 22.7% of spending.

America's Affordable Care Act, better known as Obamacare, introduces penalties for hospitals when patients have to be readmitted; and limits the sums hospitals can charge for certain conditions. These measures are forcing hospital operators to make serious efforts, for the first time, to improve the quality of care and keep patients out of the emergency unit where possible. As patient-monitoring systems become more sophisticated and widespread, they could reduce the load on doctors' surgeries by reducing the need for routine check-ups; and help curb the rising cost of medical-malpractice claims.

Many personal monitoring devices now transmit data via the patient's smartphone: Apple's HealthKit app makes it easy for patients to connect them up, and to input data directly. At the other end, hospitals using

HealthKit find it a lot simpler to integrate the incoming data with their IT systems. The Ochsner Health System in New Orleans recently announced it will use HealthKit to collect data on the weight of patients with heart failure. If their weight increases significantly, which is often a sign of fluid accumulation, they may get a call from a pharmacist about changing their drugs.

Medopad, a British medical-technology firm, has launched an app of its own for cancer patients undergoing chemotherapy, that runs on Apple's smart watch: the patients can confirm they have taken their medication, and report any symptoms, by simply tapping buttons on the app. Their doctors will be able to use the accelerometers on the watch to monitor their activity levels.

Some patients will, inevitably, still want to talk to a real, live doctor. There is an app for this too. Doctor on Demand lets people in America request a rapid video consultation with a physician. Prescriptions can be sent electronically to the patient's nearest pharmacy. The cost for this can be as little as $40. MDlive, a competitor, also offers quick video-consultations, for $49. It is not just the patients who gain: their health insurers and employers are also keen. UnitedHealthcare, one of America's biggest insurers, now covers patients for their use of Doctor on Demand. Comcast, America's largest cable-television provider, offers it to its workers.

Attempts to make hospitals and clinics more efficient by building huge, centralised IT systems have a sorry history—just look at the failed patient-record system for Britain's National Health Service, scrapped at a cost of around £10 billion ($15 billion). But computing power is now being applied successfully in countless small ways, using smartphones and other diminutive devices, to make a big difference to the effectiveness of treatments. ■

医疗保健

临床沟通

患者居家小数据，医疗成本大节约

2008年，乔丹·斯兰恩（Jordan Shlain）诊治了一名患肺炎的老人。因为担心老人的病情，他把自己的手机号码告诉了她。但这位病人没有联系过他，最终住进了重症监护病房。这以后，斯兰恩开始反思该如何跟进患者的病情。他的简单做法是每天给患者打电话，并以电子表格记录数据。一天，在他旧金山的诊所里，一位患者对他说："老兄，你该把这一套做法变成一个软件。"斯兰恩真这么做了。他成立的公司Healthloop开发出了一套患者反馈系统，在今年年初被洛杉矶的医院营运商"雪松-西奈医疗系统"（Cedars-Sinai Health System）采用。

利用Healthloop系统，医生可以通过电邮、短信或智能手机应用向患者询问病情，然后由软件衡量何时需要医生或护士介入照料。过程省时省力，得到患者喜爱。如今，"发掘医疗数据价值"的理念备受追捧，但人们大多聚焦在"大数据"带来的美好前景，期望通过对基因、人口健康及治疗信息的巨型数据库加以分析，从中发掘医疗新知。然而，为改善治疗方法及成效，也有大量努力投入到"小数据"上——向患者个人采集少量的信息并加以处理。

小数据运用在家居保健监控上已有多年，卓有成效。荷兰科技公司飞利浦早已推出多个版本的"生命线"医疗求救吊坠（如图）。除了让用户（一般是体弱长者）发出呼救，这些设备还可以自动探测他们是否摔倒，另外也能监测他们是否按时服药。目前有一百万名患者在使用。

因为把传感器和处理器集成到小型设备上变得越来越容易，制造商们正在思考各种监护患者的新创意。飞利浦的莱恩特·本-祖尔（Liat Ben-Zur）表示，公司正与欧洲一些医院合作研发一种家用设备，可以跟踪监测慢性阻塞性肺病患者的心率、血压、心率变化和睡眠模式。芝加哥一家创业公司PhysIQ也在做类似的研究，研发一款可测量呼吸频率和心率的胸带，用

来监控心脏病患者的病情，在问题恶化前及时向医生通报。

这类点子的发明者很可能赚大钱。对医院和医疗保险机构而言，采用这些设备近于从患者实时采集数据并进行监测，节约成本更显著——通过及早介入治疗，它们可以节省大量医疗成本。这尤其是因为慢性病患者群体虽然相对不大，所占的医疗成本份额却高过其人数比例。例如，在美国，1%的患者占了医疗支出的22.7%。

美国的《平价医疗法案》（Affordable Care Act），通常称为“奥巴马医改”（Obamacare），引入罚则，如果患者在出院后一段时间内须再度入院治疗，医院将被处罚。另外，法案对某些疾病的治疗收费设置了上限。这些措施史无前例地迫使医院营运商努力改善医护质量，尽可能不滥用急诊室资源。随着患者监控系统日益精良、应用广泛，病人找医生作常规检查的必要性降低，从而减轻了诊所的工作量，也有助于遏制不断上升的医疗事故赔偿支出。

如今，许多个人监测设备会通过患者的智能手机传送数据：苹果公司的HealthKit应用使设备连接、数据输入变得非常简便。在另一端，通过HealthKit，医院也可以更方便地把外来数据接入其IT系统。美国新奥尔良的奥克斯纳医疗卫生系统（The Ochsner Health System）最近宣布将采用HealthKit向心脏衰竭患者收集体重数据。如果他们的体重显著增加，往往是体液积聚的信号，患者可能会接到药剂师的电话，让他们改服其他药物。

英国医疗技术公司Medopad推出了一款为接受化疗的癌症病人而设的独特应用，在苹果智能手表上运行：患者可以点击应用中的按钮确认已服用药物并报告症状。医生将可利用手表上的加速度计监测病人的活动水平。

部分患者难免还是希望与医生真人面谈。也有一款应用可以做到。“随传医生”（Doctor on Demand）让美国人通过视频向医生快速问诊。处方会以电子格式发送到离患者最近的药房。服务费用可低至40美元。其竞争对手MDlive同样提供快速视频问诊服务，费用为49美元。得益的不单是病

人：医疗保险公司及雇主对此也饶有兴致。美国最大的保险机构之一联合健康保险公司（United HealthCare）为使用“随传医生”的患者提供保险服务。美国最大的有线电视提供商康卡斯特（Comcast）则向员工提供“随传医生”作为医疗福利。

过去，为提高医院和诊所的效率，人们曾尝试建立中央集成的巨型IT系统，但教训惨痛——看看为英国国民健康服务体系打造的病历系统吧，在花费了约100亿英镑（150亿美元）后仍不能免于失败被搁置。但如今，通过智能手机和其他微型设备，运算能力大显身手，凭借无数小应用，获得的疗效大不同。■

Investing in art

A study in red and black

The global art market is booming, but treacherous

IT MAY be modern art going under the hammer at one of Christie's auction halls in London, but most of the prospective purchasers look downright antique: tweed jackets and threadbare twinsets abound. No matter: when it comes to the big pieces of the day, the serious cash comes in via the internet or phones manned by sleek women with bright lipstick and thick-rimmed glasses. A painting that once belonged to Noël Coward causes a bidding war between telephone buyers. It was expected to go for no more than £20,000 ($30,000), but ends up selling for £250,000. Helpful displays throughout the room convert the sum into roubles and Hong Kong dollars. "I just come to watch the spectacle," says a middle-aged man. "Prices are mad!"

The global art market is booming. Last year sales reached a record €51 billion ($68 billion), nearly double the level of 2009 and slightly above the previous peak of €48 billion in 2007, according to the European Fine Art Foundation. Last month an anonymous buyer paid $300m for Paul Gauguin's "When will you marry?" (pictured)—the highest price ever paid for a work of art. A few days later another record was broken when an American paid £30m for a painting by Gerhard Richter—a record for a living European artist. On average, prices for contemporary and post-war art have risen by 19% over the past year.

The sums changing hands are so colourful that they have inspired a whole new profession: consultants who pick out paintings for their clients based not on aesthetics but on potential returns. Philip Hoffman, who manages funds that invest in art on behalf of rich families, notes a steady shift from buying art for pleasure to buying for investment. According to Deloitte, a

(conventional) consultancy, rising prices in recent years have attracted lots of speculators: nearly three-quarters of art purchases are made at least partly as an investment, up from half as recently as 2012.

Institutional investors first entered the art market in the 1970s as a hedge against inflation: the pension fund of British Rail, for instance, put £40m, or about 3% of its holdings, into oil and canvas. (Although returns were not bad, it sold its last piece in 2003.) Art is also billed as a useful form of diversification, although like many other supposedly "uncorrelated" assets, it did not live up to that billing during the financial crisis. Another selling point is that it is tangible—a popular attribute since the crisis, when lots of abstract and incomprehensible financial instruments proved huge liabilities.

Unlike many other real assets, such as farmland or property, art is also movable, which is handy for buyers who do not plan to tell the taxman about it. It can be a relatively discreet way of investing, too: Christie's arranged $916m of private purchases in 2014, compared with just $266m in 2009.

Even so, the risks of investing in art are high. Prices are volatile and the market is idiosyncratic—no two pieces are interchangeable. "Especially at the top it's based on the passions and whims of a small group of collectors," says Orlando Rock from Christie's. The most popular genres and the most expensive pieces skew art's overall performance as an asset. Last year 0.5% of transactions accounted for nearly half the value of all fine art sold at auction. According to Arts Economics, a research firm, the value of works of art that cost more than €200,000 is growing five times faster than the cheaper stuff. And although contemporary art has had a great year, prices for Old Masters are stagnant and Chinese decorative art is losing value.

Worse, transaction costs, sometimes as high as 4%, make art an especially

expensive asset to trade. Those who buy for aesthetic reasons tend to get better returns than those who buy purely for financial gain, says Philip Hook of Sotheby's, another auction house.

"People buy art when they're confident about their future wealth," says Clare McAndrew, an art economist. She sees the current boom as part of a wider resurgence in optimism since the crisis. When gloom next sets in, unlucky investors will at least have something pretty to look at. ■

投资艺术品

红与黑之学

全球艺术市场如火如荼，却又变幻莫测

伦敦佳士得拍卖行的一间大厅里可能正在拍卖现代艺术品，但大部分准买家看起来非常老派：粗花呢外套和磨破的针织两件套比比皆是。但没关系：轮到重大展品时，总是由光鲜时髦的女性负责通过互联网或电话转入大手笔的竞拍。她们戴着粗框眼镜，红唇明艳。曾属于诺埃尔·科沃德（Noël Coward）的一幅画引发了电话买家间的竞标大战。这幅作品估价不超过2万英镑（3万美元），最后以25万英镑成交。满场显示屏上的帮助信息将这一价格转换为卢布和港币。“我只是来看个稀奇，”一位中年男子说，“这价格疯了！”

全球艺术品市场正如火如荼。据欧洲艺术基金会（the European Fine Art Foundation）的统计，去年交易总额达创纪录的510亿欧元（680亿美元），是2009年的近两倍，略高于之前2007年的峰值480亿欧元。三月一位匿名买家花3亿美元购买了保罗·高更（Paul Gauguin）的作品《你何时结婚？》（When will you marry? 见图），创下艺术品最高价格成交记录。几天之后另一项纪录被打破，一位美国买家以3000万英镑买下格哈德·里希特（Gerhard Richter）的一幅画作，创下在世欧洲艺术家单幅作品的记录。去年，战后及当代艺术作品的价格平均上浮了19%。

转手所得的金额如此丰盈，已催生出一种全新的职业：并非基于审美，而是依据潜在的回报来帮助客户挑选画作的顾问。菲利普·霍夫曼（Philip Hoffman）为富裕家族管理投资艺术品的基金，他注意到了艺术品从买来欣赏到买来投资的稳步转变。传统咨询公司德勤指出，近年来不断攀升的价格已经吸引了大批投机商：近四分之三的艺术品购买在一定程度上有投资的考虑，就在不久前的2012年这一比例还只是50%。

上世纪70年代，为了应对通货膨胀，机构投资者首次进入艺术品市场：例如，英国铁路公司的养老基金将其所持资产的3%，即4000万英镑，投资

于油画。（尽管回报不错，它仍在2003年卖掉了最后一幅。）艺术品也被宣传为分散投资的一种有效形式，尽管和很多其他所谓的“不相关”资产一样，它在金融危机中的表现没能兑现这一宣传。艺术品的另一大卖点是有形资产。金融危机以来，当许多抽象且高深莫测的金融工具最终成了累累负债时，有形成了受人欢迎的属性。

和许多其他实物资产如农场或房地产不同，艺术品转移方便，这对那些不打算将其告知税务人员的买家来说尤其便利。它也可以成为一种低调隐蔽的投资：2014年佳士得的私人洽购业务总计9.16亿美元，2009年仅为2.66亿美元。

尽管如此，投资艺术品的风险仍然很高。价格不稳定，市场特质化，没有两件作品能够互换。“尤其在顶层，它取决于一小群收藏者的激情和心血来潮。”佳士得的奥兰多·罗克（Orlando Rock）说道。最流行的类别和最昂贵的单品扭曲了艺术品作为一种资产的整体表现。去年0.5%的交易占艺术品总拍卖额的近一半。研究公司艺术经济（Arts Economiscs）称，单价超过20万欧元的艺术品的价格增长比便宜的作品快五倍。尽管当代艺术品去年有了个好年景，古典大师的作品价格停滞不前，中国的装饰艺术品正在贬值。

更糟的是，有时高达4%的交易费用让艺术品交易变得特别昂贵。另一家拍卖行苏富比的菲利普·胡克（Philip Hook）说，那些出于审美目的而购买的人，往往会比纯粹为了经济利益出手的人获得更丰厚的回报。

“当人们对自己未来的财富很自信时，他们才买艺术品。”艺术经济学家克莱尔·麦克安德鲁（Clare McAndrew）说道。她将目前的繁荣视作经济危机以来更大范围内乐观情绪复苏的一部分。当下一次黑暗来临时，不走运的投资者至少还有漂亮的东西可以看看。■

Investing in wine

Intoxicating

The quest for full-bodied returns

IT HAS an "extraordinary nose of caramelised herbs, smoke, cedar, pen ink, blackcurrants and earth. The gorgeous aromatics are followed by a full-bodied, plump, rich, fleshy wine with low acidity." Thus Robert Parker, a wine critic, toasted the 1982 Lafite Rothschild.

A virtue he did not mention, however, was its quality as an investment. Wine lovers who scraped together £300 (£1028 in today's money) for a case in 1982, and have resisted the urge to drink it, are now sitting on a £28,000 nest-egg. Few equities have done so well. In the hope of replicating such heady returns, investors have been pouring money into fine wine, now thought to be a $5 billion-$10 billion market.

Limited supply is part of the appeal: the very best wines are grown in tiny batches. Petrus, a much lauded winery, produces only 2,500 cases a year. The most feted producers are often prevented from expanding by law and geography, and it is impossible to replicate the weather that produced the 1982 Lafite. At the same time, demand has soared thanks to the growing ranks of the mega-rich, for whom a collection of fine wine can be the ultimate status symbol.

Brokers flogging wine as an investment offer impressive indices showing average annual growth rates as high as ten percent. Yet that is misleading. Prices surged in 2008-11, thanks largely to the seemingly unquenchable thirst of rich Chinese buyers. But it has since been slaked, both by China's slowing economy and by a fierce anti-corruption campaign, which has discouraged conspicuous consumption. The price of the 2008 Lafite, which was marketed to Chinese buyers in particular, has dropped by half since its

peak in 2011. Across the market as a whole, prices have stagnated since then.

Worse, the market remains small and, ironically, illiquid. Trades can take time, brokers and auctioneers charge fees as high as 20% and the lack of regulation allows scams to flourish. Although online trading platforms, such as WineOwners, and price-comparison sites such as Wine-Searcher are making investing more transparent, the market favours the well informed. And whereas stock-picking can be reduced to algorithms, wine-picking is much more subjective and influenced by a small number of critics such as Mr Parker. Nasty hangovers, alas, are common. ■

投资美酒

酒香醉人

寻觅丰盈回报

此酒“香气非凡，散发着焦糖草、烟熏、雪松、墨香、黑醋栗和泥土的气息。品过美妙的香气，尝到的是低酸度、口感醇厚充盈、浓郁丰满的味道”。这是葡萄酒评论家罗伯特·帕克（Robert Parker）对1982年拉菲葡萄酒（Lafite Rothschild）的颂词。

但他没有提到这种酒的另一个优点——投资价值。爱酒之人如果在1982年时凑出300英镑（等于现在的1028英镑）买来一箱拉菲而一直忍住没喝的话，现在坐拥的就是价值28000英镑的一箱金蛋。没有哪支股票能媲美如此佳绩。为复制这样的强势回报，投资者纷纷把资金投向优质葡萄酒。据估计，如今这一市场的规模为50至100亿美元。

限量供应是吸引力的要素之一：最上乘的葡萄酒只以小批次种植生产。享有盛名的柏图斯酒庄（Petrus）每年只生产2500箱葡萄酒。那些最受推崇的酒庄往往受法律和地理因素的限制，难以扩大经营，而且也不可能复现1982年拉菲酿制时的天气。同时，葡萄酒需求的飙升还得益于超级富豪的不断增多，对他们来说，收藏一窖美酒会是终极的地位象征。

从事葡萄酒买卖投资的经纪商提供的惊人数据显示，年均价格增长率高达10%。但这带有误导性。2008年至2011年间，价格的确大幅上升，主要的幕后推手是中国的富裕买家，他们的渴求似乎难以满足。但之后市场就冷却了下来，一是由于中国经济放缓，二是政府的反腐风暴打击了炫耀性消费。主要针对中国买家的2008年拉菲如今的价格相比2011年时的高位跌去了一半。市场整体价格自此停滞不前。

更糟的是，市场仍然很小，而且讽刺的是，流动性差。交易耗时很长，而经纪商和拍卖行收取的佣金高达20%。监管又不到位，导致欺诈盛行。虽然WineOwners这样的网上交易平台和Wine-Searcher这类比价网站让葡萄

酒投资更具透明度，但要在市场上稳操胜算还是得熟门熟路。选股票可以用算法来完成，选酒则更主观，并且受少数像帕克这样的酒评家的影响。严重的宿醉自是稀松平常。■

Buttonwood

Not kicking the habit

The world is still addicted to debt

EIGHT years have passed since subprime mortgages started to go disastrously wrong, but the after-effects of the debt crisis are still around. So, as a new report from the McKinsey Global Institute* makes clear, is the debt. In fact, there is even more of it.

Global debt has risen by $57 trillion since 2007—an annual increase of 5.3%. That is not dramatically slower than the 7.3% annual growth rate between 2000 and 2007, a period widely seen as a credit boom. If the financial sector is excluded, no leading economy has managed to reduce its debt-to-GDP ratio; 14 countries have seen their ratios rise by more than 50 percentage points (see chart).

In some cases, such as Ireland, this increase merely reflects the fact that financial-sector debt has ended up on the government's balance-sheet because of bank rescues. Shifting debt from the private to the public sector is in some respects a positive step; governments can borrow at a cheaper rate than companies and individuals and, if they have their own currency, have considerable scope to expand their balance-sheets.

Nor is higher debt automatically a problem: debt is a useful way for creditors and borrowers to spread their cash flows over time. In a developing country, rising debt levels may be a sign that the economy is getting more sophisticated. Even a developed economy has no definite threshold at which debt levels become "too high".

But high debt levels do matter. Quips that net global debt is still zero, whatever the sums being borrowed, are wide of the mark. The first problem

is that a lot of debt is secured against property and, when prices fall, both creditors and debtors lose out. When credit expands, homeowners can afford higher house prices; their rising demand pushes prices up further, which increases banks' willingness to lend. McKinsey finds a strong correlation between household debt and house prices in both the countries and the individual American states it studied. They also find that countries where a single city is dominant (as London is in Britain) have higher property prices and more debt. Seven countries, by McKinsey's reckoning, are still vulnerable to debt-laden housing busts: namely, Australia, Canada, Malaysia, the Netherlands, South Korea, Sweden and Thailand.

A second problem with high debt levels is the need to refinance regularly. Ten countries have debt ratios of more than 300% of GDP; if the average maturity of debt is five years, then 60% of GDP must be refinanced every year. If creditors lose confidence in debtors' ability or willingness to repay, a crisis can occur very quickly.

The lack of deleveraging since the crisis indicates the sheer difficulty of eliminating a high debt burden. Write-offs may merely transfer the burden from one party to another. Inflation can work for a while, although eventually creditors will get wise to what is happening and demand higher nominal interest rates to compensate. The key to bringing down a high debt ratio is rapid economic growth, which the developed world has struggled to bring about. Keynesians would say that this failure reflects an excessive focus on public-sector austerity, but demography is also a constraint, and a lasting one: workforces in many developed countries are stagnant or shrinking.

The report cites the examples of Sweden and Finland, which emerged from debt crises in the 1990s. But it points out that both countries were open to trade, and were able to use currency depreciation to boost their exports when the global economy was strong. Today's economic problems are

widespread and not all currencies can depreciate at once. It is therefore hardly surprising that central banks have set interest rates near zero, or even below it: their economies could not stand the strain of higher rates.

The report has various proposals for reducing the impact of bad debts, such as shared-equity mortgages, which would enable lenders to enjoy some of the gains from higher house prices, in return for taking some of the pain from lower ones. It is not clear, however, whether such an idea would take hold without official help. Lenders would surely charge higher rates to compensate for the risk of loss. Reducing tax incentives for debt is another good idea, but one sure to meet fierce resistance, particularly in America, where tax relief on mortgages is regarded as a human right. After a while, like any feel-good drug, debt becomes addictive.

* “Debt and (not much) deleveraging”, www.mckinsey.com/mgi ■

梧桐

死性不改

全球仍借债上瘾

自次贷市场出现灾难性错误至今已过去八年，但这场债务危机的事后影响尚未消失殆尽。同样地，如麦肯锡全球研究院的一份新报告*所指明的，债务也都还在。实际上，负债甚至更多了。

自2007年以来全球债务增长了57万亿美元，年均增长5.3%。这相比2000年至2007年间7.3%的年增长率并未显著降低。普遍认为那七年是信贷繁荣期。如果不计入金融业，没有一个先进经济体设法减少了本国债务对GDP的比例；14个国家的比例上升超过50个百分点（见图表）。

在某些国家，比如爱尔兰，这一增长仅仅反映了一件事：金融业的债务因政府救市而最终转移到了政府的资产负债表上。从某些方面来说，债务从私营行业转移到国营行业是积极的一步，因为相比企业和个人，政府能以更低的利率借到钱，而如果政府发行自己的货币，它们有相当大的余地来扩大其资产负债表。

债务增加也不必定就有问题：债务是债权人和债务人对现金流实现长期合理配置的有效方式。在一个发展中国家，增高的债务水平可能是经济行为变得更为复杂的迹象。即便是发达经济体，对于债务水平如何算“太高”也没有明确的分界线。

但飙升的债务水平确实是个问题。有人打趣说无论借钱多少，全球净负债仍是零，这实属无稽之谈。第一个问题是许多债务用房产做抵押，当房价下跌时，债权人和债务人都遭受损失。当贷款额度增加时，屋主能够买得起更贵的房子，他们增加的需求推动价格进一步上升，继而增加了银行提供贷款的意愿。麦肯锡在其调研的国家和美国各州中发现家庭负债和房价之间有很强的关联性。调查还发现，在那些某个单一城市（比如英国伦敦）占主导地位的国家房价更高，债务也更多。根据麦肯锡的计算，七个

国家仍易发生债务重压下的楼市萧条，包括澳大利亚、加拿大、马来西亚、荷兰、韩国、瑞典和泰国。

高债务水平的第二个问题是需要定期再融资。十个国家的负债率已超过GDP的300%。如果债务的平均年限是五年，那么每年须再融资GDP的60%。如果债权人对于债务人还贷的能力或意愿失去信心，可能会迅速发生危机。

自金融危机以来去杠杆的乏力显现了消除高债务负担的难度之大。勾销债务可能只是把负担从一方转移到另一方。通货膨胀会帮上一段时间，尽管债权人最终会明了状况而要求更高的名义利率做补偿。拉低高负债率的关键是经济快速增长，但发达国家没能实现这一点。凯恩斯主义者会说这一失败反映出对国营行业紧缩的过多关注，但人口构成也是个限制，而且是持续的限制：许多发达国家的劳动力人口滞涨或萎缩。

报告以瑞典和芬兰为例，这两个国家在上世纪九十年代摆脱了债务危机。但报告指出这两国都开放贸易，能在全球经济走强时通过货币贬值提振出口。但今天的经济问题广泛存在，而不可能所有国家同时让货币贬值。因此各央行把利率降至近零甚至负数也不足为奇了：它们的经济无法承受更高的利率压力。

报告就减少坏账影响给出了多个提议，比如部分权益按揭（shared-equity mortgages），它让债权人能够享受到房价上升带来的部分收益，以弥补房价走低时承受的部分损失。不过，并不确定这样的方法在没有政府援助时也能奏效。债权人当然会收取更高的利率来补偿受损风险。另一个好主意是减少对债务的税收优惠，不过它势必会遭遇强烈反对，尤其在美国，在那里为按揭提供税收优惠被视为人权。过了一阵后，就和任何让人飘飘欲仙的毒品一样，借债成了一种瘾。

*《债务和去杠杆（的缺乏）》www.mckinsey.com/mgi■

Financing Europe's small firms

Treasure hunt

With bank lending still subdued, small businesses look elsewhere for cash

ANDY MURRAY, a tennis ace, made headlines in June—off the court as well as on it. He is teaming up with Seedrs, an up-and-coming British crowdfunding platform through which small companies sell stakes in themselves. The Scot will advise Seedrs on the health, sports and wearable-technology sectors as well as make the odd investment himself. Through such websites, individuals and funds provided over €1.5 billion ($2 billion) in equity and debt to European small and medium-sized enterprises (SMEs) in 2014, according to researchers at Cambridge University and EY, an accounting firm.

That is a pittance compared with the €926 billion of total new external funding made available to European SMEs the year before, mostly by banks. But the amount is more than doubling each year. That is heartening, since European banks, nursing big losses from the financial crisis and trying to rebuild their capital ratios, have trimmed lending to businesses by 12% over the past six years.

Crowdfunding is just one of a number of ways in which European SMEs, typically far more reliant on bank financing than their American counterparts (see chart), are trying to compensate for the continuing decline in bank lending. Others include issuing publicly tradable debt or equity; placing securities privately with institutional investors; and accepting loans from non-bank financial institutions ("shadow banks"). Banks and others are also securitising loans to SMEs (ie, pooling them, dividing the pool into tranches with different degrees of risk, and selling the resulting securities to investors).

Governments are keen to promote all this, to limit the economic harm done by sickly banks. In France, for example, the finance ministry has taken a lead since 2012 in creating a pan-European market for private placements. In 2013 and 2014 decrees created SME debt funds and loosened the rules to let insurers invest up to 5% of their liabilities in unlisted companies. In 2014 a regulatory framework for peer-to-peer lending was put in place. Earlier in June the government pushed through parliament the *loi Macron*, which contains among its many reforms permission for one company to lend directly to another.

Italy created a mini-bond market in 2013, granted the public export agency (SACE) permission to lend directly to SMEs in 2015, and in March opened equity crowdfunding to "innovative" SMEs. Spain set up its own mini-bond market in 2013. In March Britain exempted private placements from withholding tax on revenues.

The Bank of England and the European Central Bank are working to produce a standard for simple and transparent securitisations that will entail less onerous capital charges for their buyers. Improving finance for SMEs is a central focus of a plan pushed by the European Commission to unify the continent's capital markets.

All this seems to be having an effect. Private-debt funds (investment funds that lend directly to SMEs) account for about 6% of SMEs' estimated total funding, according to the Alternative Investment Management Association (AIMA), an industry group. That share will increase to 15-20% within the next five years, AIMA reckons. A survey of hedge funds, private-equity funds and traditional asset managers with $440 billion under management revealed that 82% of them are lending to SMEs, mostly in Britain but also in France, Germany and the Netherlands. Banks and non-banks are increasingly lending alongside each other.

European private placements are multiplying too. In 2014 firms (around half of them French) raised about €6.7 billion in the market, twice the level of recent years. They raised another €11 billion through similar German *Schuldscheine* and €13 billion in American private placements.

Securitisation has been dwindling for the past few years but volumes may now stabilise. At the end of 2014 European SMEs had almost €107 billion in securitised debt outstanding, according to figures from the Association for Financial Markets in Europe, another industry group. That is a far cry from the €175 billion in the second quarter of 2012. New SME securitisations in 2014, however—some €33 billion—were well up on the €20 billion of 2013.

Almost all SME securitisations involve loans originated by banks and spun off their balance-sheets; the banks still sit in between borrowers and lenders. But Monica Curti of Moody's, a rating agency, points to another development that she believes will lead to further "disintermediation" of banks. A French investment group, Giac, is securitising pools of bonds issued by SMEs, not bank loans. Last year eight Italian water utilities pooled and securitised their mini-bonds. Igor Zelezetskii, also of Moody's, thinks securitisation will prove a shot in the arm for peer-to-business lending too.

Such steps cannot come soon enough. With bank lending still shrinking, novel forms of corporate finance will have to grow exponentially to fill the void. At least alternatives exist—and are prospering. ■

欧洲小企业融资

寻宝记

银行信贷仍然低迷，小企业往别处寻找资金

网球名将安迪·穆雷（Andy Murray）6月在球场内外都上了新闻头条。他和英国前途大好的众筹平台Seedrs（小企业在该平台上出售自己公司的股权）达成了合作协议。这位苏格兰球星将给Seedrs提供健康、运动和可穿戴技术行业的建议，而他自己也会做出不同寻常的投资。根据剑桥大学的研究人员以及安永会计师事务所的统计，通过这类网站，2014年个人和各类基金通过购买债券和股票，向欧洲中小企业提供了超过15亿欧元（20亿美元）的资金。

欧洲中小企业在2013年获得的外部融资总额为9260亿欧元，其中大部分来自银行。相比之下，从众筹平台中获得的融资微不足道。但其金额每年增长超过一倍。这一点振奋人心，因为欧洲的银行在金融危机中承受了重大损失，它们试图重建资本充足率，过去六年中已经把对企业的贷款削减了12%。

欧洲中小企业通常远比美国的中小企业更依赖银行贷款（见图表）。现在，它们正在试图弥补银行信贷持续缩减带来的空缺，众筹只是它们使用的许多方法之一。其他方法包括：发行可公开交易的债务或股权；向机构投资者私募配售证券；接受来自非银行金融机构（所谓的“影子银行”）的贷款。银行和其他机构还把提供给中小企业的贷款证券化（即把这些贷款汇集成贷款池，分成风险层级不同的组别，转化为证券出售给投资者）。

各地政府热衷于促进所有这些融资手段，以减少问题银行对经济造成的危害。比如在法国，财政部自2012年以来牵头创建一个泛欧股权私募市场。2013年和2014年颁布的法令创立了中小企业债券基金，放宽了法规，允许保险商最多将其债权的5%投资于未上市公司。2014年推出了P2P借贷监管框架。6月稍早时，法国政府推动国会通过了马克龙法案（loi Macron）。该法案包含许多改革措施，其一是允许一家企业直接向另一家企业放贷。

意大利在2013年创建了迷你债券市场，今年已准许公共出口信贷机构（SACE）直接向中小企业放贷，3月还向“创新型”中小企业开放了股权众筹。西班牙在2013年也建立起自己的迷你债券市场。今年3月，英国豁免了私募配售的收入预提税。

英国央行和欧洲央行正在商订一套让证券化变得简单而透明的标准，将会减少证券买家的资本支出负担。欧盟委员会推动开展一项旨在统一欧洲资本市场的计划，聚焦于改善中小企业融资。

所有这些努力看来都产生了效果。根据行业组织另类投资管理协会（AIMA）的统计，私人债务基金（直接出借给中小企业的投资基金）贡献了中小企业融资总额估计值的约6%。该协会估计，该比例在未来五年将增至15%到20%。对管理着4400亿美元资产的对冲基金、私募基金和传统资产管理者的调查发现，这些机构中有82%都向中小企业贷款，大多是英国的企业，但也有法国、德国和荷兰的企业。银行和非银行机构正变得更为互补，向企业提供融资。

欧洲的私募发行也在加速倍增。2014年，企业（其中约半数是法国公司）在私募市场融资约67亿欧元，是近年平均水平的两倍。它们还通过德国类似的私募工具Schuldscheine（凭证贷款）筹集到另外110亿欧元，并在美国的私募市场获得了130亿欧元。

过去几年证券化陷入低迷，而如今规模可能已经趋稳。根据另一行业团体欧洲金融市场协会（AFME）提供的数据，2014年底，欧洲中小企业的证券化债务余额约为1070亿欧元。这比起2012年第二季度的1750亿欧元相去甚远。但是，在2014年完成的新一批证券化达到约330亿欧元，远超过2013年的200亿欧元。

几乎所有中小企业证券化都涉及由银行发起但从其资产负债表剥离的贷款。银行仍是借方和贷方的中间人。但是，评级机构穆迪的莫妮卡·柯蒂（Monica Curti）指出在她看来会进一步导致金融脱媒的另一项发展。法国投资集团Giac正把中小企业发行的债券池而非银行贷款证券化。去年，

八家意大利水力公司汇集了它们的迷你债券并将其证券化。同样来自穆迪的伊戈尔·泽勒泽茨基（Igor Zelezetskii）认为，证券化会被证明对P2B贷款也是一剂强心针。

这类发展来得永远都不够快。银行信贷还在萎缩，新形式的企业融资必须出现指数级增长才能填补缺口。不过，至少这些替代方式已经存在——而且也已在蓬勃发展。■

Private equity

Another Greek tragedy

Pressure mounts on two private-equity giants that did very well out of a disastrous takeover

IN THE run-up to the financial crisis, private-equity funds seemed to be trying to outdo each other in overpaying for assets. Yet many avoided the bulk of the losses when disaster struck. Often the industry would contribute only a sliver of equity, then quickly extract an equivalent amount or more through heroic feats of financial engineering—thus ensuring a quick profit, and leaving others to bear the pain if the acquired firm tottered under its new mountain of debt. Wily tax structures could help boost returns further.

Now the chickens appear to be coming home to roost for the architects of one particularly egregious-looking deal: the takeover in 2005 of a Greek telecoms group, TIM Hellas, by funds set up by TPG and Apax Partners, two private-equity giants. One question is whether TPG and Apax put their own payouts from Hellas ahead of the financial health of the company. But aggrieved creditors go further. They allege that the transactions involved were not just imprudent, but fraudulent.

Hellas wobbled—and eventually toppled—after the private-equity sponsors increased its debt many times over in short order, while simultaneously extracting several times more money than they had put in. This prompted a legal battle with bondholders and the liquidators, which is still going on. The liquidators have accused the former owners of "duplicitous and catastrophic plunder" that amounted to "one of the very worst abuses of the private-equity industry". Apax denies wrongdoing. TPG declined to comment.

The Economist understands that the two firms are also indirectly under assault from Luxembourg's taxman, who has demanded a hefty payment from a Hellas vehicle after it allegedly mischaracterised distributions to its private-equity owners. On top of this, on June 8th Britain's accounting regulator ordered that Ernst & Young (now EY), which had audited Hellas's books, be "severely reprimanded" and fined for ethical breaches related to its work for Hellas.

The €1.6 billion ($2.1 billion) acquisition of Hellas, then Greece's third-biggest mobile operator, was at the time the country's largest leveraged buy-out. The fourth-biggest mobile operator, Q-Telecom, was subsequently rolled into it. The group was later renamed WIND Hellas.

At the time, Hellas looked to be in reasonable, if not stellar, shape: serving 20% of the Greek mobile market, it was making more than €110m in annual profit and its debt was a modest €187m. Within little more than a year of the deal, however, the group's debt had been jacked up 15-fold. Much of this increase was the result of heavy borrowing to pay cash to redeem "convertible preferred-equity certificates" (CPECs), a bond-like instrument that can be converted to shares. The deal's sponsors—vehicles set up by the private-equity firms to carry it out—had arranged for group companies to issue these notes to them in exchange for their equity contribution of €77m (the sponsors also lent the group more than €300m, which they later repaid themselves).

After siphoning out most of their investment through the CPECs, the owners sought to flip Hellas. When that failed, they quickly ramped up their withdrawals. This was done by arranging the redemption of most of the remaining CPECs at a controversial price.

Having allegedly taken out almost five times their total contribution (and almost 20 times their equity portion) in 18 months, the sponsors sold

Hellas to an Egyptian investor in 2007. With insufficient income to service its debts, Hellas went into administration in 2009. The crux of the claims by creditors is that the money they lent was misappropriated. They thought they were financing Hellas's operations, whereas in practice, they argue, the firm was "systematically pillage[d]" by the sponsors, rendering its debts unsustainable.

The story behind the bill of more than €200m that Luxembourg's tax authority has presented to a Hellas vehicle gives a sense of the financial engineering involved. If the vehicle cannot pay, the private-equity firms themselves could eventually be on the hook. The ruling that led to the bill has not been made public; neither the tax agency nor the private-equity firms will comment. But it has been confirmed by well-placed sources.

The tax demand relates to the redemption of the CPECs, which are a uniquely Luxembourgish instrument. Holders receive regular payments, tied to the issuer's profits. At maturity, typically a matter of decades, the note can be redeemed for cash at face value or converted into shares. CPECs can be accounted for as either debt or equity, depending on how they are used. This "hybrid" status opens up intriguing tax-minimisation opportunities.

The tax spat hinges on whether the company should have classified redemption payments made in 2006 as a dividend distribution (equity) or a loan repayment (debt). The private-equity partners who benefited from them said they were loan repayments that would deleverage Hellas. That led to favourable tax treatment, as Luxembourg levies a withholding tax on equity, but not on debt.

The tax authority argues that the distribution could be treated as debt only if it was used to reduce Hellas's borrowings. It wasn't, it believes, but was instead an improper dividend. Company filings suggest the owners were

aware that such CPEC redemptions should be treated as equity; a financial statement for Hellas in 2006 said the firm "has concluded that [the CPECs] should be classified as equity".

Hellas's liquidators and debt-holders believe the Luxembourg ruling, if it stands, will bolster cases that are pending in American bankruptcy and state courts. "It validates our litigation, which turns on similar issues, such as the nature and purpose of redemptions, and the argument that withdrawals were taken from borrowed funds, not reserves," says a creditor.

The liquidators' complaint is a colourful read that compares the private-equity firms' windfall to the sack of Troy. It has several angles of attack. The first is the contention that the speed of the owners' withdrawals was reckless. By autumn 2006, a year after they first bought in, they had already recouped 90% of their total €390m contribution, mostly by getting Hellas companies to borrow heavily and pay them back with the proceeds.

That leads to the second line of attack: the questionable valuation of the CPECs as withdrawals accelerated. In December 2006, €973m was passed along to the owners, via a chain of Hellas vehicles, as the bulk of remaining CPECs were redeemed (see chart). This redemption was unlike earlier ones, which were done at par value (the amount the holders originally paid for them). It was priced at a whopping 35 times par. The company tried to justify this on the ground that this was the security's current "market" value. This allowed the owners to extract a lot more for each CPEC they held. Strikingly, weeks later those CPECs that were still to be redeemed were once again valued at par.

The liquidators argue that the spike in the valuation was arbitrary and unfair, and that there is no evidence an independent valuation was sought, as required. Approval for the revaluations came from a board largely affiliated with TPG and Apax. (Nikesh Arora, heir-apparent at Japan's

SoftBank, was on the board of the main operating company at the time. Named by the liquidators as a defendant, he is understood to have settled their claims. Mr Arora declined to comment.) The handling of the CPECs showed "utter disregard" for fiduciary obligations to Hellas and its creditors, says a legal complaint. It also argues that the payments violated the terms of the CPECs because they lay outside the circumstances in which early redemption is allowed. "None of the preconditions for a CPEC redemption had been satisfied, let alone carried out at a preposterous multiple of 35 times par," it states.

An Apax spokesman says, "Apax and TPG funds sold Hellas to a third party in a 2007 transaction that valued it at €3.4 billion, and it was not until three years later, on the heels of the global financial crisis, that the Hellas notes went into default. For these reasons and others we are confident that the plaintiffs' claims will not succeed."

The buyer in 2007 was Weather Investments, controlled by Naguib Sawiris, an Egyptian. It wrote a cheque for €500m and took on Hellas's €2.9 billion of debt. A year or so later, Apax paid the same amount, €500m, for a 5% stake in Weather.

The new owner moved Hellas's domicile from Luxembourg to Britain, which offers a speedy form of bankruptcy known as a pre-packaged administration. It entered such a process in 2009, causing much of Hellas's debt to be wiped out. Weather then bought the company back for €50m in cash and certain debt guarantees.

Meet the agitators

The legal and tax battles over Hellas look set to continue for some time. Luxembourg's move on the tax front is part of a wider trend. The Grand Duchy has been under pressure to crack down on its cushy tax arrangements with multinationals. The tax demand is "a positive sign that

Luxembourg is finally showing it can be tough," says Laurence Sudwarts, a bondholders' representative. The OECD is leading the global charge to close loopholes like those created by CPECs. Hybrids are high up its agenda and are "on their way to being dismantled" in tax havens, says Pascal Saint-Amans, the OECD's tax chief.

More drama is guaranteed in the courtroom, too. A group of out-of-pocket investors won a $565m judgment on one of their claims last year, but collecting will be a challenge since the ruling is against a Hellas vehicle, not the private-equity funds.

In March an American court denied a motion by TPG and Apax to dismiss an unjust-enrichment claim, saying the complaint "sufficiently alleges that the transfers…were made with actual fraudulent intent". TPG and Apax are also trying to have legal standing in America denied to the liquidators, even though a third of the aggrieved debt-holders are in New York.

Some of the creditors are distressed-debt outfits that bought after Hellas hit trouble. They are a determined bunch. One, who bought in "purely to agitate", says he "will never give up". Overall, creditors are €1.4 billion out of pocket.

All of the claims that TPG, Apax and their funds and vehicles could ultimately be on the hook for add up to somewhere between €2 billion and €2.5 billion, including interest. In the worst-case scenario, a money-spinner could become a loss-maker. Small wonder they are fighting hard to persuade the courts that Hellas was a good deal done at an inopportune time, not a brazen piece of asset-stripping. ■

私募股权

又一出希腊悲剧

曾在一场灾难性收购中表现出众的两大私募巨头正倍感压力

在金融危机抬头阶段，私募基金似乎都在互相攀比，给资产开出过高的价格。但是当灾难袭来时，许多私募基金却避免了大量损失。这一行业通常只拿出一小部分资金来投资，然后利用金融工程的种种壮举迅速抽取与投资相当甚或更多的资金，从而保证快速获利，而且一旦新收购的公司在堆积如山的债务下摇摇欲坠时，痛苦可以留给他人去承受。精妙的税收结构更加有助于提升回报。

不是不报，时候未到。现在，一笔尤其厚颜无耻的交易的始作俑者到了偿罪之时。2005年，两大私募股权巨头德太投资（TPG）和安佰深（Apax Partners）成立基金，收购了希腊电信集团TIM Hellas。疑问之一是德太投资和安佰深是否只顾自己从Hellas攫取回报，而罔顾公司的财务健康。但是愤愤不平的债权人不止步于此。他们宣称所涉交易不仅仅是轻率鲁莽，而是有意欺诈。

在私募股权出资人短期内多次加重公司的债务杠杆，并数次从公司抽取比他们的投入更多的资金后，Hellas摇摇欲坠，最终倒下。这促发了与债券持有人和清算人之间的官司，且仍在继续。清算人指责公司前所有者“表里不一、进行灾难性的掠夺”，所作所为构成了“私募股权行业最恶劣的伤害之一”。安佰深否认有不当行为。德太投资则拒绝评论。

据《经济学人》了解，这两家公司也间接遭到卢森堡税务部门突袭。它们的一个Hellas载体被指在向私募股权所有者分配收入时分类性质不当，卢森堡税务机构因此要求该载体补缴高额税费。此外，6月8日英国的会计监管机构对曾审计过Hellas账目的安永会计师事务所“严厉斥责”，并对其在与Hellas相关的工作中违反职业操守处以罚款。

Hellas当时是希腊第三大移动运营商，这场价值16亿欧元（21亿美元）的

收购是当时该国最大的杠杆收购。第四大移动运营商Q-Telecom随后也被并入。该集团后来更名为WIND Hellas。

当时Hellas看起来即使不算出类拔萃，状况也算不错：拥有希腊移动市场20%的份额，年利润超过1.1亿欧元，负债1.87亿欧元，并不算多。然而，成交不过一年多，该集团的债务上涨了15倍。这一增长有很大一部分源自大量借款，以支付现金赎回“可转换优先股凭证”（CPEC）——一种可转换为股份的类债券工具。收购交易的出资机构，即由私募股权公司成立用以开展交易的载体，安排了集团公司向出资机构发行这些证券，以交换其7700万欧元的股权投资（这些出资载体还借给集团3亿多欧元的债务，后来它们偿还给了自己）。

在通过CPEC抽回了大部分投资之后，所有者们试图卖掉Hellas。计划失败后，它们迅速加快攫取资金。采用的方式是以有争议的价格赎回大部分剩余的CPEC证券。

据称这些出资人在18个月中攫取的资金几乎相当于它们所有投入的五倍，也是它们投入股本的近20倍。之后在2007年，它们将Hellas卖给了一家埃及投资商。由于资不抵债，Hellas于2009年进入破产管理。债权人追索的关键点是他们认为出借的资金被挪用了。他们称，他们原以为自己在为Hellas的营运提供资金，但实际上，公司被出资人“有计划、有步骤地掠夺”，致使其债务负担变得无法承受。

卢森堡税务机构向Hellas的一家载体开出了2亿多欧元的罚单。这个故事背后可以一觑其中牵扯的复杂金融工程。如果该载体无力支付罚单，那么最终私募股权公司自己可能被套住。与处罚相关的裁决至今未公开；税务机关和私募股权公司都不予置评。但是已经有相当可靠的信息来源证实了这一点。

催税单与CPEC的赎回有关，而CPEC是一种独特的卢森堡式金融工具。持有人会获得与发行者的利润相关联的定期付款。这类凭证通常期限长达几十年，到期时可以按面值以现金赎回，或者转换为股权。CPEC在会计上

既可以算作债务也可以算作股本，取决于怎么使用它们。这种“双重”状态为最大限度避税提供了绝妙机会。

税收上的争执集中在公司应当将2006年的赎回款项归为股息分配（权益）还是贷款还款（债务）。从中受益的私募股权合伙人说这些是贷款还款，将为Hellas降低债务。税收优惠对此适用，因为卢森堡对股本征收预提所得税，但对债务不征收。

税务机关认为这一分配只有在用于偿还Hellas的借款时才能当做债务。而它们相信实情并非如此，这其实是一项不当的股东权益。公司档案显示所有者曾意识到这类CPEC赎回应该被当做权益；2006年Hellas的一份财务报表称该公司“已得出结论（CPEC）应当被归为权益”。

Hellas的清算人和债权人认为，如果卢森堡的裁决有效，那么它将支持在美国破产法院和州法院待决的案例。一位债权人说：“这支持了我们的诉讼，因为它涉及类似的议题，比如证券赎回的性质和目的，以及被提取的资金出自借入资金而非资本公积的说法。”

清算人的申诉精彩纷呈，他们将私募股权公司的意外之财比作对特洛伊城的劫掠。它从几个角度展开攻击。首先是对所有人抽取资金的速度是否过快的争论。到2006年秋天，距首次收购仅一年，所有人已经收回了总计3.9亿欧元投入的90%，主要是通过让Hellas旗下公司大举借贷来支付他们的借款。

这引出第二个攻击方向：随着抽取资金加速，对CPEC的估价也有疑问。2006年12月，剩余CPEC的大部分被赎回，9.73亿欧元通过一系列Hellas载体流进所有者的腰包（见图表）。这次赎回与之前的数次不同，之前是按票面价值（持有者最初购买时的金额），而这次的定价是票面价值的35倍，着实惊人。公司试图证明这是合理的，理由是这是该证券当时的“市场”价值。这使得所有者从每份CPEC上都抽取了金额咋舌的资金。引人注目的是，几个星期之后，还未赎回的CPEC再一次跌落回票面价值。

清算人认为估价飙升属独断专行且有失公允，而且没有证据表明这些证券

曾经按规定做过独立估值。曾批准进行重新估值的那届董事会与德太投资和安佰深具有强关联关系。尼科什·阿罗拉（Nikesh Arora）是日本软银的第一接班人，当时是主要运营公司的董事之一。清算人将他列为被告。据了解，阿罗拉已经就他们的索赔达成和解。他对此拒绝评论。一份诉状中写到，对CPEC的处理显示出对Hellas和其债权人信托义务“全然无视”。诉状还认为支付违反了CPEC的条款，因为这些款项支出并不属于允许提前赎回的情况。诉状中称：“CPEC赎回的先决条件一条也不满足，更别说以35倍的票面价值进行，这简直荒谬。”

安佰深的一位发言人称：“在2007年的交易中，安佰深和德太投资基金将Hellas出售给第三方，价值34亿欧元，直到三年后，紧随全球金融危机之后，Hellas的债券才陷入违约。鉴于这些原因及其他事项，我们相信原告的诉求不会成功。”

2007年的买家是Weather Investments，由埃及人那古布·萨维里斯（Naguib Sawiris）控股。该公司开出5亿欧元的支票，并承担了Hellas29亿欧元的债务。大约一年后，安佰深同样支付了5亿欧元，获得了Weather公司5%的股份。

新的所有人将Hellas的注册地从卢森堡迁往英国，英国提供一种加速破产的程序，称作预重整制度。2009年Hellas进入这一程序，导致其大量债务被抹去。Weather随后以5000万欧元现金和一些债务担保将公司购回。

> *满足煽动者*

针对Hellas的官司和税务战还将持续一段时间。卢森堡在税收方面的动作是更大趋势的一部分。由于对各跨国公司的税务安排过于宽松，这个大公国一直备受压力，要求其加强管制。催税单是“一个积极的信号，表明卢森堡终于显示出它能够强硬起来。”债券持有人代表劳伦斯·萨德沃茨（Laurence Sudwarts）说道。经合组织正引领全球堵住类似CPEC这样的漏洞。经合组织税务主任帕斯卡尔·圣阿曼斯（Pascal Saint-Amans）说，混合证券首当其冲，且在避税国“正被铲除”。

法庭上也一定有好戏上演。在去年的一项诉讼中，一群赔钱的投资者赢得了5.65亿美元的判决，但因为裁决是针对Hellas载体，并非私募股权基金，所以执行将是一大挑战。

3月，美国法院驳回了德太投资和安佰深关于不予受理不正当得利索赔的一项动议，称该申诉“充分指出这些转移……具有实际的欺诈意图”。德太投资和安佰深还试图让清算人的法律地位在美国不被承认，尽管三分之一愤愤不平的债权人就在纽约。

有些债权人是不良债券机构，在Hellas遇到麻烦后才买入债券。这一群体态度非常坚决。其中一位买进这些债券“只为了兴风作浪”的人说，他“绝不会放弃”。总的说来，债权人赔了14亿欧元。

所有针对德太投资、安佰深，以及它们的基金和载体的索赔最终合计约在20亿至25亿欧元之间，包括利息在内。最坏的情况下，这台印钞机可能变成赔钱货。因此私募基金奋力抗争，试图说服法庭Hellas只是在不合时宜的情况下完成的一笔好买卖，而不是一次无耻的资产剥离，也就不足为奇了。■

Insurance in Asia

Astounding claims

For insurers, Asia is a cauldron of innovation, but also of competition

ASIANS are becoming older and richer, which should mean plenty of business for insurers. Age, after all, increases the need for health insurance; wealth brings property to protect. The region's middle class is expected to balloon from 525m in 2009 to 3.2 billion by 2030, according to BCG, a consultancy. Household wealth will double over the coming decade, from $81 trillion today to $174 trillion by 2025. Thanks to increased life expectancy, the region's army of pensioners will grow rapidly, especially in China, which already has 132m people over the age of 65. Rich-country diseases are proliferating too: by 2030 half of the world's new cancer cases will be in Asia and, according to Swiss Re, a reinsurer, non-communicable chronic conditions such as heart disease could account for 67% of deaths in India.

No wonder that insurance in the region is indeed booming. In 2013 premiums grew by 7.3%, compared to 1.4% in Europe and a decline in North America (see chart). In 2003 Indonesians spent $7 a person on life insurance; in 2013, $59.

Yet Asia remains woefully underinsured. Western countries typically spend 7-8% of GDP on insurance; in 2013 Asian ones, excluding Japan, spent 3% on average. That is all the more inadequate given that governments have no plans to develop cushy public safety nets. Instead, they are opening up their insurance markets, in the hope that these can help shoulder the growing cost of health care and retirement. In India, where patients pay around 68% of medical bills directly and insurers only 3%, the government recently loosened rules on foreign ownership of insurance firms in an effort to stimulate the industry. China wants 5% of GDP to be spent on

insurance by 2020, up from 3% today.

The main obstacle to that is cultural. In many Asian countries, people tend to insure themselves, by building up savings, rather than paying someone else to take on their risks. In response, insurance firms are marketing hybrid policies that offer both savings and protection. For instance, Manulife, a Canadian firm, offers several life-insurance products that also offer insurance against critical illness if the underlying investments are performing well enough. Linking such policies to specific goals is also popular: one example from another insurer is a saving product designed to cover a child's college education, but with an insurance element whereby contributions will be maintained if the breadwinner dies. Taikang, a Chinese life insurer, promises those taking out its "Be Fortunate" policy a place for life in one of its retirement homes, rather than the cash payments most life policies offer.

By the same token, insurance products tied to a specific risk sell well. Prudential, a big British insurer, offers another protection-investment hybrid called Pru My Child, which covers unexpected medical costs for pregnant Indonesians and their babies. Insurers are also coming up with cut-price products along these lines. Most auto-rickshaw drivers cannot afford comprehensive medical insurance, but might buy low-cost insurance that covers emergency medical expenses in the event of hospitalisation from a traffic accident.

Getting quick access to health care is another selling-point. If you're unwell and uninsured in China, the only thing to do is stand in the queues that start growing at around 3am on the steps of state-run hospitals and hope for the best.

Many people want insurance just to get a number in that queue, says Jonathan Zhao of EY, a consultancy. Ping An, one of China's fastest-growing

health insurers, has an app called “Ping An Good Doctor” which provides appointments for outpatients and help with admissions for inpatients at a network of state-run hospitals. Many insurers now employ lots of doctors to give advice online, by text or by phone. Pricier products that promise to fly sick policyholders to Singapore for treatment are also popular.

Distribution is another area of innovation. Insurers typically seek a tie-up with a bank to identify and importune likely customers. AIA, a big regional insurer, has a partnership of this sort with Citibank for 11 Asian countries; Prudential with Standard Chartered for nine. More creatively, Aviva, a British firm, has developed a partnership with Astra, Indonesia’s biggest distributor of cars and motorcycles. MetLife, an American insurer, recently launched a digital sales drive in China, including an app developed with Tencent, a Chinese social-media giant, which enables customers to buy insurance via their mobile phones.

Some of the most innovative firms are local. A group of Thai insurers is selling basic accident, fire and health policies via scratch cards sold at 7-Eleven stores. Buyers text the number revealed by scratching to the relevant firm to activate the policy. Asian firms that are big in their national markets, such as Ping An in China, Tokio Marine in Japan and Hanwha in South Korea, are all expanding regionally. It is testimony to Asia’s allure that insurers from near and far are piling in. ■

亚洲保险业

惊人的断言

对保险公司而言，亚洲是创新的热土，也是竞争的焦点

随着亚洲人口日益老龄化和更加富裕，保险公司拥有无限商机。毕竟，老龄化会加大对健康保险的需求；而财富带来需要保障的财产。据波士顿咨询公司（BCG）预计，亚洲的中产阶级将从2009年的5.25亿猛增至2030年的32亿。未来十年中，家庭财富将会翻番，从目前的81万亿美元上升到2025年的174万亿美元。由于预期寿命的增加，这里的退休大军将迅速壮大，尤其在中国（中国65岁以上的人口已达1.32亿）。富裕国家的疾病也在激增：据再保险公司瑞士再保险（Swiss Re）称，到2030年，世界上将有一半的新发癌症病例来自亚洲，心脏病等慢性非传染性疾病可能会占印度死亡人数的67%。

难怪这个区域的保险业务如此红火。2013年保费增长了7.3%，相比之下，欧洲增长了1.4%，而北美有所下降（见图表）。2003年，印尼人的人均人寿保险支出为7美元；2013年为59美元。

遗憾的是，保险业在亚洲发展依然滞后。西方国家通常把GDP的7%至8%用于保险；而2013年，日本以外的亚洲国家的平均比例为3%。鉴于亚洲各国政府没有发展舒适的社会保障网的计划，这一比例就愈发不够了。取而代之的是，政府正在开放保险市场，希望它能帮助承担不断增长的医疗和退休费用。在印度，患者直接支付大约68%的医疗费，而保险公司仅负担3%。为了刺激保险行业，印度政府最近放宽了保险公司外资所有权的规定。中国希望用于保险的GDP比例能从目前的3%上升到2020年的5%。

对此，主要障碍是文化上的。在许多亚洲国家，人们往往通过储蓄来自我保障，而不是花钱让别人承担风险。为应对这种情况，保险公司销售兼具储蓄和保障功能的混合保单。例如，如果投资标的表现得足够好，加拿大公司宏利（Manulife）的一些寿险产品还提供重大疾病保障。把这种保单和具体目标挂钩的做法也很流行：另一家保险公司有一款储蓄产品，用以

支付孩子上大学的费用，但它兼有保险的要素，如果家里的经济支柱去世，保险给付还将继续。中国寿险公司泰康人寿承诺将由旗下的养老院向购买“幸福人生养老保险计划”的客户提供终身养老，而不是像大多数寿险产品那样支付现金。

同样，与特定风险相捆绑的保险产品也很热销。英国大型保险公司保诚（Prudential）提供名为“Pru My Child”的保障加投资混合产品，为印尼的孕妇和婴儿支付意外医疗费用。沿着这个思路，保险公司还提供低价产品。大多数机动三轮车司机买不起综合医疗保险，但可以购买廉价的保险，万一发生交通事故时可用来支付住院的紧急医疗费用。

迅速获得医疗保健也是一个卖点。在中国，如果你身体不适又没有保险，你唯一能做的就是站在国有医院的门口排队（这种队伍从凌晨3点起就不断壮大），听天由命。

咨询公司安永的赵晓京表示，许多人买保险仅仅是为了能排队挂上号。中国发展最快的健康保险公司之一平安有一款名为“平安好医生”的应用，提供门诊预约，并在国有医院帮助客户办理住院。现在，许多保险公司雇用大量医生通过在线、短信或电话提供咨询。更贵些的产品还保证让生病的投保人飞到新加坡接受治疗，这也很受欢迎。

分销是另一个创新领域。保险公司通常会寻求与银行联盟来识别和追逐潜在的客户。大型区域性保险公司友邦（AIA）与花旗银行在亚洲11个国家拥有这种伙伴关系；英国保诚与渣打银行在九个国家结盟。英国公司英杰华（Aviva）更具创造性，已经与印尼最大的汽车和摩托车经销商阿斯特拉（Astra）结为伙伴。美国保险公司大都会人寿（MetLife）最近在中国推出一项数字销售活动，包括它与中国社交媒体巨头腾讯联手开发的一个应用，让客户用手机买保险。

一些最富有创新精神的公司是当地企业。一批泰国保险公司通过7-11便利店出售的刮刮卡来销售基本的意外、火灾和健康险产品。买家刮开相应公司的号码并发送短信来激活保单。中国平安、日本东京海上（Tokio

Marine）和韩国韩华（Hanwha）等在本国市场做得很大的亚洲企业都在区域内扩张。四面八方的保险公司都蜂拥而至，这证明了亚洲的吸引力。

Free exchange

Money for old folk

The relationship between ageing and inflation is not as simple as economists assume

WHEN it comes to the economic impact of demography, Japan is the wizened canary in the world's coal mine. It has become older faster than any other big country: its median age went from 34 in 1980 to 46 today, and will continue rising for decades. But it will soon have plenty of greying company, from wealthy countries such as Finland and South Korea to developing giants, including China and Russia. Economists generally agree that the ageing of populations leads to slower growth, because a country's potential output tends to fall as its labour force shrinks. They also expect heavier fiscal burdens, with governments providing for more pensioners from a smaller tax base.

Until recently, though, there had been little research into how demography affects inflation. The Japanese example of persistent deflation over the past two decades was seen as evidence enough that prices fall when countries age and their growth slows. Shinzo Abe, Japan's prime minister, has sought to disprove that, espousing massive monetary easing to get prices rising. With inflation slumping far below the Bank of Japan's 2% target in recent months, it is tempting to conclude that ageing is too powerful a force to overturn. But a new body of research* gives advocates of Abenomics a bit of support, at least on the demographic front. It shows that deflation is not the preordained outcome of ageing.

The problem lies not in identifying the possible links between ageing and prices, but in working out which way they cut. Consider the factors of production. When growth slows businesses rein in investment, so the cost of capital may decline. Yet wages ought to rise when the supply of workers falls. In the realm of fiscal policy, some indebted governments may make

painful cuts as pensioners multiply, leading to slow growth and sluggish inflation. But others may opt to monetise their debt, pushing inflation up. (Some suspect this is the ultimate aim of Abenomics.)

How to disentangle these possibilities? In a recent working paper, Mitsuru Katagiri of the Bank of Japan and Hideki Konishi and Kozo Ueda of Waseda University distinguish between the ageing caused by a falling birth rate and that brought on by increased longevity. The main effect of fewer births would be a shrinking tax base; that might prompt the government to embrace inflation to erode its debts and thus stay solvent. But longer lives would cause the ranks of pensioners to swell; their increased political influence, in turn, would augur for tighter monetary policy to prevent inflation eating into savings.

In the case of Japan the authors estimate that the ageing process has led to deflation of about 0.6 percentage points a year over the past 40 years—a huge cumulative impact. That, they believe, is because the big surprise in Japanese demography has been ever-increasing longevity. Fertility rates are close to the levels projected in 2002, but the government has steadily revised up its estimates of lifespans. It is unexpected longevity, not simply ageing, that has been deflationary in Japan.

What about the impact of ageing on financial assets? Economic theory—"the life-cycle hypothesis"—holds that people smooth their consumption over their lifetimes, going into debt when young, buying assets when their earnings peak and selling them to pay for retirement. That, in theory, should lead to lower asset values as countries enter their dotage, but the empirical record is mixed: house prices often fall, but stocks sometimes rise.

An important variable is whether assets sold by pensioners are domestic or foreign. Derek Anderson, Dennis Botman and Ben Hunt of the International

Monetary Fund looked at the decrease in Japan's net savings rate from some 15% of disposable income in the early 1990s to about zero in 2011. What stands out is that many of the liquidated savings had been invested in foreign assets. When Japanese pensioners sold stocks and bonds abroad and repatriated the funds, they fuelled an appreciation in the yen—a consistent problem until 2012. This in turn contributed to deflationary pressure, by lowering the cost of imports. But the researchers also reckon that strong monetary easing combined with a credible commitment to an inflation target would have been sufficient to negate the effect of ageing. In other words, they believe Japan needed Abenomics long before it got it.

Greyflation

A recent paper by Mikael Juselius and Elod Takats for the Bank for International Settlements offers a very different take on how ageing affects inflation, suggesting that Japan may not be typical after all. They look at 22 advanced economies from 1955 to 2010. Japan is, after all, not the only country to have experienced deflation. Sure enough, they find a steady correlation between deflation and demography, but just the opposite of what is commonly assumed. A larger share of dependents—both young and old—is associated with higher inflation, whereas having more people of working age is linked to lower inflation. Their explanation, albeit tentative, is straightforward. Countries with more people consuming goods and services than producing them are liable to have excess demand and thus inflationary tendencies. Those with more producers than consumers will, by contrast, have excess supply and a deflationary bias.

That raises the question of why prices in Japan have fallen for so many years, given its rapidly ageing population. There are several potential culprits: the damaged balance-sheets left by the popping of the asset bubble of the 1980s, say, or the hesitant monetary policy before Mr Abe. But if the paper's thesis holds true, an ageing population could yet lead to rising

prices in the coming years. As the Bank of Japan seeks to vanquish deflation, demography may turn out to be friend, not foe.

* Studies cited in this article can be found at www.economist.com/ageing15 ■

自由交流

长者资金

老龄化与通胀的关系不像经济学家想得那么简单

说到人口结构对经济的影响，日本可谓是世界经济“煤矿”里的老“金丝雀”。其老龄化速度比其他大国更快：国民年龄中位数从1980年时的34岁升至如今的46岁，之后几十年还将继续上升。但马上有不少老龄化国家将与之作伴，包括芬兰、韩国这些富裕国家以及中国、俄罗斯这类发展中大国。经济学家普遍认为人口老龄化将导致经济增长放缓，理由是当一国劳动力减少时，其潜在产出也倾向下降。他们还估计，政府税基缩小而养老金支出增多，国家的财政负担将因而加重。

但直至最近，很少有研究探讨人口结构如何影响通胀。日本过去20年持续通缩，被视为可充分证明随着社会老龄化和增长放缓，物价会下降。日本首相安倍晋三力图推翻这种定式，他推行大规模的货币宽松政策刺激物价上涨。最近数月，通胀水平下滑至远低于日本央行之前所定2%的目标，很容易让人得出结论，认为老龄化是难以推翻的巨大力量。然而，新一组研究*却给安倍经济学的倡导者带来一点助力，至少在人口结构问题上是如此。研究显示通缩并非社会老龄化的必然结果。

问题不在于辨识老龄化与物价之间的潜在关联，而在于其影响。考虑生产要素。当增长放慢，企业抑制投资，资本成本可能因而下降。但随着劳动力供应下降，工资应该上涨。在财政政策领域，随着退休老人激增，一些负债累累的政府也许会痛削支出，导致增长放慢，通胀低迷。但也有一些政府选择以债务货币化的手段推高通胀。（有人怀疑此乃安倍经济学的终极目标。）

如何理清这多种可能性？最近由日本央行的片桐满（Mitsuru Katagiri，音译）与早稻田大学的小西秀树（Hideki Konishi，音译）及上田幸三（Kozo Ueda，音译）合作的一份工作论文把低出生率导致的老龄化和人口寿命延长带来的老龄化加以区分。出生率减低的主要影响是令税基缩

小，这或许会促使政府接受通胀以化解债务，维持偿付能力。而人口寿命增长会令领取退休金的老人增多，其愈加壮大的政治影响力将预示着更紧缩的货币政策，以防通胀蚕食储蓄。

针对日本的情况，该论文作者估计，在过去40年里，老龄化进程导致每年约0.6个百分点的通缩，其累积影响巨大。他们认为，原因是日本人口结构的大惊喜——人们寿命的不断延长。如今日本的生育率接近2002年时预测的水平，但对于人口寿命的估计，政府需要不断修正提高。促使日本持续通缩的是意料之外的人口长寿现象，而非简单的老龄化问题。

那么，老龄化对金融资产有何影响？经济理论“生命周期假说”认为，人们的消费随人生不同阶段调整——年轻时欠债，收入达顶峰时购入资产，之后出售资产以供退休使用。按此理论，那意味着国家一旦老龄化，资产价值就会下降，但实证数据却结论不一：房价往往下跌，但股票却时有上涨。

一个重要的变量是退休人口出售的资产究竟是国内的还是国外的。日本的净储蓄率从上世纪90年代占可支配收入约15%下跌至2011年的约为零，国际货币基金组织的德里克·安德森（Derek Anderson）、丹尼斯·鲍特曼（Dennis Botman）及本·亨特（Ben Hunt）就此作出一番研究。他们发现，那消失的储蓄中许多投资于外国资产。当日本退休老人出售手中的海外股票和债券，把资金转回国内时，就会推动日元升值。这是截至2012年持续存在的一个问题，继而令进口成本下降，造成通缩压力。但这群研究者也认为，强有力的货币宽松政策加上对通胀目标的可信承诺足以抗衡老龄化的影响。换言之，他们相信日本早就应该实践安倍经济学。

银发通胀

最近由米克尔·朱里思（Mikael Juselius）和艾洛德·塔卡兹（Elod Takats）为国际清算银行撰写的一份研究论文对老龄化如何影响通胀却有另一番见解。他们提出日本的情况未必是典型现象。他们研究了22个发达经济体在1955至2010年间的情况。毕竟日本并非经历通缩的唯一国家。果然，他们发现了通缩与人口结构之间的一个稳定关联，与普遍认可的理论

恰恰相反。供养人口（包括老人和儿童）增加与更高的通胀相关联，而劳动力人口增加则与低通胀相关。个中理由未成定论，但解释起来简单直接。产品及服务的消费人口高于生产人口的国家会趋向过度需求，从而产生通胀趋势。相反，生产者比消费者多的国家会出现供过于求，偏向通缩。

那大家会问，日本人口迅速老龄化，为何物价仍多年持续下降？其中有一些潜在元凶：比如说，上世纪80年代资产泡沫破灭后受损的资产负债表，或者是安倍晋三上台前优柔寡断的货币政策。但如果该论文观点正确，人口老龄化还是可以引致未来物价上涨。随着日本央行出招对战通缩，“老龄化”也许是朋友，而非敌人。

* 本文所引的研究可见参见www.economist.com/ageing15

China's banks

Small is ugly

Bad loans pile up at China's small, unlisted banks

IF THE recent actions of China's regulators are anything to judge by, its lenders need help. Over the past ten days alone, the central bank has pumped extra cash into the financial system, cut interest rates and lowered the portion of deposits banks must hold in reserve; the government has scrapped a ceiling on their loan-to-deposit ratios. The combined effect is to free more cash for banks to lend—a boost for banks seeking to improve the return on their assets as well as a prop for the sputtering economy and plunging stockmarket. The official data, though, suggest China's lenders are still in rude health: bad loans make up just 1.4% of their balance-sheets. That is a touch above the level of the past few years, but still more than two-thirds lower than before the global financial crisis.

How to explain the discrepancy? One possible answer is that bad loans are a lagging indicator. It is only after the economy has struggled for a while that borrowers begin to suffer. Looked at this way, China is trying to anticipate problems, keeping its banks in good nick by sustaining economic growth of nearly 7% year-on-year. Another, more worrying possibility is that bad loans are worse than official data indicate. Many in the market have long suspected this: bank shares are priced as though bad loans constitute 5-10% of their books.

That has consistently looked too pessimistic for China's biggest banks, which are managed conservatively and largely focus on the country's highest-quality borrowers. But there is mounting evidence that when it comes to smaller banks, especially those yet to list on the stockmarket, bad loans are piling up. That is important, because unlisted lenders account for just over a third of the Chinese banking sector, making them as big as

Japan's entire banking industry (see chart).

Although non-performing loans have edged up only slowly, the increase in special-mention loans (a category that includes those overdue but not yet classified as impaired) has been much bigger. At the end of the first quarter, they accounted for 3.5% of banks' balance-sheets, up one percentage point from a year earlier, according to the banking regulator. Special-mention loans are about 2% at most of China's big, listed banks, suggesting that they must be much higher at their smaller, unlisted peers. Many of these overdue-but-not-impaired loans are simply bad debts which banks have not yet admitted to.

Another troubling omen is China's roaring trade in dud loans. Some 15 years ago, the government created asset-management companies (often referred to as "bad banks") to take on the non-performing loans of its lenders. After the initial transfer, the bad banks had little to buy. But last year, they began gobbling up troubled loans again. Cinda, the biggest of the bad banks, bought nearly 150 billion yuan ($24 billion) of distressed assets last year, two-thirds more than in 2013. Without the disposals, these assets would have nudged up the banks' bad-loan ratio by a few tenths of a percentage point.

Although such numbers are still not very alarming, a bleaker picture emerges from a close reading of the balance-sheets of unlisted lenders. Jason Bedford and Stephen Andrews of UBS, a bank, reviewed last year's results for 138 banks, of which only 20 are listed. They found that "shadow loans"—loans recorded as investments—have grown to as much as 8.7 trillion yuan, or 5% of the industry's assets. These are heavily concentrated on the balance-sheets of smaller, unlisted banks (see chart). Banks need not specify whether their shadow loans have gone bad or not.

A handful of banks do spell things out and, for a few, the figures are

frightening. Bank of Changsha's impairments on its shadow loans are 12 times higher than on its conventional loan book. Leshan City Commercial Bank's impaired shadow loans are 80 times higher, in effect putting its bad-loan ratio at a jaw-dropping 20% (the bank says this reflects investments at risk, not in default). These may be extreme cases but, given scant disclosures from other unlisted banks, it is impossible to be sure. They may be deliberately disguising bad debts as shadow loans. At a minimum, all this points to a need for recapitalisation. Small banks can make big waves. ■

中国的银行

小而丑

不良贷款在中国未上市小银行内越垒越高

以中国监管部门近日的行动判断，该国的贷款机构需要援助。单单过去十天里，中国央行已向金融系统注入额外现金、降息、下调银行存款准备金率，同时政府取消了银行贷存比率上限。这些举措形成合力，要让银行能够释放更多资金用于放贷，为寻求改善资产回报的银行提供助推力，为走弱的经济和暴跌的股市提供支撑。然而，官方数据却显示中国的银行仍然非常健康：不良贷款仅占其资产负债表的1.4%，略高于过去几年的水平，但仍比金融危机前的水平低逾三分之二。

如何解释这种不一致？一个可能的解释是不良贷款是一个滞后的指标。只有当经济已经挣扎了一段时间后，借款人才开始承受冲击。如果从这一角度来看，那么中国正未雨绸缪，努力维持经济同比增长近7%，以保持银行运行状况良好。而另一种更让人担忧的可能性是不良贷款的状况要比官方数据所披露的更糟。许多市场人士对此早有怀疑，从银行股的价格来看，人们认为坏账占银行资产的5%到10%之多。

对中国最大的银行来说，这种估计一直以来都显得过于悲观。这些银行管理保守，很大程度上专注于中国最高质量的借款人。但是，越来越多证据显示，在更小的银行尤其那些尚未上市的小银行内，坏账正在堆积。这一点很重要，因为未上市银行占了中国银行业的三分之一强，规模和日本整个银行业一般大（见图表）。

虽然不良贷款只是缓慢上升，关注类贷款（逾期但尚未为被列为坏账）的增长幅度要大得多。根据中国银监会数据，今年第一季度末，它们占银行资产负债表的3.5%，比去年同期增加了一个百分点。在中国大部分的大型上市银行里，关注类贷款占总资产的约2%，由此可以推算出，在更小型的未上市银行中，其占比必定高得多。许多这类逾期但尚未列为坏账的贷款实际上就是银行尚未承认的坏账。

另一个坏兆头是中国坏账交易大增。大概15年前，中国政府创立了资产管理公司（常被叫做“坏账银行”）来承接银行的不良贷款。在最初的剥离之后，这些坏账银行没什么可收购的了。但在去年，它们又开始大量收购问题贷款。中国最大的坏账银行中国信达资产管理股份有限公司去年收购了近1500亿元（240亿美元）的不良资产，相较2013年增加了三分之二。如果没有对坏账的此类处理，这些不良资产原本会把银行的不良贷款率推高零点几个百分点。

虽然这些数字还算不上非常惊人，若仔细审视未上市银行的资产负债表，看到的景象更加不容乐观。瑞银的贾森·贝德福德（Jason Bedford）和斯蒂芬·安德鲁斯（Stephen Andrews）查看了138家银行去年的数据，其中只有20家已经上市。他们发现，“影子贷款”也就是被录为投资的贷款已经上涨至8.7万亿元之多，占银行业全部资产的5%。这类贷款主要集中在规模较小的未上市银行（见图表）。银行不需要列明它们的影子贷款是否已经变成坏账。

少数银行确实列明了这种变化，而其中有几家的数字高得吓人。长沙银行的影子贷款坏账是其传统贷款坏账的12倍。乐山市商业银行则为80多倍，实际上将其不良贷款率推高至令人咋舌的20%（该银行称这反映了有风险的投资而非违约水平）。它们可能是极端的案例，但鉴于其他未上市银行披露甚少，并不能确定这一点是否属实。银行可能故意将坏账包装成影子贷款。至少，所有这些都指向了资产重组的必要性。小银行可能掀起大风浪。■

Buttonwood

The debt trap

The developed world has not found an answer to its debt problem

ALMOST eight years have elapsed since the financial crisis took hold in August 2007 and still the same issues are being fought over. Who should suffer the most pain—creditors or debtors? Is the best way to achieve growth short-term fiscal stimulus or long-term structural reform? And, in Europe in particular, how does one reconcile local democracy with international obligations?

Debt is a claim on future wealth: lenders expect to be paid back. The stock of debt accordingly tends to expand at moments of economic optimism. Borrowers hope that their incomes are set to rise, or that the assets they are buying with borrowed money will increase in price; lenders share that enthusiasm.

But if wealth does not rise sufficiently to justify the optimism, lenders will be disappointed. Debtors will default. This causes creditors to cut back on further lending, creating a liquidity problem even for solvent borrowers. Governments then step in, as they did in 2008 and 2009.

The best way of coping with too much debt is to spur growth. But developed countries, even America, have struggled to reproduce their pre-crisis growth rates. So the choice has come down to three options: inflate, default or stagnate.

The inflation option means that nominal GDP rises rapidly, reducing the ratio of debt to GDP. The main constraint on this strategy is the speed with which creditors react by forcing up interest rates on newly-issued debt. The longer the maturity of their existing debt, the easier it is for governments to

use this option.

In practice, there has been very little inflation in the developed world. (Countries in the euro zone do not control their own currencies so have no power to inflate the debt away in any case.) The debt burden has been controlled by "financial repression": holding real rates at very low, or negative, levels. By making it easier for borrowers to service their debts, this has staved off a repayment crisis in many countries, but it has not made much of a dent in the overall debt burden.

The Greeks did manage to default on private-sector debt in 2012, but this wasn't enough help given the collapse in their GDP in recent years. And the problem with default, when debt is so widespread, is that it simply shifts the liability somewhere else. If a country's banks hold a large amount of government debt, and the government defaults, then the banks will need to be rescued by the government, making the problem circular. Countries have been defaulting to foreign creditors for centuries, of course, and they tend to be forgiven by investors after a few years. But economic conditions get pretty scary in the interim, as the Greeks may find out.

So if inflation has been hard to achieve and default looks like a risky option, then stagnation (or near-stagnation) ends up being the outcome. That has been the case in Japan, where sluggish economic growth has been the norm since its asset bubble burst in the early 1990s. But stagnation only postpones the problem. Japan has faced less pressure than most, since it owes money mainly to its own citizens—it does not have to worry about foreign creditors. Yet even Japan has tired of the situation: Abenomics was designed to get the country out of the trap by generating more growth and inflation.

The EU has been heading down the Japanese route. Both places face demographic problems that will sap their growth indefinitely. That

increases the need for offsetting improvements in productivity, but reforms to that end face fierce political resistance.

Like Japan, the euro zone has an internal, not an external, debt problem. However, the current crisis has shown that there is not enough political solidarity to support outright burden-sharing. Intra-European transfers are seen as a zero-sum game, in which any aid to Greece is a loss to other nations in the bloc.

This has been a flaw in the euro project from the start. The only answer is political union with a central fiscal authority. But that would require voters in the 19 euro-zone member states to give up sovereignty—something the Greeks are not alone in resisting. And the EU's sluggish growth is adding to the disillusionment with Brussels among European electorates.

So what does all this mean?At the very least, an endless series of crises and European summits. It also means that Syriza will not be the last insurgent party to gain power, that central banks will have to keep interest rates low in order to keep the system going and that, given current high valuations, portfolio returns for investors are going to be mediocre for the foreseeable future. ■

梧桐

债务陷阱

发达国家的债务问题至今无解

2007年8月金融危机爆发，距今已近八年时间，但人们还在争论着同样的问题。谁该承受最大的苦果？是债权人还是债务人？实现增长的最佳途径是短期财政刺激还是长期结构性改革？如何调和本国民主治理与所负国际债务，尤其是在欧洲？

债务是对未来财富的索取：出借方期望得到偿还。因此，经济乐观时，债务总额有扩大的倾向。借款人寄望自己收入上升或者贷款购入的资产升值，出借方也有同样的期盼。

但若财富增值的程度不如预期般乐观，债权人会失望，债务人会违约。这导致债权人收紧未来放贷，从而造成流动性问题，即便对有偿付能力的借款人也是如此。然后政府介入，就像2008年和2009年时那样。

重债缠身，最好的应对办法是刺激增长。但即使是美国这样的发达国家也难以再现危机前的增长速度。所以，只剩三个选择：通胀、违约、停滞。

通胀意味着名义GDP迅速上升，降低债务占GDP的比率。这一策略的主要局限在于债权人会迅速迫使新发债提高利率。现有债务的久期越长，政府运用此招就越容易。

实际上，在发达国家通胀很少见。（欧元区国家对自己的货币没有控制权，所以在任何情况下无权以通胀来缩减债务。）发达国家的债务负担一直受“金融抑制”所控，实际利率保持在非常低或负数水平。这减轻了借款人的偿债负担，从而让许多国家延缓陷入还款危机，但整体债务负担却并未因此减轻许多。

2012年，希腊成功完成私营部门债务置换计划，但近年该国GDP连续下滑，该计划并不足以解决问题。而且遍地债务的情况下，以违约脱身只不

过是把债务责任转移到别处而已。如果一国银行持有大量国债，而政府违约，则银行又需要政府出手救援，问题只会循环相生。当然，数百年来一直有国家对外国债权人违约，而往往几年后便得到投资者的原谅。但期间的经济状况会变得相当可怕，希腊人接下来可能就会经历这样的过程。

如果通胀难以实现，违约又似一着险棋，那么停滞（或近乎停滞）就成了最终结果。日本就是如此，自上世纪90年代初资产泡沫破裂，该国经济增长乏力已经成为常态。但停滞只是推后了问题。日本比大部分国家面对的压力要小，因为它主要是对国民负债，而无外国债权人之忧。但就连日本也厌倦了这样的状态：安倍经济学就是要通过刺激增长和通胀让国家走出陷阱。

欧盟正在重蹈日本的覆辙。两地均面对将无限期削弱经济增长的人口结构问题，从而更需要生产率的提高来补偿，但以此为目标的改革面临强烈的政治阻力。

与日本一样，欧元区面对的是内部而非外部的债务问题。但目前的危机显示，欧元区内缺乏政治向心力，成员国不愿直接分担责任。债务在欧洲内部转移被视为一种零和游戏，对希腊的任何资助在欧元区其他国家看来都是自己的损失。

这是从欧元项目启动之初就已存在的一个缺陷，而唯一的办法是建立具有中央财政主管机构的政治联盟。但那需要欧元区19个成员国的选民放弃主权，在这一点上，反对的不止希腊人。区内增长缓慢，更加剧了欧洲选民对欧盟幻想的破灭。

这一切意味着什么？最起码是无止尽的连场危机及欧洲首脑会议。这也预示着，希腊激进左翼联盟（Syriza）不会是最后一个登场夺权的反对党，而且各国央行将不得不保持低利率，以维持体系运作。另外，鉴于目前的高估值，在可预见的未来，投资组合回报将乏善可陈。■

The Big Mac index

A few dollars less

Our burger benchmark finds that the greenback is too dear

IN NOVEMBER the McDonald's restaurant in Pushkin Square in Moscow reopened following a three-month closure ordered by local health inspectors. The penalty was widely seen as retaliation for Western sanctions against Russia. The restaurant was a predictable target. When it first opened in 1990, it symbolised the triumph of American capitalism over a crumbling Soviet Union. Now it holds up a mirror to another American economic victory: the resurgence of the dollar. All but four currencies in our Big Mac index look cheap compared to the greenback. The rouble is the cheapest of all.

The index is based on the idea of purchasing-power parity, which says exchange rates should move towards the level that would make the price of a basket of goods the same in different countries. Our basket contains just one item: a Big Mac hamburger. If the local cost of a Big Mac converted into dollars is above $4.79 (its price in America), a currency is dear; if it is below the benchmark, it is cheap. In Pushkin Square a Big Mac costs 107 roubles, or $1.88 at the current exchange rate, two-fifths of the average price in four American cities. That in turn implies that the rouble is undervalued by 61% (see chart 1).

Purchasing-power parity holds only in the long run. Over shorter periods, currencies are often pushed far away from such fair-value yardsticks by international capital flows, which in turn are driven by broader trends in the global economy. Exchange rates are currently being buffeted by the euro crisis, the growing likelihood of a rise in interest rates in America, China's slowing economy and the sharp drop in the oil price, one of the drivers of the rouble's slump. By showing how much these forces have driven

different currencies off course, the Big Mac gives a flavour of what may be to come.

Start with the dollar's revival. It began in earnest in May 2013 when Ben Bernanke, the chairman of the Federal Reserve at the time, dropped a hint that the Fed's purchases of bonds using newly minted money ("quantitative easing" or QE) might soon tail off. The prospect, however distant, of higher interest rates in America prompted a sell-off in emerging-market currencies. As the Fed moved slowly towards a tighter monetary stance, policy became looser in other rich economies. The yen is 38% below its fair value in burger terms, in large part because of the Bank of Japan's expanding QE scheme. When the European Central Bank eventually resorted to QE, the euro dropped like a stone from $1.30 to $1.05. It has since rebounded to $1.10, but that still leaves it 15% undervalued on the Big Mac gauge.

Yet the dollar's broad-based rise appears to have run out of steam. It ticked up against the euro and yen on July 15th after Janet Yellen, the Fed's new boss, told Congress that interest rates were likely to rise later this year, as expected. But she also said that the pace of interest-rate increases would be gradual. The Fed's caution will probably prevent the dollar rising much further, at least against the main currencies of the rich world. Japan's current-account surplus is growing thanks to burgeoning income from the country's huge holdings of foreign assets, according to analysts at Morgan Stanley. The euro area's large current-account surplus is a similar bulwark against further depreciation. "It can't keep on going down every day on the back of bad news that everyone expected," says Kit Juckes of Société Générale, a bank.

For emerging-market currencies, cheap Big Macs are not necessarily a sign of an impending appreciation. That is because the cost of a burger depends partly on untradeable inputs, such as rent and wages, which tend to be

lower in poor countries (gauges based on purchasing-power parity work best when comparing countries with similar income). But not all emerging markets are equal: the countries whose currencies have fallen furthest recently are commodity producers. In fact, China's waning hunger for raw materials is afflicting rich and poor exporters alike (see chart 2).

The prices of oil and of some industrial commodities, such as iron ore, are falling again. That leads to cuts in investment and weaker GDP. The debts run up to pay for mines and wells also look more onerous. Brazil is a big commodity exporter, and the real looks overvalued relative to its peers, but Brazil's high interest rates make it costly for speculators to sell it short and are a lure to yield-hungry investors. The Malaysian ringgit, in contrast, is second only to the rouble in terms of value on our gauge. Yet it is likely to get cheaper still, reckons George Papamarkakis of North Asset Management, a hedge fund, because of its exposure to raw materials and because lots of flighty foreign investors own Malaysian bonds. The Canadian dollar is close to fair value on the Big Mac index but it should perhaps be cheaper. A slump in the country's oil-sands industry, among other ills, prompted the Bank of Canada to cut interest rates to 0.5% on July 15th.

Eventually currencies that have fallen hard will become cheap enough to attract buyers. There is a price for everything—even currencies such as the South African rand and the Russian rouble, which investors currently see no merit in. Who can resist a 60% discount? ■

巨无霸指数

少了几美元

我们的汉堡指数发现美钞太贵了

去年11月，在被当地卫生检查部门关停了三个月之后，位于莫斯科普希金广场的麦当劳餐厅重新开业。人们普遍认为这一处罚是俄罗斯在报复西方国家的制裁。这家餐厅是意料之中的靶子。它于1990年首次开业，象征着美国资本主义击败了摇摇欲坠的苏联。现在它清楚地映照出美国的又一场经济胜利：美元的反弹。我们的巨无霸指数中除了四种货币之外，其他货币与美元相比看来都便宜了。而卢布是最便宜的。

这一指数基于购买力平价理论，即汇率应当会趋向某个水平，让一篮子商品在不同的国家售价相同。我们的篮子里只有一样东西：巨无霸汉堡。如果当地巨无霸汉堡的售价兑换成美元超过4.79美元（即巨无霸在美国的价格），那么这种货币就偏贵；如果低于这一基准价，那么这种货币就较为便宜。在普希金广场一个巨无霸汉堡售价107卢布，按当前汇率为1.88美元，是四个美国城市平均价格的五分之二。这也意味着卢布被低估了61%（见图表1）。

购买力平价的假定只在长期内成立。短期内，货币常常在国际资本流动的推动下远离这样的公允价值基准，而国际资本流动又由更广泛的全球经济趋势所驱动。目前汇率受到多重因素冲击：欧元危机、美国加息可能性日增、中国经济趋缓，以及油价大幅下跌——即卢布暴跌的原因之一。通过展现这些作用力如何将不同的货币推离轨道，巨无霸指数让我们一窥可能到来的前景。

先从美元复苏说起。它真正始于2013年5月，时任美联储主席伯南克暗示美联储可能会很快缩减用新发行货币购买债券（量化宽松）的规模。虽然距美国加息尚有时日，但这种前景引发了对新兴市场货币的抛售。随着美联储慢慢收紧货币政策，其他富裕经济体的政策渐渐放松。从巨无霸指数看，日元比其公允价值低38%，很大程度上是由于日本央行扩大了量化宽

松的规模。当欧洲央行最终求助于量化宽松时，欧元汇率一落千丈，从1.30美元暴跌至1.05美元。虽然之后回弹至1.10美元，但用巨无霸指数衡量仍被低估了15%。

但是美元的全面上涨似乎已显露疲态。7月15日，美联储新主席珍妮特·耶伦（Janet Yellen）告知国会可能会在今年迟些时候加息——一如外界预期。美元兑欧元和日元的汇率应声上涨。但她同时也表示加息将逐步进行。美联储的谨慎可能会阻止美元进一步上涨，至少兑换富裕世界主要货币的汇率会如此。摩根士丹利的分析师称，由于日本持有的大量国外资产带来迅速增长的收入，该国的经常账户盈余正在增加。欧元区庞大的经常账户盈余也是类似的堡垒，抵御欧元进一步贬值。法国兴业银行（Société Générale）的科特·朱克斯（Kit Juckes）说："它不可能因为众人预期中的坏消息而每天往下跌。"

就新兴世界而言，便宜的巨无霸不一定是货币即将升值的信号。这是因为汉堡的一部分成本取决于不可交换的投入，例如租金和工资，贫穷国家的这些成本往往较低（基于购买力平价的指标在比较收入相近的国家时效果最佳）。但是并非所有新兴市场都相同：最近货币跌势最猛的国家都是大宗商品生产国。其实，中国对原材料的需求不断减少，这既让富裕的出口国苦恼，同样也折磨着贫穷的出口国（见图表2）。

油价和铁矿石等工业大宗商品的价格再次下跌，这导致投资削减、GDP疲软。用来支付矿山油井成本的积欠债务看来也愈加繁重。巴西是大宗商品出口大国，相比其他同类国家，雷亚尔看起来被高估了。但因为巴西的高利率，投机商要卖空雷亚尔代价不菲，而对于渴求收益的投资者来说，高利率是一大诱惑。相比之下，在我们的价值指标中，马来西亚林吉特仅高于卢布。但是对冲基金北方资产管理公司（North Asset Management）的乔治·帕帕马卡基斯（George Papamarkakis）认为林吉特可能还会下跌，因为其在原材料方面的风险敞口大，而且很多浮躁的外国投资者持有马来西亚债券。加拿大元接近巨无霸指数的公允价值，但它或许应该再便宜一些。该国油砂行业萧条，加上其他问题，促使加拿大央行于7月15日降息至0.5%。

最终那些大幅下跌的货币将便宜到足以吸引买家。万物皆有价，即便是如南非兰特和俄罗斯卢布这样投资者目前看不到价值的货币。四折优惠谁能抵挡？■

Stocks in China

China embraces the markets

A panicked response to tumbling stocks casts doubt on the pace of reform

FOR nearly two years, hopes of economic reform in China have rested on the faintest of rhetorical shifts. At a conclave in late 2013 the Communist Party declared that it would let market forces play a "decisive role" in allocating resources; previously, their influence had been just "basic". A slender reed perhaps, but it supported a great expectation: that the state would ease its grip on business, trade and finance.

These hopes have been dealt a blow this week by China's stockmarket crash. By the end of July 7th trading in over 90% of the 2,774 shares listed on Chinese exchanges was suspended or halted. Shares have fallen by a third in less than a month, wiping out some $3.5 trillion in wealth, more than the total value of India's stockmarket. It is not the plunge in share prices, however, nor the implications for the Chinese economy that are worrying, so much as the government's frenzied attempts to bring the sell-off to a stop.

The market mayhem is the first grave economic blemish on Xi Jinping and Li Keqiang, China's leaders. Officials' botched attempts to repair the damage have only made a bad situation worse. The danger now is that the party draws the wrong conclusions—leaving China more vulnerable to instability.

Red flag

The first mistake—often made by China pessimists—is to think that the market crash presages an economic collapse. That is most unlikely. True, the stockmarket is down by a third in a few weeks, but it has fallen back only to March levels; it is still up by 75% in a year.

Lost in the drama is the fact that the stockmarket still plays a small role in China. The free-float value of Chinese markets—the amount available for trading—is just about a third of GDP, compared with more than 100% in developed economies. Less than 15% of household financial assets are invested in the stockmarket, which is why soaring shares did little to boost consumption and their crash should do little to hurt it. Many stocks were bought with debt, and the unwinding of these loans helps explain why the government has been unable to stop the rout. But such financing is not a systemic risk; the loans are about 1.5% of total assets in the banking system. The economy is solid. Growth, though slowing, has stabilised. The property market, long becalmed, is picking up. Money-market rates are low and steady, suggesting banks are stable.

To be fair, Chinese officials understand this. The trouble is that they are less willing to accept the two fundamental causes of instability: the structure of markets and China's brittle politics. Take each in turn.

From mid-2014 until early June, ChiNext, a market for start-ups, more than tripled. China's mania derived partly from the way the market functioned. Regulators act as gatekeepers over initial public offerings, in effect deciding which firms list, when and at what price. Because the government was initially slow to approve new IPOs, those firms already lucky enough to have ChiNext listings became financing vehicles. Investors pumped their shares higher, knowing that the capital could buy firms waiting in the long queue to list. Hence the wooden-flooring company that remade itself as an online-gaming developer and the fireworks-maker that became a peer-to-peer lender, among dozens of similar mutations. Before long, the ChiNext price-to-earnings ratio had reached 147, putting it in the same league as NASDAQ during the dotcom era.

China's repressed financial system helped inflate the bubble by pumping money into the stockmarket. Banks pay interest rates well below the level

that would be expected without regulatory caps, and China has yet to develop alternatives for savers looking to park their cash elsewhere. The hunt for good returns has over the past decade sparked investment frenzies in property, stamps, mung beans, garlic and tea. Steps to give investors better access to foreign markets and to free up bank rates all aim in the right direction but progress has been halting. Equities were as ripe for a bubble in 2015 as they were in 2007, the last time China experienced a stock frenzy.

If economic stability is not in peril, the best explanation for the interventions is politics. When the stockmarket was soaring, the press cheered the bull run as an endorsement of the economic reforms of the Xi-Li team. Now that it is falling, regulators want to shore up the leadership's reputation.

It is not just the motive that is dodgy; the nature of the intervention is also unwise. Cutting interest rates as support for the economy when inflation is so low is fair enough. But regulators capped short-selling; pension funds pledged to buy more stocks; the government suspended initial public offerings; and brokers created a fund to buy shares, backed by central-bank cash.

Just as the Communist Party distrusts market forces, so it misunderstands them. Botched attempts to save stocks suggest it is losing control, while a successful rescue would have made buying shares a one-way bet—inflating the bubble still further. One of the persistent illusions about China's governance is that, whatever its other shortcomings, eminently capable technocrats are in control. Their haplessness in the face of the market turmoil points to a more disconcerting reality.

China is not the first country to prop up a falling stockmarket. Governments and central banks in America, Europe and Japan have form in

buying shares after crashes and cutting interest rates to cheer up bloodied investors. What makes China stand out is that it panicked when a correction of clearly overvalued shares had been expected. Rather than calming investors, its barrage of measures screamed of desperation.

Go faster

The journey from command to market economy is a long and dangerous one. China has managed it well. But, in financial markets, it still has a long way to go. After the bedlam of this week, it must realise that being partially liberalised presents investors with perverse incentives and policymakers with extraordinary demands. China must not go slow or turn back. That would be the most dangerous path of all. Instead, the real lesson from this week is that it must let the markets decide. ■

中国股市

中国拥抱市场

股市暴跌，应对张皇，改革步伐引质疑

近两年的时间里，中国经济改革的希望一直立足于措辞的细微变化上。2013年底的一次党内会议上，中国共产党宣布将让市场在资源配置中发挥“决定性作用”；在之前的官方说辞中，市场仅起到“基础性作用”。虽然用词的调整微乎其微，但这已支撑起一个宏大的希望：中国将放松对商业、贸易和金融的管控。

本周，中国股市的暴跌给这种希望以沉重一击。截至7月7日收盘时，沪深两市2774只上市股票中超过90%停牌或跌停。股市在不到一个月里下跌了三分之一，市值蒸发3.5万亿美元，超过印度股市的总市值。然而，比起股价暴跌以及对中国经济的影响，更令人担忧的是政府多次疯狂阻止股市抛售的尝试。

此次市场混乱是中国领导人习近平和李克强经济政策的第一次重大缺陷。政府官员多次拙劣的救市尝试只让事态越发糟糕。现在的危险是党得出错误的结论，从而加剧中国经济形势的不稳定性。

> *红旗飘飘*

第一个错误常由中国的悲观主义者所犯，他们认为市场暴跌预示着经济崩溃。这非常不可能。股市的确在几周内下跌了三分之一，但也只是回落至今年3月的水平，一年内仍上涨了75%。

在这出大戏中被忽略的一个事实是，股市在中国经济中扮演的角色仍小得惊人。流通股的市值，即可交易量，只占GDP的约三分之一，而在发达国家这一比例超过100%。家庭金融资产不足15%流入股市，这是为何股价飙升时并未提振消费，而大跌时也不会损害消费。许多股票是融资买入，一旦强制平仓，政府就无力阻止暴跌。但是，这类融资并非系统性风险，它只占银行总资产的约1.5%。经济依然坚实，增长虽在放缓，但已经企稳。

长期沉寂的房地产市场也在抬头。货币市场利率稳定在低位，表明银行系统波澜不惊。

公平地说，中国政府官员知道这一点。麻烦的是他们不太愿意接受导致经济不稳定的两个基本原因：市场结构和中国敏感脆弱的政治。下面逐一分析。

从2014年中到今年6月初，为创业公司所设的创业板市值增长了超过三倍。市场的这种狂热一部分源于市场的运作方式。监管机构作为IPO的把关人，实际上决定了哪些公司能够在何时以什么价格上市。因为政府原先对IPO放闸很慢，那些有幸抢先在创业板上市的公司就成为了融资工具。投资者知道资本可以用来购买排着长队等待上市的公司，因而抬高股价。所以，做木地板的公司经过重新包装，变成了在线游戏开发商，烟火生产商摇身一变，成了P2P贷款公司，诸如此类的变身有数十例。很快，创业板市盈率已达147倍，堪比互联网泡沫时期的纳斯达克。

中国受压抑的金融系统使资金涌入股市，助长了更多泡沫。由于监管限制，银行的存款利率远低于预期水平，而中国尚未开发出其他可供储蓄者投资的替代渠道。对高收益的追求在过去十年已经掀起数轮投资风潮，从房地产、邮票到绿豆、大蒜和茶叶。虽然放开国外市场投资和利率管制的各项举措大方向正确，但进展缓慢。2015年股票市场的泡沫正如2007年一样大，而07年是中国最近一次牛市的顶峰。

如果经济稳定性不存在危险，那么对干预的最好解释就是政治。当股市飙升时，媒体为牛市欢呼庆贺，表达对习李政府经济改革的认可。那么现在股市大跌，监管部门就想要为领导挽回颜面。

不仅是动机不纯，干预本身就不明智。在通胀如此低位之时降息拉动经济尚可接受，但其他措施就不是如此了：监管机构限制抛售；社保基金承诺购买更多股票；政府暂停IPO；在央行资金支持下，多家券商组建基金购入股票。

正如中国共产党不相信市场一样，它也误解了市场。如此拙劣的救市表明

股市已失控，如果救援成功，购买股票将成为稳赚不赔的单向押注，这将进一步吹大泡沫。人们对于中国的统治总有一种错觉，认为尽管有诸多缺点，能力卓著的技术官员仍能掌控局势。但这些官员在面对市场动荡时的坏运气点明了更加令人不安的事实。

中国不是第一个试图救市的国家。美国、欧洲和日本的央行等曾在股市暴跌后买入股票并降息，以求振奋遭受重创的投资者。但中国的不同之处在于虽然市场对股市估值过高后出现调整已有预期，但它在过去十天里还是张皇失措。它的连番救市轰炸并没能安抚投资者，反而成了绝望的歇斯底里。

> *加快步伐*

从计划经济向市场经济转型，长路漫漫，危机四伏。中国迄今都妥善应对。但是在金融市场，它还有很长的路要走。在经历了本周的混乱之后，中国必须意识到部分的自由化给了投资者不当激励，也对政策制定者提出了非常高的要求。中国不能放慢脚步，更不能走回头路，那将是最危险的道路。相反，本周真正的教训是中国必须让市场说了算。■

Business in Brazil

Courting the state

The upside of professional lobbying

THERE is nothing unusual about a retired president jetting around the world drumming up work for his country's businesses. But amid the various corruption scandals surrounding Brazil's governing Workers' Party, prosecutors have decided to look into the trips that Luiz Inácio Lula da Silva has taken since leaving office in 2011. Lula has visited places like the Dominican Republic and Ghana, where chums of his are still in power, allegedly to persuade them to sign contracts with Odebrecht, Brazil's biggest engineering conglomerate.

For now, the prosecutors are merely pondering whether there is a case for investigating Lula formally for alleged influence-peddling, given his continued close links to power. He and Odebrecht deny any untoward dealings: both say that the firm simply offered Lula hospitality in foreign talking-shops that it sponsored. But the prosecutors' move reflects broader worries about the cosy links between Brazilian business and politics. The country's commercial and political elites have long been joined at the hip. Bosses and officials attended the same schools and frequent the same parties.

Enter the unlikeliest of heroes: the corporate lobbyist. A growing "government relations" industry is trying "to replace personal relationships with institutional ones", says Caio Rodrigues, head of ABRIG, the lobbyists' lobby. ABRIG has gone from 12 members in 2008 to 145. Most big companies now have in-house government-relations departments; law firms are increasingly offering advice in this area; and specialist university courses are springing up.

Keen interest in its new MBA in institutional relations prompted Fundação Getulio Vargas, a business school, to offer 45 places at its Brasília campus, instead of the 40 it first planned. ABRIG reckons Brazil now has around 2,000 government-relations professionals. Their ranks have swelled since the global financial crisis, when first Lula and then his protégée and successor, Dilma Rousseff, started meddling more in the private sector.

Brazilian lobbyists still lack a set of clear rules to follow. Some aspects of the job are governed by laws against corporate bribery, conflicts of interest and the like. But ABRIG is pushing for reforms, modelled on Canada's, that would require lobbyists to join a register and to report whom they met, in whose name, and why. "Formality is an antiseptic," says Mr Rodrigues. No doubt, as in other countries, furtive lobbying would continue to take place outside the formal system, but at least it would provide a legitimate, regulated route for businesses to make their case to government.

Whether government is willing to listen is another question. Many in Ms Rousseff's inner circle wouldn't touch a lobbyist with a bargepole. So government-relations firms continue to tread carefully. Patri, one of the biggest, says it arranges to put businessmen in the same room as decision-makers, but does not represent them directly. Arko Advice offers its clients in-depth analyses of congressmen's votes but says it does not try to influence those votes. Even so, in a country where 40% of GDP passes through the state, lobbying will always go on. Better the professional variety. ■

在巴西做生意

讨好政府

专业游说的优势

一位退休总统满世界奔走，为自己国家招揽生意，这本不奇怪。但巴西前总统路易斯·伊纳西奥·卢拉·达席尔瓦自2011年离任后的一系列出国旅行，却成为巴西检察官调查关于执政党工人党各项腐败丑闻的突破口。卢拉出访了多米尼加和加纳等国家，他的一些好友在这些国家仍然掌权。据称卢拉曾说服他们同巴西最大的工程集团奥德布雷赫特（Odebrecht）签订合同。

目前，有鉴于卢拉和在位者的紧密联系，检察官还在谨慎考虑是否有证据启动对他以权谋私的正式调查。卢拉本人和奥德布雷赫特集团均否认有任何不法交易：双方都表示奥德布雷赫特集团只是在其赞助的国外交流会谈活动中向卢拉提供了周到的款待。但是，检察官的举动反映出人们对巴西政商两界之间的亲密联系有着更为广泛的担心。在巴西，政商精英之间一直以来都亲密无间。老板们和官员们就读同一类学校，也经常参加同一类派对。

最出人预料的英雄出场了：企业说客。巴西政府机构关系联合会（ABRIG）是一个游说集团，其总裁卡约·罗德里格斯（Caio Rodrigues）认为，一个新兴的“政府关系”行业正在尝试“用机构关系取代个人关系”。该联合会的成员从2008年的12个增加到145个。大多数大公司如今都在内部设立了政府关系部门；律师事务所也越来越注重在该领域提供建议；相应的大学专业课程也不断涌现。

Fundação Getulio Vargas商学院新开设的机构关系MBA课程大受欢迎，这促使该学将巴西利亚校区的招生名额从最初计划的40名增加到45名。巴西政府机构关系联合会估计，巴西目前有大约2000名政府关系方面的专业人士。他们的地位在全球金融危机之后急速上升，也正是在当时，卢拉及其门徒和继任者迪尔玛·罗塞夫先后开始更多地插手私营部门。

巴西的说客仍然缺乏一套清晰的行业规则。这份工作在某些方面受到反公司行贿、反利益冲突等相关法律的监管。但巴西政府机构关系联合会正在以加拿大模式为蓝本推动改革，要求说客注册登记，报告他们以何人名义与何人见面，以及见面的原因。罗德里格斯说："规则是防腐剂。"毫无疑问，就像在其他国家一样，秘密游说仍将继续在正规体系之外进行，但规则至少能为企业向政府陈情提供一个合法而又规范的渠道。

政府是否能被说服则是另外一个问题。很多罗塞夫圈子里的核心人物都对说客避而远之。因此政府关系公司会继续小心行事。大型政府关系公司Patri表示，它仅安排商人与决策官员会面，但并不直接代表他们。Arko Advice向其客户提供议员投票的深度分析，但声称并不试图左右投票。即便如此，在一个40%的GDP操控于政府之手的国家，游说将会永远存在下去。当然，这一行业若能呈现专业化的多样性就更好了。■

Ageing consumers

Chasing the grey yen

Japanese firms have wisdom to hand down about selling to the elderly

DESIGNING underwear to fit human curves is tricky. For decades, Wacoal, a global manufacturer of lingerie based in Kyoto, has been measuring the female form and making products that factor in the toll of time and gravity. Its research is proving ever more rewarding. The company's sales to senior citizens—who are just as interested in a graceful silhouette as women decades younger—are growing by double-digit rates each year.

Many societies are ageing, from America to China, but Japan has a head start. One in four Japanese are over 65; by 2035 it will be one in three. So the country is serving as the world's laboratory for selling to older consumers. Elderly Japanese outspend younger ones, says a study by the Boston Consulting Group. They now account for two-fifths of personal consumption.

Many of the country's biggest firms have adjusted their strategies to tap into the grey yen. Panasonic, a maker of domestic appliances, has rolled out a string of new products, including foot heaters and lightweight vacuum cleaners. Aeon, a giant retailer and shopping-centre operator, has a "Grand Generation" strategy, which ranges from providing one-stop medical clinics on the premises to making in-store signs easier to read. Fujitsu, an electronics firm, has sold 20m of its "Raku Raku" mobile phones, with larger buttons and simplified functions, and is now introducing them into Europe.

Japanese firms have been equally inventive in the area of medical products for the elderly. But this is an area where cumbersome regulation can hold them back. Cyberdyne, a spin-off from the University of Tsukuba, designed

a robotic exoskeleton suit to give mobility to the elderly and disabled. Although it gained approval for clinical use in Europe in 2013, it has yet to do so at home. Testing for medical products is costly as well as slow in Japan, and getting new devices covered by health insurance is a long and arduous process. Having opened up a lead in robotics for nursing care, the country risks losing it.

Regulation is not the only pitfall firms face, however. Businesses are finding it is easier to invent products that the elderly might find useful than it is to market those products to them. One reason is that older consumers do not appreciate being reminded that they are old. A recent report by McKinsey, a consulting firm, describes how one Japanese firm, Bridgestone, made the mistake of promoting a new line of golf clubs as being for senior citizens; a rival brand did better by avoiding any explicit mention of age, but stressing its clubs' ability to make the ball travel far, tapping into older golfers' anxieties about not being able to whack it like they used to.

> *Must be accompanied at all times*

With this in mind, advertising campaigns often tread delicately around the age issue. Toyota, a carmaker, uses silver-haired, middle-aged models to target ageing baby-boomers but those of pensionable age seldom appear in ads of any kind unless accompanied by young actors representing their children or grandchildren.

Some companies, such as Wacoal, have created separate brands and marketing campaigns for their new products designed for older consumers, so as to avoid damaging the "young" image of their main brand. However, Florian Kohlbacher, co-editor of "The Silver Market Phenomenon", a marketing handbook, argues that it is often better, instead of creating separate products just for the old, to design ones that bridge the generations. Toyota increasingly loads its cars with lasers, cameras and sensors to prevent collisions, for example. Such safety features can be

marketed to drivers of all ages, but the main beneficiaries are the increasing numbers of elderly motorists: although total traffic deaths in Japan have roughly halved over the past two decades, the number of fatalities involving the over-65s is rising.

Debates such as these will soon enough be part of boardroom discussions outside Japan, too. In the end, says Mr Kohlbacher, all managers will have to find ways to market to the old without either offending them or putting off younger consumers. They might start by actually talking to the elderly, who have more experience of shopping, after all, than anyone else. ■

老去的消费者

进军银发经济

如何向老年人销售产品，日本企业可分享智慧

要设计出适合人体曲线的内衣很不容易。几十年来，总部位于日本京都的女式内衣全球制造商华歌尔（Wacoal）一直致力于测量女性体形，并在制造产品时考虑到年龄和体重因素对体形的影响。事实证明，它研究的回报越来越高。公司对老年人的销售额正以每年两位数的速度增长。和比她们年轻几十岁的女性一样，老年人对保持优雅体形也非常感兴趣。

从美国到中国，许多社会都在老龄化，但日本最先步入。现在，有四分之一的日本人超过65岁；到2035年，这一比例将达到三分之一。因此，日本正成为向老年消费者销售产品的世界实验室。波士顿咨询公司的一项研究显示，日本老人的消费力超过了年轻人，目前占个人消费的五分之二。

许多最大的日本公司已经调整策略，进军银发经济。家电制造商松下推出了足部加热器和轻便吸尘器等一系列新产品。零售巨头及购物中心运营商永旺（Aeon）制定了“盛大一代”战略，从商场提供一站式医疗诊所，到店内指示更易阅读，形式多样。电子公司富士通的Raku Raku系列老人手机（Raku Raku的日语含义为“易用、舒适”）有较大的按钮和简化的功能，已经售出2000万部，正在进入欧洲。

日本企业在老年人医疗产品领域同样具有创造力。但在这个领域，繁冗的监管可能会拖它们的后腿。分拆自筑波大学（University of Tsukuba）的Cyberdyne公司设计了一套机械外骨骼装置，使老年人和残疾人能行动自如。尽管它在2013年已获准在欧洲进行临床应用，但在日本国内还没有获得同等进展。在日本，医疗产品的测试昂贵而缓慢，而且，让健康保险覆盖新设备的过程漫长而艰巨。日本已在机器人护理领域取得领先地位，现在却有失去这一地位的风险。

然而，监管并不是企业面临的唯一陷阱。公司普遍发现，发明一些老年人

可能觉得有用的产品比把这些产品推销给老年人要容易些。原因之一是老年消费者不喜欢别人提醒他们已经老了。咨询公司麦肯锡的一份最新报告提到，日本的普利司通公司犯了一个错误，把一款新型高尔夫球杆作为老年专用杆来推销。另一个竞争品牌则处理得当，避免明确提及年龄，而是强调球杆击球更远的特性，正好切中了年长球手对于不能像以往一样猛烈击球的担忧。

必须始终伴随

考虑到这一点，广告宣传在涉及年龄问题时往往小心翼翼。汽车制造商丰田公司用银发的中年模特来吸引老去的婴儿潮一代，但是，那些已经过了退休年龄的老人形象很少出现在任何形式的广告中，除非是有扮演其儿孙的年轻演员陪同。

像华歌尔这样的公司给专为老年消费者设计的新产品创造了独立的品牌和营销活动，以免损害它们的主营品牌"年轻"的形象。然而，合编营销手册《银发市场现象》（The Silver Market Phenomenon）的弗洛里安•科尔巴赫（Florian Kohlbacher）认为，相比于创造老年人专用的产品，设计出能跨越代际差异的产品往往效果更好。例如，为防止碰撞，丰田在汽车上安装越来越多的激光器、摄像机和传感器。这种安全特性可以推销给所有年龄段的司机，但主要受益者是越来越多的老年司机：虽然日本过去20年里交通事故的死亡总人数已大致减半，但65岁以上人员的死亡人数正在上升。

这样的辩论很快也将成为非日本公司董事会讨论的一部分。科尔巴赫表示，所有管理者最终都必须想方设法地向老年人推销，既不冒犯年老顾客，也不让年轻消费者反感。要这么做，他们可以从访谈长者开始，毕竟，老人在购物方面比其他人更有经验。■

Government auditors

The wisdom of watchdogs

What decent auditing does for public administration

WHEN offices handle public money, said Aristotle, "there must of necessity be another office that examines and audits them." Today's equivalent is the "Supreme Audit Institution", and 192 countries have one. These beancounters-cum-watchdogs check on behalf of legislatures and the public that their governments spend money cleanly and sensibly—and hold them to account when they do not. Though public, they are (or at least are supposed to be) independent of government.

In "The Art of Audit", Roel Janssen, a veteran Dutch journalist, tells their story through conversations with former top auditors from eight countries. Number-crunching may be number-crunching, but their experiences, and the outfits they run, differ enormously.

America's 94-year-old Government Accountability Office (GAO) is a bulky, sophisticated machine employing 3,000 people that holds the government's feet to the fire on behalf of Congress. David Walker's main achievement, as its head from 1998 to 2008, was to raise the alarm about America's exploding federal debt. Running Iraq's audit board from 2004 to 2014, Abdulbasit Turki Saeed worried more about being blown up himself. His predecessor was killed in the job, as were some people on Mr Turki's team; he had a lucky escape when he discovered a bomb under his car.

The bravery of Iraq's public auditors in perilous circumstances is inspiring. The board has fought corruption fearlessly, even producing a damning report on graft at the defence ministry that led to the minister and several members of staff receiving prison sentences. (Its authors were duly sent abroad for their own safety when it was published.) Mr Turki shrewdly

convinced the finance minister to cut off funding to state institutions that were not following the board's accounting rules. Overall, he helped turn it into a rare role model for good governance while, as he describes it, "everything else around us was collapsing".

Other stirring stories of public service include Tunisia's then auditor-in-chief, Faiza Kefi, posting all previously censored reports online during the Jasmine Revolution, and the corruption-fighting muscle of Heidi Mendoza, the head of the Philippine court of audit, who needs a permanent security detail because of her past work on fraud cases. Ms Mendoza provided fresh thinking, too: she pioneered "citizen audits", in which ordinary workers are encouraged to contribute to local audits in education, health care, housing projects and the like, for instance by conducting interviews to check if experience on the ground matches investment on paper.

Not all audit bodies are such paragons of good governance, however. Dozens lack full independence, and as a result are docile and rarely heard in public. Auditors can be "drowsy" even in "exemplary democracies", says Saskia Stuiveling, former head of the Dutch court of audit. Frustratingly, the book has almost nothing to say about these laggards.

The auditors' work has evolved, from plain book-keeping to "regularity audits" (checking whether money has been spent correctly), "performance audits" (whether it has delivered the desired results) and complex fraud investigations. Mr Walker changed the GAO's name from General Accounting Office to reflect this broader focus. Modern audit bodies are increasingly promoting the somewhat fuzzy concept of "organisational learning": encouraging government institutions to identify and learn from past mistakes.

Another challenge comes from the "open data" revolution, which preaches unrestricted electronic access to information. NGOs are demanding real-

time access to government budgets and programmes, with some striking results. Spending linked to America's Recovery and Reinvestment Act of 2009, for instance, is published online as soon as it is disbursed, down to the postcode level. But, as Mr Walker points out, spewing numbers out is not all that is needed to foster transparency: they have to be correctly interpreted as well.

The book shows that, at their best, the watchdogs play a vital role in bolstering public trust in government, particularly in countries that are in political chaos, emerging from dictatorship. Ms Kefi sees Tunisia's auditor, the Cour des Comptes, as "the guardian of the political process". Mr Janssen makes the same point a different way: by institutionalising mistrust of public finances, government auditing creates trust in public administration. ■

政府审计员

监督者的智慧

合宜的审计会给行政带来什么影响

亚里士多德曾说，当政府部门处理公共资金时，“须有另一部门审查和审计其账目”。今天，这个“另一部门”是“最高审计机构”，在192个国家均有设立。这些统计兼监管部门代表立法机构和公众查核政府是否廉洁且理智地花钱，并在政府没有做到时对其发起问责。虽然这些机构是公立的，但它们独立于政府（或至少应该如此）。

在《审计的艺术》（The Art of Audit）一书中，荷兰资深记者罗埃尔·詹森（Roel Janssen）采访了八个国家审计机构的前负责人，讲述了这些机构的故事。虽然同是捣鼓数据，他们各自的经历以及运营的机构却大相径庭。

有94年历史的美国政府问责局（GAO）是一台庞大、复杂的机器，雇员3000人，代表国会对政府问责。在1998至2008年间担任主计长的大卫·沃克（David Walker）的主要成就是对美国联邦债务的爆炸性增长提出警告。阿卜杜勒巴西特·图尔基·赛义德（Abdulbasit Turki Saeed）在2004到2014年间管理伊拉克的审计委员会，他更担心自己被炸死。他的前任以及他团队里的一些人都在工作中丧生；他自己则在发现藏在自己汽车底部的炸弹后幸存下来。

伊拉克的公共审计员身处险境时的英勇行径激励人心。该审计委员会在打击腐败上无所畏惧，甚至发布了一份强烈谴责国防部贪污受贿的报告，导致国防部部长和几名官员锒铛入狱。（报告发布时，其作者出于安全考虑被及时送至国外。）图尔基机敏地说服了财政部长对那些没有遵守该委员会审计规则的国家机构切断资金供给。总的来说，他把该委员会变成了一个良好治理的罕见范本，而在当时，用他的话说，“我们周围其他的一切都在崩塌。”

公共服务领域里还有其他激动人心的故事，包括时任突尼斯主计长的法伊扎·克菲（Faiza Kefi）在茉莉花革命中把所有从前受审查的报告统统对外发布；菲律宾审计院院长、反贪斗士海迪·门多扎（Heidi Mendoza）因为过去在欺诈案件中的工作而一辈子需要保安。门多扎还提供了新鲜的思路：她首创“公民审计”，鼓励普通员工参与地方教育、医疗、住房等部门的审计，比如展开访问，审查实地经验和书面投资数字是否相符。

不过，并非所有审计部门都是这样的治理典范。尚有几十家审计机构因为并非完全独立而屈从于政府，很少在公众中发声。荷兰审计院的前院长萨斯基亚·斯都维林（Saskia Stuiveling）说，即使在典型的民主国家，审计人员也可能漫不经心。令人失望的是，本书对于这类落后的机构几无着墨。

审计部门的工作内容不断演化，从单纯的记账，到“常规审计”（查核资金是否被正确使用）、“绩效审计”（是否获得了预期效果），以及复杂的欺诈调查。沃克把GAO的全称从以前的总审计署（General Accounting Office）改成政府问责局，就体现了这一更广泛的关注。现代审计机构日益多地提倡“组织学习”这个有些含糊其辞的概念，鼓励政府机构找出历史错误并从中吸取教训。

另一挑战来自“公开数据”革命，它宣扬通过电子化渠道不受限制地获得信息。非政府组织正在要求实时获得政府预算和计划方案的细节，取得了一些惊人的结果。比如，美国2009年复苏与再投资法案的相关花销一经拨付就被公布在网上，而且细致到了以邮政区域划分的程度。但是，沃克指出，要增加透明度，并不是公开数字就足够，这些数据还必须被正确地诠释。

本书展现了在最好的情况下，监督者在提升公众对政府的信任上能够发挥关键作用，尤其是在那些因独裁统治而引发政治乱局的国家。克菲把突尼斯的审计院视为“政治进程的保卫者”。詹森则以另一种方式表达了同样的看法：通过把对公共财政的不信任制度化，政府审计创建了人们对公共管理的信任。■

Dependency on commodities

What Vlad can learn from Chad

Why some commodity exporters are coping better with lower prices than others

COMMODITIES are sirens: alluring, yet dangerous. When prices are high, politicians in commodity-exporting countries rejoice. Proceeds from the export of oil, gas and metals fill state coffers. Foreign cash floods in and well-paid jobs are created. Such countries' governments often neglect other parts of the economy, believing that the good times will never end. But they always do.

As commodity prices tumble, many countries are learning what happens when an economy is too reliant on natural resources. Venezuela, with the world's largest oil reserves, is on the verge of defaulting. Brazil and Norway, two other big oil exporters, have seen their growth forecasts cut. The Russian president, Vladimir Putin, will watch his economy shrink by 5% in 2015, according to central-bank estimates. His government's debt is likely to be downgraded to "junk" status.

When commodity prices started to fall in 2014, economists feared the worst for other commodity exporters, but so far many have surpassed expectations. Only a handful of Latin American countries—Argentina, Venezuela and possibly Brazil—will fall into recession in 2015. Others have seen growth forecasts trimmed but are still doing well. Chile, a copper exporter once hostage to market forces, will expand by 3% this year. Peru, which relies heavily on metal exports, will see 5% growth. Latin America as a whole will grow by 2%. In 2015 no Middle Eastern oil exporters are expected to suffer a recession (though measuring growth in war-torn countries is near-impossible). Saudi Arabia is using its big currency reserves to boost government spending and will grow by 4.5% in 2015.

Some African countries are taking a hit. Nigeria, which has barely any non-oil exports, saw its currency lose 13% of its value in 2014; Zambia, a copper exporter, turned to the IMF in June. But things have been nowhere near as bad as some had feared. Compared with previous periods of commodity-price decline, currencies have been fairly strong. Only the Ebola-hit countries and the kleptocratic Equatorial Guinea should see their economies shrink in 2015. Sub-Saharan Africa is expected to grow by 5% this year.

> *Putin the boot in*

Two factors explain why some commodity exporters are coping better than others with falling prices. First, many governments have made their countries more business-friendly. According to the World Bank, in recent years sub-Saharan Africa has been the star performer at improving business environments. Rwanda, which was in the throes of a civil war 20 years ago, is now a better place to do business than Italy.

Benign business environments encourage foreign direct investment (FDI). In recent years FDI into Africa has held up, despite global wobbles. Foreign money is helping African economies diversify. Nigeria's strong recent growth is thanks not to its oil sector—which has stagnated—but to finance and other services. Even Chad, an oil exporter mocked for its one-track economy, has of late seen oil rents play a progressively smaller part. Russia, though, has got no less dependent on the stuff. Diversifying the Russian economy is harder than ever for Mr Putin, thanks to an FDI slump that hit the country in 2014.

Second, some governments are spending their money more wisely. Before the 2000s almost all splurged when commodity prices were high and taxes were flooding in, only to slash spending when prices dived. Russia still does this. The state has no money with which to boost domestic demand; instead it is cutting public spending, inflicting further damage.

Some Latin American and African countries, such as Zambia and Chile, now operate "counter-cyclical" fiscal policy, saving during good times and spending during bad. Others, particularly in the Middle East, are broadening their tax bases to cope better when commodity sales fall. A decade ago the Angolan budget was almost entirely dependent on oil, but now a third comes from elsewhere. Chile, where copper makes up 60% of exports, was once known for the wayward management of its copper revenues. Now an independent panel checks that the government uses them responsibly.

Some commodity exporters face a grim 2015, but others can be optimistic. Africa, for decades synonymous with resource dependency, will this year be one of the world's fastest-growing regions. It is no longer doomed to the commodity roller-coaster. If Mr Putin had tried to dismount a decade ago, his people would not now be facing such a tough year. ■

对大宗商品的依赖

普京能向乍得学些什么

为什么有些大宗商品出口国能更好地应对较低的价格

大宗商品像是海中女妖塞壬：充满诱惑，但却危险。当价格高企时，大宗商品出口国的政治家们欢欣鼓舞。出口石油、天然气和金属得来的收益填充了国库。国外现金大量涌入，高薪就业机会层出不穷。这类国家的政府常常忽略了经济的其他部分，深信好日子永远不会到头。但好日子通常都会结束。

随着大宗商品价格下跌，很多国家开始认识到经济过分依赖自然资源的后果。委内瑞拉有着世界第一的石油储藏量，但却处于债务违约边缘。巴西和挪威是另外两大石油出口国，经济增长预测已下调。根据俄罗斯中央银行的预计，2015年总统普京将目睹经济萎缩5%。他的政府债务信用等级可能会被降至“垃圾级”。

当大宗商品价格自2014年开始下滑时，经济学家担心其他大宗商品出口国会一败涂地，但是迄今为止很多国家的表现超出了预期。只有几个拉丁美洲国家如阿根廷、委内瑞拉，可能还有巴西，在2015年会陷入衰退。其他国家虽增长预测下调，但表现尚可。铜出口大国智利曾为市场力量所左右，但今年经济将增长3%。严重依赖金属出口的秘鲁将达到5%的经济增长。拉丁美洲整体将增长2%。2015年中东石油出口国将不会遭受经济衰退（尽管在饱受战争蹂躏的国家要衡量增长几无可能）。沙特阿拉伯正动用其雄厚的货币储备扩大政府开支，2015年经济将增长4.5%。

一些非洲国家受到冲击。尼日利亚除石油外几乎没有任何其他出口商品，2014年其货币贬值13%；铜出口国赞比亚2014年6月求助于国际货币基金组织（IMF）。不过情况远不像有些人担心的那么糟糕。与以往大宗商品价格下跌的时期相比，货币已相当坚挺。只有遭受埃博拉病毒袭击的国家和政治腐败的赤道几内亚，2015年经济会萎缩。撒哈拉沙漠以南非洲国家今年的增长预计将达5%。

雪上加霜

对于价格下跌，有些大宗商品出口国尚能应对，有些则不行，有两大因素可以解释这一现象。第一，很多政府将自己国家的商业环境建设得更好。世界银行认为，近年来撒哈拉沙漠以南非洲在提升商业环境方面表现最佳。20年前卢旺达还深陷内战动荡不安，现在已成为一个比意大利更适合经商的地方。

宜人的商业环境鼓励更多外商直接投资（FDI）。近年来尽管全球经济动荡，对非洲的外商投资始终保持良好势头。外国资本帮助非洲经济呈现多样化发展。尼日利亚最近的强劲增长并非得益于该国已经停滞的石油行业，而是源于金融和其他服务业。甚至连乍得这一因单轨经济而被嘲讽的石油出口国，近来的石油收益占比也越来越小。而俄罗斯仍然很依赖石油。对普京而言，要让俄罗斯经济多元化的难度前所未有，因为2014年FDI的大幅下降给予该国沉重一击。

第二，有些政府花钱的方式更明智。2000年之前当大宗商品价格高涨、税收滚滚而入时，几乎所有政府都在挥霍，而当价格暴跌时只能大幅削减开支。俄罗斯还在这么干。该国没有资金刺激内需，相反地，它正在缩减公共支出，从而造成进一步损害。

有些拉丁美洲和非洲国家，如赞比亚和智利，正在实行"逆周期"财政政策，在经济景气的时候储蓄，萧条的时候支出。其他国家，尤其是中东，扩大了征税基础，因此在大宗商品销售下滑时应对得更好。十年前安哥拉的预算几乎完全依靠石油，但现在三分之一源自其他产业。智利的出口中铜占了60%，该国曾因对铜收入的随性管理而闻名，现在成立了独立的专家组，检查政府是否认真负责地使用这些收入。

2015年有些大宗商品出口国形势严峻，但其他国家可以保持乐观。非洲几十年来都是资源依赖的同义词，今年将会成为全球发展最快的地区之一，终于不用再受大宗商品过山车似的行情所累。要是普京十年前就试着从过山车上下来，现在他的人民就不用再面对如此艰难的一年了。 ■

Health care in America

Shock treatment

A wasteful and inefficient industry is in the throes of great disruption

THE best-known objective of America's Affordable Care Act of 2010—commonly known as Obamacare—was to ensure that the 40m-plus Americans who lacked health insurance could get it. Less widely appreciated, but at least as important, are the incentives and penalties the law introduced to make the country's hideously expensive and poorly performing health services safer and more efficient. Economists are debating how much credit Obamacare should get for a recent moderation in the growth of health costs, and for a fall in the number of patients having to be readmitted to hospital. Whatever the answer, many companies see the disruption unleashed by the reforms as the business opportunity of a lifetime.

One of the biggest shifts under way is to phase out the "fee for service" model, in which hospitals and doctors' surgeries are reimbursed for each test or treatment with no regard for the outcome, encouraging them to put patients through unnecessary and expensive procedures. Since Obamacare they are increasingly being paid by results—a flat fee for each successful hip replacement, say. There are also incentives for providers which meet cost or performance targets, and new requirements for hospitals to disclose their prices, which can vary drastically for no clear reason.

Millions of people are now looking for health insurance on the new public exchanges set up under the reforms. And Obamacare has come into effect at a time when American employers, who often provide health cover for their workers, are seeking to cut its cost by encouraging them to shop around on private exchanges, and by offering less generous plans.

The upshot is that there are growing numbers of consumers seeking better treatment for less money. Existing health-care providers will have to adapt, or lose business. All sorts of other businesses, old and new, are seeking either to take market share from the conventional providers, or to provide the software and other tools that help hospitals, doctors, insurers and patients make the most of this new world.

Patients are increasingly having to pay higher "deductibles" out of their own pockets, before the insurance kicks in, to keep the cost of the cover down. So for minor ailments and simple tests, it makes sense for such patients to go to one of the increasing numbers of walk-in clinics, staffed by well-qualified nurses, on the premises of retail pharmacies such as CVS and Walgreens (see chart). The prices are clear, the care is cheap and the service is quick. Walgreens has a partnership with Theranos, a diagnostics firm, which offers customers a range of tests from a tiny drop of blood. Walmart, a giant supermarket chain with many in-store pharmacies, also intends to become one of the leading sellers of affordable health services, says Alex Hurd, its product-development chief.

For injuries and illnesses that are more serious but not immediately life-threatening, lots of "urgent-care centres" are being opened as an alternative to going to a hospital emergency unit. Private-equity firms are pouring money into independent chains of centres. Merchant Medicine, a consulting firm, reckons that between them, these chains now have just over 1,500 urgent-care centres, up from about 1,300 at the start of 2013. The market is still fragmented but a national brand could emerge from one of the largest chains, such as Concentra or MedExpress.

Some hospital operators, seeking to cut their costs of care, and choosing to be among the disrupters rather than the disrupted, are also opening urgent-care centres. Aurora Health Care, a Wisconsin-based chain of hospitals and clinics, now has more than 30 of them.

Hospital operators are now facing a classic "innovator's dilemma", as described by Clay Christensen, a Harvard business professor. If they persist with their high-cost business model even as their customers discover that cheaper alternatives are good enough, they will be in trouble. According to Strata Decision Technology, an analytics firm, many hospital groups saw what was coming and started to cut their costs well before the provisions of Obamacare started to bite. One of the fastest movers is Advocate Health Care, a hospital operator from Illinois, which says it now earns two-thirds of its revenues from value-based payments.

The largest chains of for-profit hospitals, such as Tenet Healthcare, HCA and Community Health Systems, are rather profitable. They have trimmed their costs, been conservative with capital and, thanks to Obamacare raising the number of Americans with health insurance, now have more patients and fewer bad debts. However, credit-rating agencies are worried about the prospects for the not-for-profit hospitals, which are 60% of the total. With lower margins, and less capital to make investments, they have become targets for takeover, says Jim Bonnette of The Advisory Board Company, another consulting outfit.

As a result further consolidation in the hospital business is likely. This could mean greater efficiency and lower costs. But if antitrust authorities are not vigilant, it may lead in the longer term to a concentration of market power. If so, the benefits from the efficiencies being wrung out of the hospital system may end up in the pockets of shareholders rather than saving patients and insurers money.

Obamacare is also encouraging the creation of all sorts of health-related advisory and intermediary companies that help care providers, insurers and patients save money. A company called Vitals approaches employees on behalf of their company's health plan, and offers them cash rewards, and a taxi, if they agree to be treated at a cheaper provider. The sums to be

saved can be astonishing: a new cost-comparison tool created by Blue Cross Blue Shield, a big alliance of private health insurers, has found that a colonoscopy with a biopsy costs $8,489 at one clinic in Chapel Hill, North Carolina, but just $928 at another provider in Greensboro, only 50 miles (80km) or so away.

Cohealo offers a "sharing economy" solution for hospitals and clinics wanting to make the best use of expensive equipment, in much the same way as Airbnb helps people with spare rooms fill them with paying guests. Doximity is trying to be a Facebook for doctors, letting them refer patients and discuss treatments securely without the blizzard of faxes they rely on today. Grand Rounds is a sort of medical Match.com: an online matchmaker that pairs patients with specialists. As in other industries, administrators are being tempted to switch to renting software and data storage in the online "cloud": Athenahealth, a seller of medical back-office software, is trying to get doctors and hospitals to move patients' health records onto its cloud-based service.

Preliminary diagnosis

For supporters of Obamacare, it is clear that the reforms are empowering patients, driving public and private health insurers to achieve better value, forcing existing providers to shape up and providing opportunities for disruptive newcomers. Digital technology is also helping to increase transparency about prices, making it easier to share information and increase efficiency. For some analysts it all adds up to a "new health economy"—as PwC, a consulting firm, puts it—the most significant re-engineering of the American health system, by far the world's costliest, since employers began providing cover for their workers in the 1930s.

And the revolution has only just begun. The Obama administration recently set a target of making 50% of Medicare payments value-based, rather than fee for service, by the end of 2018. America's largest private payers have a

target of 75% by 2020. So hospitals do not have long to shape up. Some will have their profits squeezed, and customers stolen by new rivals. Some may close, or be taken over. But for other businesses, from supermarket and pharmacy chains to digital-health startups, there will be billions to be made. ■

美国的医疗

休克疗法

一个浪费极多且效率低下的行业正在经历重大颠覆的痛楚

美国2010年通过了“平价医疗法案”（Affordable Care Act），通常被称为“奥巴马医改”，其中最广为人知的目标是要确保4000多万没有医疗保险的美国人也能纳入保障。不那么广受理解但却同样重要的是法案中引入的激励和惩罚措施，旨在推动美国成本高昂、运转不良的医疗服务变得更为安全和高效。经济学家们还在争论，最近医疗开支增速的减缓和重复住院病人数量的下降在多大程度上应归功于奥巴马医改。无论答案如何，很多公司已将此次改革所带来的颠覆视为千载难逢的商机。

一些巨大的转变正在进行。其中之一是逐步取消“按服务项目收费”的模式。在这一模式下，医院和诊所按检查或治疗项目列支费用，而不考虑结果，这使医生有动力给患者安排昂贵而不必要的项目。在奥巴马医改后，他们更多地按治疗结果收费，例如，对每一例成功的髋关节置换手术收取固定费用。还有对那些达到成本或绩效目标的服务商给予激励，以及对医院披露价格提出新的要求，这些价格可能会因不明原因而差别巨大。

医改建立了新的公共交易市场，数百万人可以在其中购买医疗保险。美国的雇主通常为员工提供医疗保障，正当他们想要削减开支时，奥巴马医改发挥了作用——鼓励他们在各私有交易所间货比三家，或者提供不那么慷慨的保障方案。

结果是越来越多消费者寻求花更少的钱获得更好的治疗。现在的医疗服务商将必须适应，不然就会失去市场。或新或旧的各类其他公司，或者想要抢夺传统供应商的市场，或者想为医院、医生、保险公司和患者提供软件和其他工具，以充分利用这个新世界。

为降低保障成本，在保险生效前，越来越多的患者须自掏腰包支付更高的免赔额。对于小病和简单检查，这些患者更乐于到免预约诊所就医，此类

诊所正日益增多，通常位于像CVS和沃尔格林（Walgreens）这样的零售药房之内（见图表），配有高素质的护理人员。它们明码标价，诊治平价，服务快捷。沃尔格林和诊断技术公司Theranos建立了合作关系，只需要一小滴血就能为消费者提供一系列的检查。连锁超市巨头沃尔玛在很多门店内设有药房，它也计划跻身领先的平价医疗服务销售商之列，其产品开发负责人亚历克斯·赫德（Alex Hurd）如此表示。

对于伤病较为严重但还不至于立刻危及生命的患者，很多“紧急救护中心”可以作为医院急救门诊之外的另一选择。私募股权公司的资金正大量涌入这类独立连锁急救中心。咨询公司Merchant Medicine看到，这些连锁如今总共已拥有超过1500家紧急救护中心，比2013年初的约1300家有所增加。这一市场仍然相当分散，最大的几家连锁中心里可能会产生一家全国性品牌，如Concentra或MedExpress。

一些医院运营商正在力图削减护理成本，选择成为颠覆者而不是被颠覆。他们也在开设紧急救护中心。医院和诊所连锁机构奥罗拉医护（Aurora Health Care）的总部位于威斯康星州，如今已拥有30多家紧急救护中心。

医院运营商现在面临着典型的“创新者的窘境”，哈佛商学院教授克莱·克里斯滕森（Clay Christensen）对此有过论述。如果医院运营商坚持原来的高成本商业模式，一旦顾客们发现平价的替代选择一样很可靠，它们就有麻烦了。根据分析公司层级决策技术（Strata Decision Technology）介绍，很多医院集团已看到了这一趋势，早在奥巴马医改的规定开始执行之前就着手削减成本。伊利诺伊州的医院运营商Advocate Health Care就是动手最快的一个，它表示现在有三分之二的收入来自按价值付费的服务。

像Tenet Healthcare、HCA和Community Health Systems这些最大的营利性连锁医院相当赚钱。它们已经削减了成本，投资谨慎，现在由于奥巴马医改扩大了有医保的人数，它们的病人多了，坏账少了。然而，评级机构担心的是非营利性医院的前景，这占医院总数的60%。另一家咨询机构Advisory Board Company的吉姆·邦尼特（Jim Bonnette）表示，这些医院利润低，缺少资本投资，成为了被收购的目标。

因此，医院产业进一步整合大有可能。这可能带来更高的效率和更低的成本。但是，如果反垄断机构掉以轻心，长期而言，它可能导致市场支配力的集中。如果这样，医院系统效率提升所带来的效益可能最终会进入股东的腰包，而非为患者和保险公司省钱。

奥巴马医改还鼓励创建各类和医疗相关的咨询和中介公司，帮助医疗服务商、保险公司和病患节省开支。一家名为Vitals的公司代表企业就医保方案和其员工接洽，如果员工同意在更平价的服务商处接受治疗，Vitals将提供现金奖励和出租车。这其中可能节省的金额让人瞠目结舌：大型私营保险公司联盟“蓝十字蓝盾”（Blue Cross Blue Shield）制作的新成本比较工具发现，同样是结肠镜活检，在北卡罗来纳州的教堂山（Chapel Hill）要花费8489美元，但在相距50英里（80公里）之外的格林斯博罗（Greensboro），另一家服务商只收928美元。

对想要充分利用昂贵设备的医院和诊所，Cohealo提供了一种“共享经济”的解决方案，大致类似于Airbnb帮助有空置房间的人们寻找寄宿房客。Doximity试图成为医生们的Facebook，让他们能够安全稳妥地转介病人和讨论治疗方法，而不用像现在一样依赖雪片似的传真。Grand Rounds则是医疗界的世纪佳缘，这一在线匹配平台把患者和专科医生配对。像在其他行业一样，管理员正想转向租用云端软件和数据存储：医疗后台软件销售商Athenahealth设法让医生和医院把病人的健康档案转移到它的云服务上。

初步诊断

对于奥巴马医改的支持者，有一点很清楚，改革给予患者更多权力，推动公营和私营保险公司提升服务价值，迫使现有服务商好好表现，并为颠覆性的新进入者提供机会。数字技术也帮助提高价格透明度，令信息分享更容易，并改善效率。在一些分析师看来，如此种种汇集为一种“新健康经济”，如咨询公司普华永道（PwC）所说的那样，这是美国医疗体系最重大的再造工程，也是自上世纪30年代雇主开始为员工提供医疗保障以来全世界最昂贵的工程。

而革命才刚刚开始。奥巴马政府最近设定的目标是，到2018年底，使50%的联邦老年人医疗保险计划（Medicare）支出按价值而非按服务种类支付。美国最大的私营医保机构的目标是到2020年实现75%。所以医院没有很多时间了，它们要振作起来。有些医院会被新竞争者挤压利润，抢夺客户。有些则可能倒闭或者被收购。但其他企业，从连锁超市和药房到数字医疗领域的创业公司，面临的将是赚取几十亿美元的机会。■

Schumpeter

The Washington wishing-well

The unstoppable rise in lobbying by American business is bad for business itself

IN 1971 Lewis Powell, an American lawyer who would go on to become a Supreme Court judge, wrote a memorandum for the Chamber of Commerce. Business was the victim of a "broadly based and consistently pursued" assault, he argued. There were few elements of American society that had "as little influence in government as the American businessman, the corporation, or even the millions of corporate stockholders." It was time for companies to change all this—and acquire political power. "Such power must be assiduously cultivated; and that, when necessary, it must be used aggressively and with determination."

Powell has been granted his wish. In 2012 corporate America accounted for more than three-quarters of the $3.3 billion spent on lobbying in Washington, DC. General Electric was the market leader, spending $21.4m, and Google came second, with $18.2m. And this is just lobbying in the strict sense defined by American law—ie, the work of registered lobbyists, employed to make direct contact with congressmen and officials. Businesses also employ innumerable other people, in areas such as "government relations", "public affairs" or "corporate communications", whose job, in plain English, involves lobbying for or against changes in public policy. Then there are the countless business-funded outfits that say they are simply providing information about a particular industry, and the army of friendly, corporate-sponsored academics, who are all indulging in a subtler form of lobbying.

A big American firm may nowadays have a dozen or more full-time registered lobbyists on Capitol Hill, while also employing the services of a couple of dozen lobbying firms from among the 2,000 or so based around K

Street. At a moment's notice, Gucci-clad glad-handers can flood the halls of Congress, and retired politicians on a retainer can be summoned up to "make a call". Overworked, underpaid officials find there is always a sympathetic lobbyist on hand to help them draft new regulations.

In a new book, "The Business of America is Lobbying", Lee Drutman of the New America Foundation, a think-tank, demonstrates that in recent years companies have gone from using lobbying simply to protect themselves from politics (by seeing off such things as tax increases and regulations) to using politics to help them become more profitable. They set the terms of the debate by funding Washington's innumerable talking-shops; and then work on the politicians and officials to ensure that the legislation locks in their advantage. Mr Drutman's book complements a 2013 one, "The Fracturing of the American Corporate Elite", by Mark Mizruchi of the University of Michigan. It argued that whereas companies once lobbied for public goods such as better roads, they are now more inclined to press for company-specific, or at best industry-specific, benefits.

A classic case of selfish lobbying wrapped in a cloak of selflessness was the Medicare Modernisation Act of 2003. Thanks to the pharmaceutical industry's lobbyists, this brought new prescription-drug benefits to millions of older Americans, but without any attempt to control costs through means-testing or bulk-buying. John Friedman, an economist at Brown University, estimated that as a result the drugmakers would gain benefits of $242 billion over a ten-year period—a healthy return on the $130m the industry spent on lobbying in the year the law passed.

There is plenty of other academic evidence to demonstrate that every dollar big business drops into the Washington wishing-well repays handsomely. Mr Drutman's book notes studies showing, for instance, that the more companies lobby, the lower their effective tax rate; and that firms which lobby are less likely to be detected for fraud than comparable non-lobbying

ones.

There is equally abundant evidence that corporate lobbying is bad for society as a whole. The American Jobs Creation Act of 2004, which began as a measure to cut export subsidies, ended up being stuffed with handouts to big business at the behest of lobbyists. This added to the burden on other taxpayers and helped frustrate efforts to simplify America's Byzantine tax rules. The infestation of lobbyists special-pleading for their clients contributes to Congress's gridlock, which means that important business like fixing the tax code, and improving America's infrastructure, does not get done. Ironically, businesses are themselves among the victims when government seizes up. The tax code is so complex that companies and citizens spend 6.1 billion hours and $163 billion preparing their tax returns each year. Bad infrastructure damages the competitiveness of American firms.

Pathological and permanent

Is there any chance that America might be able to cure its lobbying cancer? There are occasional signs of hope. The number of registered lobbyists has fallen since Congress passed the Honest Leadership and Open Government Act in 2007. During the 2013 government shutdown, Paul Stebbins, the chairman of World Fuel Services, expressed the private worries of many business leaders when he said that, "We are part of the pathology that got us here." But these signs are probably illusions. The decline in numbers is probably just due to registered lobbyists being rechristened as "strategic advisers", "issues managers" and the like. After the financial crisis Barack Obama worked closely (and opaquely) with lobbyists and other interest groups in crafting his stimulus package and his financial and health-care reforms.

Mr Drutman dashes any hopes that the growth of lobbying can be reversed. He notes that it is "sticky": once companies have made an initial

investment in lobbying they almost never give up. They find that the more they do of it, and the better they get at it, the more they get out of it. American companies succeeded in recovering from the slough of the 1970s by overcoming enemies who were outsiders—over-mighty trade unions and anti-business campaigners. Today they have a much trickier problem on their hands: they have to wage war on themselves. ■

熊彼特

华盛顿许愿池

美国商界掀起的势不可挡的游说风潮对商业本身不利

1971年，即将成为美国最高法院法官的刘易斯·鲍威尔（Lewis Powell）为美国商会写下了一段备忘录。他说道，在一场“广泛且持续”的进攻下，商业成了受害者。美国社会中很少有其他元素像“美国商人、企业乃至成千上万的公司股东一样对政府的影响力如此微弱”。是时候由企业来改变这一切并获取政治权力了。“这种权力必须孜孜不倦地培养，且如果有必要，应当积极果断、坚定不移地运用。”

鲍威尔的愿望实现了。2012年，在33亿游说华盛顿特区的总费用中，美国大企业的贡献占了超过四分之三。通用电器是市场领导者，花费了2140万，谷歌紧随其后，花费1820万。这仅仅包括美国法律严格定义的游说，即注册游说人员的工作，他们受雇于公司，与国会议员及官员保持直接联系。企业还从其他诸如“政府关系”、“公共事务”或者“企业交流”等行业聘请了大量其他人员。他们的工作，简单来说，就是展开游说，支持或者反对新的公共政策。此外，还有不计其数得到企业赞助的机构和学术界人士，前者声称他们的工作就是提供某一特定行业的相关信息，而同企业关系密切的后者也都乐于进行形式更为隐秘的游说。

如今美国一家大型公司可能拥有十几个甚至更多的全职注册说客来专攻国会山，同时还雇用华盛顿K街上2000多家游说公司中的数十家为其服务。一旦接到通知，身着古驰的说客们即刻涌入国会大厦的门厅内活动，特聘的退休政客们会被召集起来“打个电话”问问情况或者打声招呼。疲劳不堪、待遇简苛的官员们发现身边总会有一个热心的说客帮他们起草新的法规。

在新书《美国的商业是游说》（The Business of America is Lobbying）中，智库新美国基金会（the New America Foundation）的李·卓特曼（Lee Drutman）证实，之前各公司只是利用游说寻求政治方面的保护

（通过终结加税和特定法规），最近几年它们转为运用政治帮助自己获取更大利润。它们通过资助华盛顿不计其数的清谈俱乐部来为辩论设定内容，在政客和官员身上做工作，确保立法符合自己的利益。卓特曼的书是对2013年出版的一本书的补充，即密西根大学马克·米兹路奇（Mark Mizruchi）所著的《美国企业精英的断裂》（The Fracturing of the American Corporate Elite）。马克在书中指出，以前公司游说是为了公共利益，如修建更好的公路，但现在它们更倾向于推进公司自身，最多也就是行业自身的利益。

以无私之名行自私之实的游说经典案例之一就是2003年的老年医保现代化法案（Medicare Modernisation Act）。因为有了制药行业的游说，该法案带来的新处方药让成千上万的美国老人受益，但是却没有尝试通过经济状况测试或大宗采购来控制成本。布朗大学的经济学家约翰·弗里德曼（John Friedman）估计十年内制药行业最终可以获利2420亿美元。在法案通过的那一年，该行业共花费了1.3亿美元游说，相比而言回报颇丰。

还有很多学术证据表明，大企业在华盛顿许愿池每投下一枚硬币都能获得巨大的回报。卓特曼的新书指出，研究表明公司所做的游说越多，它们的实际税率就越低；相比那些未开展游说的公司，做了游说的公司更不容易被查出欺诈行为。

同样还有大量证据表明，企业游说整体上对社会有害。2004年通过的《美国就业机会创造法案》（American Jobs Creation Act）刚开始是为了削减出口补贴，最后在说客要求之下塞满了给大公司的好处。这增加了其他纳税人的负担，进一步打击了美国简化复杂税法的努力。说客为维护客户利益而不断进言的一面之词导致了国会的僵局，意味着重要的事项无法完成，比如修订免税代码或者改善美国基础设施。讽刺的是，政府运转不畅时，商界本身也是受害者之一。免税代码太过复杂，公司和公民每年要花费61亿个小时、1630亿美元准备退税。差劲的基础设施伤害了美国公司的竞争力。

病态和常态

美国有没有任何可能治愈游说这个毒瘤呢？有些零散的康复迹象。自2007年国会通过《诚实领导和政府公开法案》（the Honest Leadership and Open Government Act）以来，注册游说者的数量在下降。2013年美国政府关门期间，世界燃料服务公司（World Fuel Services）的董事长保罗·斯特宾斯（Paul Stebbins）表达了很多商界领袖私下里的担忧。他说："我们能走到这里是一种病态，而我们是这种病态的一部分。"但是这些迹象也许只是幻觉。数量的减少很有可能只是因为已注册的说客更名为"战略咨询师"、"议题经理"等等。金融危机之后，奥巴马同说客和其他利益团体紧密而不透明地合作，制定了他的经济刺激方案以及金融和医疗改革方案。

卓特曼粉碎了任何希望，他认为游说的发展不可能逆转。他提到，问题很"棘手"：一旦公司开始进行游说，它们几乎永不放弃。它们发现游说越多就越如鱼得水，获利也越多。美国公司成功地从70年代的衰退中恢复过来，打败了外部敌人——过于强大的工会和反商业活动家。今天，它们面临一个更棘手的问题：必须对自己宣战。■

Germany's corporate lobby

Turning American

As corporate lobbying booms, stronger regulation is needed

GERMANS' reputation as early risers extends even to their lobbying. One colourful Berlin lobbyist told a television programme why he likes talking to members of the Bundestag over a good breakfast: they have had a night's sleep, they are ready to listen—and their refrigerators are empty after travelling from their home districts back to Berlin.

A new book, "Die Lobby-Republik" by Hans-Martin Tillack, an investigative journalist, sounds an alarm about such activities. Just a few big firms and interest groups had offices in the pre-unification capital, Bonn. But Berlin, to which the government moved in 1999, is becoming infested with lobbyists. An estimated 5,000-6,000 of them now work in the city, compared with the 12,000 in Washington, DC, the trade's romping-ground. Parliamentwatch, a German pressure group, reported recently that hundreds of lobbyists have passes to enter the Bundestag, approval of which requires the support of a parliamentary party.

Until recently most lobbying was conducted by cautious, conservative industry associations. Numbering over 2,000, these range from the mighty Federation of German Industry (BDI) to the Association for Zoos. But brash new players are joining the game. Many lawyers, from specialist German firms and big international ones like White & Case and WilmerHale, double as lobbyists. International public-relations firms are also expanding their lobbying business in Germany: Burson-Marsteller, one of these, has near-doubled its staff to 25 in the past five years. And companies, foreign and domestic, are expanding their in-house lobby shops. Big firms such as Google and ExxonMobil have opened offices on Unter den Linden and other streets near the Bundestag, creating a local version of Washington's K

Street.

Transparency International (TI), another watchdog, is worried. In a recent report on the regulation of lobbying in Europe, it ranked Germany low, alongside Bulgaria and Portugal. TI says Germany, like other weak regulators, should bring in an obligatory register of lobbyists, a clear code of conduct, and a "cooling-off" period for public servants who move to the private sector. (Roland Pofalla, the head of Angela Merkel's cabinet office, raised eyebrows by announcing, as he left last year, that he would soon join Deutsche Bahn, a rail operator—and he is hardly alone.)

But is influence really easily bought in Berlin? Business lobbies point ruefully to the current government, a grand coalition of left and right. It has introduced a minimum wage, quotas for women on companies' supervisory boards and pension rights for many workers at age 63. Protests by the BDI and the Federation of German Employers fell on deaf ears. Property developers' lobbyists failed to stop a law limiting rent rises, which goes into effect this summer. Germany continues both its exit from nuclear power and its heavy subsidies for renewables, despite the objections of the power utilities.

German voters have been strict with politicians they feel are too close to corporate lobbyists. Under the previous government, a coalition between Ms Merkel's Christian Democrats and the more business-friendly Free Democratic Party, a hoteliers' lobby pressed for cutting the value-added tax on hotel stays, around the same time as a firm with ties to Mövenpick, a hotel chain, made a big donation to the FDP. The tax was soon cut. Though the FDP and the hotelier denied any quid pro quo, the story began a slide in the polls that ended with the FDP's ejection from parliament in the September 2013 election.

Lobbying is not in itself corrupt, of course. TI notes that it is itself a lobby

group, and expressing policy preferences is part of democracy. According to another recent TI survey, businesspeople regard Germany as one of the cleanest countries in the world (see chart).

In the last truly big political scandal, Helmut Kohl, Germany's chancellor from 1982 to 1998, ended his career in disgrace over undisclosed donations received by his party. (Mr Kohl insists he did nothing wrong aside from a failure to disclose.) But the sum in question, perhaps 2.1m Deutschmarks (about $1.3m at the time), pales in comparison to the big cheques that lobbies routinely give to American politicians: the main presidential candidates are each expected to raise about $1.5 billion for the 2016 campaign.

Clear rules would nonetheless help ensure that Germany stays relatively clean as lobbying becomes more pervasive. The BDI is sceptical about compulsory registers and cooling-off periods, saying that new laws could be a bureaucratic mess, and that politicians and officials moving in and out of other walks of life is a good thing.

That is short-sighted, not least because rules would also constrain environmental, labour and consumer lobbies that often line up against business. These groups, too, are becoming more organised: an American working in Frankfurt for a foreign PR firm says union officials now appear at negotiations with research commissioned from McKinsey or the Boston Consulting Group, to support their case. Making all groups that seek to influence politicians disclose how they get funded and how they spend their money is the best way for Germany to keep its clean reputation. ■

企业说客在德国

趋于美国化

企业游说渐兴盛，政府监管须收紧

德国“勤作早起”的美誉甚至延伸到政经游说的领域。柏林一位活跃的游说人士在电视节目中透露自己为何喜欢和德国联邦议院的议员共进美味早餐，向对方展开游说。因为经过一晚酣睡，这些议员愿意倾听，而且他们刚从家乡选区赶回柏林，家里的冰箱空空如也。

由调查记者汉斯-马丁·提拉克（Hans-Martin Tillack）撰写的新书《游说共和国》（Die Lobby-Republik）就此类活动敲响了警钟。在前西德首都波恩，仅有几家大公司和利益集团设有办事处。但在柏林，自从1999年德国政府迁都至此，这里已经遍地说客。据估计，现在约有五六千名说客在柏林工作，而在说客云集的美国华盛顿特区为1.2万人。德国的施压组织“国会观察”（Parliamentwatch）最近报道称，很多说客拥有国会政党协助获取的通行证，可以自由进出联邦议院。

直至最近，大部分游说行动一直由谨慎保守的行业协会进行。这些协会的总数超过2000家，上至强大的德国工业联合会（BDI），下至动物园协会。而如今，游戏迎来了狂妄的新玩家。许多律师同时担当起说客的角色，他们来自德国本地的专业律师事务所和美国伟凯（White & Case）及美国威凯平和而德（WilmerHale）这样的国际律所。国际公关公司也在德国扩展游说业务。其中，博雅公关（Burson-Marsteller）的员工数量在过去五年已近翻倍至25人。而无论是国外还是德国本地企业，也都在扩展公司内部的游说部门。谷歌及埃克森美孚这类大公司已经在林登大道（Unter den Linden）及联邦议院附近的其他街道上开设办事处，打造德国版的华盛顿K街。

另一家监督机构“透明国际”（TI）表示忧心。该机构最近就游说行为在欧洲的监管问题发表了一份报告，将德国的排名列于低位，与保加利亚和葡萄牙同列。透明国际指出，和其他监管薄弱的国家一样，德国应设立说客

强制登记制度，制订清晰的行为准则，并规定公务员离任后必须经过一段“冷却”期才能转投私营公司。去年，安格拉·默克尔的总理府办公室主任罗兰德·波法拉（Roland Pofalla）离任后随即宣布将加入铁路运营商德国铁路公司，惹来众人非议。而类似情况并不鲜见。

但是柏林的政府决策真的那么容易被左右吗？商业游说团体沮丧地把矛头指向当前左右翼大联盟政府。该政府推出了最低工资标准，制订了公司监事会女性人数指标，让大批民众享有63岁退休的权利。政府对德国工业联合会和德国雇主联合会的抗议之声置若罔闻。房产开发商的说客未能阻止今年夏天将生效的一条限制租金上涨的法律。尽管电力企业提出异议，德国仍坚持退出核电，同时维持对可再生能源的高额补贴。

德国选民也有一套严格准则，不甚青睐他们感觉与企业说客关系太过密切的政客。上届德国政府是由默克尔的基督教民主联盟和更亲商界的自由民主党联合组成。当时旅业商会游说代表向政府施压，希望减免酒店住宿增值税。大约同一时间，连锁酒店集团莫凡彼（Mövenpick）的一家关联公司向自由民主党作出巨额捐款。该税项随即被减免。虽然自由民主党和莫凡彼均否认有任何私相授受，但该党民望自此下跌，最终在2013年9月的大选中被赶出议会。

当然，游说本身并不涉及腐败。透明国际明言自己也是游说团体，表达政策偏好是民主的一部分。据透明国际最近的另一项调查，在商界人士眼中，德国是全球最廉洁的国家之一（见图表）。

上一次在德国爆出真正轰动的政治丑闻的人，要数在1982年至1998年间任德国总理的赫尔穆特·科尔（Helmut Kohl）。因为他所属的政党收受献金而未向公众公开，他不光彩地退出了德国政坛。（科尔坚称自己除未披露献金外并无过错。）所涉献金金额约为210万德国马克（当时约等于130万美元），比起说客们惯常给美国政客开出的巨额支票，这实在是小巫见大巫：2016年美国总统竞选的主要候选人预计每人要筹集约15亿美元的经费。

不过，随着游说活动变得愈加普遍，订明规则有助德国保持相对清廉。对于游说人士强制登记及冷却期制度，德国工业联合会持怀疑态度，认为新的法规可能滋生繁文缛节，带来一团乱象，而且政客、官员进出其他领域应属好事。

那是短视的看法，原因之一是至少法规也将限制常与商界作对的环境、劳工及消费者游说团体。这些团体也越来越有组织：在法兰克福一家外国公关公司工作的一名美国人表示，现在的工会领导人会委托麦肯锡公司或波士顿咨询集团做研究，为谈判增添理据。德国要保持廉洁清誉，最佳途径是要求一切试图影响政客决策的游说团体披露资金来源及去向。■

Bombardier

Turbulence

The Canadian firm is struggling to make its bet on a big new plane pay off

ALTHOUGH it started life making snowmobiles, Bombardier's main businesses these days are building corporate jets, smallish "regional" jets for airlines, and trains. The Canadian firm has long dreamed, however, of breaking the stranglehold that Boeing and Airbus enjoy in full-sized commercial airliners. For 11 years it has been spending heavily on developing the CSeries, a 100- to 149-seater to compete with the slightly larger Boeing 737 and Airbus A320.

However, like so many new aircraft, the CSeries has slipped behind schedule and gone over budget. Orders are weak. And the family-controlled firm's other businesses, which have been footing the bill for the work on the new plane, are struggling. There are worries that the CSeries will never be a commercial success—and that Bombardier might even run out of cash before the plane turns a profit.

On May 14th Bombardier said it would cut production of the Global 5000 and 6000, its largest and most profitable corporate jets, with the loss of 1,750 jobs. Russian and Chinese tycoons are feeling the pinch, or are shopping with rivals such as Gulfstream and Dassault. In January Bombardier said it would suspend work on the Learjet 85, a smaller private plane. The market for this type of aircraft slumped after the financial crisis and has not recovered.

The company's regional jets, seating 50-100, are also struggling. Even as Bombardier seeks to break the Boeing-Airbus duopoly on planes of the next size up, the duopoly it has itself enjoyed with Embraer of Brazil on regional jets is being challenged by rivals from Japan, Russia and China.

As for Bombardier's rail division, the source of around half its annual revenues of $20 billion in 2014, attempts to improve profitability have not got far. A renewed expansion by Hitachi, a Japanese rival, and the increasing global success of several Chinese trainmakers have intensified competition. A flotation of part of the rail business, announced on May 7th, will raise some money while keeping Bombardier in control of the division's cashflow.

After several setbacks, including an engine failure last May, the CSeries should go into service next year, two years late and $5.4 billion, or 50%, over budget—assuming no further problems, that is. In the meantime, Boeing and Airbus have revamped the 737 and A320 with new engines, which they say can match the 20% fuel savings (compared with current models) that were the CSeries' main advantage. The 737 and A320 have versions that can take 200 passengers or more, and the two incumbents are said to have offered airlines discounts to persuade them to go for larger planes. Having given its rivals plenty of time to prepare for its challenge, it is unclear what Bombardier can do to win customers over. As Robert Spingarn of Credit Suisse, a bank, puts it, "if you poke a bear you had better show up with the right sort of stick".

So far the CSeries has attracted just 243 orders, some of which could yet fall through, whereas it probably needs to sell 400 just to break even. Boeing and Airbus have 2,700 and 3,600 orders, respectively, for their new planes. Bombardier is burning $1.5 billion a year in cash on the CSeries, and analysts worry that if it slashes its prices to try to win more customers, the group's cash may be drained in the next two years or so.

The company insists it has the finances to see the project through. However, if things began to look that serious, Alain Bellemare, the new boss Bombardier hired in February, might conceivably put the commercial-aircraft division, which makes regional jets as well as the CSeries, up for

sale. Canada's government would not relish seeing a national champion fall into foreign hands, such as those of COMAC, China's state planemaker. Canadian taxpayers might just be called upon to dip in their pockets and keep the CSeries in the air. ■

庞巴迪

气流颠簸

加拿大公司推新机，一波三折难回本

虽然庞巴迪以制造雪地摩托起家，如今其主营业务却是制造公务飞机、小型“支线”飞机及列车。然而，这家加拿大公司长久以来的梦想是要打破波音和空客对大型商用客机的垄断局面。11年来，庞巴迪投入巨资研发100至149座的C系列客机，力图与机型稍大一点的波音737和空客A320一较高下。

但与许多新飞机的研发一样，C系列的开发进度及成本开支均超出了原定计划，订单却陷于疲软。而且这个家族企业为新机研发提供资金的其他业务又境况堪虞。C系列的商业前景令人担忧，甚至有人担心在新飞机盈利之前庞巴迪便会耗尽资金。

5月14日，庞巴迪公司表示其最大型且最赚钱的公务飞机“环球5000”及“环球6000”将减产，削减1750个职位。俄罗斯及中国的富豪们目前手头吃紧，有些从庞巴迪的对手厂商湾流公司（Gulfstream）和达索公司（Dassault）购机。今年1月，庞巴迪表示将暂停小型私人飞机“里尔85”（Learjet 85）项目。金融危机后，这类飞机的市场一落千丈，至今元气未复。

该公司的50至100座支线飞机的销售也举步维艰。即便庞巴迪努力打破波音和空客在较大型客机上的双头垄断局面，它自己与巴西航空工业公司（Embraer of Brazil）在支线飞机上的双头垄断也正受到来自日本、俄罗斯和中国对手公司的挑战。

在庞巴迪2014年200亿美元的总营收中，约一半来自列车制造部门，而该部门提升盈利的努力至今收效不大。其日本对手日立公司展开新一轮的扩张，加上中国多家列车厂商在全球成功抢滩，令市场竞争加剧。5月7日，庞巴迪宣布其列车业务将部分挂牌上市，筹集资金的同时公司仍保持对该

部门现金流的控制。

几经周折，包括去年5月的发动机故障事件， C系列应该会在明年投用，前提是不再节外生枝。这已经比原计划晚了两年，超支54亿美元，比原计划多出50%。同时，虽然C系列的主打优势在省油，但波音和空客已分别为737及A320装配了新引擎，据称与目前机型相比可节省20%的燃油。737及A320也已推出可承载200人或以上的机型。据说，这两家市场霸主开出了优惠价格，吸引航空公司购入其大型客机。庞巴迪之前给对手留下了充分时间应战还击，此刻还不清楚它能以何种招数赢回客户。正如瑞信银行的罗伯特•斯平加（Robert Spingarn）所言：“要捅熊一把，最好拿上一根趁手的棍子。”

目前为止，C系列获得的订单仅243架，其中一些仍有可能取消，但庞巴迪可能要售出400架才能回本。而波音和空客的新客机订单分别为2700架和3600架。庞巴迪在C系列上每年烧钱15亿美元，有分析师担心庞巴迪如果削价抢客，恐怕在未来两年左右将耗尽资金。

该公司坚称其财务状况足以支撑完成项目。但一旦前述的恶劣局面出现，2月上任的庞巴迪新老板阿兰•贝勒马尔（Alain Bellemare）很可能会把制造C系列及支线客机的商用飞机业务向外出售。而加拿大政府不会甘心坐视国家领军企业落入外国公司手中，例如中国国有飞机制造商中国商飞。到时候，为了让C系列继续飞翔，加拿大也许得发动纳税人慷慨解囊了。

Schumpeter

The last 90 days

For successful bosses the end is almost as important as the beginning

BUSINESS leaders are obsessed with how to begin new assignments. One of the bestselling business books of all time is "The First 90 Days", by Michael Watkins, which provides a template for newly appointed managers to start with a bang. When Mitt Romney, a private-equity tycoon, ran for the American presidency in 2012 he had a 200-day action plan for turning round the free world, replete with floor plans and flow diagrams. Far less thought has gone into how bosses should leave successfully.

Lord Browne, who ran BP for 12 years, wrote in his memoirs that, as he pondered retirement from the oil giant: "My emotional self prevailed over reason. I did not know how to leave." Niccolo Machiavelli bungled his exit from the government of 16th-century Florence. "I am rotting away," he said after being fired. He went on to write a masterpiece on manipulation. But "The Prince" mainly dwells on how to acquire and retain power, not how to relinquish it. To fill the void, Schumpeter has drafted six rules to govern bosses' departures.

First, the wise executive is neither tardy nor rushed. Sometimes he has no choice in the matter. Hopeless bosses may be forced out fast. Great leaders may be ambushed by fate. Lord Browne left after a newspaper delved into his private life. Akio Morito, the co-founder of Sony, suffered a stroke and Emilio Botín, the patriarch of Santander, a bank, a heart attack. But for those with the luxury of choosing when to go, timing is everything.

The average boss of a big American firm is in the job for eight years. The longer the tenure, the greater the chances of a sticky end. Staying in the post too long greatly increases the chances of making a calamitous error or

becoming stale. Some chief executives linger by heading for the chairman's office: think Larry Ellison at Oracle. Such cohabitation rarely works.

Premature evacuation is no better. Instead wise executives wait until their firm meets its long-term targets, ensuring them a bumper bonus. They are patient enough to manoeuvre their preferred successor into pole position and defuse any ticking time bombs. Sir Alex Ferguson achieved one but not the other at Manchester United, a hitherto successful British football club. He ensured the job of manager went to a friend and fellow Scot, David Moyes. But he left behind an ageing team of declining talents and slumping form. A poor run of results meant that Mr Moyes lasted just ten months in the job. Bosses should behave like a brilliant guest who leaves a banquet while it is still in full swing.

Whether wicked or glorious, all leaders must steel themselves for the emotional shock of their abdication. This is the second rule and the most easily ignored. The unlucky will find that investors cheer—Microsoft's stock rose by 7% on the day Steve Ballmer said he would step down in 2013. Others will be showered with flattery. But all will see their power recede like a fast-ebbing tide. As Sandy Weill, who created Citigroup, recalled with horror, "I had become a lame duck…I felt numb." He eventually consulted a psychiatrist.

Even as they indulge the collective's need for nostalgia and tributes, resolute executives are as unsentimental in their last 90 days as in their first. They retain the counsel of trusted outsiders and focus on the important things, especially themselves. They obey the third rule; to keep a beady eye on their compensation. Most pay-offs are now governed by long-term contracts. Yet boards retain sovereignty over the interpretation of these agreements, including non-compete clauses. Wise chiefs flatter and dazzle the board members until the very end. They negotiate directly, not through lawyers or compensation consultants. They do not ask for petty

perks, such as the use of country clubs and cars, that will look idiotic if they become public.

Glory is just as important as treasure and so the fourth rule is to create a narrative about the future and past. Leaders must be seen to be leaving for another great and noble task, and must mythologise their legacy. Winston Churchill recommended writing your own history. The best bosses go one better by writing the history while it is still happening. Lou Gerstner, who ran IBM between 1993 and 2002, published an account of his triumphs two months before he retired. A leader who is still arguing about his legacy years after he has gone has lost control of the narrative, as Terry Leahy, an ex-boss of Tesco, a fallen British retailer, is discovering. Laying the blame for the firm's slide since he left on Philip Clarke, his (since-sacked) successor, has won him few admirers.

The wise chief will grit his teeth and commit to the fifth rule: do not make big decisions in the last 90 days. Jack Welch, the boss of General Electric between 1981 and 2001, put together one of the most elaborate succession plans in corporate history, which included helping the two runners up find jobs at other companies. But he botched his departure, postponing retirement to oversee an ambitious takeover bid for Honeywell, a huge rival, which then collapsed.

When Harry met Dwight

Their legend secure and treasure-chest full, cunning leaders should obey a final rule: ensuring that the next occupant of the job does not outshine them. If they despise their successor, departing bosses can block access to a firm's important clients, suppliers and investors, and fail to explain vital procedures. President Harry Truman budgeted only half an hour to brief his successor, Dwight Eisenhower. The meeting lasted 15 minutes.

Even if they love their replacement, sensible departing bosses will keep

back some information about their once-and-not-future subjects: the malcontents and the treacherous, the astute and the virtuous. They should make a vague offer of advice, safe in the knowledge that their successor will rarely, if ever, accept it for reasons of pride. And then they should walk out and never look back, praying that the new boss is successful—just not as successful as they were. ■

熊彼特

最后九十天

成功高管须慎终如始

商界领袖总是满心想着怎样开展新任务。迈克尔·沃特金斯（Michael Watkins）所著畅销多年的商业读物《最初九十天》（The First 90 Days）给新官上任的管理者们提供了成功开始的模版。2012年，私募股权投资巨头米特·罗姆尼（Mitt Romney）竞选美国总统时，做了一个200天行动计划来扭转自由世界，其中充满了平面图和流程图。相比之下，领导者该如何功成身退，这方面的考虑少得多。

执掌BP达12年的布朗勋爵（Lord Browne）在其回忆录中写道，考虑从这一石油巨擘退休时："那时我的情感遮蔽了理智，不知该如何离开。"十六世纪在佛罗伦萨，尼可罗·马基亚维利（Niccolo Machiavelli）贻误了从政府高位退下的时机，最终被撤职时，他说道："我在渐渐腐烂。"后来他写了一部关于权术操纵的巨著《君王论》（The Prince）。但该书只关注怎样获取、保有权力，而非怎样舍弃权力。为填补这一空白，熊彼特专栏作者拟出了领导者全身而退的六道法则。

首先，明智的管理者既不拖拉也不匆忙。有时候，在离任问题上他并无选择。不可救药的老板也许很快被迫下台，但好领导也会遭命运伏击。布朗勋爵在一份报纸曝光其私生活的事件后离任。索尼的联合创始人盛田昭夫（Akio Morito）因为中风而被迫退休，桑坦德银行（Santander）的掌门人埃米利奥·博坦（Emilio Botín）则由于心脏病而猝然离世。但对于那些有幸可挑选离任时间的领袖们，时机便是一切。

美国大公司一般老板的在位时间为八年。任期越长，晚节不保的机会越大。在位时间过长大大增加了犯灾难性错误的机会，也很可能变得年久乏味。一些首席执行官因为恋栈而转任董事长：想想甲骨文（Oracle）的拉里·埃里森（Larry Ellison）。想要同时干好这两个职位，成功者很少。

过早离任也好不了多少。相反，明智的高管会等到公司达到长期目标、自己稳获丰厚奖金后再退下来。他们有足够耐心，把心仪的继承者捧到有利位置，同时拆除任何滴答作响的定时炸弹。亚历克斯·弗格森爵士（Sir Alex Ferguson）在曼联这家英国迄今最成功的足球俱乐部里也只做到了两者之一。他确保主教练一职留给了同为苏格兰人的朋友大卫·莫耶斯（David Moyes）。但他身后留下的是一支老化的球队，队员才华日减，状态低迷。一系列惨淡的战绩令莫耶斯在短短十个月后便遭解雇。领导者应该像个聪明的宾客，懂得在盛宴正酣之际抽身离席。

歹毒也好，伟大也罢，所有领导人物都必须为退位的落差做好心理准备。这是第二个法则，也是最易被忽视的。倒霉的退位者会发现投资者报以欢呼雀跃——2013年史蒂夫·鲍尔默（Steve Ballmer）宣布自己即将退休的那天微软股价上涨7%。其他的会被颂扬所包围。但他们都会看着自己的权力像潮水般瞬间消退。花旗集团的创始人桑迪·威尔（Sandy Weill）惊恐地回忆道："我成了一只跛脚鸭……，只觉得麻木。"最终他不得不求助心理医生。

即便任由集体怀旧和唱颂歌之需，果断的高管们在最后九十天一如最初九十天，毫不感情用事。他们继续倾听可靠局外人的建议，关注重要的事情，尤其关注自身。他们遵从第三道法则：睁大眼睛盯着自己的退休薪酬。现在大部分的退休薪酬受长期合同的约束。但董事会保留对这些协议的解释权，包括竞业限制条款。明智的高管懂得对董事们拍马溜须，令其飘飘然到最后一刻。他们自己出面讨价还价，而不是通过律师或薪酬顾问。他们也不要什么乡村俱乐部会员资格或是汽车这类小福利，因为如果这些要求公开的话，会显得自己很愚蠢。

荣耀与财富同样重要，所以第四道法则是想好一套叙事，述过去，道未来。领导者必须摆出奔往远大前程的姿态，同时必须神化自己的丰功伟业。丘吉尔建议把自己的历史写下来。而最优秀的领导者更进一步，在事情还没成为历史时就已开写了。1993年至2002年间领导IBM的郭士纳（Lou Gerstner）在退休前两个月就出版了自己的成功史。衰落的英国零售商乐购（Tesco）前总裁特里·莱希（Terry Leahy）在离任后仍对自己

当年的伟业念念不忘，但他已经无法控制叙事。把离任后公司下滑怪罪于继任人菲利普·克拉克（Philip Clarke，之后已被解雇），没为他自己赢得多少拥戴。

明智的高管会咬紧牙关谨遵第五道法则：在最后九十天不做重大决定。通用电气1981至2001年间的总裁杰克·韦尔奇（Jack Welch）制定了企业史上最为细致的继任方案，包括帮助两位落选候选人在其他公司找到职位。但他却搞砸了告别演出，为了亲自监督并购劲敌霍尼韦尔（Honeywell），他推迟退休，但最终并购失败。

> *当杜鲁门遇到艾森豪威尔*

在事迹流传、薪酬满载之后，狡黠的领导者还有最后一道法则须遵从：确保继任人不会功高盖“己”。若不喜欢继任人，即将离任的高管可以不让其接触到公司的重要客户、供应商和投资者，关键流程也不予解释。美国前总统杜鲁门给继任人德怀特·艾森豪威尔（Dwight Eisenhower）只预留了半小时来交接工作。两人实际会面仅15分钟。

即使喜欢继任人，但谈及曾经的下属，谁牢骚满腹谁奸诈叛逆，谁精明谁仁善，明智的离任高管是不会全盘透露的。他们只需轻描淡写做出建议姿态，深明继任者出于傲气甚少会采纳。然后就该离开，不再回头，祈愿新任领导成功——只要略逊自己当年就好。 ■

Shale oil

There will be blood

The ingenuity of America's shale industry is admirable, the state of its finances awful

WALL STREET loves a good scrap almost as much as the wildcatters who drill for oil do. No wonder that the fight over the finances of America's shale-oil industry has turned nasty. In one corner are shortsellers, including David Einhorn, a hedge-fund manager whose scalps include Lehman Brothers. They argue that "fracking"—the business of blasting oil out of rocks using water, sand and chemicals—is a bottomless pit into which too much cash has been thrown.

In the other corner are America's oil pioneers, who say that shale can thrive even though the benchmark American oil price has dropped from over $100 a barrel last year to $57 today. The oilmen are backed by plenty of other investors who are still pumping money into shale firms: some $35 billion of equity and bonds has been raised since December.

Both sides have a point. It makes sense to be cheery about the long-term prospects for shale energy—and to be queasy about today's bunch of fracking firms.

Shale matters. The industry has become huge—listed firms have invested over half a trillion dollars of capital. Much of that money has been raised through junk bonds: if you include privately held companies, shale firms owe almost as much debt as Greece. After drilling beneath much of Texas and North Dakota, they account for 5% of global oil output. The health of shale firms affects people around the world, from Western drivers and Saudi Arabia's sheikhs to Asia's consumers.

The reason to be optimistic about shale energy is that the industry has

responded cleverly to the falling oil price. Output surged in 2011-14 because of a spending boom. Bosses borrowed like mad, bid up land rights and drilled indiscriminately. But gone are the days when roughnecks were fed lobster in luxury camps and Texan towns were circled by Learjets. Instead, the new mantra in America's shale basins is thrift. Since December, costs have been cut by a fifth, mainly by squeezing suppliers. Texas has suffered 20,000 job losses. Shale bosses say their firms are concentrating on the very best prospects and sucking more oil from them. Production has held up even though the number of drilling rigs has fallen by half.

Economies of shale

Lower costs and more selectiveness mean that new investments should make money. Most firms boast potential annual returns of 25% or more on new wells when oil costs $60 a barrel. The industry's agility to date suggests costs will fall further.

If only shale firms could escape their past and concentrate on this bright tomorrow. Alas, every corporation is the sum of its existing, depleting assets and the promise of its future ones. Many shale firms made rotten decisions in the boom. This legacy means a dose of pessimism about them is in order.

The top 60-odd shale firms are making a return of roughly zero on the swollen stock of capital they employ. Despite this, investors value them at well above book value, which suggests their share prices are frothy. Many firms are juicing up the cash they can crank out of their old wells. In the first quarter of 2015, 31% of the cashflow reported by the top firms came from derivatives bets placed when the oil price was high. These hedges will expire over the next year or so; cashflow will fall.

That puts cracks in the shale barons' claim that they can ramp up production without further borrowing. With less cash flowing in, shale

firms need to slash their investment by over two-thirds if they are to balance their books. If spending falls, production will follow. And the capital markets may not always remain open: about half of shale firms, owing $85 billion of debt between them, have distressed balance-sheets. The pace of capital-raising has slowed in the past few weeks.

The wild card is the oil price. Many shale bosses are betting that they will be bailed out by higher prices. Oilmen are optimists by nature—why else would you drill holes in the ground? But if prices do not rise there will be a reckoning, with more firms defaulting, being bought or selling their assets. That would lead to short-term losses among banks and investors. America's shale industry needs to drill through its past if it is to emerge leaner and meaner than ever before. ■

页岩油

血色将至

美国页岩业巧妙运作令人钦佩，但财务状况堪忧

华尔街爱争抢的劲头几乎不亚于钻井采油的投机分子。难怪美国页岩油工业的融资争夺已演变成一场恶斗。站在角力台一角的是看空人士，包括曾经成功做空雷曼兄弟的对冲基金经理大卫·艾因霍恩（David Einhorn）。他们认为，“水力压裂”采油（用水、沙及化学品把石油从岩石中压释出来的做法）是个无底洞，已投入过多的资金。

在另一角的是美国的石油开采先锋，他们认为页岩油开采前景大好，即便美国原油基准价格已从去年的每桶100美元下降到今天的57美元。石油开采商得到大批其他投资者的支持，继续向页岩油公司投入资金：自去年12月以来通过股权和债券融资已获得约350亿美元。

双方各有各理。对页岩能源的长远前景抱持乐观，或为目前大批页岩油公司感到不安，都有据可循。

页岩油业事关重大。它已成为一个庞大的产业——上市公司已投入超过5000亿美元的资本。大部分资金通过垃圾债券筹集而得：如果加上向非上市公司的借债，页岩油公司的欠债水平几乎不亚于希腊。这些公司在德州及北达科他州的大部分地区钻取页岩油，所得石油产量占全球石油总产量的5%。页岩油公司的财务健康状况对全球各地的人们都有影响，包括西方国家的车主、沙特阿拉伯的酋长，以至亚洲的消费者。

之所以乐观看待页岩能源是因为该行业巧妙地应对了油价下跌。2011年至2014年间，石油产量因消费热潮而飙升。老板们如丧失理智般借贷筹资、哄抬地价、肆意钻探。但是，土豪们在豪华营地享用龙虾大餐的日子已经一去不复返，德州城镇被小型商务喷气机包围的景象也再难重现。相反，美国页岩盆地的新口号是节俭。去年12月至今，页岩开采成本已下降了五分之一，主要通过挤压供应商实现。德州已丧失了2万个工作岗位。页岩

油公司老板们表示正把资源集中到前景最佳的钻井，从中钻取更多的石油。所以即使钻机数量已经减半，原油产量仍然得以保持。

> *页岩经济*

成本降低与精挑细选意味着新投资项目应该能够盈利。在油价回落每桶60美元之际，大多数公司夸耀新油井的潜在年回报率为25%或以上。至今该行业反应灵活，预示成本还将进一步下降。

页岩油公司要是能摆脱过去、专注于光明前景就好了。可惜，每家企业都是既有资产、折旧资产以及未来潜在资产的总和。许多页岩油公司在市场畅旺时决策失误，后果自然是令人对这些公司心生一抹悲观。

位居前列的60多家页岩油公司投入庞大资本，但如今回报近乎零。尽管如此，投资者对其估值远高于账面价值，这表明其股价虚高。许多公司把能从旧油井榨取的资金拿来投资。2015年首季度，大型页岩油公司的现金流中31%来自当初油价高企时他们押注的衍生品。这些对冲工具大概来年就要到期，届时现金流将下降。

页岩大亨们曾宣称无须进一步借贷也可以提高产量，此话并不牢靠。现金流入减少，页岩油公司若要达到收支平衡就要削减超过三分之二的投资。投入下降，产量也会随之减少。而且资本市场不一定总是对其开放：负债总额高达850亿美元的约半数页岩油公司资产负债状况堪忧。过去几周，融资的步伐已经放缓。

油价是个变数。许多页岩油老板押注油价上升将使他们摆脱困境。油商天生就是乐观派，不然怎么会跑去钻地打洞？但如果油价没有上升，那将出现一场洗牌清算：更多的公司出现债务违约，被收购或被迫出售资产。这将导致银行和投资者的短期损失。美国的页岩油产业需甩下旧日的包袱，才能变得比以往更精简节约。■

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您诚挚的，

詹尼·明顿·贝多斯

《经济学人》总编辑■

Schumpeter

Calibrating Chinese creativity

The sceptics exaggerate: in some industries Chinese firms are innovative

"YEAH, the Chinese can take a test, but…they're not terribly imaginative. They're not entrepreneurial. They don't innovate—that's why they're stealing our intellectual property." So declared Carly Fiorina, a former boss of Hewlett-Packard, shortly before announcing her candidacy for America's presidency earlier this year. Ms Fiorina's provocation fuelled a global debate over one of the big business questions of the age: can China innovate?

Sceptics make two arguments. They point to the historically lax protection of intellectual-property (IP) rights and the proliferation of copycat business models in China as evidence that Chinese companies cannot create for themselves. An article published in *MIT Sloan Management Review* last year claimed that Chinese theft of IP costs American firms $300 billion a year. Nay-sayers also argue that the heavy-handed approach taken by China's government to promoting innovation is in fact retarding it.

Two new publications bang the drum for the opposite side of this debate. "The China Effect on Global Innovation", a study by the McKinsey Global Institute (MGI), the think-tank of the eponymous consulting firm, argues that Chinese companies do indeed show promise. MGI does not fall into the common trap of conflating innovation with invention: "The proof of successful innovation is the ability of companies to expand revenue and raise profits," as opposed to filing lots of patents that never get used, or releasing a stream of novelty products that fail to generate a return. And "China's Disruptors", a book out on July 14th, by Edward Tse, a management consultant, argues that China's dynamic private sector has risen with the help of, not despite, government policies on innovation.

The MGI team scrutinised financial data on 20,000 firms from China and elsewhere, to see if they create value for customers and shareholders. It weighed up the extent to which they do so through such things as basic research, by throwing large numbers of engineers at problems (as firms like Huawei, a telecoms-equipment maker, are good at doing), by improving manufacturing processes, and so on. China has spent years, and large sums of money, trying to be an "innovation sponge" that absorbs foreign technologies. Despite this, notes the MGI report, it still lags the West in creating world-class medicines, civil aircraft and cars.

However, it finds that in many other sectors, China is now taking a global lead in two areas of innovation: in improving consumer products and the business models used to sell them; and in making manufacturing processes cheaper, quicker and better. As a result, Chinese firms now outsell foreign rivals in such things as household appliances, internet software and consumer electronics. They are helped by the fact that their home market is so huge. But they are also fleet of foot. Chinese consumers are ready adopters of smartphones, social media and e-commerce, as well as being value-conscious and brand-licentious. If consumer firms can make it in China, they can make it anywhere.

Chinese firms are inventing new business models. The West's online firms generate most of their revenue from advertising. But China's advertising industry is only about one-eighth the size of America's, so Chinese digital firms have had to find new ways to monetise their users' eyeballs. Tencent generates 90% of its revenue from online games, sales of virtual items on social platforms and e-commerce. Average revenue per user in 2014 was $16, which was $6 more than Facebook. YY.com, an online-video platform, lets viewers buy electronic "roses" to shower upon video artists whose shows they enjoyed. YY says its top performers, who get a cut of the revenue, can earn more than 20,000 yuan ($3,200) a month, seven times the average factory worker's pay.

What about the other argument, on the role of the state? The pessimists argue that China's bureaucrats are bad for private-sector innovation. In a sense Mr Tse is an unlikely person to be challenging this view. He was the top China man for the Boston Consulting Group and then for Booz & Company (two rival consulting outfits). His book chronicles in compelling detail the rise of the mainland's entrepreneurial economy from the ashes of Maoist policies. And yet this arch-capitalist insists that, "Companies alone cannot make the massive long-term commitment of resources needed to drive innovation in many crucial areas." Just as American public spending on universities and defence research boosted Silicon Valley's early stars like HP, in China too, "the state has to lead the way." He is encouraged by the fact that China now spends more than $200 billion a year on research and development (public and private), putting it above the European Union as a proportion of GDP, though still behind America.

Mr Tse also points to evidence that, he argues, shows how China's regulatory and legal infrastructure is becoming more "innovation-friendly". Baidu, China's biggest internet-search firm, used to be notorious for hosting pirated music and videos. Thanks to regulatory crackdowns and legal challenges from rights holders, it has cleaned up its act and has become a big, legitimate distributor of foreign TV shows.

Setting the stage

Ms Fiorina is right that most Chinese firms are not at the cutting-edge of technology, but she is wrong to say they are incapable of value-creating innovation. HP itself has been overtaken by Lenovo of China as the world's leading computer-maker, helped not just by its bold acquisitions of Western businesses but by its impressive in-house product development. And Mr Tse is right that there is a role for government in setting the stage for innovation. However, in civil aviation and carmaking, the government is also dictating the structure of the industry: in planes, through a state-

owned national champion, AVIC; and in cars, via forced partnerships with foreign firms. Chinese firms can innovate. But its government has not yet learned to distinguish between helpful support and counter-productive meddling. ■

熊彼特

中国创造力再评估

怀疑论者夸大其词了。中国公司在有些行业其实富有创新精神

“是的，中国人会考试，但是……他们不那么有想象力。他们缺乏创业素质。他们不创新——所以他们在剽窃我们的知识产权。”今年早些时候，惠普前掌门卡莉·菲奥莉娜（Carly Fiorina）在宣布竞选美国总统前如是说。菲奥莉娜的挑衅言辞引燃了对这个时代一大商业议题的辩论，那就是：中国能创新吗？

怀疑论者有两个观点。他们直指中国过去一直疏于保护知识产权，山寨商业模式泛滥，由此可见中国公司没有自主创新能力。去年发表在《麻省理工斯隆管理评论》（MIT Sloan Management Review）上的文章称，中国窃取的知识产权使美国公司每年损失3000亿美元。怀疑论者还说，中国政府促进创新的强硬手段实则适得其反。

两份新的出版物为这场辩论的另一方擂鼓助威。麦肯锡咨询公司的同名智库麦肯锡全球研究院（MGI）的研究报告《中国对全球创新的影响》（The China Effect on Global Innovation）称，中国公司的确显露潜力。MGI不落窠臼，没有将创新与发明混为一谈：“成功创新的证据是公司能够扩大收入，提高利润”，而不是申请很多永远不会应用的专利，或者发布一连串无法带来回报的新奇产品。而由管理顾问谢祖墀（Edward Tse）所著、于7月14日出版的新书《中国的商业颠覆者》（China’s Disruptors）认为，中国充满活力的私营部门崛起得益于政府的创新扶持政策，而非相反。

MGI的团队审视了中国境内外两万家公司的财务数据，考察它们是否为客户和股东创造了价值。他们衡量了这些公司通过基础研究、投入大量工程师解决问题（如电信设备制造商华为等公司就擅长此道），以及改进生产流程等环节创造价值的程度。中国耗时多年、投入巨资，试图成为吸纳外国技术的“创新海绵”。尽管如此，MGI的研究报告指出，中国在研制世界

一流药物、民用飞机和汽车方面仍然落后于西方。

但报告发现，在许多其他行业，中国目前正在两个创新领域引领全球：一是改进消费品以及销售这类产品的商业模式；二是让制造工艺更便宜、更快、更好。因此，中国公司如今在销售如家用电器、互联网软件和消费电子产品等方面超越外国对手。它们有庞大的本土市场相助，但确实也是行动迅捷。中国消费者已成为智能手机、社交媒体和电子商务的拥趸，他们重实用而轻品牌。如果消费品公司能在中国立足，就能无往而不利。

中国公司正在开创新商业模式。西方网络公司的大部分收益来自广告，而中国的广告产业规模仅为美国的约八分之一，所以中国的数字公司若要把用户的关注转化为金钱就不得不另辟蹊径。腾讯90%的收益来自在线游戏、社交平台上的虚拟产品销售和电子商务。该公司2014年的每用户平均收入为16美元，比Facebook多6美元。在线视频平台YY.com的观众可以购买电子“玫瑰”撒向他们喜欢的视频主播。主播可以从平台收入中分成，该网站称最出色的主播每月能挣2万多元（3200美元），是工厂工人平均工资的七倍。

另一个关于国家所扮演角色的观点又如何？悲观主义者认为中国的官僚作风不利于私营部门创新。在某种意义上说，谢祖墀原本不太可能是挑战这种观点的人。他先后就职于波士顿咨询集团和博思咨询公司（Booz & Company）这两大竞争对手，曾是两家公司的中国区管理人。他的书以引人入胜的细节记录了毛泽东时代政策余烬之中大陆创业经济的崛起。然而这位典型的资本主义者却坚称，“在诸多关键领域里，仅靠公司本身无法实现推动创新所需的大量、长期的资源投入。”正如美国在高校和国防研究上的政府开支推动了惠普等硅谷初期明星企业的发展，在中国也是如此，“政府要起带头作用。”令他感到鼓舞的是，现在中国每年政府与私人的研发投入超过2000亿美元，占GDP比例超过了欧盟，尽管仍落后于美国。

谢祖墀还指出，有证据表明中国的监管与法律基础越来越“有利于创新”。中国最大的互联网搜索公司百度过去因为充斥盗版音乐和视频而声名狼

藉。由于监管打击和版权所有者的法律诉讼，百度已经纠正了这些问题，成为了一家大型合法的外国电视节目发行商。

打造舞台

大部分中国公司并没有高精尖的技术，在这一点上菲奥莉娜没有说错，但她错在认为中国公司没有能力做出具价值创造的创新。惠普作为全球领先计算机制造商的地位已经被中国的联想取代。联想的成功不单单源于大胆收购西方企业，更得益于它令人惊叹的自主产品开发能力。谢祖墀认为政府的角色之一是为创新打造平台，这是对的。然而，在民用航空和汽车制造业，政府同时也对产业结构独断专行：在航空业是通过位居全国之冠的国有企业中国航空工业集团公司来施加影响；在汽车制造业则是迫使企业与外国公司合作。中国的公司能够创新，但是中国政府还未学会区分什么是有益的支持，什么是适得其反的干预。■

Elon Musk

Fortune favours the brave

How risk-taking and obsession have fuelled the rise of a Silicon Valley grandee

IN MOST parts of the world, chief executives strive to be steady, straightforward and as uncontroversial as possible. Not in Silicon Valley. The titans of the technology business tend to be outspoken optimists whose quests to challenge entrenched industries and change the world make them seem like megalomaniac characters out of an Ayn Rand novel—albeit flecked with an engineer's social awkwardness.

Steve Jobs, the late head of Apple, took on music labels, redefined computing with the iPod and iPhone, and helped change the look of animated films through Pixar. Peter Thiel, a libertarian venture capitalist and a founder of PayPal, wants to set up a floating island that can incubate new social policies. Jeff Bezos, the founder of Amazon, is spending millions to commercialise human space travel and build a clock that can last for 10,000 years.

Whatever their pet projects, Silicon Valley's giants are disconcertingly focused. This is especially true of Elon Musk, the subject of a new biography by Ashlee Vance, a journalist with *Bloomberg Businessweek* magazine. More than perhaps anyone since Mr Jobs, Mr Musk has assumed legendary status in the Valley. He is only 44, but has already played a role in disrupting internet, finance, car, space and energy businesses. He is best known for making a fortune at PayPal, an online-payments company, and using the proceeds to fund two of this era's most interesting technology companies: Tesla, which makes electric cars and batteries, and SpaceX, a rocket company.

Mr Musk seems to be a unique melding of the brash and the brainy. He

wants to wean the motor industry off fossil fuels, and help human beings become a "multiplanetary species" by eventually settling on Mars. He has a flair for self-promotion, although appears less motivated by profits than by purpose. Indeed his determination to change the world can, at times, make him appear slightly unhinged. "Do you think I'm insane?" he asks Mr Vance during a dinner.

South African-born, Mr Musk was brought up mostly by his curmudgeonly father after his parents divorced, and he was badly bullied at school. (He ended up needing a nose job to repair one injury.) Aged 17 he moved to Canada and lived with relatives before enrolling in university in Kingston, Ontario. He eventually headed to Stanford, but dropped out to start his first software company, Zip2, which made online maps. It was sold to Compaq for $307m in 1999. That same year he started X.com, an online-finance firm, which merged with PayPal.

Mr Musk is a compelling character in part because he embodies the booms and busts of his own industry. Before becoming a billionaire he risked nearly all his money to put some $100m into SpaceX and $70m into Tesla, and watched both flirt with bankruptcy. Even today their success is not guaranteed: on June 28th an unmanned SpaceX rocket bound for the International Space Station exploded.

Mr Vance's highly readable book offers some clues to those trying to understand Mr Musk's involvement in some of Silicon Valley's biggest fights. A grand vision must be combined with a relentless focus on detail. The only other renowned boss of recent times to obsess so much about the specifics of products was, again, Mr Jobs. Like him, Mr Musk has created a working environment characterised by brutally high expectations, where he sets unrealistic deadlines for rocket launches and car debuts and then dresses down employees who do not meet them.

Success in the technology world also requires both a stomach for failure and an enthusiasm for reinvention. Mr Musk was fired by the boards of Zip2 and PayPal, yet stayed involved in the firms. Such setbacks are reminiscent of Mr Jobs's experience. Fired from Apple, he later came back and turned the company around.

Another, more controversial quality that has helped Mr Musk and some of his peers to succeed is a certain lack of empathy. Mr Vance tries to play down Mr Musk's brittleness, but it is hard to obscure. While dancing with his first wife on their wedding day, he told her, "I am the alpha in this relationship." When Mary Beth Brown, his longtime assistant, asked for a pay rise, he said he wanted to see if he could do her job, and then fired her instead. Mr Vance concludes that Mr Musk is not on the Asperger's spectrum, as some have suggested, but is "profoundly gifted". Bent on saving humanity, he sometimes lacks the patience to deal with individual humans.

The most fascinating and at times frustrating relationship revealed by the book is in fact the one between biographer and subject. Several times Mr Vance compares Mr Musk to Tony Stark, the businessman who becomes "Iron Man" (of Marvel Comics fame). Mr Vance comes across as a "Musketeer", someone who believes in Mr Musk's power to reshape the world. Having waited 18 months for an interview he may have felt indebted for the access that was eventually granted. The reverential tone grates, but it also reflects this moment in the technology business, when celebrity entrepreneurs are riding high, and their big personalities and ambitions are seen as virtues. They will inevitably stumble, and some of their companies will suffer declines, but many will make a comeback, as heroes often do. ■

埃隆·马斯克

财富眷顾勇者

冒险与痴迷如何造就硅谷显贵的崛起

在全球大部分地区，首席执行官都力求稳重踏实，尽量少惹争议。在硅谷，情况则不然。科技业巨头们大多是直言不讳的乐观主义者，他们努力挑战根深蒂固的行业，立志改变世界，看起来活脱脱就是安·兰德（Ayn Rand）小说中的自大狂，尽管带点工程师的不善交际。

苹果公司已故CEO史蒂夫·乔布斯用iPod挑战过唱片公司，以iPhone重新定义了计算机行业，还通过皮克斯（Pixar）促成了动画电影业的变革。自由主义风险资本家、PayPal的创始人之一彼得·泰尔（Peter Thiel）希望建立一个人工浮岛来培育新的社会政策。亚马逊的创始人杰夫·贝索斯（Jeff Bezos）花费巨资推动人类太空旅行的商业化，还投资建造可在今后一万年里精准报时的时钟。

无论钟情于什么项目，硅谷的巨头们都展现出惊人的专注力。《彭博商业周刊》记者阿什利·万斯（Ashlee Vance）所著新传记的主角埃隆·马斯克（Elon Musk）尤其如此。马斯克也许是继乔布斯之后硅谷最具传奇地位之人。年仅44岁的他已涉足颠覆互联网、金融、汽车、太空及能源产业。他最为人熟知的是通过网上支付公司PayPal大赚一笔，再把收益投资到这个时代最有趣的两家科技公司上：制造电动汽车及电池的特斯拉和火箭公司SpaceX。

马斯克似乎是鲁莽与聪慧的独特结合体。他要让汽车工业摆脱对化石燃料的依赖，还要帮助人类最终定居火星，成为“星际物种”。他具有自我推销的天赋，但似乎是为使命感所驱动，而非由逐利所激发。的确，他执意改变世界，有时坚决得略显疯狂。“你觉得我疯了？”他在一次晚餐上如此向万斯问道。

出生于南非的马斯克在父母离异后主要由其乖戾吝啬的父亲带大。在学校

里，他倍受欺凌，后来甚至要做整形手术来修复受伤的鼻子。17岁时，他搬到加拿大的亲戚家里，之后在安大略省的金斯顿开始大学生涯。他最终前往斯坦福大学学习，但中途辍学创办了自己的第一家软件公司——制作在线地图的Zip2。1999年他以3.07亿美元把公司卖给了康柏电脑（Compaq）。同年，他创立了在线金融公司X.com，后来与PayPal合并。

马斯克是个引人注目的人物，原因之一是其经历体现了他所在行业的几番潮起潮落。在成为亿万富翁之前，他几乎押上了自己所有的资金，分别向SpaceX和特斯拉投入一亿及七千万美元，然后亲眼目睹两家企业在破产边缘挣扎。即便在今天，这两家公司也并非高枕无忧：6月28日，向国际空间站发射的SpaceX无人火箭发生爆炸。

万斯这本可读性甚高的传记提供了一些线索，可供人们了解在硅谷最大的一些争斗中马斯克所扮演的角色。宏图大志必须加上对细节的不懈关注。这些年来，另一位如此执着于产品细节的知名老板也只有乔布斯了。和他一样，马斯克创建了高要求的严酷工作环境，为火箭发射及新车亮相设定不切实际的期限，对无法如期完成任务的员工大加训斥。

在科技界争胜既需要能承受失败的肚量，也要有投身再创造的热情。马斯克先后被Zip2和PayPal的董事会解雇，但仍参与这两家公司的运作。这样的挫折让人想起乔布斯的经历。被苹果解雇后，他日后再度归来，扭转乾坤。

另一个较具争议的性格特质也有助马斯克及其部分同侪迈向成功，那就是缺乏同理心。万斯努力淡化马斯克尖刻暴躁的一面，但这一点很难掩盖。与第一任妻子在婚礼当天跳舞时，他告诉她：“我是这段关系的主导者。”当他的长期助手玛丽·贝丝·布朗（Mary Beth Brown）要求加薪时，他说想看看能否把她的工作接过来自己做，然后就炒了她的鱿鱼。万斯总结道，马斯克不像有些人说的那样属于阿斯伯格自闭人群，而是“天赋异禀”。因为一心想着拯救全人类，他有时会对人类个体缺乏耐性。

书中最引人入胜又不无矛盾的人物关系其实是在传记作家与主角之间。万

斯多次把马斯克比作漫威漫画中可变身“钢铁侠”的商人托尼·斯塔克（Tony Stark）。万斯好似马斯克的“火枪手”，相信他能重塑世界。为了采访马斯克，他等待了18个月，终获应允的他也许为此感激不尽，恭敬膜拜的口吻叫人厌烦，但这也反映出此刻科技业名人企业家风头正盛，个性乖张与野心勃勃被视为美德。他们将不可避免地犯错摔跤，有些人的公司或将衰败，但许多人会卷土重来，一如英雄人物常做的那样。■

Schumpeter

The great gambler

Kirk Kerkorian made a fortune the old-fashioned way—by wheeling and dealing

HE WAS one of the great dealmaker capitalists of the past century. He bought and sold the MGM studios three times. He did more than anyone else to create the neon-lit fantasy land that is Las Vegas. He tried to buy Chrysler, and at one point was a big shareholder in Ford and General Motors. Kirk Kerkorian accumulated all the accoutrements of the mogul lifestyle: a lavish estate in Beverly Hills, friendships with Frank Sinatra and Cary Grant, three wives and a legendary divorce battle. (The third Mrs Kerkorian, who only stuck around for a month, tried to sue him for $320,000 a month in alimony and child support until it turned out that the child was the product of a liaison with a rival tycoon, Steve Bing.) Yet Mr Kerkorian was a very private man: he shunned the Hollywood social scene, and only saw the films he financed when they reached the cinema. After he hit 50, he focused obsessively on his tennis.

He was as self-made as you can get: the son of an Armenian immigrant farmer, he moved home at least 20 times as a child, started bringing in income at the age of nine, got sent to reform school for punching a teacher's son and made a living as a boxer, "Rifle Right Kerkorian". Then, with the war coming, he qualified as a pilot and got a job flying Canadian bombers to Britain's Royal Air Force. Mr Kerkorian saved enough money from these daredevil missions to establish his own business, Trans-International Airlines, flying high-rollers and celebrities from Los Angeles to Las Vegas. He worked as mechanic, cleaner, ticket collector and pilot, and often joined his passengers at the gambling table.

Mr Kerkorian's real passion was not running a business but doing deals: he made more than $100m by selling, buying back and reselling his airline.

His move into Vegas in the 1960s inevitably brought him into contact with the Mafiosi who then infested the city. But despite their sniffing around, law enforcers and journalists found no sign of collusion with the Mob. His audacity marked him out. He outmanoeuvred legendary dealmakers like Howard Hughes and Ted Turner. He built the biggest hotel in the world three times, in 1969, 1973 and 1993.

Often, he appeared to act on a hunch. He bet heavily on Chrysler on the strength of meeting Lee Iacocca, its then boss, at a racetrack. But his deals were united by two great themes: land and leisure. He embodied a great American tradition of spotting the next frontier and snapping up bits of it before anyone else. He was among the first to realise after the war that the country was in for a leisure boom—that people were going to get richer and that they would spend their surplus wealth on having fun and travelling. Two deals he made in his 80s—buying the Mirage resorts for $6.4 billion in 2000 and the Mandalay Resort Group for $4.8 billion in 2004—gave him control of more than half of the hotel rooms on the Vegas strip. His fortune hit an estimated $16 billion in 2008, making him one of the world's 50 richest people, but fell to around $4 billion after the financial crisis.

Bold dealmakers like Mr Kerkorian used to be more common in Western boardrooms. Hollywood was created by European émigrés, such as Sam Goldwyn and the Warner brothers, who were driven by their gut instincts. Vegas was full of tycoons with outsize personalities. Mr Kerkorian died three days before Ralph Roberts, another American of émigré stock, who started with a small Mississippi cable-television outfit and, by dint of countless transactions, turned it into a corporate colossus, Comcast.

There are still a few such types around—Rupert Murdoch and Donald Trump have far more orthodox biographies than Mr Kerkorian but are both dealmakers to their fingertips. But in general, their type are making way for new sorts of billionaires: tech folk who build fortunes on the back of their

own inventiveness; and private-equity and hedge-fund types who do so through financial engineering. Mr Kerkorian once said, "I didn't go to school but I went into buying and selling businesses at an early age." But today it is harder than ever to get rich (legally, at least) without the benefits of an academic education. In the most lucrative areas of business, such as technology and finance, formal qualifications are more or less a condition of entry. It is harder than ever for a teenage school-leaver to start at the bottom and rise to the executive suite.

At the same time, it is getting more difficult for a self-made man or woman to make a living out of old-fashioned wheeling and dealing. Established businesses, often run by dull company men, are better than they used to be at spotting neglected niches and filling them. Regulators and prosecutors have got better at catching up with anyone who tries to cut corners on the way up. The two worlds that provided Mr Kerkorian with his fortunes—Hollywood and Vegas—are now dominated by corporate stiffs with their entourages of accountants, lawyers and PR people.

Look east, and south

To find the new generation of bold capitalists you need to look to emerging markets, where living standards are still rising rapidly and regulators are weak. Chinese business is dominated by colourful tycoons who seized their chance when private enterprise was made legal. South-East Asia's sprawling business groups are the agglomeration of their owners' inveterate dealmaking. Eike Batista of Brazil has lost the fortune he made in mining and oil exploration, and Vijay Mallya of India has seen his airline collapse. But do not be surprised if both men pick themselves up, dust themselves down and make themselves a fresh fortune somewhere else. Even if they do not, there are still plenty of other wheelers and dealers out there, making fortunes out of big bets on the next frontier and providing the newly affluent with entertainment. "Sometimes you lose," Mr Kerkorian once said

after one of his occasional setbacks, “but that’s the nature of the game. There’s always another game.” These days the best games are a long way from Las Vegas. ■

熊彼特

了不起的赌徒

柯克·克科里安发家致富靠的是老一套——长袖善舞、不择手段

他是上世纪最伟大的买卖资本家之一。他三次买卖米高梅电影公司。在缔造霓虹闪耀的梦幻世界拉斯维加斯这件事上，他的贡献超过任何人。他试过买下克莱斯勒，一度曾是福特和通用汽车的大股东。柯克·克科里安（Kirk Kerkorian）集所有大亨式生活方式于一身：在贝弗利山拥有豪宅，与弗兰克·辛纳屈（Frank Sinatra）和加里·格兰特（Cary Grant）是密友，有过三任妻子，还有一场传奇的离婚大战。（只维持了一个月婚姻的第三位克科里安太太试图控告他，要他支付每月32万美元的赡养费和子女抚养费，最后发现孩子是她与克科里安的竞争对手、另一位大亨史蒂夫·宾[Steve Bing]私通所生。）不过克科里安是个非常孤僻的人：他避开好莱坞的社交场合，只有在他出资的电影上线时才会去影院观看。50岁后，他对网球几近痴迷。

他是标准的白手起家：父亲是亚美尼亚农民，移民到美国，他小时候至少搬过20次家，9岁开始挣钱，因为揍了老师的儿子而被送进少年管教所，后来做拳击手讨生活，得名“来复右拳克科里安（Rifle Right Kerkorian）”。当战争来临，他通过考核成为飞行员，驾驶加拿大轰炸机飞抵英国皇家空军服役。克科里安通过这些充满惊险的任务攒够了钱，创立了自己的公司“越际航空”（Trans-International Airlines），用飞机将大赌客和社会名流从洛杉矶送到拉斯维加斯。他是技工、清洁工、检票员、机师，还常常跟乘客一起在赌桌上玩几把。

克科里安真正的激情不在经营公司，而在做买卖：他把自己的航空公司卖掉，买回来，再卖掉，赚了1亿多美元。上世纪60年代他搬到维加斯，不可避免地要跟当时在那里出没的黑手党打交道。执法人员和记者四处打探，仍没发现他与黑帮勾结的任何迹象。他的大无畏让他脱颖而出。他比传奇的交易人霍华德·休斯（Howard Hughes）和泰德·特纳（Ted Turner）更足智多谋。在1969年、1973年和1993年，他曾三次建起世界上

最大的酒店。

他似乎常常凭直觉而动。仅凭与克莱斯勒当时的老板李·艾柯卡（Lee Iacocca）在赛马场的一面之缘，他就大举押注这家公司。不过他的买卖可归为两大主题：土地和休闲。在他身上体现了一种伟大的美国传统：发现下一个前沿领域，抢在别人之前率先入手。他是第一批意识到战争之后美国必定会掀起休闲热潮的人：人们越来越富裕，他们会将富余的财富花在享乐和旅游上。80多岁时他做了两笔交易：2000年以64亿美元买下海市蜃楼度假酒店（the Mirage resorts），2004年以48亿美元买下曼德勒度假村集团（Mandalay Resort Group）。这两笔交易让他得以掌控维加斯一带超过一半的酒店房间。据估算，他的财富在2008年达到160亿美元，成为全球最富有的50人之一，但金融危机后降至约40亿美元。

像克科里安这样胆大的买卖人以前在西方企业的董事会里更为常见。好莱坞由欧洲移民创建，比如塞缪尔·戈尔德温（Sam Goldwyn）和华纳兄弟，他们凭直觉和本能行事。维加斯到处是个性十足的大亨。克科里安去世三天后，拉尔夫·罗伯茨（Ralph Roberts）也走了，这是另一位移民血统的美国人，以一家很小的密西西比有线电视公司起家，借助无数次买来卖去，最终成就了企业巨头康卡斯特（Comcast）。

现在还有几位这样的人物。鲁珀特·默多克（Rupert Murdoch）和唐纳德·特朗普（Donald Trump）的经历比克科里安正统得多，但也是彻头彻尾的买卖人。不过总的说来，他们这一类人物正在为新型亿万富翁让路，后者要么是科技人士，凭借自己的创造力发家；要么是私募股权和对冲基金人才，靠金融工程致富。克科里安曾说：“我没上过学，但我很早就开始买卖公司。”但时至今日，如果没有正规教育的帮助，一个人会比以往任何时候都更难致富（至少难以合法致富）。在最有利可图的行业，如科技和金融业，正规文凭或多或少是一块敲门砖。中学就辍学的青少年要想从底层干起变身高管大亨，会比以往任何时候都更困难。

与此同时，白手起家的男男女女越来越难通过不择手段的老路来谋生了。老牌的公司多由枯燥无趣的公司人员经营，在发现被忽略的细分市场并将

其填补这一点上，它们比以前在行得多。对于任何试图在上升的道路上抄捷径的人，监管者和检察官们都能更快抓住他们。曾为克科里安提供财富的两大世界——好莱坞和赌城——现在被固执刻板的老板所把持，陪同他们的是会计师、律师和公关人员。

看东方，看南方

要找到新一代大胆的资本主义者，你得去看新兴市场，那里的生活水平仍在快速提升，监管力度很弱。中国的商业由形形色色的大亨主导，他们在私营企业合法化时抓住了机遇。东南亚不断扩张的商业集团是其所有者长期不断买卖交易的结果。巴西的埃克·巴蒂斯塔（Eike Batista）已经损失了他在采矿和石油勘探上获得的财富，印度人维贾伊·马尔雅（Vijay Mallya）眼见着他的航空公司破产。但是如果这两人自己爬起来，拍拍身上的灰尘，在别处又新赚了一笔，你可别觉得惊讶。就算他们没有这样，还有很多买进卖出的行家里手，通过在下一个浪潮中掷下豪注发家致富，为新富起来的人提供休闲娱乐。“有时候你输了，”克科里安在他偶尔的一次挫折后曾说道，“但这就是游戏。总有新的一局。”如今最好的游戏离拉斯维加斯已经很远了。■

Schumpeter

Cheap and cheerful

After some teething troubles, frugal innovation is on the rise

VICTOR HUGO once said that "nothing can stop an idea whose time has come". He failed to add that a lousy product launch can delay it. In the first decade of this century it seemed that frugal innovation's time had indeed arrived: to meet surging demand from new consumers in emerging economies, innovative firms in those countries were stripping products of their fripperies and cutting their cost drastically. The new world had at last produced a big, new management idea.

Then along came the Tata Nano. The $2,000 car bore the imprimatur of one of the emerging world's best companies. But some of the earliest Nanos burst into flames. Although Tata Motors fixed its engineering problems, aspirational Indians made it clear that they did not want to be seen driving "the world's cheapest car". Frugal innovation looked as if it might go from promising to passé without having made any impact.

In a new book, "Frugal Innovation: How to Do More with Less", Navi Radjou, a consultant, and Jaideep Prabhu, an academic at Cambridge University's Judge School of Business, reassure readers that this is not the case. (Its publisher, Profile, has a business relationship with *The Economist*, but neither of the authors has any editorial relationship.) Frugal innovation has not only continued to advance in the emerging world. It is also conquering a rich world in which a financial crisis and recession have been followed by a spell of stagnant household incomes and, in parts, persistently high unemployment.

Some of the West's biggest multinationals are designing no-frills products in developing countries with the intention of selling them in developed

ones, too. General Electric designs affordable medical devices in India and China. Renault-Nissan has a centre for frugal engineering in India. The carmaking group sells a variety of no-frills cars built in low-cost countries, including Dacia models made in Romania and Datsuns made in Indonesia.

Sales teams accustomed to the fat commissions from selling full-price products are hardly going to be keen on pushing frugal ones. So companies such as Renault and Procter & Gamble have created separate sales departments for their no-frills lines. In some cases they are using new distribution channels to reach impecunious consumers: American Express, for example, is marketing Bluebird, a low-cost current account, through Walmart stores.

Companies are realising that the "fortune at the bottom of the pyramid" is not just to be found in poor countries. Vianney Mulliez, the boss of Auchan, a big French retailer, says that "there are many 'emerging markets' within Western economies that we are eager to serve." Walmart has opened hundreds of "money centres" in its stores, offering cheap financial products such as Bluebird to low-income customers. Costco, another big American retailer, now sells a range of cut-price medical devices, such as a $34.99 blood-pressure monitor.

Western firms are adopting frugal business practices pioneered in the emerging world. Bharti Airtel, an Indian mobile-phone operator, is able to offer remarkably low prices in part because it shares wireless towers with other providers. Among rich-world firms inspired by the idea of cutting costs by sharing infrastructure, Ericsson and Philips are working together on projects in which mobile-phone antennae are embedded in streetlights in European cities. And Hershey and Ferrero, two confectioners, are sharing warehouses and vehicles in North America.

As part of their frugal-innovation strategies, some rich-world companies

are “crowdsourcing” product-development ideas from their customers and workers. Ford has converted a Detroit warehouse into an innovation centre where employees can spend their spare time experimenting with new technologies. Having at first gone into a defensive crouch when hackers tried to improve Kinect, a motion sensor for its video games, Microsoft decided to co-operate with them to solve problems its own researchers had not yet turned their attention to.

Ideas from everywhere

Messrs Radjou and Prabhu are right that a frugal revolution is sweeping the rich world. But they sometimes give the East too much credit for leading the way. The West led the frugal revolutions in low-cost airlines and discount supermarkets. It is also pioneering the use of digital technology to replace expensive physical plant and to help people share resources. The Khan Academy, founded by Sal Khan, an American entrepreneur, offers free maths and science lessons on YouTube (Bill Gates, the world’s richest man, encourages his children to attend the academy). Airbnb lets people supplement their incomes by renting out spare rooms to cost-conscious travellers.

Three-dimensional printing is opening up all sorts of possibilities for frugal, small-scale manufacturing. New Matter and M3D, two startups, are developing 3D printers that will sell for a few hundred dollars. Shapeways, a global network of 3D-printing factories, delivers cheap, high-quality copies of products its customers have designed at home. Entrepreneurs are creating apps and attachments that turn smartphones into measuring devices, replacing all sorts of expensive industrial and medical instruments with something far cheaper. Crowdfunding outfits such as Kickstarter, KissKissBankBank and MedStartr provide a frugal source of financing for frugal innovators.

The reason that the launch of the Nano was such a disaster was that its

early mishaps played into people's suspicion that cheap products are bound to be shoddy. But that prejudice looks increasingly outdated as the discounting revolution gathers pace. Middle-class Britons are flocking to Aldi and Lidl, having discovered that a lot of their products are as good as those at Tesco and Sainsbury's supermarkets, and a lot cheaper. As frugal innovation continues to spread, such retailers will have an ever greater variety of bargains to put on their shelves. ■

熊彼特

价廉物美

经历过发展初期的暂时困难，节俭式创新正在兴起

维克多·雨果曾经说过，“时代思潮势不可挡。”他没能加上一句：发布一个糟糕的产品会推迟新时代的到来。本世纪的第一个十年，似乎节俭式创新的时代真的到来了：为了满足新兴经济体中新兴消费者急剧增长的需求，这些国家的创新公司将产品华而不实的装饰剥去，大大降低了成本。新世界终于创造出了一个宏大、新颖的管理理念。

接踵而至的是塔塔Nano（Tata Nano）。这款售价2000美元的车承载着新兴世界一家顶尖公司的期许。但是最初推出的Nano车发生了多起自燃事故。尽管塔塔汽车公司解决了其工程问题，心怀抱负的印度人却明确表示他们不想被人看到开着“世界上最便宜的车”。节俭式创新看起来似乎尚未产生任何影响就要从勃兴走向凋零。

在新书《节俭式创新：如何少花钱多办事》（Frugal Innovation: How to Do More with Less）中，咨询专家纳维·拉朱（Navi Radjou）和剑桥大学贾奇商学院（Judge School of Business）的学者贾伊迪普•普拉布（Jaideep Prabhu）让读者确信事实并非如此。（该书的出版社Profile和《经济学人》有业务关系，但两位作者和本刊均无任何编辑往来。）节俭式创新不仅在新兴世界中生根发芽，也在积极进军富裕世界。经历了金融危机和经济衰退，富裕世界正处于家庭收入停滞期，部分地区的失业率高居不下。

一些西方跨国公司巨头正在为发展中国家设计经济实惠的产品，同时也计划销往发达国家。通用电气为印度和中国设计了价格适宜的医疗设备。雷诺日产在印度设立了节俭工程中心，这一汽车制造集团在低成本国家生产并销售各种各样的经济型汽车，包括在罗马尼亚生产的达契亚（Dacia）和在印度尼西亚生产的达特桑（Datsun）。

销售团队已经习惯了售卖正价产品以获取丰厚的佣金，几乎不可能热衷于

推销经济型产品。因此像雷诺和宝洁这样的公司为其经济实惠的产品线设立了专门的销售部。有些情况下他们采用新的分销渠道争取囊中羞涩的顾客，例如，美国运通正通过沃尔玛门店推出一种名为“蓝鸟”（Bluebird）的低成本活期账户。

各大公司都开始意识到“金字塔底层的财富”并非只能在贫穷国家找到。法国大型零售商欧尚的老板米伟（Vianney Mulliez）表示：“在西方经济体中有很多我们渴望为之服务的‘新兴市场’。”沃尔玛已在门店里设立了成百上千个“货币中心”，向低收入顾客提供如蓝鸟之类便宜的金融产品。另一美国大零售商好市多（Costco）现正出售一系列特价医疗设备，如34.99美元的血压监测仪。

西方公司正在吸纳新兴世界率先提出的节俭式商业实践。印度移动电话运营商巴帝电信（Bharti Airtel）能以超低价格提供服务，部分原因是它和其他供应商共用无线基站。受到共用基础设施降低成本这一想法的启发，富裕世界的公司中，爱立信和飞利浦正合作开发项目，在欧洲城市的路灯里嵌入手机天线。而两大糖果制造商好时和费列罗在北美共用仓库和车辆。

作为节俭式创新战略的一部分，富裕世界的有些国家从它们的客户和员工那里“众包”产品开发的创意。福特将底特律的一间仓库改装成创新中心，员工们空闲时可以在那儿体验新技术。当黑客想要完善其视频游戏的体感设备Kinect时，微软一开始采取防守策略，但最终还是决定与黑客合作，以解决自己的研发人员尚未关注到的问题。

处处皆创意

拉朱和普拉布是对的，节俭革命正在席卷富裕世界。不过谈及引领潮流，有时他们过多地强调了东方在此过程中的作用。在低成本航空和折扣超市领域，西方领导了节俭革命。在使用数字科技替代昂贵的实体设施并帮助人们分享资源方面，西方同样也是先驱。由美国企业家萨尔·可汗（Sal Khan）创立的可汗学院（the Khan Academy）在YouTube上免费提供数学和科学课程（全球首富比尔·盖茨鼓励他的子女去上这个学院）。Airbnb

让人们将空余房间出租给注重节约的旅行者以补贴收入。

三维打印为节俭型的小规模生产提供了各种各样的可能性。New Matter和M3D这两家创业公司正在研发售价几百美元的3D打印机。3D打印全球网络工厂Shapeways根据客户在家中的设计就可送上质优价廉的产品。企业家还在开发应用和配件，将智能手机转变成测量仪器，用便宜得多的东西代替各种昂贵的工业和医疗器械。众筹平台如Kickstarter、KissKissBankBank和MedStartr为节俭式创新者提供了经济的融资渠道。

Nano的推出之所以会成为灾难，是因为其早期事故印证了人们的怀疑，即便宜没好货。不过随着折扣革命步伐加快，这样的偏见显得越来越过时了。英国中产阶级纷纷涌入Aldi和Lidl超市，因为发现那儿的许多产品和乐购（Tesco）、Sainsbury's超市的一样好，但价格便宜得多。随着节俭式创新的继续传播，这类零售商会有越来越多价廉物美的商品摆上货架。

Legend Holdings

A torch-bearer for Chinese capitalism

The conglomerate built by Liu Chuanzhi is closer to its American and European counterparts than to Asian business groups

THREE years ago one of the many companies started by Liu Chuanzhi, the chairman of Legend Holdings, held its annual meeting in a city in the Chinese interior. As is usual, the conglomerate invited various officials to the opening banquet. But when people went to pay their respects to the most important figures in the room, it was Mr Liu, rather than the local Communist Party chief, who had the biggest queue of people wanting to speak to him.

That is because Mr Liu is the leading light of Chinese entrepreneurial capitalism. Legend is best known for spawning Lenovo, now the world's biggest maker of personal computers, in which it still holds a big stake. But Legend has a range of other business interests, from agriculture to car hire to dentistry (see diagram), and fingers in all sorts of other pies through its private-equity arm, Hony Capital.

Lenovo has been listed in Hong Kong since 1994 but now Legend itself is going for an initial public offering there. This week it released its prospectus, and Mr Liu and other executives went on an extensive road show. It expects to raise over $2 billion in the flotation, with nearly half of that sum already said to have been snatched up by strategic investors, putting a valuation of around $13 billion on the group.

The emergence of Legend into the global spotlight raises a few questions. First, who is Mr Liu and how did he rise to such prominence inside China? Second, what exactly are investors getting if they decide to buy shares? Most important, does Legend have a coherent strategy?

Mr Liu was born into a wealthy mainland family, but experienced severe deprivation during Chairman Mao's rule. Such memories drove him to be frugal and to persevere—two qualities that are essential for entrepreneurs everywhere but especially in China. His father was an ardent Communist who became one of China's top patent lawyers. He made a deep impression on his son, whose career has been devoted to creating a Chinese equivalent to the West's great corporations, through the embrace of modern business practices—including respect for intellectual-property rights. That is why Lenovo's smartphones are now sold around the world. Xiaomi, an upstart Chinese rival that is more relaxed about copying, is sure to attract lawsuits if ever it tries to sell its handsets in America.

The legend of Legend began in 1984 when the Chinese Academy of Sciences (CAS) loaned Mr Liu and a few associates $25,000 to help commercialise government-funded technologies. Frustrated by bureaucracy and eager to capitalise on nascent economic reforms, Mr Liu pushed Legend (and later Lenovo) to be market-oriented. CAS still owns 36% of Legend, but it is far from the typical state-owned enterprise. Liang Neng of the China Europe International Business School (CEIBS) in Shanghai insists, "It really behaves very much like a private firm in the market."

Thus far, Lenovo, of which Legend owns just less than a third, provides two-thirds of the group's profits. The computer-maker is doing well. In the year to March Lenovo's revenues rose by 20% to $46 billion and its gross profits increased by nearly a third, to $6.7 billion. But some of Legend's other businesses have also turned into profit, and look set to make a growing contribution to the group.

The group's sprawl reflects Mr Liu's bets on China's successive waves of growth and liberalisation. In the mid-1980s he saw opportunities for Chinese firms in the global rise in demand for computer hardware. At the turn of the century his firm bet on urbanisation and the need for non-bank

financing. In this decade, it is betting that rapidly rising affluence will spur demand for safer food and for services ranging from health care to personal finance.

Given its many tentacles, it is tempting to see Legend as a Chinese incarnation of a South Korean *chaebol* or a Japanese *keiretsu*. Gordon Orr of McKinsey, a consulting firm, says that although there are some passing similarities, Legend does not have the web of cross-shareholdings, and the incestuous supplier relationships among group members, that are seen in the archetypal East Asian conglomerate. He thinks a better comparison would be with European holding companies such as Investor, run by the Wallenberg family of Sweden, which is into everything from domestic appliances to hotels. In both cases, "They have listed and unlisted entities, they have private equity, they do startups," notes Mr Orr.

Peter Williamson of Cambridge University's Judge Business School notes that, somewhat like a *chaebol*, Legend's business model is about allocating capital between businesses in a place where capital markets are inefficient. "But unlike the *chaebol*, I think Legend is more about leveraging expertise and international experience than pools of capital."

Given his long-term outlook, and indeed his cultish following, does it make sense to think of Mr Liu as China's Warren Buffett? Again, the shoe does not quite fit. Zhang Tao was Mr Liu's assistant for eight years and recently published a book about his former boss. He thinks Mr Liu is more like General Electric's former boss, Jack Welch. Mr Buffett is as proud of Berkshire Hathaway's sprawl as Mr Liu seems to be of Legend's; but Berkshire is not particularly known for developing managers or nurturing small firms in the way Legend seems to be doing. GE, in contrast, is a world leader in training managers. And as its current boss, Jeff Immelt, likes to say, the American firm is not so good at startups but it is great at scaling up small businesses into billion-dollar enterprises.

Mr Liu himself has said that a two-week visit to GE's management-training centre in America, long ago, inspired him to build a world-class conglomerate in his native land. These are the lessons he took away: "Diversification will work when…every subsidiary is focused on its own field while the holding company serves as an investor and a driving force. To make a well-arranged ownership structure, we need the right leaders."

Mr Liu has been adept at navigating the shoals of China's state-led model of capitalism. He also deserves credit for professionalising management practice in China, says Edward Tse of Gao Feng, another consulting outfit. Mr Liang of CEIBS says Mr Liu's strategy has been widely studied by younger Chinese businesspeople: "Build a strong top team, focus on long-term strategy and nurture a capable and dedicated workforce."

For all his success so far, Mr Liu should look again at his erstwhile mentors at GE. Under pressure from regulators and investors, the American giant is now simplifying its business model, in particular by dismantling its huge financial division. As a private firm, Legend has so far not had to answer hard questions about its strategy. That is about to change: investors in publicly traded firms the world over dislike complex, murky conglomerates. Even one led by a figure as admired as Mr Liu will not have it easy. ■

联想控股

中国资本主义的火炬手

与亚洲企业集团相比，这个由柳传志创建的企业更接近于欧美公司

三年前，联想控股董事长柳传志创办的众多公司中的一家在中国内陆的一个城市召开年会。与往常一样，公司邀请了众多官员出席开幕宴会。当时，人们纷纷向在场最重要的人物致敬，其中想要攀谈的人龙最长的，不是当地的市委书记，而是柳传志。

这是因为柳传志是中国企业家资本主义的泰斗。联想控股孕育了当今世界上最大的个人电脑制造商联想集团，因此声名远扬。联想控股仍持有后者大量股份。但联想控股还有各种其他商业利益，从农业到租车，再到牙科，种类繁多（见图）。此外，它还通过私募股权分支机构弘毅投资广泛涉猎其他行业。

联想集团于1994年在香港上市，现在联想控股自己也将在香港进行IPO。本周它公布了招股说明书，柳传志和其他高管做了一次大规模的路演。预计此次上市将募集超过20亿美元（据说其中将近一半的股份已被战略投资者抢购），对该集团的估值约为130亿美元。

联想控股出现在全球聚光灯之下，也引出了一些问题。首先，柳传志是谁？他在中国如何声名鹊起？其次，如果投资者决定购买股票，他们到底能获得什么？最重要的一点，联想控股有没有清晰的策略？

柳传志出生在内地的一个富裕家庭，但在毛泽东统治时期他经历了严重的匮乏。种种回忆使他变得节俭而坚韧，这两种品质对全世界（尤其是中国）的企业家都不可或缺。他的父亲是一名忠实的共产党员，也是中国顶尖的专利律师。他对儿子有深远的影响。柳传志在职业生涯中一直致力于以西方大企业为蓝本来创办中国的企业集团，他通过接受现代商业实践，包括对知识产权的尊重，来实现目标。正是因为这样，联想集团的智能手机现在能行销全世界。新近崛起的中国竞争对手小米对抄袭行为更为放纵

宽容，因而，如果它试图在美国出售手机，必将引发诉讼。

联想控股的传奇故事开始于1984年。当时，中国科学院向柳传志和几个同事借款20万元，让他们把政府资助开发的技术商业化。由于对官僚体系感到灰心，并渴望利用新兴的经济改革，柳传志推动联想控股（和后来的联想集团）以市场为导向来发展。中国科学院现在仍然持有联想控股36%的股份，但联想远不是典型的国有企业。上海中欧国际工商学院（CEIBS）的梁能表示，“它的所作所为真的很像市场中的私营企业。”

到目前为止，由联想控股持股不到三分之一的联想集团贡献了前者三分之二的利润。这家电脑制造商表现良好。截至今年3月，联想集团的年收入增长了20%，达460亿美元，毛利增长了近三分之一，为67亿美元。但联想控股一些其他的业务也已扭亏为盈，势必为集团做出越来越多的贡献。

联想控股的扩张表明，柳传志一直把赌注押在中国持续不断的发展和开放上。上世纪80年代中期，在计算机硬件需求全球增长的背景下，他看到中国企业拥有大量的机会。在世纪之交，他的公司押注于城市化和对非银行融资的需求上。在这个十年中，该公司相信，快速增长的富裕阶层将刺激对更安全的食品以及从医疗到个人金融等方方面面服务的需求。

鉴于它多方面的影响力，人们很容易把联想控股看成中国版的韩国财阀（*chaebol*）或者日本企业联盟（*keiretsu*）。咨询公司麦肯锡的戈登·奥尔（Gordon Orr）说，尽管乍看起来有些相似之处，但是联想控股没有典型东亚企业集团中常见的复杂交叉持股，集团成员之间也没有狭隘排外的供应商关系。他认为更适合进行比较的是欧洲的控股公司，例如由瑞典的瓦伦堡家族运营的银瑞达集团（Investor），它的业务从家用电器到酒店，包罗万象。奥尔表示，这两家公司都“拥有已经上市和没有上市的实体，拥有私募股权，还兴办创业企业”。

剑桥大学贾吉商学院（Judge Business School）的彼得·威廉森（Peter Williamson）指出，联想控股的商业模式有点像韩国财阀，都是在资本市场效率低下的地方进行企业之间的资本配置。“但是我认为，联想控股更

侧重于利用专业知识和国际经验，而不像韩国财阀那样注重利用资金池。”

鉴于他的远见，以及他确实超高的人气，把柳传志视为中国的巴菲特是否合情合理？同样，这个类比也不太适合。张涛曾为柳传志当过8年助理，他最近出版了一本关于自己前任老板的书。他认为，柳传志更像通用电气以前的老板杰克·韦尔奇。巴菲特为伯克希尔·哈撒韦的扩张而骄傲，柳传志也以联想控股的壮大为豪；但伯克希尔并不像联想那样以培养管理层或者培育小公司而著称。相反，通用电气在培训经理人方面世界领先。正如通用电气现在的老板杰夫•伊梅尔特（Jeff Immelt）常说的那样，美国公司在创业公司方面不那么擅长，但在促使小公司发展壮大成为十亿元企业方面表现卓著。

柳传志自己曾经表示，很久以前他对通用电气在美国的管理培训中心进行过一次为期两周的访问，这激励了他在本国建起一家世界级的企业集团。这些就是他学到的经验：“多元化能够奏效，前提是……每家子公司都专注于各自的领域，控股公司则充当投资者和驱动力。为了形成精心安排的股权结构，我们需要合适的领导人。”

柳传志一直在国家牵头的资本主义模式运作中长袖善舞。另一家咨询机构高风咨询公司的谢祖墀表示，柳传志促使中国的管理实践专业化，这也值得称赞。中欧国际工商学院的梁能认为，柳传志的策略被中国年轻一代商人广泛研究：“建立一个强有力的高管团队，专注于长期战略，并培育一支能干、敬业的员工队伍。”

尽管他迄今为止都很成功，柳传志还是应该再次关注他昔日的导师通用电气。在监管机构和投资者的压力之下，这家美国巨头目前正在简化业务模式，特别是通过拆分其庞大的金融部门来达成目标。联想控股作为一家私营企业，至今无须回答有关公司战略的尖锐提问。这一局面即将改变：全世界上市公司的投资者都不喜欢复杂隐晦的企业集团。即便是由柳传志这样受人钦佩的人物所领导的企业，日子也不会好过。■

Biofuels

Thin harvest

Investment in biofuels is dwindling and scepticism is growing

MAKING fuel from the solar energy stored in living organisms by photosynthesis is a tempting idea. It sounds inherently green, and so biofuel schemes—ranging from fermenting starch, to recycling cooking oil, to turning algae into jet fuel—have drawn more than $126 billion in investment since 2003, according to Bloomberg New Energy Finance (BNEF), a research outfit. The results, though, are like a Venn diagram whose sets barely overlap. Those biofuels that can best compete commercially are not, in fact, green. Those that are green cannot compete commercially.

The biggest cause of ungreenness is that biofuels made from food crops—or from plants grown on land that might otherwise produce such crops—hurt food supplies. A committee of the European Parliament agreed this week to cap the use of "first-generation" biofuels of this sort. The current European target is for renewables to make up 10% of the energy used in transport by 2020. The new proposal says only seven-tenths of this can come from first-generation fuels. The difference must be made up by more advanced ones based on waste products and other feedstocks that do not impinge on food production. That could mean European demand for advanced biofuels of 14 billion litres by 2020, reckons Claire Curry of BNEF.

Only two such advanced fuels, she thinks, are capable of large-scale production. One is turning waste cooking oil and other fats into diesel—a process for which Europe already has 2 billion litres of capacity. The other involves making ethanol from cellulose by enzymatic hydrolysis.

Everything else, according to Ms Curry, is at least four years from

commercial production. That includes the much-touted idea of renewable jet fuel.

This is promising on a small scale. South African Airways (SAA), in conjunction with Boeing and other partners, is developing fuel based on the seeds of the tobacco plant—once a big crop in the country, but now fallen on hard times. The specially bred strain of tobacco involved is nicotine-free. It is grown by hard-up farmers, who gain two cash crops a year from the tobacco, and then have money for seeds and fertiliser for a third food crop. The seeds' residue becomes animal feed. Ian Cruickshank of SAA says that the cost of the tobacco-based product matches that of jet fuel refined from fossil sources. The airline expects to use 20m litres of it, blended 50-50 with conventional stuff, by the end of 2017, and 500m litres by the end of 2022.

Fans of the jatropha bush see similar opportunities. This toxic, capricious vegetable has disappointed investors. But, grown properly, its beans can provide both animal fodder and an oil which may readily be made into diesel fuel.

Finding more types of biofuel that hit the sweet spot in the Venn diagram may be tricky, though. Campaigners generally find it easier to fulminate against those which damage the environment or food security than to explain exactly how they ought to be grown. Another controversial issue is genetic modification. This could improve yields, increase resistance to insects and permit biofuel crops to be grown on unirrigated, marginal land. But any kind of GM crop is a tough sell to the green-minded.

Science still has plenty to offer, though. For example, researchers at the University of Manchester, the University of Turku, in Finland, and Imperial College, London have adapted an enzyme currently used to produce bio-butanol to make propane—a more useful product.

Whether such bright ideas can be commercialised at scale is a different question. Some companies, indeed, are starting to give up. Several algae-to-fuel ventures in America are switching to the manufacture of high-value chemicals instead. Sunlight is a great source of energy. Biology may not be the best way of storing it. ■

生物燃料

歉收

对生物燃料的投资正在减少，怀疑在增多

从生物体通过光合作用存储的太阳能中生成燃料，这个想法很吸引人。它听起来天生环保，因此，根据研究机构彭博新能源财经（BNEF）的统计，自2003年以来生物燃料项目已经吸引到了1260多亿美元投资，从发酵淀粉，到回收废食用油，到把藻类植物变成航空燃料，不一而足。然而，其结果却像是一张几个集合几乎不相交的文氏图。那些最具商业竞争力的生物燃料实际上并不环保，而环保的生物燃料又没有商业竞争力。

不环保的最大原因是，用粮食作物制造的生物燃料损害了食物供给。还有些燃料是用植物制造，但种植这些植物的土地原本可以用来种粮食。欧洲议会的一个委员会本周同意限制使用这类“第一代”生物燃料。目前欧洲的目标是到2020年可再生能源占交通能耗的10%。新提案要求其中第一代生物燃料的占比不超过十分之七。缺口必须由基于废品和其他原料、不会影响粮食生产的更先进生物燃料填补。彭博新能源财经的克莱尔·柯里（Claire Curry）估计，这可能意味着到2020年欧洲人对先进生物燃料的需求将达到140亿升。

她认为，只有两种先进生物燃料能实现大规模生产。一种是把废食用油和其他植物油变为柴油。欧洲已经有20亿升的生产能力。另一种是通过酶水解用纤维素制造乙醇。

柯里认为，其他所有种类的先进生物燃料距离规模生产至少还有四年时间，包括备受吹捧的可再生航空燃料。

这种燃料在小规模生产中前景颇佳。南非航空公司（SAA）联合波音及其他合作方，正在研发基于烟草植物种子的燃料。烟草植物曾是南非的一大作物，但如今收成不佳。在南非航空的项目中，专门种植的烟草不含尼古丁。它由手头拮据的农民栽种，他们从烟草中获得两种经济作物，然后才

有钱为第三种粮食作物购买种子和肥料。种子的残渣变成了动物饲料。南非航空的伊恩·克鲁克尚克（Ian Cruickshank）说，这种基于烟草的燃料和从化石燃料中精炼获得的航空燃料的成本差不多。该公司预期到2017年底将使用二千万升这种燃料，混合等量的传统燃料使用；到2022年底前用量达五亿升。

麻风树的粉丝看到了类似的机遇。这种变化无常的有毒植物已经让投资者失望。但是，如果能正确种植它们，麻风树豆可以同时提供动物饲料和一种或许可以迅速制成柴油的油。

不过，要找到更多能在文氏图上击中最佳平衡点的生物燃料种类可能很难。运动人士通常发现，大肆抨击那些损害环境或食物生产的生物燃料，要比清楚解释该如何种植它们更容易。另一个争议性问题是基因改造。这种方式可以改善产出、增加抗虫性，并让生物燃料作物可以在未灌溉的贫瘠土地上种植。不过，任何一种基因改造作物都很难获得环保人士的认同。

但科学仍能提供很多机会。比如，曼彻斯特大学、芬兰的图尔库大学（University of Turku）和伦敦帝国学院（Imperial College）的研究人员已经改造了一种目前用来制造生物丁醇的酶，用它制造更有用的丙烷。

这类聪明的创意能否实现大规模商业生产则是另一个问题。确实有些公司已经开始放弃。美国几家用藻类制造燃料的公司已经转为生产高附加值化学品。阳光是一个很好的能量来源，生物可能不是存储它的最佳方式。 ■

Technology in New Zealand

Kiwis as guinea pigs

A small, technophile country is a great place to test digital products

IN MEDICINE, trials are conducted on guinea pigs, rats, mice and rabbits. In digital businesses, tests are performed on New Zealanders. Their country is proving the perfect location for software firms, social networks and app developers discreetly to try out and refine their products. Take Microsoft, which last year made New Zealand its first test market for Sway, a new app that helps users create websites, and which has since been released into other markets. Other big technology firms, including Facebook and Yahoo, also use New Zealand as a development lab, as do games companies and small startups.

Firms preparing to launch new products need to discover and fix any bugs before releasing them, and to see whether their servers can support lots of users at the same time. It could prove fatal to a young firm if problems emerge only after the products are up for sale on the Apple and Google app stores. Developers could concentrate their testing on, say, one American state or city, but customers for digital products are so prone to sharing things among their social-media contacts that it would be hard to keep the trial under wraps for long, says Ivan Kirigin, a software entrepreneur.

New Zealand's relative isolation means that if a product needs to be modified significantly to fix faults or make it more appealing to consumers, word of its teething troubles is less likely to spread, thereby discouraging customers elsewhere from trying the improved version. If a firm finds that a particular product, or a new feature added to an existing one, is a resounding flop in New Zealand, it can quietly be dropped without having much effect on the company's overall reputation. Facebook tried offering Kiwis disappearing messages (in the vein of Snapchat) and a tool that let

users pay a small fee to promote their status updates to friends. It abandoned plans to roll these out elsewhere after New Zealanders nixed them. “If you mess up and burn that market, it’s not that big of a deal,” says David Stewart of Fade, a photo-sharing firm.

Apart from being technophiles, and always up for a challenge, New Zealanders speak English and enjoy similar levels of affluence, and similar tastes, to Westerners in larger markets. The population of 4.5m is also large enough to provide decent enough sample sizes for product trials, says Mr Stewart.

Digital firms have other preferred locations for discreet trials. Chile is a popular test market for apps in Latin America: it is small and relatively affluent, and speaks Spanish, another world language. But few tech firms like having their test markets publicised. It is in no scientist’s interest for the guinea pigs to realise they are being experimented on. ■

科技试水新西兰

新西兰人当白老鼠

热衷科技产品的小国成为数字产品的绝佳测试地

医学研究常以豚鼠、大鼠、小鼠、兔子作实验对象。数字产品研发则常以新西兰人为测试对象。事实证明，软件公司、社交网络，以及应用程序开发人员要低调地测试并改良产品，新西兰是一个完美的试验场。以微软为例，去年它帮助用户创建网站的新应用Sway就是在新西兰首发试水，之后才推广至其他市场。其他大型科技公司，包括Facebook和雅虎，同样以新西兰为研发实验室。游戏公司及小型创业公司也是如此。

准备发布新产品的公司需要在推出产品前及时发现并修复漏洞，还要测试其服务器能否承受大量用户同时访问。如果产品在苹果和谷歌应用商店上架后才出现问题，对一家年轻公司而言将是致命一击。开发人员可以集中开展测试，比如在美国某个州或某个城市，但数字产品的顾客热衷在社交媒体上分享新知，产品测试难以长时间保密，软件企业家伊万•克里金（Ivan Kirigin）说。

新西兰的相对遗世独立意味着，假若产品需要大幅改良以修复错误或进一步取悦消费者，那些初期问题的相关消息也不太可能被广为散播，其他市场的顾客日后仍会积极尝试改进后的产品。如果一家公司发现新产品或已有产品的新功能在新西兰遭遇滑铁卢，则可以悄悄放弃它们，而不会对公司的整体声誉造成太大影响 。Facebook曾在新西兰推出“阅后即焚”的信息功能（类似Snapchat），以及让用户支付小额费用以向朋友推送状态更新的工具。在新西兰用户的否决声中，公司放弃了在其他地方推出这些功能的计划。“就算你在那个市场搞砸了，也没什么大不了的。”照片分享公司Fade的大卫•斯图尔特（David Stewart）说道。

除了热衷科技新品、勇于尝试之外，新西兰人说英语，他们的富裕程度和品味取向也与更大型市场的西方消费者相似。该国450万的人口也足够为产品测试提供合理的样本规模，斯图尔特表示。

数字产品公司对开展低调测试还另有心仪之地。智利是拉美地区应用的热门测试市场。这个小国相对富裕，使用另一种世界性语言——西班牙语。但科技公司很少愿意公开其测试市场。豚鼠意识到自己成为实验对象，这对科学家并没有什么好处。■

Airline interiors

Flying into the future

How technology is changing the passenger cabin for whatever class you fly

THE twinkling stars above the passengers gradually fade away as the night sky lightens and the sun begins to rise. It is an illusion, as it has long been daylight outside. But the projected image has a purpose: gently to awaken those on board and help their body clocks adjust to a new time zone. As the airliner begins its descent to New York, the ceiling and walls turn transparent to provide a panoramic view of the Manhattan skyline. And on lining up to a runway, the aircraft's seats automatically change shape, becoming more upright and firm to provide additional support for the landing. Welcome to JFK airport, sometime in 2050.

This vision of what it will be like inside an airliner of the future comes from Airbus. The European aerospace giant got its engineers to look at how flying might evolve from the passengers' perspective. The fuselage has a "bionic" structure constructed from composite materials which mimic the bones of those masters of flight: birds. The composition of bone consists of fibres, which are light but also immensely strong when arranged to carry tension where it is needed. The structure saves space and also helps to reduce the aircraft's weight, so it burns less fuel.

The upper part of the bionic cabin is covered with what Airbus describes as a "biopolymer membrane", a sort of tough plastic coating which can be electronically controlled to turn opaque or transparent on command, thus eliminating the need for conventional windows. This too helps to make the fuselage light and strong.

The traditional rigid divisions into first, business and economy classes have gone. This is thanks to the transforming seats. Made from "memory"

materials which can morph into a different shape and then return to their initial form, they adapt to the size of an individual's body—and their travel budget. The more you pay, the more space and comfort the seat will provide. This would enable airlines to configure seating according to demand. And that means there will no longer be any need to upgrade passengers from cattle class if the rear is overbooked.

The technological elements that could make this concept become reality can already be seen in new aircraft and in cabin designs that are much closer to production. How the experience of flying will change depends, however, as much on the unforgiving economics of air travel as on the imagination of the designers.

Producing the interior of an aircraft is a costly business—not least because in order to provide a distinctive product most airlines want something different, so the insides are custom-built. As a result carriers will spend some $10 billion this year, up by 5% from 2014, on cabin interiors for new and refurbished aircraft, estimates ICF International, a consultancy based in Virginia. Making that kind of expenditure pay depends on what flyers you have in mind.

In the battle for passengers, the price of the ticket is usually the most important thing. Given a choice, air travellers always say they want more room and extra comfort, but are usually not prepared to pay any more money for them—or at least not a lot more. The emergence of various forms of a new airline class, often called "premium economy", is an answer. But there is a widening gulf between the luxury of first and business classes, and the austerity endured by hoi polloi at the back.

The differences are most apparent in the amount of space a passenger gets. The seat pitch in standard economy (measured as a point on one seat to the same point on the seat in front) is typically between 78cm (31 inches) and

82cm. Spirit Airlines, a budget American carrier, has trimmed the pitch of its standard-economy seats to just 71cm. At the other end of the spectrum Abu Dhabi's Etihad Airways is offering a nearly 12-square-metre three-room first-class suite with a shower called "The Residence" on its Airbus A380s. It comes complete with a private chef and a butler trained at the Savoy Hotel in London.

> *Turn left…*

It is in the business-class cabin that airlines are spending most heavily, however, because it is more profitable for them. One seat manufacturer reckons that this year airlines will install in new and refurbished aircraft roughly 2,000 new seats in first class, but 50 times as many in business.

Business class has already changed a lot in recent years. It can provide the same or a better level of comfort than that available in the first-class cabin less than a decade ago. For a start, if a business-class seat does not extend into a fully flat bed, the airline's offering is no longer "even in the game", says Blake Emery of Boeing, America's biggest aircraft manufacturer.

The result is that business seats are turning into areas of personal accommodation. These spaces will get more sophisticated and specialised. Teague, a Seattle company which has designed interiors for all models of Boeing's airliners, worked with Nike, sleep experts and professional coaches to design a concept called the "athlete's plane". It includes a training room and a sleeper pod (pictured) to enhance relaxation. The effects of air travel on the body's natural rhythms means that athletes travelling over multiple time zones are statistically more likely to lose against a home team, says Teague's Devin Liddell.

Powerful computer-aided design and simulation provide designers with more ways to explore the clever engineering required to create as much room as possible in a confined space. Paperclip Design, a Hong Kong

company, has come up with the closest thing yet to a morphing seat. Called Butterfly (also pictured), it is composed of units of double seats with the aisle seat offset backwards. In premium economy both seats would be used, but the cabin could be upgraded quickly to business by having the inboard seat left empty to flip over as a sleeping platform.

Another approach involves positioning seats at various heights to gain space. Jacob-Innovations, a Massachusetts firm, has a design called StepSeat that lifts every other seat about 18cm allowing extra room for them to recline. A more radical arrangement is a series of stacked cocoons called Air Lair (illustrated). It offers a third more passenger capacity, says Adam White, head of Factorydesign, its London creator. So far, airlines have tended to shun these so-called 3D-seating set-ups because they think that some passengers, for reasons of status, will not want to sit on different levels.

Developing and designing a new business-class sleeper-seat or pod can take two years or more, and top-of-the-line models might cost up to $350,000 each, once they are stuffed with electronics. The price is partly explained by the standard required to protect passengers from a seat breaking in a crash. This was raised in 2009 by America's Federal Aviation Administration from withstanding a deceleration of nine times the force of gravity (9g) to 16g. Although this mean that seats and their fittings have to be made stronger, the use of lightweight composite materials, such as carbon fibre, allows thinner seats to meet what has now become a global standard.

Carbon fibre is already widely used to make aircraft fuselages and wings. It is stronger than steel but lighter even than aluminium. That strength comes from the powerful links between carbon atoms—similar to the toughness imparted to a diamond. The fibres are woven together and arranged in position using detailed computerised stress-analysis for

maximum strength. The fibres are then embedded in a hard resin. Carbon technology is advancing rapidly, with even greater performance characteristics claimed for single-atom-thick layers of graphene. Such work may well lead to the advanced composites needed to make bionic fuselage structures.

> *... turn right*

New lightweight technologies are also having an impact in the back of the aircraft. Last year Air Mediterranée, a French carrier, removed the 220 economy seats in an Airbus A321—it bought them for about $300,000 in 2006—and replaced them with a new, lighter version. The skinny seat (pictured) is made by a Paris startup called Expliseat and weighs just 4.2kg (9.3lb) compared with the 12kg seat it replaced, says Air Mediterranée's Christophe Costes.

Expliseat's seat-frame is constructed of titanium and carbon fibre. The "titanium seat", as it is named, cost Air Mediterranée nearly three times as much as each aluminium one it replaced, but this will be more than compensated for by fuel savings. Expliseat's lightest seat weighs just 3.9kg. Air Tahiti, which has also bought the company's seats, reckons the weight savings will allow some of its turboprop aircraft operating off short runways to carry 55 rather than 50 passengers, says Benjamin Saada, Expliseat's co-founder.

That hints at how the space savings from thinner seats are likely to be used in economy: not to provide more legroom but instead to pack in an extra row or two of seats. Some new aircraft will also have smaller lavatory cubicles as a result of more petite plumbing. All this helps seating "efficiency", the industry's euphemism for density. Shrinking the seatback pocket and placing tray stowage higher on its seats has already helped Germany's Lufthansa increase seating on its Airbus A320 fleet from 150 to 168, says Samuel Engel of ICF International. Tallying the additional seats

packed into all aircraft in its fleet, Lufthansa gained the equivalent capacity of 12 new A320s, he adds.

It could be worse. Some carriers have flirted with standing room. Spring Air, a Chinese budget carrier, has proposed installing such a scheme to increase capacity on its aircraft by 40%. In 2012 Michael O'Leary, never one to miss making headlines, promoted the idea of a padded backrest for standing passengers on Ryanair, the Irish discount carrier which he runs. Aviointeriors, an Italian seatmaker, produced a downward-sloped perch called Skyrider but got no takers. Public reaction, says Ermanno De Vecchi, the firm's boss, was, in essence, "sitting on a saddle crammed in like a sardine? Forget it." Safety certification for "standing" seats would, in any event, be highly improbable.

If more space in the economy cabin is unlikely, passengers on all budgets will see some benefits from the changes to cabins. First, technologies that reduce weight and therefore fuel consumption should help to lower fares further. Even the padding in the seat cushions is changing with improved materials. New types of foam and fire-resistant coverings have been developed to produce lighter cushioning. This has resulted in a fall in the weight of a typical seat's cushioning from 1.8kg a decade ago to less than half a kilo now, according to Aviointeriors. Mark Hiller, head of the aircraft-seating division of Recaro, a German firm, says that in 20 years the company has cut the overall weight of its seats by 20% on three separate occasions. Each kilo of weight shed from an aircraft reduces its annual fuel bill by at least $100, he adds.

Second, new designs may help address some of the most common irritations of economy-class travel. Having a passenger drop his seat backwards into another passenger's space is a great cause of angst. (Hence the brisk sales of a $22 gizmo called the Knee Defender, now banned by some airlines, which attaches to a tray strut and prevents the seat in front

from reclining.) James Lee, the boss of Hong Kong's Paperclip Design, has come up with a fixed-position seat in which the back cushion can be lifted forward from the bottom and kept inclined by stuffing a briefcase or jacket behind it. This "anti-technology" seat, adds Mr Lee, has the benefit of doing away with a reclining mechanism. Expliseat's titanium seat also remains upright.

Elbows at war

Another annoyance is the battle over a shared armrest. But Mr Lee has an answer for that, too. He has patented a design with two flat surfaces at different heights, providing room for two elbows (pictured). Having knees pushed into passengers' backs is a further frustration. Expliseat embeds a taut sheet of a secret polymer into the rear cushion to absorb the shocks of impacting knees. The material is lighter and softer on the kneecaps than the rigid plastic shields which are sometimes used, adds Mr Saada. Teague's Mr Liddell says one area where more innovation is needed is to make the dreaded middle seat more inviting—especially in economy. At the moment, he adds, for passengers the middle seat is "your sentence for waiting too long to book".

The third improvement is likely to be the ambience of the cabin. BAE Systems, a British firm, recently made its first sale of a set-up called IntelliCabin that features LED lighting designed to induce calm, improve sleep and charm flyers with illumination schemes like an artificial sunset for dinner, says Jared Shoemaker, head of cabin technology. A Boeing team of engineers, psychologists and marketing people are also concocting LED-lighting schemes to make cabins appear roomier—"to essentially distract people from the discomfort" of a tight squeeze, says Boeing's Mr Emery. Accentuating ceiling curves with sky-blue light generates a "sense of space expanding above" and bathing vertical surfaces in white light creates an illusion of greater width.

When Boeing's 787 was introduced in 2011 it pioneered a number of enhancements. The aircraft is fitted with large "electrochromic" windows that trap a thin gel between two panes of glass. An electrical current is applied to darken the gel, allowing passengers to choose from five transparency settings. The 787 also improves the air in the cabin. Airlines have long kept air dry because humidity corrodes metals. But that is less of a problem with the 787's largely carbon-fibre fuselage. This means the air can be more moist. And because carbon fibre is stronger than aluminium, cabin pressure can be maintained at a higher level, closer to what it is on the ground. The 787 also pumps air into the cabin electrically rather than having it bled from the compressors in the jet engines, which risks fumes entering.

The goggle box

Augmented reality might help ease the journey, too. Epson, a Japanese electronics firm, has created goggles, called Moverio BT-200, which project images onto a lens that appears to be a screen five metres away. Some of the first versions are being tested by a South Korean airline. The goggles could be used to watch films, which in the future are likely to be beamed wirelessly around the aircraft's cabin, eliminating the need for lots of bulky in-flight entertainment equipment.

Video screens made from thin films could be used on the back of skinny seats and placed on cabin walls to provide an enhanced view of the outside and, eventually, as a replacement for windows. The view would be relayed to the screen by exterior cameras.

The Centre for Process Innovation, a British technology group, is exploring the use of organic light-emitting diodes (OLEDs) to make the thin-film screens. OLEDS use a luminescent layer of organic compounds to emit light in response to an electric current. Matthew Herbert, a manager at the centre, says that in less than a decade production technology will be

inexpensive enough to mass-manufacture flexible OLED displays for use in aircraft. Using such screens instead of windows would reduce weight and improve the strength of the fuselage. One company, Spike Aerospace of Boston, is proposing to replace windows with screens in a supersonic executive jet (see next article). Step by step, the vision of that New York-bound flight in 2050 is moving closer to reality. ■

飞机内部

飞向未来

科技正在改变客舱的模样，无论你坐几等舱

乘客们头上闪烁的星星渐渐淡去，夜空微微泛白，太阳开始升起。这是一个幻象，因为机舱外面一直阳光普照。但这个投影有个作用：温和地唤醒乘客，帮助他们的身体调节生物钟，适应新时区。飞机开始在纽约上空降落，舱顶和舱壁变成了透明的全景天窗，曼哈顿的天际线尽收眼底。飞机驶入跑道时，座位自动变形，变得更挺直坚固，为着陆提供额外支撑。欢迎抵达肯尼迪机场，现在是2050年的某个时刻。

这番未来飞机内部的景象来自空中客车。这家欧洲航空巨头让它的工程师们研究如何从乘客的角度开发飞行体验。这架飞机的机身有一个由合成材料打造的“仿生”结构。这种材料模仿飞行大师——鸟类——的骨骼。骨骼的成分包括纤维。纤维很轻，但当它们经过一定的编排，在需要承压的地方会无比坚韧。这种构造节省了空间，同时减轻了飞机的重量，因而飞机耗费的燃料减少。

根据空客公司的描述，仿生机舱的上部覆盖着一层“生物高聚物”，这是一种强韧的塑料涂层，由电子控制，能按指令在不透明和透明之间转换，所以不再需要传统的窗户。这也有助于机身变得轻巧又牢固。

传统上对头等舱、商务舱和经济舱的严格区分已不复存在。这得益于可变形的座椅。它们用“记忆”材料制造，能变成不同形状，而后恢复到初始形态。因此它们可以依据乘客的体型来调适——当然也会根据他们的旅行预算而变化。你付的钱越多，座位就越宽敞舒适。这让航空公司可以根据需求配置座位。这也意味着当飞机后方的经济舱满座时，不再需要给乘客升舱。

能够让这种设想得以成为现实的技术元素在接近投产的新飞机和机舱设计中已经存在。但是，飞行体验会发生怎样的变化不仅取决于设计者的想象

力，同样也取决于航空业无情的竞争压力。

制造飞机内部设施是一项昂贵的业务，尤其是因为大部分航空公司都想要有差异性来让自己的飞机与众不同，所以内部结构都是定制的。如此一来，根据总部位于美国弗吉尼亚州的ICF国际咨询公司估算，航空公司今年在新飞机和翻新机的舱内设施上将花费约100亿美元，比2014年增加5%。这么高的花销若要获得回报，取决于你想争取怎样的乘客。

在争抢乘客的战役中，票价通常是首要因素。如果有选择，乘客总会说他们想要更宽敞、更舒适的座位，但他们通常都不想为此花更多钱——至少不是很多钱。一种新的舱位等级——通常叫“高级经济舱”——的各种形式应运而生。然而，在头等舱、商务舱乘客享受的奢华和机舱后半段草民们所忍受的局促窘迫间存在的差距正在拉大。

最显著的差异是乘客享有的空间大小。标准经济舱的座位间距（从一个座位上的某个位置到前排座位相同位置之间的距离）通常在78厘米（31英寸）到82厘米之间。美国的廉价航空公司Spirit Airlines已经把经济舱的座位间距减少到了仅剩71厘米。而另一方面，阿布扎比的阿提哈德航空公司（Etihad Airways）正在它的空客A380上推出近12平方米、名为“官邸”的带浴室三房头等舱套间。这个套间还配有在伦敦萨佛伊酒店（Savoy Hotel）受训的私人厨师和男管家。

向左转……

不过，航空公司砸钱最多的部分是商务舱，因为这一块的利润更多。一名座位制造商估计，今年航空公司将在新飞机和翻新机的头等舱中安装约2000个新座位，但在商务舱中安装的新座位将是50倍之多。

近些年商务舱已经大变样。它如今提供的舒适度已经可以和不到十年前的头等舱相提并论，甚至更好。首先，如果一个商务舱座位不能伸展成一张完全平躺的床，那么这家航空公司“也不要玩了”，美国最大的飞机制造商波音公司的布莱克·埃默里（Blake Emery）说。

商务舱的座位因此正在变成个人空间。这些空间还会变得更为高级和特

殊。西雅图的Teague公司为波音所有型号的飞机设计过内部装配，它和耐克公司、睡眠专家以及专业教练一起设计出了“运动员的飞机”。这种飞机包括一个训练室和一个睡眠舱（如图），让乘客更放松。乘飞机影响身体的自然节奏，因此从统计数据看，飞经多个时区的运动员更容易在比赛中输给主场队伍，Teague公司的德温·利德尔（Devin Liddell）说。

强大的计算机辅助设计和模拟让设计师们有更多办法来探索更聪明的工程设计，把有限的空间变得尽可能宽敞。迄今为止，香港公司万子夹设计（Paperclip Design）的产品最接近真正的变形座位。取名为“蝴蝶”（见图），它由两个并排的相邻座位组成，其中靠过道的座位向后偏移。在高级经济舱中，两个座位都会坐人，但它可以被迅速升级成商务舱，只需把靠里边的座位空出并部分翻转，合并成一个可供躺下睡觉的平面。

另一个方法是让座位高低参差以增加空间。马萨诸塞州的雅各布创新公司（Jacob-Innovations）设计出了“阶梯座位”（StepSeat），每隔一排座位抬高18厘米，让它们有更多空间向后方倾斜。一个更大胆的设计是一系列分层堆叠的茧状座位，名为“空中巢穴”（Air Lair，见图）。其设计者、伦敦的“工厂设计”公司（Factorydesign）的亚当·怀特（Adam White）说，这种设计能让飞机可容纳的乘客数量增加三分之一。到目前为止，航空公司大多避开这类所谓的三维座位，因为他们认为有些乘客出于身份地位的原因不会想坐在不同的高度。

研发和设计一套新的商务舱躺椅或睡舱可能需要两年或更长时间，而其中的顶级型号在配备了电子设备后可能每套花费35万美元之多。造价之所以如此昂贵，部分原因是必须符合航空标准，在空难中座椅碎裂时保护乘客。美国联邦航空管理局（FAA）在2009年把飞机座椅须承受的减速冲击力从9倍于重力（9g）提高到16倍（16g）。虽然这意味着座椅及其配件必须更强固，但使用碳纤维这样的轻型合成材料使得瘦身后的座椅能够达到目前的这种世界标准。

碳纤维已经广泛用于制造飞机的机身和机翼。它比钢坚硬，却比铝还轻。其强度来自碳原子之间的强大连接——和钻石之所以坚硬的原因类似。纤

维交织在一起，根据细致的计算机应力分析来编排位置，以获得最大的强度。然后它们被嵌入硬树脂中。碳技术正在迅速发展，据称单原子厚度的石墨烯层级已经拥有更好的性能特征。这类工程很可能会发展出制造仿生机身结构所需的先进复合材料。

> *……向右转*

新的轻型技术也在影响飞机后排的座位。去年，法国航空公司地中海航空（Air Mediterranée）换掉了一架空客A321班机上的220个经济舱座椅。它在2006年花了约30万美元购置了这些座椅。新换上的座椅更轻巧（见图），由巴黎的创业公司Expliseat制造，仅重4.2公斤（9.3磅），而之前的座椅重12公斤，地中海航空的克里斯托夫·科斯特斯（Christophe Costes）说。

Expliseat制造的座位框架由钛和碳纤维制成。这种“钛制座椅”让地中海航空花费的价钱是它更换掉的每个铝制座椅的近三倍，不过，省下来的燃油费会更多。Expliseat出品的座椅中最轻的仅重3.9公斤。大溪地航空公司（Air Tahiti）也从该公司购买座椅，它估计由此减少的重量会让自己公司从短跑道起飞的部分涡轮螺旋桨飞机能够搭载55人而不是50人，Expliseat的联合创始人本杰明·萨阿达（Benjamin Saada）说。

由此可以看出座椅瘦身所节省下来的空间在经济舱中会被怎样利用：不是要提供更多舒展腿脚的空间，而是要再挤进一两排座位。而因为水管设施也可以瘦身，一些新飞机还会把洗手间变小。所有这些都有助于提高座位“效率”——航空业对座位密度的委婉说法。德国汉莎航空（Lufthansa）的空客A320系列班机缩小了座椅后方的口袋，把托盘位置升高，由此把座位数量从150个增加到了168个，ICF国际咨询的塞缪尔·恩格尔（Samuel Engel）说。把所有汉莎班机上新增的座位加在一起，该公司相当于拥有了12架新的A320，他说。

事情还可能更糟。一些航空公司已经在琢磨站位。中国的廉价航空公司春秋航空已经提出这样的方案来让其飞机的可容纳乘客数增加40%。2012年，从不错过任何上头条机会的迈克尔·奥莱利（Michael O’Leary）宣传

了他的创意：在他运营的廉价航空公司瑞安航空（Ryanair）上增设站位，给站立的乘客一个后背靠垫。意大利座椅制造商Aviointeriors推出了一款向下倾斜的座椅，名为“空中骑士”（Skyrider），可惜无人问津。公司老板埃尔曼诺·德韦基（Ermanno De Vecchi）说，公众的反应基本上就是：“坐在马鞍上，挤得像沙丁鱼罐头？算了吧。”无论如何，这类“站”位会获得安全认证的可能极小。

或许经济舱乘客不大可能享受到更多空间，但所有舱位的乘客都将从机舱的变化中获得一些益处。首先，技术减轻了飞机的重量从而减少了燃油消耗，应该会推动票价进一步下降。座椅的包裹材料也会改进。新型泡沫和耐火的覆盖层已经被研发出来，可以打造出更轻巧的包裹物。根据Aviointeriors的数据，这已经让一个典型座椅的包裹物重量从十年前的1.8公斤减至如今的不到0.5公斤。德国公司Recaro的飞机座椅部门主管马克·希勒（Mark Hiller）说，该公司在20年里已经分三次将其生产的座椅总重减少了20%。他说，一架飞机每减少一公斤重量，它一年的燃油费减少至少100美元。

其次，新设计可能有助解决搭乘经济舱最常见的一些困扰。前排乘客把椅背向后靠，侵入了后排乘客的空间，这是一个严重的焦虑源头。（这是为何一个售价22美元的小玩意“护膝器”会走俏，你可以把它绑在托盘的杆子上，让前排座椅不能往后靠。一些航空公司已经禁止使用它）。香港的万子夹设计公司的老板詹姆斯·李（James Lee）想出了一个固定位置的座椅，其靠背包裹的垫套可以从底部向前掀起，把一个包或一件外套塞进垫子和靠背框架的中间，垫子就会保持前倾。他说，这个“反科技”座椅的好处是抛弃了椅背后靠模式。Expliseat的钛制座椅同样保持直立。

手肘之战

相邻乘客共用一个座椅扶手也让人不适。但詹姆斯·李也有对策。他已经给一项设计申请了专利：这个扶手有两个位于不同高度的平面，让两个手肘各就其位（见图）。膝盖顶到前座靠背则更让人懊恼。Expliseat在椅背后方的垫套里加入一个紧绷的、不明显的聚合物薄层，为膝盖的撞击吸震。相比有些飞机上使用的硬质塑料外壳，这种材料更软，对膝盖骨的压

力更小，萨阿达说。Teague的利德尔说，还有一个地方需要更多创新：怎么让人们竭力避开的中间座位变得更吸引人，尤其是在经济舱内。目前，他说，对乘客而言中间的座位“就是对订票太晚的判罚”。

第三种改进可能是机舱的环境氛围。英国公司BAE系统公司（BAE Systems）制造的名为“智慧舱”（IntelliCabin）的系统做成了第一笔买卖。公司机舱技术主管贾里德·休梅克（Jared Shoemaker）说，这套系统带有LED灯光设计，能为乘客带来宁静的氛围，改善他们的睡眠，在晚餐时分用照明设计打造出日落美景来让他们惊艳。波音公司一个由工程师、心理学家和营销人员组成的团队也在研究LED照明，要让机舱看上去更宽敞。“实质上就是把乘客的注意从拥挤带来的不适中转移。”波音的埃默里说。给舱顶投射天蓝色光会产生“头顶空间延展的感受”，而在两边的舱壁打上白色光会产生空间变宽广的幻觉。

波音787于2011年推出时，率先实践了许多改进。这架飞机上装设了“电致变色”的大窗户，在两层玻璃间锁有一层稀薄的凝胶。电流会把凝胶颜色变暗，让乘客可以选择五种透明度设置。波音787也改善了舱内空气。长久以来，航空公司都会让舱内空气保持干燥以防潮湿腐蚀金属。但787的机身很大程度上由碳纤维制成，因而腐蚀的问题不再那么严重，空气可以更潮湿。而由于碳纤维比铝更牢固，舱内气压可以被维持在更高水平，更接近地面上的气压。波音787还用电动方式把空气泵入机舱，而不是从喷气机引擎的压缩机中流出空气，后者有可能把尾气烟雾带入机舱。

电影屏幕

增强现实技术也可能让旅途变得更轻松。日本电子公司爱普生（Epson）研发了名为Moverio BT-200的眼镜，把影像投到五米以外的一个虚拟屏幕上。部分初始版本正在一家韩国航空公司的班机上测试。这些眼镜可以用来看电影。未来，电影屏幕将被无线投射到机舱各个角落，而不再需要大量笨重的娱乐硬件。

薄膜制成的视频屏幕可以安装在轻便的座椅后方以及舱壁上，放映飞机外部景观的增强版本，最终取代窗户。外部景观将由飞机外部的摄像头传递

到机舱内的屏幕上。

英国一家科研集团“流程创新中心”（Centre for Process Innovation）正在探索用有机发光二极管（OLEDs）制造薄膜荧幕。OLED使用一个有机合成物发光层，通电时发光。该中心的一名主管马修·赫伯特（Matthew Herbert）说，用不了十年，生产技术成本的下跌幅度之大将足以大规模制造在飞机上使用的弹性OLED屏。用这类屏幕取代窗户将减轻飞机重量，改善机身强度。波士顿的Spike Aerospace公司正提议在一架超音速商务专机上用屏幕取代窗户。一步步地，那架2050年飞往纽约的航班正在变成现实。 ■

A guide to alternative smartphones:

Ready to runcible

Want to be different? There are now many handset brands to choose from, besides the ubiquitous iPhone or Galaxy

IS IT a clock? Is it a rock? It's a Runcible. That is the name of what might be the strangest-looking smartphone ever designed. Styled after an old-fashioned fob-watch, it takes its name from the works of Edward Lear, a 19th-century British poet who invented nonsense words. Its Californian (where else) creator, Monohm, bills it as an "anti-smartphone" that does not dare to distract its user with alerts and beeps and other forms of information overload. Instead of lots of hyperactive apps, for instance, the Runcible provides only a simple summary of its user's social networking.

Runcible is not the only unusual smartphone destined to appear on the market. Google will begin a trial in Puerto Rico later this year of a "modular" device called Ara. Users will be able to update the phone, say with a new battery or a better camera, by replacing one of its plug-in modules. LG sells smartphones with a curved body and a pair of digital eyes on the back that change expression (supposedly to establish "emotional" contact with the user). And the latest model from Yota, a small Russian maker, has a second black-and-white display on the back, which is meant to allow a user to read for hours without draining the battery.

So should consumers expect smartphones to evolve into all sorts of different shapes and sizes? Before the arrival of the touchscreen phones, after all, there was a greater variety of shapes, from clamshell designs to slide-out keyboards. Yet unusual designs, such as the Runcible, are likely to remain rarities for now—activities like typing are suited to palm-sized rectangular devices. If consumers really want an unusual-looking smartphone then they had best wait a few years, says Geoff Blaber of CSS

Insight, a market-research firm. To provide really novel shapes, components such as batteries and screens will first have to evolve, perhaps with both becoming flexible. Even then, because of their clout in the market and their economies of scale, it is likely to be Apple or Samsung which pioneer them.

The choice of brands available to consumers is multiplying fast, however. Most of the newcomers are regional brands, which come by the hundreds and not just in China, where the phenomenon is most prevalent; Coolpad, OnePlus and Oppo are among the better-known names. France has seen the rise of Wiko, which is now one of the country's most popular smartphone brands. Africa, too, has its brands, such as VMK, which hails from Brazzaville, the capital of the Republic of Congo.

Although these firms make much of their regional roots ("African technology for Africa" is VMK's tagline), most are combinations of Chinese manufacturing and local marketing. The producers may add nice features (one of Wiko's latest models, called Highway Pure, for instance, is only 5.1 millimetres thick), but their aim is mainly to serve buyers who want to upgrade to a real smartphone, but cannot afford the latest Apple iPhone or Samsung Galaxy. The Highway Pure, with a respectable list of specifications, costs less than $300; VMK's Elikia L costs about $110. At those prices most of these phones represent good value, and they work perfectly well. (The odd-looking phones are a lot dearer: when the Runcible is launched later this year it is expected to be priced towards the top end; the two-screen YotaPhone 2 retails for $680.)

The question is whether, and for how long, the regional brands will be available to consumers elsewhere. The competition for cheap smartphones is cut-throat and some of the smaller regional brands will not survive, predicts Francisco Jeronimo of IDC, a market-research firm. Xiaomi, a fast-growing Chinese firm, is one of the big brands, but problems with

intellectual-property rights might prevent it from moving as quickly as it would like into markets outside China. That means India's Micromax may become the first big regional Asian smartphone brand to be widely offered to Western consumers. The company is already India's biggest smartphone vendor, according to some analysts, with a market share of 22% compared with 20% for Samsung, its main rival. Micromax boasts an impressive line-up of dozens of smartphone models, ranging in price from less than $30 to more than $200.

Call the plumber

Novelty-seekers are not just interested in design and price; they also care about the services that handset-makers offer. Given that, Mr Jeronimo says, buyers should look at brands which view their devices as more of a loss leader and try to make money by offering attractive services. This is Xiaomi's territory. The Chinese company is often compared to Apple and its boss, Lei Jun, feted as a second Steve Jobs, but the better comparison may be to Google and its co-founders. Xiaomi's ambition is to be an online powerhouse, not just a handset-maker. In April Mr Lei predicted the company's services revenue will triple to nearly $1 billion this year, about 6% of expected total sales of $16 billion.

Micromax has ambitions in this area as well. One of its most interesting handsets is Yureka, a $140 budget smartphone powered by Cyanogen, a variant of Android. It allows users to customise and extend Google's operating system and even exchange the online giant's mobile services for other offerings.

"With Android, every phone became the same. And all the data goes to Google," says Rahul Sharma, a co-founder of Micromax. Cyanogen, he says, will allow the firm to become more like Xiaomi by adding differentiating features and services. "If I'm looking for a plumber, my phone should be able to tell me whether a friend already knows one," explains Mr Sharma.

And smartphones should come with a selection of services pre-installed which users can pick and choose from, he adds, rather than being offered only a default set from Google. And if that all sounds a bit too sensible, there is always the Runcible. ■

另类智能手机指南：

迎接“无厘头”

想要与众不同？除了随处可见的iPhone和三星Galaxy，你现在可以从众多其他手机品牌中选择

它是一只钟？还是一块石头？都不是，它是一部Runcible。这是迄今为止外观可能最为古怪的智能手机的名字。它的模样仿照一块老式怀表，名字取自19世纪英国诗人爱德华·李尔（Edward Lear）的作品——他生造了许多无厘头词汇。研发这部手机的公司Monohm来自加州（还能来自哪儿呢？），它声称这是一部“反智能手机”，不胆敢用提醒、铃声等各种过量信息搞得用户心不在焉。比如， Runcible上没有许多过度活跃的应用，只提供用户社交网络的简单概要。

市场上势必会出现不同寻常的智能手机，不止Runcible一家。今年晚些时候，谷歌会开始在波多黎各测试一款名叫Ara的“模块”手机。用户可以更换插入式模块来给手机升级，比如换上新电池或更好的摄像头。LG出售弧形机身的手机，还有一款手机的背面有一对会变换表情的数字眼睛（应该是为了和用户建立“情感”联系）。而俄罗斯小型制造商Yota生产的最新型手机的背面是一块黑白屏幕，用户可以连续阅读几个小时而不耗光电池。

那么，消费者应该期待智能手机演变成各种不同的形状和尺寸吗？毕竟，在触摸式手机出现以前，手机的形状纷繁得多，从翻盖式到滑出式键盘，林林总总。但是，像Runcible这样稀奇古怪的设计目前仍然属罕见，因为打字这类活动适合用手掌大小的长方形设备。如果消费者真的想要一款外观特立独行的手机，那他们最好再等上几年，市场调研公司CSS Insight的杰夫·布拉韦尔（Geoff Blaber）说。手机若要打造出真正新奇的形状，其部件如电池和屏幕必须首先演进，可能两者都得变得更有弹性。即使到了那时，考虑到市场影响力和规模效应，引领这类新设计的公司更可能是苹果或三星。

不过，可供消费者选择的品牌正在迅速增加。大部分市场新进者是地区品

牌，它们成百上千地涌现，不止是在中国——那里最为声势浩大。酷派、一加和Oppo是其中几个最响亮的名字。Wiko已经在法国崛起，如今是该国最流行的智能手机品牌之一。非洲也有自己的牌子，比如来自刚果共和国首都布拉柴维尔的VMK。

虽然这些公司重视自己的地方根基（VMK的宣传语是“非洲的技术用于非洲”），它们的模式大多是中国制造和本土营销的结合。制造商们可能会添加一些不错的特性（比如Wiko的最新型号之一“Highway Pure”厚度仅为5.1毫米），但他们的主要销售对象是那些想用上真正的智能手机、却买不起最新款苹果iPhone 或三星Galaxy的人。Highway Pure有一个相当不错的功能列表，售价却不到300美元；VMK的Elikia L价格约为110美元。在这样的价位，这些手机的性价比大多很高，而且运行也非常顺畅。（那些外形古怪的手机要贵多了：Runcible将在今年稍晚时发布，预期定价贴近高端；双屏的YotaPhone 2零售价为680美元。）

问题是这些地区品牌是否能向其他地区的消费者出售，又能卖多久。廉价智能手机竞争惨烈，一些较小的地区品牌将无法存活，市场调研公司IDC的弗朗西斯科·杰罗尼莫（Francisco Jeronimo）预测说。快速成长的中国公司小米是其中一个大品牌，但知识产权问题可能会妨碍它以自己设想的速度进军中国以外的市场。这意味着印度的Micromax可能会成为亚洲第一个广泛向西方消费者出售的区域性智能手机品牌。根据某些分析师的统计，这家公司已经是印度最大的智能手机供应商，市场份额为22%，而其主要竞争对手三星的份额为20%。Micromax的智能手机型号有几十款之多，令人赞叹，价格从不到30美元到200多美元不等。

致电水管工

那些想尝鲜的人不止关心设计和价格，也关心手机制造商提供的服务。有鉴于此，杰罗尼莫说，买家应该关注那样的品牌：它们把硬件设备更多视为亏本买卖，而努力靠提供吸引人的服务赚钱。这是小米的领地。这家中国公司常被拿来和苹果比较，老板雷军甚至被捧为乔布斯第二，但更恰当的比较可能是谷歌及其联合创始人。小米的野心是要成为一家网络巨头，而不只是手机制造商。4月，雷军预测其公司今年的服务类营收将达到近

10亿美元，约占160亿美元预期总销售额的6%。

在这个领域，Micromax也虎视眈眈。该公司最有趣的手机之一是Yureka。这款售价140美元的廉价手机使用的操作系统是基于安卓开发的Cyanogen，它让用户能够定制和扩展谷歌的操作系统，甚至能用谷歌的移动服务交换其他服务。

“有了安卓，每部手机都变得一模一样。而所有数据都跑到了谷歌那里。”Micromax的联合创始人拉胡尔·夏尔马（Rahul Sharma）说。而Cyanogen会增加差异性功能和服务，让公司变得更像小米。“如果我要找一个水管工，我的手机应该要能告诉我，是否我的某个朋友就认识一个。”夏尔马解释说。而智能手机应该提供一批预装在手机上的服务选项，让用户可以自主选择，而不是只有来自谷歌的默认设置，他补充道。如果这一切听起来都有点太过合情合理，那么总还有Runcible这种怪咖在。■

Apple and the music business

The second revolution

Having transformed the music business once, Apple is trying to do so again

WHEN Apple bought Beats, best known for making brightly coloured headphones, for around $3 billion last year, many wondered what the technology giant had in mind. They now have their answer. On June 8th, at Apple's annual gathering for software developers in San Francisco, it revealed a new music-streaming service, based on one it had acquired as part of Beats. Tim Cook, Apple's boss, promised that, "It will change the way you experience music forever." Others on the stage called it "revolutionary".

Apple led the way in popularising the legal downloading of music, with the launch of its iPod player in 2001. But as music fans have taken to streaming songs in a big way over the past few years—in effect, renting them rather than owning them—downloads have started to decline (see chart 1). Apple's revenues from music have started to fade, even as those from apps and other services have kept soaring (see chart 2). This time it is following, rather than leading, a musical revolution. Spotify, the most popular on-demand streaming service, has 20m paying subscribers worldwide, and around 55m who regularly use its free, ad-supported version.

Apple Music will attempt to differentiate itself from incumbents by having playlists chosen by people rather than algorithms, and technology that makes it easier to search for songs. It is marching into the territory of SoundCloud, a firm that lets unsigned acts promote their tunes to music-lovers looking to discover the next big thing. It is taking on Google's online-video service, YouTube, by making it easy to watch music videos. And its offering will include a new, 24-hour radio station, "Beats One". If enough of Apple's existing customers take to the new station, it could become one of the world's leading influences on popular music tastes.

Apple's big announcement raises two questions. The first is whether lumping together so many familiar elements of existing services into one convenient offering really adds up to a revolution. The second, therefore, is whether people are likely to pay for what Apple is peddling. Spotify this month raised more than $500m to help it fend off the challenge. That is a useful sum, but it is small change compared with Apple's near-$200 billion cash hoard. Furthermore, Apple already has the credit-card details of around 800m account holders, and a fan base whose ardour knows no bounds. So it is not hard to imagine Apple Music quickly overtaking Spotify's 20m paid subscribers, once people have taken up the three months' free trial the firm is offering, and become accustomed to using the service.

> *The best things in life are free*

Throwing a possible lifeline to Spotify, the attorneys-general of New York and Connecticut are looking into whether the deals that Apple has struck with record labels amount to some sort of arrangement to suppress the availability of free, ad-supported music streaming. This provides a chunk of Spotify's revenues. Apple, in contrast, has chosen not to offer a free tier.

For Apple the biggest difference between now and 2001 is that the success of this revolution will not determine the firm's fate. When it first released its iPod, Apple was a largish computer-maker with grand ambitions. Fast-forward to 2015 and Apple is now the most valuable listed company in the world. It is not only a technology company but a luxury brand and a growing payment-services provider, among other things. Apple Music, in other words, is just one track in its album.

As for pop stars and their record labels, they should not be celebrating Apple Music's launch by driving their Rolls-Royces into swimming pools. The fees it will pay them for streaming will be even more meagre than those they get from downloads. ■

苹果和音乐产业

第二次革命

苹果曾经变革过音乐产业，现在想要再来一次

去年，当苹果花费约30亿美元收购Beats这家以生产色彩亮丽的耳机著称的公司时，很多人疑惑这一科技巨头在想什么。现在他们有答案了。6月8日，在旧金山举行的苹果年度软件开发者大会上，它公布了新的音乐流媒体服务，这一服务正是基于之前购自Beats的一项业务。苹果老板库克承诺“这将永远改变你体验音乐的方式”。而台上其他嘉宾则称这一服务是“革命性的”。

随着苹果在2001年推出iPod播放器，它在推广音乐合法下载上一马当先。但是过去几年乐迷们纷纷转向在线听歌，其实是租用歌曲而非拥有它们，下载量已开始下降（见图表1）。苹果来自音乐的收入已经开始逐渐萎缩，尽管来自应用和其他服务的收入一直在飙升（见图表2）。这一场音乐革命里，苹果成了追随者，而非领导者。最流行的点播流媒体服务Spotify在全球有2000万付费用户，有约5500万人经常使用其带广告的免费版本。

Apple Music由人而不是算法选择播放列表，并使用技术让搜索歌曲变得更简单，想借此让自己从现有音乐服务中脱颖而出。它正在侵入SoundCloud的领地。这是公司让未签约艺人向乐迷们推广自己的歌曲，迎合乐迷们想要发现明日之星的期待。苹果想让观众更方便地观看音乐视频，以此和谷歌的在线视频服务Youtube一决高下。苹果的服务还包括一个全新的24小时广播电台“Beats One”。如果苹果现有用户中有足够多的人喜欢这个新电台，那么它可能会成为世界上对流行音乐品位影响最大的力量之一。

苹果的这一重大决定引发了两点质疑。第一，把这么多已有服务的熟悉元素混成一个方便的服务是否真的等于一场革命。第二，正因如此，人们是否会买苹果的账。本月Spotify融资了5亿多美元来对抗挑战。这笔钱有

用，但比起苹果近2000亿美元的现金储备只是杯水车薪。此外，苹果已经拥有约8亿账户持有人的信用卡信息和激情无限的粉丝群。所以不难想象，一旦人们尝试苹果提供的三个月免费试用期，并且习惯了使用这项服务，Apple Music将迅速超越Spotify达2000万人的付费用户量。

> *生命中最好的是免费*

纽约州和康涅狄格州的总检察长给Spotify带来一线生机。他们正在调查苹果与唱片公司达成的交易是否相当于某种安排，压制了获得免费、带广告的音乐流媒体的可能性。免费音乐为Spotify带来了一大块收入。相反，苹果已经选择了不提供免费服务。

对苹果而言，现在与2001年最大的区别是，这次革命成败与否不会决定公司的命运。首次推出iPod时，苹果还是一个较大的电脑制造商，雄心勃勃。快进到2015年，苹果现在是世界上最具价值的上市公司。它不仅是一家科技公司，还是一个奢侈品牌，一个不断发展的付费服务供应商，不一而足。换句话说，Apple Music只是它专辑中的一首歌曲。

至于歌星和他们的唱片公司，他们不应该开着劳斯莱斯冲进泳池来庆祝Apple Music的推出。在线流媒体服务付给他们的费用将会比他们从音乐下载中获得的还要少。■

Buttonwood

Default is not in the stars

Junk bonds have been remarkably good credits

THE world of bonds is usually thought of as one of rigid divisions. At one end of the scale, there is government debt: safe, reliable, suitable for widows and orphans. At the other end, there are junk bonds: speculative offerings issued by companies with poor credit ratings and suitable only for the young and reckless.

That picture looks a bit out of date. Speculation is rampant that Greece might be about to default on its government debt again. Meanwhile, the short-term bonds of many European countries are trading at negative yields. That means investors are guaranteed to lose money in nominal terms (ie, before accounting for inflation).

Junk debt also looks a lot less like garbage than it used to. Contrary to its reputation, issuers are proving to be reliable payers, as a new study by Deutsche Bank shows. Since 1983 (the period for which Deutsche has data), the default rate for junk bonds has averaged 4.9%. But that disguises a big change that occurred after 2002. The average default rate from 1983 to 2002 was 6.9%; since then, the average has been just 1.5%. In this later period, the only year in which the default rate was above the long-term average, at 15%, was 2009, when the world economy was slumping.

This is particularly surprising given that the creditworthiness of issuers has steadily declined over time, as judged by the rating agencies. A bigger proportion of them is in the "C" categories, the lowest tier for those that have not actually defaulted. This should, over time, have led to a greater number of deadbeats.

So what has driven the improvement? More than anything else, corporate debtors depend on confidence. They borrow not just from the bond markets, but also from the banks. When they get into trouble, it is usually because the banks will not extend their loans. And when that happens, they often struggle to keep up with their bond payments.

The result is that the corporate-bond markets can get into virtuous or vicious cycles. In the former, confidence is high and the spread (excess interest) paid by riskier borrowers is small. As a result, such borrowers find it easier to service their debts, bringing spreads further down, and so on. This has been the dynamic for much of the past 13 years.

The cycle has been reinforced by monetary policy. Short-term interest rates have been zero, or even negative in some countries, and central banks have also steered long-term government-bond yields to historic lows. That has prompted income-seeking investors to turn to junk bonds to add a bit of juice to their portfolios.

Ultra-low rates have allowed corporate borrowers to lock in cheap credit for the long term. Moody's, a rating agency, says that issuance of high-yield debt in America in the first quarter was $79 billion; in Europe it was $39 billion. Both figures are higher than in the same period of 2014. There was also a rise in the number of issuers borrowing for eight to ten years rather than the usual six or seven. The longer the maturity, the less vulnerable the borrower to a sudden decline in confidence.

So what might trigger a shift into a vicious cycle, in which a loss of confidence leads to higher spreads, making it more difficult for companies to finance themselves? Deutsche reckons that the willingness of banks to lend depends on the shape of the yield curve—the difference between the rates available on short- and long-term debt.

When rates on long-term debt are much higher, banks earn a good return lending to companies. But as the gap narrows, or even turns negative, they lose their enthusiasm for lending. As they turn off the taps, many of the companies denied bank loans also end up defaulting on their bonds.

Deutsche's research shows that there is a lag of around 30 months between the yield curve becoming flat and a rise in defaults (see chart). Another important factor is the level of real rates (ie, after accounting for inflation). High real rates also lead to higher defaults with a 30-month lag. Based on these two factors, Deutsche predicts the next upcycle in American defaults will occur in the second half of 2017. In Europe, where there tends to be a shorter lead time, a rise may occur in the second half of next year.

Of course, investors in junk bonds can suffer losses without a sharp rise in defaults. If the general level of bond yields rises—perhaps because of an increase in inflation or a sudden change in monetary policy—the price of junk bonds will fall. But not many people are expecting that to happen. The enthusiasm for junk is not going away. ■

梧桐

违约并非命中注定

垃圾债券迄今为止信用状况非常好

人们通常认为债券的世界里分级非常严格。一个极端是政府债券：安全、可靠、适合鳏寡孤独者投资。另一个极端则是垃圾债券：由信用评级不佳的公司发行的投机性产品，只适合胆子大的年轻人。

这样的图景看起来有点过时了。关于希腊的政府债务可能会再次违约的传言已经满城风雨。与此同时，许多欧洲国家的短期债券正在以负收益进行交易。这意味着按名义价值计算（即未考虑通胀因素），投资者笃定会赔钱。

垃圾债也远远不像以前那么垃圾。德意志银行的一项新研究显示，与其名声相反，垃圾债券的发行者其实是可靠的偿债人。自1983年起（此时德意志银行开始有数据），垃圾债券的违约率平均为4.9%。但是这掩盖了2002年之后的一个巨大变化。1983年到2002年的平均违约率为6.9%；之后的平均值仅为1.5%。在后一段时期内，只有2009年的违约率超过长期平均值，达到15%，当时世界经济正在衰退。

这一点尤其令人惊讶，考虑到按照评级机构的判断，发行者的信用水平呈持续下降趋势。这些发行者中更多的评级为C级，即尚未真正违约的企业中最低的一级。久而久之，这本应该产生更多赖账不还的企业才对。

那么是什么推动了改善？最重要的是，企业债务人依赖信心。他们不仅从债券市场上借钱，也从银行贷款。他们之所以陷入困境，常常是因为银行不肯做贷款展期。这样一来，他们的债券偿付就非常艰难。

结果就是企业债券市场既能进入良性循环，也能堕入恶性循环。良性循环时，信心高涨，风险较高的借款人支付的价差（超额利息）较小。因此，这些借款人觉得付息压力小，从而进一步压低价差，以此类推。过去13年

大部分时间都是这种情况。

货币政策强化了这一循环。短期利率已经为零，在有些国家甚至是负值，而各国央行也将长期政府债券收益率降至历史新低。这就促使追求收益的投资者转向垃圾债券，以提高他们投资组合的整体收益率。

超低利率让借款公司能够长期锁定低息贷款。评级机构穆迪（Moody's）指出，第一季度美国发行的高利率债券为790亿美元；欧洲为390亿美元。两个数字都高于2014年同期。发行八年期到十年期债券的公司数量也有增长，而通常为六年或七年。期限越长，借款人对信心急挫的防御能力越强。

那么是什么让这一循环转向恶性？在恶性循环中，信心丧失导致利差增大，令企业融资更加困难。德意志银行认为银行放贷的意愿取决于收益率曲线的形状，即短期债券和长期债券之间的利差。

当长期债券的利率高得多时，银行放贷给企业能获得较好的收益。但随着长短期限利差的缩小，甚至出现倒挂时，银行就失去了提供贷款的热情。它们一旦切断资金供给，许多公司不仅还不起银行贷款，最终在债券上也会违约。

德意志银行的研究显示，收益率曲线趋平与违约率上升之间有约30个月的滞后（见图表）。另一个重要的因素是实际利率水平（将通货膨胀计算在内）。实际利率高也导致30个月后违约率更高。基于这两个因素，德意志银行预测美国违约的下一个周期将是2017年下半年。欧洲的周期往往更短，因此明年下半年就可能出现违约率上升。

当然，没有违约率的大幅上扬，垃圾债券的投资者也会遭受损失。如果债券收益率的总体水平上涨，可能是因为通货膨胀上升或者货币政策突然改变，那么垃圾债券的价格将下跌。但是没有多少人希望这样的事发生。人们对垃圾债券的热情不会消失。■

Investment in Mexico

The 100-year view

Investors take a century-long bet on boom-and-bust Mexico

AT THE beginning of April international investors made two whopping bets by snapping up the first ever 100-year bond denominated in euros. The first bet was that the euro would still exist a century from now. No bookie would give short odds on that. The second was that the issuer, Mexico, which suffered three long cycles of boom and bust in the past century, would continue to be creditworthy for the next 100 years.

Mexicans, whose country has, as one economic historian puts it, lived longer in moratoria than with access to capital markets, reacted with bemusement. A typically gloomy columnist predicted that, since Mexico will have run out of oil by 2115, it will have to sell off the country's extremities to repay the bondholders.

Foreign creditors are more bullish. Over the past five years they have extended the equivalent of more than $5 billion of 100-year bonds to Mexico in three currencies: dollars, sterling and now euros. It is the only country to have tapped the so-called centennial market since China and the Philippines in the 1990s, and it has done so at relatively low yields—of 6.1% on its dollar bond in 2010 and just 4.2% on its euro bond last month. Those are extraordinarily good terms given Mexico's distinctly spotty credit record (see chart), which raises two questions. How has Mexico managed to pull off this "sale of the century"? And what are the chances of investors, or their grandchildren, getting their money back?

The answer to the first question is a combination of salesmanship and timing. The finance ministry's bright, American-educated technocrats know how to attract attention from investors who may not have considered

Mexico before. The euro-denominated bond, for instance, was sold largely to insurance companies and annuity firms. One advantage of its long life, for borrower and creditors alike, is that it helps avoid the sort of overcrowded redemption schedules that contributed to Mexico's debt crises in 1982-83 and 1994-95.

But in an era when the yields on the bonds of many rich countries are negative, Mexico's main selling-point is a relatively high return for a borrower that last year received an "A" rating from Moody's. On the day Mexico issued its euro-denominated centennial bond, Switzerland sold a ten-year bond at a negative yield—a first.

Mexico also stands out from other emerging markets in several ways. Although the halving of the oil price has hurt the public finances, the peso has done better than many of its peers. Agustín Carstens, the governor of the central bank, says Mexico has an "arsenal" of $195 billion of international reserves and a $70 billion credit line from the IMF in case of financial-market volatility. That has helped to attract outsiders: foreigners hold 2.2 trillion pesos ($144 billion) of domestic debt.

The government has further impressed investors by tightening its belt before times get tougher. It has cut spending in an election year and is attempting to implement a string of reforms aimed at bolstering competition in areas like energy and telecommunications that have the potential to attract large sums of foreign direct investment. "Mexico is a bright spot among emerging markets. It is one of the few countries that has been fixing the roof while the sun shines," says Andrew Stanners of Aberdeen Asset Management, a big investment fund.

So why are few Mexicans so sanguine? Gerardo Esquivel of El Colegio de México, a university, describes the government's approach with a different home-improvement analogy. He likens it to "putting a bright coat of paint

on the exterior of the house, while the inside is rotting away". The problem, he says, is that the 20 years of macroeconomic stability and flexible exchange rates that have endeared Mexico to foreign creditors have been accompanied by meagre, narrowly based growth that depends heavily on exports.

Growth in output per person has averaged about 1% a year since 1995. Poverty levels have remained stagnant. President Enrique Peña Nieto initially promised his reforms would bring annual growth of 5-6%; his government has since had to lower its forecasts repeatedly. Private-sector economists think growth will average 3.8% over the next decade, according to a poll from the central bank.

The strength of Mexico's exports to America—especially cars—has not translated into booming domestic demand due to decades of miserly wages, economists say. A huge, unproductive informal sector and general lawlessness also drag the economy down. The "pressure cooker effect" of low growth, low wages and rising inequality of income and opportunity could explode, according to Mr Esquivel. "The Peña Nieto administration doesn't understand this. They still talk in terms of trickle-down."

The government disputes this. Alejandro Díaz de Léon, the finance ministry's point man on the latest 100-year bond, acknowledges that Mexico has underperformed in terms of growth. "Productivity, job creation and wealth creation are the key issues for the future," he admits. But he says the president's reforms aim to address them. Moreover, he argues, the lessons learned from Mexico's past booms and busts are so embedded among politicians and officials that there is little chance of a slide back into financial chaos. He points to Mexico's independent central bank, open financial markets and free-trade agreements as guarantors of stability.

Demography is another card played by the optimists. A whopping 46% of

the population is under 25. Luis de la Calle, an uncharacteristically upbeat Mexican economist, says this alone could turn Mexico into one of the world's biggest economies within the next few decades. He believes that the country will soon rue its 100-year issuance at 4%, because it will be able to borrow far more cheaply. "We'll prepay that bond, no doubt," he says.

Whether countries repay their debts comes down to questions of political will as much as economic performance, however. Some fret that Mexico's past will return to haunt it. The country inherited a habit of default from the Spanish empire, which reneged on its debts more than a dozen times between the 16th and 20th centuries. Mexicans have also alternated repeatedly between an embrace of globalisation and a reversion to an inward-looking nationalism.

For the first decade of the 20th century, for instance, international bankers threw money at Mexico because of its macroeconomic stability, its railway boom and a global liquidity glut. Then came the murderous revolution of 1910, which erupted partly because the fruits of that prosperity had not been shared. Mexico defaulted on its debt in 1914. It was shut out of capital markets for most of the next three decades. It did not become a big borrower again until the 1970s. For bondholders to get their money back in 2115, Mexico must defy its history and remain open to trade and foreign capital. ■

投资墨西哥

百年眼光

投资者为墨西哥的繁荣与萧条掷下世纪赌注

四月初，全世界的投资者纷纷抢购史上首次100年期、以欧元计价的债券，押下两个巨大的赌注。其一是从现在起欧元仍能存在一个世纪。没有哪家博彩公司肯为此开出低赔率。其二是发行者墨西哥在今后一百年仍然资信可靠，尽管该国近一个世纪经受了三轮漫长的周期，繁荣与萧条更迭。

正如一位经济历史学家所言，墨西哥身处延期偿付的时间比进入资本市场的时间更久，因而墨西哥人对此十分困惑。一位很有代表性的悲观专栏作家预言，既然墨西哥的石油到2115年将耗尽，那么该国唯有倾家荡产才能偿还债券持有人。

外国债权人更为乐观。过去五年他们以三种货币——美元、英镑，以及最近的欧元——为墨西哥提供资金量相当于50多亿美元的百年期国债。继上世纪90年代中国和菲律宾之后，墨西哥成为开发所谓百年国债市场的又一国家，而且是以相对较低的收益率。2010年它发行的美元国债收益率为6.1%，而4月发行的欧元国债收益率只有4.2%。考虑到墨西哥明显不光彩的信用记录（见图表），这些条件好得惊人，也引出了两个问题。第一，墨西哥如何完成这次“世纪销售”？第二，投资者，或他们的孙辈收回投资的可能性有多大？

第一个问题的答案是推销技巧和时机的结合。墨西哥财政部聪明灵活、受过美国教育的技术专家知道如何吸引投资者的注意，而这些投资者之前可能并未考虑过墨西哥。例如，以欧元计价的债券主要卖给保险公司和年金管理公司。对于借款人和债权人而言，期限长的优势之一是有助于避免过于频繁的赎回安排。而短期频繁的赎回压力恰恰是造成墨西哥在1982年至1983年以及1994年至1995年爆发债务危机的原因。

但是时至今日，许多富裕国家的债券收益率都是负值，墨西哥的主要卖点是作为一个去年被穆迪公司评为A级的借款人，它的回报率相对较高。在墨西哥发行百年期以欧元计价的国债当日，瑞士首次发行了十年期负收益率的国债。

就其他方面而言，墨西哥在新兴市场上也鹤立鸡群。尽管油价折半已经损伤了国家财政，但比索的表现仍好于许多新兴市场国家的货币。央行行长奥古斯丁·卡斯腾斯（Agustín Carstens）说墨西哥“弹药充足”，万一金融市场波动，它有1950亿美元国际储备和国际货币基金组织700亿美元的信贷额度。这有助于吸引外来客：外国人持有2.2万亿比索（1440亿美元）的墨西哥债券。

而政府在形势严峻前就勒紧腰带，这一点进一步打动了投资者。墨西哥在选举年削减开支，且试图实施一系列改革，旨在增强如能源和电信等领域的竞争，这些领域有可能吸引大量的外国直接投资。大型投资基金公司安本资产管理（Aberdeen Asset Management）的安德鲁·斯坦纳斯（Andrew Stanners）说：“墨西哥在新兴市场上是个亮点。它是少数几个未雨绸缪的国家之一。”

那么，为什么只有极少数墨西哥人表示乐观？墨西哥学院（El Colegio de México）的赫拉多·埃斯基维尔（Gerardo Esquivel）将政府的措施描述成一种不同的家装方式。他将之比作“金玉其外，败絮其中”。他指出问题在于，20年来宏观经济的稳定和灵活的汇率固然令墨西哥为外国债权人所钟爱，但同期经济增长微弱，覆盖面窄，且严重依赖出口。

自1995年起，人均产出增长平均约为每年1%。贫困状况始终停滞不前。总统恩里克·培尼亚·涅托（Enrique Peña Nieto）最初承诺他的改革将带来5%至6%的年增长率；但他的政府已不得不数次下调预测。央行的一项民意调查显示，私营部门的经济学家认为增长率在今后十年将达到平均3.8%。

经济学家认为，由于几十年来薪酬极低，墨西哥对美国的大量出口，尤其

是汽车，并未转化为不断增长的内需。庞大但效率低下的非正规产业、随处可见的目无法纪也拖了经济的后腿。埃斯基维尔认为，低增长、低工资以及收入和机会不平等的加剧将引爆“高压锅效应”。“培尼亚·涅托政府不懂这些。他们还在提涓滴理论。”

政府则出言反驳。负责最新一期百年期债券的财政部核心人物亚历杭德罗·迪亚兹·德莱昂（Alejandro Díaz de Léon）承认墨西哥在增长方面表现不佳。“生产力、创造就业机会、创造财富是关乎未来的关键问题。”他承认。但是他指出总统的改革旨在解决这些问题。而且，他说，从墨西哥以往的兴衰中学到的教训已被政治家和官员们铭记于心，几乎不可能重蹈金融混乱的覆辙。他指出，墨西哥独立的中央银行、开放的金融市场以及自由贸易协定是稳定的保证。

人口结构是乐观主义者打出的另一张牌。高达46%的人口在25岁以下。路易斯•德拉卡莱（Luis de la Calle）是难得一见持乐观态度的墨西哥经济学家，他认为仅凭这点就能让墨西哥在未来几十年中成为世界上最大的经济体之一。他相信墨西哥很快会后悔以4%的收益率发行了百年期国债，因为它将能够以低得多的价格贷到款。“我们会提前还债，毫无疑问。”他说。

不过，政府是否能够偿还国债不仅取决于经济实绩，还有政治意愿。一些人担心墨西哥的历史会阴魂不散，再度重演。该国从西班牙帝国那里继承了违约的习惯，后者在16世纪到20世纪之间债务违约不下十几次。墨西哥还在拥抱全球化和回归到封闭的民族主义之间摇摆不定。

例如，上世纪第一个十年，因为墨西哥宏观经济稳定、铁路迅猛发展以及全球流动性过剩，全世界的银行纷纷投资该国。然而紧接着，一定程度上由于繁荣的成果未能得到共享，1910年残酷的革命爆发。墨西哥于1914年债务违约。之后30年中的大部分时间里，墨西哥被资本市场拒之门外，直至上世纪70年代才再次成为借款大国。为了让债券持有人能在2115年收回投资，墨西哥必须挑战历史，继续对贸易和国外资本保持开放。■

Private equity and energy

Refilling the pipeline

The plunging oil price has pummelled private equity but may now help it

OIL'S fall may be good for consumers, but it has hurt big private-equity firms. In Feburary Apollo Global Management announced that profits were down by 79% year on year in the three months to December 31st. At the same time, KKR and the Carlyle Group said they were smarting too, with KKR's profits down by 94% and Carlyle's by 68%. Energy-related assets, whose valuations have fallen with the oil price, are largely to blame.

Spurred on by the shale boom in America, private-equity funds have invested heavily in the energy sector. More money was raised for energy buy-outs in America in 2014, and more deals were made, than ever before, according to Preqin, a data provider. "All sorts of folks who would never have dreamed of oil and gas piled in, often loading companies with debt," says Joel Moser of Aquamarine Investment Partners, a fund that has invested in the sector for decades.

Private-equity firms mainly invested in oilfield-services companies, which support the industry but do not own oil themselves. Because such firms are involved in a variety of activities there is greater scope for the type of restructuring private-equity types specialise in, such as selling off less-profitable units or firing people. But the buy-out firms had also begun to invest in oil companies themselves—a more straightforward bet on the oil price.

Carlyle's earnings were dragged down by its stake in SandRidge Energy, a debt-laden oil-and-gas exploration company, which lost 58% of its value over the quarter and has just announced that it is mothballing most of its drilling rigs. Shares in EP Energy, an oil-and-gas company of which Apollo

owns about a quarter, are down by 40%. And Samson, an American producer partly owned by KKR, has also fallen in value. (One buy-out firm that got away relatively unscathed was the last of the "big four", Blackstone. Sceptical about $100 oil, it started selling energy assets in 2013.)

Despite such losses, private-equity investors are now more interested in the sector than ever, according to Antoon Schneider from the Boston Consulting Group. Buy-out funds love distressed assets. Many see the situation now as akin to the collapse in property prices in 2008, when investors who had borrowed too much (including many private-equity funds) were forced to sell as prices plummeted. Blackstone's chief executive, Stephen Schwarzman, said in December that the turmoil would be a "wonderful, wonderful opportunity for us".

The giddiness is not without reason: prices for energy-related assets have been slashed indiscriminately. Some oil-services firms that cater to ongoing operations—by providing maintenance for offshore rigs, for example—may have been hit unfairly hard and could well bounce back. Companies that specialise in more expensive ways of getting oil out of the ground, such as makers of offshore drilling rigs and construction vessels, were already suffering from the problem of overcapacity before the price fell and are now in even worse shape. Private equity thrives on such price swings.

Another way to cash in is through credit provision. The volume of high-yield debt in the energy sector is now three times what it was in 2008, according to Credit Suisse. Cheap oil is imperilling borrowers, such as American shale producers, who need cash to stay afloat until prices (they hope) rebound. With banks unwilling to lend and many companies desperate not to sell assets, private-equity firms can name their terms when offering financing.

Such thoughts have sent the buy-out titans into a fund-raising frenzy. Blackstone alone says it has a war chest of $9 billion available for energy investments, not to mention the energy-related debts it might buy through credit funds. Warburg Pincus, another private-equity firm, closed a $4 billion energy fund late last year. Apollo is also raising a multi-billion-dollar fund. All of which holds out a ray of hope for those private-equity funds that are currently sitting on devalued energy investments, provided they can afford to wait it out. ■

私募与能源

输油管，加油重来

油价急跌重挫私募基金，如今低油价或可助其一臂之力

油价暴跌也许是消费者的福音，而大型私募股权投资公司却因此损失惨重。今年2月，阿波罗全球管理公司（Apollo Global Management）宣布，截至去年12月31日的三个月内，公司利润同比下降了79%。同时，KKR和凯雷集团（Carlyle Group）表示他们也遭受切肤之痛，KKR的利润下降了94%，凯雷则下降了68%。这在很大程度上要归咎于估值随油价下跌的能源类资产。

在美国页岩能源开发热潮的带动下，私募股权基金在能源领域投入了巨资。根据数据服务商Preqin的资料，2014年在美国，能源收购交易筹集到的资金及交易宗数之多，史无前例。“从来没跟油气业沾过边的各类人等蜂拥而至，往往让公司背上沉重债务。”海蓝宝石投资合伙公司（Aquamarine Investment Partners）的乔尔·莫泽（Joel Moser）说。其基金公司投资该行业已有数十年。

私募股权公司主要投资于油田服务业，这一行业只为石油业提供支持，本身不拥有任何石油。因为这类公司的业务涉及类型广泛，给擅长重组的私募股权公司提供了更大的施展空间，如抛售盈利较低的业务单元或裁员。但并购股权公司也开始投资到石油企业——以便更直接地下注于油价。

凯雷的收益受累于对桑德里奇能源公司（SandRidge Energy）的参股，这家负债累累的油气勘探公司市值在一季度内蒸发58%，刚宣布旗下大部分钻机将停产。阿波罗全球管理公司持有油气公司EP能源约四分之一的股份，EP的股价已下跌了40%。KKR部分所有的美国油企Samson的市值同样在下滑。（四大“并购巨子”中，唯一相对安然无恙的是排名最后的黑石集团。由于对每桶100美元的油价心存疑虑，2013年黑石便开始抛售能源资产。）

尽管损失如此惨重，私募股权投资者如今对这个领域的兴趣不减反增，波士顿咨询集团（Boston Consulting Group）的安东·施耐德（Antoon Schneider）说。并购基金最喜欢问题资产。许多人认为，现在跟2008年楼市崩盘的情况相似，当时随着楼价暴跌，债台高筑的投资者（包括许多私募股权基金）被迫出售资产。黑石集团的首席执行官斯蒂芬·施瓦茨曼（Stephen Schwarzman）在12月说，这场风暴将是“我们的绝妙机会”。

这股得意之情背后不无道理：能源相关资产的价格已普遍大幅下降。一些配合钻探日常运作，如提供直升机及海上钻机维护的石油服务公司可能已饱受池鱼之灾，极易触底反弹。专门以海上钻井平台和海洋作业船这类高成本方式开采石油的公司在油价下跌前已承压，部分原因是繁荣时期的过度建设，而现在情况更糟。这类资产价格波动正是私募股权投资公司的赚钱时机。

另一种赚钱方式是借贷。瑞士信贷银行（Credit Suisse）的数字显示，如今能源领域高收益债券的发行量是2008年的三倍。油价低迷危及借款人利益，如美国的页岩油生产商，他们需要资金维持运营，支撑到油价如愿反弹之日。银行不愿放贷，许多公司拼死不卖资产，这令私募股权公司在向能源企业提供融资时可以随便开价码。

这些想法令众多并购巨子掀起集资狂潮。单是黑石集团就表示已集资90亿美元可用于能源投资，更不用说可能购买能源相关债务的信贷基金规模。另一家私募股权公司美国华平投资集团（Warburg Pincus）去年底集得一只40亿美元的能源基金。阿波罗也正在筹措一只数十亿美元的基金。这一切给如今坐拥贬值能源资产的私募股权公司带来一线曙光，前提是他们能熬过黎明前的暗夜。■

Buttonwood

Skewiff

The role of government bonds as an asset class is changing

NEGATIVE bond yields are a very modern phenomenon. The idea that rational investors would sign up to lose money in nominal terms would have seemed laughable 30 years ago. Now it looks as if European investors are embracing Islamic finance, which eschews interest altogether.

It is possible to explain negative yields in terms of deflationary fears or risk aversion. But Jérôme Teiletche of Unigestion, a Swiss fund-management group, says that such yields are fundamentally changing the risk-reward profile of government bonds and thus the role that bonds should play in investors' portfolios.

Many natural phenomena, such as people's heights, conform to what is known as the normal distribution or the "bell curve". If the average male height is 178cm, say, the number of men who are shorter or taller will decline the further you get from that mark. The normal distribution is easy to model: 95% of the data will be within two standard deviations of the mean. It is thus common to use the normal distribution when analysing the financial markets—when calculating, for example, the "value at risk" of a portfolio.

But financial markets tend to have "fat tails"—more extreme outcomes, in the form of bubbles and crashes, than the normal distribution would suggest. The 23% fall in the Dow Jones Industrial Average on October 19th 1987 is an obvious example. Markets tend to rise more slowly than they fall. They may take months to advance by 15-20% but can drop that far in a week or even a day. In statistical jargon, this is known as "negative skew".

Strategies with negative skew have been described as "picking up nickels in front of steamrollers". An investor may make a series of small gains, only to be wiped out by a sudden, large loss. An example would be offering insurance (selling put options) against a sharp plunge in the stockmarket. Most of the time, the market will not fall, and the seller will pocket the premium. But at times like October 1987, the bill will come due.

Another asset class with negative skew is high-yield, or junk, bonds. At best, investors will be repaid at par on maturity; at worst, the company defaults and investors get back pennies on the dollar.

In contrast, government bonds have typically been used as "shock absorbers" within portfolios. When equities or commodities are plunging, government bonds tend to do very well. Even when bonds do badly, the pain is not that great. Since 1925 the biggest annual loss in real terms (including the income from interest payments) in the Barclays US bond index was 15.5% in 2009. In contrast, the biggest real loss in equities was 38.9% in 1930; and there were seven other instances of a real annual loss of more than 20%.

When yields are zero or negative, government bonds clearly do not give investors an income. The problem is that they may not function as shock absorbers either. It is hard to say precisely how far yields can fall: until recently, many people may have felt that zero was a firm limit. Even if slightly negative yields are palatable, however, it seems inconceivable that investors would accept an annual loss of 5%, say.

Since prices move in the opposite direction to yields, it is thus difficult to imagine investors buying bonds at current yields making much of a capital gain. It is easy, though, to imagine them making a big loss. If inflation returns, nominal yields would rise sharply and prices would plummet. Government bond returns seem likely to have a negative skew.

As evidence, Mr Teiletche points to Japanese government bonds, which have had very low yields since the turn of the century. Japanese bonds have not been very volatile but they have had a negative skew. In this respect, they resemble equities and high-yield bonds (see chart).

If government bonds in the rest of the developed world start to behave like Japan's, then some investors may doubt whether they are worth holding at all. They will simply offer reward-free risk.

Low yields may still last for a while, even so. Many investors—pension funds, insurance companies—are forced holders of government bonds for accounting or regulatory reasons. Central banks also tend to hold other countries' government bonds as a key component of their reserves. And of course, the European Central Bank and the Bank of Japan are committed to buying tens of billions of government bonds each month. But in doing so, Mr Teiletche implies, they are fundamentally altering the nature of the bond market—perhaps for ever. ■

梧桐

偏态很偏

政府债券作为一种资产类别的角色正在改变

债券收益率为负值是近来才有的现象。若在30年前，理智的投资者会购买在名义上赔钱的产品看起来会很可笑。现在看来，欧洲的投资者貌似欣然接受了完全戒绝利息的伊斯兰金融。

或许能用担心通缩或规避风险来解释负收益率。但是瑞士基金管理集团Unigestion 的热罗姆·恩莱施（Jérôme Teiletche）称，这样的收益率正从根本上改变政府债券的风险回报，继而改变政府债券在投资者的投资组合中应当扮演的角色。

很多自然现象，如人的身高，都服从所谓的正态分布或“钟形曲线”。假设男性平均身高为178厘米，那么离这一数值越远，高于或矮于这一数值的男性数量越少。正态分布很容易建模：95%的数据应当在均值正负两个标准差之内。因此，在分析金融市场时，如计算某一投资组合的“风险价值”，通常会用到正态分布。

但是金融市场上往往有“肥尾效应”：即出现比正态分布显示的更极端的结果，如泡沫或崩盘。1987年10月19日道琼斯工业平均指数暴跌23%就是个明显的例子。市场上涨往往比下跌慢得多。可能几个月才上涨15%至20%，但一周甚至一天内的跌幅会远远超过这一比率。在统计学术语中，这叫做“负偏态”。

应对负偏态的策略被形容为“压路机前捡硬币”。投资者可能会获得一连串小利，又被一场突如其来的巨大损失抹杀殆尽。例如提供股市暴跌的保险（卖出看跌期权）。大多数时候，市场并没有下跌，卖家将风险对价收入囊中。但是在像1987年10月那样的情况下，卖家就要买单了。

另一种呈负偏态分布的资产类别是高收益或垃圾债券。最好的情况下，投

资者可以在到期日按票面价值得到偿付；最坏的情况下，该公司违约，投资者损失惨重。

相比之下，政府债券在投资组合中常被当做“减震器”。当股票或大宗商品暴跌时，政府债券往往表现优异。即使债券表现不好，也不会那么痛苦。自1925年起，按实值计算，巴克莱美国综合债券指数年度最大亏损（包括利息收益）出现在2009年，为15.5%。相比之下，股票的最大实值亏损为1930年的38.9%；还有另外七次年度实际亏损超过20%。

当收益率为零或负值时，政府债券显然无法给投资者带来收益。问题是它们可能也无法起到减震器的作用。很难准确预测债息最多会降到什么程度：直到最近，很多人可能还觉得零是一道坚挺的底线。不过，就算收益率略为负值差强人意，也难以想象投资者能接受5%的年亏损率。

价格朝着与收益率相反的方向移动，因此很难想象投资者在目前的收益率下能有丰厚的资本收益。倒是很容易想象他们损失惨重。如果通货膨胀回归，名义收益率将大幅上涨，价格将暴跌。政府债券收益可能会呈现负偏态。

恩莱施将日本政府债券作为证据，自世纪之交起这一债券就收益甚微。日本国债的波动并不大，但曾呈负偏态分布。在这一点上，它们与股票和高收益债券（见图表）类似。

如果其他发达国家的政府债券也开始像日本的那样，那么有些投资者可能会怀疑是否值得持有这些债券。它们只有风险，没有回报。

低收益率可能仍会持续一段时间。即便如此，很多投资者如退休基金、保险公司出于会计或监管原因被迫持有政府债券。作为其外汇储备的重要部分，中央银行往往也持有其他国家的政府债券。当然，还有欧洲央行和日本央行承诺每月购买数百亿的政府债券。但是恩莱施认为，这么做意味着它们正从根本上改变债券市场的性质，可能是永久改变。■

Oil prices

Unconventional but normal

The fall in the oil price has not curbed fracking nearly as much as expected

WHEN the oil price crashed last year, many assumed that the earliest casualties would be the small, nimble American companies that specialise in getting "unconventional" oil out of shale, tar-coated sand and the like. After all, with their high production costs and heavy debts, these firms were inherently more vulnerable to price shocks than big oil companies, the thinking went. Indeed, Saudi Arabian officials even suggested that they were refusing to cut their output precisely in order to put such firms out of business.

Six months later, though, there is little sign of a bust in America's shale basins, where horizontal drilling and hydraulic fracturing (fracking) have led to a boom in oil and gas production in the past five years. Scott Nyquist of McKinsey, a consultancy, says the price drop has not caused the "immediate distress" that was originally assumed. An analysis of 300 independent American oil and gas companies in the first quarter of this year showed that more than two-thirds had healthy balance-sheets, with at least as much equity as debt. By the same token, the debt of two-thirds of the midsized firms in the survey was trading at 80% or more of its face value, suggesting that investors are not too worried about their health. The firms that have been in trouble are those with dud leases, or which had embarked on big takeovers last year, just before the price began falling.

Figures compiled by investment bankers at Barclays tell a similar story. Although yields on the "junk bonds" issued by American energy firms spiked from a low of 5% in the summer to more than 10.5% in December, they have since fallen back to 8% (roughly the same as in mid-2012). It has become a little more expensive for frackers to borrow, in other words, but

there is no sign of a crippling squeeze.

The number of rigs drilling for oil in America has fallen by half since October, from some 1,600 to 800; that will eventually sap output. For now, though, American oil production is still growing: in March it rose by 120,000 barrels a day (b/d).

One reason is that frackers have been able to cut costs, along with the rest of the oil industry, as the price of labour, steel and other inputs has fallen. That gives a one-off boost to their finances. They are also benefiting from continuing improvements in productivity. These include better seismic data, which means more fracks are successful, the ability to drill ever more wells from a single spot and, on the horizon, polymers and other fluids that cut water use or replace it altogether.

It is not all plain sailing. Oil reserves are valued in October, notes Michael Cohen of Barclays. Those priced last year, with oil around $100 a barrel, will be worth a lot less this time round. But even troubled firms do not necessarily cut production. New owners can purchase their assets cheaply and keep pumping.

The main lesson is that although the price drop has been bad for producers in such places as the North Sea, it has not derailed America's oil boom. Indeed, America is replacing Saudi Arabia as the world's swing producer. Frackers have drilled lots of wells and then plugged them, waiting for the price to rise again. If it does, Mr Cohen expects between 300,000 and 800,000 b/d of production to start up.

Nor is there any sign of a shift away from unconventional oil in terms of capital investment. Unconventional oil has been gaining an increasing share of the pie in recent years (see chart). Investment of all kinds will dip this year but Rystad Energy, a research firm, sees it rising strongly again

thereafter. A new forecast from America's Energy Information Administration reckons rising production and greater efficiency mean that the country will stop importing energy between 2020 and 2030, depending on the price.

This contributes to a picture in which oil prices—barring big geopolitical upsets—look unlikely to rise sharply. True, global demand for oil is set to rise, and old oilfields are depleting, meaning that much of the industry needs to run in order to stand still. But the message from America is that finance and technology combined are more than a match for geology. ■

油价

非常规但正常

油价下跌对压裂采油业的抑制远没有预期那么多

去年油价暴跌时，许多人以为最先倒下的会是那些专事从页岩、油砂等当中提取“非常规”石油的灵活小公司。毕竟，一般分析会认为这些公司生产成本高、债务多，比起大型石油公司来，它们天生更难承受价格冲击。实际上，沙特阿拉伯的官员甚至暗示，他们拒绝减产就是为了把这些公司排挤出局。

然而，六个月后，美国的页岩盆地上看不到什么败落的迹象。过去五年，这里的水平钻井和水力压裂技术已经带来了油气产量激增。咨询公司麦肯锡的斯科特·尼奎斯特（Scott Nyquist）说，油价下跌并未像预期的那样造成“马上的困境”。今年第一季度对300家美国独立油气公司的分析显示，其中超过三分之二的公司有健康的资产负债表，股权至少和债务等量。同样，三分之二的这类中型公司的债券交易价格为面值的80%或更高，显示投资者并不太担心它们的财务健康。那些陷入麻烦的公司，有的是因为签了糟糕的租赁合同，有的正好在去年油价下跌前开始大笔收购。

巴克莱银行（Barclays）的投资银行家搜集的数据显现了类似的结果。虽然美国能源公司发行的“垃圾债券”的收益从去年夏季5%的低点冲到12月的超过10.5%，这以后它们又回落到8%（和2012年中大致相同）。换言之，对于压裂采油业者而言，融资变得更贵了些，但并没有出现严重的信贷紧缩。

自去年10月以来，美国的油井数量已经减半，从1600个左右变成800个。这最终会减少产量。不过，就目前而言，美国的石油产量仍在增长：3月间每天增产12万桶。

原因之一是压裂采油业者和石油产业的其他领域一样，因为劳动力、钢材以及其他投入的价格下跌而削减了成本。这让它们的财务状况获得了一次

性提升。它们也从持续的生产效率改善中受益，包括更好的地震数据让更多压裂采油获得成功、能在同一个地点开掘更多油井，以及即将实现的变化——用聚合物和其他液体减少用水量，甚至完全取代水。

并非诸事顺利。巴克莱的迈克尔·科恩（Michael Cohen）指出，石油储备的估值是在去年10月完成。而去年定价约100美元一桶的石油储备如今会大为贬值。但是，即使陷入困境的公司也不一定会减产。新东家可以用便宜的价格买下其资产并继续采油。

主要的发现是，虽然油价下跌对北海这类地区的生产商很不利，但并没有让美国的石油繁荣之路改弦易辙。事实上，美国正在取代沙特阿拉伯成为全球的产量调节者。压裂采油业者已经挖掘了许多油井，而后暂时封存，等待价格再度攀升再开采。如果价格上升，科恩预期产量会以每天30万到80万桶起步。

也没有任何迹象显示资本投资正从非常规石油领域移出。近些年非常规石油在采油大饼中分得的份额越来越多（见图表）。今年各类投资都会减少，但调研公司Rystad Energy认为这之后投资会强劲反弹。根据美国能源信息署最新预测，产量增加以及效率提高意味着美国将在2020年到2030年间停止能源进口，具体时间待视价格情况。

由此推断的前景是，除非发生重大的地缘政治动荡，否则油价不太可能大幅上涨。诚然，全球对石油的需求势必上升，而旧油田正逐渐枯竭，意味着石油产业的大部分产能必须被使用才能保持价格稳定。但来自美国的讯息显示，金融和技术的联合作用比地质更强大。■

Modi's rule

India's one-man band

The country has a golden opportunity to transform itself. Narendra Modi risks missing it

A YEAR ago Narendra Modi came to office promising to bring India "good times", by which he meant jobs, prosperity and international renown. His progress has been frustratingly slow. The problem is hardly a lack of opportunity. Voters gave his Bharatiya Janata Party (BJP) the biggest parliamentary mandate for change in 30 years. Mr Modi has concentrated more power in his own hands than any prime minister in recent memory. The problem is that India needs a transformation—and the task is too much for a one-man band.

> *The Modi blues*

There is no doubting Mr Modi's conviction that India is about to achieve greatness, and he may well be right. Within a generation, it will become the planet's most populous nation. It could be one of the world's three largest economies. And it could wield more influence in international relations than at any time in its history. But, in his heart, the prime minister believes that only one man is destined to lead India down this path: Narendra Damodardas Modi.

Much has gone well, though serendipity shares the credit. Helped by oil prices, Mr Modi has presided over an improving economy. Inflation is down, interest rates are dropping, the rupee is stable, and fiscal and current-account deficits have shrunk. Official statisticians claim that India's growth, at 7.5%, outpaces China's—meaning the country has the world's fastest-expanding large economy. Foreign direct investment is up. So are the prime minister's visits abroad, where he cuts an impressive figure. This newspaper chose not to back Mr Modi in last year's elections

because of his record on handling religious strife. Though he fails to control the Hindu-extremist bullies who back him, we are happy that our fears of grave communal violence have so far not been realised.

But when it comes to reform, Mr Modi's record is underwhelming. The past year saw auctions of coal deposits. The past few days have brought the tiniest of baby steps towards privatisation: eight state-run hotels may be sold off. Mr Modi points out that foreigners may now invest more in railways, insurance and defence. He is cutting red tape to create a friendlier business climate. Poorer Indians will increasingly get cash welfare, not cheap rations in kind: since April the world's biggest cash-transfer scheme has replaced artificially cheap canisters of cooking gas. Massive subsidies on diesel have been scrapped; whopping ones on paraffin should follow. And by encouraging people to open 150m new bank accounts, linked to a biometric database of 850m people so far, the government is creating a structure to provide better poverty relief.

As welcome as this is, it sells India short. Mr Modi is making two mistakes. The first is to think that time is on his side and that big unpopular decisions can wait, perhaps until he has control of the upper house as well as the lower one. That rests on a delusion among Indian leaders that they must consolidate power first and reform later. In fact a brief period exists in which to get change going, early in the parliamentary term.

Mr Modi already faces twinges of popular discontent. Surly voters drummed his party out in state elections in Delhi. Some dislike his attention to diplomacy overseas. In May he wrapped up a trip to China, Mongolia and South Korea, completing 52 days abroad in 18 countries over the past year. Others are put off by his narcissism, embarrassed that he met America's president, Barack Obama, wearing a dark suit with all 22 letters of his name stitched over and over into its golden pinstripe. As he cracks down on groups like Greenpeace, some complain of his authoritarian

streak.

The second mistake is for Mr Modi to think that he alone can bring about change. On the contrary, the only way for him to realise his aims is to draft in help. And it could come from three main sources—India's states, other national politicians and the power of the market.

He has made a start by devolving some power to states. The idea is to create a manufacturing boom (though that would, at a minimum, also require wider changes to the way land is bought, labour hired and roads built). As they compete in setting priorities for policy and spending, the go-getting states will become models for the rest. Good policy will be rewarded thanks to a national goods-and-services tax that creates a common market—and hence competition—across India. Mr Modi says he wants the tax by next April, as promised, though parliament has just delayed it. The sooner, the better.

Unfortunately, national politics is a long way behind the states. Mr Modi cannot blithely assume his power will grow. The prime minister's office cannot expand to do everything. It is time to relaunch his government by bringing in outside talent. Like the previous government, he should get in bright people from the private sector—especially as the BJP is short of capable leaders—to strengthen, say, the finance ministry and the corporate-affairs ministry. In parliament Mr Modi could sometimes compromise with the opposition Congress party, to rush through the sales tax, say, or make buying land simpler.

All together now

Lastly, he needs to use markets as agents of change. Mr Modi should lead a national campaign to ease the world's worst labour laws. Perverse restrictions on domestic trade in farm produce should go. Private companies could compete to make the railways more efficient.

Infrastructure must be built faster, which requires a better law on acquiring land. State-run banks should no longer be subject to political meddling, but recapitalised and put in independent, ideally private, hands. Foreign investors could raise standards in Indian universities. Across the woefully bad education system a focus is needed on excellence in teaching and standards—easing the way for more private providers.

Mr Modi acts as if a lot of small improvements add up to transformative gains. They don't. He is still thinking like the chief minister of Gujarat, not a national leader on a mission to make India rich and strong. If he is to transform his country, India's one-man band needs a new tune. ■

莫迪的统治

印度的独角戏

这个国家恰逢转型的黄金机会，而莫迪有错失良机的风险

一年前纳伦德拉·莫迪开始执政，他承诺给印度带来“好日子”，他指的是工作机会、经济繁荣和国际声望。令人沮丧的是他的进展非常缓慢。问题绝不是缺乏机会。选民们给予他所在的印度人民党（BJP）30年来最大的议会授权，以主导改革进程。莫迪手里集中的权力比近年来任何一届总理都大。问题是印度需要转型，而这个艰巨的任务非一人可以独力承担。

> *莫迪的忧郁蓝调*

毫无疑问莫迪坚信印度将成就伟业，他很可能是对的。一个世代之内，印度将成为世界上人口最多的国家。它可能成为全球三大经济体之一。而且在国际关系中可能具有比历史上任何时期都更大的影响力。但是，在内心深处，这位总理认为只有一个人注定要带领印度沿着这条道路前行，他就是纳伦德拉·达莫达罗达斯·莫迪。

尽管有运气的成分，但印度大体上进展顺利。有低油价相助，莫迪主持的经济蒸蒸日上。通货膨胀减缓，利率正在下降，卢比稳定，财政和经常账户赤字已经缩减。官方统计宣称印度的增长已达7.5%，超过了中国，意味着该国成为世界上发展最快的大型经济体。外国直接投资也在增长。总理出访国外的次数也更多了，他的表现总是给人以深刻印象。在去年竞选时，考虑到莫迪处理宗教冲突的历史记录，本刊选择不支持莫迪。尽管他未能控制住支持他的印度教极端分子的恶行，但我们很高兴到目前为止，我们担心的严重暴力冲突尚未出现。

但是谈及改革，莫迪的表现未免乏善可陈。去年政府拍卖了部分煤炭储备。过去几天印度才向私有化迈进了微小的一步：八家国有酒店可能被出售。莫迪指出外资现在可以更多地投在印度的铁路、保险和国防等领域。他正在削减繁文缛节，创造更宜商的氛围。贫困的印度人将越来越多地获得现金补助，而非便宜的实物配给：自4月以来，世界上最大的现金转移

支付体系已经取代了家用燃气罐，这种燃气的价格曾被人为降低。大规模柴油补贴已经取消，紧随其后的应当是取消煤油补贴。通过鼓励人们新开1.5亿个银行账户，政府正在建设一个更有效的扶贫体系，与这些银行账户相关联的数据库迄今为止涵盖了8.5亿人的生物识别信息。

尽管受到欢迎，这些举措还是“贱卖”了印度。莫迪正在犯两个错误。第一，他认为还有时日，一些不得人心的重大决定可以推后进行，或许可以等到他同时控制议会上下两院之时。这种想法是基于印度领导人普遍的错觉，即他们必须先巩固政权再推动改革。实际上，在本届议会任期开始之初就存在着一个推动改变的短暂时期。

莫迪已经感受到了民意不满带来的痛苦。在德里的邦一级选举中，暴怒的选民轰走了他的人民党。有些人反感他对外交的重视。5月他访问了中国、蒙古和韩国，过去一年里他在国外52天，访问了18个国家。其他人则反感他的自恋。会见美国总统奥巴马时，莫迪穿着深色西装，上面打满由其全名22个字母重复绣成的金色细条纹，这让一些人感到尴尬不已。而对“绿色和平”这类组织的打压让一些人抱怨他的独裁倾向。

莫迪的第二个错误是自以为单靠他一人就可实现变革。相反，对他来说实现目标的唯一途径就是争取帮手来出谋划策。可能得到的援助主要来自三处：印度各邦、其他全国性政治家，以及市场的力量。

在下放权力到各邦这一点上，莫迪已经起步。他的用意是形成制造业的繁荣，尽管这可能至少还要求在土地征用、劳动力雇用和道路修建等方面做出更多改变。当各邦在设定政策和支出的优先级别上展开竞争时，走在前列的邦将成为其他邦的榜样。全国统一的商品和服务税会在印度各地形成一个共同市场，也带来竞争，因此好的政策将获得回报。莫迪表示他希望如承诺的那样，在明年4月前征收这项税费，尽管议会已拖延该法案。这项税改越早越好。

不幸的是，全国政治远远落后于各邦。莫迪不能草草假定他的权力会继续增加。总理办公室不可能不断扩张，包揽一切。现在是引入外部人才、重

组政府的时候了。就像往届政府一样，他应当从私营企业里招揽才俊，以加强财政部和企业事务部等，特别是考虑到印度人民党缺乏有能力的领导者。在议会里，莫迪可以在某些时候向反对派国大党妥协，以求快速通过法案，如销售税，或者简化土地购买流程。

全力以赴

最后一点，莫迪应当将市场当做变革的推动力。他应当领导一场全国性的运动来缓和世界上最糟糕的劳工法。对国内农产品贸易的不合理限制应当被摈弃。应该允许私营企业参与竞争，让铁路更高效。基础设施建设速度要加快，这需要改进土地征用方面的法规。国有银行不应再受政治干预的制约，而应对其进行资本重组，并独立运营，理想情况下应交于私人。外国投资能够提升印度大学的标准。在糟糕透顶的全国教育系统中，需要着眼于建设优质教学和优质标准，放松对更多私营教育的限制。

莫迪似乎认为点滴的进步集合起来能够让印度改头换面。事实并非如此。他的思考方式仍像古吉拉特邦（Gujarat）的首席部长，而非一位肩负着富国强民使命的全国领袖。假如莫迪打算改天换地，他的独角戏就需要新动作。■

The oil industry

After OPEC

American shale firms are now the oil market's swing producers

BIG companies making big bets on big oilfields, while a cartel of oil-producing states fixed the price to keep itself rich and others, including the oil majors, profitable. That, in caricature, was how the oil industry once ran.

That model now seems broken. On May 13th the International Energy Agency, representing the main oil-consuming countries, said a global oil glut was building, as Saudi Arabia pumped oil frantically in a continuing battle for market share with American shale-oil producers. The shale firms have proved a lot more resilient, and a lot more productive, than the Saudis and other members of OPEC, the producers' cartel, had expected. Last November, with prices already slipping, OPEC's members stopped trying to agree production quotas among themselves, sending crude tumbling further. Their hope was that this would force rival producers, especially in the American shale beds, to slash investment. As supply tightened drastically, the oil price would rebound.

This has not happened. Prices have staged only a partial recovery: West Texas Intermediate (WTI), one of the main benchmark prices for crude, was just above $100 a year ago and hit a low of around $44 in March; it had recovered to just $60 by the middle of May. If the glut persists, the price is likely to slip back. As OPEC oil ministers prepared for a meeting in Vienna in May, a draft paper leaked to the *Wall Street Journal* said that even in its most optimistic scenario, the price will not exceed $76 a barrel until after 2025. It also considered a scenario in which it fell below $40. OPEC denied that the draft existed, but the conclusions ring true: the chances of a return to triple-digit crude prices look slim.

The big oil multinationals, such as BP, Chevron, ExxonMobil, Shell and Total, have responded to the weaker oil price by cost-cutting, and postponing and cancelling some of their exploration projects (although Shell in the middle of May got a provisional go-ahead to restart a $6 billion project in the Arctic, troubled by delays and accidents). However, the output of the shale firms has proved surprisingly robust, even though they have cut their number of rigs significantly since the peak last October (see chart).

One reason for this is canny hedging by some shale producers, which means they are in effect getting paid above the current market price. But many unhedged producers have also continued to pump oil, since the market price is still above the marginal cost of producing another barrel, even if it doesn't cover the upfront costs of drilling the well. Most important of all, their productivity has continued to improve in leaps and bounds. Wells that used to take 35 days to complete now take 17, says Daniel Yergin of IHS, a research firm. The amount of oil produced per dollar invested will rise by 65% this year, he says. Better seismic data, improvements to the fracking liquids pumped into wells and more intensive deployment of rigs are all helping.

In all, IHS reckons that 80% of the new capacity this year will be profitable with WTI at $50-$69 a barrel. As its price has edged above $60 in recent days, some shale companies have begun to talk about increasing output again. The size of the "fracklog", the pipeline of ready-to-roll projects awaiting better prices, is contested. But the principle is clear: American shale firms have become the new "swing producer" of the global oil market.

Its main influence used to be OPEC, and particularly the Saudis, switching the taps on and off to try to rig the price. Now the market is increasingly led by the American frackers, ramping their drilling up and down in response to global prices. Petromatrix, a consulting firm, has coined the phrase

"shale band" for the price range between $45 and $65: below that range, American production falls sharply; above it, it surges. If so, there should be a tendency for prices to stay within that range.

The greater the proportion of the world's oil supply that comes from fracking, the stronger this effect will be. The American government's Energy Information Administration has in the past three years raised its forecast of American oil output in 2020 by 3.1m barrels per day to 10.6m—the equivalent of adding another producer the size of Iraq. There is scope to reduce production costs further through the consolidation of what is still a fragmented fracking business. In mid May, in the first big deal of its kind since the oil-price drop, Noble Energy said it would buy Rosetta Resources, a smaller and indebted rival, for $2 billion, paid in shares. More such deals are likely. Paul Stevens of Chatham House, a think-tank in London, expects a "flurry of mini-mergers".

As American production continues to rise, pressure will grow on the government to ease its restrictions on exports of crude. In the meantime America's imports are diving—they fell below those of China last month. Other countries, from Russia to Argentina, have promising shale beds. Although they lack America's expertise, finance and legal system, they may eventually begin to produce oil from them in significant quantities.

All this leaves the Western oil majors in an uncomfortable place. They are used to overseeing huge, high-risk, long-term projects, and have not shaken the habit of indulging in costly bespoke solutions which delight their engineers but give their accountants nightmares. Mr Yergin of IHS notes that there are 328 standards within the industry just for valves. Contrast this with the shale firms, whose wells are small, cheap and drilled quickly using standardised, interchangeable parts. The current weakness in prices will eventually force the oil majors to strain themselves to find cheaper and more flexible ways of working, however. Oswald Clint of

Sanford C. Bernstein, another research outfit, thinks that the majors have scope to cut perhaps tens of dollars a barrel from their breakeven prices.

Unless some large-scale conflict erupts that takes out some of the world's biggest oilfields, the oil industry may be heading for a new normal in which the price of crude oscillates in the mid-double digits. The one thing that might make it break out of this range and head back above $100 is a surge in demand. However, economic growth and energy consumption have decoupled in the rich world; and it is an open question if emerging economies will be as wasteful of energy in coming decades as the established ones were in the past century. Ever more affordable renewable-energy sources, and cheap gas, are proving increasingly attractive alternatives to many users of oil products.

Paul Sankey of Wolfe Research, a New York-based outfit, believes that underinvestment resulting from the recent sharp dip in crude may lead to one last spike in the oil price; but after that, he reckons, the "oil age is over". Even if that proves an exaggeration, a return of OPEC's dominance seems a distant prospect. ■

石油产业

后OPEC时代

美国页岩油公司如今是石油市场的生产调节者

大公司大手笔投资大油田，石油生产国联盟确定油价，保障自己利润的同时，也让他人包括石油巨头们有利可图。夸张点说，这就是石油产业曾经的运转模式。

现在这种模式似乎已经解体。5月13日，代表主要石油消费国的国际能源署（International Energy Agency）表示，随着沙特阿拉伯拼命提高石油产量同美国页岩油生产商继续争夺市场，全球石油市场供过于求的局面正在形成。事实证明，页岩油公司比沙特及石油生产国联盟OPEC其他成员国预想的韧性更强，产量更高。去年11月，当油价开始下滑，OPEC成员国决定停止在组织内部实施产量配额，推动原油价格继续下跌。他们希望通过此举逼迫对手特别是美国页岩油生厂商减少投资。随着供给大幅缩减，油价就会反弹。

然而这并未发生。油价仅仅经历了小幅回弹：西得克萨斯中间基原油（WTI）是全球原油主要基准价格之一，一年前还处在100美元之上，今年3月降到了44美元左右的低位，5月中则恢复到60美元。如果供过于求的市场持续下去，油价有可能再次跌落。就在OPEC石油部长准备5月的维也纳会议之际，一份透露给《华尔街日报》的文件草案提到，即便在最为乐观的情况下，油价在2025之前也不会超过每桶76美元。文件也设想了油价低于40美元的情况。OPEC否认这份草案的存在，但上述结论听上去真实可靠：原油价格回归三位数的可能性看上去非常小。

大型跨国石油公司，包括BP、雪佛龙、埃克森美孚、壳牌和道达尔，都已削减成本应对油价下跌，同时推迟并取消了一些勘探计划（尽管壳牌5月中旬取得了有条件的批准，重启在北极圈备受延误和事故困扰的60亿美元油气勘探项目）。但是，页岩油公司的产量被证明惊人的强劲，即使其钻井数量自去年10月达到峰值以来已经被大幅缩减（见图表）。

这种现状的成因之一是部分页岩油生产商精明的对冲交易，即他们在交易中卖出的石油实际价格高于现在的市场价格。但是很多未采取保值措施的生产商也还在继续产油，因为市场价格即使不能弥补前期钻井成本，却依然高于生产下一桶油的边际成本。最为重要的是，他们的生产效率仍在大幅度跃进。来自研究公司IHS的丹尼尔·耶金（Daniel Yergin）说，以往需要35天完成的油井现在只需要17天。他还说，每一美元投资带来的石油产量今年将上升65%。更准确的地震勘探数据、更高质量的打入油井中的压裂液、更密集排列的钻井，都起到了推波助澜的作用。

总之，IHS估计今年80%的新产能在WTI每桶50至69美元的价格条件下能够盈利。近日价格已逐渐超出60美元，一些页岩油公司已经开始讨论重新增加产量了。人们对美国“压裂油井库存”——已被钻探但没有抽取石油、一俟价格回弹即涌入市场的页岩油井——的数量规模或许还有争论，但总的认识再清晰不过：美国页岩油公司已经成为国际石油市场新的产量调节者。

国际石油市场的主导力量过去是OPEC，尤其是沙特阿拉伯，它们通过调节产量操控价格。如今，市场越来越多地由美国页岩油开采商主导，他们根据全球油价调节开采力度。咨询公司Petromatrix创造了“页岩区间”一词，指的是从45美元到65美元这一价格范围：低于这个范围，美国的产量大幅下降；高出这个范围，产量飙升。如果情况确实如此，价格走势就应该在此范围内变动。

全球石油供应中页岩油的比例越大，这种效果就越明显。美国政府机构之一能源信息署（Energy Information Administration）在过去三年里将美国到2020年的石油日产量预期提高到了1060万桶，增加了310万桶，相当于整个伊拉克的产量。通过整合目前仍呈分散状态的页岩油开采行业，生产成本还有进一步下降的空间。5月中，诺布尔能源公司（Noble Energy）表示将通过股票交易，以20亿美元收购规模较小且负债累累的竞争对手罗塞塔资源公司（Rosetta Resources），这是自油价下跌以来此类并购中的第一宗大交易。更多类似交易可能接踵而至。来自伦敦智库英国皇家战略研究所（Chatham House）的保罗·史蒂文斯（Paul Stevens）表示，未来

会出现一阵“微型并购潮”。

随着美国石油产量继续上升，政府放松原油出口的压力逐渐增加。同时，美国的石油进口迅速下降，4月已经低于中国的进口水平。其他国家，从俄罗斯到阿根廷，都拥有丰富的页岩油层。尽管他们缺乏美国的专业技术、资金和法律体系，但终有一日他们同样能开采出大量的页岩油。

这些都让西方石油巨头们深感不安。他们习惯于开展规模大、风险高、周期长的项目，醉心于让工程师兴奋但让会计师做噩梦的专属方案。IHS的耶金提到，在这个行业里光是阀门就有328项标准。与之相对的是，页岩油公司的油井规模小、造价低、出油迅速，使用的是通用的标准化零部件。石油巨头们目前在价格上的劣势最终会逼迫他们压缩成本，找到更为低廉、灵活的经营模式。来自另一家研究机构盛博（Sanford C. Bernstein）的分析师奥斯瓦尔德·克林特（Oswald Clint）认为，石油巨头们还有削减成本的空间，也许可以从目前每桶油的盈亏平衡价格上再降低数十美元。

除非发生大规模的冲突导致一些世界级大油田停产，石油产业或许会朝着一个新常态发展，原油价格徘徊在40至60美元左右。唯一可能使价格冲出这个范围重回100美元以上的因素是需求的爆发性增长。然而，发达国家的经济增长和能源消费已不再紧密相关，同时，现在尚不确定新兴经济体未来几十年的能源消费会否像发达国家在过去一个世纪里那样挥霍无度。价格更为合理的可再生能源、便宜的天然气越来越成为吸引众多石油消费者的替代选项。

纽约Wolfe研究公司的保罗·桑奇（Paul Sankey）认为，最近油价锐减导致的投资不足有可能带来最后一次油价飙升，但在其后，他认为“石油时代终结了”。尽管此种说法不无夸张，但OPEC回归统治地位的那一天看上去已经遥遥无期了。■

Asia and the world economy

A faulty gauge

A tumble in exports from Asia need not spell gloom for the world

EXPORTS from north-east Asia have long been a good gauge of the health of the world economy. The region, which knits together Japan's high-tech wizardry, Korean and Taiwanese expertise in electronics, and China's prowess in assembly, produces nearly a quarter of all goods shipped around the world. This juggernaut now appears to be slowing. South Korean exports fell by 8.1% in April from the same month a year earlier, the worst figure in two years. China's were down by 6.4% year on year. Taiwanese and Japanese exports are limping along as well. The weak figures seem to point to a renewed funk for the world economy. In fact, Asian exports are simply not the reliable barometer of global demand they once were.

First, there is the problem of currency swings. The bad showing for Asia is made worse by the convention of reporting data in dollar terms. America buys only about 15% of Asian exports, but when the dollar is as strong as it has been, the value of exports to other countries appears to shrink. In other currencies, or in volume terms, shipments have been more robust. Frederic Neumann of HSBC, a bank, notes that Europe's imports from Asia, expressed in euros, have been climbing steadily.

Yet even before the dollar's rally began in mid-2014, the link between north-east Asian exports and growth in developed economies had started to break down. Over the past three years, for instance, north-east Asian exports have grown much more slowly than the American economy (see chart).

Why the divergence? One possible explanation is that other regions are now out-competing north-east Asia as Chinese labour costs rise. But this does

not hold up to scrutiny: over the past year exports from emerging economies in Asia excluding China have followed the same arc as those from north-east Asia. Exports from Latin America and central and eastern Europe have fared worse. North-east Asia's share of global exports actually crept up from 22% in 2011 to 23% last year.

A better theory is that the structure of north-east Asian trade has itself changed. After China entered the World Trade Organisation in 2001, global companies rushed to extend their supply chains from their previous Asian footholds into China. That sparked a boom in the trade of intermediate goods around the region—a network often referred to as "Factory Asia"—with Japan and South Korea making many of the most sophisticated parts and China putting them together as finished products.

That process has slowed markedly as China has started to climb up the value chain. Louis Kuijs of the Royal Bank of Scotland calculates that the share of intermediate parts in China's total imports fell by nearly 11 percentage points from 2007 to the start of this year. As a result, less intra-Asian trade is required to produce the same final goods as in the past. Supporting this theory, Chinese exports, though volatile, have been more resilient than those of the other countries in Factory Asia. Over the past two years, China's exports have grown by 6% a year on average in dollar terms. Exports from South Korea and Taiwan have grown by only 2%, while Japan's have fallen by 6%.

With more of the regional supply chain contained within China itself, Chinese exports alone may now form the better gauge of the world economy. Once the exchange-rate effect is stripped out, they offer a glimmer of good news. Despite the strength of the yuan, Chinese exports have increased by 5.9% so far this year in volume terms, an improvement over their 4.6% rise during the same period a year earlier. Looked at this way, global demand growth still seems weak, but at least it is edging up. ■

亚洲和世界经济

一个错误的评判标准

亚洲出口下跌并不意味着世界经济前景阴郁

东北亚的出口一直是世界经济健康状况的准确晴雨表。这个地区结合了日本的高科技奇迹、韩国和台湾的电子技术专长，以及中国在装配方面的实力，生产了将近四分之一的全球货物。这个庞大的系统现在似乎正在减速。今年4月，韩国的出口同比下降了8.1%，是两年来最糟糕的数字。中国的出口同比下降6.4%。台湾和日本的出口也十分低迷。这些疲软的数字似乎表明，世界经济会重新陷入恐慌。而事实上，亚洲的出口早已不再是全球需求可靠的晴雨表了。

第一，有汇率波动的问题。公布的数据是按美元计算，这种惯例让亚洲本已糟糕的表现雪上加霜。美国仅仅购买亚洲出口产品的15%，但当美元像过去几年那么强劲之时，销往其他国家的出口值表面上会缩水。而按其他货币计算，或按数量计算，出口会比按美元计算更为强劲。汇丰银行的范力民（Frederic Neumann）指出，欧洲从亚洲的进口按欧元计算，一直在稳步攀升。

然而，即使在美元于2014年中期开始反弹之前，东北亚的出口与发达经济体的增长之间的联系也已经开始被打破。例如，过去三年中，东北亚的出口增长远比美国的经济增长缓慢（见图表）。

为什么会出现分化？一个可能的解释是，随着中国劳动力成本的上升，其他地区目前正从与东北亚的竞争中胜出。但是，这种解释经不起推敲：过去一年中，中国以外的亚洲新兴经济体的出口呈现出与东北亚相同的趋势。拉丁美洲和中东欧的出口表现则更糟。实际上，东北亚在全球出口中所占的份额从2011年的22%慢慢爬升到了去年的23%。

一个更好的理论是，东北亚的贸易结构本身已经发生变化。中国2001年加入WTO后，全球企业都争先恐后地把供应链从它们之前在亚洲的据点延伸

到中国。这引发了区域内半成品贸易的繁荣，这个网络通常被称为“亚洲工厂”，由日本和韩国生产许多最先进的部件，而由中国把它们组装成为成品。

随着中国开始向价值链的高端攀登，这一过程已明显放慢。苏格兰皇家银行的高路易（Louis Kuijs）算出，从2007年到今年初，中间部件占中国进口总额的比重已下滑了近11%。因此，要生产出同样数量的制成品所需要的亚洲内部贸易比过去少了。支持这一理论的还有，中国的出口尽管不稳定，但它已经比亚洲工厂的其他国家更具弹性。过去两年中，按美元计算，中国出口的年均增长为6%。韩国和台湾的出口仅上升了2%，而日本出口则下降了6%。

随着区域供应链越来越集中在中国国内，中国的出口如今可能变成了世界经济更好的晴雨表。如果剔除汇率影响，中国的出口还带来了一点好消息。尽管人民币坚挺，今年以来，中国的出口量增加了5.9%，比去年同期4.6%的增幅有所上升。从这个角度看，尽管全球需求增长仍显疲软，但至少它在缓步上升。■

The world economy

Watch out

It is only a matter of time before the next recession strikes. The rich world is not ready

THE struggle has been long and arduous. But gazing across the battered economies of the rich world it is time to declare that the fight against financial chaos and deflation is won. In 2015, the IMF says, for the first time since 2007 every advanced economy will expand. Rich-world growth should exceed 2% for the first time since 2010 and America's central bank is likely to raise its rock-bottom interest rates.

However, the global economy still faces all manner of hazards, from the Greek debt saga to China's shaky markets. Few economies have ever gone as long as a decade without tipping into recession—America's started growing in 2009. Sod's law decrees that, sooner or later, policymakers will face another downturn. The danger is that, having used up their arsenal, governments and central banks will not have the ammunition to fight the next recession. Paradoxically, reducing that risk requires a willingness to keep policy looser for longer today.

> *The smoke is clearing*

The good news comes mainly from America, which leads the rich-world pack. Its unexpected contraction in the first quarter looks like a blip, owing a lot to factors like the weather. The most recent data, including surging vehicle sales and another round of robust employment figures, show that the pace of growth is rebounding. American firms took on 280,000 new workers last month. Bosses are at last having to pay more to find the workers they need.

In other parts of the rich world things are also looking up. In the euro zone unemployment is falling and prices are rising again. Britain's recovery has

lost a bit of puff, but strong employment growth suggests that expansion will continue. Japan roared ahead in the first quarter, growing by 3.9% at an annualised rate. A recovery so broad-based and persistent is no fluke.

Inevitably fragilities remain. Europe is deep in debt and dependent on exports. Japan cannot get inflation to take hold. Wage growth could quickly dent corporate earnings and valuations in America. Emerging economies, which accounted for the bulk of growth in the post-crisis years, have seen better days. The economies of both Brazil and Russia are expected to shrink this year. Poor trade data suggest that Chinese growth may be slowing faster than the government wishes.

If any of these worries causes a downturn the world will be in a rotten position to do much about it. Rarely have so many large economies been so ill-equipped to manage a recession, whatever its provenance, as our "wriggle-room" ranking makes clear. Rich countries' average debt-to-GDP ratio has risen by about 50% since 2007. In Britain and Spain debt has more than doubled. Nobody knows where the ceiling is, but governments that want to splurge will have to win over jumpy electorates as well as nervous creditors. Countries with only tenuous access to bond markets, as in the euro zone's periphery, may be unable to launch a big fiscal stimulus.

Monetary policy is yet more cramped. The last time the Federal Reserve raised interest rates was in 2006. The Bank of England's base rate sits at 0.5%. Records dating back to the 17th century show that, before 2009, it had never fallen below 2%; and futures prices suggest that in early 2018 it will still be only around 1.5%. That is healthy compared with the euro area and Japan, where rates in 2018 are expected to remain stuck near zero. When central banks face their next recession, in other words, they risk having almost no room to boost their economies by cutting interest rates. That would make the next downturn even harder to escape.

The logical answer is to get back to normal as fast as possible. The sooner interest rates rise, the sooner central banks will regain the room to cut rates again when trouble comes along. The faster debts are cut, the easier it will be for governments to borrow to ward off disaster. Logical, but wrong.

Raising rates while wages are flat and inflation is well below the central bankers' target risks pushing economies back to the brink of deflation and precipitating the very recession they seek to avoid. When central banks have raised rates too early—as the European Central Bank did in 2011—they have done such harm that they have felt compelled to reverse course. Better to wait until wage growth is entrenched and inflation is at least back to its target level. Inflation that is a little too high is a lot less dangerous for an economy than premature rate rises are.

Because America's recovery is strongest, that is where debate about how fast to return monetary policy to normal is fiercest. Hawkish voices at the Fed argue that, with unemployment below 6% and hiring continuing at a torrid pace, it is plainly time to start raising interest rates. In this view, wages and prices are bound to pick up in future. Meanwhile excessively low rates are inflating asset prices and creating long-run financial risks. Those risks are real but manageable. Regulators have the ability to let the air out of asset prices by tightening rules on leverage and liquidity. An economy at full employment and with a healthy level of inflation will be better positioned to withstand a bout of financial instability than one that is flirting with deflation.

The best defence

Governments can also do their bit. There has still been shamefully little growth-boosting investment in infrastructure. The OECD, a club of mostly rich countries, was right to rap George Osborne, Britain's finance minister, on the knuckles for the scale and pace of his proposed public-spending cuts. Growth is better than austerity as a policy for bringing debts under

control. Governments should instead direct their energies towards overdue reforms to product and labour markets. Open product markets encourage enterprise. The freedom to hire workers under flexible contracts is the best way to keep people out of unemployment. Both reforms make an economy better able to cope with the next shock.

Having fought off the effects of the financial crisis, governments and central banks are understandably eager to get back to normal. The way to achieve their goal is to allow the recovery to gather strength first. ■

世界经济

当心

下一次经济衰退来袭只是时间问题。而富裕世界尚未准备好

这场奋战漫长且艰辛。不过纵观富裕世界遭受重创的各经济体，现在是时候宣布对抗金融混乱和通货紧缩的战斗取得胜利了。国际货币基金组织称，各发达经济体的经济今年都将增长，这是自2007年以来的第一次。自2010年以来富裕世界的经济增长将首次超过2%，美国央行有可能提高已经触底的利率。

但是，全球经济仍然面临着各种各样的隐患，从希腊债务危机到中国动荡的市场。极少经济体能走过十年而不陷入衰退，美国经济是从2009年开始增长。按照索德定律，政策制定者们迟早将面临下一次经济衰退。危险在于，各国政府和央行已经用光了弹药，在面对下一场经济衰退时将赤手空拳。自相矛盾的是，降低这一风险需要愿意在今天更长久地保持更宽松的政策。

烟雾正散去

好消息主要来自富裕世界的领头羊美国。第一季度美国的意外紧缩看起来是暂时的，主要出于天气等原因。最新数据，包括飙升的汽车销量和另一轮强劲的就业数据均显示增长速度正在回升。上月美国公司招聘了28万名新员工。终于，老板们开始需要多付薪水才能雇到所需的员工。

在富裕世界的其他国家，情况也在好转。欧元区失业率在下降，物价也开始上涨。英国的复苏虽然见缓，但强劲的就业增长表明经济发展仍将继续。日本第一季度高歌猛进，年化增长率达3.9%。如此广泛且持久的经济复苏绝非偶然。

薄弱之处仍在，这一点无可避免。欧洲负债累累，依赖出口。日本无法保持通胀状态。美国的工资增长可能很快削弱企业盈利和估值。新兴经济体贡献了金融危机之后几年大部分的经济增长，它们曾有过更好的光景。今

年巴西和俄罗斯的经济预计都将萎缩。糟糕的贸易数据显示，中国经济增长放缓的速度可能比政府希望的更快。

如果这些担忧中的任何一项导致经济衰退，整个世界将陷入泥潭，无能为力。无论经济危机源自何处，很少有这么多大型经济体在应对时如此捉襟见肘，我们的“腾挪空间”排名清楚地显示了这一点。富裕国家平均负债率（债务占GDP的比例）自2007年以来上涨了50%。英国和西班牙的债务已经翻了一倍还多。没人知道上限在何处，但想要大举开支的政府必须战胜不安的选民和紧张的债权人。那些很难借助债券市场的国家，如欧元区边缘国家，可能无法推出大规模的财政刺激方案。

货币政策则更加受限。美联储上一次提高利率是在2006年。英国央行的基准利率为0.5%。自17世纪以来的记录显示，2009年之前，基准利率从未低于2%；而未来价格显示，到2018年初，基准利率将仍然只在1.5%左右。而相比之下这还算健康，欧元区和日本的利率到2018年预计仍将接近于零。换言之，当这两家的中央银行面临下一次经济衰退时，它们可能几乎毫无空间通过降息来刺激经济。这会让下一次经济衰退更加难以摆脱。

顺理成章的答案是要尽快恢复正常利率水平。利率上涨得越快，当麻烦出现时，央行就能越快重获空间再度降息。债务削减得越快，政府就越容易通过贷款避免灾难。这符合逻辑，但却是错误的。

在工资较低、通胀远低于央行目标的情况下，提高利率有可能将经济推回到通货紧缩的边缘，从而陷入原本试图避免的经济衰退。当央行过早提高利率，恰如欧洲央行在2011年所做的，结果都造成了巨大损害，令它们感到不得不扭转进程。最好等到工资增长稳定下来、通货膨胀至少回到目标水平之时，再考虑加息。对于一个经济体而言，稍微偏高的通胀水平比过早加息安全得多。

因为美国的复苏最为强劲，该国关于货币政策要多快回归正常的争论也最为激烈。美联储中鹰派的意见是，目前失业率低于6%，招聘仍在迅猛增长，显然已经到了开始加息的时候了。按照这一观点，工资和物价水平未

来一定会上涨。同时过低的利率会导致资产价格膨胀，产生长期金融风险。这些风险的确存在，但仍然可控。监管机构有能力通过收紧与杠杆率和流动性有关的法规来挤掉资产价格中的水分。比起为通货紧缩所扰的经济体，一个就业充分、通胀水平健康的经济体更能够承受住一场金融波动。

最好的防守

政府也可以尽其所能。在基础设施方面促进经济增长的投资仍然少得可怜。主要由富裕国家组成的经合组织（OECD）严厉斥责英国财政大臣乔治·奥斯本（George Osborne）提出的公共支出削减计划的规模和速度，这是对的。作为控制债务的政策，促进增长好过紧缩。政府应当将精力转向早该进行的商品和劳动力市场改革。打开商品市场是对企业的鼓励。能以灵活的合同自由雇用员工是让人们摆脱失业的最佳方法。两方面改革都能让经济更好地应对下一次冲击。

摆脱了金融危机的种种影响，各国政府和央行迫切希望回归正常，这一点可以理解。要达到它们的目标，首先要让经济复苏积攒力量。■

Parental leave

More hands to rock the cradle

Both parents should be paid to spend time at home with their babies

"IN AMERICA there is nothing we wouldn't do for moms—apart from one major thing," said John Oliver, a British-born comedian, in his television show, "Last Week Tonight", on May 10th (Mother's Day). The "major thing" he was speaking of is paid maternity leave, which, as he pointed out, is standard in all but two of 185 countries surveyed by the International Labour Organisation (ILO): America and Papua New Guinea. In America some women who work for the federal government or larger firms can take 12 weeks' leave unpaid after giving birth. In a handful of states new mothers get a few weeks at a low wage, funded by a payroll tax. By contrast, in Britain new mothers can take a year off, and during much of it part of their salary is replaced by the government. Sweden grants more than a year's paid maternity leave—even to women who were not previously employed.

America would do well to take note. Many countries are proud of their maternity leave, and rightly so: the social and economic benefits of making it possible for working mothers to spend time with their newborn children are clear. But many of those countries have failed to follow the argument through to its conclusion. The gains from maternity leave would be multiplied if countries extended it to apply to fathers, too.

Mothers who struggle to combine work with child care often sacrifice work. That lowers their lifetime earnings and leaves them and their children more likely to end up poor. Much of Europe introduced paid maternity leave in the 1970s. Since then dozens of other countries have found that giving new mothers a reasonable amount of time off work—the ILO recommends at least 14 weeks—increases women's participation in the labour force.

But there are problems. Overly generous provision sometimes harms women, rather than helping them. Those who take long spells off work see their skills grow rusty and fail to gain experience and promotions. And although gender discrimination at work is illegal almost everywhere, some employers still avoid hiring women they think will be away a lot.

Paid paternity leave can help. Nearly half the world's countries now offer new fathers short periods at home; a growing number let mothers cede some maternity leave to their partners while they go back to work. Several European countries have started to reserve some of that leave for fathers to encourage them to make use of the opportunity: in Sweden couples get an "equality bonus" for splitting their time off more evenly.

Fathers and offspring benefit. When a woman hands her baby to the father and heads out of the door to work, he learns how to be a better parent. The hands-on habits he picks up persist: fathers who take even short paternity leave play a bigger role in child-rearing years later. An international study found that they were more likely to brush their toddlers' teeth, feed them and read to them. Babies whose fathers take paternity leave go on to do better in cognitive tests at school. Fathers are generally keen on their progeny, so some time to bond with them is a boon. Some men who thought that child care would not be much fun discover that they rather like it.

Mothers are big winners, too. If both sexes are likely to take time off for child care, there is less temptation for employers to discriminate against women. Time-use studies show that even when both parents work the same amount, the mother usually does more child care and housework. More hands-on fathering should cut down on this "second shift", which is a big reason why many mothers work part-time or in jobs for which they are overqualified.

That leads to gains for society as a whole. Few young women these days expect to have to choose between motherhood and work. In most countries they are now better educated than their male peers, which suggests that careers figure prominently in their plans—and makes losing them from the workforce an even bigger waste. Parental leave that is generous, but not too generous, is essential if mothers are not to be forced out of work by lack of support, or eased out by a surfeit of it. And ensuring that fathers take a share of it minimises the risks and amplifies the gains. ■

育婴假

多个帮手摇摇篮

新生儿的父母双方都应该获得带薪假来照顾孩子

“在美国，我们愿意为妈妈们做任何事，只有一件大事除外。”5月10日（母亲节），英国出生的喜剧演员约翰·奥利弗（John Oliver）在他主持的电视节目《上周今晚》（Last Week Tonight）中这样说道。他说的“大事”是带薪产假。这种休假，如他所说，在国际劳工组织（ILO）调查的185个国家中都是标准福利，唯美国和巴布亚新几内亚两国除外。在美国，一些为联邦政府或较大企业工作的妇女可以在分娩后享受12周无薪假。在少数几个州，新妈妈们获得几周由薪资税资助的低薪假。相比之下，英国的新妈妈们有一年产假，这一年的大部分工资由政府支付。瑞典提供超过一年的带薪产假，即使没工作过的妇女也能享受。

美国应该提起注意。许多国家对它们提供的产假很自豪。理当如此：让职业女性能花时间和她们刚出生的孩子在一起，带来的社会和经济效益都显而易见。但这些国家大多没能把这套观点贯彻到底。如果它们能把产假也提供给父亲们，好处会加倍。

那些难以做到上班、带孩子两不误的妈妈们常牺牲工作。这减少了她们的收入，让她们和孩子更可能成为穷人。欧洲大部分地区在上世纪70年代开始推行带薪产假。自那时起，其他几十个国家已经发现，给新妈妈们放假适量时间会增加妇女参加工作的比例。国际劳工组织建议至少给予14周假期。

> *爸爸和妈妈*

但这有其问题。太过慷慨的福利有时给女性带来了害处而非帮助。那些离职很久的人发现自己的技能变生疏，未能获得经验和升职。而虽然几乎在任何地方，职场性别歧视都属于违法，一些雇主仍认为女性常要休假而避免聘用她们。

给男性提供带薪育婴假会有帮助。目前全世界有近一半国家向新爸爸们提供短假期。越来越多国家让妈妈们把一些产假留给伴侣，自己回去工作。一些欧洲国家已经开始为爸爸们保留一些产假，鼓励他们利用这一机会。在瑞典，夫妻两人如果更平均地分用产假，会获得“平等奖金”。

这对爸爸和孩子有益。当女性把孩子交给爸爸，自己离家去上班，他会学习如何成为更好的父亲。他通过亲身实践积累的习惯将持续下去：即使是休短期育婴假的父亲，多年后在抚育孩子中发挥的作用仍比其他父亲更多。一项国际研究发现，他们给孩子刷牙、喂食、朗读的可能性更大。休育婴假的男性的孩子日后在学校认知测试中的表现也更好。父亲们普遍热爱自己的后代，因此若他们能花一段时间和孩子建立联系大有裨益。一些男性本以为带孩子这件事不好玩，结果却发现自己乐在其中。

妈妈们也成了大赢家。如果男女双方都有可能休假来照顾孩子，那么雇主们歧视女性的诱因就会减少。对时间使用的调查显示，即使父母两人工作量相同，妈妈带孩子和做家务通常都更多。若有更多亲力亲为的父亲，应该会减少女性的这种“第二份工”。它是许多母亲选择兼职，或在大材小用的职位上工作的一大原因。

整个社会将从中受益。如今很少有年轻女性预期自己不得不在带孩子和上班之间做选择。如今在大部分国家，她们比同龄男性受教育的程度更高，这显示职业在她们的人生计划中地位显要。由此，在劳动力大军中损失这部分人群就是更大的浪费。如果不想让妈妈们因为缺乏支持而被迫离职，或者因为获得的支持过多而在职场中被淘汰，那么优厚但不会过于优厚的产假至关重要。而确保爸爸们分得假期的一部分将减少这种风险而放大收益。 ■

Deutsche Bank and HSBC

In hole, still digging

Restructuring continues at two of the world's universal banks

ALL houseguests are said to bring pleasure: some when they arrive, others when they leave. The same could be said of banking bosses and the strategies they champion. The surprise ousting on June 6th of Deutsche Bank's embattled co-bosses, Anshu Jain and Jürgen Fitschen (who will leave the bank in June and in May 2016 respectively), caused its share price to jump by 8%. Meanwhile, a new strategy at HSBC, hemming in its investment bank and expanding in Asia, was greeted by investors with the enthusiasm usually reserved for visiting in-laws (shares dropped by 1%).

The travails of Deutsche and HSBC are distinct but related: international jack-of-all-trade banks are out of fashion. The cost of running them has spiralled. Regulators who fret they will one day have to bail out these horribly complex global institutions demand that banks finance themselves with more equity (cash from shareholders) rather than cheaper funds borrowed from depositors or in money markets. Compliance costs have ballooned, alongside multi-billion-dollar fines for fiddling currency markets and interest rates or facilitating money-laundering and tax-dodging, among many other trespasses.

Bosses such as HSBC's Stuart Gulliver (and Jamie Dimon of JPMorgan Chase before him) have sought to reassure investors that the benefits of running a global giant still outweigh the hassle. But estimates of the revenue generated by being global, and of the savings reaped by different bits of the firm sharing the same infrastructure, often appear to be plucked out of thin air. In contrast, the fines and capital-raisings are all too tangible for frustrated shareholders.

Many wonder whether the big banks' parts might not be worth more than the whole. Returns on equity at universal banks typically languish in the single digits—just 2.6% for Deutsche and 7.3% for HSBC in 2014—well below the 10% or more shareholders are assumed to expect. Investors value Deutsche at just 0.6 times the value of its tangible net assets (ie, excluding woolly things such as the value of its brand); in theory it would be better off winding itself up and returning the proceeds from the sale of its investments to aggrieved shareholders. HSBC is valued at just over tangible net assets, but it still lags behind most rivals (see chart).

Assuming bosses ignore the calls to dismember banks, they still have to decide what the right mix of businesses should be. That is no easy task given ever-changing regulations, which have hampered bond-trading giants such as Deutsche in particular. Regulators in effect squashed a plan preferred by Mr Jain to split Deutsche into a red-blooded investment bank, probably based in London, and a staid German lender headquartered in Frankfurt.

The more timid alternative that was ultimately plumped for, which involves reversing the recent acquisition of Postbank, a German retail lender, only frustrated all parties. Investors wondered whether Deutsche's bosses were ready to take the sort of decisive actions some rivals had. Only 61% of shareholders backed management in a non-binding vote on the plan last month. Analysts were bewildered by the lack of detail around promised cost cuts. Unions demanded change at the top.

The workers may soon rue that. The incoming boss, John Cryan, was once the chief financial officer at UBS, a Swiss rival that all but shut down its markets arm. He brings with him a cost-slashing expertise that Deutsche has sorely lacked. Unlike Mr Jain, however, he speaks fluent German, which should earn him points in Frankfurt. German newspapers from the left-leaning *Süddeutsche Zeitung* to the business-minded *Handelsblatt* are

urging Mr Cryan to return to a "boring" model of lending to German families and firms.

Mr Cryan's strategic options look limited. Cuts at what will remain of the German retail bank are clearly a priority—costs guzzle a whopping 80% of revenue. He may be less sentimental than Mr Jain when it comes to lopping off bits of the investment bank, which is one way to strengthen Deutsche's balance-sheet without tapping shareholders for more money. But investors originally elated by the change of guard now wonder if there won't be more of the same under Mr Cryan. After all, he has been on Deutsche's board since 2013, so had a hand in the underwhelming new strategy. The leap in the share price that followed news of Mr Jain's departure over the weekend had largely subsided by Tuesday.

HSBC has more room for manoeuvre. Like Deutsche, it is depriving its investment bank of capital, cutting risk-weighted assets by $140 billion so as to shrink it from 40% to less than 33% of the group. Unlike Deutsche, it has plenty of lucrative places to invest the freed-up money. Its new strategy is to refocus on Hong Kong. It will leave Brazil and Turkey, and shrink its staff of 266,000 by almost a fifth.

HSBC is in effect gingerly reversing a 20-year policy of diversifying away from Asia, where 39% of its revenues but 82% of its profits are generated. That carries risks, most obviously of a further slowdown in China or other upheaval in emerging markets. But the return on equity at its main Asian subsidiary is 16-17%. Even so, the management is only aiming for an overall return on equity of 10% by 2017—one reason for the lukewarm response from investors. Nor will they know for months if it plans to relocate from London to Hong Kong, as it has sporadically threatened.

Yet HSBC's strategy at least has the virtue of being clear. Deutsche by contrast still doesn't know what it wants to be. Like HSBC, it weathered the

financial crisis better than some (both at least avoided a bail-out) but lost focus afterwards. Mr Jain was unable to paint a clear picture of its future, and has paid the price.

德意志银行与汇丰银行

泥沼之内，越挖越深

世界两大全能银行仍在重组

据说，家中暂住之客总会带来欣喜：要么在到访之时，要么在临别之际。银行老板和他们所拥戴的战略也是一样。6月6日，德意志银行突然宣布其四面楚歌的联席CEO安舒·贾恩（Anshu Jain）和于尔根·菲辰（Juergen Fitschen）将分别在当月及2016年5月离任，此消息推动该银行股价蹿升8%。同时，汇丰银行宣布新战略，收缩投资银行业务，并在亚洲扩大发展。这一消息招致的却是姻亲登门般的尴尬冷遇（股价下跌1%）。

德意志银行和汇丰银行的苦难历程各不相同，但亦有关联：全球性大型银行已经过时。这类银行的运营成本不断上升。监管者担心终有一天要出手给这些异常复杂的全球性机构纾困，所以要求银行必须充实资本金（股东提供的资金），而非依靠从存款人处或在货币市场上借得成本较低的资金。合规成本激增，此外，操纵货币市场和利率或协助洗钱及偷税等违规活动面临的是数十亿美元的罚款。

前有摩根大通的杰米·戴蒙（Jamie Dimon），现在是汇丰银行总裁欧智华（Stuart Gulliver），这些银行高层都试图安抚投资者，表示全球性大型银行集团运营起来仍是利大于弊。但通过全球化运作能产生多少收益，以及公司内不同部门共享同一套基础设施能节约多少成本，这些估算得出的数字听来往往像信口开河。相反，罚款及筹措的大笔资本金却是实实在在展现在失望的股东眼前。

许多人怀疑大银行的分支加总起来也许并不比整体更值钱。全能银行的股本回报率一般徘徊在个位数（2014年德意志银行仅为2.6%，而汇丰为7.3%），远低于股东普遍期望的“至少10%”。投资者对德意志银行的估值仅为其有形净资产价值（去除品牌价值这类无形部分后）的0.6倍；理论上，这还不如干脆就此清算，出售其投资，把所得收益返还受损的股东。汇丰的估值只是稍高于其有形资产净值，仍落后于大部分竞争对手（见图

表）。

纵使老板们无视要求拆分银行的呼声，他们仍必须决定合适的业务结构。这绝非易事，由于法规变动不断，对德意志银行这类债券交易巨头而言尤为掣肘。贾恩本来倾向采用一个计划，把德意志银行分为两部分：一家充满活力的投资银行（可能设在伦敦）以及一家沉稳持重的德国商业银行（总部在法兰克福）。但监管当局实际上否决了这一计划。

一个更畏首畏尾的替代方案最终被抛出，其中涉及逆转集团之前对零售银行德国邮政银行（Postbank）的收购行动，结果徒令各方失望。投资者们怀疑德意志银行的高层能否像其部分对手那样采取果决的行动。在5月份对此方案的非约束性投票中，只有61%的股东支持管理层的决定。分析师们对缺乏详细说明的成本削减承诺感到困惑。工会则要求改换高层。

员工们也许马上会为此而哀叹。即将上任的新总裁约翰·克莱恩（John Cryan）曾是瑞银的首席财务官，而瑞银几乎完全关闭了其投行部。克莱恩具备大刀阔斧削减成本的专长，这是德意志银行极度缺乏的。与贾恩不同的是，他能讲一口流利的德语，这应该能为他在法兰克福赢得优势。从左倾的《南德意志报》（Süddeutsche Zeitung），到在商言商的《德国商报》（Handelsblatt），德国报纸纷纷促请克莱恩回归“沉闷”模式，为德国家庭及公司提供贷款。

而克莱恩的战略选项似乎有限。对这家德国零售银行余下业务部门的裁减显然是头等大事——成本吞掉了高达80%的收入。要砍掉部分投资银行业务，克莱恩可能没有贾恩那么眷恋不舍，这是无须向股东筹募更多资金而能强化德意志银行资产负债表的一个办法。但原本为换帅而欣喜的投资者如今又在想，在克莱恩的管治下，接续而来的会不会其实如出一辙。 毕竟他从2013年就已进入德意志银行董事会，因此也参与制订了这个平庸无奇的新战略。贾恩离任消息传出的那个周末，德意志银行股价飙升，但到周二就基本平复下来了。

汇丰银行则有更大的回旋余地。与德意志银行一样，汇丰正在收紧其投资

银行业务，削减1400亿美元的风险加权资产，使其占资产总额的比例从40%下降到33%不到。有别于德意志银行的是，对于这些释放出来的资金，汇丰有大量盈利可观的地方可以投资。它的新战略是重新聚焦于香港。汇丰将从巴西和土耳其抽身，并将其26.6万名员工裁减约五分之一。

汇丰20年前的策略是要走出亚洲，多元化经营，如今实际上是小心翼翼地走回头路。如今它39%的收入、82%的利润源自亚洲。这自有风险，最明显的是中国经济可能进一步放缓，或是新兴市场出现其他动荡。但汇丰主要的亚洲子公司股本回报率是16%至17％。尽管如此，管理层对于公司到2017年整体股本回报率的目标仅为10%——这是投资者反应冷淡的原因之一。 究竟汇丰会否像其不时威胁的那样把总部从伦敦迁至香港，没有一年半载投资者也难以明了。

然而，汇丰至少有一个优点，它的战略清晰明确。相比之下，德意志银行仍是一片迷惘。两者都经受过金融危机的考验，表现胜于部分银行（至少都无须政府纾困救助），但之后发展都失去了焦点。贾恩无法为德意志银行描画清晰的未来，为此他已付出了代价。■

Greece and the euro

My big fat Greek divorce

Greece and the euro zone are stuck in an abusive relationship

IT IS never pleasant to watch a relationship founder. Greece's prime minister, Alexis Tsipras, has charged its creditors with trying to humiliate the country; he has accused the IMF of "criminal responsibility" for Greece's suffering. Prominent euro-zone politicians are saying openly that, without a deal to release rescue funds in the next few days, default and "Grexit" loom.

The urgency is because of a repayment of €1.5 billion ($1.7 billion), which Greece seemingly cannot afford, to the IMF on June 30th and because Greece's European bail-out expires that day. Cue the last-ditch negotiations that have become a Euro-speciality: just after *The Economist* went to press, finance ministers were to assemble in Luxembourg; leaders may meet over the weekend; a European Union summit is scheduled at the end of next week. It may come down to a head-to-head between Mr Tsipras and Angela Merkel, Germany's chancellor. A deal is still possible, but the sides have come to loathe each other. If this were a marriage, the lawyers would be circling.

Divorce would be a disaster—for everyone. The trouble is that, unless Greece and the euro zone change the terms of their relationship, staying together would not be a great deal better.

> *Exit Greece, stage far-left*

To see why, start with the results of a default and Grexit. After arguing on and off for five infuriating years, some have begun to welcome the prospect. They are making a mistake.

For Greece the gains from defaulting would be slight, and the costs potentially vast. True, the country could walk away from debts of €317 billion, or almost 180% of GDP. But that is worth less to Greeks than it sounds. Although the debt is huge, it is at bargain-basement interest rates and repayable over decades. Interest payments until the early 2020s are just 3% of GDP a year. Even for Greece, that is manageable. Nor would leaving the euro do much good. In theory, with a new drachma and its own central bank, Greece could devalue and gain competitiveness. But Greece's trade is modest. And it has already lowered nominal wages by 16% without a boom in exports.

By contrast, the cost of Grexit would be exorbitant: bust banks, slashed savings, broken contracts and shattered confidence. Politics could be devastated. Syriza, Mr Tsipras's hard-left party, is anti-market and anti-enterprise. Neo-fascist Golden Dawn and the Communists, with a combined 12% of the vote, would thrive. Most of the parties in the middle, already discredited, would struggle. This week Mr Tsipras was due to play footsie with Vladimir Putin in Russia. Ejected from the euro, and possibly the EU, a country with a history of coups would risk becoming violent and even more corrupt.

That is one reason for the euro zone to think twice before ditching Greece. A failing state on the Aegean would be the EU's problem regardless of whether its politicians accepted bribes in euros or drachmas—indeed, it would be a greater and less tractable problem than Greece is today. In addition, monetary union was supposed to be irrevocable. If, in fact, its members risk ejection, then contagion will be more likely to spread to other vulnerable economies, such as Portugal and Cyprus—if not in this crisis, then in the next.

Some people, including possibly Mr Tsipras, have concluded that the price of Grexit is so high that Greece can count on the euro zone giving ground at

the last minute. But that is reckless. If the euro is to endure, its rules must be enforceable. So long as the monetary union is forged between sovereign states the principles of irrevocability and enforceability are contradictory. Yet you can be sure there is a limit to what the euro zone will tolerate—even if nobody knows where it lies.

> *Till debt do them part*

The upshot is that Grexit is a process, not an event. Even if talks fail, even if Greece defaults, even if it introduces capital controls and the government starts to issue paper IOUs because no more euros are left—even then, a referendum or a new government could still offer Greece a way back.

But a deal is a process, too. Though it would doubtless be hailed as a triumph, it would mark only a step towards the eventual restructuring of Greek debt. Trust is so low and Greece's reluctance to honour its pledges so evident, that each slug of new rescue money will depend on Greece showing that it has kept its side of the bargain. Such conditionality is necessary and economically desirable (see Free exchange), but in today's poisoned environment comes at a high cost. Relations between the euro zone and Greece are defined in terms of the "concessions" each has screwed out of the other. The marriage may endure, but even more unhappily than before.

A change of mindset is needed. Both sides have bungled the Greek crisis. Especially at the outset, the creditors put too much weight on rapid fiscal adjustment, in a doomed attempt to limit the size of Greek debt. As well as needlessly impoverishing Greece (GDP has shrunk 21% since 2010), this was a distraction from the real task, which is to sort out the structural impediments to growth—rampant clientelism, hopeless public administration, comically bad regulations, a lethargic and unreliable justice system, nationalised assets and oligopolies, and inflexible markets for goods and services and labour.

But Mr Tsipras has made a bad situation worse. In 2014 the Greek economy grew. Now it is shrinking again, partly because Syriza has proved incompetent and even more clientelist than its predecessors. But also because posturing in negotiations has absorbed all Syriza's attention and set the country back years. The need for a crisis to bring the talks to a head and to wring concessions from the other side has wrecked market confidence. Capital has flooded out of the banking system. Investors have kept away. Every reform has become a bargaining chip that must not be traded away before a deal and will not be exceeded once a deal has been struck. The idea that reform is actually good for Greece has been lost.

Most Greeks want to stay in the euro. But their politicians still look to Berlin for salvation, rather than to reform at home. Greece must understand that, if this does not change, the creditors will lose patience. Avoiding divorce would be better for everyone. But this marriage is not worth saving at any price. ■

希腊和欧元

我盛大的希腊式离婚

希腊和欧元区陷入交恶

目睹一段关系破裂从来都不好玩。希腊总理齐普拉斯谴责债权人成心“羞辱”希腊；他指责IMF对希腊的困境负有“刑事责任”。显赫的欧元区政治家们公开表示，如果今后几天不能就提供援助基金达成协议，违约和“希腊退欧”（Grexit）正在逼近。

形势紧迫是因为希腊要在6月30日向IMF偿付15亿欧元（17亿美元），而它看起来拿不出这笔钱，同时希腊的欧洲纾困方案将在这一天到期。请关注已经是欧元特色的最终谈判：就在本期《经济学人》出版后，各国财长齐聚卢森堡；本周末各国首脑可能会面；欧盟峰会按计划将在下周末召开。归根到底可能是齐普拉斯与德国总理默克尔之间的针锋相对。仍有可能达成协议，但双方已经开始彼此嫌弃。如果这是一场婚姻，律师们要忙得团团转了。

无论对谁而言，离婚都会是一场灾难。麻烦在于，除非希腊和欧元区改变它们之间的关系模式，否则待在一起也好不到哪里去。

> *希腊退场，极左登台*

究其原因，先来看违约和“希腊退欧”的结果。五年来断断续续的争吵令人愤怒，有些人已经开始期待这样的收场。如果这么做，那他们将铸就大错。

对希腊而言，违约的收益甚微，而潜在的损失巨大。诚然，希腊可以摆脱3170亿欧元的债务，这几乎相当于其GDP的180%。但这对希腊仍是得不偿失。尽管债务庞大，但利率极低，且允许在几十年内偿付。到2020年代早期，利息支付仅占每年GDP的3%。就算是希腊应该也能应付。退出欧元区也不见得多好。理论上，有了新的货币和自己的央行，希腊可能会让本币贬值，以增强竞争力。但是希腊的贸易规模不大。而且它已经将名义工资

降低了16%，却并未提振出口。

相对而言，希腊退欧的代价将非常高昂：银行破产、储蓄大跌、合同破裂、信心破灭。政治上也可能是灭顶之灾。齐普拉斯所在的极左政党“左翼激进联盟”（SYRIZA）持反市场、反企业的立场。新法西斯主义的金色黎明党和希腊共产党将抬头，它们共有12%的选票。而已经名誉扫地的大部分中间政党将苦苦挣扎。本周齐普拉斯已悄悄赴俄和普京眉来眼去。如果被逐出欧元区，甚至被踢出欧盟，这个有着政变历史的国家可能会变得暴力，甚至更加腐败。

这也是欧元区在抛弃希腊前需要三思的原因之一。爱琴海上一个失败的国家可能成为欧盟的麻烦，无论该国的政客接受的贿赂是欧元还是德拉克马（希腊曾经的货币），其实这个问题都将更严重，而且会比现在希腊的情况更难驾驭。另外，货币联盟应当是不可撤销的。如果其成员面临被逐，那么危机可能将蔓延到其他脆弱的经济体如葡萄牙和塞浦路斯，即便不是这次经济危机，也会在下一次。

有些人，可能包括齐普拉斯，得出的结论是“希腊退欧”代价太大，因此希腊可以指望欧元区在最后一刻让步。这种想法太过草率。如果欧元区要维持下去，那么它的规则必须得以执行。只要货币联盟由主权国家建立，不可废止性和可执行性的原则就会互相抵触。但是可以肯定，欧元区能忍受的有限，尽管没人知道底线在哪儿。

> *债务临头，劳燕分飞*

结论是希腊退欧会是一个过程，而不是一个事件。即便谈判破裂，即便希腊违约，即便希腊实行资本管制，政府因为欧元所剩无几开始“打欠条”——即便到那时，一场全民公投或者一届新的政府依然能为希腊提供一条退路。

但达成协议同样也是一个过程。尽管协议的达成最终毫无疑问会被吹嘘成一场胜利，但它只是迈向希腊债务最终重组的一小步。互信程度如此之低，希腊不想遵守诺言又是如此之明显，导致新的援助资金每一分钱是否

给出都要看希腊是否能表明遵守了协议条款。这样的限制是必要的，从经济角度看可取，但在眼下恶劣的大环境下，却代价高昂。希腊与欧元区的关系被界定为两者从对方身上获得的“让步”。婚姻可能会继续，但痛苦尤甚于前。

有必要改变思路。双方在希腊危机中都应对失措。特别是在刚开始，债权人过于强调迅速的财政调整，试图以此缩减希腊债务，但注定以失败告终。这在毫无必要地洗贫希腊的同时（自2010年来GDP下降了21%），还偏离了真正需要做的工作，即厘清阻碍增长的结构性因素——猖獗的裙带关系、让人绝望的公共管理、荒唐的法律法规、反应迟缓不可信赖的司法体系、资产的国有化和垄断，以及不灵活的商品、服务和劳动力市场。

然而齐普拉斯进一步恶化了局势。2014年希腊经济出现增长，现在又陷入衰退，原因之一是左翼激进联盟领导无方，甚至比前任更奉行裙带主义。当然也因为强撑谈判消耗了其大量精力，让国家倒退回若干年前。谈判需要靠危机来推动，双方又殚精竭虑以求对方有所让步，这些都损害了市场的信心。资本从银行体系大量外逃。投资者退避三舍。每一项改革都成了谈判的筹码，在达成协议之前绝不允许有半分损失，在达成协议之后又不愿多进一步。改革事实上有利于希腊这个常识被人遗忘了。

大多数希腊人希望留在欧元区内。但是他们的领导人依然希望德国出手援助，而不是进行国内改革。希腊必须明白，如果这种现状不改变，债权人将会失去耐心。避免离婚对双方当然是更好的选择，但这场婚姻并不值得不惜一切来维持。■

Financing capital goods

Keeping the grease

Why GE is retaining one bit of its finance arm

THE headlines focused on the fact that GE, a big industrial conglomerate, is beginning to sell off its $500 billion finance arm in small chunks. In early June it put a $40 billion portfolio of corporate loans up for sale. But not all of GE Capital will end up on the block: GE is keeping the $90 billion division that finances purchases of medical equipment, power-generation gear and aeroplanes, or leases them to users. In part, that is because those fields are critical to GE: it makes all or part of the products being financed or leased. But it is also because the financing of old-fashioned capital goods is a booming business.

The gear GE sells is expensive; would-be buyers often lack the capital to buy it outright. For GE, therefore, the financial engineering that underpins the use of its wares is as important as the mechanical engineering that created them. Many hospitals, for instance, do not buy expensive scanners from GE, but lease them instead. When it develops improved versions, it helps the hospitals swap the new generation for the old, by passing the outmoded gear to another, thriftier institution, and so on down a long chain. By the same token, the sale of a plane that appears to be from Boeing to an airline may in fact be a sale to GE and a lease to the airline. In 85% of these cases, the plane will have engines made by GE or a joint venture.

Manufacturers have financed purchases of their own products for a long time, with mixed results. General Motors started its own finance operation, General Motors Acceptance Corporation (GMAC), in 1919, which helped it to expand its customer base and thus boosted its profits for decades. Eventually, and disastrously, GMAC expanded into mortgages. Just before the crisis, GM sold half of GMAC to raise money. Its subsequent collapse

and nationalisation contributed to GM's own bankruptcy in 2009.

Yet in 2010, shortly after GM had emerged from bankruptcy and while it was still under government control, it spent $3.5 billion in cash—a vast amount given its straitened circumstances—to purchase AmeriCredit, a Texan subprime auto lender. The company has since been renamed GM Financial. Its assets have grown from $11 billion to $49 billion in five years, an astonishing rate for a financial institution in recent years. China, where car-buyers are beginning to rely more on credit instead of buying with cash, is one area where it is growing fast.

Toyota continues to own a bank in America to help customers finance car purchases. BMW does as well. Car loans, after all, proved much more resilient during the crash than other forms of credit. For companies that do not have such financing arms, often because they use all the capital they can raise cheaply in their core business, a relationship with a finance firm is vital. This is all the more true, says Vincent Caintic of Macquarie, a bank, as ever stricter regulation makes it increasingly expensive for banks to offer car loans and the like.

Element Financial, a Canadian firm, has carved out a lucrative niche financing specific items, such as the railcars produced by Trinity Industries, an American conglomerate, and the small diggers made by Bobcat, part of a South Korean one. It went public in 2011 and its shares are up fourfold since (see chart). Over the same period, the S&P index of North American firms in financial services has not even doubled. ■

为资本产品提供融资

保住润滑剂

为何GE还保有部分金融部门

头版头条都在关注工业企业集团GE开始将其价值5000亿美元的金融部门分拆成小块出售。6月初它将400亿美元的企业贷款业务出售。但是并非整个GE金融（GE Capital）都会被卖掉：其中900亿美元的业务将会保留，为购买医疗设备、发电装置和飞机提供融资，或将这些产品出租。原因之一是这些领域对GE非常关键：因为那些向买家提供融资或租赁的产品整体或部分由GE制造。但也因为老式资本产品的融资正在蓬勃发展。

GE销售的设备非常昂贵，可能的买家常常缺乏资金直接购买。因此对于GE而言，支撑其产品使用的金融工程和创造产品的机械工程同样重要。比方说，很多医院并没有从GE购买昂贵的扫描仪，而是选择租用。开发出改进型号时，GE帮助医院以旧换新，将旧设备转手给另一家更为俭省的机构，从而形成长链。同样的道理，看起来由波音卖给航空公司的飞机实际上可能是卖给了GE，再由GE租给航空公司。在85%的此类情况中，这架飞机上有GE或它旗下合资企业生产的引擎。

生产商为客户购买自己的产品提供融资已有时日，但结果多种多样。通用汽车自1919年起开展自己的金融业务，成立通用汽车金融服务公司（GMAC），此举帮助它扩大了客户基础，从而促进利润增长达数十年之久。但最终，GMAC灾难性地扩展到了抵押贷款领域。就在金融危机之前，通用汽车卖掉了GMAC一半的股权以筹措资金。GMAC之后的崩溃及国有化是导致2009年通用汽车破产的原因之一。

但是2010年，就在通用汽车刚从破产中缓过劲来，且仍在政府控制之下时，它又以35亿美元现金收购了一家德州次级汽车贷款公司AmeriCredit，考虑到通用汽车当时的拮据处境，这的确是大手笔。之后这家公司更名为通用汽车金融（GM Financial）。五年间其资产由110亿美元增至490亿美元，可谓近年发展速度惊人的金融机构。中国是该公司迅速发展的区域之

一，当地的汽车买家开始更依靠贷款而非现金购车。

丰田在美国仍拥有一家银行，为客户买车提供融资服务。宝马也是如此。毕竟在这次金融危机中，汽车贷款远比其他形式的贷款更有弹性。一些公司没有类似的金融部门，通常是因为它们把能低成本筹集到的全部资金都用于自己的核心业务。对于这些公司而言，与金融公司的关系至关重要。麦格理银行（Macquarie）的文森特·凯恩提克（Vincent Caintic）说，随着监管日益严格，银行的车贷及类似贷款的价格越来越高，这一点越发重要。

加拿大公司Element Financial开辟出了一个有利可图的利基市场，为特定产品融资，如美国企业集团Trinity Industries生产的轨道车和一家韩国集团旗下的山猫公司（Bobcat）制造的小型挖掘机。Element Financial于2011年上市，至今股价上涨了四倍（见图表）。而同一时期，标准普尔北美金融服务公司的指数涨幅甚至还不到一倍。■

Coal mining

In the depths

As more countries turn against coal, producers face prolonged weakness in prices

CHEAP energy matters most to poor people, and the coal industry's hopes have rested on emerging economies burning the black stuff to fuel their modernisation. But growing energy efficiency, rising pollution worries and stiffer competition from other fuels mean that in most countries the tide is turning against coal. Prices have been sliding (see chart), political opposition growing and demand drooping. The Dow Jones Total Coal Market index has fallen by 76% in the past five years.

High-cost deep mines in the rich world are worst-hit: in America 24 coal companies have gone bust in the past three years, and one-sixth of the remaining capacity loses money. But even Australia, whose low-cost opencast mines play a role akin to Saudi Arabia's in the oil market, is jittery.

Stoking the gloom is China, once the strongest market. It is still the world's biggest coal consumer, and has accounted for four-fifths of global demand growth since 2000. But Chinese consumption dipped by 1.6% in 2014, despite economic growth of 7.3%. The country's voracious appetite for steel is peaking, damping demand for coking coal. Worries about pollution mean that demand for thermal coal, as used in power stations, is slackening too. Water conservation is another concern for policymakers—on current trends coal could account for a quarter of China's water use by 2020 and coal reserves are mainly in the most parched regions. Its coal-fired plants are running at only 54% of capacity, a 35-year low. In Beijing two big coal-fired plants closed in March; the capital's last one will shut down next year.

Another prop to demand has been power generation in rich countries. But in America coal now struggles to compete with natural gas, which has

fallen by 80% in price since 2008. Domestic coal use there peaked in 2007. European consumption soared after Germany's hasty decision to close its nuclear-power plants. But gas and renewables are eating into that.

Coalswarm, an environmental think-tank, says in a new report that two-thirds of coal-fired power plants proposed worldwide since 2010 have been stalled or cancelled. The growth rate in coal-fired generating capacity is slowing, down from 6.9% in 2010 to 2.7% in 2013. In 2014 the world added more generation from windpower than coal. Overall, Europe and America have already cut coal-fired generation capacity by over a fifth in a decade. The output of American coal mines dropped to 1993 levels in 2013 (though consumption rose slightly, compared with 2012, as stocks were run down).

Political pressure is growing against the most carbon-intensive fossil fuel. Coal provides 40% of the world's electricity. But of 1,617GW of global capacity, 75% is of the dirtiest kind, which burns coal at low temperatures and emits 75% more carbon dioxide than the most advanced (and costly) "ultra-supercritical" plants, which burn powdered coal at high temperatures. The chimneys of all but the most modern coal plants also emit plenty of other nasties. Mercury emissions stunt young brains. Sulphur and nitrous oxides scald lungs. Overall, coal kills around 800,000 people a year, most of them poor. In China it is responsible for up to a sixth of the particulates most dangerous for human health.

Germany is introducing new CO2 curbs to force the closure of its dirtiest coal plants. In America the coal and electric-utility industries are fighting the Environmental Protection Agency's attempts to curb emissions of CO2, mercury and other toxins contained in coal. On March 25th the Supreme Court heard arguments by some state governments, backed by the miners and utilities, that the agency has failed duly to consider the cost of its measures against mercury.

Campaigners reckon 80% of the world's coal reserves must stay in the ground if the planet is to stand a chance of keeping global warming under 2° C by 2050. A divestment movement akin to the apartheid-era campaign to boycott South Africa is under way in many universities. Stanford may dump its coal investments and Oxford University is under pressure to do likewise. The World Bank no longer invests in coal-fired plants. Last year Norway's sovereign-wealth fund dumped its holdings in more than 50 coal companies worldwide. South Korea recently introduced a carbon cap-and-trade scheme which punishes coal.

The horizon is not wholly bleak for coalmen. Clean-coal technology can abate the worst pollution, at a cost. Schemes for capturing power stations' CO2 emissions may one day prove economic, countering coal's reputation as a planet-cooker.

Furthermore, in some emerging markets, India especially, demand for coal is set to continue rising—so overall global demand may not peak until at least the 2030s. In March India's government predicted a 19% rise in the country's coal imports in this fiscal year. But thereafter the plan is to bring in private contractors to develop India's untapped coalfields, and then to phase out all thermal-coal imports. If so, that will be grim news for the Indonesian, Australian and South African mining firms that are supplying India at the moment.

Black hole

Even though some other developing nations' coal imports will grow in future, coal companies are having to face up to a crisis now. Some are cutting costs and getting ready for a wave of consolidation. Others are litigating and lobbying against change. In Poland, Europe's largest producer, pampered and powerful miners produce costly deep-mined coal that nobody wants to buy. It costs the state-owned miner, Kompania Weglowa, $80 to mine a tonne of coal against a world price of $61 for

similar grades. A stockpile of 16m tonnes continues to grow, as Poles import much cheaper coal from Russia. Miners have nonetheless reacted furiously to plans to close four of the countries' least efficient mines and to create a new company with nine more viable ones. The authorities, in the run-up to elections this year, quickly retreated.

The biggest danger for the coal miners is that capital ceases to flow their way. Investors can cope with a cyclical business, but the fear now is of a structural shift, in which China follows the rich world in beginning to phase out coal, India increasingly produces its own, and a plentiful supply of cheap gas keeps prices low everywhere. If so, new coal-mining investments would risk becoming stranded assets, and older deep mines would be even more uneconomic than now. Carbon Tracker, a non-profit group, reckons that more than $100 billion-worth of planned capital spending risks being stranded by 2035. A prospect as black as a miner's lungs. ■

煤矿开采

陷入深渊

随着越来越多国家反对用煤，生产商面临旷日持久的价格疲软

廉价的能源对穷人最为重要，因而煤炭业的希望一直寄托于新兴经济体，希望它们用这些黑乎乎的东西为现代化加油助力。但是，日益提高的能效要求、对污染越来越多的担忧，以及来自其他燃料愈加激烈的竞争，意味着在大多数国家，反对用煤是大势所趋。煤炭价格一路下滑（见图表），反对的政治呼声越来越高，需求持续萎靡。过去五年道琼斯煤炭市场总体指数下跌了76%。

受创最重的是富裕国家里高成本的深井煤：过去三年美国有24家煤炭公司破产，剩余产能的六分之一处于亏损。就连澳大利亚也战战兢兢，尽管其低成本的露天煤矿扮演着类似沙特在石油市场上的角色。

中国曾是最强劲的市场，现在则让形势雪上加霜。目前中国仍是世界上最大的煤炭消耗国，自2000年起占全球需求增长的五分之四。但2014年中国经济增长达7.3%，煤炭消耗量却下降了1.6%。中国对钢铁的贪婪胃口已达峰值，因而对炼焦煤的需求将下滑。对污染的担忧使得对发电站所用电煤的需求也在减缓。用水保护是决策者关心的另一个问题，依照目前的趋势，到2020年煤炭业用水量将占全国用水量的四分之一，而且煤炭储藏主要位于最干旱的地区。中国正在运转的火力发电厂的发电量仅占装机量的54%，为35年来最低。北京的两大火力发电厂在3月关闭，首都的最后一家火电厂也将在明年关停。

对煤炭需求的另一支撑是富裕国家的发电。但是美国的煤炭业在和天然气的竞争中举步维艰，自2008年以来煤价已经下跌了80%。美国国内用煤量在2007年达到峰值。在德国草草决定关闭其核电站后，欧洲的煤炭消耗量飙升，但天然气和可再生能源正在蚕食这一市场。

环保智库Coalswarm在一份最新报告中称，2010年以来拟建的火力发电厂

有三分之二搁浅或取消。火力发电量增长率正在减缓，从2010年的6.9%降至2013年的2.7%。2014年全世界风能发电量的增长大于火电增长。总体而言，欧洲和美国近十年来火力发电量已经减少了超过五分之一。2013年美国煤矿产量降至1993年的水平（尽管随着库存量的下降，消耗量相比2012年稍有上升）。

反对这种碳强度最高的矿物燃料的政治压力越来越大。煤炭提供了世界上40%的电力。但是全球1617吉瓦的燃煤发电量中，75%用污染最严重的方式生产。因为采用低温下烧煤，相比最先进也是最昂贵的高温下烧粉煤的“超超临界”发电厂，它要多产生75%的二氧化碳。唯有最现代化的燃煤发电厂除外，其他烟囱还都同时排放大量其他污染物。汞排放会影响幼儿大脑发育。硫氮氧化物会灼伤肺部。总的说来，每年有80万人死于煤炭污染，大部分是穷人。在中国，对人体危害最大的颗粒污染物中，有多达六分之一由燃煤产生。

德国正在引入新的二氧化碳排放限制，以强制关闭污染最严重的火力发电厂。在美国，煤炭和电力行业正和国家环保局作斗争，该局试图限制燃煤中二氧化碳、汞和其他有毒物质的排放。3月25日，美国最高法院听取了由矿业公司和电力公司支持的一些州政府的意见。州政府指美国环保局未能充分考虑其汞排放限制措施的成本。

有活动家估算，世界上80%的煤炭储量必须沉睡地下，地球才有望到2050年将全球变暖幅度控制在2° C 以下。许多大学出现了撤资运动，类似于当年为抵制南非种族隔离制度开展的撤资。斯坦福大学可能抛售对煤炭的投资，牛津大学在压力之下也将效仿。世界银行不再对火力发电厂投资。去年挪威主权财富基金抛售了它所持有的全球50多家煤炭公司的股份。韩国最近引入了一套碳排放限额交易体系以处罚煤炭的使用。

对于煤商来说，前途并非一片黯淡。代价不菲的洁净煤技术能够减轻最严重的污染。有朝一日人们可能证实捕捉发电厂排放二氧化碳的项目有利可图，从而减轻煤炭作为地球炉灶的恶名。

此外，在一些新兴市场，尤其是印度，煤炭需求将持续上涨，因此至少要到本世纪30年代全球煤炭需求量才可能达到顶峰。3月，印度政府预计该国的煤炭进口在本财年将上涨19%。不过今后的计划是让私营承包商开采印度未开发的煤田，然后逐步取消所有电煤进口。如果当真如此，对目前向印度供应煤炭的印尼、澳大利亚和南非的矿业公司而言无疑是坏消息。

黑洞

就算其他一些发展中国家的煤炭进口未来将有增长，煤炭公司现在仍不得不面对一场危机。有些公司正在削减成本，准备迎接新一轮整合。其他公司则在开展诉讼和游说，拒绝改变。在欧洲最大的产煤国波兰，养尊处优且有权有势的矿业公司生产昂贵的深井煤却无人愿买。国有煤炭商Kompania Weglowa开采一吨煤的成本为80美元，而同样等级的一吨煤的世界价格仅为61美元。随着波兰人从俄罗斯进口便宜得多的煤炭，该国1600万吨的库存仍在增加。即便如此，对于关闭波兰生产效率最低的四家煤矿、将更具生命力的九家煤矿合并成立新公司的计划，矿业公司仍怒不可遏。恰逢今年大选前夕，主管当局很快就偃旗息鼓。

对煤矿公司来说最大的威胁是资金流中断。投资者能够应对周期性的行业问题，但现在的担忧是结构性转变。中国跟随富裕国家的脚步开始逐步淘汰煤炭，印度逐渐自给自足，廉价天然气的充足供应保证了在全球各处煤炭维持在低价。这样一来，对采煤业的新投资有成为搁浅资产的风险，年久的深井会比现在更不经济。非营利组织碳追踪（Carbon Tracker）估算，价值超过1000亿美元的计划投资有可能搁浅至2035年。前景如矿工的尘肺一样黑。■

Natural gas

Golden scenarios

A promised golden age of gas is arriving—but consumers are cashing in well before producers do

ONCE upon a time, in a world in which oil was costly and energy sources seemed scarce, the International Energy Agency, a think-tank for countries which import fossil fuels, produced a special report heralding a "golden age of gas". That was in 2011. It suggested that fast-rising demand, chiefly from emerging economies and in power generation, could lead gas to displace coal by 2030.

Big energy companies shared that optimism. High prices and rising demand in East Asia, especially China and Japan, encouraged them to pile into huge projects in places such as Australia and Papua New Guinea to produce liquefied natural gas (LNG), either from offshore drilling or, in the case of a $20 billion project in Queensland by BG Group of Britain, from gas found in coal beds. America, awash with gas thanks to the shale boom, began rejigging coastal terminals originally built for importing LNG, so as to begin exporting it.

But something unexpected happened. Coal, despised as the dirtiest fossil fuel, underwent an unexpected renaissance, notably in Europe, displacing gas in power generation. This was partly because of plentiful supplies of cheap coal on world markets, and partly because the European Union's regime for trading in permits to emit carbon dioxide was so flawed that coal was not getting taxed out of the market, as had been intended.

So demand for LNG has been broadly flat for the past three years. The result is a buyers' market, intensified by the recent weakness in the oil price. Natural-gas prices are plunging (see chart 1). In February, the American

spot-market price, as measured at the giant Henry Hub distribution node in Louisiana, has been around $2.75 per million British thermal units (MMBtu), the lowest since mid-2012. The spot price of LNG in the vital market of Japan fell to $6.65 per MMBtu, the lowest level for five years—and below the European price for the first time in four years.

This is indeed a golden age, then, but for gas consumers. Investors in large gas facilities such as liquefaction plants are hurting. As with the oil price, the gas-price slump is the result of weak demand and booming supply (though without the added ingredient of a collapsed cartel). Millions of tonnes of new capacity are coming on-stream, as projects begun when energy prices were high reach completion.

Global export capacity is set to rise by a third, from 290m tonnes per year (mtpa) at the end of 2013 to nearly 400 mtpa by 2018. Australia will overtake Qatar to become the largest exporter, tripling its capacity to 86 mtpa by 2020. America starts exporting this year. Two giant LNG projects that tap into gasfields off the coast of Western Australia are due to come on-stream next year: Chevron's $30 billion, onshore Wheatstone complex, and Shell's Prelude plant, based aboard a giant ship (pictured) and costing perhaps $13 billion. In Papua New Guinea, Exxon's $19 billion project began shipping gas last May, ahead of schedule.

Now, in what a report from Sanford C. Bernstein, a research firm, calls an "anxiety attack", new investment has stalled. No big, new LNG projects have been announced for months. The business is so capital-intensive that long-term contracts, which account for three-quarters of global trade, are essential. Such contracts mean that weak spot prices are less of a problem for gas-producing countries than for oil states. But for energy firms, contracts are no longer providing the comfort cushion needed for big investments. Buyers are taking advantage of the weak market, and driving hard bargains. Last year Japan, for example, signed contracts for gas at

around $16 per MMBtu. Now, contract prices are forecast to fall to $11 or lower; and with the spot price below $7, such forecasts do not seem unrealistic. Given the cost of liquefaction and shipping, American exporters could face losses.

The LNG industry's hopes rest on a surge in demand. Latin America is showing an unexpectedly strong appetite; sales to Britain are up; and Indonesia, once an exporter, is now importing gas. But the short-term picture is sombre. Economic growth is slowing in China and weak in Japan. Even healthy economies are using energy of all kinds more efficiently.

Other fuels are competing strongly. Japan is likely to restart some nuclear capacity this year, and can burn cheap oil in some power plants. China is pushing ahead with domestic gas production, as well as clean coal and renewables, all of which displace imported gas in power generation. European customers can use LNG as a bargaining chip against suppliers such as Russia's Gazprom, but demand in Europe is declining, not rising.

With so many energy consumers looking for cleaner fuels but not yet ready to give up entirely on hydrocarbons, the long-term outlook for gas looks strong. Demand for gas as a transport fuel is set for rapid growth. Some carmakers, such as Fiat Chrysler, are promoting gas-powered versions of their vehicles, whose fuel economy makes them attractive even at a time of cheap petrol. The motor industry is struggling to meet ever tighter emissions standards in America, Europe, Japan and China, and one way to comply with them is to sell more gas-powered vehicles. Sales of ones that run on compressed natural gas (CNG), such as motorised rickshaws, are booming in India and China.

Indian Railways has begun switching its trains to run on CNG. Worries about pollution from the heavy oil used by marine engines have prompted tough new emissions rules in the Baltic Sea and in American coastal waters.

This is prompting a switch to vessels that run on LNG. Timo Koponen of Wartsila, a Finnish company that builds gas-powered marine engines, says the main constraint now is refuelling. But America is opening its first LNG bunkering facility, in Port Fourchon, Louisiana. It carried out a trial refuelling earlier in February.

A switch towards generating electricity in smaller plants closer to consumers (which cuts distribution costs) is also increasing demand for gas at the expense of other fuels. Richard Kauffman, the head of energy policy for New York state, notes that small-scale, gas-fired "combined heat and power" (CHP) plants are now more economical than ever. Some businesses and apartment blocks are beginning to install their own full-time gas generators, cutting their dependence on mains power.

The current freeze on new projects means that demand growth may begin to outstrip supply growth within a few years (see chart 2).

Thereafter the current glut may dwindle, allowing producers to recover pricing power. It will take time, but they should enjoy a gilt-edged future, too. ■

天然气

金色前景

天然气的黄金时代已然到来——消费者比生产商更先得益

曾几何时，石油价格高不可攀，能源看似稀缺。为化石燃料进口国提供智囊服务的国际能源署（International Energy Agency）曾制作一份专题报告，宣告“天然气黄金时代”的到来。那是在2011年。报告指出，主要来自新兴经济体及发电行业的需求增长迅猛，可能导致天然气在2030年前取代煤炭的地位。

大型能源企业同享这份乐观。东亚地区尤其是中国和日本的燃气价格及需求走高，促使众多能源企业投资澳大利亚及巴布亚新几内亚这些地方的巨型项目，生产液化天然气（LNG）。有的通过海上钻井，也有的像英国天然气集团（BG）在昆士兰价值200亿美元的项目那样开采煤层气。得益于页岩开发热，一下子拥有充沛天然气的美国已开始改造原本用来进口液化天然气的沿海码头，以方便出口。

但意想不到的事情发生了。煤炭，这被鄙视为最肮脏的化石燃料，却出其不意地复兴起来，特别是在欧洲，在发电方面取代了天然气。这一方面是因为廉价煤炭大量供应世界市场，另一方面则是因为欧盟的二氧化碳排放许可证交易制度存在严重缺陷，无法像预想的那样通过征税令煤炭退出市场。

所以，过去三年，市场对液化天然气的需求已大致持平。结果形成了买方市场，最近油价疲软更加剧了这一态势。天然气价格正在暴跌（见图表1）。今年2月，按美国天然气输送集散点路易斯安那州的亨利中心（Henry Hub）的报价，美国天然气现货市场价格一直徘徊在每百万英热单位（MMBtu）2.75美元的水平，是自2012年中期以来的最低位。液化天然气在日本这个重要市场的现货价格跌至每百万英热单位6.65美元，是五年来最低的水平，而且四年来首次低于欧洲价位。

这的确是一个黄金时代，只不过是对天然气消费者而言。液化厂等大型燃气设施的投资者损失惨重。跟油价跌势一样，天然气价格暴跌是需求疲软和供应充沛的结果（不过和垄断联盟的倒台这一因素无关）。随着能源价格高企时展开的项目逐渐完工，数以百万吨的新产能将陆续投产。

天然气全球出口能力将提升三分之一，从2013年底的每年2.9亿吨发展到2018年的每年近4亿吨。澳大利亚将赶超卡塔尔成为最大的出口国，2020年产能可增至如今的三倍，达8600万吨。今年美国开始出口天然气。在西澳大利亚海上油田开采的两个液化天然气巨型项目将于明年投产，分别是雪佛龙公司投资300亿美元的惠斯登（Wheatstone）岸上生产基地，以及壳牌公司的“前奏曲”（Prelude）浮动液化天然气厂，后者建于一艘巨轮之上（如上图），耗资约130亿美元。埃克森斥资190亿美元建于巴布亚新几内亚的项目提前完工，去年5月开始投产运送天然气。

现在，如盛博研究公司（Sanford C. Bernstein）在一份报告中形容的，“焦虑来袭”，新投资已然停滞。已有数月没听到大型液化天然气新项目启动的消息。这个产业亟耗资本，所以长期合约是关键，这占到全球贸易的四分之三。这样的合约意味着，现货价格疲弱对天然气生产国的冲击不及对石油国家来得厉害。但对能源企业来说，合约已不能再作为保底的缓冲来支持大规模投资。买家们正利用市场的疲态狠狠砍价。例如，去年日本签订合约，以每百万英热单位约16美元的价格购入天然气。如今，合约价格预计将降至11美元或更低；随着现货价格已低于7美元，这些预测不再看上去不切实际了。考虑到液化及运输的成本，美国出口商可能面临亏损。

液化天然气产业的希望寄托在需求大增之上。拉丁美洲正显现意想不到的强劲需求；销往英国的数字在提升；印尼曾经是天然气的出口国，现在成了进口国。但短期形势不容乐观。中国的经济增长正在放缓，日本则疲弱不振。即便是蓬勃稳健的经济体，也在提高各类能源的使用效率。

其他燃料正强势出击，争抢市场。日本很可能于今年重启部分核能设施，并且在部分电厂利用廉价石油发电。中国正在推进天然气、清洁煤和可再生能源在国内的生产，以取代进口天然气来发电。欧洲客户可以利用液化

天然气作为筹码，与俄罗斯天然气工业股份公司（Gazprom）这类能源供应商讨价还价，但欧洲的需求不升反降。

众多的能源使用者在寻找更清洁燃料的同时尚未准备好完全放弃碳氢化合物，天然气的长远前景看涨。以天然气作为运输燃料的需求将快速增长。一些汽车制造商，如菲亚特克莱斯勒，正在推广天然气动力车型，其燃料经济性在这个汽油廉价的年头仍十分吸引人。汽车行业正努力迎合美国、欧洲、日本及中国愈加严格的排放标准。要符合标准，一个途径是销售更多天然气动力汽车。在印度和中国，像机动三轮车这类使用压缩天然气（CNG）的车辆销售旺盛。

印度铁路公司（Indian Railways）旗下列车已开始转用压缩天然气。对船用发动机重油污染的忧虑促使波罗的海及美国沿海水域推行更严格的排放新规则，从而推动船只转用液化天然气。芬兰天然气动力船舶引擎制造商瓦锡兰公司（Wartsila）的蒂莫•科彭南（Timo Koponen）表示，现在主要的制约在于加气的问题。但美国将在路易斯安那州弗尔雄港（Port Fourchon）开启首个液化天然气加气站，2月初已进行了加气试运行。

发电行业正转向在更靠近消费者的较小型电厂发电以降低输配电成本，这一趋势也令天然气需求增加，抢占了其他燃料的份额。美国纽约州能源政策主管理查德•考夫曼（Richard Kauffman）指出，使用天然气的小型热电联产（CHP）电厂现在比任何时候都更经济。一些企业和公寓大楼开始安装自己的全时燃气发电机，减少对市电的依赖。

目前新项目的冻结意味着几年内需求增长可能开始超过供应增长（见图表2）。

之后，如今的过剩也许会缩小，令生产商重获定价能力。这需要时间，但他们应该拥有镶了金边的未来。■

Schumpeter

Twilight of the gurus

The management-pundit industry is a shadow of its former self

IT IS customary nowadays for management gurus to preach that competition is fiercer than ever. Rita McGrath of Columbia Business School talks about "the end of competitive advantage". Richard D'Aveni of the Tuck School of Business refers to "hypercompetition". Ram Charan, a consultant and writer on management, lauds "The Attacker's Advantage".

Yet the management-guru industry itself seems remarkably stable. Competitive advantage is strikingly enduring, competition is far from "hyper" and the defender has the upper hand. The latest two "Thinkers50" rankings of the world's leading management pundits, published in 2011 and 2013, show no change at the top, with Clay Christensen of Harvard Business School and the duo of Chan Kim and Renée Mauborgne of INSEAD ranking first and second respectively. Two of the most prominent business books of the past few months have been retreads rather than new publications with new ideas: the tenth-anniversary edition of Mr Kim's and Ms Mauborgne's "Blue Ocean Strategy" and the 20th-anniversary edition of Don Tapscott's "The Digital Economy". It is a far cry from the glory years of the 1980s and 1990s, when "In Search of Excellence", by Tom Peters and Robert Waterman, sold 3m copies in its first four years and "Re-engineering the Corporation", by James Champy and Michael Hammer, touched off a global re-engineering craze.

What explains such lethargy in a supposedly lethargy-busting industry? The main problem is that the guru business is reaching the end of a long cycle of creativity. For the past two decades or so it has been driven by two seismic economic changes—the rise of the emerging world and the digital revolution. The first change led to the ascent of a remarkable group of

Indian management theorists, most notably C.K. Prahalad (who died in 2010). They focused on subjects such as the buying power of developing-country consumers, the virtues of frugal products, and the difficulties of doing business in places with poor infrastructure and weak institutions. The list of business schools with Indian-born deans includes those of Harvard, Cornell and Chicago universities. The digital revolution produced a new class of digital gurus, such as Mr Tapscott. And Mr Christensen's idea of disruptive innovation (which holds that the most successful innovators create new markets, rendering many established businesses irrelevant) rightly turned him into the world's leading management guru.

But the cycle has played itself out. Prahalad published his seminal article on "The Fortune at the Bottom of the Pyramid" in 2002, and the book of the same title in 2004. Mr Christensen published his first article on disruptive technology in 1995 and his book on "The Innovator's Dilemma" in 1997. The new edition of Mr Tapscott's book reminds us that people have also been grappling with the digital revolution since the 1990s.

Ironically, the digital revolution is making it harder for new gurus to emerge. Many of today's biggest business changes are being driven by "quants", who excel at finding meaning in big data or at producing algorithms that can automate lots of work, but who are much less good at putting numbers into words or at thinking about what big data and automation mean for industries beyond their own. The management-theory business is producing plenty of mini-gurus who specialise in particular industries or techniques, such as Philip Evans in big data or Jim Whitehurst in collaborative ("open-source") management. But few of the new pundits can range across as many industries as Tom Peters does, let alone across the centuries and multiple intellectual disciplines in the manner of the late Peter Drucker.

Perhaps the biggest enemy of guru renewal is the development of a

"thought leadership" industry. Companies are being sold the idea that becoming a leading public thinker on some issue affecting their industry will give them a competitive edge. Industrial and tech firms like Siemens and IBM are doing battle with more established peddlers of management thinking such as McKinsey and Bain. As Whitespace Consultants, a smaller firm, puts it, thought leadership makes you "part of the conversation early in the buying journey". In the recent sexual-discrimination case that Ellen Pao brought unsuccessfully against Kleiner Perkins, a venture-capital firm, it emerged that one of the reasons she was not promoted was that she was judged to have fallen short on the thought-leadership front.

Pursuing thought leadership simply encourages thought followership, however. As companies scramble to be seen as thought leaders, they are likely to end up just repackaging existing ideas instead of listening out for genuinely new ones. Whenever companies treat thinking as "content" and deploy their marketing and PR people to pump it out, the result is bound to be cliché or gobbledygook.

Mind-stretching in Mountain View and Massachusetts

Are there any signs of a new wave of gurus who can buck these trends and revive their stagnant industry? There are glimmers of hope in Silicon Valley and the Massachusetts Institute of Technology. Some of the Valley's most successful entrepreneurs, such as Reid Hoffman (LinkedIn) and Peter Thiel (PayPal), are stretching their minds to address all sorts of challenges, from ageing to talent-management. "The Second Machine Age", by Andrew McAfee and Erik Brynjolfsson of MIT's Sloan School, is a striking attempt to grapple with the massive management change that will result from autonomous machines.

But considering the resources that are devoted to thinking about management, it is remarkable how much virgin territory remains. There are still no Chinese management gurus to challenge the leadership of the

ageing Indian establishment. There are still no serious books on what the internet economy means for the boundaries of the firm or markets for talent. The guru industry seems ripe for disruptive innovation. ■

熊彼特

大师迟暮

管理学大师行业日渐式微

如今管理大师们习惯性地四处宣扬竞争比以往任何时候都更为激烈的观点。哥伦比亚大学商学院的丽塔•麦格拉思（Rita McGrath）探讨“竞争优势的终结”。塔克商学院（Tuck School of Business）的理查德•达韦尼（Richard D’Aveni）提出“超强竞争理论”。管理咨询师兼作家拉姆•查兰（Ram Charan）则极力推崇“攻击者的优势”。

然而，管理大师这一行业自身似乎相当稳定。竞争优势异乎寻常的持久，竞争也远未达到“超强”程度，且占据上风的是防守者。在“全球最具影响力50大商业思想家”（Thinkers 50）2011年和2013年最近两期的榜单上，世界顶尖管理大师前几位排名并没有什么变化：哈佛商学院的克雷•克里斯坦森（Clay Christensen）位列第一，英士国际商学院（INSEAD）的二人组金伟灿（Chan Kim）和勒妮•莫博涅（Renee Mauborgne）排名第二。过去几个月最富盛名的两本商业书籍也都是旧书新版，而不是有新见解的新著：金伟灿和莫博涅合著的《蓝海战略》十周年版以及唐•泰普斯科特（Don Tapscott）所著《数字经济》（The Digital Economy）的20周年版。这与上世纪八九十年代的黄金时代相比简直不可同日而语，当时汤姆•彼得斯（Tom Peters）和罗伯特•沃特曼（Robert Waterman）的《追求卓越》头四年就卖出300万本，詹姆斯•钱皮（Jame Champy）和迈克尔•哈默（Michael Hammer）的《企业再造》则引发了全球追捧。

为什么一个本该打破沉闷的行业自己却暮气沉沉？主要问题是管理行业正在接近一个创造力长周期的末端。在过去20多年里，该行业受到两次世界级经济变化的冲击——新兴世界的崛起和数字革命。第一个变化让一批有影响力的印度管理理论家崛起，代表性人物是普拉哈拉德（CK Prahalad，于2010年逝世）。他们的课题主要集中在发展中国家消费者的购买力、节俭型产品的优点，在基础设施落后以及管理薄弱的地区经商的困难等等。哈佛大学、康奈尔大学和芝加哥大学等院校的商学院院长都出生在印度。

数字革命则催生出新一批数字大师，如泰普斯科特。而克里斯坦森关于颠覆性创新的观点令他成为世界管理学大师的领军人物，他认为最成功的创新者创造出新的市场，而把很多既有企业排除在外。

但是这个周期行将结束。普拉哈拉德在2002年以“金字塔底端的财富”（The Fortune at the Bottom of the Pyramid）为题发表开创性文章，同名书籍于2004年出版。克里斯坦森于1995年发表关于颠覆性技术的第一篇文章，其著作《创新者的窘境》（The Innovator's Dilemma）于1997年出版。泰普斯科特专著的新版提醒我们，自上世纪90年代以来，人们一直在与数字革命搏斗。

颇具讽刺意味的是，数字革命让新的管理大师很难出现。今天，很多重大的商业变革都由“定量分析师”推动，他们擅长在大数据中找到意义，或者擅长创造算法，以便实现工作的自动化，但是他们却不善于将数字转换成文字，抑或思考大数据或自动化对产业意味着什么。管理学理论界产生了很多“微型大师”，他们精专于某一个行当或技术，比如菲利普•埃文斯（Philip Evans）就擅长大数据，吉姆•卫赫士（Jim Whitehurst）擅长协同（开源）管理。但是很少有新学者能像汤姆•彼得斯（Tom Peters）那样横跨众多领域，更不用说能像已故的彼得•德鲁克（Peter Drucker）那样跨越几个世纪以及众多知识学科。

也许管理学复兴的最大敌人是“思想领导力”行业的发展。企业都在被灌输这样一个理念，在某个影响自身行业的议题上成为公众意见领袖能让他们拥有竞争优势。工业和科技公司，如西门子和IBM，正在与麦肯锡、贝恩这样的管理思想推销者竞争。正如小公司Whitespace咨询说的那样，思想领导力让你“在（客户）采购过程的前期就能加入对话”。在最近鲍康如（Ellen Pao）起诉风投公司凯鹏华盈（Kleiner Perkins）性别歧视败诉一案中，当事人没有被提拔的原因之一就是她被认为在思想领导力上已落于人后。

不过，追求思想领导力实际上会鼓励思想追随者。在企业争相成为意见领袖时，他们很有可能只是把别人的观点重新包装，而不是仔细倾听，追求

真正的新观点。不管何时，只要企业把思想当作内容，部署其营销和公关部门炮制思想，结局就只能是陈词滥调或者官样文章。

> *山景城和麻省的思维延展*

有没有任何迹象表明会有新一批的管理学大师能够改变这一潮流，中兴他们沉寂的行业？在硅谷和麻省理工学院有希望在闪光。硅谷一些最成功的企业家，比如雷德•霍夫曼（Reid Hoffman）（领英）和彼得•蒂尔（Peter Thiel）（PayPal），正在绞尽脑汁应对从人口老龄化到人才管理的各种挑战。麻省理工学院斯隆管理学院的安德鲁•迈克菲（Andrew McAfee）和艾瑞克•布林约尔松（Erik Bryniolfsson）的新书《第二个机器时代》（The Second Machine Age）是一次了不起的尝试，想要应对自动化机器带来的巨大管理变革。

但是，考虑到对管理学思考的资源投入，还有那么多处女地尚未开垦令人吃惊。迄今为止，还没有中国的管理学大师挑战日渐衰落的印度大师的地位。我们仍然没有严肃书籍探讨互联网经济对企业边界或人才市场的意义。管理学大师界颠覆性创新的时机似乎已经成熟。■

Schumpeter

How to join the 1%

A book on the persistence of elites is an unexpected guide to getting a good job

MANAGEMENT consultants, investment banks and big law firms are the Holy Trinity of white-collar careers. They recruit up to a third of the graduates of the world's best universities. They offer starting salaries in excess of $100,000 and a chance of making many multiples of that. They also provide a ladder to even better things. McKinsey says more than 440 of its alumni run businesses with annual revenues of at least $1 billion. The top ranks of governments and central banks are sprinkled with Goldman Sachs veterans. Technology firms, though they are catching up fast, have nothing like the same grip on the global elite.

Which raises a pressing question: how do you maximise your chances of joining such elite professional-services firms? Lauren Rivera of Northwestern University's Kellogg School of Management has spent a decade studying how these firms recruit. The result, "Pedigree: How Elite Students Get Elite Jobs", is an academic book with the requisite references to gender theory and Marxist concepts of inequality. But read it carefully and it becomes something far more useful—a guide on how to join the global elite.

The bad news is that by far the best way to get into the tiny group of elite firms is to be studying at the tiny group of elite universities—Ivy League colleges in America (where Ms Rivera did her fieldwork) or Oxford and Cambridge in England. The firms spend millions of dollars love-bombing these institutions with recruiting events: students can spend the recruitment season wining and dining at their expense. However, as Ms Rivera notes, firms reject the vast majority of elite students they interview: so even the most pedigreed need to learn how to game the system.

The most important tip is to look at who is doing the recruiting. Whether in consulting, investment banking or the law, firms use revenue-generating staff rather than human-resources people to decide who has the right stuff. The interviewers are trying to juggle their day jobs with their recruiting duties: they seldom spend more than a minute or so reviewing each application form. In the interview room they behave predictably: they follow a set script, starting with some ice-breaking chit-chat, then asking you about yourself, then setting a work-related problem. That makes them desperate for relief from the tedium. Be vivacious. Hang on their every word. And flatter their self-image as "the best of the best" and the most jet-lagged of the jet-lagged.

The most important quality recruiters are looking for is "fit": for all their supposedly rigorous testing of candidates, they would sooner choose an easy-going person with a second-class mind than a Mark Zuckerberg-type genius who rubs people up the wrong way. Staff in professional-services firms spend most of their time dealing with clients; so looking the part is essential. They also expect their employees to spend extraordinary amounts of time together—learning the ropes in boot camps, working late in the office, having constant work dinners, getting stuck together in airports in godforsaken places. Recruiters repeatedly told Ms Rivera that they looked for people who could be their friends as well as their colleagues. One compared hiring to "picking a team on the playground growing up"; another described his firm as "a fraternity of smart people".

It is easier to give the impression you will fit in if you have swotted up on the firm in question. Speak to any friend-of-a-friend you can find on the inside, to learn about its internal culture and its inside gossip. One candidate in Ms Rivera's sample passed the interview by adopting the persona of a successful consultant that he knew at that firm. Even if you do not go that far, you must at all costs avoid appearing nerdy or eccentric: there are plenty of jobs with tech companies for those types. The old-

fashioned belief still prevails that playing team sports, especially posh ones like rowing, makes for a rounded character.

The final key to success is to turn your interviewer into a champion: someone who is willing to go to bat for you when the hiring committee meets to whittle down the list. Emphasise any similarities that you can find between the two of you. If the interviewer sees a little bit of himself in you, a phenomenon known as "looking-glass merit", he will regard any attempt to eliminate your name as a personal slight.

Minority margaritas

As for those who have not got into the elite universities, all hope of joining the bulge bracket of professional-services firms is not lost. As Ms Rivera's book demonstrates, even the most tenuous connection with insiders can be of help. If you belong to an underrepresented group and meet a recruiter over cocktails at a "diversity event", exploit the connection ruthlessly.

Ms Rivera notes that coming from an underprivileged background can actually be a plus, if sold well. Recruiters love to hear stories about gritty candidates triumphing against the odds. She also notes that there are organisations that can help non-elite candidates to sell themselves. Sponsors for Educational Opportunity, an American outfit, has an excellent record of pre-selecting ethnic-minority youngsters and getting them internships that can lead on to full-time jobs. America's armed forces play a similar role of giving a career leg-up to the disadvantaged. "I've spent two years in a job where any minute might be my last," one military candidate told an interviewer coolly. "Yes, I think I can handle high-pressure situations." But don't harp on about the odds being still stacked against you, or reveal that you have a sick mother or a demanding child, or you kill the Horatio Alger buzz.

This overwhelming emphasis on style rather than substance may seem an

odd way to select members of the 1%. But those at the top of the consulting, investment-banking and legal professions know that the most prized possession in uncertain times is not brainpower, but self-confidence. For all the talk of the world becoming dominated by a "cognitive elite", in reality it appears it is nothing more than a "confidence elite". ■

熊彼特

如何跻身顶尖1%

书写精英圈子传承，恰成高端求职指南

管理顾问公司、投资银行、大型律师事务所，这可谓是白领职场三大至尊领域。全球顶尖大学毕业生有三分之一被这类公司招至麾下。它们的起薪超过10万美元，而且大有机会数倍提升。它们还提供通向更好前程的阶梯。管理咨询公司麦肯锡表示，其前员工中有超过440人经营的企业年收入至少达10亿美元。高盛的元老遍布各国政府及央行高层。相比之下，作为职场后起之秀的科技公司，在吸引全球精英方面还望尘莫及。

大家不禁追问：该如何拓宽机遇，争取加入这些精英专业服务公司？美国西北大学凯洛格商学院（Northwestern University's Kellogg School of Management）的劳伦·里维拉（Lauren Rivera）花费十年时间研究这些公司的招募之道。其成果《谱系传承：精英学生如何获得精英职位》（Pedigree: How Elite Students Get Elite Jobs）是一本学术专著，难免援引性别歧视理论和马克思主义的不平等概念。但细读之下，此书更有大用——实为跻身全球精英阶层的指南。

坏消息是，要加入这一小撮精英公司，迄今为止的最佳途径是入读那一小撮名牌大学——美国的常春藤盟校（里维拉在此做了实地调查）或者英国的牛津、剑桥。各大精英公司花费数百万美元在这些高校举办招聘活动，发动"情感攻势"：学生在招聘季可尽享他们提供的美酒佳肴。然而，正如里维拉指出的，这些公司面试过的名校优等生中，绝大部分最终还是会遭到淘汰：所以即便系出名门，也还要知其内情，以为己用。

最重要的秘诀是要看谁负责招聘。无论是咨询公司、投资银行还是律师事务所，都并非由人力资源部派人筛选求职者中谁最合适，而是由公司业务部门的员工决定。这些面试官要兼顾日常工作与招聘职责，对每份求职申请往往最多只看一分钟左右。在面试室，其一举一动也可预见：他们照本宣科，先以闲聊破冰开场，然后询问求职者自身情况，进而提出与工作相

关的问题。这乏味套路让他们极其渴望逃脱。所以求职者要表现活泼。紧扣面试官的一字一句好好发挥，对其日理万机、人中龙凤的自我形象大加恭维。

招聘者最看重的素质是“契合度”：尽管对求职者严格测试，他们还是宁愿选择头脑稍逊但性情随和的人，而不是像马克·扎克伯格这样不合时宜地惹人恼怒的天才。专业服务公司的员工要花大量时间与客户打交道，所以契合像样是必须的。这些公司也期望员工们长时间共处——在入职培训中熟习业务，在公司加班，享用一成不变的工作餐，与同事滞留荒凉偏僻的某地机场。招聘人员一再向里维拉透露，他们希望招募的是那些可以成为同事，更能成为朋友的人。其中有人把招募工作比喻为“在人生竞技场上组队对垒”；也有人将其公司描述成“聪明人组成的兄弟会”。

通过努力钻研求职公司的情况，求职者更容易给人留下自己可以契合公司的印象。向任何能搭上关系的内部人士打听，了解公司的内部文化和内幕八卦。里维拉的研究样本里有一位求职者学足了公司里一位他认识的成功咨询顾问的做派，最终通过了面试。即便不至于那么极端，你也必须尽全力避免以书呆子或特立独行的模样示人：科技公司有大量职位适合这类人士。传统上认为团队运动有利于造就健全性格，尤其是赛艇这类上流运动，此观念如今依然盛行。

最后的成功关键是要把面试官变为自己的拥护者：当招聘委员会筛选最后人选时，他愿意替你卖力争取。强调你和这位面试官之间的共同点。如果他在你身上看到了一点点他自己的影子（所谓“自怜加分”现象），别人对你的任何排挤都会被他视为是对他的轻慢。

少数派鸡尾酒会

如果无缘名牌大学，要跻身大型专业服务公司也并非绝无希望。正如里维拉书中所示，即便是最牵强的内部人脉也会有帮助。如果你属于某个弱势社群，而在一场“多元化活动”的鸡尾酒会上遇到某位招聘官，就得尽情利用这人脉机缘。

里维拉指出，如果巧妙利用，底层背景出身可以成为加分元素。招聘官喜欢听求职者诉说自己坚忍不拔度过难关的故事。她也指出，有些机构可以帮助非精英求职者自我推销。美国机构“教育机会资助者”（Sponsors for Educational Opportunity）一直选拔少数族裔青少年参与有机会获得全职工作的实习计划，项目成绩斐然。美国军队扮演了类似角色，给弱势社群求职人士提供助力。“过去两年的工作里，每一分钟都有可能是我生命的最后一分钟，”一位军人应聘者从容地告诉面试官，“没错，我觉得我可以应付高压工作环境。”但别喋喋不休地诉说自己仍有多少困难压身，或者上有高堂卧病下有孩儿劳心之类的烦扰，否则就坏了白手起家故事里的励志劲头。

社会1%顶层精英的选拔，如此铺天盖地强调形式而非内涵，似乎是咄咄怪事。但管理咨询、投行及法律界的高层人士深明一个道理——在前景不明的时代，最宝贵的财富不是智力，而是自信。尽管都说世界将由“才智精英”主宰，现实中，那似乎不过只是一群“信心精英”罢了。■

Management training

Keeping it on the company campus

As more firms have set up their own "corporate universities", they have become less willing to pay for their managers to go to business school

"DON'T ask the barber if you need a haircut—and don't ask an academic if what he does is relevant." So wrote Nassim Nicholas Taleb in his 2007 book, "The Black Swan". The trouble for academics, particularly those who teach business, is that companies seem to be posing that awkward question more and more; and then coming up with an even more discomfiting answer.

Firms looking to put their managers through development programmes are increasingly creating their own, rather than relying on business schools, consulting firms and the like. Companies are not only spending more of their training budgets in-house but are setting up their own "corporate universities".

The idea is not new. General Electric is considered to have opened the first corporate university, in 1956. Perhaps the most famous is McDonald's "Hamburger University". Since 1961 around 275,000 people have passed through one of its seven campuses worldwide. However, such in-house academies have become a lot more common in recent years. A survey by the Boston Consulting Group (BCG) found that the number of formal corporate universities in America doubled between 1997 and 2007, to around 2,000. Since then, it reckons, they have continued to spread, and now more than 4,000 companies around the world have them.

The numbers are vague because the definition of what qualifies as a corporate university is slippery. Unlike conventional universities, they tend to focus more on practice than theory, and they rarely hand out degrees. But they are about more than just slapping a grand title on companies' hotch-

potch of ad hoc training courses. Corporate universities have two distinguishing features: the first is a dedicated facility, whether built of bricks or housed online; the second is a curriculum tailored to the company's overarching strategy.

This latter trait gives the best clue as to why they have become so popular. "The world is changing quickly," says Rainer Strack of BCG. "Each firm has specific challenges, be it financial crises, the rise of digital or artificial intelligence, or increasing globalisation." Having training and development under the auspice of a central, in-house facility makes it easier to focus on its distinct needs. Business schools, he says, can be too standardised.

Corporate universities can be particularly useful when a firm is attempting to overhaul its culture. Unilever, a consumer-goods firm, opened its first campus in London more than half a century ago. In 2013 it spent €50m ($65m) opening another in Singapore. When it wanted to change the company's ethos to focus more on "sustainable" business, its university played a central role. Jonathan Donner, an executive who oversees it, says that programmes espousing the management style the firm was after—"purpose-driven leaders who can deal with a volatile and ambiguous world", no less—were not available on the open market. So it cherry-picked a bunch of professors, from business schools such as Cambridge and INSEAD, to tailor and teach programmes to be delivered on Unilever's campus. Apple has gone further, poaching Yale business school's dean, Joel Podolny, to run its corporate university.

Unilever's university focuses mainly on its top tranche of management. Other companies take a broader approach. One such is ArcelorMittal, a steelmaker, which has six corporate university campuses, including sites in Ukraine and South Africa. It will soon open three more, two of them in Kazakhstan and Brazil. In 2012 more than 27,000 employees spent around 200,000 hours in its classes. Such a geographic spread is important. Since

only around 15% of the firm's employees have English as a first language, says Christian Standaert, the head of ArcelorMittal University, the firm needs to provide lots of training in local tongues. This helps it develop managers locally, rather than having to send in expatriates to run its operations.

Lecture theatre, or echo chamber?

Although there are many good reasons for firms to invest in corporate universities, they have their limitations. One is the danger of building an echo chamber. Managers who go to a university business school are exposed to ideas from peers in other companies, notes Sim Sitkin of Duke University. And students can safely ask awkward questions without the risk of this affecting their careers.

Even more troubling is that, for all the millions spent on them, it seems all but impossible to measure the effect a corporate university has on the bottom line. Too often, companies do little more than ask those completing a course to fill out a survey on how useful they felt it was. A few try to track employees' effectiveness for perhaps two years after attending a programme. Corporate universities usually come under the auspices of firms' human-resources departments, which are usually not geared up to do a more rigorous analysis of what they achieve.

Privately, some firms confide another benefit of shifting management development in-house. Companies have been known to use the offer of education at a prestigious business school, whether an "Executive MBA" (EMBA) degree or a shorter leadership course, as a way to keep their rising stars happy. Even if the business need was not always apparent, splashing out on an EMBA from an Ivy League school made such managers feel treasured and, it was hoped, loyal. Unfortunately, it often had the opposite effect, providing a firm's brightest and best with a highly marketable qualification that made them more prone to being poached by rivals.

Certificates from corporate universities, being more focused on the sponsoring firm's needs, are less attractive to competitors.

Many firms have now stopped paying to send managers to external business schools altogether. After the financial crisis a lot of companies concluded that they were an extravagance. As better times returned, few have reverted to their old ways. A long-running survey of EMBA students by *The Economist* suggests that the number who have their tuition fees paid for by their employers has fallen precipitously. In 2005, 69% of students were sponsored; this year 39% were.

Yet the overall demand for EMBAs does not seem to have fallen, according to Michael Desiderio of the Executive MBA Council. That is because despite steep tuition fees, many managers think it is worth paying for themselves. They may be right. Students on the EMBA programme offered by IE in Spain, which has come top in our latest ranking of such programmes (see table), enter the course earning an average of around $144,000. A year after they graduate, this has risen to $260,000, more than covering the $81,000 cost of the programme. Some 82% say they were promoted soon after graduation. Of course, they may have been destined for higher things regardless of their sojourn in academia, but most who took our survey believe that their EMBAs played a part in their rise. For those managers willing to pay, there now seem to be two types of business education: the one they want, and the one their firm wants to give them. ■

管理培训

留在公司校园内

随着越来越多公司建立自己的“企业大学”，它们更不愿意花钱送管理人员上商学院了

“不要问理发师你是否需要理发，也不要问大学老师他做的事是否有意义。”纳西姆•尼古拉斯•塔勒布（Nassim Nicholas Taleb）在他2007年出版的《黑天鹅》一书中如是说。让大学老师尤其是商科老师头痛的是，企业界似乎越来越多地提出这个尴尬问题，然后给出更令人不安的答案。

那些考虑让管理人员参加发展课程的企业正在更多地创造自己的课程，而不是依靠商学院、咨询公司等机构。公司不仅在内部花费更多的培训预算，而且还建立起自己的“企业大学”。

这个想法并不新鲜。通用电气被公认为于1956年开设了第一所企业大学。而麦当劳的“汉堡大学”或许是最有名的。1961年以来，已有约27.5万人在它全球的七个校区完成了学习。然而，这种内设的大学最近几年变得更为常见。波士顿咨询公司（BCG）的一份调查发现，在1997年至2007年期间，美国正规企业大学的数量翻了一番，达到2000家左右。该公司估计，在那之后它们已经继续壮大，目前全球超过4000家公司拥有企业大学。

这个数字比较模糊，因为怎样才能算作企业大学，定义含混不清。与传统大学不同，企业大学更倾向于实践而非理论，也很少颁发学位。然而，它们不仅仅只是为大杂烩般的公司特设培训课程冠上了堂而皇之的头衔。企业大学有两个鲜明的特征：首先要有专用的教学设施，无论是用实体场所还是在线系统；其次要有根据公司总体战略量身打造的课程。

后面这个特点给出了最好的线索，解释了为什么它们变得如此受欢迎。波士顿咨询公司的雷纳•斯特拉克（Rainer Strack）表示：“世界变化很快，每个企业都有特定的挑战，无论是金融危机、数字或人工智能的崛起，还是不断加强的全球化。”拥有由内部机构集中管理的培训和发展课程，企业更容易专注于自身独特的需求。他认为商学院有可能过于标准化。

在公司试图重塑企业文化时，企业大学会特别有帮助。消费品公司联合利华半个多世纪前在伦敦建立了自己企业大学的第一个校区。2013年，该公司斥资5000万欧元（6500万美元）在新加坡再建了一个校区。当它打算改变企业精神，要更加注重“可持续”业务之时，企业大学发挥了核心作用。负责企业大学的高管乔纳森·唐纳（Jonathan Donner）表示，这些课程奉行公司的管理风格，目的是毫不含糊地塑造“目标导向、能够应对动荡而模糊的世界的领袖”，这在公开市场上无处可寻。因此，联合利华从剑桥和英士国际商学院（INSEAD）等商学院精挑细选了一批教授，在公司校园里打造并教授课程。苹果则更进一步，把耶鲁商学院的院长乔尔·波多尔尼（Joel Podolny）挖角过来管理它的企业大学。

联合利华的大学主要关注其高层管理者。其他公司则有更广泛的安排。钢铁公司安赛乐米塔尔（ArcelorMittal）就是其中之一，它的企业大学有六个校区，包括在乌克兰和南非的校区。它很快将再增加三个，其中两个分别位于哈萨克斯坦和巴西。2012年，超过2.7万名员工花费约20万个小时用于进修。这种地理分布很重要。安赛乐米塔尔大学的主管克里斯蒂安·斯坦达尔特（Christian Standaert）表示，由于只有15%的员工以英语为第一语言，公司需要用当地语言提供大量的培训。这种安排能帮助公司就地培养管理者，而无须派遣外籍人士管理业务。

演讲厅，还是回音室？

尽管公司有许多很好的理由投资企业大学，这些大学还是有其局限性。首先是有成为培养应声虫的危险。美国杜克大学的西姆·希特金（Sim Sitkin）指出，就读于大学商学院的管理人员能大量接触到其他公司同行的想法。学生还能安全地提出尴尬的问题，而不会有影响其职业生涯的风险。

更麻烦的是，尽管为企业大学花费了数百万美元，公司几乎不可能衡量它们对企业利润的贡献。在绝大多数情况下，公司仅仅要求完成课程的员工填写一张调查表，谈谈他们觉得课程有多大用处。少数几家公司试图在参加课程后跟踪员工的效能，大概为时两年。企业大学通常由公司的人力资源部门主管，而这个部门往往没有准备好对企业大学取得的成绩做更为缜

密的分析。

私下里，一些公司透露了转向机构内部管理发展课程的另一个好处。众所周知，公司一直把在著名商学院就读作为取悦企业新星的手段，无论是EMBA学位还是短期的领导力课程。即使商业需求并不总是显而易见，在常春藤盟校的EMBA上一掷千金也让这些经理感到自己备受珍惜。公司也希望他们会忠心耿耿。不幸的是，实际效果往往背道而驰，为公司最聪明、最优秀的人才提供热销的学历，反而使他们更容易被竞争对手挖角。企业大学颁发的证书由于更专注于主办公司的需求，对竞争对手不那么有吸引力。

许多公司现在已经完全不再花钱送管理人员到外部商学院进修了。金融危机后，大批公司认为这是铺张浪费。当好景重现，很少有公司会重归旧路。《经济学人》关于EMBA学生的一个长期调查表明，雇主支付学费的学生数量已急剧下降。2005年，69%的学生受到资助，而今年的比例为39%。

然而，据EMBA理事会的迈克尔•德西德里奥（Michael Desiderio）称，对EMBA的总体需求似乎没有下降。究其原因，尽管学费高昂，许多管理人员还是认为值得自掏腰包。他们或许是对的。在我们最新的EMBA排名（见表）中，名列第一的是西班牙IE商学院，其EMBA学生入学时的年均收入约为14.4万美元。他们毕业一年后，年均收入上升到26万美元，足可弥补该课程8.1万美元的学费。82%左右的人表示，他们毕业后很快得到了晋升。当然，不论是否学业镀金，他们可能早已注定要迁往高位。但大多数参加本刊调查的人都认为，他们的EMBA头衔在晋升中起了作用。对于那些愿意掏钱的管理者而言，现在似乎有两类商业教育：一种是他们想要的，而另一种是公司想提供给他们的。■

Schumpeter

Managing partners

The pressure on companies to form alliances with rivals is growing inexorably

IN THE run-up to the British election in early May, it was taken for granted that politics was entering an age of alliances. No party would win a majority; that much seemed certain. The question was whether the Conservatives or Labour could put together a winning coalition. David Cameron's surprise victory on May 7th put paid to this talk. But in many industries it is still May 6th: companies are casting around for alliances that can complement their strengths, make up for their defects, hedge their bets, add to their store of knowledge or extend their reach.

There is nothing new about businesses forming either joint ventures (in which they establish jointly owned subsidiaries) or looser alliances. There are ample studies to show how often they have been tried—and how often they have ended in tears. However, despite the difficulties of making partnerships work, firms are under a number of pressures to keep trying.

The first is that, in some industries, the cost of new technologies is so crippling that even the largest companies cannot bear it alone. Carmakers, for example, are having to spend fortunes developing electric, hybrid, hydrogen fuel-cell and other forms of propulsion, while also investing heavily in their petrol and diesel engines as they struggle to meet regulators' ever-stricter targets for carbon-dioxide emissions. Even Toyota, the world's largest carmaker, is having to swallow its pride and work with rivals such as BMW on fuel-cell technology. Ford is collaborating with its Detroit arch-rival, GM, on high-efficiency gearboxes. Daimler is increasingly co-operating with a long-standing alliance between Renault and Nissan, into which AvtoVAZ of Russia has also been incorporated.

Among makers of aircraft and mobile phones, uneasy alliances are ever more common, not just with direct competitors but between manufacturer and supplier. One big lesson from Boeing's struggles to get its 787 Dreamliner in the air was that it needed a collaborative, rather than an adversarial, relationship with the firms that provided its advanced components. Apple's main supplier of microchips for its iPhones is none other than Samsung, its main rival in the smartphone business. The two have to manage a complex relationship in which they compete furiously in the market—and in the courts, where they are locked in battle over patents—while collaborating closely on the design of the semiconductors Samsung sells to Apple. Lee Jae-yong, Samsung's genial incoming boss, is said to be better than his autocratic father, Lee Kun-hee, at navigating this neologistic world of "frenemies" and "co-opetition".

A second source of momentum behind partnerships is new technology that brings firms from different industries together. Allianz, a German insurer, has teamed up with Google to create an "accelerator" centre in Munich, to foster startups that are seeking to use data analysis to improve the insurance market. Mobile-telecoms operators and financial institutions are collaborating to offer mobile payments.

Cross-border ties are also on the rise. Western companies have long sought out partners in developing countries to help them cut costs and enter markets. Now, however, it is as likely to be an emerging-market firm seeking a Western partner to help it go global. Dr Reddy's Laboratories, an Indian pharmaceutical company, and Merck KGaA, a German one, are working together on cheaper versions of cancer therapies that are losing their patent protection. In a reversal of the normal arrangements, Dr Reddy's will take the lead in early product development and testing; and Merck will handle manufacturing and late-stage trials.

The fourth pressure to get together stems from the consumer. As online

shopping gains in popularity, owners of physical shops are having to find new ways to get customers to visit them. Uniqlo, a Japanese clothing retailer, has improved the pulling-power of its 90,000-square-feet flagship store in New York by striking deals with Starbucks, to install a coffee shop on the premises, and with the nearby Museum of Modern Art, to feature reproductions of work by Andy Warhol and Jackson Pollock. H&M, another fashion firm, has begun a scheme in which consumers can free space in their wardrobes by bringing their old clothes to its shops, also receiving a discount on new ones. To do this it works with I:CO, a logistics firm, which sends some of the used clothing to the second-hand market and the rest to be recycled.

A fatal embrace

There is no shortage, then, of good reasons why companies should seek to join hands with even their eternal foes. However, the drubbing that the Liberal Democrats—the Conservatives' former coalition partners—received at the polls in May is a reminder of how easily alliances can go wrong. Sometimes even the best-intentioned partner can squeeze the lifeblood out of another. Companies entering an alliance must learn how to trust each other—but also guard against being taken for a ride.

Businesspeople have much to learn from politicians and diplomats in this. Politicians have always lived in a world where the boundaries between friends and enemies are blurred. They recognise that your closest ally can soon become your bitterest adversary. (Mr Cameron may soon be looking back at how much easier it was to work with his "enemies" from the Liberal Democrats than with his "friends" on the right wing of his own party). Diplomats understand the importance of maintaining relations through thick and thin: whatever their underlying rivalries and occasional spats, America and China have a mutual interest in remaining on tolerably good terms and co-operating on global problems. And both politicians and

diplomats realise that all alliances are marriages of convenience. Lord Palmerston, a British prime minister, once said that Britain has no permanent allies or enemies, only permanent interests. That is the view business leaders should take as they enter partnerships. ■

熊彼特

搭档管理

企业正迫于日渐势不可挡的压力，要与对手结盟

五月初英国大选前夕，人们想当然地认为政治进入了一个联盟时代。没有政党会赢得多数席位，这一点看来毫无疑问。问题是会由保守党还是工党来组织多数党联盟。5月7日卡梅伦的胜出令人大跌眼镜，让这种预期落空。但是，在众多产业中，时间还停留在5月6日：公司正四处寻找合作者，以求加强优势、弥补短板、缓冲风险、增加知识储备，或者扩展产品覆盖。

公司组成合资企业（创办共同拥有的子公司）或更松散的联盟，这种做法毫不新鲜。有大量研究显示了它被不断尝试，却每每以惨败告终。然而，尽管合作联盟想要收到成效会有种种难处，但企业正受到诸多压力而不得不继续迎难而上。

首先，在一些产业中，新技术的成本如此高昂，即使最大的企业也无法独自承担。比如，汽车制造商正在投入巨资研发电动、混合动力、氢燃料电池，以及其他种类的动力系统，而同时，为了尽可能符合监管者设定的日益严苛的碳排放目标，他们还要大力投资汽油和柴油发动机。即使是丰田这家全球最大的汽车制造商也不得不放下架子，和宝马等竞争对手共同研发燃料电池技术。福特正和底特律的劲敌通用汽车合作开发高效变速箱。戴勒姆汽车也越来越多地和雷诺-日产这个长期联盟合作，该联盟之前已经收购了俄罗斯车厂AvtoVAZ。

在飞机和手机制造商中，不稳定的联盟日益常见，不仅是和直接竞争者结盟，还有制造商和供应商之间的合作。波音把787梦幻客机送上天空经历了艰难曲折，从中得到了一大教训：它需要和自己的先进零部件供应商建立合作而非对立的关系。苹果iPhone芯片的主要供应商恰恰是三星——其智能手机业务的主要对手。两家公司必须处理复杂的关系：在市场上激烈竞争，在法庭上为冗长的专利纷争而战，却要在三星出售给苹果的半导体

设计上紧密合作。即将成为三星老板的李在镕个性温和，据称要比他专制型的父亲李健熙更擅长在“亦敌亦友”和“竞合”的新世界里游走。

合作背后的第二个动力源泉是把来自不同行业的企业聚合在一起的新技术。德国安联保险集团（Allianz）已经和谷歌合作，创建位于慕尼黑的“加速器”中心，以扶植创业公司利用数据分析来改善保险市场。移动通讯商和金融机构正开展合作，提供移动支付服务。

跨境合作也在增加。长久以来西方企业在发展中国家寻找合作伙伴，帮助自己削减成本、打入新市场。但现在，新兴市场的企业有同样多的可能寻求西方合作伙伴的帮助来走向全球。印度制药商Dr Reddy的实验室正和德国的默克集团（Merck KGaA）合作，针对专利即将过期的抗癌药物研发廉价版本。常见的角色分配被倒转：Dr Reddy将牵头早期产品研发和测试，而默克负责制造和后期测试。

企业联手的第四个压力来自消费者。随着网上购物日益普遍，实体店老板不得不另辟蹊径来吸引顾客走进店铺。日本服装零售商优衣库位于纽约的一家占地9万平方英尺的旗舰店和星巴克咖啡达成协议，在店内开出咖啡馆，同时也和附近的现代艺术博物馆（MOMA）合作，在衣服上印制安迪·沃霍尔和杰克逊·波洛克的作品，由此增加了这家店的吸引力。另一家服饰公司H&M已经启动了一个新项目，让顾客把旧衣服送到店里，给自己的衣橱腾出空间，并在买新衣服时获得折扣。该公司为此和物流公司I:CO合作，I:CO把部分旧衣物运至二手市场，其余送去回收站。

致命的拥抱

企业甚至不乏好理由去和夙敌牵手。不过，保守党前盟友自由民主党5月在选举投票中遭遇的惨败提醒我们联盟有多容易失败。有时即使是最善意的伙伴也可能挤压了对方的生计。正在结盟的企业必须懂得如何相互信任也防范被欺。

在这方面，商人可以从政客和外交官那里学到很多。政客们一直生活在敌友边界模糊的世界。他们明白最亲密的同盟不久就可能变成最凶残的对

手。（卡梅隆可能很快会发现，和自由民主党的“敌人”合作，要比和自己党内的右翼“朋友”共事容易得多。）外交官们明白同舟共济的重要性：无论有何种潜在竞争且时有纷争，美国和中国有共同的利益来维持尚可接受的合作条款并在全球事务上合作。而政客和外交官都很清楚，所有联盟都是权宜联姻。前英国首相巴麦尊曾说，英国没有永远的盟友或敌人，只有永恒的利益。商业领袖在结盟时也该抱持这样的视野。■

Samsung

The soft succession

As he gradually takes the reins of the South Korean conglomerate, Lee Jae-yong will have an even tougher job than his father did when he took over 28 years ago

WHEN Lee Kun-hee took the helm at Samsung just two weeks after the death of his father, the firm's founder, in 1987, he set himself a seemingly unachievable goal: turning a middling South Korean conglomerate into a global giant in the mould of IBM or General Electric. He had a clear vision of how to climb that mountain: making big bets on emerging technologies and going for scale at almost any price. And he had the sort of management style that would have made Zeus proud. Every few years he hurled lightning bolts into the group's headquarters in Seoul, where he would otherwise rarely show up. In 1993, for instance, he ordered all his senior managers to drop everything and fly immediately to Frankfurt, where he gave them a speech that lasted three days.

Today, nearly 30 years later, Samsung boasts annual revenues of more than $300 billion. It is now the world's largest electronics manufacturer, with two-thirds of the group's revenues coming from smartphones, semiconductor chips and assorted other components. The rest comes from a grab-bag of lower-tech offerings, from washing machines and container ships to theme parks and life assurance.

Once again, the colossus is in the midst of a dynastic succession. Mr Lee, now 73 years old, suffered a heart attack last year. It is said that his physical condition has stabilised but that he cannot communicate, and is not expected to return to work. Gradually, his only son, Lee Jae-yong, 46 (who calls himself Jay), has been stepping towards the limelight. On May 15th it was announced that he would become chairman of two family foundations. These hold some of the various small stakes in Samsung

companies that allow the Lees to control the group despite owning only a few percent of it. The foundations are also seen in South Korea as the family's public face: they support good causes, such as child-care centres for poor families, and the stunning Leeum museum in Seoul.

Taking charge at the charities will help cement the younger Mr Lee's image as a softer, more reflective leader than his father. It is also seen as one of the final steps before he ascends to the corporate throne. He is expected to take a leadership role at the group's most important division, Samsung Electronics, in the coming months.

Until recently, precious little was known about the group's new boss. Articles about him, especially in Western news media, have tended to repeat the same few points: that he is more soft-spoken than his father, that he was involved in a disastrous e-commerce venture during the late-1990s dotcom bubble and that analysts regard his managerial abilities as unproved.

Indeed, when 50 fund managers, stockmarket analysts and other experts were recently polled about 11 heirs to the *chaebol*, South Korea's dominant business conglomerates, Mr Lee ranked seventh on leadership ability and last on legitimacy to inherit his father's wealth. South Koreans as a whole have become less tolerant of corporate "princelings", but in Samsung's case at least it helps that the family's third generation—Lee Jae-yong and his two sisters, who already run smaller bits of the empire—are seen as having clean hands. The younger Mr Lee gained credit for pushing the company, a year ago, to apologise swiftly to employees who had apparently contracted leukaemia while working in its semiconductor plants.

Quietly passionate

Those who have met Mr Lee say he is indeed low-key and even a bit shy, but that he can also be insightful, funny and even passionate—for instance

when he talks about Samsung's plans to become a big contract manufacturer for drug companies, a project he has been known to describe as his "baby". And although he does not (yet) sit on the board of Samsung Electronics and has only the rank of vice-chairman at the firm, it would be naive to assume that he had no say in the firm's recent big moves.

One example is the release earlier this year of the Galaxy S6 smartphone. It does not seem to be selling much better than its predecessor, which received poor reviews, prompting a fall in Samsung's market share (see chart 1). When the S6 was launched, Korean news media called it the "Lee Jae-yong phone"—an echo of the "Lee Kun-hee phone", the SGH-T100, which the older Mr Lee launched in 2002 and which became Samsung's first big hit, selling more than 10m units.

Although he is unlikely to subject his staff to three-day speeches, the younger Mr Lee will probably emulate his father in another respect, by keeping out of day-to-day matters to concentrate on broad, strategic issues. In a number of ways, those issues raise far tougher questions than the ones his father faced from 1987. Although Mr Lee senior's path to greatness was steep, at least it was relatively clear. Now, besides having to oversee a far larger group—consisting of around 80 firms, with almost half a million employees around the world—the new boss will have to manage three simultaneous balancing acts: between competition and co-operation, between hardware and software and, most importantly, between Samsung's Korean roots and its global present and future.

In electronics and other technology-based industries these days, one of the most important skills a boss needs is managing a complex relationship with rivals that is part competition, part co-operation (see Schumpeter). Apple is not just Samsung's biggest rival in selling smartphones, it is also the biggest customer for Samsung's semiconductors. Samsung's smartphones run on Google's Android operating system, making those two

firms partners. But Samsung continues to invest heavily in Tizen, an operating system of its own, that powers its simpler handsets and other devices—a weapon that could be deployed more widely if the need arose.

As Samsung's "chief customer officer", a job created for him, the younger Mr Lee has already been in charge of such tricky relations for several years, says Shaun Cochran of CLSA, a stockbroker. Somewhere along the line Mr Lee, a graduate of both Keio University in Tokyo and Harvard Business School, seems to have acquired the knack of managing them. He got along well with Steve Jobs, Apple's abrasive former boss, and was even invited to his memorial service. His good rapport with Tim Cook, Jobs's more emollient successor, has helped the two firms repair their relationship following a bitter legal row over patents. Apple won an award of nearly $1 billion after it convinced the jury that Samsung's Galaxy smartphones copied several aspects of the iPhone.

It is less clear how well Mr Lee will handle his second big balancing act: making Samsung better fit for an age in which more and more profits are generated by software and online services, despite the fact that hardware is the firm's forte. It now employs thousands of programmers, but its culture is still dominated by hardware engineers—making it tough, for instance, to compete with Xiaomi, an upstart smartphone-maker which has taken a lot of market share from Samsung in China. Xiaomi is often likened to Apple. But a better comparison is Google: the Chinese firm's devices are essentially loss leaders; its plan is to make most of its money using them to peddle services, content and advertising.

Under the elder Mr Lee, Samsung would have tried to develop the necessary software skills entirely in-house. His son seems open to acquiring expertise. In recent months Samsung has bought two startups: SmartThings, which makes software for the "internet of things" (wirelessly connected appliances), and LoopPay, a mobile-payments service.

To be more plugged into the world of startups, the group has also started to open innovation labs at important tech hubs around the world, notably in Silicon Valley, where Samsung is building fancy new facilities, complete with a clean room for chipmaking and a gym for employees. But all this may not be enough to turn it into a successful software firm. For that, Samsung may have to become more forceful in establishing its own "platform"—like Android, or Apple's iOS operating system—on top of which other firms can build a variety of services. So far, for all its investment in Tizen, Samsung has seemed hesitant to use it more widely.

Perhaps the most difficult balancing act will be the third one: between staying true to the Korean roots that have served Samsung so well, and becoming truly global. Samsung's greatest strength has been the discipline and loyalty it instils in its workforce. Once the leader has set the goal, employees march in lockstep to achieve it. That culture was easy to maintain while Samsung was still a Korean company full of Korean engineers. But it now employs a far wider variety of people from all backgrounds. It needs to become a more open-minded organisation, and to accept that creativity carries expectations of freedom.

At least Korean corporate culture is not as conformist as Japan's, where dissent is always discouraged, says Mark Newman, an analyst at Sanford C. Bernstein, a research firm, and formerly a Samsung employee. "At certain times, before the goals are set, speaking up is actually valued," he says. In other words, giving free-spirited software coders a bit of licence to speak their minds would not be completely alien to Samsung's management. And the younger Mr Lee, with his part-Western education, should understand better than his father why a culture change is needed.

However the group's new boss manages all these tensions, he will ultimately be judged on the numbers he delivers. Samsung may not be as profitable as Apple, but at least it remains way ahead of its main domestic

rival, LG (see chart 2). That said, most of Samsung's current money-makers—displays, memory chips and even smartphones—are maturing. To ensure future growth, Samsung is having to make not just one big bet, but several—in the knowledge that it cannot predict which technology will win.

One of its bets is on next-generation batteries; another is on medical equipment. But the most interesting may be the younger Mr Lee's plan for Samsung to become a giant contract manufacturer for biotech drugs. It has figured out that growing proteins in animal cells, at massive scale in ultra-clean plants with extremely high standards of quality control, is quite similar to "growing" circuits on silicon wafers under similar conditions. By concentrating on this bit of the pharmaceutical business and leaving other firms to design and market the drugs, just as with its microchip "foundries", it could become as dominant in drugmaking as it is in the chipmaking industry.

That is a long-term project. In the short term Mr Lee may try to please investors through a further untangling of the conglomerate's Byzantine structure. Already, two of its main companies have gone public, and some non-core businesses, in defence and chemicals, have been sold. Turning Samsung from a corporate hairball into an investor-friendly group with a proper holding company is a work in progress. Some early moves on this will help convince shareholders that Samsung's leader is heading in the right direction. ■

三星

柔性接班

随着李在镕逐渐接管这家韩国企业集团，他面临的挑战甚至会比他父亲在28年前接手公司时更大

1987年，李健熙在他的父亲也就是三星的创始人过世仅两周后接手公司，他给自己设定了一个看似不可企及的目标：把这家普通的韩国企业集团变成像IBM或通用电气这样的全球巨头。对于如何征服这座高山，他有清晰的蓝图：大力押注新兴技术，近乎不惜一切代价地实现规模化生产。他的管理风格会让宙斯也为之骄傲。每隔几年他会向极少现身的首尔集团总部扔出雷霆闪电。比如，1993年，他命令所有高管放下手中一切事务立即飞往法兰克福，在那里他给大家的讲演持续了三天。

今天，近30年后，三星已经拥有3000多亿美元的年收入。该集团是目前全球最大的电子制造商，三分之二收入来自智能手机、半导体芯片和各种其他组件。其余收入来自一系列技术含量更低的产品，从洗衣机、集装箱船，到主题公园、人寿保险。

现在，这个巨人正经历又一次改朝换代。现年73岁的李健熙去年心脏病发作，据称病情已稳定，但无法与人交流，预期不会再返回工作。其独子、46岁的李在镕（他叫自己Jay）慢慢走进聚光灯下。5月15日，三星宣布李在镕将出任两个家族基金会的董事长。这两个基金会部分持有三星系企业的少量股份，让李氏家族虽只拥有少量股权却仍能控制整个集团。在韩国，这些基金会也被视为该家族的公众形象：它们支持公益慈善，比如贫困家庭幼儿中心，以及位于首尔的令人惊艳的李氏博物馆（Leeum museum）。

掌管慈善机构有助李在镕打造比其父更柔和、会反思的领导人形象。这也被视为他登上企业王位的最后几步之一。未来几个月，预期他将在集团最重要的部门三星电子里出任一把手。

直到最近，外界对这位集团新老板知之甚少。关于他的报道尤其是西方媒体的报道翻来覆去就是那零星几点：比他父亲言语温和；在上世纪90年代末互联网泡沫期参与了一个灾难性的电子商务项目；分析师认为其管理才能尚未被证明。

确实，在最近对50名基金经理、股市分析师以及其他专家的问卷中，韩国占据主导地位的商业企业集团*chaebol*（大财阀）的11位继承人中，李在镕在领导能力排名中位列第七，在财富继承的合法性排名中垫底。韩国人整体对于企业"太子党"的包容度已经下降。不过，在三星这个例子上，外界认为李氏家族的第三代正派营商，这一点多少有些帮助。这代人包括李在镕和他的两个妹妹，她们已经在掌管李氏帝国较小的部分。一年前，三星的雇员显然是从公司的半导体工厂感染了白血病，李在镕敦促公司迅速向这些雇员道歉，由此赢得了信誉。

低调的热情

见过李在镕的人说，他真的很低调，甚至有些害羞，但有时也很有洞见、有趣，甚至热情——比如当他说到三星要成为庞大的制药公司代工制造商的计划时。众所周知，他把这个项目形容为自己的"孩子"。而尽管他（还）没有成为三星电子的董事，还只是该公司的副会长，据此认为该公司最近做出的几大动作没有他的份，就太天真了。

动作之一是今年较早时三星发布了Galaxy S6智能手机。相比获得差评的上一代机型，这款手机的销量并没有好很多，引发了三星的市场份额下跌（见图表1）。S6发布时，韩国媒体称其为"李在镕手机"，呼应了"李健熙手机"——李健熙在2002年发布了SGH-T100手机，是三星首款轰动产品，卖出超过1000万部。

虽然李在镕不太会让他的员工连听三天报告，他可能会在另一个方面效仿他的父亲：不介入日常事务，而专注广泛的策略性议题。在许多方面，这些议题所带来的挑战远比其父亲在1987年时所面对的要艰巨。虽然李健熙迈向伟大的山路陡峭，但至少比较清晰。现在，除了要管理一个庞大得多的集团——旗下有约80家公司，在世界各地有近50万名雇员，新老板还必

须同时做好三个平衡动作：竞争和合作的平衡、硬件和软件的平衡，以及最重要的——韩国传统和全球化的现在与未来间的平衡。

在当今的电子及其他基于科技的产业里，一个老板需要拥有的最重要技能之一是管理与其对手的复杂关系：部分竞争、部分合作。苹果不只是三星销售智能手机的最大竞争对手，也是三星半导体的最大客户。三星的智能手机在谷歌的安卓操作系统上运行，这让两家公司成为合作伙伴。但三星继续在它自己的操作系统Tizen上大笔投资。该系统支持较简易的三星手机和其他设备——三星的这一武器可以在有需要时被更广泛地部署。

作为三星的"首席客户官"（CCO）——一个专门为他设立的职位，李在镕负责处理这类棘手的关系已经几年，证券经纪公司里昂证券（CLSA）的肖恩·科克伦（Shaun Cochran）指出。在人生的某个时段，这位东京庆应义塾大学和哈佛商学院的毕业生似乎掌握了处理这类关系的诀窍。他和脾气粗暴的苹果前老板乔布斯相处融洽，甚至还受邀参加其追悼会。他和乔布斯的继任人、性格更为温和的蒂姆·库克关系良好，这帮助了两家公司在发生激烈的专利纠纷后修补了关系。苹果说服了陪审团相信三星的Galaxy手机系列抄袭了iPhone的几个特点，赢得了近10亿美元的赔偿。

在第二个大的平衡动作上，李在镕能做得多好就不那么明朗了。在一个利润越来越多源自软件和网络服务的年代，以硬件为长项的三星要如何调适？三星目前聘用了成千上万程序员，但其文化仍由硬件工程师主导，举例而言，这让它难以和小米竞争。手机制造商中的新贵小米已经夺去了三星在中国的许多市场份额。人们常拿小米和苹果比，但其实它更像谷歌：这家中国公司的设备基本上是亏本销售；其计划是用这些设备兜售服务、内容和广告，以赚取大部分利润。

如果还是李健熙当家，那么三星应该会尝试完全在公司内部开发必须的软件技能。但他的儿子看来更乐意用钱收购技能。最近几个月，三星已经买下了两家创业公司：一家是SmartThings，该公司为"物联网"（无线连接家电设备）制造软件，一家是移动支付服务LoopPay。

为了更融入创业公司的世界，三星也已开始在世界各地重要的科技中心开设创新实验室，尤其在硅谷，它正在那里建造豪华的新设施，带有生产芯片的无菌室和为员工打造的健身房。但所有这些开销可能不足以将它变成一个成功的软件企业。要达到这一目标，三星或许得更为坚定地建设自己的“平台”——就像安卓或苹果的iOS操作系统——让其他公司可以在其上打造各类服务。到目前为止，尽管三星在Tizen上大力投资，但是否要更广泛地运用这个系统，它似乎犹豫不决。

或许难度系数最高的平衡动作是第三个：既忠实于迄今对三星颇有助益的韩国根基，又变得真正全球化。三星的最强项是在员工中培养纪律和忠诚度。一旦领导人设定了目标，员工们就会步调一致地实现它。当三星还是一家聚集韩国工程师的韩国企业时，这种文化容易维持。但如今它雇用的人员背景各异。它需要变成一个更开放的企业，能够接纳创造力对自由的期待。

至少韩国的企业文化不像日本的那般唯唯诺诺和惯于压制异见者，盛博研究公司（Sanford C. Bernstein）的分析师、三星前雇员马克·纽曼（Mark Newman）说。“在某些时候，在目标确定前，公司实际上重视你说出自己的意见。”他说。换言之，给随性的软件编程人员一些发声机会，这和三星的管理模式并非完全抵触。而李在镕的部分西方教育背景应该会让他比他父亲更能理解为何需要文化上的改变。

无论三星集团这位新老板如何处理所有这些关系拉锯，人们最终会以他实现的盈利数字来评判他。三星的利润可能不及苹果，但它至少把主要的国内对手LG远远抛在了后头（见图表2）。尽管如此，三星目前大部分的收入来源，包括显示器、内存芯片，甚至智能手机，都日益成熟。要确保未来的成长，三星应该明白，鉴于它无法预测哪项技术会突围而出，因此它必须做出不止一个大赌注。

其赌注之一是下一代电池，另一个是医疗设备。但最有趣的一个可能是李在镕要把三星变成庞大的生物技术制药公司的代工制造商这一计划。该公司已经发现，在超洁净工厂内以极高规格的质量控制来大规模培育动物细

胞内的蛋白质，很像在类似条件下在硅晶上“培育”芯片。专注于医药业的制造环节，把设计和营销留给其他公司去做，就像三星的芯片“铸造厂”那样，那么它会像在芯片制造业中那样，在制药领域抢占主导地位。

这是一个长期工程。短期而言，李在镕可能会进一步理清这家企业集团拜占庭式的复杂结构，以图取悦投资人。其主要公司中有两家已经上市，而在防御和化学领域的一些非核心业务已经出售。已在进行中的努力要把三星从一个企业乱毛球变成一个有恰当控股公司、对投资人有利的集团。在这方面，一些早期举措将让股东们确信，三星的领导人正迈向正确的方向。■

Cleaning up sport

Bigger than Blatter

The problem of corruption in sport transcends FIFA and is too serious to ignore

SO THE stubborn septuagenarian resigned from the tiddlywinks committee. Why all the fuss and headlines, some eye-rolling observers have been wondering? What does it matter who runs FIFA, football's abstruse governing body, or where its tournaments are held? All these shenanigans, like the furores that occasionally erupt in other sports, are absurdly overblown. Football belongs on the back pages, not the front.

That view, common among sports non-enthusiasts, rests on the mistaken notion that corruption in sport is also a sort of game, in which rubicund rogues harmlessly siphon off gate receipts. Even many fans, perturbed by the disruption of their hobby, miss its real gravity. Because at bottom this is not a recreational issue but a criminal one. Neither harmless nor victimless, sports corruption is perpetrated by crooked officials, abusive governments and gangsters, sometimes in concert. It matters—and, welcome as Sepp Blatter's demise is, the problem goes well beyond him, FIFA and football.

Corruption in sport has four main, related drivers. One is the needlessly pharaonic scale of mega sporting events. For kleptocratic regimes such as that of Russia—venue of last year's ludicrously costly winter Olympics and, on current plans, of the football World Cup in 2018—these are superb opportunities to embezzle public funds. The victims are the host country's short-changed taxpayers, pensioners and public services.

Second, top-level sport is now a global commodity, eliciting vast sums from marketeers and broadcasters (real-time sporting drama is one of the few remaining draws for live audiences). As the American inquiry that helped

topple Mr Blatter suggests, kickbacks sometimes lubricate the fat contracts that arise. Thus sports corruption is inextricable from the wider scourge of corporate graft. A third factor is the under-regulated globalisation of gambling, and its exploitation by match-fixers and money-launderers. Dodgy betting is hardly new: the rigging of baseball's World Series of 1919 is immortalised in "The Great Gatsby". But worldwide fan bases and the internet have made it more rife and much more lucrative, attracting serious mafiosi from Asia and eastern Europe.

Last, the governance of too many sports is opaque, juicily monopolistic, badly monitored—and wholly unsuited to the big-money age. Some sports (such as professional tennis) and places (such as Finland and South Korea, which have cracked down on match-fixing in football) have caught up. Others have, like FIFA, proved ill-equipped to combat predation and too hospitable to unscrupulous officials. Football is not the only vulnerable game; scandal has struck pastimes as obscure as handball. Villainous politicians, such as some of the many involved in Indian cricket (a swamp of fixes and backhanders), are often in on the act.

Jail time, not yellow cards

In many ways globalisation has been a boon to sport, and not just for well-paid players and the car dealerships they patronise. It has produced higher standards, better stadiums and slicker spectacles. But to cope with the concomitant risks, sports need to be run as transparent, rigorous businesses. In some cases their rule-setting and game-nurturing functions should be split off from their marketing and event-organising roles. Corporate sponsors should be quicker than they have been in FIFA's case to dissociate themselves from thievery.

Yet because sports corruption is a reflection of wider problems—sport merely being an organism to which criminal succubi attach themselves—it is too formidable for sporting organisations to tackle alone, even if they are

inclined to. Precisely because it is a nexus for broader crime and malpractice, more governments and law-enforcement agencies should emulate America's Justice Department (and India's Supreme Court, which is trying to clean up cricket) by pursuing the embezzlers, bribe-payers and money-launderers, and dishing out serious punishments to those they catch. Too often the authorities have shared the misconception that corruption in sport is essentially benign. Worried about appearing killjoys, they have let it be. FIFA's shame should mark the end of such naivety. ■

彻底清理体育

不止于布拉特

体育领域的腐败问题不止限于国际足联，形势之严峻不容忽视

所以，那个倔强的七旬老人从玩弄无聊游戏的国际足联辞职了。就这样一件事，至于如此小题大做，上各种头条吗？——一些观察家们翻着白眼嘀咕着。谁执掌错综复杂的国际足联，或者各项赛事在哪里举办，有什么要紧的？所有这些闹剧就像在其他体育领域不时爆发的骚乱一样，被不合理地夸大了。足球报道应该放在报纸的后面几页，而不是上头版。

那种看法源于一个错误观念，即体育腐败也是一种游戏，红光满面的腐败之徒从门票收入中榨取些好处，无甚危害。这种观点在非体育爱好者中很普遍。甚至许多体育迷也只是因为自己钟爱的运动受影响而心烦，忽略了腐败的真正危害。因为这实质上不是娱乐事件，而是犯罪案件。体育腐败既非无所危害，也不是没有受害者，它们由心术不正的官员、滥用职权的政府和不法分子所为，有时还是勾结作案。这事关重大。赛普•布拉特的下台固然是好事，但其中的问题远不止于他本人、国际足联和足球。

体育腐败有四个主要的相关推手。首先是大型体育赛事中不必要的铺张浪费。对贪腐的政府而言，这些赛事是侵吞公共资金的绝佳机会，比如俄罗斯，它刚在去年举办了一届花费浩大的冬奥会，按照现在的计划还将举办2018年世界杯。受害者是赛事主办国吃亏的纳税人、退休人士，以及受损的公共服务项目。

第二，顶级赛事现在已经变成了全球性商品，从营销机构和转播商那里吸金无数（实时转播的体育赛事是为数不多能吸引现场观众的活动）。美国所做的调查促成了布拉特的下台，调查显示回扣有些时候是达成大合同的润滑剂。因此体育腐败和更广泛的公司贪污密不可分。第三是赌博全球化的监管不足，以及比赛操纵者和洗钱者对此的利用。《了不起的盖茨比》对世界职业棒球联赛被操纵的描写已成经典。但是遍布全球的粉丝还有互联网使得这种情况变得更为普遍，更有利可图，吸引了来自亚洲和东欧的

大量黑帮。

最后，太多的体育项目监管不透明，由于垄断而油水多多，极度缺乏监督，这完全和滚滚“钱景”不相称。一些运动（如职业网球）和一些国家（如芬兰和韩国严厉打击对足球比赛的操纵）已经有了进展。而以国际足联为代表的另一些机构则在对抗腐败方面无所作为，对待无耻官员过于宽容。足球不是唯一一项受此影响的运动，即使像手球这样冷门的消遣运动也受到丑闻困扰。无良的政客经常插手其中，例如许多卷入印度板球运动的官员，这项运动已深陷操纵比赛和回扣的泥潭之中。

> *直接入狱，而非黄牌警告*

在许多方面，全球化都是体育运动的福祉，这并不仅仅限于获得丰厚收入的运动员以及他们光顾的汽车经销商。全球化带来了更高的标准、更好的体育场馆和更精彩的比赛。但要应对与之相伴而来的风险，体育运动须以透明严谨的方式运作。有时候，体育项目的规则制定和运动培育职能应该与营销及赛事组织部门分离。赞助商应该更快地脱离腐败事件，而不是像在国际足联的案例中那样行动迟缓。

然而，由于体育腐败反映了更广泛的问题——运动仅仅是犯罪势力所寄生的肌体——因此它太过强大而无法由体育组织独力解决，即使他们想采取行动。恰恰因为大量犯罪势力和不法之徒的相互勾结，更多政府和执法机构应该效仿美国司法部（以及正在力图肃清板球运动的印度最高法院），彻查侵吞公款者、行贿者和洗钱者，对落网之徒加以严惩。太多执法机构都误认为体育腐败本质上并非恶性犯罪。为了不被看作是扫兴之人，它们往往听之任之。国际足联的蒙羞应该为这种天真的想法画上句号。■

Sporting mega-events

Just say no

Hosting the Olympics and the World Cup is bad for a city's health

THERE may be few sweeter siren songs for public officials across the world than the dulcet tones of emissaries from the International Olympic Committee (IOC) and FIFA, the global governing body of football. To induce cities to bid to host the Olympics and World Cup, they promise infrastructure investment to modernise blighted areas, a lasting rise in tourism, improved public health, a month at the centre of the world stage and the eternal gratitude of constituents. And as for the costs? Well, the economic ripple effects will surely be so large that the spending will pay for itself, and it can always be financed with debt that comes due long after an officeholder has moved on.

Following the extensive media coverage of the economics of the London and Sochi Olympics and Brazil's World Cup, it should be no surprise that these lofty assurances rarely come to fruition. But even appropriately jaded readers are likely to be shocked by the evidence in "Circus Maximus", a brief polemic by Andrew Zimbalist, an American sports economist, which reveals the magnitude of the deception that precedes these events and the disappointment that follows. The book's misleading subtitle calls hosting the competitions an "economic gamble", implying it is a risky bet with a potentially high return. In fact, "Circus Maximus" leaves little doubt that under current conditions, prudent city governments should avoid the contests at all costs.

In principle, there is no reason why hosting such events needs to be an economic own-goal. Between television rights, ticket sales, licensing and sponsorships, the most recent summer Olympics, in London, generated $5.2 billion in revenue. In a city with sufficient existing athletic, hotel and

transport infrastructure, it would be easy to stage the competition for less than that figure and come away with a healthy profit—as Los Angeles did in the highly successful 1984 summer games. But over the past few decades, the IOC, in particular, has appropriated an ever-greater share of the proceeds for itself: the most recent public data reveal that it now pockets more than 70% of Olympic television revenue, compared with less than 4% between 1960 and 1980 (see chart). And there is little evidence to support the projections that hosting will bring a surge in tourism: Beijing and London both attracted fewer visitors during their summer Olympics in 2008 and 2012 respectively than they had in the same period a year earlier.

The international organisations argue, in return, that they also contribute to the costs of staging the contests: in particular, FIFA funds the entire World Cup operating budget. However, "operating" costs account for only a small portion of the price of hosting tournaments. The lion's share is spent on construction, both on stadiums and on transport capacity to shuttle people between events. Those expenditures are borne entirely by the host. Although there is no formal requirement that such venues be new, the IOC and FIFA have consistently selected cities with the most ambitious plans for custom-built facilities. It is the need to build so much, so fast that leads to taxpayer-funded cost overruns that would be comic were they not so tragic, running from a low of four times the original estimate up to ten times or more.

To justify this spending, proponents of hosting often argue that these infrastructure projects will provide continuing benefits long after the events end. Such claims are almost offensively misleading. Mr Zimbalist offers a whirlwind tour of the "white elephants" that litter host cities following the Olympics or World Cup: in Athens a volleyball stadium inhabited by squatters and a softball park overgrown with trees; in Beijing a weed-infested cycling racetrack; in Brazil a football pitch with 40,000 seats now used by a second-division team that draws around 1,500 fans a match.

All of these structures cost millions of dollars a year to maintain, making the games' costs their enduring "legacy".

Perhaps the only encouraging finding in Mr Zimbalist's work is that potential hosts are getting wise to the bad deal the IOC and FIFA seek to foist on them. Twelve different cities bid for the 2004 Olympics, whereas the 2020 edition drew just five applicants. After Oslo dropped out last October, only two cities—Beijing and Almaty, Kazakhstan—are now candidates to host the 2022 winter Olympics, providing further support for a prediction in a 2012 report commissioned by the Dutch government that in the future only non-democratic countries will pay up to host the events. If the IOC, which markets the games as a force for peace and harmony, wants to avoid being turned into a propaganda tool for autocratic regimes, it may need to rethink. Thomas Bach, its head, recently established a working group to propose changes to the host-selection process.

Mr Zimbalist offers a number of proposals for reform. The most important would be for the IOC and FIFA to abandon their preference for new construction and give a fair hearing to bids relying on existing facilities. He also suggests limiting the number of cities bidding, adjusting the split of television revenue to favour host cities, making the organisations' voting systems more transparent and imposing term limits on their members. The IOC has clamped down on corruption. Both bodies need to do far more to curb costs and improve transparency and accountability. Nothing less than an Olympian advocacy campaign will be needed to change a system that has served many bigwigs so well. ■

大型赛事

只管说不

举办奥运会和世界杯有损城市健康

对全世界的政府官员而言，可能没有什么歌曲比国际奥林匹克委员会和全球足球管理机构国际足联的特使那悦耳的声音更加甜美诱人。为了劝诱各地城市申办奥运会和世界杯，他们做出种种承诺：基础设施投资让衰败的地区现代化；旅游业持续增长；公共卫生得到改善；占据世界舞台中心长达一月之久，以及选民们永恒的感激之情。至于成本呢？好吧，经济连锁效应一定会非常大，所以花出去的钱总能赚回来，而且总能获得贷款融资，等贷款到期的时候，这届官员早已不在任上了。

从媒体关于伦敦奥运会、索契冬奥会和巴西世界杯经济状况的广泛报道中可以看出，这些崇高的保证极少实现。这一点不足为奇。但即便是有些腻烦的读者也可能对《大竞技场》（Circus Maximus）一书中的证据感到震惊。这部简短的抨击之作由美国体育经济学家安德鲁·津巴利斯特（Andrew Zimbalist）所著，揭示了这些赛事在举办之前存在的巨大谎言，以及赛事落幕之后的失望之情。该书的副标题将举办竞赛称作“经济赌博”，意指这是一场豪赌，可能回报颇丰，但这有点误导。其实，《大竞技场》坚信，在当前局势下，谨慎的城市政府应该不惜一切代价避免举办赛事。

原则上，举办这样的赛事没有理由会成为经济上的一个乌龙球。通过电视转播权、销售门票、授权和赞助，上届伦敦奥运会产生了52亿美元的收入。对一个拥有足够运动、酒店和交通基础设施的城市来说，很容易就能用比这更少的钱举办赛事，并且大赚一笔——洛杉矶在举办非常成功的1984年奥运会时正是如此。但是在过去二三十年，尤其是国际奥委会，已将越来越大的收益份额据为己有：最新的公开数据显示，现在它已将奥运会电视转播收入的70%揽入囊中，这一比例在1960年到1980年间低于4%（见图表）。几乎没有证据能够证明举办大型赛事确实会令旅游业激增：2008年和2012年夏季奥运会期间，北京和伦敦吸引的游客数量都少于

前一年同期。

这些国际组织反过来争辩说它们也分担了举办赛事的成本。尤其是国际足联，它资助了世界杯的全部运营预算。但是，“运营”成本只占赛事举办成本很小的一部分。重头花费在建设上，包括运动场馆以及在各项赛事间往返运送人员的能力。这些花费全部由主办方承担。尽管没有明文规定这些场馆必须是新建的，但国际奥委会和国际足联一致选择了那些在计划建造专门设施方面最雄心勃勃的城市。在如此短的时间内大兴土木，这让由纳税人出资的成本超支，这一点即便不是悲剧也是闹剧，最终支出低则达到最初预估的四倍，多则到十倍，甚至更多。

支持举办赛事的人为了使这笔支出合理化，往往辩称基础设施项目在赛事结束后能带来持续效益。这样的说法简直是明目张胆的误导。津巴利斯特带领读者快速游览了在奥运会或世界杯结束后废弃在各主办城市的形象工程：在雅典，一座排球馆被居无定所者占据，一座垒球场内树木丛生；在北京，自行车赛道上杂草遍布；在巴西，可容纳四万名观众的足球场如今由一家乙级球队使用，单场比赛仅能吸引1500名球迷到场。所有这些基础设施每年要耗费几百万美元维护，举办赛事的成本成了它们永恒的“遗产”。

津巴利斯特提到可能的主办方对国际奥委会和国际足联试图强加于他们身上的亏本买卖有着越来越明智的态度——这也许是其著作中唯一积极的发现了。12个城市申办了2004年奥运会，但2020年奥运会的申办城市只有五个。去年10月奥斯陆退出后，只有两个城市——北京和哈萨克斯坦的阿拉木图——参与申办2022年冬奥会。这进一步支持了荷兰政府于2012年委托完成的一份报告中的预言：未来只有非民主国家才办得起体育赛事。如果一直将奥运会视为和平与和谐的力量加以推广的国际奥委会不希望自己沦为独裁政权自我宣传的工具，那它应该好好反思。国际奥委会主席托马斯·巴赫（Thomas Bach）最近成立了一个工作小组，专门研究修订申办城市挑选程序。

津巴利斯特为改革提出了一些建议。最重要的是国际奥委会和国际足联要

抛弃对新建筑的偏爱，给依赖已有设施的申办城市发言的机会。他还建议限制申办城市的数量，调整电视转播收入分成比例而让主办城市受惠，让各组织的投票机制更加透明，对其成员的任期实行限制。国际奥委会已经开始打击腐败。这两大组织都需要更加努力控制成本，提升透明度，加强问责制。要改变这个已经让许多大人物受用的体系，所需要的努力不亚于一场奥林匹克推广运动。■

Consumer electronics in China

From followers to leaders

Why the Chinese will increasingly set the trends in gadgetry

IT IS a courageous foreigner who drives on China's roads. A combination of tens of millions of inexperienced drivers and a general disregard for traffic rules makes them among the world's deadliest. Braver still would be the car manufacturer that dares to put a car loaded with automated-driving features on such roads. Western notions of what is a safe distance between cars mean little in China. How could an autonomous vehicle conceived for orderly Germanic roads cope with such anarchy?

Nevertheless Audi was last month giving journalists demonstrations of hands-off motoring through the frantic Shanghai streets. Its test cars were in town for a giant consumer-electronics fair, where it announced deals with Baidu, China's biggest search-engine and mapping firm, and Huawei, a telecoms-equipment manufacturer, to kit out its connected cars of the future.

The German firm's faith in China's digital boom may be well placed, if last month's convention is a guide. This is the first year that a version of the Consumer Electronics Show (CES), which is held every year with much fanfare in Las Vegas, has been held outside America. Hitherto, trends in consumer gadgetry have typically taken off in America first, followed by the rest of the rich world, and then in emerging markets like China. That may be changing.

Size is one reason. America's Consumer Electronics Association, which stages the CES, forecasts that the Chinese market for electronic goods will grow by 5% to $281 billion this year, and at current growth rates will overtake America's next year. A big market gives firms added incentive to

try out new devices there early.

But there are other reasons besides size to expect the Chinese consumer increasingly to be the trend-setter, rather than the trend-follower, in electronics. First, take autonomous and "connected" cars. The average Audi buyer in America or Europe is in his 50s, but in China he is a digitally-addicted 36-year-old. So models with such advanced options are likely to become widespread in China first. Fully driverless cars, in particular, may take off quicker than in litigious America or risk-averse Europe.

Second, the Chinese have taken to mobile commerce with gusto. Apple is reported to be in talks with Alibaba, a local e-commerce firm, to bring its mobile payment system to the Middle Kingdom. Consumers who have quickly got used to shopping on mobile devices also seem likely to be enthusiastic adopters of smart watches and other wearable devices.

The Chinese people are turning out to have a greater affinity for gadgetry than even the Japanese; and Chinese companies are innovating furiously, producing all manner of devices, one of which may, perhaps, turn out to be the next Sony Walkman. JD, a successful online retailer akin to Amazon, last month showed off a voice-controlled gadget, dubbed the DingDong Smart Speaker, essentially a radio that plays whatever you tell it to—music, news, weather, or whatever. At a gathering of its own in Beijing last month, Lenovo, now the world's biggest computer-maker, unveiled its plans for the first smart watch with two screens—an ordinary one, and one that uses optical reflection to create a much bigger virtual display. It also unveiled plans for a smartphone with a built-in laser projector and infrared motion detector that is capable of projecting what is, in effect, a giant touch screen.

Chinese electronics firms still have a reputation for simply copying Western designs. And there was still evidence of this at the CES gathering in Shanghai: plenty of lookalikes of Google Glasses, Apple Watches and iPads

were to be seen at vendors' booths. However, there were also a surprising number of original inventions on display, with a chance of making it in foreign markets. This opportunity is beginning to change Chinese firms' attitudes towards intellectual-property protection. Chinese inventors backed by venture capital, who are hoping to launch their products in America, are beginning to patent them, realising that this boosts the valuation that investors put on their firms.

Consider The One, a brilliantly conceived electronic piano that integrates with music libraries accessed via smartphones and tablets. Many people give up trying to learn the piano because of the tedium of learning to read off manuscripts. The keys on this nifty piano light up in progression, to help pupils figure out which keys to press, and it uses tricks adapted from video games to help pupils eventually wean themselves off the lights and become able to read music. Ask Ben Ye, the firm's founder, whether his hot-selling invention is safe from local copycats, and he says no. So why is his firm paying hefty licensing fees to foreign music publishers, to use their songs? We pay for the intellectual property we use because we want to go global, he says. ■

中国的消费电子产品

从追随者到领导者

为何中国人将在小型电子设备上逐渐引领潮流

一个外国人敢在中国的道路上开车，勇气可嘉。数千万新手司机，加上对交通规则普遍漠视，让这些道路成为世界顶级“杀手”。更有勇气的是汽车制造商，竟敢让配备自动驾驶功能的车辆在这样的道路上行驶。西方对于车与车之间安全距离的概念在中国没什么意义。一辆为井然有序的德国道路设计的自动驾驶汽车如何能应对这样的混乱无序？

尽管如此，上个月奥迪向记者们展示了如何在疯狂的上海街头实现自动驾驶。它的测试车在上海一个大型消费电子展会上亮相，同时奥迪宣布与百度和华为合作，推出未来的联网汽车。百度是中国最大的搜索引擎和地图公司，而华为是通讯设备制造商。

如果上月的大会是一个指引，那么这家德国公司对中国数字化繁荣的信心可能是有的放矢。这是每年在拉斯维加斯举办得如火如荼的消费电子展（CES）首次在美国以外的地区举办。小型电子消费品的热潮通常在美国发端，其他富裕国家紧随其后，最后才到达像中国这样的新兴市场。现在可能不太一样了。

规模是一个原因。CES的主办方美国消费电子协会（Consumer Electronics Association）预测中国电子产品市场今年将增长5%，达到2810亿美元，以目前的增长速度，明年将超越美国。一个庞大的市场让公司更有动力早早地在这里展开新产品试水。

但是，除了规模之外还有其他原因，人们期待中国消费者越来越成为电子产品的风潮引领者，而非追随者。首先以自动驾驶和“联网”汽车为例。在美国或欧洲购买奥迪车的顾客平均年龄50多岁，但是中国的奥迪车主平均仅36岁，正是对数字产品上瘾的年龄。因此这类有先进配置的车型可能首先在中国普及。尤其是完全无人驾驶的汽车，在中国可能会比在喜好诉讼

的美国或者回避风险的欧洲更快取得成功。

其次，中国人已经满怀热情地沉浸于移动商务中。据报道，苹果正在和本地电子商务公司阿里巴巴洽谈，将苹果的移动支付系统带到中国。中国的消费者很快就习惯了用移动设备购物，他们看来也很可能成为智能手表等可穿戴设备的忠实用户。

中国人现在甚至比日本人更青睐小型电子设备。中国的公司也正在加紧创新，推出各种各样的产品，这其中或许会出现下一个索尼随身听。京东是一家类似于亚马逊的网络零售商，上个月推出了一款名叫“叮咚智能音箱”的声控设备。这实际上是一台接受语音指令的收音机，能播放任何你指定的内容——音乐、新闻、天气预报等等。目前全球最大的电脑制造商联想上月在北京的联想科技大会上公布了推出世界首款双屏智能手表的计划。这只手表有一块普通屏幕，还有一块运用光学反射原理创造出的更大尺寸的虚拟屏幕。联想还展示了一个内置激光投影仪和红外动作感应器的智能手机项目，能将手机屏幕通过投影转变成一个巨大的虚拟触摸屏。

中国的电子产品公司依然有着仅仅是抄袭西方设计的名声。这样的例证在上海的消费电子展上不难找到：大量谷歌眼镜、苹果手表和iPad的仿制品出现在卖家的摊位上。然而，令人惊讶的是，大会也展示了为数不少的原创发明，它们有机会打入外国市场。这样的机会开始改变中国公司对知识产权保护的态度。得到风险资金支持的中国发明家希望进入美国市场，开始为他们的产品申请专利，他们意识到这样做能提升投资者对公司的估值。

以“壹枱”为例，这架电子钢琴构思巧妙，把通过手机和平板电脑访问的音乐库整合其中。很多人放弃学钢琴就是因为不堪忍受学习读谱的乏味。这架智能钢琴上的琴键会在音乐行进中亮起，引导学习者按下正确的键。同时，它还借助类似电子游戏的方法，帮助学习者最终摆脱对琴键亮灯的依赖，实现自主读谱。如果你问这家公司的创始人叶滨，他的这件热销产品能否免于国内抄袭者的剽窃，他的答案是不能。那为何他的公司要向国外音乐发行商支付高额许可费来使用它们的乐曲呢？他的回答是，我们为知

识产权买单，是因为我们想走向全球。■

Shareholder activism

Capitalism's unlikely heroes

Why activist investors are good for the public company

AS INVENTIONS go, the public company is one of capitalism's greatest. Initial public offerings promote innovation, by providing an exit route for entrepreneurs; being listed makes a firm open to scrutiny; and ordinary people have a chance to invest in capitalism's wealth-creating machines.

But the past 15 years have cast a shadow over the public company. There was not much sign of scrutiny or wealth creation in fiascos like Enron and Lehman Brothers. Governance has been weakened by the rise of passive index funds, which means that many firms' largest shareholders are software programs. Institutional investors prefer to sell at the first sign of trouble rather than manage problems—so chief executives obsess about quarterly earnings and grab pay and power while they can. At the same time, tycoons in Silicon Valley have often turned outside investors into second-class citizens, by creating special voting rights for their own shares.

Private-equity barons say their model of concentrated ownership makes more sense. Some governments argue that companies need the steadying hand of the state. But there is a better way. Activist hedge funds take small stakes in firms and act like political campaigners, trying to win other shareholders' support for their demands: representation on companies' boards, cost-cutting, spin-offs and returning cash to shareholders. Mad, bad and dangerous to know, activists are often loathed by public-company bosses for their belligerence and opportunism. But the bosses are wrong. Activists are in fact the public company's unlikely saviours.

> *Hyenas laughing...*

Activists have been around since the 1980s, but the scale of their

insurrection in America is unprecedented. Activists run funds with at least $100 billion of capital, and in 2014 attracted a fifth of all flows into hedge funds. Last year they launched 344 campaigns against public companies, large and small. In the past five years one company in two in the S&P 500 index of America's most valuable listed firms has had a big activist fund on its share register, and one in seven has been on the receiving end of an activist attack.

Americans encounter firms that activists have targeted when they brush their teeth (Procter & Gamble), answer their phone (Apple), log in to their computer (Microsoft, Yahoo and eBay), dine out (Burger King and PepsiCo) and watch television (Netflix). In December an activist fund called Trian broke new ground by winning a board seat at Bank of New York Mellon, custodian for many of the world's biggest banks.

A disgrace, say some; the cult of short-term shareholder value gone mad. Activists have a reputation for stripping cash and assets and loading firms with debt. Their rowdiness seems calculated to distract managers, good or bad. One prominent activist, Carl Icahn, likes to call chief executives "morons" and tease them on Twitter. Another, Bill Ackman of Pershing Square, has compared Herbalife, a firm he says is a fraud, to the Nazis. When Dan Loeb went for Sotheby's, its then chairman branded him a "scumbag". Some have used dubious tactics, including building positions by stealth with derivatives.

So much money is flowing the activists' way that a few will no doubt go too far, harming a decently run firm or even breaking the law in the pursuit of an edge. Yet, despite their flaws and excesses, activists are a force for good.

> *...all the way to the bank*

One reason is that plenty of companies suffer from rotten management. About a tenth of big American firms, and even more smaller ones, still

employ tactics like “poison pills” and staggered boards that shelter incompetent managers.

Another is that today’s activists belie the scavenging stereotype of the 1980s. They often seek to improve firms’ boards rather than strip companies of assets. They work with other shareholders, frequently winning the support of big money-managers such as Capital Group and Fidelity. They are raising longer-term capital and so stretching their investment horizons. ValueAct, based in San Francisco, locks in its investors for three to four years and has served on the boards of 37 firms, including Microsoft. Mr Ackman has raised a pile of “permanent capital”. *The Economist* has analysed the 50 largest activist positions in America since 2009. More often than not, profits, capital investment and R&D have risen.

Private-equity funds are another way of fixing misfiring firms. But activists have advantages over Wall Street’s buy-out barbarians. Instead of loading up on debt to finance the takeover of entire firms, they get the work done with a stake of, typically, just 5% or so. That means activists are good value because they use less debt, pay no takeover premium and extract far lower absolute fees.

Most of all, activists fill a governance void that afflicts today’s public companies. A rising chunk of the stockmarket sits in the hands of lazy investors. Index funds and exchange-traded funds mimic the market’s movements, and typically take little interest in how firms are run; conventional mutual funds and pension funds that oversee diversified portfolios dislike becoming deeply involved in firms’ management. In the face of Wall Street’s provocateurs, America’s lazy money is waking up. Whether their ideas are barmy or brilliant, the activists make it harder for investors to stay on the sidelines. Mutual funds and pension funds are being forced to take a view, and hence become more active and forward-

looking.

European and Asian shareholders say they do not need activists because they have more power than American investors over managers' pay and appointments. They typically dismiss Mr Icahn and his friends as an American solution to an American problem. And, for cultural reasons, the few European activists tend to be more diplomatic and consultative than their brash cousins.

Yet wherever there are stockmarkets you will find underperforming companies, clubbable bosses and lazy capital. The public company was never meant to be a bureaucracy run by distant managers accountable to funds run by computers. The activist revolt will help give it a new lease of life. ■

股东激进主义

资本主义的非典型英雄

为什么激进投资者有益于上市公司

若论发明创造，上市公司实属资本主义的一大杰作。IPO为创业者们提供退出之路，从而促进创新；上市令公司透明可察；而普通人也有机会投资到资本主义的生财机器之中。

但过去15年里，上市公司头上笼罩着一片阴霾。在安然（Enron）丑闻和雷曼兄弟（Lehman Brothers）的破产惨剧中，审查或财富创造几近空谈。被动型指数基金的崛起意味着许多公司的最大股东实为软件程序，公司治理因而被削弱。稍有风吹草动，机构投资者倾向于马上减仓，而非处理问题——所以首席执行官们执着于季度收益，利用一切机会增加薪酬攫取权力。与此同时，硅谷的大亨们为自有股份设立特殊投票权，使外部投资者沦为二等公民。

私募股权投资大亨们称其集中持股模式更为合理。一些政府则认为企业需要政府出手支持。但有更好的方式。激进对冲基金购入公司少数股权，同时像政客竞选般尽力呼吁其他股东支持其诉求：在公司董事会上获得席位、削减成本、分拆公司、向股东返还现金。一副狂妄险恶、来者不善的样子，激进股东往往招上市公司老板厌恶，嫌其戾气重、投机心强。但这就错了。激进投资者实为上市公司的非典型救星。

> *鬣狗笑着……*

激进投资者自上世纪八十年代已经出现，但他们在当下美国的勃兴是空前的。激进投资者掌控着规模至少达千亿美元的基金，2014年吸引了五分之一流入对冲基金的资金。去年他们针对大小上市公司发起了344个维权活动。过去五年，标普500估值最高的美国上市公司中有一半在股东名册上可见大型激进基金的名字，而有七分之一受到过激进股东炮轰。

激进投资者针对的公司遍及美国人生活的方方面面，从刷牙（宝洁）、接

电话（苹果）、开电脑上网（微软、雅虎、eBay）、外出用餐（汉堡王、百事可乐）、看电视（Netflix），无所不及。去年12月，名为Trian的激进投资基金更是开创先河，在纽约梅隆银行（Bank of New York Mellon）董事会中赢得一席，该行是全球很多大银行的托管行。

有人说，那是耻辱；对短期股东价值的狂热已走火入魔。激进投资者以剥离现金和资产、增加公司负债而闻名。 其粗鄙行径好像在刻意扰乱公司管理者的视线，而不论其好坏。有名的激进投资者卡尔·伊坎（Carl Icahn）喜欢称首席执行官们为“低能儿”，在推特上对他们揶揄取笑。另一位激进分子，潘兴广场资本管理公司（Pershing Square）的比尔·阿克曼（Bill Ackman）曾把康宝莱（Herbalife）视为骗子公司，并将其与纳粹相提并论。丹·勒布（Dan Loeb）投资苏富比时，被时任董事长冠以“卑鄙小人”之名。有些更使出可疑手段，包括依托衍生品暗地建仓。

巨额资金源源流向激进投资者手中，无疑其中少数会越界，损害正当经营的公司，甚至违法逐利。尽管有缺陷有过度，但激进投资者始终是一股向好力量。

> *……看财源滚滚来*

理由之一是有太多企业受管理不善之累。约有十分之一的美国大型企业以及更多的小企业还在运用“毒丸计划”和掩护无能管理者的董事会轮选制这类策略。

另一理由是，今天的激进投资者不再是上世纪八十年代时的凶悍面目。如今他们着力提升公司董事会的运作，而非剥离企业资产。他们与其他股东合作，常赢得大型基金公司的支持，如群益集团（Capital Group）和富达投资（Fidelity）。他们筹集较长期的资金，延长投资期限。总部设在旧金山的对冲基金公司ValueAct锁定投资者资金三至四年，并在37家公司的董事会中获得席位，其中包括微软公司。阿克曼也已筹集到一大笔“永久性资本”。《经济学人》分析了美国2009年以来50家激进投资持仓量最大的公司，发现它们的利润、资本投资及研发大都有所提升。

私募股权基金是对付公司哑火的另一方法。但激进投资者比起华尔街的并购野蛮人更具优势。无须举债融资收购整个公司，他们一般只需购入5%左右的股权便大功告成。这意味着激进投资者的性价比更高，因为他们举债更少，不必支付收购溢价，抽取的绝对费用也低得多。

最重要的是，激进投资者填补了困扰当今上市公司的治理漏洞。股市越来越大的份额落在懒人投资者手中。指数基金和交易型开放式指数基金模拟的是市场动态，一般对公司的运营少有关注；投资组合多元化的传统共同基金和养老基金不喜欢深入参与公司管理。面对华尔街的撩拨，美国的怠惰资金渐渐苏醒。无论激进投资者的想法是笨是棒，已令一众投资者难以置身局外。共同基金和养老基金被迫审视一番确立观点，从而变得更主动更具前瞻性。

欧洲和亚洲股东称自己并不需要激进投资者加入，因为在管理层的薪酬及任命问题上，他们比美国投资者拥有更大的权力。他们通常不把伊坎及其伙伴们放在眼里，认为那只是对美国问题的美式解决方法。而且，出于文化差异，欧洲仅有的少数激进投资者也比其莽撞无礼的美国表亲们来得更委婉体面，更有商有量。

然而，有股市的地方就会有表现不佳的公司、可棒喝的老板和怠惰的资本。上市公司本来就不是什么官僚机构，不该让以计算机量化交易的基金经理远程操控。激进投资暴动将有助其焕发新生。 ■

Schumpeter

A palette of plans

Choosing a strategy is a lot more complex for companies than it used to be

BUSINESSES are bombarded with advice on strategy. Many gurus urge them to discover a "blue ocean" where they can swim without competition. Others argue that this is a pipe dream—a blue ocean will immediately be turned red by competitors—and advise them to focus on flexibility. Some pundits preach the first-mover advantage; others urge firms to be fast followers. Bosses end up confused and cynical, with some lurching from one strategy to another and others concluding that they never want to hear the word "strategy" again.

The Boston Consulting Group (BCG) made its name with clever ideas about strategy, most notably the growth-share matrix, which helps firms divide their lines of business into stars, cash-cows, dogs and question-marks. Now it has brought some clarity to the current confusion with a new book, "Your Strategy Needs a Strategy", by Martin Reeves, Knut Haanaes and Janmejaya Sinha. The BCG trio argue that business is so fast-moving and diverse these days that a single, overarching strategy will no longer do. The competitive landscape is constantly changing in many industries; businesses speed through the life-cycle from stars to dogs. So, they say, wise bosses should choose from a "strategic palette" in much the same way that artists choose from a palette of colours. The book identifies a handful of primary strategies, that bosses should be ready to switch between and, at times, blend.

It starts with the "classical" strategy that business schools have taught since the 1950s: find a good niche, develop a plan to dominate it, then muscle up. Mars, a confectionery giant, maintains its dominance through close relationships with suppliers, relentless cost control and timeless products.

The Milky Way bar was invented in 1923 and the Mars Bar in 1932. Consumer-goods makers such as Procter & Gamble, retailers such as Walmart and logistics firms such as UPS all use variations of this strategy. But stable markets are getting harder to find. So companies are making more use of four other types of strategy.

One is the adaptive, evolutionary approach. This is particularly popular among technology firms. Tata Consultancy Services talks about its 4E model—explore, enable, evangelise and exploit—which in English means trying lots of small things and then backing whichever ones work. But it can also be applied in older industries. Inditex's global success as a fashion retailer is based on first producing its clothes in small batches, then scaling up production rapidly if they sell well.

Another is the visionary, blue-ocean approach: generate a compelling new idea—a whole new market, with you at its centre. This was Steve Jobs's approach with Apple's iPhone and iPad, but there are plenty of smaller examples. Anna Wojcicki, a founder of 23andMe, came up with a new health product—a kit that allows you to analyse your susceptibility to various diseases—and then focused on selling her new idea to both investors and the general public. "The average individual just didn't know why they should get their genome," she said. "So educating the individual and getting them excited about it was our first challenge."

A third is the shaping approach: working with partners to create new markets. The partners could be private-sector ones. Apple and Google have worked with many small app developers to create an ecosystem of mobile services. Or they could be public-sector ones. Novo Nordisk, a Danish drugmaker, has captured 60% of the Chinese market for insulin by working closely with Chinese doctors and health authorities to raise awareness of diabetes, which had previously been under-diagnosed.

A fourth strategy—for companies on the brink—is renewal: refocus the business decisively, preserve capital, free resources to apply to areas of growth. After its government bail-out, AIG, a giant insurance conglomerate, got out of many businesses and took drastic action to stop rivalry and overlap between the rest.

Overlying all these options is the strategy of being "ambidextrous", that is, being able to skip nimbly from one strategy to another, or to pursue several of them simultaneously. Some companies, such as PepsiCo, have two separate groups of people in each division: one whose strategy is to maximise the efficiency of the business in its current form, and another that looks for ways to disrupt it (before someone else does).

Smudging the canvas

The BCG trio's taxonomy of strategies at least brings a bit of clarity to some of management theory's cloudier waters. But they have little to say on how managers should apply their palette of strategies to the canvas without making a Jackson Pollock of it. The classical, niche-domination strategy often entails minimising variation to squeeze out costs; the adaptive strategy involves maximising variation so as to find out which variant works best. The shaping strategy is all about sharing between companies and others; the classical strategy is typically all about being closed and defensive. How to solve such contradictions?

Besides offering little advice on how best to pivot from one strategy to another, the authors also avoid discussing how companies can pursue a multi-strategy approach without creating battle lines between their various chiefs. It is simply assumed that the executives running the "business as usual" strategy will get along happily with those pursuing the "disrupt everything" approach. It is hard enough for businesses to switch wholesale to a new strategy without encountering resistance from managers who have tied their reputations to the old one; maintaining different teams

working simultaneously on opposing strategies is a recipe for internecine warfare, and for wasting resources as the firm is pulled in opposing directions. The BCG trio are no doubt right that companies will need to become more ambidextrous if they are to survive in turbulent times. But what bosses need now is a book on how to prevent such organisations from becoming self-contradictory and conflict-ridden ones. ■

熊彼特

战略调色板

选择商业战略已经变得远为复杂

企业终日被各种战略建议轰炸个不停。许多大师催促他们发掘“蓝海”，到对手罕至的领域畅游。另一些则说这是白日梦——蓝海马上会被竞争对手变成一片红海，他们建议公司注重灵活变通。一些权威人士鼓吹先发优势；另一些督促企业紧跟潮流。最后，老板们晕头转向，疑窦丛生。有些在各种战略之间游移不定，另一些则撂下话来，说再也不愿听到“战略”一词。

波士顿咨询集团（BCG）以战略妙想扬名立万，最为人熟知的是它的“增长份额矩阵”（growth-share matrix），帮助企业把业务划分为“明星”、“现金牛”、“瘦狗”及“问号”四类。该集团最近推出由马丁·瑞夫斯（Martin Reeves）、克努特·哈纳伊斯（Knut Haanaes）、贾梅贾亚·辛哈（Janmejaya Sinha）撰写的新书《战略还需战略》（Your Strategy Needs a Strategy），在各派争论中颇有拨云见日之感。波士顿的这三位顾问认为，今时今日，商业世界瞬息万变，业务内容多元多样，统领一切的单一战略已不再适用。在许多行业里，竞争格局不断变化；业务瞬间走完从“明星”到“瘦狗”的生命周期。所以，他们说，明智的老板应像艺术家从调色板里取色那样，从“战略调色板”中选取战略。书中指明了几个主要战略，可供老板们选取切换，有时也可融合并用。

首先是各大商学院自上世纪50年代以来一直教导的“经典”战略：找到优质的利基市场，制订计划占领市场，然后极力上位。糖果制造巨头玛氏（Mars）与供应商紧密合作，严格控制成本，推出永不过时的产品，从而保持着市场主导地位。其“银河巧克力棒”（The Milky Way bar）始创于1923年，而“玛氏棒”（Mars Bar）则于1932年推出。宝洁这样的消费品制造商、沃尔玛这类零售商，以及UPS等物流公司均采用这一战略的变式。但要找到稳定的市场是越来越难了。所以，企业更偏重于利用其余四类战略。

一种是调适渐进，在科技公司当中尤为流行。塔塔咨询服务公司（Tata Consultancy Services）提出4E模型——探索（explore）、开启（enable）、宣讲（evangelise）、利用（exploit）——解释起来就是尝试众多小项目，可行的便全力支持。这一战略也可用于更传统的行业。Inditex集团的时装零售业务成功立足于全球，所建基的策略就是先小批量生产，再对畅销产品迅速扩大生产。

另一种是高瞻远瞩的蓝海策略：构思无懈可击的创想——全新的市场，由你来统领。这就是史蒂夫·乔布斯推出iPhone和iPad时的做法，而这方面的小案例还有很多。23andMe公司的创始人之一安娜·沃西基（Anna Wojcicki）先是设计出一款保健新产品——让人分析自己患各种疾病的可能性的工具包——然后再专注于向投资者和大众推销这一创意。“普通人根本不明白为什么要获取自己的基因组信息，”她说，“所以，我们的首要挑战是对个人进行宣传教育，让他们为之兴奋。”

第三个策略是塑造市场：与合作伙伴一起创建新市场。这些伙伴可以是私营公司。苹果与谷歌一直与许多小型应用的开发者合作，共建移动服务的生态系统。当然也可以是公共机构。丹麦制药商诺和诺德公司（Novo Nordisk）与中国的医生及医疗卫生部门紧密合作，提高人们对糖尿病的认知（之前一直漏诊较多），目前已在中国的胰岛素市场抢占了60%的份额。

第四个策略则面向身陷危局的企业——更新重振：果断调整业务，保全资本，释放资源投放于增长领域。大型保险集团AIG在得到政府纾困后从许多业务领域抽身，并采取激进行动，停止剩余业务之间的内耗和重叠。

位于所有这些策略选择之上的统领战略是要“两手俱利”，也就是能灵活地转换策略，或同时并用几个策略。包括百事公司在内的一些企业会在各部门设置两个不同的团队：一组人的策略是以现有方式最大限度地提高业务效率，而另一组人则想办法进行颠覆（赶在外人动手之前）。

画布之上，颜色纷杂

波士顿三位顾问的这套战略分类法至少给管理学理念上的某些浑水带来了一丝清澄。但管理者该如何把调色板上色彩纷繁的战略抹上画布，而不至于纷乱如杰克逊·波洛克（Jackson Pollock）的泼彩大作？这一点他们却着墨甚少。抢占利基市场这一经典战略往往需要最大限度地减少多样性，从而降低成本；调适策略则涉及多元发展的最大化，从而找到最佳之选。塑造市场策略讲求的是公司和其他机构之间的信息分享；而经典战略一般要求信息保密，封闭防守。如何解决这些矛盾呢？

除了在如何做好战略转换的问题上无甚高见，对于公司该如何采取多种战略而不会引发各个战略的负责人之间的争斗，三位作者也避而不谈。他们只是简单假设负责“一切照常”策略的高管和奉行“颠覆一切”策略的高管能和平共处。企业要在战略上改弦更张，难免会遭遇以旧手段打下天下的管理者阻挠；让不同团队同时按对立的策略行事，容易造成内讧，公司被两极拉扯也导致资源浪费。三位作者认为企业需要“两手俱利”才能在动荡的时代求存，这无疑是正确的。但老板们现在需要的是另一本书，阐明这些机构该如何避免陷入自相矛盾、争端四起的乱局。■

Business in Japan

Meet Shinzo Abe, shareholder activist

At last Japan has introduced corporate-governance reforms that will make a difference

"STUPID, greedy, adulterous, irresponsible and threatening." At least the Japanese vice-minister for the economy, speaking about equity investors in 2008, was being honest. Indeed, he could not have summed up most Japanese politicians' contempt for shareholders any more pithily. But as Shinzo Abe, the prime minister, tries to boost a flaccid economy, official attitudes are changing at last.

Japan's companies are sitting on ¥231 trillion ($1.9 trillion) in cash, an amount nearly half the size of the economy itself. Mr Abe wants that hoard to boost capital expenditure or wages, or to be returned to investors, who could put it to better use. He thinks a dose of shareholder capitalism will do the trick. Government bigwigs, including Mr Abe himself, now offer meetings to foreign activist investors. A new governance code, which came into force this week, seeks to break open the cosy world of the Japanese boardroom by requiring firms to appoint at least two outside directors.

Big deal, say the sceptics. Japan's corporate-governance revolution has had many false dawns. However keen the politicians now are on a bit of Anglo-Saxon greed and menace, firms themselves retain a deeply insular culture. Only 274 of some 40,000 directorships are held by foreigners. A mesh of shareholdings still binds big firms together. Japan's business lobby group, Keidanren, fought to dilute the new reforms. The banks still keep weak companies afloat: the fact that not one of Japan's listed firms went bankrupt last year, for the first time since 1991, reflects not just a zippier economy, but also lenders' clubby ties to borrowers. For all his reformist zeal, Mr Abe has yet to embrace measures that make it easier for firms to hire and fire. Hobbesian, Japan is not.

Even so, there are three reasons to think that real change is under way. The first is that market pressure is adding to the political pressure. Institutional investors are increasingly benchmarking firms by their returns on equity; and no investor has more clout than the Government Pension Investment Fund, Japan's enormous national fund, which made a big move into equities last year. Shareholder-advisory firms are doing their part, by recommending investors to ditch underperforming managers. At the moment firms are bumping up returns by buying back their shares; in time they will have to increase earnings, too.

Some of Japan's most prominent companies are also changing their stripes. Hitachi has got rid of unprofitable units to focus on sectors like railways and infrastructure, and last autumn it severed the link between length of service and wages. Fanuc, a robotics firm with an activist on its shareholder register, set up an investor-relations hotline this year and authorised a share buy-back and bigger dividends. A showdown over awful corporate governance at a famous family-owned furniture manufacturer, Otsuka Kagu, ended this spring with a reforming daughter worsting her 71-year-old father. Conformist cultures can change quickly once a new orthodoxy forms.

Third, the need for firms to absorb hard-to-employ Japanese workers is diminishing. Lifetime employment, coupled with pay and promotion that are linked to age, not performance, has long been part of the social contract in Japanese firms. But now the working-age population is shrinking, bringing down unemployment. Panasonic, an electronics firm, has shut its "banishment room", where surplus staff used to while away the hours with nothing to do. The argument for Japanese firms to act as a safety net is less potent than it once was.

From grey to black

But the biggest transformation must be inside companies themselves.

Although relations between firms and their shareholders are becoming more productive, change has yet to penetrate within the office walls. The likes of Hitachi aside, too many firms still function as risk-averse bureaucracies. The incentives to take risks are muted if time served matters more than profits generated. Young executives still pledge obedience to older bosses to win advancement. And since older bosses receive little extra reward for outperforming—the average pay packet for chief executives at large Japanese firms is around $1m, a modest sum in international terms—it is unsurprising that few do. Introducing pay for performance would add entrepreneurial vim to Japan's formidable strengths in technology and team spirit.

Changing corporate cultures is hard, but not impossible. Before the second world war Japan had powerful shareholders, no insistence on lifelong employment and firms were able to lay off staff when times were hard. Forget "Anglo-Saxon" capitalism. A revived Japanese sort could work just as well. ■

日本商业

会见股东维权支持者安倍晋三

日本终于出台的公司治理改革将有所作为

“愚蠢、贪婪、花心、不负责任，而且具有威胁性。”日本经济产业副大臣2008年谈到股权投资者时曾有这样的评价。至少他很诚实。的确，他为大多数日本政治家对股东的蔑视所做的总结再直截了当不过了。但是，随着首相安倍晋三试图提振疲软的经济，官方的态度终于改变了。

日本公司坐拥231万亿日元（1.9万亿美元）现金，相当于日本自身经济规模的将近一半。安倍希望囤积的现金可以加大资本支出、提高工资，或者返还给能够更好地利用它的投资者。他认为添加少许股东资本主义就能奏效。政府要员，包括安倍本人，现在主动提出要与外国维权投资者会面。于本月生效的公司治理新准则旨在打破日本董事会的舒适局面，要求公司至少任命两位外部董事。

怀疑论者会说：这有什么大不了？日本的公司治理改革有过许多虚假的黎明。无论政治家们如今多么热衷于来点盎格鲁-撒克逊式的贪婪和威胁，企业界本身还是保持着一种非常孤立的文化。日本企业约4万名董事中只有274名外国人。错综复杂的交叉持股仍然把大企业紧密地联系起来。商业游说团体日本经济团体联合会（Keidanren）努力弱化新的改革。银行仍然在维持弱小公司的正常运转：去年没有一家日本上市公司破产，这是1991年以来的第一次，反映的不只是更为活跃的经济，还有排外的借贷关系。尽管安倍颇有改革热情，但他尚未接受一些措施，让公司更容易雇用和解雇员工。霍布斯主义，日本不时兴这个。

即便如此，也有三个理由让人认为真正的改变正在开始。首先，市场压力加剧了政治压力。机构投资者越来越多地用股本回报率来衡量企业；没有哪个投资者的影响力能超过日本庞大的国家基金——政府养老金投资基金（Government Pension Investment Fund），该基金去年大举进入股市。股东咨询公司正在恪尽职责，建议投资者摆脱表现不佳的经理。目前公司

正在回购股票以增加收益；迟早它们还将不得不增加收入。

日本一些最著名的企业也在转型。日立剥离了亏损的部门，专注于铁路和基础设施等行业。去年秋天，它取消了服务年限与工资的关联。机器人公司发那科（Fanuc）股东名册里有一位维权股东。今年，它开设了一条投资者关系热线，批准了一次股票回购，并增加了股息。今年春天，著名的家族企业、家具制造商大塚家具（Otsuka Kagu）就糟糕的公司治理进行了最后摊牌，最终，改革派的女儿击败了她71岁的父亲。一旦新的正统观念形成，墨守成规的文化就能迅速改变。

第三，企业吸收难以就业的日本工人的需求正在减弱。终身雇佣，再加上年龄而非业绩与薪酬晋升相挂钩，这些长期以来一直是日本企业里社会契约的一部分。然而当前，适龄劳动人口正在萎缩，导致失业率下降。电子公司松下关闭了冗余人员无所事事时用来消磨时间的“流放室”。日本企业充当安全网的观点没以前那么有说服力了。

从灰色到黑色

然而，最大的转变必须来自公司内部。尽管公司与股东之间的关系正变得更有成效，但改变尚未进入企业内部。除了日立这类公司，太多的公司仍像规避风险的官僚机构那样运作。如果服务年限比创造利润更为重要，承担风险的动力就会减少。年轻的高管仍然承诺服从年长的老板，以赢得晋升。由于工作出类拔萃所获的额外奖励极少（日本大型企业首席执行官的平均年薪大约为100万美金，在国际公司里不算高），很少有年长的老板会极力追求绩效这一点就不足为奇了。引入绩效工资将在日本强大的技术优势和团队精神之上增添企业家活力。

改变企业文化很难，但不是不可能。二战以前，日本拥有强大的股东，并未坚持终身雇佣，企业可以在艰难时刻裁员。忘记“盎格鲁-撒克逊”资本主义吧。恢复日本旧有的文化也能奏效。 ■

Schumpeter

Mammon's Manichean turn

The business world is divided between optimists and pessimists

SOME of the world's best businesspeople are giddy with optimism. They live in a world of digital wonders where every problem has a solution and every scarcity is yielding to abundance. Others are haunted by pessimism. They live in a world of "secular stagnation", "jobless growth", zero-sum competition and stability-threatening inequality.

The optimists' headquarters is, of course, Silicon Valley. Technologists are quickly extending their problem-solving and productivity-boosting mindset to a mind-boggling range of industries: transport (Google and Uber), hospitality (Airbnb), house-cleaning and odd jobs (Task Rabbit). They are also dreaming planet-sized dreams. Elon Musk, the founder of the Tesla electric-car company, wants to send a man to Mars. Bill Gates, formerly of Microsoft, claims that the lives of the world's poor will improve more in the next 15 years than they have in previous history. A host of Silicon Valley giants wants to reinvent food by growing meat in labs, to extend life-expectancy to 120 through gene therapy, and to empower humanity by inventing a personal assistant that will accompany you wherever you go. The recent meeting of the World Economic Forum in Davos featured sessions on "the end of blindness" and "the dusk of disability".

Only some of this is moonshine. The internet of things is allowing the technology industry to extend its reach into the everyday world: Gartner, a research firm, predicts that 25 billion devices, from washing machines to heart-monitoring implants, will be attached to the internet by 2020. Mr Gates's latest report card on his philanthropic work suggests that the world is on course to eliminate polio within the next 15 years. Airbnb provided

accommodation for more than a million people a month last year. Uber has grown into a $40 billion business in five years.

The headquarters of the pessimism camp is Main Street. John Maynard Keynes once observed that capitalism depends on "animal spirits" to give people the courage to invent and produce. Robert Shiller, a Nobel laureate at Yale University, recently pronounced that these spirits are being lost as economies sputter and stagnate. Main Street companies in general are trying to do more with less rather than employing new people: despite high unemployment, supermarkets have been installing automated checkouts. Gloom is particularly pronounced among companies which grew fast during the commodity boom but are now downsizing and re-engineering to survive.

There are a few exceptions to this general mood: Indian CEOs are on a roll once again as the Modi government promotes pro-business reforms. Their American counterparts are beginning to see the green shoots of spring. Continental Europe has been given a huge monetary stimulus. But Brazil and Russia are stalled and Chinese growth has slowed. The danger of deflation still dogs the euro zone. America's growth engine continues to deliver a disproportionate share of its rewards to the richest 1%.

The very forces that are promoting optimism in the tech elite are stoking pessimism elsewhere. The technology revolution is widening inequality by increasing demand for the best brains while reducing demand for everyone else. It is raising the spectre of mass unemployment as intelligent machines do for middle-class employment what their dumb brothers have already done for working-class jobs: Andrew McAfee of MIT's Sloan School of Management estimates that 50% of current jobs will eventually be automated out of existence. The logic of efficiency and competition is extending to areas that have hitherto been protected: teachers have to compete with Khan Academy and hotels will have to go up against the

spare-room brigade. Natarajan Chandrasekaran, the boss of Tata Consulting Services, puts the logic of the new economy simply: "Anything that can be made to sweat more will be made to sweat more."

Off you go

For many firms on Main Street, globalisation has its drawbacks. The world is shrinking for terrorists, criminals and disease as well as for businesspeople. The fact that one in seven people is on the move at any one time means that the world is engaged in a constant struggle to prevent Ebola and the like from spreading and terrorists from disrupting. The chances of a backlash against globalisation are rising. Vladimir Putin has already tested the global system: German exports to Russia declined by 22% year-on-year in November thanks to the imposition of sanctions. Popular anger about immigration is reshaping European politics.

In this new age of confusion all signals are mixed and all trends contain countertrends. The old models are breaking down but no new models are taking their place: central bankers are printing money without generating inflation and digital entrepreneurs are revolutionising productivity without revolutionising economic growth.

How should businesspeople respond? Pierre Nanterme, the CEO of Accenture, argues that they need to be willing to rethink or dump some of their most basic assumptions. Too many of them are still "using an equation that is no longer valid". A new report from Oxford University's Saïd School of Business contains a revealing quotation from one company boss: "Michael Porter used to talk about 'sustainable competitive advantage'. There is no 'sustainable' any more." Almost half the companies on the Fortune 500 list in 1999 have fallen off it since.

Nimbleness is replacing clout as the most prized quality. Business models which seemed like fortresses—such as large numbers of big

supermarkets—can look like a prison when habits change, say to online shopping and convenience stores. As businesses strive to remain agile, they do more with less, replace fixed costs with variable ones, and put long-term plans on hold. That may work for them—but it does nothing for those sought-after animal spirits that fire the wider economy. ■

熊彼特

财富的二元对立

商界分为乐观主义者和悲观主义者

世界上有些最好的商人，被乐观主义冲昏了头脑。他们生活在一个充满数字奇迹的世界里，每个难题都有解决方案，每种匮乏都会变成充裕。而另一些人则被悲观主义困扰。他们的世界到处是“长期停滞”、“无就业增长”、零和竞争以及威胁稳定的不平等。

乐观主义者的司令部当然在硅谷。技术专家把他们解决问题和提高生产力的思维方式迅速推广到各行各业，范围之广超乎想像：交通（谷歌和优步）、酒店业（Airbnb）以及家居保洁和零活儿（Task Rabbit）。他们还有些梦想堪比天高。特斯拉电动汽车公司的创始人埃隆·马斯克（Elon Musk）想把人类送上火星。前微软老板比尔·盖茨声称，未来15年全世界穷人生活改善的程度将大于历史总和。一批硅谷巨头打算在实验室里培育肉类以彻底改造食品，用基因疗法把寿命延长至120岁，还要发明一种常伴人们左右的个人助理，让人类更强大。最近在达沃斯世界经济论坛上，人们还讨论了“消除失明”和“终结残疾”。

以上种种只有部分是纸上谈兵。物联网使得技术产业可以渗透进日常生活：研究公司高德纳咨询（Gartner）预计，截至2020年，从洗衣机到心脏监测移植在内的250亿个各种装置将与互联网相连。盖茨的最新慈善记录表明，世界将在未来15年内消灭小儿麻痹症。Airbnb过去一年中每月为超过100万人提供住宿。优步创立5年，业务额已达400亿美元。

悲观主义者的大本营则在传统行业。凯恩斯曾表示，资本主义依靠“动物精神”给人发明创造和生产的勇气。耶鲁大学的诺贝尔奖获得者罗伯特·希勒（Robert Shiller）最近断言，在经济放缓和停滞时，这种精神也不复存在。总的来说，传统行业公司正努力少花钱多办事，而不是雇用新人：尽管失业率高企，超市还是安装了自动收银台。那些在大宗商品繁荣期迅速发展起来的公司，现在为了生存要压缩规模和流程再造，消沉的情绪尤

为明显。

这种普遍的情绪也有几个例外：由于莫迪政府推行亲商改革，印度的CEO们再次好运连连。他们的美国同行开始看到了复苏迹象。欧洲大陆已进行过一轮庞大的货币刺激。但巴西和俄罗斯发展停滞，中国增长也已放缓。通货紧缩的危险仍然困扰着欧元区。美国的增长引擎继续把过多的收益分给人口中最富有的1%。

让技术精英充满乐观主义的力量却在别处助长了消极主义。技术革命加大了对最强大脑的需求，而减少对其他人的需求，进而加剧了不平等。就像早期较笨重的机器曾取代蓝领工人的职位一样，智能机器正在取代中产阶级的工作，这引发了人们对于大规模失业的担忧。麻省理工学院的斯隆管理学院（Sloan School of Management）估计目前50%的职位将由于实现自动化而最终消失。效率与竞争的逻辑正扩展到一些迄今仍被保护的领域：教师必须和可汗学院（Khan Academy）竞争，酒店则不得不应对空房出租大军。塔塔咨询服务公司（Tata Consulting Services）的老板纳塔拉简·钱德拉塞克兰（Natarajan Chandrasekaran）简单明了地道出了新经济的逻辑："任何能被压榨出更多力的会被压榨出更多力。"

一路走好

对于许多传统行业公司而言，全球化有其缺点。对于恐怖分子、犯罪分子、疾病以及商人而言，世界正在变小。每时每刻，全世界每七个人中就有一个在旅行，这意味着我们始终要奋力阻止埃博拉之类的疾病传播，以及防止恐怖分子搞破坏。强烈抵制全球化的几率正在上升。普京已考验过全球系统：由于实行制裁，去年11月德国对俄罗斯出口比前年同期下降了22%。移民引起的公愤正在重塑欧洲政治。

在这个混乱的新时代，所有迹象都混杂在一起，所有趋势都包含反趋势。旧模式正在解体，但新模式尚未取而代之：央行印钱但没引发通胀，数字企业正变革生产率却没能变革经济增长。

商界人士应该如何应对？埃森哲的CEO皮埃尔·纳特米（Pierre

Nanterme）认为，商界要甘于反思或抛弃一些最基本的假设。他们中太多人仍在“使用不再有效的方程式”。牛津大学的赛德商学院（Said Business School）在一份新报告里引用了一位公司老板发人深省的话：“迈克尔·波特（Michael Porter）过去常谈论‘可持续的竞争优势’。但现在再没什么是‘可持续的’了。”1999年财富500强中近半数的企业如今已跌出榜单。

灵活性正在取代影响力成为最珍贵的品质。一旦人们改变习惯，例如改为网购和逛便利店，像开办众多大超市这样攻城掠地的商业模式就会变得如监狱一般禁锢。随着企业力求保持灵巧，它们会少花钱多办事，以变动成本代替固定成本，并暂缓长期计划。这对于企业或许管用，但对于广受欢迎、点燃整体经济的动物精神却全无助益。 ■

Schumpeter

Getting hooked

How digital firms create products that get inside people's heads

CICERO once said that "Nature has planted in our minds an insatiable desire to see the truth." These days it would be truer to talk of an insatiable desire to check our e-mail and Twitter accounts, and to play a few games of Candy Crush Saga (as a British parliamentarian was recently caught doing during a committee meeting). It is reckoned that four-fifths of smartphone owners check their devices within 15 minutes of waking up, and that the typical user does so 150 times a day.

This time it is not nature but man that has done the planting. Internet entrepreneurs devote a lot of thought to getting people hooked on their products. How else can they survive in a world in which hundreds of new ones are launched every day? And smartphones and tablets have helped greatly: what could be more habit-forming than devices that are always evolving, always there and always buzzing with fresh diversions?

"Hooked", a new book by Nir Eyal, a technology writer, gives an overview of one of the most interesting battles in modern business: the intense competition to create new digital products that monopolise people's attention. Peter Drucker, a management guru, once said the aim of a business is to create a customer. For today's digital firms the aim is to create an uber-user: a tapping, scrolling devotee who keeps coming back for more whenever he has a spare moment. Habit-forming products help companies squeeze more money or information out of their customers. Some video-game makers get players hooked and then charge them for virtual products; often these are just cosmetic changes to how the game looks, but sometimes players can buy boosts to their in-game powers that help them win. Google specialises in useful apps, from Gmail to Google Maps, that

gently squeeze data from users, the better to serve them ads.

Such products also offer protection from competition: once you have incorporated Twitter into your daily routine and devoted time to developing a following, you will be reluctant to switch to a rival. Although companies must make their products pretty simple to use, so as to persuade people to take them up, they also need to find mechanisms that encourage them to invest a lot of time in the product. Getting started on Twitter or Facebook is simple; but the more you tweet, the better and more popular your Twitter account becomes, and the more you search for friends and family on Facebook the more useful it is.

How do these companies turn you into a user? The biggest challenge is to get their hook into you in the first place: that is, persuade you to install their app or click on their link rather than choose one of the many alternatives. The best way to do this is through social pressure: create a buzz that gets people talking about your product. But it will become habit-forming only if it satisfies an inner need. People keep visiting Facebook because they are keen to keep in with their pals. They keep checking Twitter and their e-mail because they are worried about being out of the loop if they don't.

The makers of habit-forming products have clearly read the works of B.F. Skinner, the father of "radical behaviourism", who found that training subjects by rewarding them in a variable, unpredictable way works best. That is why the number of monsters one has to vanquish in order to reach the next level in a game often varies. Faithful Twitter users are rewarded with more replies to their tweets, and more ego-boosting followers, but not according to any predictable formula. These variable rewards come in three forms. The reward of the tribe: people who use Twitter or Pinterest are rewarded with social validation when their tweets are retweeted or their pictures are pinned. The reward of the hunt: users quickly scroll through

their feeds in search of the latest gossip or funny cat pictures. And the reward of self-fulfilment: people are driven to achieve the next level on a video game, or an empty e-mail inbox.

> *E-cigarettes*

Should the makers of habit-forming products be praised as innovative entrepreneurs? Or shunned as the immoral equivalents of drug pushers? Ian Bogost, a designer of video games, describes them as nothing less than the "cigarette of this century". Paul Graham, a Silicon Valley investor, worries that humans have not had time to develop societal "antibodies to addictive new things". Mr Eyal pushes back against such hyperbole. Creating a habit-forming product is in fact very hard. There have been plenty of digital products, such as Farmville, that were crazes for a while but went out of fashion. There is an important distinction between a habit and an addiction: only about 1% of people who regularly play slot machines, one of the most habit-forming technologies ever created, can reasonably be described as addicted. The proportion is surely lower for Twitter and the like. In any case, Mr Eyal notes, unlike smoking and playing slot machines, some apps help inculcate good habits, such as dieting or exercising.

That said, it is hard to read "Hooked" without feeling a bit queasy. Companies are getting at once more sophisticated and more shameless. If any other business were found to be employing people with the title of "behaviour designers", they would be seen as exploitative and downright creepy. The internet is becoming ever more powerful and pervasive. And every new technological leap makes it easier for behaviour designers to weave digital technology into consumers' daily habits. As smartphones become loaded with ever more sensors, and with software that can interpret their users' emotional states (see earlier article), the scope for manipulating minds is growing. The world is also on the cusp of a wearable

revolution which will fix Google Glasses to people's skulls and put smart T-shirts onto their torsos: the irresistible, all-knowing machines will be ever more ubiquitous. And the trouble with insatiable desires is that the struggle to sate them leaves everyone as exhausted as they are unfulfilled. ■

熊彼特

日渐上瘾

数字公司如何发明难以忘怀的产品

西塞罗（Cicero）曾经说过：“大自然在我们心中种下发现真理的渴望，欲罢不能”。如今，用这个表述来形容我们对以下活动的无尽渴望可能更为确切：查看电邮和推特帐号，以及玩几盘“糖果传奇”（最近一名英国议员被发现在一次委员会会议上玩这款手游）。据估计，五分之四的智能手机用户起床十五分钟内会查看手机，而且他们一般每天会看150次。

这次种下渴望的不是大自然，而是人类自己。互联网企业家苦苦思索如何能让人们迷上自己的产品。他们想在这个每天都推出数百款新产品的世界里生存，除此之外还能怎么办？智能手机和平板电脑也来推波助澜：还有什么比那些不断演进、触手可及并且随时提供新鲜娱乐的装置更让人上瘾的呢？

科技作家尼尔·艾亚尔（Nir Eyal）在新书《上瘾》（Hooked）中论述了现代商界最有趣的一种较量：为了发明垄断人们注意力的新型数码产品而进行的激烈竞争。管理学大师彼得·德鲁克（Peter Drucker）提出，企业的目标就是创造顾客。当今数字公司的目标则是创造超级用户：一有空闲就流连忘返，不断点击和滚屏的铁杆粉丝。让人上瘾的产品能帮助公司从顾客身上榨取更多的金钱或信息。一些电子游戏制造商先让玩家上瘾，然后让他们为虚拟产品付费；这些虚拟产品往往只是游戏界面外观上的变化，但有些时候玩家可以花钱提升在游戏中的能力来帮自己胜出。谷歌专门提供有用的应用，从Gmail到谷歌地图应有尽有，能不落痕迹地从用户身上获取数据，以便更好地向他们推送广告。

这种产品也保护公司免受竞争：一旦把推特变成日常生活的一部分，并花费时间进行了很多关注，你将不愿意转到它的竞争对手那里去。尽管公司必须让产品简单易用，以说服人们接受它们，他们还是需要找到办法来鼓励人们在这些产品上投入大量时间。推特和Facebook上手都很容易；但你

发的推文越多越好，你的推特账号才越受欢迎，同理，你在Facebook上搜索越多亲戚朋友，它对你越有用。

公司是怎么把你变成用户的？最大的挑战是从一开始就让你着迷：换言之，就是要说服你安装其应用，或点击其链接，而不是选择众多的替代产品。为此，最好的方式就是借助社会压力，营造一种人人都在谈论这个产品的氛围。但只有当产品满足人们的内心需求时，它才会让人上瘾。人们不断访问Facebook，原因是他们渴望和朋友保持良好关系。人们总在查看推特和电邮，因为他们担心不这样做就会掉出圈外。

让人上瘾产品的制造商显然都读过“基本教义派行为主义”之父斯金纳（B.F. Skinner）的作品。斯金纳发现，进行培训时，效果最好的是用富于变化、出人意表的方式奖励培训对象。这就是为什么游戏升级前必须打败怪物的数量往往不同。推特忠实用户的奖励是推文回复的增多和满足虚荣的粉丝数增长，不过获奖并不遵循任何可预测的公式。这些可变的奖励采取三种形式。首先奖励团体归属感：当推文被转推或图片被收藏时，推特或拼趣（Pinterest）用户获得的是社会认可度的奖励。其次奖励猎奇感：用户迅速滚屏查看其订阅来搜索最新的小道消息或搞笑图片。最后奖励自我实现感：人们受驱使要打到电子游戏的下一级，或是看完收件箱里的每一封电邮。

电子香烟

让人上瘾产品的制造商是应作为创新企业家受人赞誉，还是作为与贩毒者同列的无良商家遭人回避？电子游戏设计师伊恩·博格斯特（Ian Bogost）认为这种产品无异于“本世纪的香烟”。硅谷投资人保罗·格雷厄姆（Paul Graham）则担心人类已没有时间对“新型上瘾物品”产生“社会抗体”。艾亚尔却对这种夸张表述予以反驳。要发明出让人上瘾的产品实际上非常困难。以前出现过许多像“农场小镇”（Farmville）这样的数码产品，曾经风靡一时但都成过眼云烟。习惯和上瘾之间存在重大差别：经常玩老虎机的人中，只有1%的人可以合理地归为上瘾。而老虎机是迄今发明的最易上瘾的技术之一。对于推特这一类，比例肯定会更低。而且，艾亚尔特别指出，与吸烟和玩老虎机不同，有些应用能帮助人们养成像节食

和锻炼这样的好习惯。

话虽如此，读过《上瘾》的人难免会有些不安。企业正变得更复杂但也更无耻。要是发现其他行业的公司雇用“行为设计师”，人们会认为它们剥削成性而且极其恐怖。互联网正日益强大而且普遍存在。每一次新技术的飞跃都让行为设计师能更轻而易举地把数码技术植入消费者的日常习惯。随着智能手机里内置的传感器和诠释用户情感状态的软件越来越多，可供操纵心智的领域也越来越广。此外，世界正面临一场可穿戴革命，要把谷歌眼镜安到人们头上、把智能T恤衫套在人们身上：这些势不可挡、无所不知的机器将会更加无所不在。欲壑难填的问题是人们拼命将其填满，直至精疲力竭，内心却依然空落。 ■

Uber

Driving hard

The taxi-hailing company is likely to disrupt the delivery business

TRAVIS KALANICK, Uber's hard-nosed chief executive, seems to relish taking on regulators and rivals. "I realise I can come across as a somewhat fierce advocate for Uber," Mr Kalanick recently quipped at a celebration for the taxi-hailing company's fifth birthday. "I also realise some people have used a different 'a'-word to describe me." Mr Kalanick's brashness has helped Uber become the most valuable American company of its generation. If it succeeds in raising a further $1.5 billion from investors, as reports indicate, its implied valuation will soar to a staggering $50 billion. That is higher than 80% of the firms in the S&P 500 index, many of which are decades old. Uber's value has grown faster than those of Facebook and Twitter in their early years (see chart).

Uber now operates in 311 cities in 58 countries, providing more than 1m rides each day. Consumers like Uber, and rival services like Lyft in America, Didi Kuaidi in China and GrabTaxi in South-East Asia, because they are cheaper than conventional taxis, clean and reliable. Uber's freelance drivers (who typically pay it around 20% of their fares) enjoy flexible working hours and are spared the formalities of qualifying as a conventional cabbie.

But Uber should also be admired by strategists in other industries. It is a case study in how to construct a "platform", a Silicon Valley buzzword for a digital service on top of which other businesses can be built. As it arrives in a city, it launches a vigorous recruiting programme for drivers, offering them incentives to sign up. Its fares are "dynamic"—they undercut conventional taxis most of the time, but go up when it rains, or when there is some other reason why demand for rides is high.

This encourages more of its drivers onto the roads when they are most needed. This in turn means that customers can always get a car quickly, even if it sometimes costs a bit more. This encourages them to keep using Uber, in turn providing lots of work for its drivers. It soon becomes difficult for any rival to match the liquidity of Uber's market in rides. And once lots of people are using it for that purpose, the company can use the same app, the same computer systems and the same drivers to offer those customers a range of other services.

Taxis are to Uber, therefore, what search-related advertising is to Google: the killer app that generates lots of revenue and brings the firm to everyone's attention, after which it can broaden its horizons and enter other businesses. Both firms have grand ambitions. Google's mission is to organise all the world's information; Uber's is to offer "transportation as reliable as running water, everywhere for everyone". And perhaps "everything": it has begun experimenting with local delivery services, with the aim of becoming as disruptive in logistics as it has been in the taxi business.

Last month Toronto became the fifth city where the firm's lunch-delivery service, UberEATS (pictured), is available. It is also running in Chicago, Los Angeles, New York and Barcelona. New Yorkers can call up a cycle-courier service on their Uber apps; and in Washington, DC, they can use it to order household supplies for rapid delivery. The company is reported to be in talks to set up same-day delivery for various retailers in America, from Hugo Boss to Cohen's Fashion Optical.

In some cities there are already a number of smaller firms that offer rapid dispatch via an app: for instance, Instacart delivers groceries, Postmates brings hot meals and Shyp collects parcels. None has anything like the scale and reach of Uber, and thus all must fear it eating their lunch. "FedEx and Hertz combined", is how Max Levchin, a founder of PayPal and an investor

in Uber, describes the future of the firm, referring to two giants of logistics and car rentals respectively.

It seems unlikely that even in the long term Uber would want to go into long-haul shipping, but there is huge scope for consolidating the fragmented and inefficient business of making deliveries in large conurbations. Postal services and logistics firms could outsource their last-mile deliveries to Uber. But privately at least, they must also fear losing business to it.

In March Fred Smith, the boss of FedEx, dismissed the threat of Uber, pointing out the complexity of his firm's business and the high barriers to entry. However, Uber has an advantage that most delivery and shipping firms lack: it does not have to bear the cost of maintaining its own fleet of vehicles, since its drivers supply their own.

Logistics companies have invested heavily in algorithms that help them route deliveries efficiently; but as Uber's traffic grows, and as it spreads to more places, it will gather a wealth of data that will let it catch up with them. It is also reportedly looking to buy HERE, a mapping application owned by Nokia, which could improve its routing algorithms and reduce its reliance on Google for maps.

As with Google, Uber's data collection will make it ever better at understanding its customers: for example, when a discount voucher might entice them to use the service again. As with Apple, Uber keeps its users' credit cards on file for seamless payment, which also makes it easy to sell new services to them.

Taking on the likes of FedEx and UPS is not the immediate priority. In line with its platform strategy, Uber's main goal is achieving scale. As a private company, it does not report its revenues, but analysts reckon that it will

receive between $2 billion and $4 billion in commission from drivers this year. Since it does not own the cars or employ the drivers, but simply takes a cut of each fare, Uber is thought to be generating significant free cash flow within 18 months of launching in each new city. Nevertheless, it is continuing to raise money from investors to fuel its global expansion and to intimidate rivals such as Lyft, which is Uber's main domestic competitor but is valued at a mere $2.5 billion.

Over time, Uber hopes to become so popular and ubiquitous that many city dwellers give up their cars and all the costs and hassles of parking, maintenance, insurance and the like. In several cities Uber is trying to entice people to use its carpooling service instead of public transport and is subsidising the cost of it, to entice drivers to join. Currently, San Franciscans can use UberPool to go anywhere in the city for a mere $7. Like Google, it is taking an interest in driverless cars, hoping one day to be able to dispense with drivers and offer its services even more cheaply.

Uber's valuation is extremely high for such a young company, and there is a long way to fall if the firm skids. The success of its core business is not certain. Later this year courts in California will consider whether the drivers who work for Uber and Lyft (and other on-demand companies) are in fact freelancers or should be categorised as employees, which would have significant implications for their firms' lean cost structure. Investors may be underestimating that risk.

Rivals with deep-pocketed backers could yet stop Uber dominating the world's streets. In China it has a partnership with Baidu, an internet firm, but its local rival, Didi Kuaidi, is backed by two online giants, Alibaba and Tencent. The Chinese taxi-app firm has announced its own plan to spend 1 billion yuan ($160m) on incentives for drivers and passengers to use the service.

From New Delhi to East Hampton, Uber and its competitors are squaring up to regulators, which have banned them. Some governments are concerned about whether Uber properly protects passengers by doing background checks on drivers and requiring insurance; others are sympathetic to local taxi monopolies. Uber is betting that its popularity among both passengers and drivers will overcome such objections—indeed, this month Uber drivers in Delhi protested over a crackdown against the service. It cannot be taken for granted that rules on carrying passengers will be relaxed all over the world. Objects, however, might be a different story. ■

优步

一路前行

打车公司可能会颠覆快递业务

优步（Uber）的强硬派总裁特拉维斯·卡兰尼克（Travis Kalanick）似乎就爱挑战监管者和竞争对手。“我知道我给人的印象是维护优步的狠角色，”卡兰尼克最近在该打车公司成立五周年的庆典上打趣说，“我也知道有些人骂我混蛋。”卡兰尼克狂放的个性促使优步成为同期成立的美国公司中估值最高的一家。如果公司能按报道猜测的那样成功向投资者再融资15亿美元，其对应估值将飙升至500亿美元的天价。标普500指数里有80%的公司达不到这一水平，而这些公司大都成立了好几十年。优步的估值增长速度已高出Facebook和推特的早期表现（见图表）。

目前，优步在58个国家的311座城市里运作，每天提供超过100万次接载服务。消费者之所以喜欢优步和其他类似的打车服务（像美国的Lyft、中国的滴滴快的、东南亚的GrabTaxi），是因为它们比传统出租车更便宜，而且干净、可靠。优步的兼职司机（一般向公司缴纳20%左右的车资作为佣金）工作时间灵活，也免去了考取传统出租车司机资格的手续。

但其他行业的战略制定者也应该对优步钦佩有加。硅谷的流行词“平台”指的是建立一套数字服务体系，在此基础上发展其他业务，优步为此提供了一个研究案例。每拓展到一个城市，优步都会大力推广司机招募计划，开出优厚条件吸引车主加入。优步的车资会“动态”变化——大部分时间低于一般出租车，但遇到下雨天或其他特殊原因造成的需求高峰，价格会上调。

这鼓励更多优步司机在最需要的时候出动分担客流。反过来，这意味着消费者总能迅速找到接载车辆，即便有时会多花一点钱。这促使消费者持续使用优步服务，从而为其司机提供大量工作机会。很快，在打车市场上，谁也难以媲美优步的覆盖面与灵活度。而且当大量人群为此目的使用优步时，公司就可以利用同一应用、同一电脑系统及同一批司机向那些顾客提

供一系列其他服务。

由此，出租车之于优步，就如同搜索广告之于谷歌：杀手级应用产生大量收入，令公司受万众瞩目，之后可拓展视野，进军其他业务领域。两家公司都有一番鸿图壮志。谷歌的使命是要整理全球所有资讯；优步是要“向每个角落的每一个人提供像自来水般高效可靠的运输服务”。而且也许会是“包罗万象”的服务：优步已在尝试本地配送服务，目标是要颠覆物流业，像它搅局出租车业一样。

五月，多伦多成为优步推出午餐配送服务UberEATS（如图）的第五个城市。另外四个城市是芝加哥、洛杉矶、纽约和巴塞罗那。在纽约，人们可通过优步叫快递；在华盛顿特区，人们可以用优步订购家居用品并快递上门。据报道，该公司正与包括雨果博斯（Hugo Boss）以至科恩时尚眼镜（Cohen’s Fashion Optical）在内的美国各零售商讨论提供当天快递服务。

一些城市早已有多家较小型的公司通过应用提供快递服务，比如，Instacart递送杂货，Postmates配送热食，Shyp收取包裹。其中没有任何一家比得上优步的规模与范围，所以必然担心它抢占自己的市场。PayPal创始人及优步投资者之一的马克斯·列夫琴（Max Levchin）在描绘优步的前景时，分别以物流业和汽车租赁界的两大巨头作类比，说那会是“联邦快递与赫兹租车的合体”。

即使从长远来看，优步也不太可能想要进入长途货运领域，但是在大城市圈内整合零散低效的配送服务，优步极具发展空间。邮政服务及物流公司可以把“最后一公里”配送外包给优步。但他们也必然担忧业务被这家公司抢去，至少私下里是这样。

今年3月，联邦快递的老板弗雷德·史密斯（Fred Smith）对优步的威胁不以为然，指出自己公司业务复杂，而且行业准入门槛高。但优步拥有大部分快递货运公司所缺乏的一个优势：它无须承担运输车队的保养成本，因为旗下司机自带汽车加入服务。

物流公司投入巨资开发算法以规划高效配送路线；但随着优步载客流量及覆盖地点的增加，它也能搜集到大量数据，从而迎头赶上。据说，优步也正在考虑收购诺基亚的地图应用程序HERE，用来改善路线算法并减轻对谷歌地图的依赖。

与谷歌一样，优步收集的数据可以让它进一步了解客户：比如，何时优惠券可能吸引他们再次使用服务。和苹果一样，优步预先登记了用户的信用卡资料，方便无缝支付，也让它更容易推销新服务。

优步的当务之急并非挑战联邦快递和UPS这类物流公司。按照其平台战略，优步的主要目标在于形成规模。作为一家非上市公司，优步无须公布营收，但分析师认为，今年优步向司机收取的佣金在20至40亿美元之间。优步本身并不拥有车辆，也不雇用司机，只是从每份车资中抽取一部分佣金，所以被认为在每扩展到新城市时均可在18个月内产生巨大的自由现金流。尽管如此，公司还在继续向投资者募集资金，为其全球扩张提供动力，同时也为吓退对手，例如它在美国的主要竞争者Lyft，但后者估值仅为25亿美元。

优步希望假以时日自己的服务会广受欢迎，遍地开花，令大量城市居民放弃自己的座驾，不再为停车、保养、保险等诸事烦心。在好几个城市，优步尝试吸引人们使用它的拼车服务，而不再搭乘公共交通，并提供补贴吸引车主加入充当司机。目前，在旧金山，人们可以利用“优步拼车”（Uberpool）去往市内任何地点，车资仅为7美元。与谷歌一样，优步也对无人驾驶汽车兴趣浓厚，希望有朝一日能舍弃司机，以更低的价格提供服务。

作为如此年轻的一家公司，优步的估值极高，而长路漫漫，公司难保不摔跟斗。其核心业务是否成功仍未成定数。今年晚些时候，美国加州的法院将考虑应该把优步与Lyft（以及其他按需服务公司）的司机归类为自由职业者还是公司雇员。最终结果如何可能大大改变这些公司目前精简的成本结构。投资者也许低估了那方面的风险。

对手如果有财力雄厚的支持者，还是有可能阻挡优步称霸全球街头。在中国，优步与互联网公司百度联手，但其本地对手滴滴快的背后撑腰者是两大网络巨头——阿里巴巴和腾讯。这家中国本地的打车应用公司已公布计划，将投入10亿人民币（1.6亿美元）吸引司机及乘客使用其服务。

从新德里到东汉普顿（East Hampton），优步与其对手们面对禁令，均剑拔弩张，准备与监管机构大战一番。一些政府担心优步在司机背景调查、汽车保险方面有所欠缺而无法充分保障乘客权益；另一些则同情本地出租车垄断集团。优步赌的是，乘客及司机的热捧将克服上述种种障碍——确实，新德里的优步司机本月发起行动，抗议当地打击该项服务。不能想当然地认为世界各地的载客法规将会放宽。但说到载货，也许就是另外一回事了。■

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《经济学人》总编辑■

Green food

Silicon Valley gets a taste for food

Tech startups are moving into the food business to make sustainable versions of meat and dairy products from plants

A PLANT-BASED hamburger patty that bleeds. Meatless chicken strips with the same fleshy and fibrous texture as cooked poultry. Mayonnaise made without eggs that is creamy and smooth. And a vegan beverage that contains all the ingredients for human sustenance, making it unnecessary to bother eating ordinary food every again. Hungry yet?

These are the offerings from a recent crop of Silicon Valley-funded startups which are trying to change the way people eat. The idea of making such products is attracting entrepreneurs and venture-capital firms who think that the traditional food industry is ripe for disruption because it is inefficient, inhumane and in need of an overhaul. The companies have different approaches, but they share the ambition of creating new plant-based food that they say will be healthier, cheaper and just as satisfying as meat, egg, dairy and other animal-based products—but with a much lower environmental impact.

“Animal farming is absurdly destructive and completely unsustainable. Yet the demand for meat and dairy products is going up,” says Patrick Brown, founder of one such startup, Impossible Foods, based in Redwood City in the heart of Silicon Valley. It has raised $75m to develop plant-based meat and cheese imitations.

According to the United Nations, livestock uses around 30% of the world’s ice-free landmass and produces 14.5% of all greenhouse-gas emissions. Making meat also requires supplying animals with vast amounts of water and food: in the United States producing 1kg of live animal weight typically

requires 10kg of feed for beef, 5kg for pork and 2.5kg for poultry. Yet between now and 2050, the world's population is expected to rise from 7.2 billion to over 9 billion people—and the appetite for meat to grow along with it. To keep up with demand, food production will need to increase significantly.

It is a big challenge, but also an economic opportunity. "Anytime you can find a way to use plant protein instead of animal protein there's an enormous efficiency in terms of the energy, water and all sorts of other inputs involved—which translates at the end of the day to saving money," says Ali Partovi, a San Francisco-based entrepreneur and investor in tech startups, such as Dropbox and Airbnb, as well as half-a-dozen sustainable-food companies.

The problem is many people shun vegetables and prefer to eat meat or dairy products. Dr Brown and others think the solution is to mimic the taste of meat and other animal-derived foods with plants and take the animal out of the equation. In theory at least, there would be plenty of food for everyone and fewer resources needed to produce it. "We're reinventing the entire system of transforming plants into meat and milk," he says. Other startups have similar aspirations. Beyond Meat, which makes plant-based chicken strips and beef "crumbles", is already selling its products in stores. As is Hampton Creek, whose eggless mayonnaise has become a bestseller at Whole Foods Market, a big American chain.

Beyond vegetarianism

Of course, the food giants already offer a variety of meat and dairy alternatives that many vegetarians and vegans buy. What is different with this new approach is that the startups are not targeting the small percentage of the population who largely live on a plant-based diet already. They are after people who love meat and dairy products, and that means replicating the meaty, cheesy or creamy flavours and textures that so many

people crave. “We want to have a product that a burger lover would say is better than any burger they’ve ever had,” says Dr Brown.

This is also different from “growing” meat in a laboratory using tissue engineering, which involves culturing cells taken from live animals. Modern Meadow, a New York company, is working on this technology, although its more immediate aim is to grow unmarked cultured leather.

Introducing a new food category is risky as it takes a lot of time and money. Big food firms prefer to acquire innovative products rather than develop them internally, explains Barb Stuckey, chief innovation officer at Mattson, a California-based food and beverage consultancy which has developed many new products. “It may take someone from outside the food industry to really disrupt it,” reckons Ms Stuckey. And Silicon Valley has enough hubris to do so.

The business has already attracted a fair share of famous venture-capital firms and investors, including Kleiner Perkins, Google Ventures, Andreessen Horowitz, Khosla Ventures, Bill Gates and others. “If we can provide [plant-based] food that’s healthier, tastes equal to better, at an equal to lower cost, it’ll go everywhere,” says Khosla’s Samir Kaul. If the companies they are backing succeed, the returns could be massive. The US beef industry alone is worth $88 billion. And even for condiments, such as mayonnaise, the market totals $2 billion. Still, not everyone is bullish on the prospects. These are high-risk endeavours and some of them might fail, cautions Michael Burgmaier of Silverwood Partners, an investment bank involved in dozens of food and beverage deals. The question is, he says: “Is the consumer ready for some of these products?”

Impossible Foods’ Dr Brown thinks they are. The inventor of a DNA chip now widely used in gene-expression analysis, his firm has been developing meat and cheese imitations from plants for three years. For meat, the aim is

to recreate its key components—muscle, connective and fat tissue—using suitable plant materials. The company's first product, a hamburger patty, already looks and cooks like meat, and will taste as good or better by the time it reaches the shops, Dr Brown promises.

To do this he has assembled a team comparable to one at a biotech or pharma company. It is largely made up of molecular biologists and biochemists, as well as some physicists; only a few members of his staff have a background in food science or have culinary training. In the company's laboratory scientists break down plant materials and extract individual proteins with functional properties that can, for example, make foods firm up or melt down during cooking or baking.

The company has also spent a lot of time working out what gives meat its unique flavour. According to Dr Brown, the secret to a burger's taste is haem, a compound found in all living cells, including plants. It is especially abundant in haemoglobin in blood, and in muscle tissues as myoglobin. It also gives a burger its red colour. During the cooking process haem acts as a catalyst that helps transform the amino acids, vitamins and sugars in muscle tissue into numerous volatile and flavourful molecules, he explains. To create the meaty flavour in its burger patties, the company uses a heme protein equivalent to one found in the roots of legumes.

Development of the burger has come a long way. Dr Brown says one person described the taste of the very first prototype as "rancid polenta". Recent versions have been reviewed much more favourably as "better than a turkey burger". In terms of nutrition, the patty's protein content may be slightly higher than that of a conventional burger and have at least as many micronutrients. Because it is made from plants, it will not contain any traces of antibiotics, hormones or cholesterol. The company hopes to start selling the burger before the end of this year.

Getting the flavour

Beyond Meat, based in Southern California, has also been studying the components of meat to emulate its texture and flavour. "We're smart enough now to understand the architecture and the composition of a piece of muscle," says Ethan Brown (no relation to Dr Brown), the company's CEO. The firm's flagship product, Beyond Chicken Strips, has been on sale since 2012, and has a surprisingly authentic feel when eaten. When several Whole Foods Markets accidentally sold mislabelled chicken salads with the company's plant-based strips there were no complaints. Only when an employee discovered the mix-up after two days were the salads officially recalled. The product's texture is based on years of research at the University of Missouri, and it can now be created in a process that takes less than two minutes. An extruder rapidly heats, cools and pressurises a mixture of proteins and other ingredients into a structure that mimics the fibrous tissue of muscle.

The company's most recent product, the Beast Burger, was released last month. It has more protein, more iron and is overall more nutritious than actual meat burgers. "The entire quest for meat in human evolution is really about a nutrient-dense source of food," explains Mr Brown. "I wanted to build on that theme."

But marketing plant-based burgers to carnivores is not easy. "My view is that meat has a masculine bent to it. You can't sell it the same way you sell lettuce," says Mr Brown. Hence the company is building the brand with images of vitality, fitness and health. In promotions it is using athletes. David Wright, captain of the New York Mets baseball team, has already signed up. In return, he is getting a small stake in the company.

Still under development is what may be Beyond Meat's most ambitious product to date—a raw ground beef equivalent which it hopes will be offered in supermarkets' meat sections right next to actual beef. Due for

release later this year, it can be cooked and moulded into a meatloaf or meatballs—or, as Mr Brown hopes, even supplied to a fast-food chain to make burgers.

San Francisco-based Hampton Creek has replaced eggs with plant proteins in the products it has released so far. Its Just Mayo and Just Cookie Dough are now distributed in 30,000 stores, including Kroger and Walmart. Other items in the works include a ranch salad dressing, a scrambled-egg alternative and pasta. The goal is to create products that make it easy for people to choose sustainable plant-based foods over conventional items. "Change happens by making something so delicious and so affordable, everyone chooses it," says the firm's boss, Josh Tetrick.

To accomplish this, Hampton Creek has assembled a team that includes experts in biochemistry, bioinformatics and food science along with a number of chefs. Scientists extract and isolate proteins from plant materials and conduct basic biochemical studies to understand their characteristics and possible applications for a variety of foods. The promising ones are tested in recipes in the company's bakery and culinary sections to see how they perform.

So far, Hampton Creek has analysed more than 7,000 plant samples and identified 16 proteins that might prove useful in food applications. Several are already being used in its commercial food products, including a type of Canadian yellow pea in its mayonnaise. The team are looking for proteins with functional properties such as foaming, gelling and moisture retention. Mayonnaise, for example, requires a substance that binds the right amount of oil with water to create a stable emulsion. For its version in stores the company tested more than 1,500 different formulations.

Dan Zigmond, the former lead data scientist for Google Maps and now Hampton Creek's vice-president of data, is in charge of simplifying the

process of finding useful proteins. There are an estimated 400,000 plant species in the world, each of which may have tens of thousands of proteins. To search this vast number more efficiently, his team are feeding data the company has already gathered into machine-learning models, which are designed to predict which types of proteins could be useful in specific food applications without having to go through all the biochemical tests.

Last October Unilever, a consumer-goods giant, sued Hampton Creek for false advertising, saying its product should not be called "mayo" because it does not contain eggs. (Based on food standards from America's Food and Drug Administration that date back to 1938, mayonnaise includes eggs.) Unilever also complained that the plant-based product had taken market share away from its well-known brand Hellmann's, which is made with eggs. Some people saw the lawsuit as a frivolous food fight in which a big company tries to bully a fledgling one. Andrew Zimmern, a celebrity chef who had preferred Just Mayo over Hellmann's in a blind taste-test, even started an online petition to urge Unilever to drop the lawsuit. It gathered over 100,000 signatures.

"This was great for Hampton Creek because it got their name out there and people on their side," says Matthew Wong, a research analyst at CB Insights, an analytics firm. Initially Unilever demanded that Hampton Creek rename its product, take existing inventory off the shelves and pay damages. But in December, the company suddenly dropped its lawsuit. It was on the same day that Hampton Creek announced its latest funding round of $90m, bringing its total raised to $120m.

Hampton Creek has been successful with the products it already sells. However, it is not trying to build a burger patty from scratch with plants, as Impossible Foods is trying to do, and it has not yet released its scrambled-egg replacement. "It's much easier to make a cookie dough without egg than it is to create a scrambled egg without egg," says Mattson's Ms Stuckey.

In a cookie dough or mayonnaise there are plenty of other ingredients to work with. But in creating an egg or meat analogue there is a higher bar in the consumer's mind, she adds, because the product is not combined with other ingredients it can hide behind.

Perhaps the most radical approach to disrupting the food industry comes from Soylent, whose beverage is designed to be a complete substitute for food and not just one of the many diet drinks or nutritional supplements. Sold as a powder to be mixed with water, it contains all the ingredients needed for sustenance, says Rob Rhinehart, Soylent's founder. It also eliminates the need to plan meals, cook and clean up afterward. "I see it as a life-simplification tool," he says.

The name originates from the sci-fi novel "Make Room! Make Room!" in which people in an overcrowded, apocalyptic world live on foods made of soy and lentils. (A twist in the movie version "Soylent Green" is that its secret ingredient is human flesh.) The company moved from the San Francisco area to Los Angeles in late 2013 in search of cheaper office space.

Some users of the first version of the beverage complained of flatulence because of the high fibre content. That problem has now largely been solved by changing the carbohydrate blend and adding some digestive enzymes. Mr Rhinehart likens the improvements to the continuous updates to software that tech companies make. Soylent 1.3, the most recent version, has a smoother texture than the original, a more neutral taste and its omega-3s now come from algae as opposed to fish oil.

> *Out with the dishes*

Mr Rhinehart himself uses Soylent for about 80% of his dietary needs. As a result he has not made a trip to the grocery store in years. He owns neither a fridge nor dishes. And he has turned his kitchen into a library. "I've also been able to separate the feeling of biological hunger from the craving of

food from an experiential aspect," explains Mr Rhinehart, who still enjoys "recreational food" on occasion.

As of mid-February his firm had a four-to-five-month backlog for new orders. Customers subscribe online to receive monthly shipments with a "meal" costing roughly $3. According to Mr Rhinehart, his company is already profitable and will use a recent $20m cash infusion to expand production and sales.

Mr Rhinehart is, to put it mildly, a little extreme. Not everyone may want to separate eating into utility versus pleasure. Impossible Foods' Dr Brown does not believe such a compromise is necessary. "I don't see any reason why you can't have it all—the best tasting food, healthiest, best for the planet and most affordable."

But even if the scientific hurdles of making plants taste like meat and other animal-based products are overcome, the bigger obstacle these companies face may be cultural. People have been eating meat and having meals together for thousands of years. Meat in particular is not only prized for its taste but also perceived as a force of vitality, strength and health.

A recent study by the Humane Research Council, an animal advocacy group, says most vegetarians and vegans, about 2% of America's population, go back to eating meat eventually. In the future that may not be an option. "We can't sustain the number of people that we're going to need to feed over the next couple of decades with the current way that we're eating, " says Ms Stuckey. Whether out of necessity or choice, Silicon Valley's vision of a big shift to plant-based foods may be inevitable. ■

绿色食物

硅谷一尝食滋味

科技创业公司进军食品行业，用植物可持续制造肉奶制品

用植物原料制成的肉香四溢的汉堡肉饼、质地口感如同烹制禽肉的素鸡柳、不含鸡蛋却浓郁细滑的蛋黄酱，还有包含人体生存所需一切养分的素食饮料，让人无须再食用任何普通食物。你饿了吗？

最近一批硅谷投资的创业公司试图改变人们的饮食习惯，推出了以上产品。制造此类产品的理念吸引了一些企业家和风投公司，他们觉得颠覆传统食品业的时机已经成熟，因为旧有方式低效、非人道，亟需彻底的整体改变。这些公司虽然方法各异，但雄心无二，都想创制出自称更健康、更便宜，像肉、蛋、奶及其他动物性产品般美味，但对环境影响低得多的植物性食品。

“畜牧业破坏性极大，完全不可持续。但市场对肉类和奶制品的需求正在上升。”上述创业公司之一的“不可能食品”（Impossible Foods）的创始人帕特里克·布朗（Patrick Brown）说道。其公司总部位于硅谷心脏地带的红木城（Redwood City），目前已筹得7500万美元，研发植物性肉食及奶酪仿制品。

据联合国数字，畜牧业约占用世界无冰陆地面积的30%，温室气体排放占总量的14.5%。获取肉食还意味着要给动物供应大量的水和食物：在美国，生产一公斤牛肉要投入10公斤饲料，猪肉要5公斤，禽肉则要2.5公斤。然而，从现在到2050年，世界人口将从72亿上升至90亿，对肉食的需求也将随之增大。要跟上需求，食品生产必须显著提升才行。

这是个大挑战，也是商机。“只要找到方法利用植物蛋白代替动物蛋白，能源、水和其他一切投入都将效率大增，最终意味着节省金钱。”旧金山一位企业家阿里·帕托维（Ali Partovi）说道。他也是一位科技创业公司投资人，投资了Dropbox 和Airbnb等公司，以及好几家可持续食品公司。

问题是，很多人不爱蔬菜，而偏好肉类或奶制品。布朗博士等人认为解决方法在于以植物仿制出肉类及其他动物性食品的味道，以此取代动物作为食物来源。至少在理论上，我们将有充足的食物满足每个人，生产食品所需的资源也将减少。“我们正在重塑把植物转换为肉类和奶类的整套系统。”他说。其他创业公司也有类似的抱负。“超越肉食”（Beyond Meat）是制造植物性鸡柳和牛肉碎的创业公司，其产品已在商店有售。同样，“汉普顿溪”（Hampton Creek）食品公司的不含蛋“蛋黄酱”已成为美国大型连锁“全食超市”（Whole Foods Market）的畅销产品。

不止素食主义

当然，食品业巨头们早已推出各种肉类及奶制品的替代品供众多素食者购买。有别于此，走食品制造新路的这些创业公司的目标不是已经以素食为主的小众人口。他们志在争取那些偏爱肉食和奶制品的人，而这意味着要仿制出大众喜爱的肉食、奶酪和乳品的味道与质感。“我们要做出好的产品，连汉堡狂人也会说比他们吃过的所有汉堡都更好吃。”布朗博士说道。

这也有别于在实验室里利用组织工程“培植”肉食，后者从活体动物提取细胞来培养制造。纽约一家公司“现代草甸”（Modern Meadow）正在研究这一科技，但其更直接的目标在于培植无损人造皮革。

引入新的食品种类要花费大量的时间和金钱，这是有风险的。大型食品企业更愿意购买创新产品，而非内部研发，芭波·斯塔基（Barb Stuckey）解释道。她是总部位于加州的餐饮顾问公司“马特森”（Mattson）的首席创新官，该公司已开发出许多新产品。“这可能需要食品业的行外人来进行真正的颠覆。”斯塔基认为。在这方面，硅谷的野心狂想绰绰有余。

这一商机已吸引到不少著名的风投公司和投资者，包括凯鹏（Kleiner Perkins）、谷歌风投、安德森霍洛维茨（Andreessen Horowit）、科斯拉创投（Khosla Ventures）、比尔·盖茨等。“如果我们能提供更健康、味道相当甚至更佳、价格等同或者更低的（植物性）食品，那将无往不利。”科斯拉创投的萨米尔·考尔（Samir Kaul）说道。如果他们投资的

公司获得成功，将有巨大回报。单单是美国的牛肉产业就价值880亿美元。连调味料，例如蛋黄酱，其市场总值也达20亿美元。但是，并非所有人都对前景看好。参与众多餐饮业交易的投资银行“银木合伙”（Silverwood Partners）的迈克尔·伯格麦尔（Michael Burgmaier）表示，这些是高风险的努力和尝试，一些可能失败。他认为，问题在于：“消费者准备好接受这些产品了吗？”

“不可能食品”的布朗博士认为答案是肯定的。其公司发明过一款DNA芯片，目前广泛应用于基因表达分析。这三年来该公司一直在研发肉类和奶酪的植物性仿制品。仿制肉类的目标是以合适的植物原料再造出肉类的关键部分——肌肉、结缔和脂肪组织。该公司的第一款产品是汉堡包肉饼，观感和烹饪的感觉已经很接近真牛肉。等到推出市场时，味道会一样好，甚至更好，布朗博士承诺道。

为做到这一点，他已经组建了一支团队，阵容堪比生物技术或制药公司的科研队伍，主要由分子生物学家和生物化学家组成，还有一些物理学家；其中只有几个成员具有食品科学背景或者接受过烹饪训练。在该公司的实验室，科学家分解植物原料，提取具有功能特性的个别蛋白质，例如，在烹煮或烘烤过程中可令食物固化或融化的蛋白质。

该公司还花了很多时间来研究是什么令肉类具有独特味道。据布朗博士说，汉堡肉饼味道的秘诀在于血红素，这是所有活细胞都含有的一种化合物，植物也有。在血液的血红蛋白里含量尤其丰富，肌肉组织中的肌红蛋白也是如此。肉饼的红色也来自血红素。他解释说，在烹煮过程中，血红素起催化作用，帮助肌肉组织里的氨基酸、维生素和糖分转化为无数挥发性带香味的分子。为了给植物汉堡肉饼添上肉味，该公司采用了一种豆科植物根部所含物质作为血红蛋白的替代品。

这种汉堡肉饼的研发已经走了很长一段路。布朗博士说，在第一代产品原型的试吃评价中，有人描述那味道像“腐臭的玉米粥”。最新的测试品得到的评价好多了，有人说“比火鸡汉堡好”。论营养，人造肉饼的蛋白质含量可能稍高于传统的汉堡肉饼，微量营养素也至少与之持平。由于是以植物

制成，所以不含任何抗生素、激素或胆固醇。该公司希望今年年底前开始售卖这款汉堡肉饼。

调对味

总部在南加州的“超越肉食”公司也一直在为仿制出肉类质感及味道而钻研其成分。“我们已能充分了解一块肌肉的构造及组成。”该公司的CEO伊桑·布朗（Ethan Brown，与上文的布朗博士无亲缘关系）说道。其旗舰产品“超越鸡柳”已在2012年推出市场，吃起来具有意想不到的真肉口感。当年好几家全食超市在出售含该公司素鸡条的沙拉时无意中把素鸡当真鸡，误贴了标签，但却没有遭遇任何顾客投诉。直至某位员工在两天后发现标签搞混，这些沙拉才被正式召回。该产品的质感基于密苏里大学多年研究的成果，如今只需不到两分钟的过程便可制成。他们采用的是一台挤压机，对多种蛋白质及其他成分的混合物快速加热、冷却及加压，以形成结构类似肌肉纤维组织的产物。

该公司的最新产品“野兽汉堡”（Beast Burger）上月推出市场。其蛋白质、铁质含量更高，总体上比真正的汉堡肉饼要更富含营养。“人类进化史上，对肉类的一切追求为的其实就是富含营养的食物，”伊森·布朗解释道，“我希望在这一主题上加以发挥。”

但要向偏爱肉食的消费者推销植物性汉堡肉饼并非易事。“在我看来，肉食带阳刚气。你总不能像卖生菜那样卖肉。”伊桑·布朗说。所以，其公司正为品牌构筑活力健美的形象，并请来运动员作产品推广。纽约大都会棒球队的队长大卫·莱特（David Wright）已成为其签约代言人。作为回报，他将获得公司一小份股权。

仍在开发中的仿鲜牛肉末可能是“超越肉食”公司迄今最具野心的产品，公司希望它能登上超市肉品柜台，与真正的牛肉并排销售。计划于今年稍后时间推出的这款产品可烹煮，可压成肉饼或搓成肉丸，或者如伊桑·布朗所愿，甚至可供应快餐连锁店做成汉堡包。

总部位于旧金山的“汉普顿溪”食品公司已在推出的产品中用植物蛋白取代

鸡蛋。“就是蛋黄酱”（Just Mayo）和“就是曲奇面团”（Just Cookie Dough）在三万家门店有售，包括克罗格（KROGER）和沃尔玛。其他仍在研发阶段的产品包括一款牧场沙拉酱、炒蛋替代品及意粉。公司的目标是要创制出相比传统食品更能吸引人们轻易选择的可持续植物性食品。“如此美味又实惠的新品令改变发生，每个人都会选择它。”公司总裁乔希·蒂特里克（Josh Tetrick）说。

为做到这点，“汉普顿溪”已组建一支团队，囊括生物化学、生物信息学、食品科学界专家及好几位大厨。科学家从植物原料提取和分离蛋白质，并进行基础生物化学研究，以了解其特点和应用于各种食品的可能性。具有开发前景的蛋白质会被用于公司烘烤部和烹饪部的食谱测试，看其表现如何。

迄今，“汉普顿溪”已分析了7000多个植物样本，并发现了可能在食品制造上发挥功用的16种蛋白质。其中好几种已被应用于商业化食品，包括一款蛋黄酱拌加拿大黄豌豆。该团队正在寻觅具有发泡、凝结、保湿等功能特性的蛋白质。例如，蛋黄酱需要一种物质把适量的油和水分结合成稳定的乳液。在最终产品推出市场前，公司测试过1500多个不同的配方。

谷歌地图的前首席数据分析师，如今“汉普顿溪”公司的数据副总裁丹·西格蒙德（Dan Zigmond）正负责简化寻找有用蛋白质的过程。世界上估计约有40万个植物物种，每一个物种可能拥有数以万计的蛋白质。为了更高效地在这个庞大的信息库中搜寻，其团队正把该公司已搜集到的数据输入机器学习模型中。模型可以预测哪类蛋白质能在特定食品应用中发挥功用，这样就无需对所有蛋白质一一作生化测试。

去年10月，消费品巨头联合利华以虚假广告之名起诉“汉普顿溪”，指其产品不含鸡蛋所以不应自称“蛋黄酱”。（美国食品药品监督管理局在1938年订立的食品标准规定蛋黄酱须含有鸡蛋。）联合利华还指控，植物性产品抢走了其知名品牌“好乐门”（Hellmann’s）以真鸡蛋做成的蛋黄酱产品的市场份额。有人觉得这只是食品界一场无聊的诉讼闹剧，是大公司企图欺凌初出茅庐的小企业。曾在盲品测试中认为“就是蛋黄酱”比“好乐门蛋黄

酱”味道更胜一筹的明星大厨安德鲁·齐默恩（Andrew Zimmern）更是发起了网上请愿，敦促联合利华撤诉。活动收集到超过十万个签名。

“这对‘汉普顿溪’来说是件大好事，因为它的品牌名字就此传开，而且人们站在它那边。”分析机构CB Insights的研究分析师马修·王（Matthew Wong）说。一开始，联合利华要求“汉普顿溪”为产品更名，将现有库存下架，并赔偿损失。但在去年12月，联合利华突然撤销了诉讼。同一天，“汉普顿溪”公布获得最新一轮融资9000万美元，意味着它筹得的总资金增至1.2亿美元。

“汉普顿溪”已推出市场的产品是成功的。但公司并不打算像“不可能食品”那样从零开始研发以植物原料制作汉堡肉饼，而且其炒蛋替代品也还没发布上市。“做曲奇面团不用鸡蛋比做炒蛋不用鸡蛋要容易得多。”“马特森”的首席创新官斯塔基说。曲奇面团或蛋黄酱有大量其他成分混合。但要做出鸡蛋或者肉类的仿制品，消费者心目中的要求会更高，她补充道，因为这些产品没别的成分来混合以掩盖其本质。

以最激进手法颠覆食品业的也许要数Soylent公司了，其饮料意在成为食物的完全替代品，而非仅仅是众多低糖饮品或营养补充剂之一。该产品为冲剂形式，需加水混合饮用，内含人类生存所需一切养分，公司创始人罗布·莱茵哈特（Rob Rhinehart）表示。这同时也省去了计划膳食、烹饪、事后洗刷锅碗瓢盆的工夫。“我觉得这是个简化生活的工具。”他说。

Soylent公司的名字源自科幻小说《让路！让路！》（Make Room! Make Room!），小说里的人们生活在拥挤不堪的末世，以由大豆和扁豆制作的食物为口粮。（根据该小说改编的电影《超世纪谍杀案》加插了桥段，说食品“绿Soylent”的秘密成分是人肉。）为节省办公室租金，公司在2013年底从旧金山地区搬到了洛杉矶。

第一版Soylent饮料的部分试饮者抱怨其高纤维含量令人肠胃气胀。这个问题现在很大程度上已得到解决，公司对该碳水化合物混合的配方作了调整，又加入了一些消化酶。莱茵哈特把这些改进比作科技公司对软件的不

断升级。Soylent1.3是最新版本，拥有比原版更顺滑的口感、更中性的味道，其欧米伽3脂肪酸并非来自鱼油，而是来自海藻。

碗碟可扔

莱茵哈特本人用Soylent满足自己约80%的饮食需求。所以，他已经好些年没去杂货店了。他家既没冰箱，也没碗碟。而且他已经把家中厨房改为书房。“我能把生理饥饿感与对体验食物的渴求感区分开。”莱茵哈特解释道。他仍会偶尔享用“休闲食品”。

截至2月中旬，他的公司已积压了四至五个月的新订单。顾客们在线订货，每月收到“餐食”，每顿花费约三美金。据莱茵哈特说，公司已经开始盈利，将把最近获得的2000万美元资金投入扩大生产与销售。

说得客气一点，莱茵哈特是有点极端。不是每个人都想把饮食分为功用与享乐两类。“不可能食品”的布朗博士觉得完全没必要作这样的妥协。“我不认为大家不能享有一切——最美味、最健康、最环保、最实惠，都可以有。”

即使科技障碍都克服了，植物做得尝起来像肉或其他动物性产品，这些公司面对的更大障碍也许是文化上的。人类吃肉和一起聚餐的习惯已经持续了数千年。尤其是肉食，人们珍爱肉食不单只为其味道，同时也视之为活力、力量和健康的源泉。

动物权益组织“人文研究委员会”（Humane Research Council）最近一项研究表明，占美国人口2%的素食者中，最终大部分还是会重拾肉食。而未来可能就没有选择可言了。“按我们现在的饮食习惯，几十年后，人们的食物供应将无以为继。”斯塔基说道。无论是迫于无奈还是自主选择，硅谷对人类向植物性食品大转移的愿景也许是无可避免的。■

Foreign investment in Africa

A sub-Saharan scramble

Private-equity investors are getting hot for Africa. Businesses there need all the capital on offer, and more

WHEN Paul Kavuma began approaching private companies in Africa a decade ago to suggest investing in their businesses and improving the way they were run, he was often shown the door. “They were offended, asking if I thought they were broke,” says the founder of Catalyst Principal Partners, an east Africa-focused fund manager. Even when, after hours of explaining the merits of private equity, Mr Kavuma changed business owners’ minds, many still struggled with the idea that within a few years he would sell the stake he had bought. “When we exited, some people thought we had lost confidence in them, rather than that we’d finished what we’d come to do,” he says.

Today, much has changed. African entrepreneurs now boast about being approached by one of the many private-equity investors scouring the continent for opportunities. And it is the financiers, or at least those from beyond Africa, who are having to adapt. Money managers on Wall Street and in the City of London are taking crash courses in Swahili and learning to find Ouagadougou on a map.

A decade ago, African countries were among the beneficiaries of a broader boom in investment in emerging markets worldwide. The financial crisis of 2007-08 put paid to that. Now, many private-equity funds are making Africa a primary target, and record amounts are being raised to invest in businesses there (see chart 1). On January 12th Helios Partners, a London-based firm, said it had raised the first Africa fund worth more than $1 billion. Abraaj, a rival, is expected to follow suit soon.

In some respects it is no surprise that Africa has become such a popular destination for business investment. It certainly needs more capital—an extra $90 billion a year for infrastructure alone, the World Bank reckons. Consumer demand is growing, and industries are being liberalised. A few years ago people would ask "Why the hell are you in Africa?" says Robert van Zwieten of EMPEA, an industry body. Now they ask "Why the hell aren't you?"

Such signs of groupthink are worrying enough in themselves. And there are plenty of other reasons to be sceptical about the current enthusiasm for Africa. Beside the "frontier market" risks private-equity investors will face–bullets, corruption, disease–they often struggle to find deals big enough to interest them. Large funds usually want to buy businesses worth more than $100m, but last year there were only seven such deals, and about half the firms bought were worth less than $10m.

Even when a potential deal is identified, family owners are often unwilling to relinquish control and incumbent managers are reluctant to make room for newcomers. Since banks still see Africa as full of risks, it is also difficult for private-equity firms to load a newly acquired business with debt, their usual technique for magnifying their returns. Another of their customary practices—selling a company after about five years of expanding it and improving its performance—is also hard. Local partners are often unwilling to sell, and undeveloped or non-existent local stockmarkets make it hard to unload a stake by means of a listing.

The private-equity managers who have done well so far have had to put boots on the ground and exercise more care and patience than is typical in their industry. "There are not many $100m deals for sale, but plenty of $100m opportunities to bolt together," says Hurley Doddy of ECP, a pan-African investor. Tope Lawani of Helios agrees that investors who complain about a paucity of big deals lack imagination. His fund pieced together

Helios Towers, a big pan-African operator of mobile-telecoms masts, from smaller businesses.

One thing successful managers agree on is that investors should not expect to fly in, do a deal and fly out again. The funds that are doing well are those with a strong understanding of local conditions and good business connections in their target countries, such as Catalyst. It looks for midsized companies (worth $5m-20m) that cater to the emerging consumer in east Africa, such as ChemiCotex, a maker of toothpaste and other toiletries it bought in 2011.

Much early investment went into businesses based on fixed assets, such as mobile-phone masts. Now retailers, packagers, restaurants and payment systems are sought after (see chart 2). In 2012 ECP invested in Nairobi Java House, a Kenyan coffee-house chain, and has since helped it to build Planet Yogurt, a group of frozen-yogurt outlets. In 2013 Helios bought 1,600 franchised Shell petrol stations across sub-Saharan Africa, not just to get into the fuel business but also to develop the convenience shops attached to the stations.

Some private-equity money is going into private health clinics and educational institutions such as universities. In much of the rich world, bringing the profit motive into public services is controversial; in Africa, where there is so much unmet need for such services, there is less of a taboo. In general, African entrepreneurs have begun to appreciate how private equity can help their businesses expand and, by improving such things as internal auditing and book-keeping, make them more robust. The rich world's negative association of private equity with asset-stripping "vultures" does not apply here.

Often, those African firms bought by private equity had been relatively well-run by their founders, albeit in a rather seat-of-the-pants fashion. The

incoming investors can often boost their performance by, for instance, improving the measurement and analysis of data. They can also provide cash to modernise businesses and make them more efficient. For example, investors in IHS Towers, another big operator of telecoms masts, found that it could cut the $3,000-4,000 average monthly cost of operating masts by almost one-third, by updating their diesel generators or replacing them with solar panels.

The sort of business that investors are keenest on is one that is already a champion in its home market and has prospects of becoming a regional or global champion. Carlyle, an American private-equity firm with a $698m pot devoted to Africa, is buying a majority stake in South Africa's largest tyre retailer, Tiger, and plans to expand it rapidly into neighbouring countries.

Since such firms are not easy to find, and since it takes patience to expand them across a continent with so many languages, cultures and legal systems, private equity's usual practice of selling after about five years may not always be best suited to Africa. Ahmed Heikal of Qalaa Holdings, an Egyptian firm, has concluded that it is not. His firm has abandoned the private-equity model and now follows a strategy of buy, improve and hold. When you finally come across a promising asset, why sell it prematurely, he asks?

Mr Heikal says he is already doing well from his investment in Rift Valley Railways, a rail line from Kenya to Uganda. But he is more interested in its long-term potential to be one of the region's main routes for transporting oil. His firm's 15-20-year planning horizon means he is happy to sit and wait for this potential to be realised.

Despite the recent flurry of fund-raising, only about 1% of global private equity goes to Africa. Even so, too much money is pouring into too few

funds, chasing the few big deals on offer. Besides, with commodities tumbling, currencies stumbling and political unrest rumbling, Africa's sunny growth projections have become more tempered. This is no bad thing, say some fund managers: it will scare off fair-weather investors and bring down the prices of overvalued businesses.

Those brave enough to run the risks will need to roll up their sleeves and look for opportunities beyond those firms listed on their Bloomberg terminals. Those who know their Mali from their Malawi, and Mauritania from Mauritius, will be better placed to succeed in the scramble for African businesses than those who do not. ■

外资在非洲

撒哈拉以南争夺正酣

私募股权掀非洲投资热，当地企业需要各路资本，多多益善

十年前，当保罗·卡乌玛（Paul Kavuma）开始接触非洲私营企业，给对方提出投资及改善经营的计划时，往往吃到闭门羹。“他们会生气，问我是不是以为他们要破产了。”卡乌玛说道。他是基金管理公司Catalyst Principal Partners的创始人，以东非为重点市场。即便大费唇舌解释清楚私募基金的好处，令企业主们改变看法，很多人仍不理解他为何过几年就会出售之前购入的股权。“我们退出，有些人就以为是对他们失去信心，不会想到那是因为我们已经达到了投资的目标。”他说道。

今天，情况大不相同。如今众多私募基金公司在非洲挖掘投资机会，得到青睐的非洲企业家均以此为荣。倒是投资者，至少是来自非洲以外的那些，得作一番调适。华尔街和伦敦金融城的投资经理们正纷纷报读斯瓦希里语（Swahili）的速成班，学着在地图上找寻瓦加杜古【Ouagadougou，布基纳法索的首都】。

十年前，对全球新兴市场的一轮大范围投资热潮中，非洲国家是受惠者之一。2007至2008年的金融危机给那一切划上了句号。如今，许多私募基金视非洲为头号目标，为向当地企业投资而募集的资金达历史新高（见图表1）。1月12日，总部位于伦敦的赫利奥斯公司（Helios Partners）表示其首个非洲基金已募集超过十亿美元。其对手Abraaj公司预计将很快效仿。

非洲之所以成为商业投资的香饽饽，某些方面看来毫不稀奇。非洲需要更多资本投入，据世界银行估算，单是每年基建就需要额外900亿美元。消费需求在增长，业界也正逐步开放。全球新兴市场私募股权投资协会（EMPEA）的总裁罗伯特·范茨威腾（Robert van Zwieten）说，几年前人们会问“你怎么去非洲了？”而现在问的是“你怎么不去非洲呢？”

这样的团体迷思现象本身已经够令人忧心。还有许多其他理由让我们对目

前的非洲投资热产生怀疑。除了将要面对子弹、贪腐、疾病这类“前沿市场”风险之外，私募股权投资者往往还苦于寻找具有足够规模和吸引力的投资标的。大型基金通常希望收购价值一亿美元以上的企业，但这样的交易去年只有七宗，投资标的有一半价值低于一千万美元。

即使发掘到有潜力的交易机会，家族企业的所有者也常常不愿放弃控制权，现任管理人员也不愿给新人腾出空间。由于银行仍视非洲为风险集中地，私募股权公司亦难以通过向银行举债来为新收购企业加杠杆，而这是他们放大收益的惯用手法。他们的另一个习惯做法是用五年时间拓展业务提升业绩，然后把公司卖掉，但在非洲要这么做也不容易。公司的当地股东往往不愿脱手，同时由于当地股票市场不成熟或根本不存在，靠上市来退出也并非易事。

目前为止在非洲表现不俗的私募股权投资经理人都深入实地，谨慎耐心程度高于行内一般水平。“上亿美元的待售交易不多，但有许多上亿美元的机会可以整合而成。”泛非洲投资机构ECP的赫利·多迪（Hurley Doddy）说道。对于投资者抱怨这里大型交易机会不多，赫利奥斯公司的托普·拉瓦尼（Tope Lawani）认为只是他们缺乏想象力而已。他的基金把很多小型企业整合成泛非洲大型电信基站运营商“赫利奥斯电信塔”（Helios Towers）。

成功的基金经理们有一个共识：投资者不应想着飞进来，干一票马上就飞走。表现好的基金都对投资地的国情有深厚了解，并在当地商界拥有广泛人脉，Catalyst即是如此。这家基金公司着眼市值500万至2000万美元、服务东非新兴市场消费者的中型公司，例如2011年购入的牙膏及洗漱用品公司ChemiCotex。

最早期的投资大多流向固定资产类的企业，例如移动通信基站。如今，零售商、包装商、餐饮、支付系统成了投资者追逐的目标（见图表2）。2012年，ECP在内罗毕对肯尼亚的咖啡连锁品牌“爪哇屋”（Java House）作了投资，之后帮助其建立了一系列“行星酸奶”（Planet Yogurt）冷冻酸奶连锁店。2013年，赫利奥斯公司收购了分布在撒哈拉以南非洲地区的1600

家壳牌专营加油站，不单为打入燃油市场，还为了发展加油站附设的便利店业务。

一些私募股权资金正在进入私营医疗诊所和教育机构，比如大学。在大部分富裕国家，把牟利动机带入公共服务是有争议性的。但在非洲，这类服务严重供不应求，因而对此不甚忌讳。总的来说，非洲企业家们开始明白，私募股权投资可以帮助他们扩展业务，而且通过改善内部审计及会计，公司得以更健壮发展。富裕国家对私募股权"秃鹰"式掠夺资产的负面联想在这里并不适用。

在非洲被私募基金收购的公司往往在创始人的经营下保持着相对良好的运作，尽管靠的是直觉经验式的管理。外来投资者常可通过改善数据衡量及分析来提升公司业绩。他们还提供资金，用于提高业务现代化程度和效率。例如，非洲另一移动通信基站运营商IHS Towers的投资者发现，通过对柴油发电机的改造升级或代之以太阳能电池板，平均每月可减少3000至4000美元的支出，基站运营成本可降低近三分之一。

投资者最热衷的是那些在本地市场已稳占鳌头且有望成为地区或全球领军者的企业。在非洲投资达6.98亿美元的美国私募股权投资公司凯雷（Carlyle）正在收购南非最大的轮胎零售商虎牌轮胎公司（Tiger）的多数股权，并计划在邻国市场迅速扩展。

由于这样的公司不容易找到，而且在语言、文化、法律体系纷繁不一的非洲大陆上扩展业务需要耐心，私募股权投资公司五年后卖出的投资惯例在非洲可能不总是上策。埃及公司Qalaa控股（Qalaa Holdings）的艾哈迈德·海卡尔（Ahmed Heikal）就这么认为。他的公司已经舍弃私募股权投资的固有模式，改用购入、改善、持有的策略。当你终于遇到有前景的资产，为什么要过早卖掉？他问道。

海卡尔说，他投资的肯尼亚到乌干达的铁路线"裂谷铁路"（Rift Valley Railways）已有不俗表现。但他更感兴趣的是其成为该地区石油运输主干线的长期潜力。公司投资规划周期长达15至20年，他乐于坐等项目实现潜

力。

尽管近期刮起一股募资热，但全球私募股权只有约1%投到了非洲。即便如此，太多资金集中在极少数几只基金手里，只为追逐为数不多的几宗大交易。此外，大宗商品市场暴跌，汇率不稳，政局乱势暗涌，进一步动摇了原本对非洲增长的乐观预测。这绝不是坏事，一些基金经理说，这会吓退那些低风险投资者，同时能降低过高的企业估值。

敢冒风险的投资者要挽起袖子，放宽眼界，而不只是盯着彭博终端上的那几个投资标的。在这场非洲商机争夺战中，分得清马里语（Mali）和马拉维语（Malawi）、辨得明毛里塔尼亚（Mauritania）与毛里求斯（Mauritius）的投资者比起一头雾水的人更具胜算。■

Bank resolution

Pre-empting the next crisis

Regulators' desire to make banks easy to kill is determining how they live

JUST 51 hours separate the closing of the New York Stock Exchange on Friday afternoon from the opening of the Tokyo bourse the following Monday. How bankers wish it were longer. Regulators want it to be possible for any bank to fail without causing chaos or taking a bail-out from taxpayers. To that end, they are demanding that big financial firms draw up plans that would make it easier to dismember them or start winding them down during the brief weekly hiatus in trading.

That is proving tricky. This week the Federal Deposit Insurance Corporation (FDIC), the American regulator that takes charge of failing banks, rejected the "living wills" of the local subsidiaries of three of the world's biggest banks: BNP Paribas, HSBC and RBS. Last year it declared inadequate the plans of all 11 of the banks with more than $250 billion in assets in America, including Bank of America, Barclays, Citigroup, Credit Suisse, Goldman Sachs, JPMorgan Chase, Morgan Stanley and UBS. The second lot have until July 1st to revise their submissions; the first three until the end of the year. If any of the revised plans are rejected, regulators will gain extraordinary powers to stem the growth of the banks in question or break them up.

The basic problem is that big banks' operations are too complicated for a quick and easy dismemberment. The FDIC and other "resolution authorities" (Europe's new one held its first meeting in March) are forcing them to become much simpler. The aim is to make a bank failure akin to that of any other firm in the economy: painful for investors, potentially troubling for staff and suppliers, but far less noteworthy for customers and the wider world.

Regulators want choices they didn't have during the financial crisis, when nudging a financial firm into bankruptcy was thought likely to unleash pandemonium—a conjecture confirmed when Lehman Brothers foundered in 2008. Since then, many governments have given resolution authorities the power to take over a faltering bank well before the cash runs out. They will be allowed to run their charges much like an administrator does an insolvent company.

Regulators also intend to impose losses from a bank failure not only on shareholders, but on bondholders too. That would be an improvement on the financial crisis, when bondholders were largely spared for fear of exacerbating the credit crunch. A large part of the money banks use to fund themselves now has to be in the form of "bail-inable" debt, (some of) which is intended to be written off if a bank is close to failure, not just if it is bust. In theory, a regulator would be able to impose enough losses on shareholders and creditors to stabilise a bank over that brief first weekend without troubling depositors or taxpayers. The resolution authority would then have a few months to make decisions on whether to wind down the bank or allow parts of it to keep going.

For all this to work, regulators think banks need to change. Ideally, they would like each operating unit to be able to function independently, with its own dedicated funding and capital. The watchdogs also want banks to be simpler. They are not keen on rococo corporate structures (cross-shareholdings between units based in assorted offshore jurisdictions, say) which mere mortals can scarcely understand, let alone disentangle in a crisis. "Too complex to resolve" is the new "too big to fail".

Banks must codify what were once informal relationships between different units. Critical but dull support services—the IT helpdesk, say, or the property-management division that holds the lease on the bank's head office—must have clear service contracts with other bits of the bank, in case

they get sundered in a break-up. Another form of simplification is the agreement 18 global banks struck last October promising not to pull out of derivative contracts abruptly if one them hits the buffers.

American regulators also want banks to be able to go through full-blown bankruptcy without needing to borrow from the Federal Reserve—a Herculean task, given depositors' and creditors' tendency to flee troubled banks. So far, Wells Fargo is the only big American bank that the FDIC judges capable of that. It is helped by a comparatively simple corporate structure: its foreign operations are small, and it does hardly any investment banking.

Some bankers concede that drafting living wills has helped them rationalise their businesses by weeding out "junk DNA" in the form of defunct subsidiaries tied to forgotten deals. Others dismiss the exercise, which for many has involved submitting over 10,000 pages of documents, as another pointless regulatory burden. "Our plan says: fire anyone who knows anything about running the firm, sell everything, get smaller," one gripes.

Asking for each unit to be self-sufficient is pushing towards a less streamlined financial system, bankers complain. "What used to be informal lending between two subsidiaries is now a strict revolving facility," says the boss of a global bank. This not only adds to administrative costs, but also makes it hard to put capital to the most profitable use. "It stops the easy flow of money across operations," says the head of regulation at another banking giant. All this will eventually translate into higher costs for customers.

"If banks cannot die in the market, the pressure on regulators will be to make them simpler and smaller," says Thomas Huertas, a former regulator now at EY, an advisory firm. However, if regulators can be made confident

their charges are safe to fail, they might ease up on the red tape. One senior official speaks of a "pivot" away from ever more regulation once resolution is a credible option for banks.

In the meantime, the regulators themselves have work to do. In Britain and America, both global financial hubs, supervisors have run "war games" to simulate their resolution strategies in a crisis. But winding down a bank in practice is bound to be much tougher. One pressing question is how much international co-operation there would be. During the crisis, national regulators scrambled to protect "their" bit of global banks, to the detriment of others. Watchdogs have agreed to work together next time. Few expect they will. ■

银行处置

危机之前，未雨绸缪

监管希望让银行倒闭更容易，此举决定银行生存环境

纽约证券交易所周五下午收市，与之后的周一东京股市开盘仅相隔51小时。银行家们希望间隔时间能长一点。监管机构希望银行能够破产而不造成混乱，或者避免动用纳税人资金纾困。要达到这个目的，他们正要求大型金融企业制订计划，以便在每周短暂的交易间隔中能更容易地将其拆分或开始走破产程序。

实践证明这很难。3月，美国联邦存款保险公司（Federal Deposit Insurance Corporation，以下简称FDIC）驳回了全球三大银行在美国分支机构的“生前遗嘱”，它们分别是法国巴黎银行、汇丰银行和苏格兰皇家银行。FDIC是美国负责接管倒闭银行的监管机构。去年，在美资产超过2500亿美元的全部11家银行呈上的处置计划均被该机构认定为不合格，包括美国银行、巴克莱银行、花旗集团、瑞士信贷、高盛、摩根大通、摩根士丹利和瑞银。这些银行提交修订计划的限期是7月1日；而前述三家银行则可至年底前提交。如果修订计划再次被否决，监管方将获特别权力限制所涉银行的发展，或有权对其进行拆分。

根本问题在于，大银行的运作太过复杂，难以快速简易地拆分。FDIC及其他“处置机构”（欧洲的新监管机构3月召开了首次会议）正迫使银行大幅简单化。目标是要让银行破产变得类似经济体中其他公司的破产：给投资者带来痛苦，可能给员工和供应商带来麻烦，但对客户和对更大范围的影响要小得多。

监管机构希望手里握有上次金融危机时不曾拥有的多种选择，当时，把金融企业推向破产被认为可能引发市场混乱——这种想法在2008年雷曼兄弟破产中得到印证。自那时起，许多政府开始赋予处置机构权力，使其可在银行摇摇欲坠但现金流尚未枯竭之时进行接管。它们获准像破产管理人接管无力偿债的公司一样执行权力。

监管机构的意图是不仅股东们需要承担银行破产的损失，债券持有人也应该承担。那将是在上次金融危机基础上的一大改进，此前因担心加剧信贷危机，债券持有人在很大程度上得以幸免。现在，银行资金来源中的一大部分必须是“自救安排债务工具”的形式，其部分或全部可在银行濒临破产时被勾销，而非仅在银行真正倒闭之时。理论上，监管方能在首个周末的很短时间内把足够的亏损加之于股东及债权人身上，而无需波及储户或纳税人利益。然后处置机构将有几个月的时间来决定这家银行是需要停业还是允许其部分业务继续经营下去。

若要这一切奏效，监管机构认为银行需要作出改变。理想情况下，他们希望银行的每个业务单元能独立运作，拥有自己的专有资金来源和专用资本。监管方还希望银行简化结构。他们不喜欢洛可可式层叠交错的公司结构（比如，隶属不同离岸司法管辖区的业务部门交叉持股），常人很难理得清楚，更别说遇到危机时对其进行分解。“太复杂而无法分解”成了新的“大而不能倒”。

银行必须将不同业务部门之间以往非正式的关系规范成文。IT服务或手里攥着银行总部大楼租约的物业管理部这类关键的日常后勤支援服务必须与银行的其他部门签署清晰的服务合同，以防日后这些部门在银行拆分时被分拆出去。另一形式的简化是18家全球银行于去年10月达成协议，承诺若其中一家银行陷入困境，不会立刻终止衍生品合约。

美国监管机构也希望银行能完成全面破产程序而无需向美联储借款求援。这是十分艰巨的任务，因为储户和债权人往往会逃离问题银行。到目前为止，FDIC认为在美国大银行中能做到这一点的只有富国银行（Wells Fargo）。这得益于它相对简单的公司架构：其海外业务规模小，而且几乎不从事任何投资银行业务。

部分银行家承认，为银行草拟“生前遗嘱”有助其合理化业务，清除“垃圾DNA”：那些与被遗忘的交易相关的、已倒闭的分支机构。另外一些银行家则不以为然，认为这是又一个无意义的监管负担，因为对许多银行而言都需要提交长达一万多页的文件。“我们的计划里写着：把熟悉公司运作

的人都炒掉，该卖的都卖掉，缩小规模。”一位银行家埋怨道。

要求每个业务部门自给自足经营会使金融体系变得不够精简，银行家们抱怨说。“以前两家分行之间的非正式拆借现在要变成严格的循环授信。”某全球性银行的老板说。这不但增加了行政管理成本，还令资本难以配置到最有利可图之处。“这阻止了资金在业务部门之间便捷地流动。”另一银行巨头的法规主管说。所有这一切最终会化为高成本转嫁到客户身上。

“如果银行不能在市场中破产，监管机构将承受压力要把银行变得更简单、规模更小。”如今就职咨询公司安永的前任监管机构官员托马斯·尔塔斯（Thomas Huertas）说道。然而，如果银行能让监管机构相信即使最终破产也不会造成大问题，那么监管上也许会少一点繁文缛节。一位高级官员提过，只要处置方案成为可靠选择，银行便可“避开”更甚的监管。

同时，监管机构本身也有任务在身。在英美这两大全球金融中心，监管者们已启动“战争游戏”，模拟在危机中执行银行处置策略。但在实践中，真要关闭一家银行肯定会遇到更多问题。一个迫切的问题是，能有多少国际协作？在危机期间，各国监管者都争相保护“自家境内”的全球性银行，而不管因此对其他国家造成的损害。各国监管机构同意下次会携手合作。但没多少人相信他们能做到。■

The power of families

Dynasties

The enduring power of families in business and politics should trouble believers in meritocracy

"AS A democracy the United States ought presumably to be able to dispense with dynastic families," wrote Arthur Schlesinger junior, one of America's best-known historians, in 1947. Yet almost 70 years on, next year's presidential election could well become a family affair. A Clinton or a Bush has been on the ticket in seven of the past nine races. Hillary v Jeb may offend against equal opportunity, but not the laws of statistics.

How, people wonder, can this happen in a country that went to war to rid itself of a king's hereditary authority? That is the wrong question. Around the world, in politics and business, power is still concentrated in the family. Power families and dynasties are here to stay. The question is how to ensure that they are a force for good.

Double helix, double standards

In politics the Clintons and the Bushes hardly count as exceptions. The leaders of Japan, South Korea, the Philippines and Bangladesh are all related to former political chiefs. The "Stans" of Central Asia are family fiefs. The Gandhis are struggling in India, as are the Bhuttos in Pakistan, but the Kenyattas are kings in Kenya, a Fujimori is once again leading the polls in Peru and a Trudeau has a fighting chance in Canada. Meanwhile the lengthy catalogue of China's "princelings", the children of Communist Party grandees, starts right at the top with the president, Xi Jinping.

In Europe family power is one reason why politics seems like a closed shop. Fifty-seven of the 650 members of the recently dissolved British Parliament are related to current or former MPs. François Hollande, France's president,

has four children with Ségolène Royal, who ran for the presidency in 2007. Three generations of Le Pens are squabbling over their insurgent party, the Front National. Belgium's prime minister is the son of a former foreign minister and European commissioner. The names Papandreou and Karamanlis still count for something in Greece.

In business, too, family companies continue to thrive, as our special report in this issue explains. More than 90% of the world's businesses are family-managed or -controlled, including some of the biggest, such as News Corp and Volkswagen, a carmaker in the throes of a boardroom battle between its two main family owners. The Boston Consulting Group calculates that families own or control 33% of American companies and 40% of French and German ones with revenues of more than $1 billion a year. In the emerging world the preponderance of family control is greater still.

The importance of power families would have surprised the founders of modern economic and political theory. Political dynasties were supposed to fade as ordinary people got the vote. Family businesses were supposed to lose ground as public companies raised money from millions of small investors.

This never happened—partly because many advantages of kinship proved surprisingly enduring. Political dynasties have a powerful mixture of brand names and personal connections. Family companies can be more flexible and far-seeing than public companies. Family owners typically want their firms to last for generations, and they can make long-term investments without worrying about shareholders hunting for immediate profits.

Power families have also prospered from big, and welcome, social and economic shifts. Their prominence reflects the increasing prosperity of Asia, where families traditionally play a large role. The emancipation of women is doubling the talent pool. In an earlier age political chauvinism

would have excluded Park Geun-hye, Keiko Fujimori—and Mrs Clinton. Likewise women have successfully taken the reins at Spain's Santander bank, Australia's Hancock Prospecting, and even Saudi Arabia's Olayan Financing Company.

However, family power poses problems. Liberals, such as this newspaper, believe in the importance of protecting private property and allowing entrepreneurs to enjoy the fruits of their talents. But at the same time they believe that people should be judged on their individual merits rather than their family connections or their brand name. The *New York Times* reckons that the son of a governor is 6,000 times more likely than the average American male baby-boomer to become a governor himself, and the son of a senator is 8,500 times more likely to become a senator. The concentration of power and wealth in a small elite raises questions about legitimacy.

Family power also has its dark side—especially where business and politics are entwined in an exclusive nexus of money and influence. The Clintons are a worrying example: all sorts of people, including foreign governments, have given millions to the Clinton family foundation, perhaps in part because they think it will give them influence over a future president. Lazy incumbents have an incentive to use political connections to protect themselves from competition. This can lead to corruption. A study found that in 2003 firms representing almost 8% of the world's market capitalisation were run by relatives of their countries' political leaders. Even without political connections, business families can exercise an unhealthy influence over the wider economy. Pyramid ownership structures enable a small chunk of capital to exert a large degree of control. Another study found that the richest ten families controlled 34% of market capitalisation in Portugal and 29% in both France and Switzerland.

Family values, public goods

The secret to healthy family power is competition. In an open system of

free markets, governed by the rule of law and held to account by a free press, nepotism matters less. America's vastly expensive elections favour political machines: another reason to re-examine campaign finance. Pyramid structures lock up capital markets. America limited them in the 1930s. Britain followed suit in the late 1960s and Israel is doing the same. So should other countries. Inheritance taxes in places such as Britain favour the family company: it should survive on its merits. Family power, like any other sort, needs watching over. If it cannot be contested, it should not be welcome. ■

家族势力

王朝

政商界的家族势力可能让精英制度的信徒感到担忧

“作为一个民主国家，美国应该能够消除世族豪门。”美国著名历史学家小阿瑟·施莱辛格（Arthur Schlesinger junior）曾在1947年这样写道。但时隔近70年后，明年的美国总统大选很有可能成为一次家族间的竞争。在过去九次选举中，克林顿家族成员或布什家族成员在选票上出现过七次。希拉里和杰布的对决也许会违背机会均等原则，但却并未违反统计学规律。

人们会问，在一个曾不惜通过战争来摆脱王权世袭的国家，怎么会发生这种事情？这是个错误的问题。环顾世界，无论是政界还是商界，权力依然集中在家族手中。权势家族和王朝将持续存在。问题的关键是如何保证他们成为向好的力量。

> *双螺旋基因，双重标准*

在政界，克林顿家族和布什家族实在算不上特例。日本、韩国、菲律宾、孟加拉国的领导人都和前任政治领袖沾亲带故。中亚各国国名中的“斯坦”意指家族封地。印度的甘地家族和巴基斯坦的布托家族确实在政坛苦苦挣扎，但肯雅塔家族（the Kenyattas）在肯尼亚仍呼风唤雨，藤森家族（Fujimori）的一位成员在秘鲁民调中又一次领先，特鲁多（Trudeau）家族成员有机会在加拿大一展身手。与此同时，数量庞大的中国“太子党”，也就是中国共产党元老的后代，正身居高位，习近平主席就是显例。

在欧洲，政治关系像是只雇用某一工会会员的商店，原因之一是家族势力。最近解散的英国议会的650名议员中有57名与现任或前任国会议员沾亲带故。法国总统弗朗索瓦·奥朗德（François Hollande）同参加过2007年总统大选的塞格琳·罗雅尔（Ségolène Royal）育有四个子女。勒庞家（Le Pens）的三代人正在为他们所创的极右派政党法国国民阵线（the Front National）吵得不可开交。比利时首相的父亲曾任外交大臣和欧盟

委员。帕潘德里欧（Papandreou）和卡拉曼利斯（Karamanlis）这两个姓氏在希腊仍颇具分量。

在商界，家族企业也在持续繁荣。全世界超过90%的企业都由家族管理或控制，其中不乏大企业，比如新闻集团和大众汽车，后者正身处董事会战争的漩涡，两大主要所有家族争斗正酣。波士顿咨询集团估算，在美国，家族拥有或控制了33%的公司，在法国和德国，年收入超过10亿美元的企业中有40%为家族所有或控制。在新兴世界，家族控制所占的比例更大。

权势家族的重要性本该让现代经济和政治理论的提出者们大吃一惊。政治王朝理应褪色，因为普通人有了选举权。家族生意也应该失去阵地，因为公众公司从成千上万投资者手中筹集资金。

但这样的情况从未发生——因为亲族关系的很多好处确实有着惊人的持久性。政治王朝有着显赫姓氏和广泛人脉积累而成的强大力量。家族企业比公众公司更为灵活，更富远见。家族所有者一般希望自己的公司能够世代延续，而且他们能够做长远投资，不必顾虑追逐眼前利润的股东。

权势家族也在巨大且受欢迎的社会和经济转变中蓬勃发展。在亚洲，家族历来扮演着重要的角色，他们的声望折射出亚洲的日渐繁荣。而女性的解放让人才储备成倍增加。早些年，政治沙文主义一定会排挤朴槿惠、藤森惠子（Keiko Fujimori），甚至是希拉里。现在，像她们这样的女性已经成功地掌控了西班牙桑坦德银行（Santander bank）、澳大利亚汉考克勘探公司（Hancock Prospecting），甚至是沙特阿拉伯的奥拉扬金融集团（Olayan Financing Company）。

然而，家族权势也会带来问题。像本刊这样的自由派认为保护私有财产非常重要，让企业家享受他们才华的果实也非常重要。但他们同时也相信，衡量一个人的标准只能是其个人的品质而非家族关系或者出身。《纽约时报》指出，州长的儿子成为州长的可能性比婴儿潮一代美国普通男性公民高出6000倍。参议员的儿子成为参议员的可能性要高出8500倍。权力和财富集中于一小部分精英会带来合法性问题。

家族势力也有其黑暗的一面——特别是当商业与政治相互交织，形成金钱和影响力独有的关联时。克林顿家族就是一个让人担心的例子：各色人等，包括外国政府，都为克林顿基金会捐助过巨额金钱，可能原因之一是他们认为这样将可以对一位未来的美国总统产生一定的影响力。慵懒的既有商业有可能会利用政治关系来保护自己，躲避竞争。这就会导致腐败。一项研究发现，2003年，代表了全球总市值8%的公司都由其所在国政治领导人的亲属运营。即便没有政治关系，商业家族也会对整体经济施加不健康的影响。金字塔所有权结构使得一小部分资金能发挥很大的控制力。另外一项研究发现，葡萄牙最富有的十个家族控制了34%的总市值，在法国和瑞士这一比例为29%。

家族价值，公共产品

竞争是保证家族权势健康的秘诀。在一个开放的自由市场体制中，由法治进行管理，新闻自由行使监督，裙带关系就不是多大的问题。美国总统选举由于耗资巨大，因此更依赖政治机器：这是重新审视竞选筹款的另一个原因。金字塔结构制约了资本市场。美国在上世纪30年代限制了这一结构，英国于60年代紧随其后，以色列正在采取同样的措施。其他国家也应该效仿。英国等国的遗产税有利于家族企业，而它们应该依靠自己的优势存活。家族权势和其他任何形式的权力没有差别，都需要接受监督。如果不能接受质疑，那么它就不应该受到欢迎。■

General Electric

Banking on de-banking

By announcing the closure of GE's financial arm, Jeffrey Immelt has only won half of the battle to save the company

SPEAKING just a month ago, one of the men who lost the struggle to become boss of General Electric (GE) in 2001 grumbled that the firm had become as soft as a marshmallow. That was before Jeffrey Immelt, who got the job, said he would terminate with extreme prejudice the group's vast banking division, GE Capital. Mr Immelt's decision, announced on April 10th, is as momentous and ruthless as any made by an American boss in decades.

The logic is impeccable: GE Capital has sapped the world's biggest industrial firm for a decade and exhausted the patience of regulators and shareholders. And Mr Immelt may find it easier than expected to liquidate in 36 months America's seventh-largest bank, with $500 billion of assets. What may prove harder is convincing the world that the rest of GE—which runs from lamps to locomotives via medical scanners, oil-drilling equipment, nuclear reactors, jet engines, water-treatment plants and all manner of other electrical and mechanical gear—still deserves to exist.

GE's finance arm was conceived in innocence in the 1980s and came of age in the roaring 1990s when it lent with abandon to consumers and companies in 48 countries and with little regulatory oversight. It had a near-death moment in 2008 when it needed almost $60 billion of government guarantees for its debt to stay afloat—on a par with the aid given to many big banks.

Today almost no one wants it to exist. Regulators dislike how it relies on wholesale borrowing markets to finance itself—it had a third of a trillion

dollars of debt at the latest count. Shareholders despair of its 8% return on equity, now that a plethora of new capital and liquidity surcharges apply to it and other too-big-to-fail banks. Mr Immelt is frustrated at how it overshadows GE's industrial business, which he believes he has remade into something special through years of unappreciated toil.

Even with its previous thirst for risk it took GE two decades to create its giant financial business. Can it really be dismantled in just three years, as Mr Immelt now intends? Pessimists can point to the experience of big banks such as Citigroup, that are still trying to offload huge portfolios of dud assets almost a decade after the crisis. The closest example that there is of a controlled liquidation of a giant financial firm, Royal Bank of Scotland, has been slow and painful in the extreme.

In fact GE stands a fair chance of putting its finance arm to sleep on time. First, there appears to be less nastiness on its balance-sheet than one might think, because it has already shrunk and cleaned up its books. Only about 5% of loans are delinquent and only 3% of assets are classified as "level-3" (regulator-speak for opaque and hard to value). Between 2009 and 2014 GE sold about $100 billion of loans at a slight profit. It has announced the sale of $27 billion of property loans—which should be among the hardest to shift—mainly to funds run by Blackstone, a private-equity firm.

Second, there seem to be lots of buyers sniffing around, thanks to bubbly financial markets. The average yield on GE's loans is 7% and in a world in which yields on most assets are at rock bottom, they are enticing. The owners best suited to GE's assets would be entities that are exempt from the capital surcharges now imposed on big banks—either because they are not banks or are foreign. And they would have a cheap and safe source of funding, either because they have access to deposits or long-term equity. GE says it has had expressions of interest from hedge funds, sovereign-wealth funds, foreign banks and fund managers, all of whom fit the bill.

Having helped save GE's finance arm during the financial crisis, the Federal Reserve is now the main obstacle for Mr Immelt's plan. It could object to certain buyers—either because they are too-big-to-fail banks or because, like GE today, they rely on risky wholesale borrowing. The Fed could also tighten monetary policy more quickly than expected, causing a bond-market rout and confidence to evaporate.

Still, for now the momentum is with Mr Immelt. His dream is that by 2018 GE Capital will have shrunk to $90 billion of underlying assets, just a fifth of their peak value, and from nearly half of GE's profits today to just a tenth. What is left will have the reduced role of providing credit for buyers of GE products. Such "vendor finance" is common among industrial companies of all sorts (see next article). A pile of capital will be released that can be returned to shareholders through buybacks—perhaps up to $50 billion-worth, or a fifth of GE's market value. And the glory that is GE's industrial side will be revealed.

What happens if all goes to plan? The most important, and least asked, question, is whether GE's industrial business is any good. That may seem churlish. GE has its own legends of "six-sigma" manufacturing excellence and frugal innovation. It has immense prestige abroad, where it makes half of its sales. GE is in the process of buying most of Alstom, a French firm, for $13 billion. Assuming the deal is completed GE says it will have the largest market share of any global firm in its biggest businesses —aviation, transport, power and health care. On the numbers GE prefers to highlight, the industrial business has been growing nicely. Organic revenue growth, that is excluding currency moves and asset sales and purchases, has been an average of 5% over the last five years. And its return on capital is a decent 14%.

The trouble is that none of this has translated into growth in profits or cashflow from the non-financial side. Both have declined alarmingly in

absolute terms (see chart). In part this reflects the asset sales GE has made—for example, Mr Immelt has sold NBCUniversal, a media company, and GE's plastics business.

Some 60% of the sales GE made in 2001 came from businesses it no longer owns. The industrial divisions have bought or sold companies worth about $100 billion in the last decade, excluding Alstom. That is more than the $64 billion of capital invested in the businesses that remain.

This figure can be brandished as evidence of how radical Mr Immelt has been. But it also means GE's industrial businesses have not been a rock, but a constantly shifting portfolio of assets—rather like a financial firm, in fact. The restructuring costs incurred have been heavy—$12 billion over a decade. The complexity involved is high: to get the French government to accept the Alstom deal, Mr Immelt agreed that, instead of buying three of its divisions outright, it would let the French firm keep stakes in them via joint ventures, a particularly exquisite form of corporate torture.

It is hard to know if the latest portfolio will cohere. GE has never managed to quantify the synergies it gains from its diverse businesses. There is some evidence it is building economies of scale. It has over $1 billion of orders in 22 countries, double the figure a decade ago. Mr Immelt talks about making GE a "store" for those buying infrastructure products and services. But customers for jet engines do not usually go shopping for nuclear reactors or neonatal incubators. As more of GE's wide variety of machines are connected wirelessly, there may be synergies to be found in the data they produce. But this is as yet unclear.

As he enters the final years of his stint as GE's boss, most eyes will be on whether Mr Immelt will become the first man in modern history safely to euthanise a too-big-to-fail financial firm. If he succeeds it will be a triumph of guts and discipline, two of the qualities that GE is renowned for. Yet if

GE's industrial businesses do not begin to yield consistently rising profits and cashflow, the same investors who agitated to break up its finance arm will eventually turn their attentions to what is left of it. ■

通用电气

寄希望于去银行化

宣布关闭通用电气的金融部门，杰夫·伊梅尔特在拯救公司的战斗中只赢了一半

仅仅一个月前，在2001年通用电气（GE）掌门人争夺战中失利的一位仁兄抱怨说，这家公司已经变得和棉花糖一样软。随后，当年赢得竞争的杰夫·伊梅尔特（Jeffrey Immelt）表示，带着极端的个人意见，他将关闭集团庞大的银行业务部门——GE金融（GE Capital）。4月10日伊梅尔特宣布的这个决定，其重大意义与无情程度在近几十年美国企业老板所做的决定中都是数得上的。

它的逻辑无懈可击：过去十年里，GE金融消耗了世界上最大的实业公司的财力，也耗尽了监管机构和股东的耐心。伊梅尔特也许会发现，在36个月内清算这家资产5000亿美元的美国第七大银行比预期要容易些。到头来更难的可能是让全世界相信，GE的其他业务依然应该延续——从电灯到火车头、医用扫描仪、石油钻探设备、核反应堆、喷气发动机、水处理厂和其他各种机电设备，林林总总。

GE的金融部门诞生于纯真的上世纪80年代，成熟于繁荣的上世纪90年代。当时，它在48个国家向消费者和公司肆意放贷，几乎无人监管。2008年，它濒临绝境，需要近600亿美元的政府债务担保来维持正常运转，这和政府给许多大银行的援助旗鼓相当。

今天，几乎没有人希望它继续存在。监管机构不喜欢它依赖银行间拆借市场来融入资金。最近一次统计时，它的债务达3千多亿美元。股东对它8%的股本回报率感到绝望，原因是它和其他大而不倒的银行都适用大量资本和流动性方面的新附加规则。让伊梅尔特感到沮丧的是，它使GE的实业业务蒙上了阴影。经过多年的辛苦耕耘，功劳却不被认可，他相信自己已经把GE的实业改造得很特别。

即便GE以前对经营风险如此渴望，它创造出庞大的金融业务也花了20

年。真的能像伊梅尔特现在打算的那样，在短短三年内拆分这块业务吗？悲观主义者可以列举出像花旗集团这样的大银行的经验作为证明：危机过去近十年了，花旗集团仍在试图摆脱巨额的不良资产。大型金融企业受控清算的最近的一个例子是苏格兰皇家银行（Royal Bank of Scotland），但这一过程极度痛苦和缓慢。

事实上，GE有相当大的机会让它的金融部门寿终正寝。首先，其资产负债表上的问题似乎比人们想象的少，因为它已经收缩规模并清理账目。只有大约5%的贷款逾期，以及3%的资产被列为“三级”（监管者对不透明、难估值资产的用语）。2009年至2014年间，GE以微利出售了大约1000亿美元的贷款。它已经宣布主要面向私募股权公司黑石（Black Stone）管理的基金出售270亿美元的房地产贷款。这种贷款应该是最难出手的。

其次，得益于存在泡沫的金融市场，似乎有很多买家正在跃跃欲试。GE的贷款平均收益率为7%，在大多数资产的收益率跌至谷底的大环境下，它们很吸引人。最适合购入GE资产的将会是这样一些公司：它们不受目前针对大银行的资本附加规则的影响，原因是它们要么不是银行，要么是外国公司。它们拥有廉价安全的资金来源，因为它们或者可以获得存款，或者拥有长期股权。GE表示，向它表示过意向的包括对冲基金、主权财富基金、外国银行和基金公司，它们全都符合要求。

金融危机期间，美联储帮忙拯救了GE的金融部门，现在它却是伊梅尔特计划的主要障碍。它可能会反对某些买家，因为它们不是大而不倒的银行，就是和现今的GE一样的公司，依赖有风险的银行间拆借。美联储还可能比预期更快地收紧货币政策，导致债券市场大跌和信心蒸发。

不过，伊梅尔特目前占据了优势。他的愿望是到2018年，GE金融的资产缩小到900亿美元，仅为峰值时的五分之一，它占GE的利润份额也将从目前的近一半减少到仅为十分之一。保留下来的金融业务将仅仅向GE产品的买家提供信贷。这种“卖方融资”在各类实业企业中很常见。大量资本将被释放，可以通过股权回购的方式返还给股东，回购价值可能高达500亿美元，相当于GE市值的五分之一。GE实业部门的荣耀将彰显出来。

如果一切按计划进行，会发生什么？最重要的也是最少被问到的问题是，GE的实业真的有那么好吗？这也许听起来很无礼。GE有它自己的“六西格玛”卓越制造和节俭创新的传奇故事。它在海外享有盛誉，海外销售占销售总额的一半。GE目前正以130亿美元收购法国公司阿尔斯通（Alstom）的大部分业务。GE表示，如果交易完成，在全球性企业里，它在航空、运输、电力和医疗等自己最重要的业务中将占有最大的市场份额。在GE更喜欢强调的数字方面，实业业务一直顺利增长。过去五年中，自助增长带来的收入平均增长5%，这个收入不包括汇率变动和资产买卖带来的收益。它的资本回报率是14%，相当不错。

问题是，这些都没有转化为非金融业务板块利润或现金流的增长。就绝对规模而言，利润和现金流的下滑都令人担忧（见图表）。这在一定程度上是受GE出售资产的影响，比如说，伊梅尔特曾出售媒体公司NBC环球（NBCUniversal）和GE的塑料业务。

以2001年GE的销售额来看，约有60%来自它目前不再拥有的业务。过去十年里，实业部门收购或出售的公司价值约合1000亿美元，这还不包括阿尔斯通。这一金额超过了GE对保留下来的业务640亿美元的投资。

这一数字可以用作证据来说明伊梅尔特是多么激进。但这也意味着GE的实业部门并非一成不变，而是不断变换的资产组合，事实上它更像一家金融公司。重组产生的成本很沉重，十年内超过了120亿美元。它涉及的事务高度复杂：为了让法国政府接受阿尔斯通的交易，伊梅尔特同意不买断对方的三个部门，GE会让阿尔斯通以合资公司的方式保留股份。这是一种极致的企业困扰。

很难知道最新的投资组合能不能协同一致。多元化业务之间产生的协同作用有多大，GE从来没能成功地量化出来。有一些证据表明它正在形成规模经济。它在22个国家拥有超过10亿美元的订单，是十年前的两倍。伊梅尔特表示要把GE变成一家针对购买基础产品和服务的买家的“商店”。但喷气发动机的客户通常不会采购核反应堆或新生儿恒温箱。随着GE越来越多的各种机器都实现无线互连，在它们产生的数据中或许能发现协同作用。但

这还不明朗。

随着伊梅尔特作为GE掌门人的任期进入最后几年，大家都会关注他能不能成为现代历史上的第一人，对一家大而不倒的金融公司安全地实施安乐死。如果他成功了，那将是勇气和纪律的胜利，而它们是GE著名特质中的两个。然而，如果GE的实业不开始产生持续增长的利润和现金流，那些曾经激动地拆分其金融部门的投资者最终将把注意力转移到它保留下来的业务上。■

Mixing commerce and banking

Risky business

Message to chief executives: do not try to turn your firm into Goldman Sachs

THE question of whether businesses should dabble in finance was supposedly settled in America after the 1929 crash, when the mixing of commerce and banking was banned. But those rules were watered down and circumvented by GE and many others. In the rest of the world the debate has raged for decades. The case for a split is clear. Managers are even worse at dealing with financial risk than bankers are. A blow-up in a firm's financial arm can hurt its main business. And giving tycoons access to savers' cash can lead them into all sorts of temptation.

Despite this, non-financial businesses are engaged in finance on a mighty scale. The share of American profits from finance is 33%, as measured by its national accounts, which include the finance arms of industrial companies. This is far higher than the 20% share of the profits generated by S&P 500 companies that is attributed to "pure" banks and insurers. Globally, non-financial firms own $9 trillion of currency derivatives.

There are four ways to dance with the devil. First, firms can get involved with "vendor financing"—lending to customers to help them buy their products. But customers can default: Motorola and Nokia lost, in total, $3 billion in Turkey in 2001. And the scale of vendor financing is scary. The five biggest car firms which report figures have finance arms with $600 billion of assets, up by a fifth in the past two years.

Second, consumer firms can sell retail financial services to their customers. Walmart, a grocer, offers banking products to shoppers. Few of these experiments have created much profit. The third approach is to engage in trading. Glencore, a natural-resources firm, makes 42% of its profits from

trading. BP, an oil firm, has $8 billion of derivatives held for the purpose of trading.

The most gung-ho strategy is to set up a fully-fledged finance subsidiary, as GE did. Sometimes it works. Warren Buffett's conglomerate, Berkshire Hathaway, contains a huge insurance unit whose cash float finances its investments. But it is opaque, with $37 billion of notional derivatives exposure. At some companies, the tacit aim may be for the finance subsidiary to exploit the main business's balance-sheet and dodge regulation. GE Capital's 2008 blow-up was not the first of its kind: in the 1997-98 Asian crisis South Korean, Thai and Indonesian conglomerates were crippled by losses in their banking arms.

Since the subprime crisis Western regulators have clamped down on closet banks. But elsewhere the idea of mixing commerce and finance is back in fashion. Last year China granted banking licences to two internet firms and an airline, among others. And India's tycoons have been lobbying to be allowed to open banks. These firms say they will boost competition but history suggests their plans are like mixing matches and gas. ■

商业与银行混业

高风险业务

给首席执行官的信息：不要试图把公司变成高盛

企业是否应该涉足金融业，美国1929年股灾禁止商业和银行混业之后，这个问题应该已经盖棺定论。但是，这些规则被通用电气（GE）和其他许多公司所淡化和规避。在世界其他地方，这种争论持续了几十年。分业经营的理由显而易见。在应对金融风险方面，公司管理者比银行家更糟。一家企业金融部门的失败可能会损害主营业务。允许巨头们使用储户的现金可能给他们带来各种诱惑。

尽管如此，非金融企业仍然大规模地从事金融业务。用国民账户衡量，美国来自金融业的利润份额为33%，其中包括了实业企业的金融部门。这个比例远远高于标准普尔500指数成份股企业中“纯”银行和保险公司所产生的20%的利润份额。全球而言，非金融企业拥有9万亿美元的外汇衍生品。

与魔鬼共舞的方法有四种。首先，企业可以参与“卖方融资”，借钱给客户帮助他们购买产品。但是客户可能会违约：在土耳其，摩托罗拉和诺基亚2001年共因此损失了30亿美元。卖方融资的规模惊人。在披露数据的五大汽车公司中，金融部门的总资产达6000亿美元，在过去两年间上升了五分之一。

其二，消费品公司可以向客户销售零售金融服务。食品杂货商沃尔玛向顾客提供银行产品。这些实验很少能创造多少利润。第三种方法是从事交易。自然资源公司嘉能可（Glencore）有42%的利润来自交易。石油公司BP为交易而持有的衍生品达80亿美元。

最卖力的策略是建立一个完全成熟的金融子公司，正如GE所做的那样。有时这种策略能奏效。沃伦·巴菲特的企业集团伯克希尔哈撒韦（Berkshire Hathaway）有一个庞大的保险部门，它的保险浮存金为集团的投资提供

了资金。但是，这个部门很不透明，名义衍生品价值敞口达370亿美元。在一些公司，心照不宣的目的可能是让金融子公司利用企业主营业务的资产负债表并逃避监管。GE金融（GE Capital）2008年的失败不是同类企业中的第一次：1997至1998年亚洲金融危机时，韩国、泰国和印尼的企业集团由于银行部门亏损而遭受重创。

次贷危机之后，西方监管机构取缔了影子银行。但在其他地方，商业和金融混业的思路重新流行。去年，中国向两家互联网公司、一家航空公司等企业颁发了银行牌照。印度大亨们一直在游说政府允许他们开设银行。这些公司声称这将促进竞争，但历史表明，这种计划实际上是将干柴堆在烈火上。■

India's economy

The Gujarat model

How Modi-nomics was forged in one of India's most business-friendly states

BILLBOARD images of Narendra Modi loom over visitors to Ahmedabad, the main city of Gujarat, at almost every turn. The big-brother omnipresence of India's prime minister is part of the build-up to a big trade fair held in neighbouring Gandhinagar, a showcase for the business-friendly state initiated in 2003 by Mr Modi when he was its chief minister. The 2015 Vibrant Gujarat summit, the seventh such event, ran for three days from January 11th, when Mr Modi makes a speaking appearance. It is a vast affair with visitors from 125 countries.

Gujarat is richer, enjoys faster GDP growth and a greater intensity of jobs and industry than India as a whole. Mr Modi's reputation for clean government and economic competence rests on his record here. When Indians voted for him in great numbers last May, it was in large part because they wanted the country run as Gujarat is. His impact on the state is nevertheless contested. It is helpful, say Mr Modi's critics, that he built a platform for a career in national politics in a state that already had deep roots in commerce (the Mafatlal textile plant, an hour's drive south of Ahmedabad, for instance, recently celebrated its centenary). What is clearer is that Mr Modi's time in Gujarat offers a guide to his approach to the bigger job of fixing India's economy.

Start with the record, which shows that Gujarat punches above its weight. With just 5% of India's population and 6% of its land mass, it accounts for 7.6% of its GDP, almost a tenth of its workforce, and 22% of its exports. Climate and geography pushed it towards commerce. Poor rainfall made it hard to scratch out a living in farming; a long coastline favoured international trade. Today a quarter of India's sea cargo passes through its

ports. Even if Mr Modi cannot claim much credit for Gujarat's natural endowments, the state's annual GDP growth under his watch from 2001 until 2012 averaged almost 10%, a faster rate than India as a whole (see chart). Other exporting states, such as Maharashtra and Tamil Nadu, also did well. But sustaining rapid growth in any of India's richer states is not a feat to be sniffed at.

Where Gujarat noticeably came up short is in poverty reduction, reckons Reuben Abraham, of the IDFC Institute, a think-tank. Other states of similar rank made greater inroads into cutting poverty rates between 1993 and 2012, he finds, though only three can boast a lower level of poverty. Mr Modi's biggest feats were tangible, says Mr Abraham, the kind of improvements that migrant workers tend to notice, and report back to their relatives. The roads through and around Ahmedabad are excellent. The state has moved from a deficit in electricity generation, in 2002, to a surplus, despite the energy demands of a booming economy. Its 18,000 rural villages are connected to the grid. Water supply is abundant.

This emphasis on basic infrastructure, a hallmark of the Gujarat model, extends to making land easily available for commercial development. In 2008 Tata Motors switched the site for the plant to make the Nano, a small car, from West Bengal to Sanand in Gujarat after Ratan Tata, boss of the conglomerate parent, received an SMS message from Mr Modi offering him a factory-ready plot for the firm and its suppliers. Bogged down in messy land disputes at its initial choice of site, Tata Motors readily made the switch. Others have since followed. Ford is opening a plant in Sanand later this year.

India sits a lowly 142nd out of 189 countries in the World Bank's "ease of doing business" rankings. But in Gujarat factories spring up more readily because permits, licences and environmental clearances are granted quickly. This predates Mr Modi's time in office. Apollo, a big tyre

manufacturer, opted in 1990 to build a plant in Gujarat in part because clearances were less painful than elsewhere. Mr Modi added his own twist. He saw that e-governance, the application of IT to the provision of government services, could make civil servants more accountable and cut corruption. "He thought of it as synonymous with good governance," says S.J. Haider, secretary of IT for the government of Gujarat. Tata Consultancy Services, an IT-services firm, designed systems for tracking state finances, documents within government offices and value-added tax payments. Other states are now looking at adopting similar platforms.

A focus on basic infrastructure and public goods; a drive to make civil servants honest and accountable; a penchant for IT; a flair for marketing to business investors. The elements of Mr Modi's brand of economics are not obviously those of Margaret Thatcher or Ronald Reagan, to whom he has been compared by some commentators. Thatcher wanted a small state. Reagan is held to have said that "the nine most terrifying words in the English language are: 'I'm from the government and I'm here to help.'" Mr Modi, by contrast, believes government can be made to work better.

"The Gujarat model is more about ideologically-neutral good governance than the sort of big-bang reforms seen in 1980s Britain and America," says Vivek Dehejia, an economist. What sets Mr Modi apart from many of his predecessors is his ability to make a decision and be held accountable for it. But his record suggests those hoping for big privatisations or bold labour reforms are likely to be disappointed. ■

印度经济

古吉拉特邦模式

莫迪经济学如何在印度宜商之邦锻造成型

在印度古吉拉特邦（Gujarat）的主要城市艾哈迈达巴德（Ahmedabad），几乎每个街角都可以看到莫迪的巨幅海报耸立人前。这位印度总理之所以威仪无处不在，部分原因是为给邻市甘地讷格尔（Gandhinagar）举行的大型交易展会造势。2003年莫迪任古吉拉特邦首席部长时，在邦内推行优化营商环境计划，该市正是典范。第七届“活力古吉拉特邦”峰会于2015年1月11日召开，为期三天，莫迪到场发表演说。来自125个国家的访客参与了这一大型盛会。

古吉拉特邦的富裕程度、GDP增长速度、工作机会及产业集中度均高于印度整体水平。莫迪正是在这里建立起了廉洁政府及经济能人的名声。去年5月印度大批选民投票给他，主要是因为他们希望全国以古吉拉特邦的模式发展。当然，也有人质疑莫迪对该邦的实质影响。反对他的人指出，古吉拉特邦本来就拥有深厚的营商根基，比如，艾哈迈达巴德往南一小时车程的马法特拉尔（Mafatlal）纺织厂刚举行了百年庆典。这样的基础有助于莫迪打造平台积累政治资本，跻身全国政治舞台。更为明确的是，莫迪执掌古吉拉特邦政府的经历为他日后在改善印度经济这一更大职责上提供了指引。

先看数据，古吉拉特邦不算大，实力却显然不容小觑。该邦人口只占全印度的5%，土地面积占6%，但GDP占比达7.6%，而且集中了全国十分之一的劳动力及22%的出口额。气候及地理因素驱使该邦往商贸方向发展。降雨量不足意味着这里的人们难以务农为生；海岸线长有利于国际贸易。如今印度海运货物有四分之一通过这里的港口进出。论古吉拉特邦的天然优势，莫迪无甚功劳可言，但2001年至2012年间，该邦在其管治下，年均GDP增长率接近10%，高于印度整体水平（见图表）。其他出口邦，如马哈拉施特拉邦（Maharashtra）和泰米尔纳德邦（Tamil Nadu），也表现不俗。然而，印度这些较为富裕的邦要保持快速增长并非易事。

智囊机构IDFC研究所的鲁本•亚伯拉罕（Reuben Abraham）认为，古吉拉特邦明显不足的是减贫力度。他发现，尽管其他类似邦在1993年至2012年间更努力地降低贫困率，但只有三个邦的减贫水平值得一提。亚伯拉罕指出，莫迪最大的功劳是那些看得见摸得着的改善，外地民工会看在眼里，回去给乡亲父老娓娓道来。艾哈迈达巴德城里城外的道路都是一流的。2002年古吉拉特邦还处于发电不足的状态，而如今，尽管经济腾飞，能源需求大增，电力供应却绰绰有余。邦内18,000个村庄都连入了电网。自来水供应也很充足。

对基础设施的重视是古吉拉特邦模式的标志之一，轻松批出地块用于商业发展也进而成为政府着力之处。2008年印度塔塔汽车公司（Tata Motors）把旗下制造小型汽车Nano的厂房从西孟加拉邦（West Bengal）转移到古吉拉特邦的萨纳恩德（Sanand），因为该集团母公司老板拉坦•塔塔（Ratan Tata）收到莫迪的短信，向其公司及供应商提供准备就绪的厂房地块。塔塔汽车当时正在工厂最初选址问题上备受土地纠纷困扰，得此消息，欣然转投。其他厂商自此也纷纷追随。福特今年晚些时候也将在萨纳恩德设厂。

世界银行的“营商环境”排行榜上，印度在189个国家中仅排名第142位。但在古吉拉特邦，由于包括环评在内的各类许可证照审批迅速，更容易涌现大批工厂。早在莫迪上任前就已如此。1990年，印度大型轮胎制造商阿波罗公司（Apollo）选择在古吉拉特邦建造厂房，部分原因就是这里的证照审批过程不像别处那般痛苦。莫迪上任，更添新招。他认为运用IT技术提供政府服务的“电子政务”可以令公务员更尽职尽责，并减少贪腐。“他把电子政务视为良好治理的代名词。”古吉拉特邦政府信息技术部常秘海德尔（S.J. Haider）说道。IT服务公司塔塔咨询服务（Tata Consultancy Services）设计的系统可追踪本邦财政、政府内部文件及增值税支付款项。其他邦正在考虑采用类似的平台。

重视基础设施建设及公众利益、推动公务员诚信问责、热衷运用信息技术、善于向商业投资者推销——莫迪经济学的这些元素显然有别于撒切尔夫人或里根总统当年的治国理念，尽管某些评论员将莫迪与两人相提并

论。撒切尔夫人秉承小政府理念。里根总统据传曾说过“英语里最恐怖的九个字就是‘我代表政府，我来帮忙’。”相比之下，莫迪则相信政府可再加以完善，发挥效力。

“古吉拉特模式更倾向于讲求非关意识形态的良好的治理，而非上世纪80年代英国和美国那种大爆炸式的改革。”经济学家维韦克•德赫贾（Vivek Dehejia）说道。莫迪与其许多前任的不同之处在于，他能作出决策并坚持负责到底。但若有人希望出现大型私有化浪潮或大胆的劳工改革，以莫迪的过往政策来看，很可能会失望。 ■

Clever computers

The dawn of artificial intelligence

Powerful computers will reshape humanity's future. How to ensure the promise outweighs the perils

"THE development of full artificial intelligence could spell the end of the human race," Stephen Hawking warns. Elon Musk fears that the development of artificial intelligence, or AI, may be the biggest existential threat humanity faces. Bill Gates urges people to beware of it.

Dread that the abominations people create will become their masters, or their executioners, is hardly new. But voiced by a renowned cosmologist, a Silicon Valley entrepreneur and the founder of Microsoft—hardly Luddites—and set against the vast investment in AI by big firms like Google and Microsoft, such fears have taken on new weight. With supercomputers in every pocket and robots looking down on every battlefield, just dismissing them as science fiction seems like self-deception. The question is how to worry wisely.

> *You taught me language and...*

The first step is to understand what computers can now do and what they are likely to be able to do in the future. Thanks to the rise in processing power and the growing abundance of digitally available data, AI is enjoying a boom in its capabilities. Today's "deep learning" systems, by mimicking the layers of neurons in a human brain and crunching vast amounts of data, can teach themselves to perform some tasks, from pattern recognition to translation, almost as well as humans can. As a result, things that once called for a mind—from interpreting pictures to playing the video game "Frogger"—are now within the scope of computer programs. DeepFace, an algorithm unveiled by Facebook in 2014, can recognise individual human faces in images 97% of the time.

Crucially, this capacity is narrow and specific. Today's AI produces the semblance of intelligence through brute number-crunching force, without any great interest in approximating how minds equip humans with autonomy, interests and desires. Computers do not yet have anything approaching the wide, fluid ability to infer, judge and decide that is associated with intelligence in the conventional human sense.

Yet AI is already powerful enough to make a dramatic difference to human life. It can already enhance human endeavour by complementing what people can do. Think of chess, which computers now play better than any person. The best players in the world are not machines however, but what Garry Kasparov, a grandmaster, calls "centaurs": amalgamated teams of humans and algorithms. Such collectives will become the norm in all sorts of pursuits: supported by AI, doctors will have a vastly augmented ability to spot cancers in medical images; speech-recognition algorithms running on smartphones will bring the internet to many millions of illiterate people in developing countries; digital assistants will suggest promising hypotheses for academic research; image-classification algorithms will allow wearable computers to layer useful information onto people's views of the real world.

Even in the short run, not all the consequences will be positive. Consider, for instance, the power that AI brings to the apparatus of state security, in both autocracies and democracies. The capacity to monitor billions of conversations and to pick out every citizen from the crowd by his voice or her face poses grave threats to liberty.

And even when there are broad gains for society, many individuals will lose out from AI. The original "computers" were drudges, often women, who performed endless calculations for their higher-ups. Just as transistors took their place, so AI will probably turf out whole regiments of white-collar workers. Education and training will help and the wealth produced with the

aid of AI will be spent on new pursuits that generate new jobs. But workers are doomed to dislocations.

Surveillance and dislocations are not, though, what worries Messrs Hawking, Musk and Gates, or what inspires a phalanx of futuristic AI films that Hollywood has recently unleashed onto cinema screens. Their concern is altogether more distant and more apocalyptic: the threat of autonomous machines with superhuman cognitive capacity and interests that conflict with those of *Homo sapiens*.

Such artificially intelligent beings are still a very long way off; indeed, it may never be possible to create them. Despite a century of poking and prodding at the brain, psychologists, neurologists, sociologists and philosophers are still a long way from an understanding of how a mind might be made—or what one is. And the business case for even limited intelligence of the general sort—the sort that has interests and autonomy—is far from clear. A car that drives itself better than its owner sounds like a boon; a car with its own ideas about where to go, less so.

> *…I know how to curse*

But even if the prospect of what Mr Hawking calls "full" AI is still distant, it is prudent for societies to plan for how to cope. That is easier than it seems, not least because humans have been creating autonomous entities with superhuman capacities and unaligned interests for some time. Government bureaucracies, markets and armies: all can do things which unaided, unorganised humans cannot. All need autonomy to function, all can take on life of their own and all can do great harm if not set up in a just manner and governed by laws and regulations.

These parallels should comfort the fearful; they also suggest concrete ways for societies to develop AI safely. Just as armies need civilian oversight, markets are regulated and bureaucracies must be transparent and

accountable, so AI systems must be open to scrutiny. Because systems designers cannot foresee every set of circumstances, there must also be an off-switch. These constraints can be put in place without compromising progress. From the nuclear bomb to traffic rules, mankind has used technical ingenuity and legal strictures to constrain other powerful innovations.

The spectre of eventually creating an autonomous non-human intelligence is so extraordinary that it risks overshadowing the debate. Yes, there are perils. But they should not obscure the huge benefits from the dawn of AI. ■

聪明的电脑

人工智能的黎明

强大的电脑将重塑人类未来。如何确保希望大于危险

斯蒂芬·霍金警告说：“人工智能的全面发展可能导致人类灭绝。”埃隆·马斯克（Elon Musk）担心人工智能（即AI）的发展可能成为人类生存面临的最大威胁。比尔·盖茨敦促人们意识到这一点。

害怕自己创造出的可憎之物成为自己的主人，或自己的终结者，这样的事并不新鲜。但出自一位著名的宇宙学家、一位硅谷创业家，以及微软的创始人之口——这三位绝非反对自动化的卢德派——再与谷歌和微软等大公司在人工智能领域的巨额投资相比照，这样的担忧有了更深一层的意义。每个人的口袋里都装着超级计算机，每个战场都有机器人俯瞰监视，只把这些当作科幻小说而嗤之以鼻似乎是自欺欺人。问题是，我们到底应该去担心什么才不是杞人忧天？

> *你教会我说话……*

第一步是弄清楚电脑现在能做什么，将来可能能做什么。因为处理能力增强、可用的数字化数据越来越丰富，人工智能在能力上正蓬勃发展。今天的“深入学习”系统通过模拟人脑的神经元层并处理大量数据，能够教会自己执行一些任务，从模式识别到翻译，几乎能和人类做得一样好。结果，以前需要调动脑力的事，从解读图片到玩电子游戏“青蛙过河”，现在都是电脑程序可以解决的范畴。2014年Facebook推出的一种算法DeepFace能从各种图像中识别单张人脸，准确率达97%。

关键在于，这一能力范围狭隘而又具体。如今的人工智能是通过生吞活剥地处理大量数据创造出智能的表象，至于如何能像人类思维赋予人类自主权、兴趣和欲望那样运作，人工智能没有太大的兴趣。在宽泛、灵活变通的能力上，即与传统意义上人体感官的智能相关联的推理、判断、决策等方面，电脑尚无任何与人类相近的能力。

但是人工智能的力量已经非常强大，足以让人类生活产生翻天覆地的变化。它能够为人们的工作提供补充，从而提升人类的创造性努力。例如国际象棋，电脑现在下得比人好。不过，世界上最好的棋手并非机器，而是国际象棋大师加里·卡斯帕罗夫（Garry Kasparov）所称的“半人马”：人类和算法的合体。在各种各样的职业中，这样的合体将成为常态：有了人工智能的支持，医生们在医学影像上发现癌症的能力将大大增强；智能手机上运行的语音识别算法让发展中国家的数百万文盲也能上网；数字助理将帮助学术研究提出前景喜人的假设；图像分类算法让可穿戴电脑在人们看到的真实世界上叠加有用信息。

即使从短期来看，也并非所有的结果都是积极的。比如说，想想人工智能给国家安全机器带来的能力，无论是专制国家还是民主国家。监控数十亿计的对话，而且仅凭某人的声音或面部特征就能从人群中找出这位公民，这样的能力对自由的威胁极大。

即便有广泛的社会收益，许多人的工作还是会被人工智能取代。最初的“计算员”是一份苦差事，通常是女性为她们的上司做无休止的运算。正如晶体管替代了她们的位置一样，人工智能也很可能让一整批白领员工失去工作。教育和培训会有助益，在人工智能的协助下创造的财富将用于新的创业，并创造出新的就业机会。但员工们注定要失去原有的工作。

不过，霍金、马斯克和盖茨担忧的并不是监控和混乱，好莱坞最近投放大荧幕的一大批关于未来人工智能的电影也不是从这里找到的灵感。总体而言，他们所关心的更遥远，更关乎世界末日：自动机器带来的威胁，它们有超人的认知能力和兴趣，利益又与智人相冲突。

还要经历一个漫长的过程才会有这样的人工智能存在；事实上，它们可能永远也无法被创造出来。尽管对大脑的分析已经折腾了一个世纪，心理学家、神经学家、社会学家和哲学家还是远远没弄清思想是怎么产生的，或者说思想是什么。即便是对一般类型的有限智能，即有兴趣和自主性的类型，其运作情况也很不清晰。一辆自动驾驶、无需主人开的车听来是件好事；可一辆自己想去哪儿的车就不是那么回事了。

> *.....我知道怎么咒骂*

但是，就算离霍金所谓的人工智能“全面”发展还很遥远，出于谨慎行事，整个社会仍应计划如何应对。这比看起来要容易，尤其是因为人类制造出具有超人能力、利益不一致的自主实体已有时日。政府官僚机构、市场和军队，都可以做到未受协助、无组织的人类做不到的事。所有这些都需要独立自主来发挥功用；所有这些都能承担起自己的命运；所有这些如果不是公平设立并由法律法规监管，都会产生巨大的危害。

这些相似之物应当可以抚慰担忧的人；它们还为社会提供了安全发展人工智能的具体方式。正如军队需要平民监督，市场需要监管，政府机构必须透明且负责一样，人工智能系统必须接受公开监督。因为系统设计者无法预见每种情形，所以还必须有一个可以关闭人工智能的开关。这些限制措施能够在不损害发展的情况下就位。从核弹到交通规则，人类已经采用技术创新和法律限制约束过其他强大的新事物。

害怕人类终将创造出自主的、非人类的智能，这样的恐惧始终萦绕心头，以至于辩论似乎已失去意义。是的，危险确实存在。但是危险不应该掩盖即将到来的人工智能时代给我们带来的巨大益处。■

Airlines

Super-connecting the world

The advance of Emirates, Etihad and Qatar, latterly joined by Turkish Airlines, looks set to continue

THE Gulf states have been on the radar of the world's airlines since the 1930s. Then Dubai, a pearl-fishing port, served as a stopover for the flying boats of Imperial Airways (a forerunner of BA) on routes connecting London to distant colonial outposts. BA still serves Dubai but most of the tail fins at its vast main airport, which recently overtook London's Heathrow as the world's busiest for international traffic, carry the logo of Emirates, the small state's own network airline. The balance of power among the world's carriers has shifted.

A decade ago Emirates, Qatar Airways and Etihad Airways, based in Abu Dhabi, were insignificant. But these three "super-connectors", in recent years joined by Turkish Airlines, increasingly dominate long-haul routes between Europe and Asia. Whereas most other international airlines rely heavily on travellers to or from their home countries, the super-connectors' passengers mostly just change planes at the carriers' hub airports on their way to somewhere else. Last year the four carriers flew about 115m people into and out of their hubs in the Gulf or Istanbul, compared with 50m in 2008. Their combined fleet has swollen to more than 700 aircraft and they have a further 900 or so on order.

The West's legacy airlines are understandably fearful of the super-connectors. All have grown at spectacular rates; Emirates is now by far the world's biggest international carrier (see chart). Europe's struggling national airlines, such as Lufthansa and Air France KLM (AF-KLM), were among the first to start losing market share to the super-connectors. They are now suffering the same devastation on long-haul routes that low-cost

carriers (LCCs) like Ryanair and EasyJet have inflicted on their shorter routes. As Andrew Charlton of Aviation Advocacy, a consulting firm, puts it: "The LCCs ate European airlines' lunch; the Gulf carriers are coming to eat their dinner." Lufthansa says its Frankfurt hub has lost nearly a third of its market share on routes between Europe and Asia since 2005, with more than 3m people now flying annually from Germany to other destinations via Gulf hubs.

A gulf opens up

Now the grumbling is getting louder from across the Atlantic, as America's airlines begin to feel the heat. In late April a lobby group backed by Delta, American and United Airlines released documents to back up a report it put out in February, accusing the three Gulf carriers of having been given $42 billion in assistance by their state owners in the past decade.

Emirates now publishes full accounts but Etihad and Qatar still do not. However, the American carriers' investigators dug up documents filed with regulatory authorities around the world, from Belgium to Australia, which in some cases include detailed accounts going back a number of years. Some of the benefits allegedly received by the Gulf airlines—such as zero-interest loans with no arrangements for repayment, and grants of land—would if confirmed seem to fall under the heading of subsidies.

Others, such as the low labour costs that the Gulf airlines enjoy, partly because of their home states' ban on unions, and the benefits they, like other businesses in the Gulf, gain from those states' generally low tax rates, would seem legitimate means of promoting business development. The cache of documents is enough to keep lawyers, accountants and trade economists arguing for years—but at the least it suggests that the Gulf three have some explaining to do if they are to justify claims they are standing on their own feet.

The legacy carriers gripe too about the massive airports, with cheap landing charges, that their home governments have built for the Gulf airlines. Although Turkish is part-privatised, it still enjoys strong support from the government, which has ordered the building of a massive new airport on Istanbul's outskirts, with about twice the capacity of Heathrow, so its flag-carrier has space to keep growing.

Allegations of unfair advantages explain only so much, however. For one thing, the West's legacy airlines have not lacked for state protection of their own. For another, the super-connectors' rapid advance is in large part down to something out of policymakers' control—location. The Gulf is handily placed between Europe, Asia, Africa and America: all are in range of modern long-haul jets. Istanbul, on the edge of Europe, is a short-haul flight from 55 capital cities. Both are ideal for consolidating traffic to and from many destinations. Fares can be kept low because of the efficiency of their long-haul-to-long-haul model.

The four super-connectors are spending huge sums expanding their fleets with the latest, most efficient jets. Their staff are young and keen, and the airlines spend lavishly on marketing their in-flight service and widening range of destinations. In 2001 Emirates and Qatar both flew from 17 destinations in Europe. Now both serve 32. Turkish sucks up passengers from 84 European airports. Besides increasing the number of European cities it flies from, Etihad has taken stakes in several European carriers, including Alitalia of Italy and Airberlin of Germany. The super-connectors have likewise added lots of new destinations in Asia, whereas the European flag-carriers have expanded their route maps more cautiously. As a result, the super-connectors' share of booming Europe-to-Asia travel has shot up.

In similar fashion the super-connectors and their hubs have been siphoning off an increasing share of air traffic into and out of Africa—still a relatively small market for aviation, but one that has grown rapidly,

especially given Asian economies' interests in its natural resources.

And now they are ramping up their services to North America. To the dismay of America's international carriers, in the weeks since they launched their broadside against the Gulf airlines' alleged subsidies, Emirates has announced a new service to Orlando and extra flights to Boston and Seattle. Turkish, meanwhile, has just begun non-stop flights to San Francisco, its 11th destination in the Americas, and plans to add Atlanta and Mexico City, among others. As the super-connectors encroach onto American runways, passengers are likely to vote with their wheelie-bags. According to Skytrax, a research firm, they all ranked in the top ten of the world's best airlines. The highest placed of America's big three is Delta, at 49th.

The reaction of most of the established airlines has been two-pronged—complaining, and further rounds of cost-cutting on top of what they have already had to pare to cope with the arrival of the LCCs. One exception is IAG, owner of BA. It managed to slash costs at Iberia and has avoided much of the turbulence created by the super-connectors. Indeed IAG, in which Qatar owns a 10% stake, recently pulled out of a European trade association saying the group's opposition to the super-connectors, led by AF-KLM and Lufthansa, was no longer consistent with its own position.

AF-KLM and Lufthansa themselves have tried to make up for years of bad management by beefing up their budget subsidiaries, Transavia and Germanwings. They have met stiff resistance from within. Pilots have gone on strike repeatedly over the past year to oppose various changes the airlines are making to become more competitive. AF-KLM has had the bumpier ride of the two. It issued three profit warnings in 2014, has shed 8,000 jobs over the past three years and plans to lose another 800 employees as it cuts investment and delays delivery of some new aircraft.

Berating the new opponents for perceived injustices has also failed so far. The legacy carriers want changes to the bilateral "open skies" agreements that have allowed the super-connectors access to European airports, and which they had supported back when the Gulf airlines were minnows. Lufthansa and AF-KLM have asked the European Commission to press for "fair competition" provisions for current and future air treaties. America's three big international carriers want the Obama administration to stop the super-connectors from adding routes.

Open-skies treaties can be watered down without ripping them up. Governments can dither and delay. Norwegian Air Shuttle, a low-cost carrier, has been hampered by American regulators, at the urging of industry lobbyists, in its efforts to expand services across the Atlantic. But so far there has been little overt gain to the incumbents from their griping.

Indeed, it may have done some damage. Delta's boss, Richard Anderson, gratuitously noted in an interview that the Gulf carriers are based in the part of the world that bred the terrorists responsible for the 9/11 attack on America, before apologising for the remark. And in response to the subsidy accusations levelled by the American carriers, the Business Travel Coalition, a lobby group backed by travel agents among others, has begun drawing attention to the support that America's government has given to its aviation industry over the years.

The West's legacy carriers put a lot of effort into letting politicians know about their concerns. But the chances that the American and European governments will roll back their open-skies commitments and halt the expansion of the super-connectors do not look good. American and European makers of aircraft and engines, which are benefiting hugely from the expansion of the super-connectors' fleets, also form a powerful lobby. So do passengers, who have shown little sympathy for their struggling national airlines and plenty of interest in their rivals' cheap fares.

If anything, matters can only get worse for the legacy carriers. If Norwegian makes a go of low-cost transatlantic flights, Ryanair and others will pile in. China's huge, state-backed airlines are surely planning to boost their market share on Pacific routes. And the high profits that America's airlines have recently been enjoying at home are likely to encourage the expansion of low-cost carriers there. In all, the future looks poor for investors in the legacy airlines. For travellers, however, the age of cheap flying is set to go on and on. ■

航空公司

超连接世界

阿联酋航空、阿提哈德航空、卡塔尔航空——加上最近崛起的土耳其航空，它们的快速发展看来会持续

上世纪30年代起，海湾国家就已经出现在世界航空公司的航线上。那时，采珠港迪拜是帝国航空公司（Imperial Airways，英国航空公司[BA]的前身）连接伦敦和偏远殖民地的航线中转站。如今，英国航空公司在迪拜仍设有航班，但是，在最近取代伦敦希思罗机场（Heathrow）成为全球最繁忙国际旅行枢纽站的迪拜庞大的主机场，大部分飞机尾翼上的标志属于阿联酋这个小国自己的全球性航空公司——阿联酋航空（Emirates）。世界航空业的力量平衡已经改变。

十年前，总部位于阿布扎比的阿联酋航空、卡塔尔航空（Qatar Airways）和阿提哈德航空（Etihad Airways）都还无足轻重。但这三家“超级中转航空”——近年土耳其航空也加入了它们的行列——日益主导了欧亚长途航线。其他国际航空公司大多严重依赖乘客往返母国，但这些超级中转航空公司的乘客大部分只是在其枢纽机场转机去往别处。去年这四家航空公司共有约1.15亿名乘客从它们位于海湾或伊斯坦布尔的枢纽站进出，而2008年的数字仅为5000万人。它们总共拥有的客机数量已经增至700多架，还另外订购了约900架。

西方传统航空公司自然对超级中转航空感到害怕。后者都在以惊人的速度扩张。阿联酋航空目前已经是全球最大的国际航空公司（见图表）。欧洲挣扎中的国家航空公司，如德国汉莎和法航荷航集团（AF-KLM），是最早被超级中转航空夺去市场份额的航空公司。过去，廉价航空公司如瑞安（Ryanair）和易捷（EasyJet）已经侵害了它们的短程航线，现在，它们的长途航线正在遭受同样的灾难。正如咨询公司航空倡议（Aviation Advocacy）的安德鲁·查尔顿（Andrew Charlton）所言：“廉价航空吃掉了欧洲航空公司的午餐，海湾航空公司又要来吃掉它们的晚餐。”汉莎称，自2005年以来，其法兰克福枢纽站的欧亚航线已经丢掉了近三分之一

的市场份额，目前有300万人每年从德国途径海湾枢纽站飞往其他地点。

差距拉大

现在，在大西洋的另一边牢骚声渐起，因为美国的航空公司开始感到焦灼。4月下旬，由达美航空、美国航空和联合航空支持的游说团体发布了文件，为它们在2月公开的一份报告提供支持，指控三家海湾航空公司在过去十年中获得自己国家政府420亿美元的资助。

阿联酋航空目前公开了完整的账目，但阿提哈德航空和卡塔尔航空还没有。不过，从比利时到澳大利亚，美国航空公司的调查人员挖出了报送世界各地监管部门的文件，其中有些包含了多年前的详细报告。海湾航空公司被指获得了一些好处，比如零息贷款——且没有要求还款计划，以及免费划拨土地等。如果这些做法被确认，应该可以被认定为补贴。

其他好处包括海湾航空公司享受了低劳动力成本，部分原因是其母国禁止工会，以及它们和海湾地区的其他企业一样，从国家总体的低税率中获益。这些看来都是提升业务发展的合法手段。这些搜集到的文件足够让律师、审计师和贸易经济学家争论多年。但它至少显示，三家海湾公司若要证明自己确实自力更生，就需要做出一番解释。

传统航空公司也抱怨自己国家的政府为海湾航空公司建造了大型机场但收取低廉的降落费。虽然土耳其航空已经部分私有化，它仍然获得了政府的强力支持。政府已经下令在伊斯坦布尔郊区建造一个大型新机场，容量约为希思罗机场的两倍，这样它的旗舰航空公司就有空间持续发展。

不过，这些对不公平优势的指控，说服力也仅限于此。首先，西方的传统航空公司并不缺乏自己国家的保护。另外，超级中转航空的迅速发展很大程度上源于一个不受政策制定者控制的因素——地理位置。海湾地区位于欧洲、亚洲、非洲、美洲之间的便利位置：所有旅程都在现代长途客机的可及范围内。位于欧洲边缘的伊斯坦布尔可以从55个首都城市经短途航线抵达。这些公司都非常适合整合往返许多地点的路线。而由于高效的长途转长途模式，它们能把票价维持在低水平。

四大超级中转航空正耗费巨资，用最新、最高效的客机为自己的机队扩容。它们的员工年轻又热情，公司还花大价钱宣传自己的旅途服务和不断拓展的目的地。2001年阿联酋航空和卡塔尔航空的航班从欧洲的17个地点起飞，如今增至32个。土耳其航空从84个欧洲机场接纳乘客。阿提哈德航空已经入股了几家欧洲航空公司，包括意大利航空（Alitalia）和德国的柏林航空（Airberlin）。超级中转航空同样也增加了亚洲目的地，而欧洲的旗舰航空公司在扩展航线地图时更为谨慎。结果，在日益繁荣的欧亚航线中，超级中转航空所占的份额已经激增。

超级中转航空及其枢纽站以类似方式吸取了进出非洲的航空份额。非洲虽然还只是一个相对较小的航空市场，但成长迅速，尤其因为亚洲国家对这里的自然资源兴趣浓厚。

此外，它们也正在开始扩展对北美市场的服务。让美国的国际航空公司沮丧的是，就在它们发动对海湾航空公司疑似接受补助的炮轰数周后，阿联酋航空宣布其航线将覆盖奥兰多市，并增加对波士顿和西雅图的航班。与此同时，土耳其航空刚刚启动往旧金山的直飞航线，这是它在美洲的第11个目的地。该公司同时计划增加亚特兰大和墨西哥城等地点。随着超级中转航空入侵美国的机场跑道，乘客们的支持看来也会跟着他们的行李跑。根据研究公司Skytrax的数据，这些公司都已经登上全球最佳航空公司前十名。美国三大航空公司排名最前的达美位列49。

大部分成熟的航空公司会有两个反应：先是抱怨，然后不得不再来几轮削减成本。此前，为应对廉价航空，它们已经不得不削砍成本。拥有英国航空的国际航空集团（IAG）倒是个例外。该集团成功地大幅削减了旗下西班牙航空（Iberia）的运营成本，很大程度上避免了超级中转航空带来的震动。实际上，拥有卡塔尔航空10%股份的国际航空集团最近退出了一个欧洲贸易协会。它表示，由法航荷航和德国汉莎领导的该协会反对超级中转航空的立场和自己的想法已经不再一致。

法航荷航和德国汉莎为了弥补自身的糟糕管理，多年来加强发展旗下廉价航空荷兰泛航（Transavia）和德国之翼（Germanwings）。它们在公司内

部遭遇了顽强抵抗。过去一年中机师们多次罢工，反对公司为变得更具竞争力而做出的各种改变。两家公司中，法航荷航的日子更不好过。它在2014年发布了三次利润警告，过去三年砍掉了8000个职位。随着它减少投资并延迟推出新客机，公司计划再裁员800人。

用不公平竞争的理由斥责新对手的做法也已纷纷告败。传统航空公司希望改变“开放天空”双边协议，该协议允许超级中转航空进入欧洲机场。当这些海湾航空公司还是小鱼小虾时，传统公司支持这份协议。汉莎和法航荷航已请求欧盟委员会力促在现有和未来的航空协议中增加“公平竞争”条款。美国的三大国际航空公司想让奥巴马政府禁止超级中转航空增加航线。

“开放天空”协议无须撤销也能让它减少效力。政府可以犹豫不决、拖拖拉拉。廉价航空公司挪威航空（Norwegian Air Shuttle）在试图扩展飞越大西洋的服务时，就被游说团体敦促下的美国监管部门阻挠。不过，到目前为止，传统航空公司的反抗并未带来什么显而易见的收获。

实际上，这种反抗可能造成了一些危害。达美航空的老板理查德·安德森（Richard Anderson）在一次访谈中毫无必要地说，海湾航空公司总部所在地区培育了要为911恐怖袭击负责的恐怖分子。他后来为这一言论道歉。而对于美国航空公司作出的补助指控，一个受旅行社等企业支持的游说团体商业旅行联盟（Business Travel Coalition）已经开始作出反应，它让外界也开始注意到美国政府多年来给予其航空行业的支持。

西方传统航空公司花费了大力气，让政客们了解他们的忧虑。但美欧政府撤销“开放天空”的承诺并阻止超级中转航空扩展的可能性并不大。美欧的飞机和引擎制造商从超级中转航空的机队扩张中极大受益，它们也组成了强大的游说力量。乘客们也一样，他们并没有对挣扎求存的本国航空公司显现出多少同情，倒是对其对手提供的廉价机票兴趣浓厚。

如果真会发生什么，传统航空公司面临的局面只会变得更糟。如果挪威航空推出廉价跨大西洋航班，瑞安和其他公司也会跟进。中国庞大的受国家

支持的航空公司必定正在计划提升太平洋航线的市场份额。而美国航空公司最近在国内享受到的高利润也可能鼓励廉价航空在本土扩张。总体而言，对于传统航空公司的投资者来说前景不妙。但对旅行者来说，廉价飞行的年代势必绵延流长。■

Crowdfunding

Cool, man

Where small businesses can borrow if the banks turn them down

BANKERS ARE CONSERVATIVE types. It is hard to imagine any of them jumping at the opportunity presented by Ryan Grepper, an Oregon-based "part visionary, part mad scientist, and a passionate supporter of the DIY revolution", to lend him $50,000 to develop an oversized picnic cooler. Not just any cooler, mind you, but The Coolest, which beyond keeping drinks chilled also blends them, blares music and recharges gadgets. But what bankers would surely have disdained, the public seized with gusto: last August Mr Grepper raised $13.3m from Kickstarter, a crowdfunding platform, over 250 times what he had asked for. None of the money he has received will ever need to be repaid, either. Instead, the first 63,380 coolers he makes will go to the backers who put up around $180 each, with luck in time for the summer picnic season. A few will be hand-delivered by Mr Grepper, who offered personally to man the party bar for anyone who pledged $2,000 to his venture.

Financing small businesses is rarely this colourful. A few consumer-friendly ventures like The Coolest aside, corporate minnows have been struggling to raise money in recent years. The buoyant bond markets that have allowed large companies to borrow at rock-bottom rates do not cater to their smaller cousins. Banks have cut back on lending to small businesses as regulation has made it less lucrative. And since the due diligence needed to extend a $20,000 business loan takes nearly as much time as that for a $2m one, they have tended to concentrate on the bigger fish. A range of fintech ventures have popped up to try to fill the gap.

Some are akin to the peer-to-peer platforms that have done so well in consumer lending. Funding Circle, a British startup that is also active in

America, advertises itself as "the bond market for small companies". It has disbursed nearly £600m of loans in Britain, some of them financed by government agencies. But applying fintech's data-guzzling model for consumer lending to small firms is tricky. There is far less readily available information to help gauge a business's creditworthiness than there is for a person's, says Samir Desai, the startup's boss. What can be discovered, from tax records and regulatory filings, is often of poor quality or well out of date. Funding Circle's method includes a step that would be considered retrograde by fintech purists: a flesh-and-blood credit agent from the company speaks to every new borrower before a loan is disbursed. Its pitch to borrowers is as much about convenience—the application process is less onerous than that of a bank, and borrowers get the money faster—as about getting better rates.

Peer-to-peer lenders to businesses, unlike their equivalents who lend to private individuals, do not have an obvious entry point such as credit-card debt that can be refinanced more cheaply. That makes it harder to acquire new customers. Many borrowers turn to peer-to-peer only after their bank has rejected them. In America, OnDeck, a platform that listed last year, has had to bat away suggestions that it is over-reliant on loan brokers, which charge hefty fees to bring in businesses looking for quick cash. And processing the applications can be fiddly, too, particularly when loans are secured against the borrower's personal assets. On the other hand, usury laws that cap interest rates for consumer loans do not apply to business credit, so rates can be higher. OnDeck's average interest rate is reportedly over 50%.

Branching out

Lending Club, the industry's biggest firm in personal peer-to-peer credit, is edging into business loans. In February it started offering American businesses up to $300,000 to finance purchases made on Alibaba, a

Chinese online marketplace. The money is not secured against the merchandise, but the fact that a business has verifiably just purchased widgets from a Chinese factory strongly suggests it will soon be earning some money from widget sales.

Kabbage, a rival based in Atlanta, specialises in lending to businesses that do most of their selling on e-commerce sites. It thinks it can work out who is a good credit risk by looking at a vendor's eBay sales history (and the accompanying reviews) in a way a bank cannot, or cannot be bothered to.

New models are emerging. Last year Square, a company that enables small businesses and individuals to process credit-card payments, started offering cash advances to some of its customers. As it has ready access to several years' worth of a merchant's payments data, it can take an educated guess at the likely future cashflow. Better still, because it will process the payments from which its advance will be refunded, it can withhold the cash at source. For a $10,000 loan, say, Square will take a 13% cut of card sales until $11,300 is reimbursed. Elegantly, though all customers end up paying the same $1,300 of interest, the interest rate will depend on how long it takes each borrower to repay the loan. The faster he sells and the faster the loan is repaid, the higher the effective rate. Borrowers eager to maximise their sales do not seem to mind. The average repayment period is about ten months. PayPal, a payments giant which is currently being spun out of eBay, is now offering a similar service to its merchants.

> *An invoice worth its weight in gold*

Small businesses would love to be able to monetise what is often one of their biggest assets: the money customers owe them. Most of them have to wait for 30-90 days after they have dispatched the merchandise before getting paid. A slew of smaller (and sometimes not very savoury) finance houses have traditionally offered to buy the outstanding invoices at a discount, paying perhaps 60 cents on the dollar. Leaving aside the risk of

fraud, the paperwork was daunting.

By moving invoices onto electronic platforms, fintechers hope they can make the process frictionless. A plethora of such platforms are competing to make e-invoicing the norm. If a local business sells a shipment of ball-bearings to Ford, say, and the carmaker agrees electronically it will make good on the invoice within six weeks, that makes the invoice nearly as valuable as a Ford bond. It might be worth 98 cents on the dollar, not 60. The verified invoice can then be auctioned on a platform, or packaged up into the sort of security investment bankers clamour for. By turning the invoice into a fungible security, the local business in effect piggybacks on Ford's credit rating, which is likely to be much better than its own. In practice, the process remains fiddly for now. Nor is this a business that banks will give up easily. They typically offer far better rates on business loans they can secure against invoices, if only because regulators treat such lending more leniently than unsecured credit.

None of these financing options are viable for businesses just getting off the ground. In Britain, those with a good story to tell (and preferably a photogenic founder) can turn to one of dozens of equity crowdfunding platforms to drum up some cash. Crowdfunded equity money usually involves handing a stake in the business to the new backers. Nesta, a charity, says the British public invested £84m in such ventures in 2014, up over 400% in a year—even though the Financial Conduct Authority has warned that investors taking small stakes in budding businesses are "very likely" to get wiped out (tax breaks may ease the blow).

In America, the time-tested method of a plucky entrepreneur maxing out his credit card is still a rite of passage. That may be about to change. Rules that currently restrict investing in startups to investors with a net worth of $1m or an annual income in excess of $200,000 will be scrapped later this month. From then on anyone will be able to try their luck at crowdfunding.

That is good news for those who want to invest in Mr Grepper's next offbeat venture and get a piece of the action, not just a deeply chic picnic cooler.

众筹

很酷

被银行拒绝的小企业可以从这里贷款

银行家是保守派。很难想象他们中有哪个人会急于抓住瑞安·格莱普（Ryan Grepper）带来的机会，给这位来自俄勒冈的“远见家也是疯狂科学家、DIY革命的热忱支持者”五万美元的贷款，让他研制一台超大野餐冷藏箱。得提醒你，它可不是一般的冷藏箱。这台“最冷最酷”（The Coolest）不止存放冰镇饮料，还能调制饮品、大声播放音乐、给电子设备充电。银行家肯定会对它不屑一顾，但民众却已一拥而上：去年8月，格莱普从众筹网站Kickstarter上募集了1330万美元，是他申请贷款的250多倍。这些钱也都不用还，只要他把自己生产的前63,380个冷藏箱送给这些支持者——他们每人掏了约180美元。运气好的话，他们能赶在夏天野餐季节时用上它。一小批冷藏箱会由格莱普亲自送货上门。他提出要为任何注资2000美元的人举办的派对提供酒水。

小企业融资很少会这么光鲜有趣。除了一小批像“最冷最酷”这样具亲和力的消费品公司，企业小虾米们最近几年很难筹措到资金。繁荣的债券市场让大企业能以最低利率借到钱，但并不适用于小企业。因为受到监管而利润减少的银行收缩了面向小企业的贷款。而既然借出一笔2万美元的商业贷款和发放200万美元的贷款所需的尽职调查耗时差不多，银行往往会集中精力钓大鱼。由此出现了一系列金融科技创业公司，试图填补缺口。

一些企业和在消费者信贷方面表现非常出色的P2P借贷平台相近。在美国也很活跃的英国创业公司Funding Circle自称“小企业债券市场”。它在英国已经发放了近6亿英镑贷款，其中一些获得政府机构融资。但是，金融科技在消费者信贷中使用的大数据模式如果用于小企业则有点棘手。公司老板萨米尔·德赛（Samir Desai）说，相比衡量某个人的信用度，要评审一家企业的信用度所能获得的现成资料少得多。从缴税记录到监管文件，能被发掘的信息常常质量低下，或者早已过期。Funding Circle使用的方法包含一个会被金融科技纯粹论者视为倒退的步骤：在每笔贷款被发放前，

公司一名血肉之躯的信贷员会和借款人谈话。公司向借款人推销的卖点不仅是利率更优惠，便利也同样重要：申请贷款的过程不像在银行那么繁琐，借款人会更快拿到钱。

针对小企业的P2P借贷公司不像那些贷款给个人的同业。它没有一个明显的进入点，比如可以更便宜地为信用卡债再融资。这让它更难获得新客户。许多借款企业唯有在被银行拒绝后才会转向P2P平台。在美国，去年上市的平台OnDeck被指太过依赖贷款经纪，它只能竭力澄清。这类经纪把想要快速获得现金的企业带到这些平台，为此收取高额费用。而处理贷款申请也是桩麻烦事，尤其当贷款是以借款人的个人资产做担保时。另一方面，限制消费者贷款利率的高利贷法并不适用于商业贷款，因此后者的利息可以更高。OnDeck的平均利率据称超过50%。

扩大经营范围

金融科技行业最大的个人P2P借贷公司Lending Club正在跨入商业贷款领域。2月，它开始向美国商家提供最高达30万美元的贷款，为他们在中国网上集市阿里巴巴上的订单融资。这些贷款并不以购买的货品做抵押，而是以一个事实做担保：一家企业可被核实刚从中国工厂购买了小部件，这强烈显示它会很快从销售这些部件中赚到钱。

总部位于亚特兰大的竞争对手Kabbage专门向那些主要在电子商务网站上销售商品的商家贷款。这家公司认为，它能通过查看商家在eBay上的销售记录（以及伴随的买家评价）衡量出给哪家贷款风险不高，这是银行做不到或者懒得做的。

新的模式正在浮现。去年，帮助小企业和个人处理信用卡支付的公司Square开始向部分客户提供现金预支。因为这家公司拥有商户多年支付数据这样的现成资料，可以对其未来的现金流做出合理估测。更好的是，因为它将处理的支付就是商户偿还预支款的来源，所以它能从源头上截取付款用于还贷。比如，对于一笔1万美元的贷款，Square将获得借款方信用卡支付销售额的13%，直到对方付清11,300美元。很妙的是，虽然所有客户最终都会同样支付1300美元的利息，利率却是由每个借款人还清贷款的

时长决定。借款人越快卖出货品，越快还清贷款，实际利率就越高。但是，急于扩大销售的借款人似乎并不介意这一点。他们的平均还款期约为10个月。目前正从eBay分拆出来的支付巨头贝宝（PayPal）正在向其商户提供类似的服务。

值钱的票据

小企业会很乐意把通常可算它们最大的资产之一货币化：客户欠它们的钱。大多数企业在发货后得等上30到90天才能拿到付款。许多较小型的（有时也不太讨人喜欢的）贷款公司一直在做应收账款贴现的生意，贴现率为60%。先不论欺诈风险，单是涉及的文书工作量就令人畏惧。

通过把票据移到电子平台上，金融科技业者希望他们能把这一过程变得畅通无阻。一大批这类平台正在展开竞争，要让电子票据成为一种常态。举例来说，如果一家本土企业把一批滚珠轴承发货至福特汽车公司，福特通过电子方式商定将在六周内付清货款，这张票据于是产生了几乎和福特的债券一样的价值。对于每一美元的票面价值，它可能值98美分，而不是60美分。经核实的票据而后可以在一个平台上拍卖，或者被打包成银行会争抢的某种证券投资。通过把这张票据变成一种可互换证券，那家本土企业实际上从福特的资信评级中沾了光，这一评级应该比它自身的评级好很多。在实际操作中，这个过程目前还很棘手。而银行也不会轻易放弃这笔业务。它们通常对能以票据做担保的商业贷款提供远为优惠的利率，而这仅仅是因为监管部门对待这类借贷比未担保贷款更宽松。

所有这些融资方式对刚刚起步的企业都不可行。在英国，那些有一套很好的企划故事（而且最好有上镜的创始人）的企业可以求助几十个股权集资平台来筹集资金。众筹股权集资通常会把企业股权分给新加入的支持者。慈善机构Nesta称，英国民众在2014年向这类企业投资了8400万英镑，在一年内增加了逾400%，即使金融市场行为监管局（Financial Conduct Authority）已经警告，在新创企业投资小额股份的投资者“很可能”会输个精光（税务优惠可能会减少他们的损失）。

在美国，大无畏创业家刷爆信用卡的做法历经时间考验，依然是一种成人

仪式。这可能将会改变。按目前的规则，只有那些净资产达100万美元或年收入超过20万美元的人可以投资创业公司，但这项规定将在本月底废除。届时任何人都能通过众筹一试运气。对于想要投资格莱普下一个不同凡响的项目的人来说，这是个好消息，他们会从中分得一杯羹，而不只是拿到一个非常时髦的野餐冷藏箱。■

Payments

A penny here, a penny there

If you have money—and even if you don't—you can now pay for your purchases in myriad ways

FINANCE, THE ADAGE goes, is the art of passing money from hand to hand until it finally disappears. This will ring true to anyone who has tried to send cash overseas and found their remittance whittled away by commissions and lousy exchange rates. Shopkeepers typically pay around 3% on sales made by credit card. Banks are involved in over $400 trillion of transfers every year and extract over $1 trillion in revenues from them, according to the Boston Consulting Group. As consumers in both rich and poor countries eschew cash in favour of paying with plastic or, increasingly, online and on their mobiles, that figure could reach over $2 trillion by 2023. But the banks no longer have the field to themselves.

Few consumers give much thought to what happens after they present their credit card at their local coffee shop, unaware of a tangled web of ever-shifting alliances and rivalries below the surface. Banks dominate an ecosystem which includes technology providers and payments networks—mainly Visa and MasterCard, which were themselves owned by a consortium of banks until a few years ago. The payments chain can contain up to seven links, every one of which will claim a tiny cut of each transaction. Most of the money ultimately goes to banks. Beyond collecting commissions on purchases, they profit because card users often pay with money they do not have, running up credit-card debts or overdrafts on which the banks charge steep interest.

Any change to this system would seem to threaten an extremely lucrative business at the core of the modern banking system. In practice the effect is more mixed. If the newcomers are increasing the size of the overall

payments pie, they are actually doing the incumbents a favour. On the other hand they may be cutting the banks' margins by forcing them to share the fees. And some may collect consumer data that banks want to hold on to.

One contestant might do all three of the above: Apple Pay, launched in October in America and expected to be rolled out globally this year. Paying with the tap of an iPhone or Apple Watch feels new to consumers, but it amounts to recreating a plastic card on a mobile phone. The tech giant is not trying to bypass the vital Visa and MasterCard "rails", in the industry's parlance—the heart of the system that banks know and profit from.

Less happily for the banks, Apple is taking a 0.15% cut of all payments made through its system. Banks fret that this "Apple tax" will rise once consumers have got used to paying with their iPhones, but hope that the increased use of their cards—probably at the expense of cash—will ultimately leave them no worse off. And in America they were lured by promises that Apple would neither capture nor use the data it acquired from purchases. However, that pledge might not apply in other markets.

A walletful of data

Google and Samsung are already setting up rivals to Apple Pay. Bankers suspect that their main motive is to get hold of the data, which would give them even more detailed insight into their customers' lives. Any model that introduces an extra layer between consumers and their bank accounts—for example, by getting them to put money into an online "wallet" and spend it from there—makes the banks uncomfortable. If the wallets are filled in ways that bypass credit cards, the banks lose out both on fees and on access to consumer data.

Facebook is another tech giant barging into fintech by letting its users in America message each other money. Peer-to-peer money transfer in that

country has boomed in recent years. Venmo, ultimately part of PayPal, a purveyor of the sort of online wallets banks dread, is widely used by American youngsters for sending each other small amounts of cash. By turning money transfer into yet another mode of teenage interaction (users speak of "venmoing" a few dollars to each other), it has grown from transferring $59m a quarter in 2012 to about $1.3 billion now (see chart). Moving money through a bank can take several days and attract a $25 fee. Venmo's app is free and instantaneous. The company's tag, "it's like your phone and your wallet had a beautiful baby", does not even mention banks.

In other areas, innovation has if anything played into the banks' hands. Credit- and debit-card usage—and therefore banks' profits—have benefited from new technology that has made it possible for just about anyone to accept plastic. Square, founded in 2009 by a former Twitter boss, led the way in America with a nifty gadget plugged into any smartphone that enables food trucks, market sellers and other transient merchants to accept cards in the same way as any shop. Copycats are rolling out similar technology in Europe.

The next frontier is online payments, particularly the mobile sort. What used to be a nuisance—pecking in a 16-digit credit-card number on a smartphone—is becoming ever more streamlined. Braintree (which acquired Venmo before itself being gobbled up by PayPal in 2013) and Stripe are among those doing for online merchants what Square did for food trucks: making it vastly easier for people to hand over money. Their pitch is that the less hassle consumers have to endure, the more likely they are to buy stuff online, justifying a small cut of the credit-card fee.

For merchants, payment systems that are easy to install on a website and help boost their all-important "conversion rate" from browser to buyer are worth shelling out for, says Scott Loftesness of Glenbrook, a payments consultancy. Apart from shopping on mobiles, users are already paying for

plenty of real-world services online, too. Braintree processes money for Uber, the taxi app that is so convenient partly because customers do not have to hand over any cash: at the end of the journey a stored credit card is automatically debited.

Soon enough, consumers should be able to walk out of a clothes shop, say, and have their accounts automatically debited with their purchases (sensors, smartphones and cheap RFID tags on the labels will do all the work for them). That will not disrupt payments incumbents as such, but there is a risk that people will bypass credit cards in making these payments, thus cutting off the banks' lucrative commissions.

How payments evolve, and what role fintech will play in that, will depend largely on local circumstances. Every country has its own payments system, based on traditions and consumer preferences. Cheques are now a rare sight in Scandinavia, say, but they are still widespread in France, Canada and America (where, in a nod to innovation, banks encourage customers to cash them by taking pictures of them with their smartphones). In China, digital payments are ubiquitous and banks make much lower commissions.

Regulators can and do upend entire payments systems at will. Britain in 2008 forced banks to allow customers to transfer money instantly. The banks complained about the costs, but the change removed an opportunity for Venmo-like insurgents. American regulators are also planning to speed up bank payments, having already put pressure on the banks to reduce their credit- and debit-card fees. Come October, retailers in America will in effect stop processing fraud-prone cards with a magnetic strip (which are swiped at the till) and switch to safer ones with chips (which require a PIN number). That will require 16m terminals to be upgraded, says Osama Bedier of Poynt, a maker of snazzy payment terminals that is hoping to gatecrash the market.

All this adds up to a mix of opportunities and threats for banks. On one hand, startups like Square and Stripe are helping them find new merchants to use their cards, so generating more fees. On the other, those interlopers are getting a cut of the action—though not always enough to be sustainably profitable, critics suggest—and consumers may in time bypass the debit- and credit-card system that is so lucrative for banks. Millennials are already eschewing credit cards altogether.

Some payments groups are now starting to intrude on banks' traditional preserve of lending. Square is offering cash advances to merchants who use its payments systems; others are extending credit to buyers. PayPal Credit, once known as Bill Me Later, allows buyers to defer payments on purchases; Amazon now offers a similar instalment scheme to customers buying larger items. Klarna, a Swedish startup, and Affirm, an American one, offer merchants immediate payment even as customers are given several months' grace. Yet the gradual shift from cash to mobile and plastic payments still leaves the banks sitting reasonably comfortably, even if they resent impositions such as the 0.15% fee they have to stump up to get the Apple Pay business. The fintech insurgents work with banks as much as against them.

But what if someone were to come up with an entirely new way of transferring money that no one has thought of before? Many think that such a system is now within reach. ■

支付

积少成多

如果你有钱——甚至即使你没钱——你现在都可以用各种方式买单

谚语云，金融是传递金钱直至它最终消失的艺术。在任何曾往海外汇款的人听来，此言不虚：他们的汇款因为手续费和糟糕的汇率缩水。店家通常要支付以信用卡结算销售额的约3%。根据波士顿咨询集团的统计，银行每年处理400多万亿美元的转账，从中抽取超过一万亿美元收入。随着富裕国家和贫穷国家的消费者都从现金支付转向银行卡支付，以及越来越多人在网络上和手机上支付，这一数字到2023年可能突破两万亿美元。不过，银行已不再独占这块肥田。

很少有消费者在本地咖啡馆里刷卡后，会想想这之后发生的事。他们不会察觉到背后错综复杂、不断演变的联盟和竞争对手网络。在包括技术提供方和主要由Visa卡和万事达卡构成支付网络的生态系统中，银行占据主导地位。直到几年前，这些支付网络都还是由一批银行联盟拥有。支付链条最多可能包含七个环节，每个环节都会从每笔交易中获得微少收入。这些钱的大头最终落入银行。除了对购买结账收取手续费外，银行的利润主要源于信用卡用户常常借钱付账，由此积欠起卡债或透支，而银行对此收取高额利息。

这个生态系统发生任何变化，看来好像都会威胁到现代银行系统核心部分一个利润极高的业务。而在实践中其影响更为混杂。如果新进者正在把支付业务这整张饼变大，那么他们实际上是在帮既有业者的忙。另一方面，他们可能迫使银行分享交易收费，从而减少了银行的利润。而一些企业可能会收集银行想要独占的消费者数据。

有一个竞争者可能会把上述三件事都干了：Apple Pay。它于去年10月在美国推出，预期今年会在全球范围内铺开。对于消费者来说，点击iPhone或苹果手表就能付费，这很新鲜，但它实际上相当于在手机上再造一张付费卡。苹果这家科技巨头并不想要绕过至关重要的Visa卡和万事达卡“轨

道”，这一金融业行话意指银行熟知并从中谋利的系统之核心。

让银行不那么高兴的是，苹果正从所有通过其系统完成的付费中分得0.15%。银行担心，一旦消费者习惯了用iPhone付钱，这一“苹果税”会提高。但它们同时也希望人们因此而更多地使用其银行卡。如果这样可以减少使用现金，最终就不会让它们的收入变差。在美国，它们被这样的承诺吸引：苹果不会收集或使用从购买中生成的数据。不过，这一保证可能不适用于其他地区。

一钱包的数据

谷歌和三星已经在打造Apple Pay的对手。银行怀疑它们的主要动机是获取数据，从而可以更为细致地观察客户的生活。任何会在消费者和他们的银行账户间引入额外一道步骤的模式都会让银行不安，比如，让消费者把钱放入一个网上“钱包”，并从这里付费。如果填充这些钱包的过程绕过了银行卡，那银行不仅损失了收费，也没拿到消费者数据。

Facebook是另一家介入金融科技的科技巨头。它让自己在美国的用户可以发简讯转账。P2P转账近年在美国蓬勃发展。最终收归贝宝（Paypal）旗下的Venmo就提供了让银行害怕的这类网上钱包，目前被美国年轻人广泛用来相互发送小额款项。它把转账变成了又一个青少年互动的模式（用户们谈论着相互“venmoing”几美元），其季度转账额已从2012年的5900万美元增至目前的约13亿美元（见图表）。通过银行转账可能耗时数日，还要付费25美元。而Venmo应用免费且实时完成。该公司的口号是：“它就像你的手机和钱包有了美丽的结晶”，全然没提到银行。

在其他领域，如果说创新已经带来成果，那也都对银行有利。新技术使得几乎任何人都能接受信用卡和借记卡支付，从而增加了银行的利润。由推特前老板在2009年创建的Square在美国引领了风潮，它把一个灵巧的小设备插入任何智能手机，让流动餐车、集市小贩等临时商户可以和任何商店那样接受信用卡。效仿者正在欧洲推行类似的技术。

下一个前沿地带是网上支付，尤其是移动支付。在智能手机上输入16位卡

号过去是件麻烦事，如今日益简化。Braintree（它在2013年被贝宝吞并，这之前它收购了Venmo）和Stripe等企业之于网上商家，就如同Square之于流动餐车。它们让转账变得远为方便。其销售卖点是，消费者需要忍受的麻烦越少，他们越可能在网上购物，因此它们分走信用卡收费的一小部分合情合理。

对商家而言，能便捷地在网站上装设支付系统、帮助他们提升最重要的“转化率”——浏览商品的人变成买家，这值得掏钱，支付咨询公司Glenbrook的斯科特·洛夫特尼斯（Scott Loftesness）说。除了在移动平台上购物，用户也已经在网上为大量现实世界里的服务付费。Braintree处理出租车应用优步（Uber）的付费，这项应用之所以这么便利，一定程度上是因为客户不需要支付任何现金。到了旅程终点，存储在手机里的信用卡会被自动扣款。

举例来说，过不了多久，当消费者从一家服装店走出时，购买衣服的费用会自动从他们的账户中扣除（传感器、智能手机，以及服饰商标上成本低廉的电子标签会为他们完成所有步骤）。这应该不会颠覆既有支付业者本身，但人们有可能会在这类支付中绕过信用卡，从而减少了银行获利丰厚的手续费。

支付会如何演变、金融科技在其中扮演什么角色，很大程度上将取决于本土环境。每个国家都有自己的支付系统，它们基于传统和消费者习惯。比如，支票在斯堪的纳维亚地区已经很少见，但在法国、加拿大和美国仍然很普遍。在美国，认同创新的银行鼓励客户用手机拍摄支票取现。在中国，数字支付已经随处可见，银行的手续费收入大减。

监管部门能随意彻底改变整个支付系统，它们确实也这么做。英国在2008年强令银行允许客户实时转账。银行抱怨成本太高，但这一改变使得Venmo这类叛乱分子失去了机会。美国的监管部门也计划加速银行支付，此前它们已经向银行施压，要求其减少信用卡和借记卡收费。今年10月，美国的零售商将停止使用容易发生欺诈的磁条银行卡（只需在终端划卡即可）而转用芯片卡（需输入密码）。这将需要升级1600万个付费终端，

Poynt的奥萨马·贝迪尔（Osama Bedier）说。Poynt制造一种时髦的支付终端系统，以期打入这个市场。

所有这些加起来，给银行带来了机会也带来了威胁。一方面，像Square和Stripe这样的创业公司正在帮助银行找到更多商家来使用他们的银行卡，由此带来更多收费。另一方面，这些闯入者正从中分得一杯羹——虽然批评人士指出这并不总能带来可持续经营的足够利润。假以时日，消费者可能会对借记卡和信用卡这一让银行油水丰沛的系统绕道而行。千禧一代就已完全避开信用卡。

一些支付集团开始涉足借贷这一银行传统的自留地。Square向使用其支付系统的商家提供现金预支。其他企业向卖家提供贷款。过去名为"稍后给我寄账单"（Bill Me Later）的贝宝信用（PayPal Credit）让买家可以延迟付款。亚马逊如今向购买大件商品的顾客提供类似的分期付款。瑞典的创业公司Klarna和美国的Affirm向商家提供即时支付服务，即使顾客被给予几个月的付款宽限期。不过，从现金到移动支付和卡片支付的逐渐转变仍然让银行日子蛮好过，即便它们厌恶某些向它们的征费，比如为了参与Apple Pay的业务不得不拱手让出0.15%的收费。金融技术叛乱分子与银行的合作和对它们发起的挑战一样多。

但是，如果有人想出了一个从来没人想到过的全新的转账方式呢？许多人认为，这样的一个系统如今已触手可及。■

Internet firms

Eat or be eaten

With a wave of consolidation in prospect, America's big internet firms look set to divide into predators and prey

EVEN at charity auctions, technology titans like large transactions. At a recent fundraiser for Tipping Point, an anti-poverty charity in San Francisco, guests swiftly bid up the price for a package of Super Bowl tickets in increments of $100,000. The fortunes made by Silicon Valley entrepreneurs are so vast that the event effortlessly raised $14m. Guests tossed yellow confetti round the room in celebration.

Companies in the Valley are big spenders too. Last year around $184 billion of mergers and acquisitions were struck in the American technology industry, according to Dealogic, a research firm. There will be even more this year. In early May speculation grew that Salesforce, a provider of cloud-based business software, had received several approaches—Microsoft and Oracle were said to be among those interested, though another, SAP, ruled itself out. Recent stumbles by Twitter and LinkedIn make them vulnerable; and a number of other internet firms are big enough to be an appetising prospect, but not too big to be swallowed up. Unlike, say, Google, most do not have founders with controlling stakes that could prevent a takeover.

With a current stockmarket value of $48 billion, Salesforce would not come cheap. But many of America's biggest technology firms are rolling in money: Microsoft, for one, has $95 billion in cash and short-term investments on its balance-sheet. Among the top ten American firms with the largest cash hoards (excluding financial firms), six are technology firms, led by Apple, and they have saved up a combined $485 billion. This, plus their high share prices, gives the tech industry's potential predators unprecedented firepower as they go hunting. Furthermore, a variety of

other companies, from old-media firms to Chinese tech giants such as Alibaba and Tencent, are also scouting round the Valley with the intent of getting more familiar with American online businesses.

Although exuberance about the internet sector's growth prospects has lifted the shares of many firms, doubts are growing about the ability of some to continue their impressive winning streaks. Recently Twitter and LinkedIn, two social networks, missed earnings forecasts, sending their shares falling by around 28% and 21% respectively. Sustained underperformance could drive down public firms' prices and make some of them easier targets.

With a $24 billion market capitalisation (down from around $33 billion a month ago), Twitter is still a large bird to swallow; and it has been buying up smaller firms over the past few years to help it grow. However, its management has disappointed investors, who had hoped the firm would scale up faster. Unless that changes, another internet firm could swoop.

Google is the most obvious buyer. Twitter's main problem is that advertisers still see it as a niche proposition. Google, the giant of online ads, could help solve this. The relationship between the two firms is growing closer. When Twitter reported its earnings on April 28th, it announced a partnership with Google to help it sell and measure the effectiveness of ads. Tencent, a Chinese firm that owns a popular messaging service, WeChat, may also be interested, although the American government would cringe at seeing a platform for free speech go to a Chinese owner.

Midsized, advertising-supported firms have struggled of late, as it has become clearer that some will not add users and revenues as quickly as once hoped. In other words, online advertising can be a tough business for firms "that are not named Google or Facebook", says Brian Wieser of Pivotal Research, who studies the industry. Four firms—Google, Facebook, Baidu

and Alibaba—control half of all digital advertising worldwide. Yelp, a firm that hosts online reviews and makes money from local ads, is "one of the most obvious take-out candidates," says Mark Mahaney of RBC Capital Markets, an investment bank.

Yahoo, a darling of the late 1990s internet bubble, is a constant subject of takeover speculation. It is in the process of spinning out its lucrative investment in Alibaba, and is exploring the sale of its stake in Yahoo Japan. After that Yahoo's chief executive, Marissa Mayer, will have run out of tricks to placate investors. Analysts and investors have urged a merger between Yahoo and AOL, another web portal, to save on costs, but one obstacle is that both Ms Mayer and Tim Armstrong, AOL's boss, want to keep their jobs.

Yahoo, which has billions of dollars in free cash, could also be attractive to a private-equity firm, or to an old-fashioned media firm that wants to strengthen its online-video assets. Comcast, which recently dropped its bid to buy a rival cable company, Time Warner Cable, because of antitrust worries, has cash to spare and will be wondering where else to spend it.

Hunting is easier when you divide a herd. eBay and PayPal, now part of the same company, will split later this year, but how long will they stay independent? eBay's online-auction business has lost users to other shopping websites, such as Amazon. Alibaba, which owns Taobao, a Chinese equivalent to eBay, could find it appealing. PayPal, which facilitates online transactions, could also be attractive to banks and credit-card companies, like American Express, which want to strengthen their position in mobile and online payments.

Some companies will want to expand in areas where they are already strong, the better to fight off other competitors. That may risk the wrath of regulators. "The advantage you have with the internet is that the regulatory regimes are not as aware about the dominance you can create in platforms,

and therefore you can create monopolies," says a big investor in internet stocks. Google, which has come under intense scrutiny from European regulators, may beg to differ: it may even be dissuaded from doing any big deals until the political climate improves.

Other firms will want to hedge their bets by investing in new fields unrelated to their core revenue streams. Microsoft, for example, is in the business of selling software, but it is not inconceivable that, if not Salesforce, it could buy LinkedIn, a professional social network. It is cheaper to do this early, however, before the potential of the firm or field is proved. Last year Facebook, an especially active acquirer, bought Oculus VR, a virtual-reality company, for $2 billion. Mark Zuckerberg, Facebook's boss, was not quite sure what he would do with it, but he knew the young firm would become more valuable.

The more mature each bit of the internet business becomes, the more consolidation there will be. Mr Mahaney of RBC points to the online-travel business as an example of what might happen elsewhere, such as among the social networks. The online-travel and booking sector rose in the late 1990s, with many firms fighting it out, but in America it is now dominated by just two big firms, Priceline and Expedia.

Much of the future of dealmaking in Silicon Valley will hinge on valuations, low interest rates and the equity market's health. Some look at Twitter's and LinkedIn's recent falls and wonder whether they are the "tremors before the earthquake", in the words of a venture capitalist.

So far the tectonic plates appear to have settled, and investors' worries remain focused on specific companies that have missed targets. However, some still wonder if a big, widespread correction among internet firms is on the way. The industry's cash-rich giants would surely relish this: what better time to strike than when prices have slumped and investors are keen

to sell.

互联网公司

吞并或被吞并

合并大潮在望，美国大型互联网企业看来将分为猎人和猎物

即使在慈善拍卖会上，科技巨头也喜欢大手笔交易。在旧金山反贫困慈善组织Tipping Point最近一次筹款活动中，客人们以10万美元的加价幅度迅速推高了超级碗套票的竞价。硅谷企业家们创造了如此巨大的财富，以至这次活动毫不费力地筹集了1400万美元。客人们在房间里抛撒黄色纸屑来庆祝。

硅谷的公司还挥金如土。根据调研公司Dealogic的数据，美国科技行业去年的并购总值高达1840亿美元。今年的并购会更多。5月初猜测四起，传言云商业软件供应商Salesforce收到了几家公司的开价：据说微软和甲骨文（Oracle）都有兴趣，而另一传言中的意向买家SAP则表示不予考虑。推特和领英最近的失误使它们变得脆弱；其他一些互联网企业已经发展壮大，拥有诱人的发展前景，但还没有大到难以被吞并的程度。与谷歌不同，大多数公司的创始人都没有控股权来抵制收购。

当前股票市值为480亿美元的Salesforce并不便宜。但美国许多最大的科技公司都很有钱，例如，微软的资产负债表上有950亿美元的现金和短期投资。在美国现金储备最多的十家公司里（不包括金融企业）有六家是科技公司，以苹果为首，它们总共握有4850亿美元。这些现金再加上它们的高股价，给了高科技产业的潜在掠食者捕猎时前所未有的火力。此外，从传统媒体公司到阿里巴巴和腾讯等中国科技巨头，其他各类公司也在硅谷周围侦查，以便能更加熟悉美国的在线业务。

虽然对互联网行业增长前景的热情推高了许多公司的股价，但一些公司越来越被质疑是否能保持不俗的表现。最近，推特和领英这两家社交网络公司未能达到盈利预测，导致股价分别下滑28%和21%左右。持续的表现不佳可能会压低公众公司的股价，使其中一些公司更容易成为收购目标。

市值为240亿美元（从一个月前的约330亿美元滑落）的推特仍然是一家大公司，难以被吞并。在过去几年里，它一直收购规模较小的公司来帮助自身成长。然而，它的管理层让那些希望公司能更快扩张的投资者感到失望。除非情况改变，否则其他互联网公司可能会突然出手收购推特。

谷歌是最显而易见的买家。推特的主要问题是，广告商仍认为它是一个小众渠道。谷歌这个在线广告巨头可能会帮助解决这个问题。两家公司之间的关系日益密切。4月28日发布财报时，推特宣布将与谷歌结为合作伙伴，帮助推动自身的广告销售和衡量广告效果。中国公司腾讯拥有广受欢迎的即时通讯服务微信，它可能也会感兴趣，尽管美国政府并不愿看到一个自由言论的平台被卖给中国公司。

最近，由广告支持的中型科技公司都在挣扎，因为情况日渐清晰：一些公司的用户和收入将不会像曾经希望的那样快速增加。换句话说，对于那些“名字不叫谷歌或者Facebook”的公司而言，网络广告可能是一门难做的生意，Pivotal Research的行业研究员布赖恩·威泽（Brian Wieser）如是说。谷歌、Facebook、百度和阿里巴巴这四家公司控制了全球数字广告一半的市场。投资银行RBC资本市场（RBC Capital Markets）的马克·马哈尼（Mark Mahaney）表示，Yelp是“最显而易见的被并购对象之一”。Yelp经营在线点评，收入来自本地广告。

上世纪90年代末互联网泡沫时期的宠儿雅虎是收购传言中永恒的主角。它正在分拆自己在阿里巴巴获利颇丰的投资，并研究出售它在雅虎日本的股份。在那之后，雅虎首席执行官玛丽莎·梅耶尔（Marissa Mayer）在安抚投资者方面将黔驴技穷。分析师和投资者敦促雅虎和另一家门户网站美国在线合并，以节省成本。但这有一个障碍，梅耶尔和美国在线的老板蒂姆·阿姆斯特朗（Tim Armstrong）都想保住各自的工作。

拥有数十亿美元自由现金的雅虎也可能会吸引私募股权公司，或者那些想要加强在线视频资源的传统媒体公司。最近，康卡斯特（Comcast）由于担心反垄断而放弃了对竞争对手时代华纳有线公司（Time Warner Cable）的收购，因而它手握闲钱想花在别处。

当你把兽群分开，狩猎会容易些。目前隶属于同一家公司的eBay和PayPal今年晚些时候将会分家。但它们的独立会保持多久？eBay在线拍卖业务的用户已经流失到亚马逊等其他购物网站。拥有淘宝（相当于中国的eBay）的阿里巴巴或许会认为eBay很有吸引力。为网上交易提供便利的PayPal也可能会吸引银行以及美国运通等希望巩固移动和在线支付领域地位的信用卡公司。

有些公司想在自己业已强大的领域中扩张，以便更好地抵御竞争对手。这种做法可能有激怒监管机构之虞。互联网股票的一位大投资者说："互联网领域的好处是，监管当局不可能像你一样认清能在这些平台上创造出的支配优势，因此你能够形成垄断。"受到欧洲监管机构严格审查的谷歌可能不敢苟同：甚至可能有人劝它在政治气候改善前不要进行任何大交易。

其他公司想通过投资到与核心收入来源无关的新领域来做两手准备。例如，微软从事软件销售业务，但不难想象，如果不收购Salesforce，它可能会收购职业社交网络领英。但是，在公司或其所在领域的潜力被证明之前，提早下手会比较便宜。尤为积极收购其他公司的Facebook去年以20亿美元收购了虚拟现实公司Oculus VR。Facebook的老板马克·扎克伯格并不很清楚自己要怎么处置它，但他知道这个年轻的公司将变得更有价值。

互联网业务的各个部分越是成熟，合并就会越多。RBC的马哈尼指出，在线旅游业务将成为社交网络等其他行业未来发展的一个范例。在线旅游和预订行业崛起于上世纪90年代末，众多公司参与了竞争。但目前在美国，这个行业仅由Priceline和Expedia两大公司主导。

硅谷未来大部分的交易将取决于估值、低利率和股票市场的健康。一些人关注推特和领英最近的股价下跌，并怀疑它们是不是风险投资家所言的"地震之前震"。

迄今为止，大格局似乎已经稳定，而投资者的担忧仍集中于未能达到目标的特定公司。然而，有些人还是好奇，网络公司中一次普遍性的重大调整是否即将来临。现金充裕的行业巨头们一定会对此甘之如饴：还有什么比

股价暴跌、投资者急于抛售更好的出手时机呢？■

The economics of low wages

When what comes down doesn't go up

Salaries in rich countries are stagnating even as growth returns, and politicians are paying heed. They may struggle to improve things—and could make them worse

ACCORDING to the rich world's politicians, economics has a new villain. The modish scoundrel of the past seven years—the immoral banker outwitting inept regulators—has been edged out by a returning blackguard: the tight-fisted boss crushing the hopes of honest workers with miserly pay. In America workers have been demonstrating for higher pay and stronger union rights in the profitable but poorly paying food industry. Hillary Clinton has blasted CEOs who earn 300 times what the average worker does, pledging that her run for the presidency will champion the "everyday Americans" who have the "deck stacked" against them. In Britain Ed Miliband, leader of the opposition Labour Party, has told the electorate that he plans to punish "predatory" capitalists that exploit the low-paid; his electoral rival David Cameron retorts that his Conservatives are the "party of working people". In Japan Shinzo Abe has sworn to lift salaries, and cajoles and threatens Japanese bosses to deliver on his promise.

The facts give such rhetoric resonance. In most places the recession that followed the financial crisis had dire effects on wages. Despite five years of growth American real wages are still 1.2% below what they were at the beginning of 2009. In Britain, real wages fell every year between 2009 and 2014, the longest decline since the mid-1800s. In 2014 median pay was 10% below its 2008 high. Germany, a haven during the euro-zone crisis, has done better, but wages are still 2.4% below their 2008 level. While there are exceptions—median pay has risen since 2008 in Canada and France—these have generally been bad years for wages.

Flat and falling pay does not just matter to the people afflicted and to those who worry generally about growing inequality (a linked problem, but not quite the same one). Workers are also shoppers. Across the G7 group of rich countries household consumption ranges from 55% (France) to 68% (America) of GDP. While it makes sense for an individual boss to hold down pay, low pay across the economy as a whole threatens to put a lid on the growth that one would otherwise expect after a recession. If it does not there's a chance it will be because households are again borrowing to spend in an unsustainable way.

But if there is good reason to be worried about wages, the political heat also has a concerning side. To design sound policies it is vital to understand why wages have stopped rising, what the implications of a flat-wage world would be, and the likely impact of pay-propelling policies. But economics is still only just getting to grips with these questions.

Part of the problem is that, even before the recession, wages had not been improving as straightforward economics might suggest—which is to say, in line with productivity. The two moved in tandem following the second world war (between 1947 and 1960 both rose by 51% in America) but have been drifting apart since the 1960s: since 1960 productivity in America has risen by almost 220%, but real wages by less than 100%. Many other advanced economies have seen the same sort of trend. The result is that labour's share of GDP has fallen. And of the share that goes to labour, more and more has been going to the people who earn the highest salaries, exacerbating the problem for the rest.

Scholars seeking to explain this decline in the labour share reckon a number of big forces are at work. One is that the income from capital—especially from housing—has been increasing more than the income from labour. Another is that, in many industries, capital goods have

become a lot cheaper and/or better. Bosses can choose whether to spend money on machinery or people, and declines in the price of the kit required for a given amount of output—which can come about either because existing machines get cheaper or because new ones can do more—reduce demand for labour.

Globalisation can reduce the demand for rich-country labour, too. Michael Elsby of the University of Edinburgh and Bart Hobijn and Aysegul Sahin of the Federal Reserve have shown that in industries where imports became a more important part of the supply chain between 1993 and 2010 the labour share fell the most. And the decline of trade unions reduces labour's bargaining power. The share of the American workforce unions represent has fallen in every decade since the 1960s, and similar declines have been seen across the G7 (see chart 1).

The new part of the puzzle—the bit that makes the lack of wage growth after the recession perplexing—concerns the other factor that, in the past, economists have seen as crucial in the setting of wages: unemployment. The usual assumption is that once unemployment gets below a certain rate, idle labour becomes scarce and competition to hire already employed workers heats up. As firms outbid each other for talent, new workers get better starter salaries and valued staff secure juicy raises. Estimating the unemployment rate at which wage-driven inflation kicks in the NAIRU (non-accelerating inflation rate of unemployment)—is part of the core business of central banks.

Matching quandaries

Following a major recession, the NAIRU often goes up. Periods of unemployment have lingering effects on workers, from a loss of vim to clinical depression. Time out of work can mean skills dwindle or become mismatched to the needs of the market; the skills needed by industries that flourish in the recovery may differ from those central to the industries

which laid people off in the slump. All this means some unemployed workers will find it harder to get back into the workforce—indeed, some may stay unemployed until they reach pensionable age—and their presence on the unemployment rolls thus does little to hold down wages. So after a big crisis the NAIRU rises; inflation should kick in sooner rather than later.

In the wake of the current recession, though, this rule of thumb has been broken in a number of countries (see chart 2). In 2013 the OECD, a rich-country think-tank, thought wage-driven inflation would kick in in Britain if unemployment got back below 6.9%. But joblessness was well below that throughout 2014 and average real wages still declined by 0.6%. In a 2013 paper Federal Reserve economists estimated a stable unemployment-wage rule for America: every percentage-point reduction in unemployment should lift inflation by 0.3% over the next year. But despite the fact that joblessness has fallen by more than two percentage points since then, median hourly wages were the same in the first quarter of 2015 as a year earlier. In Japan, unemployment averaged 3.6% in 2014, well below its pre-crisis average, but real pay fell by 2.5%.

Odd, but if temporary perhaps not too troubling. And there is evidence that real-terms wages might now be shaking off their sloth. In late February IG Metall, Germany's largest union, brokered a 3.4% raise for its members, well above the current inflation rate, 0.3%. The latest British data show average salaries up by 1.7% in a year; with inflation close to zero this is a decent real-terms rise. In America, average real pay is up by 2.2% over the past year. If this continues as unemployment falls it would mean a return to pre-crash normality, with sustained wage inflation eventually triggering central-bank interest-rate hikes.

There is, though, another possibility; that the recent hints of a wages bump are largely an artefact of unexpectedly low inflation, and that the underlying wage stagnation continues. Average pay data in America and

Britain may be hiding the continuing plight of the median worker behind the success of the most sought after. It may be that the damage this recession did to the labour market—the loss of skills and the mismatch between industries where workers have experience and those where there are vacancies—is being expressed not in the form of long-term unemployment but as lasting low pay. If that is true, and low pay locks in, sustained inflation might not return even with low rates of unemployment. That labour-market shift would chart a very different course for central banks, which would keep rates low. It would also mean the politics of low pay could be here to last.

What might account for a change of this sort? One likely factor is that, in many places, more flexible labour contracts make it easier to fill posts without raising wages. In Germany "mini jobs"—positions with pay under €400 ($440) per month—are rocketing. In Britain, "zero hours" contracts, in which neither employer nor employee commits to a fixed number of hours, have been becoming more common. By making it easier to fire workers these contracts aim to take the worry out of hiring. By making workers' positions more fragile they cut bargaining power.

> *Not for the long haul*

The ever larger "staffing industry" may be having a similar effect. It is important across a much wider swathe of the economy than is often realised; having started out in the 1960s supplying office temps, today temping companies like Kelly Services, Adecco and Randstad mainly supply light manufacturing and industrial workers. In 2013 Kelly Services was America's second-largest private-sector employer, after Walmart, with 750,000 staff. America's 2.9m temps account for 2% of its jobs.

Temping is flourishing across the G7. In Japan, once the land of the *shûshin koyô*, or job for life, transient employment is ever more common; in 2014 Recruit, the country's largest temp agency, listed for $19 billion on the

Tokyo stock exchange. In Britain everything from the Olympics on down comes with temporary security guards supplied by G4S and temporary caterers provided by Compass, the country's largest and third-largest private employers, respectively.

The industry provides flexibility for both workers and firms, and its ability to match workers on its databases to jobs may be very helpful: the 2010 Nobel prize was awarded for work showing how better job search and matching could lower unemployment. But labour aggregators that compete for business on the basis of helping lower clients' staff costs have an incentive to keep pay low. In 2014 a report by Rebecca Smith and Claire McKenna of the National Employment Law Project, an American lobby group, claims that staffing agencies cut temps' bargaining power.

Across the G7 politicians are mulling three ways to overcome the problems low pay poses. The first and least appealing is re-regulating the labour market so as to limit flexibility. In Germany trade unions are critical of mini jobs, arguing that they cannibalise higher-paying ones. The evidence suggests that this is not the case; mini jobs are growing fastest in industries where full-time jobs are up strongly too, according to the IAB, a government research institute. In Britain, the Labour Party is promising voters it will outlaw zero-hours contracts.

> *Credit where it's due*

This push will not make workers better off. For one thing many workers like the two-way flexibility temping provides. Temping is popular with some Japanese workers, allowing women with young children and retired workers seeking a pension top-up to enter the workforce. And making the market less flexible raises the risk that an economic downturn will cause mass lay-offs. France has the G7's least flexible labour market, and a 10% unemployment rate. Since 2010 the French economy has created around 140,000 new posts. Ultra-flexible Britain has created 1.6m. Although

politicians are right to ensure that work pays, the hard truth is that in a wounded economy a low-paying job is better than none at all.

The second approach to low pay is tax cuts. Britain provides a good example of how they can help. In 2010 a worker in Britain earning the minimum wage—then £5.93 per hour—was liable for tax on £5,900 of the £12,300 he would have earned that year. Today the equivalent total is £13,520 ($20,870), but increases in the tax-free allowance mean only £2,920 is taxable.

The problem is that such tax cuts are untargeted, so the better- and indeed best-off gain too. This makes them popular, but expensive. To focus low tax on the poorest, instead, many countries use tax "credits", like the Working Tax Credit in Britain or the Earned Income Tax Credit in America, which provide refunds to those on the lowest pay. In Britain, for example, someone earning £13,100 or less receives a top-up of £1,960. Since there is no cost to the employer any urge to hire remains robust.

But there are concerns here too. Some worry that stingy bosses are able to rely on tax credits rather than raise pay. Low-paid workers flipping burgers at McDonald's, Burger King or Wendy's, America's largest fast-food chains, or those pulling pints at JD Wetherspoon, Britain's biggest pub group, will be getting substantial tax credits. Yet critics point out that these outfits are profitable and returning cash to their shareholders. Other companies find higher pay affordable: Walmart plans to raise its minimum wage from $7.25 to $9, a step which should be easily manageable given profits of $27 billion and dividends of $6 billion in 2014. Indeed it may pay for itself through reduced churn and better motivation; studies of Britain's economy find that higher pay helps firms retain workers.

And even though targeted tax credits are cheaper than across-the-board cuts their costs add up: the British exchequer spent £30 billion boosting low pay like this in 2013-14, more than twice what it paid a decade earlier. A

recent report from the Centre for Labour Research and Education at the University of California, Berkeley, calculates that between 2009 and 2011 America spent $227 billion (around 6% of the annual federal budget) on top-ups for low-paid workers. Two major outlays—tax credits ($67 billion) and food stamps ($71 billion)—aim to pep up purchasing power directly. The other—Medicaid ($83 billion)—offsets the fact that companies provide less health insurance than they did, with coverage falling from 67% to 59% of workers between 2003 and 2013.

A third approach—higher minimum wages—would shift the burden back to firms. The legal floor to pay varies a lot across the G7: Italy has no minimum; France tops the pack at €9.61 (see chart 3). Many on the left would like to see higher rates. In America, Barack Obama wants the minimum wage boosted by nearly 40% to $10.10. In Britain, the Scottish National Party wants to hike the minimum to £8.70; the Living Wage Foundation, a think-tank, reckons workers outside London need £7.85 an hour and those in London £9.15—41% above the current minimum.

In general, setting floors and caps to prices is risky. Energy-price caps can stop firms investing in power stations, wage floors can stop them from hiring workers. France's lofty minimum wage comes with high unemployment. Yet most studies suggest that at moderate levels they do little to worsen unemployment. A study focusing on employment and wages during Britain's sharp recession of 2009, carried out in 2012 by Mark Bryan, Andrea Salvatori and Mark Taylor of the University of Essex, found no evidence that the minimum wage prevented firms hiring. Left-leaning think-tanks reckon politicians should go further: American cities, free to set their own pay floors, often demand wages well above the federal minimum, and a 2011 study of San Francisco, Santa Fe and Washington, DC, by John Schmitt and David Rosnick of the Centre for Economic and Policy Research found that this had no impact on employment.

Work must be a route out of poverty, not a way to stay stuck in it. To that extent new political interest in stagnant and falling pay is welcome if it really boosts what poorly paid workers take home while not deterring job creation. But although the new world of ultra-flexible labour markets has its flaws, those on the left looking for a restored rigidity are playing a dangerous game: the unemployment that could result would help neither those rendered jobless nor those scraping by. ■

低工资的经济学分析

工资只降不升，怎么办？

即便经济回暖，富裕国家劳工薪酬仍旧冰封。政客苦寻对策，却可能弄巧成拙

在富裕国家的政客眼中，经济领域出现了新的罪魁祸首。过去七年来占尽风头的恶棍（戏耍无能监管者的无耻银行家）已被卷土重来的另一个流氓挤走：以低工资压榨老实员工的吝啬老板。在美国，食品业利润丰厚但薪金水平低下，工人们一直示威集会，要求提高工资及获得更多工会权利。希拉里·克林顿猛烈抨击那些收入为工人平均薪酬300倍的首席执行官，誓言自己竞选总统是为了捍卫备受不公对待的“美国老百姓”。在英国，反对党工党领袖埃德·米利班德（Ed Miliband）已向选民表示计划惩罚以低工资剥削工人的“掠夺性”资本家。其对手戴维·卡梅伦反击说，他的保守党是“劳动人民的政党”。在日本，安倍晋三信誓旦旦要提高工人工资，威逼利诱日本企业老板来兑现他的诺言。

如此众口一辞自有事实依据。金融危机引发的经济衰退给大部分地区的工资水平带来严峻影响。美国这五年来虽然经济有所增长，但实际工资仍比2009年初低1.2%。在英国，2009至2014年间的实际工资水平每年递减，是自19世纪中期以来为时最长的下跌。2014年的工资中位数比2008年时的高位低了10%。德国堪称欧元区危机的避风港，尽管经济表现较佳，但工资水平仍比2008年时低2.4%。虽然有例外情况（加拿大和法国的工资中位数自2008年有所上升），但总体来说，这些年可谓是工资连连歉收。

工资之恶

薪酬冻结和降低不仅关系到受切肤之痛的劳动者和对贫富差异日增（相关问题，但不尽相同）深感忧虑的人们。劳动者也是消费者。富裕国家组织七国集团中，家庭消费占GDP百分比为55%（法国）至68%（美国）。虽然个别老板压低员工工资情有可原，但整个经济普遍呈现低工资水平就可能限制经济增长，而经济衰退过后本应期待复苏。即使目前还未抑制增长，将来也会发生，因为家庭消费又走上了贷款“先花未来的钱”那不可持

续的老路。

如果说工资问题值得忧虑，相关政治热议也有让人忧心的一面。要设计稳妥的政策就必须探究工资缘何停滞不前、薪酬冻结意味着什么、推进薪酬水平的政策可能产生哪些影响。但是，经济学也才刚开始着手研究这些问题。

一方面原因是，即便在经济衰退前，工资水平也没像经济学原理宣称的那般简单地随着生产力提高而相应上涨。二战后，两者确实联动变化了一段时间（1947年至1960年间两者的水平在美国均提高了51%），但自上世纪60年代起便渐行渐远：美国的生产力自1960年上升了近220%，但实际工资增长却不足100%。其他许多发达经济体也出现了同样的趋势。结果就是劳动收入占GDP的比重下降。而且如果仅就薪资收入分析，顶层高薪人士所占比例越来越高，加剧了其他劳动者的困境。

研究劳动收入份额下跌原因的学者们认为几大力量在起作用。其一是资本收益上涨高于劳动力收入，尤其来自房产的资本收益。另一因素是，在许多行业中，资本品价格大为降低，或者质量上升，抑或两者兼有。老板们可以选择是把钱花在机器上还是劳动者身上。同时，一定产出所需要的生产设备成本下降（可能由于现有设备降价或新设备产能提高）也减少了对劳动力的需求。

全球化也可能令企业减少对富裕国家劳动力的需求。爱丁堡大学的迈克尔·埃尔斯比（Michael Elsby）以及美联储的巴特·霍布金（Bart Hobijn）和艾谢居尔·沙欣（Aysegul Sahin）指出，1993年至2010年间，劳动收入份额下降最多的是供应链中进口比重加大的行业。而工会力量的萎缩削弱了劳工的议价能力。自上世纪60年代以来，美国工会所代表的工人的比例在每个十年里都呈下降趋势，七国集团内普遍出现类似现象（见图表1）。

衰退过后工资水平为何停滞不前，这一令人费解的难题涉及另一因素——失业率。过去经济学家认为它对工资设定至关重要。通常认为，只要失业

率低于一定程度，闲散劳动力变得稀缺，对已就业人员的争夺会升温。随着公司彼此争抢人才，新入职员工的起薪将提高，被器重的员工则能获得可观的加薪。分析非加速通货膨胀的失业率（NAIRU）加上工资驱动产生的通胀的影响，并据此预测失业率数据，是各国央行的核心任务之一。

匹配窘境

在大衰退之后，非加速通货膨胀的失业率往往会上升。失业期对劳动者有挥之不去的影响，有的斗志尽失，有的甚至患上临床抑郁症。中断就业可能导致技能减退或难以适应市场需求；在所需技能方面，在复苏期兴起的行业和在低迷期裁员的行业可能并不一致。这一切意味着有些失业者难以重返就业大军，实际上会有部分人员持续失业直至退休年龄，因此这些失业人口无助于压低工资水平。所以，在大危机过后，非加速通货膨胀的失业率提高，通胀应该更快显现，而非姗姗来迟。

但是，这次经济衰退过后，上述经验法则在多个国家均被打破（见图表2）。2013年，富裕国家智库经合组织（OECD）认为，如果英国的失业率降回至低于6.9%，国内将出现工资带动的通货膨胀。虽然2014年全年英国的失业率都远低于这个数字，但平均实际工资依然下降了0.6%。美联储经济学家在2013年发表的一份文章估计美国的“失业率与工资”之间将出现稳定关联：在2014年内，失业率每降低1%，通胀将上升0.3%。尽管自那以后失业率已下降超过两个百分点，2015年第一季度的时薪中位数还是与去年同期相当。日本2014年的平均失业率为3.6%，远低于金融危机前的平均水平，但实际工资却下降了2.5%.

怪哉怪哉，但如果只是暂时现象，也不必太过忧心。而且有证据表明，实际工资可能正在摆脱止步不前的情况。2月下旬，德国最大的工会组织IG Metall为其成员争取到了3.4%的加薪，远高于当前0.3%的通胀率。英国最新的数据显示，最近一年平均薪酬上升了1.7%，在通胀接近为零的情况下，这是个不错的实际升幅。在美国，过去一年平均实际工资上涨了2.2%。如果这一趋势持续而且失业率下降，将会恢复到危机前的常态，持续的工资通胀最终将引发央行加息。

然而，还存在另一种可能：最近的工资上涨势头很大程度上只是出乎意料的低通胀之下的假象，而真正的工资停滞仍会持续。美国及英国的平均薪酬数据也许只是把一般工人的持续苦况隐藏于备受追捧的高薪阶层的风光故事背后。也许这场衰退对劳动力市场造成的损害（技能丧失，劳动者具备经验的行业和存在职位空缺的行业相错配）不是表现为长期失业，而是持续的低工资水平。如果确实如此，工资被锁定在低位，那么即使失业率低，也无法重回持续通胀的局面。劳动力市场的变化将令央行作出截然不同的决策，把利率保持在低位。同时这也意味着低工资产生的政治争纷或会就此持续。

该怎样解释这种变化？一个可能的因素是，在许多地方，得益于更灵活的劳动合同，无须提高工资也能填补职位。在德国，“迷你职位”（月薪低于400欧元/440美元的职位）火爆增长。在英国，“无约定工时”合同大行其道，雇主和员工无须相互保证固定工时。这类合同令解雇员工变得更容易，雇用员工也因而无后顾之忧。通过把职位变得更脆弱难保，这类合同削弱了劳动者的议价能力。

不为长远

规模日增的“人力资源产业”也可能带来类似效果。受此影响的经济领域比我们通常意识到的要广泛得多；始于上世纪60年代为企业提供临时办公室职员，凯利服务（Kelly Services）、德科（Adecco）、任仕达（Randstad）这些人力资源服务公司如今主要向企业派遣轻型制造业及产业工人。2013年，凯利服务成为美国仅次于沃尔玛的第二大私营雇主，拥有75万名员工。美国有290万临时员工，占就业人口总数的2%。

七国集团各国的临时工市场一片兴旺。日本曾经是终身雇佣（shûshin koyô）的国度，如今短期派遣工作越发普遍。2014年，日本最大的临时雇员派遣机构“招募”（Recruit）以190亿美元市值在东京证券交易所上市。在英国，奥运会举办时的种种工作都由临时雇员负责，G4S提供临时保安人员，Compass派出餐饮服务人员，这两者分别是英国最大及第三大私营雇主。

人力资源行业为劳动者和企业提供了灵活性，而且可以根据数据库匹配工人和职位，这会很有用处：关于提升职位搜索和匹配能力以降低失业率的研究在2010年获得了诺贝尔奖。但是，这些人力资源聚合机构通过帮助客户降低人力成本来争夺业务，在利益驱使下，自然会争取让工资保持低位。2014年美国游说团体“全国就业法律项目”（National Employment Law Project）的丽贝卡·史密斯（Rebecca Smith）及克莱尔·麦肯纳（Claire McKenna）发表了一份报告，指出人力资源公司会削弱临时员工的议价能力。

七国集团内，政客们纷纷忖思，考虑以三种方式来克服低工资造成的问题。第一个也是最不讨好的是重新立法监管劳动力市场，限制灵活性。在德国，工会组织指责“迷你职位”蚕食了薪酬较高的职位机会。但证据表明事实并非如此。据政府研究机构IAB称，迷你职位增长最快的行业正是全职职位增长也相当强劲的行业。在英国，工党向选民承诺将取缔无约定工时合同。

应免则免

这样的硬性规定不会让劳动者境况改善。原因之一是许多劳动者喜欢临时工作所具有的双向灵活性。一些日本人热衷于做临时工，子女年幼的家庭妇女和想赚点额外养老金的退休人士可以藉此重返劳动力市场。而且束缚市场弹性会令风险加大，经济一旦走向衰退，必然导致大规模裁员。法国是七国集团中劳动力市场最缺乏弹性的，失业率为10%。自2010年，法国经济创造了约14万个新职位。而劳动力市场超级灵活的英国则创造了160万个新职位。没错，政客们是该确保合理的薪资水平，但残酷的事实是，在尚未恢复的经济中，拥有一份低收入工作总好过失业。

解决低工资问题的第二个方法是减税。要看其效用，英国是个很好的例子。2010年，英国的最低工资标准为时薪5.93英镑，赚取最低工资的工人当年总收入应为12,300英镑，其中应税收入为5,900英镑。换算到今天，相当于总收入13,520英镑（20,870美元），但由于免税收入额度提高，如今应税收入实际仅为2,920英镑。

问题是，这样的减税政策没有针对性，所以收入较高的人群尤其是高薪人士也受惠于此。这令减税广受欢迎，但成本高昂。为集中向低收入人群提供低税收优惠，许多国家转向推行税收“补贴”，如英国的就业税收补贴（Working tax credit）或美国向极低收入人士退税的劳动所得税抵减（Earned Income Tax Credit）。举个例子，在英国，年收入为13,100英镑或以下的人士会获得1,960英镑的补贴。由于雇主不会因此产生任何成本，所以招工的意向依旧很强。

但这里面也存在着疑虑。有人担心抠门的老板会因为有这些税收补贴而不给员工提高工资。在麦当劳、汉堡王、温迪这些美国最大的快餐连锁店里制作汉堡的低薪工人，或者在英国最大酒吧集团JD Wetherspoon旗下酒馆工作的服务生，都将获得大幅的税收补贴。但批评者指出，这些企业本就盈利，还向股东发放现金分红。其他公司认为可以承担更高的工资水平：沃尔玛计划将最低时薪从7.25美元提高至9美元，这一步应该不难跨出，毕竟2014年该公司盈利270亿美元，分红达60亿美元。通过降低流失率、提升士气，加薪带来的效益可能足以抵消所增加的成本。对英国经济的研究发现提高薪酬有助公司留住员工。

推行针对性税收抵免措施比全面减税的成本低，但算起来也是一笔巨款：英国财政大臣以此方式刺激工资增长，在2013年至2014年就花了300亿英镑，是十年前花费的两倍还多。加州大学伯克利分校劳工研究及教育中心（the Centre for Labour Research and Education at the University of California, Berkeley）最近的一份报告估算，在2009年至2011年间，美国花费了2270亿美元（约为年度联邦预算的6%）用于为低收入雇员提供补助。两项主要支出为税收抵免（670亿美元）和食品救济券（710亿美元），目标是直接刺激购买力。另一项支出为医疗补助（830亿美元），用以弥补企业对员工医疗保险投入的下降。2003年至2013年间企业为员工购买医疗保险的比率从67%下降至59%。

第三种方式是提高最低工资，把负担转回给企业。七国集团中各国法定最低工资大不相同：意大利没有最低工资规定；法国最低时薪为9.61欧元，为其中最高（见图表3）。许多激进派都希望调高最低工资水平。在美

国，奥巴马希望最低时薪提高近40%，达到10.10美元。在英国，苏格兰民族党（Scottish National Party）希望把最低时薪提高至8.70英镑；智库组织“生活工资基金会”（Living Wage Foundation）认为，伦敦以外的工人需要7.85英镑的最低时薪，而在伦敦以内的则需要9.15英镑——这比现行最低工资高出41%。

一般情况下，给价格设上下限有风险。能源价格上限会令企业不再向电站投资，工资下限会令企业不再聘请员工。法国的最低工资线高高在上，随之而来的是高失业率。2012年，埃塞克斯大学（University of Essex）的马克·布莱恩（Mark Bryan）、安德烈·撒瓦特瑞（Andrea Salvatori）和马克·泰勒（Mark Taylor）集中研究了2009年英国经济急剧衰退时的就业及薪酬情况，他们发现并无证据表明最低工资会阻碍公司聘请员工。一些左倾智库组织认为，政客们应再加推一把：美国的城市有权订立自己的最低工资线，其提出的最低工资要求往往高于联邦政府的标准，而经济与政策研究中心（Centre for Economic and Policy Research）的约翰·施密特（John Schmitt）和大卫·罗斯尼克（David Rosnick）在2011年对旧金山、圣塔菲和华盛顿特区所作的一项研究发现，这对就业没有任何影响。

工作必须是摆脱贫困的出路，而非深陷其中的绝路。在这个意义上，政客对停滞及下滑的薪酬水平的关注如果能真正提高低收入员工的实际工资而又不阻碍新职位创造，那自然是值得欢迎的。尽管那些超灵活的新型劳动力市场有其缺陷，但一心重拾刻板监管的左倾政客玩的是一局危险的游戏：结果可能导致失业率上升，对丢掉饭碗的或是勉强维持生计的劳动者而言，均属无益。■

Venture capital

Disrupters disrupted

An industry that specialises in spotting potential insurgents faces some of its own

PARTYING like it's 1999 might be unwise, but venture capitalists have reason to open a few bottles of Dom Pérignon. In the first three months of the year American VC funds invested $13.4 billion, continuing their best run since early 2000, before the dotcom bubble burst (see chart). The comeback has fuelled an already heated debate about whether the technology sector is foaming again. It has also attracted competition from a host of alternative forms of financing. Could VC, which has fostered so many disruptive companies, itself be disrupted?

The VC industry has not changed much since it emerged in America in the late 1950s. Most VC partnerships are as low-tech as it gets. They are best understood as brotherhoods (only 6% of partners are female) that invest money in high-risk ventures. Ideally, their cash comes with two even scarcer resources: advice in the form of experienced board members and access to VC firms' connections. "It's an industry based on personal relationships," explains Reid Hoffman of Greylock Partners, one of its stalwarts. "I can't ask somebody else to make an important recruitment call," says Peter Fenton of Benchmark Capital, another top Silicon Valley firm.

As a result, the sector lacks something that venture capitalists consider essential for most technology startups: it is not "scalable"—that is, able to grow rapidly. Adding partners to a VC firm tends to reduce returns. "The more people you put around the table, the more risk-averse you get," says Andy Rachleff of Stanford's Graduate School of Business, who co-founded Benchmark Capital.

The process of starting and building a business, however, is evolving fast. Thanks to cloud computing and smartphones, among other things, it has become much cheaper and easier to get going. This has led to an explosion of young firms seeking, at least initially, sums not worth a VC's attention: first financing rounds in the tens of thousands of dollars are common, as opposed to the millions that prevailed during the dotcom bubble.

Conversely, once startups have found a big market, they now need much more money to grow. Hiring top developers, acquiring customers and opening offices abroad can gobble up hundreds of millions. All this typically has to happen fast, since many startups operate in winner-take-all markets. Increasing startups' needs for private capital even further, few strive to list themselves on a stockmarket as soon as possible, put off by the tangles of red tape associated with such a move.

At the same time, the low returns on many other investments have driven more money towards startups. In America alone VC funds raised more than $30 billion in 2014—nearly twice as much as the previous year, according to the National Venture Capital Association. They are now managing investments of $157 billion. But rival forms of finance for new firms are also growing fast. For instance, America now boasts more than 300,000 "angels", rich individuals who put money directly into fledgling companies, according to the Centre for Venture Research.

The "seed stage", when a startup raises its first money, is especially vulnerable to disruption. Most ventures are experiments with an uncertain outcome; investing is often a case of "spray and pray". Many startups are now launched on crowdfunding sites, where they can raise equity or money for pre-sold products. Firms can also solicit funds on AngelList, a social network of sorts for both founders and angels. Meanwhile, "accelerators" such as Y Combinator and Techstars invest small sums in entrepreneurs with bright ideas, polishing their offering over a few months

before serving them up to VCs.

Another set of newcomers in the seed stage are VC firms that limit the size and number of their investments to allow them to focus on helping their wards. These range from "micro funds", with assets of less than $100m, to somewhat bigger ones, such as First Round Capital in Philadelphia, Union Square Ventures in New York and Mosaic Ventures in London.

The other end of the financing spectrum, the "late stage", in which companies need cash more than advice, also has lots of new entrants. Big institutional investors are now providing startups with much of their capital. When Zenefits, which offers web-based payroll services, recently raised $500m, the financing round was led by Fidelity, a big asset manager, and TPG, a big private-equity firm. Such deals are essentially "private IPOs". For tech firms, these now outnumber public ones, according to CB Insights, a financial-data service.

This model was pioneered by DST Global, a Russian fund, which invested more than $500m in Facebook starting in 2009, allowing the social network to postpone its listing. Though welcomed back then, such private IPOs are increasingly seen as feeding what Bill Gurley of Benchmark calls a "risk bubble". Late-stage investors, he recently wrote, have "essentially abandoned their traditional risk analysis" to get a stake in a "unicorn"—a no-longer-so-rare startup valued at more than $1 billion (the latest census revealed more than 100 of these magical creatures around the world).

Given the competition from below and above, many venture firms are concentrating on filling the gap between the early and late stages. But even in this area, the pressure is mounting, thanks to the technological forces venture capital has helped to unleash, argues Fred Destin of the European arm of Accel, another Silicon Valley firm.

Online media, from CrunchBase to Twitter, allow entrepreneurs to see which VC firms and partners have done which deals. Startups are also much more connected and talk about their experiences online or at one of the legions of tech conferences. Most want to get financed by the best-known VC brands. As a result, business is getting much tougher for weaker funds, many of which have already fallen dormant or closed down.

Nor is it business as usual at the top of the heap. The very attributes that make it hard for the most prestigious venture-capital firms to grow rapidly have shielded them from competition to some extent. Their contacts are unrivalled, and their experience raising other firms from obscurity to fame and fortune is rare. But this environment still requires sharp elbows.

It may be cheaper to start a firm today, but in America the startups with a chance of making it really big each year still number around 15. Over 30 years, just 7% of the industry's investments brought a tenfold return, and these accounted for 65% of the industry's profits, reckons Fred Giuffrida of Horsley Bridge Partners, a "fund of funds" that spreads its bets across many VC firms.

To get in on these deals, VC firms often outbid each other, which is one of the main reasons tech firms' valuations have reached such dizzying heights. Stories abound of entrepreneurs calling at one office after another on Sand Hill Road near Stanford University, where most of the top VC firms are based, with the valuation of their company soaring at each stop.

The increased competition is not limited to money. When Marc Andreessen and Ben Horowitz, two former entrepreneurs, launched their firm in 2009, they opted for a new, more corporate model: its main partners still make the investment decisions, but dozens of specialised partners then help portfolio companies with everything from recruiting to public relations. This approach—plus clever marketing—has proven popular with

entrepreneurs, putting Andreessen Horowitz among the most sought-after VC investors.

Older firms are following its lead. Most grand VC firms in Silicon Valley have hired at least one specialist partner, often to help startups in the war for talent. Many also use software to keep track of entrepreneurs, business partners and technology trends. Some are trying to “scale their network”, in the words of Danny Rimer of Index Ventures, a firm with offices in both San Francisco and London. Among other things, it fosters exchange among the executives of its portfolio companies. For now, the changes are small—but disruption usually ends up claiming victims. ■

风险资本

颠覆者被颠覆

一个专门发现潜在反叛者的行业自身也正面对着一些搅局者

像现在是1999年似的开派对庆祝可能有点蠢，但风险资本家们有理由开几瓶香槟王（Dom Pérignon）。今年头三个月，美国的风投基金投资了134亿美元，延续他们自2000年初——互联网泡沫破裂之前——以来的最佳一轮表现（见图表）。这次东山再起让一场原已炽烈的辩论进一步升温：科技行业是否又一次充满了泡沫。它也吸引了一大批替代性的融资方式发起竞争。扶植了这么多颠覆性企业的风投业自身有可能被颠覆吗？

风投行业于上世纪50年代末在美国出现，自此并无多大改变。大部分风投合伙企业的技术含量极低。对它们的最佳诠释是把钱投入高风险企业的兄弟会（仅6%的合伙人是女性）。理想情况下，他们提供的资金还伴随着两种更为稀缺的资源：通过担任资深董事给出的建议；提供给风投企业使用的关系网。“这是一个基于人际关系的行业。”最老牌风投企业之一Greylock Partners的里德·霍夫曼（Reid Hoffman）说。“我不能叫另一个人来打一个重要的招聘电话。”硅谷另一家顶尖企业标杆资本（Benchmark Capital）的彼得·芬顿（Peter Fenton）说。

其结果是，在风险资本家看来对大部分科技创业公司都至关重要的一样东西，恰恰是风投这个行业所缺乏的：它不可“广为复制”，也就是说，它无法迅速成长。在一个风投企业里增加合伙人往往会减少回报。“你让越多人参与进来，你就越规避风险。”标杆资本的联合创始人、斯坦福大学商学院的安迪·雷切莱夫（Andy Rachleff）说。

然而，启动和打造一个企业的过程正在迅速演变。得益于云计算和智能手机等技术，所需的启动资金已经大幅减少，而过程变得方便得多。由此涌现了大批年轻企业，它们寻求的资金数目并不值得风投关注，至少在一开始是如此。如今第一轮融资仅数万美元很常见，而在互联网泡沫时期动辄数百万美元。

相反地，一旦创业公司发现了大市场，它们如今需要的成长资金却多得多。雇用顶尖开发者、招揽客户，以及在国外开设分部可能耗费上亿。而由于许多创业公司都在赢家通吃的市场求生，这一切通常都必须迅速完成。创业公司很少会争取尽快上市，因为上市的过程牵扯诸多繁文缛节，令他们不堪其烦，这让它们愈发需要私人资本。

与此同时，许多其他投资的低回报也把资金更多地推向了创业公司。根据美国国家风险投资协会的统计，单单在美国，风投基金在2014年融资超过300亿美元，是2013年融资总额的近一倍。这些基金目前管理着1570亿美元的投资。但是，面向新企业的其他融资方式也在迅速发展。比如，根据风险研究中心（Centre for Venture Research）的数据，美国现在有30多万名“天使”投资人，这些富人把钱直接注入新兴企业。

“种子期”也就是创业公司筹集第一笔资金的时期尤其容易出现颠覆。大部分新公司就是结果未知的实验；投资常是“大面积撒网”。许多创业公司如今在众筹网站上启动，在那里它们能够预售产品来筹集股份或钱。企业也可以在AngelList上筹钱，这是一个连接企业创始人和天使投资人的社交网站。同时，像Y Combinator 和Techstars这样的“加速器”向有奇思妙想的创业者投入小笔资金，在几个月时间里改善其产品，而后才把他们推荐给风投资本。

种子期的另一类新进者是那些限制投资规模和数量以专心帮助投资对象的风投企业，从资产少于一亿美元的“小额资金”，到更大些的企业，比如费城的First Round Capital、纽约的合广投资（Union Square Ventures），以及伦敦的Mosaic Ventures，不一而足。

在融资图谱的另一端也就是“后期”阶段，企业需要现金多过建言。这个领域也有了许多新进者。大型机构投资人正将大笔资金投向创业公司。提供网上薪资结算服务的Zenefits最近募集了五亿美元，这轮融资由大型资产管理公司Fidelity和大型私募企业TPG牵头。这类交易实质上就是“私人IPO”。根据金融数据服务公司CB Insights的统计，针对科技公司的这类投资的数量如今已经超过公开募股。

这种模式由俄罗斯基金DST Global开创。自2009年起，该基金已在Facebook投资了五亿多美元，让这家社交网站得以延缓上市。虽然这类私人IPO在那时很受欢迎，但它日益被视为加剧了“风险泡沫”——用标杆资本的比尔·格利（Bill Gurley）的话说。他最近写道，后期阶段的投资人已经“从根本上放弃了他们传统的风险分析”以求入股“独角兽”，即估值超过10亿美元的创业公司，这类公司如今已不那么罕见，最新调查显示全世界有100多家这样的神奇巨兽。

由于在上游和下游都遭遇竞争，许多风投企业于是专注于填补早期和后期间的空档。但在这个领域，压力也与日俱增。硅谷另一家公司Accel欧洲分部的弗雷德·德坦（Fred Destin）认为，这正是缘于风险资本帮助解放的技术力量。

从CrunchBase到推特，网络媒体让创业者看到哪些风投企业和合伙人达成了哪些交易。创业公司之间的联系也远为增加，它们在网上或一大批科技会议上谈论自己的经验。大部分企业想获得最著名风投品牌的投资。结果，对较弱小的基金来说，生意变得难做了许多，它们中许多已经没了动静，或者关门大吉。

而金字塔顶层的生态也今非昔比。那些让最具声望的风投企业难以迅速扩张的特征，过去在一定程度上也帮助了它们免于竞争。它们的人际网络无可匹敌，它们培育其他公司从寂寂无名到名利兼收的经验不同寻常。但在这个层级仍然需要一番搏杀。

如今启动一家公司可能耗资减少，但在美国，每年有机会成为真正大鳄的创业公司仍然只在15家左右。霍斯利-布里奇合伙公司（Horsley Bridge Partners）的弗雷德·朱弗里达（Fred Giuffrida）估算，过去30年里，风投行业的投资中仅7%获得了10倍回报，而这占了整个行业利润的65%。霍斯利-布里奇是一家组合基金公司，在许多风投企业中分派投资。

为跻身这类交易，风投企业往往互相抬价。科技公司的估值达到如此令人晕眩的高度，这是主因之一。常常可以听到这样的故事：创业者给斯坦福

大学附近砂山道（Sand Hill Road）上的办公室逐个打电话。大部分顶级风投公司的总部都设在这里。而每打一个电话，其公司的估值就又飙高了一截。

加剧的竞争不限于金钱。当马克·安德森（Marc Andreessen）和本·霍洛维茨（Ben Horowitz）这两个曾经的创业者在2009年创办他们的公司时，他们选择了一个更为企业化的新模式：其主要合伙人仍然做出投资决策，但几十个专门合伙人则帮助公司投资的企业，从招聘到公关，无所不包。这种方式，再加上聪明的营销，已经证实很受创业者欢迎，这让安德森-霍洛维茨成为最抢手的风投企业之一。

较成熟的风投企业正跟从这种模式。硅谷大部分重要的风投企业已经聘请了至少一位专门合伙人，其角色通常是帮助创业公司抢夺人才。许多企业也用软件追踪创业者、商业合伙人和科技趋势。一些企业正在努力“升级它们的人脉网络”——用Index Ventures的丹尼·赖默（Danny Rimer）的话说。该公司在旧金山和伦敦都设有办公室。它带来的影响之一是促进其投资企业的主管间的交流。在目前，这些改变都还不大——但颠覆通常会最终造就牺牲品。■

Self-made wealth in America

Robber barons and silicon sultans

Today's tech billionaires have a lot in common with a previous generation of capitalist titans—perhaps too much for their own good

IN THE 50 years between the end of the American civil war in 1865 and the outbreak of the first world war in 1914, a group of entrepreneurs spearheaded America's transformation from an agricultural into an industrial society, built gigantic business empires and amassed huge fortunes. In 1848 John J. Astor, a merchant trader, was America's richest man with $20m (now $545m). By the time the United States entered the first world war, John D. Rockefeller had become its first billionaire.

In the 50 years since Data General introduced the first mini-computers in the late 1960s, a group of entrepreneurs have spearheaded the transformation of an industrial age into an information society, built gigantic business empires and acquired huge fortunes. When he died in 1992, Sam Walton, the founder of Walmart, was probably America's richest man with $8 billion. Today Bill Gates occupies that position with $82.3 billion.

The first group is now known as the robber barons. The second lot—call them the silicon sultans—could face a similar fate. Like their predecessors, they were once revered as inventive mould-breakers, delivering gadgets to the masses. But just like Rockefeller and the other "malefactors of great wealth", these new capitalists are losing their sheen. They have been diversifying into businesses that have little to do with computers, while egotistically proclaiming that they alone can solve mankind's problems, from ageing to space travel. More pointedly, they stand accused of being greedy businessfolk who suborn politicians, employ sweatshop labour, stiff other shareholders and, especially, monopolise markets. Rockefeller once

controlled 80% of the world's supply of oil: today Google has 90% of the search market in Europe and 67% in the United States.

Together, the two groups throw light on some of the most enduring themes of American history—both the country's extraordinary ability to generate vast wealth and its enduring ambivalence about concentrations of power. Henry Ford, the youngest of the robber barons, once said that history is more or less bunk. He was wrong. The silicon sultans have the advantage of being able to learn from their predecessors' mistakes. It is not entirely clear that they are doing so.

History rhymes

All business titans have certain things in common—a steely determination to turn their dreams into reality, a gargantuan appetite for success and, as they grow older, a complicated relationship with the fruits of their labour. But the robbers and sultans have more in common than most: they are the *Übermenschen* of the past 200 years of American capitalism, the people who feel the future in their bones, bring it into being—and sometimes go too far.

The most striking similarity is that they refashioned the material basis of civilisation. Railway barons such as Leland Stanford and E.H. Harriman laid down more than 200,000 miles of track, creating a national market. Andrew Carnegie replaced iron with much more versatile steel. Ford ushered in the era of the automobile. Mr Gates tried to put a computer in every office and in every home. Larry Page and Sergey Brin put the world's information at everybody's fingertips. Mark Zuckerberg made the internet social. Just as the railroad made it possible for obscure companies to revolutionise everything from food (Heinz) to laundry (Procter & Gamble), the internet allows entrepreneurs to disrupt everything from retailing (Amazon) to transport (Uber).

Both relied on the relentless logic of economies of scale. The robber barons started with striking innovations—in Ford's case, a more efficient way of turning petrol into power—but their real genius lay in their ability to "scale up" these innovations to squeeze the competition. "Cut the prices; scoop the market; run the mills full," as Carnegie put it. The silicon sultans updated the idea. Mr Gates understood the imminent ubiquity of personal computers, and the money to be made from making their software. Messrs Brin and Page grasped that their search engine could create a massive audience for advertisers. Mr Zuckerberg saw that Facebook could profit from inserting itself into the social lives of a sizeable chunk of the world's population.

Economies of scale allowed the robber barons to keep reducing prices and improving quality. Henry Ford cut the price of his Model T from $850 in its first year of production to $360 in 1916. In 1924 you could buy a much better car for just $290. The silicon sultans performed exactly the same trick. The price of computer equipment, adjusted for quality and inflation, has declined by 16% a year over the five decades from 1959 to 2009. Each iPhone contains the same amount of computing power as was housed in MIT in 1960.

The robber barons denounced regulators in the name of the free market, but monopoly suited them better. Rockefeller rued the "destructive competition" of the oil industry, with its cycle of glut and shortage, and set about ensuring continuity of supply. The first trust, Standard Oil's, established in 1882, was designed to persuade his rivals to give up control of their companies in return for a guaranteed income and an easy life. "The Standard was an angel of mercy reaching down from the sky and saying 'Get into the ark. Put in your old junk. We will take all the risks'," he wrote.

Others followed. Although the Sherman Anti-Trust Act of 1890 outlawed these devices as restraints on free trade, the barons either neutralised the

legislation or got round it with another control-preserving device, the holding company. By the early 20th century trusts and holding companies held nearly 40% of American manufacturing assets. Alfred Chandler, the doyen of American business historians, summed up the hundred years following the civil war as "ten years of competition and 90 years of oligopoly".

The silicon sultans have it easier. They sometimes brush with the law—Google and Apple have been scolded for creating informal agreements to prevent poaching wars—but network effects, whereby the more customers a service has, the more valuable it becomes, mean that their businesses tend towards monopoly anyway. In the digital world, the alternative is often annihilation. As Peter Thiel, PayPal's cerebral founder, put it in "Zero to One": "All failed companies are the same: they failed to escape competition."

The result, in both cases, is an unparalleled concentration of power. A century ago the barons had a lock on transport and energy. Today Google and Apple between them provide 90% of smartphone operating systems of; over half of North Americans and over a third of Europeans use Facebook. None of the five big car companies, by contrast, controls more than a fifth of the American market.

> *The 0.000001%*

The silicon sultans are some of the few businesspeople who can compete with the robber barons in terms of ownership. Carnegie made a point of always owning more than half of his company. Today most firms are widely held by large numbers of shareholders: the largest individual shareholder in Exxon, the grandchild of Standard Oil, is Rex Tillerson, the company's chief executive. He owns 0.05% of the stock. But tech is different. Together Google's two founders, Sergey Brin and Larry Page, and its executive chairman, Eric Schmidt (who also sits on the board of *The Economist*'s

parent company) control two-thirds of the voting stock in Google. Mark Zuckerberg owns 20% of Facebook shares but almost all of its "class B" shares, which have ten times the voting power of ordinary shares.

The tech titans are not as rich in relative terms as the robber barons. When Rockefeller retired in the early 20th century, his net worth was equal to about one-thirtieth of America's annual GNP. When Mr Gates stepped aside as CEO of Microsoft in 2000 his net worth might have equalled 1/130th of it. But they nevertheless represent the most significant concentration of business wealth in the world. In 2013 34% of billionaire-entrepreneurs aged 40 or under made their money in high tech.

What makes these concentrations of wealth all the more striking is that they followed on the heels of two of the most egalitarian periods in American history. The 1830s-40s saw America (outside the slave-owning South) establish itself as the land of participatory politics and individualism that Alexis de Tocqueville celebrated in "Democracy in America". The years between the second world war and the late 1970s were years of low inequality of income in the United States.

Both the robber barons and the silicon sultans helped to create a very different America, divided by class and obsessed with money. In "The Theory of the Leisure Class"(1899), Thorstein Veblen showed how an egalitarian society was becoming an aristocratic one. In "Capital in the Twenty-First Century" (2013) Thomas Piketty made similar claims for the past 40 years.

The culture they helped to create troubled barons of both eras. Andrew Carnegie, who had risen from bobbin-boy to steel magnate in 17 years, worried about the contrast between "the palace of the millionaire and the cottage of the labourer". Though he stretched the bounds of good taste when, as perhaps the richest man in the world, he wrote a pamphlet

entitled “The Advantages of Poverty” (1891), he was nevertheless sincere in worrying that class division was producing “rigid castes” living in “mutual ignorance” and “mutual distrust” of each other. Mr Thiel contrasts the egalitarian Silicon Valley of his childhood, in which everybody lived in identikit houses and attended first-rate state-funded schools, with today’s divided Valley. But they have taken their strictures only so far. Carnegie bought a ruined castle in Scotland, Skibo, for $85,000 and maintained a staff of 85. Mr Thiel bought an oceanfront spread in Maui for $27m.

No sooner had they transformed themselves from challengers into incumbents than the robber barons succumbed to the two great temptations of a successful middle age: undisciplined growth and unqualified self-belief. Rockefeller spilled into a succession of adjacent businesses—he bought forests to supply his company with wood, established plants to turn the wood into barrels, produced chemicals for refining and bought ships and railroad cars to carry his products. Harriman turned from financing railways to dabbling in finance more generally.

The tech barons are following a similar arc. Google is pouring its super-profits into a succession of loosely related industries: robotics, energy, household appliances, driverless cars and anti-ageing. The company may well be fashioning a world in which it has a hand in everything humans do—driving them to work, adjusting their thermostats, making (and monitoring) their phone calls, and, of course, organising their information. Facebook has spent $2 billion on a start-up that makes virtual-reality equipment. Elon Musk, one of the founders of PayPal, has moved into electric cars and rockets. Jeff Bezos, Amazon’s founder, is also investing in private space travel.

Both groups started dreaming ever bigger dreams. The robber barons turned their hands to solving social problems. Ford led a peace convoy to Europe to put an end to war. When he arrived in Norway and gave the locals

a long lecture on tractor production in faltering Norwegian, a local commented that you have to be a very great man to say such foolish things. In the Valley, extending life to 100 or 120 is a passion; Mr Thiel even talks about abolishing death. Reforming the state is another hobby; again Mr Thiel takes things to the limit with a project to establish a collection of floating city states in international waters outside the reach of governments. Reinventing food—creating meat substitutes in particular—is another recent craze: Messrs Brin, Gates and Thiel have invested in alternative food companies.

The most controversial sideways move the robber barons made was into day-to-day politics. A critic once wrote that Rockefeller's company did everything to the Pennsylvania legislature except refine it. The Senate was known as "the millionaire's club". Robber barons bought newspapers—Ford turned the *Dearborn Independent* into a mouthpiece for his cranky views on the Jews. Not content with establishing what Arthur Schlesinger junior called "government of the corporations, by the corporations and for the corporations", a growing number of robber barons and their children went into politics themselves. Two of Rockefeller's children became governors—Nelson of New York and Winthrop of Arkansas—and Nelson went on to be Gerald Ford's vice-president.

The silicon sultans swore that they would not repeat this mistake, and indeed they have gone nothing like as far as their predecessors. Yet politics is both necessary to business and irresistible to the self-important. This year Google's political action committee spent more on campaigns than Goldman Sachs, a company legendary for its political connections. Mr Zuckerberg has founded a pressure group, fwd.us, to push for immigration reform. The prospectus for the group, headed by one of Mr Zuckerberg's former Harvard room-mates, boasts that the tech industry will become "one of the most powerful political forces" because "we control massive distribution channels, both as companies and as individuals". These

"channels" include old-media redoubts such as the *Washington Post* (bought by Mr Bezos) and the *New Republic* (bought by Facebook's Chris Hughes) as well as new media empires such as Yahoo. Silicon Valley is now a regular stop in fundraising and an established part of America's revolving-door culture. Al Gore, a former vice-president, has been a senior adviser to Google. Sheryl Sandberg, Facebook's chief operating officer, started her career as chief of staff to Larry Summers when he was treasury secretary.

The backlash

The age of the robber barons led inexorably to the age of populist revolt, with mass strikes, anti-monopoly legislation, social reforms and, eventually, the New Deal of the 1930s. The robber barons had ruined too many people and broken too many rules. Ida Tarbell (whose father had been ruined by Rockefeller) proved to be the most devastating critic: a series of brilliant articles in *McClure*'s magazine aired Rockefeller's dirty laundry and popularised the term robber baron. Theodore Dreiser, a novelist, skewered the new rich in "The Titan" and "The Financier". Some economists worried that America was becoming as unequal as Europe.

A cohort of politicians and lawyers fairly swiftly translated the backlash into policy. Teddy Roosevelt thundered against the "criminal rich". Woodrow Wilson followed up with even more vigorous attacks on corporate America. The 16th amendment to the constitution introduced an income tax for the first time, and the 17th amendment decreed that senators should be elected by popular vote rather than appointed by local legislatures.

That the tech barons have attracted only a fraction of the ire of the robber barons is not surprising: with relatively small, highly paid workforces, they are not involved in the battles with unions that turned the robber barons into ogres. In 1901 US Steel, Carnegie's creation, employed a quarter of a

million men—more than the army and navy combined. Today Google employs more than 50,000, Facebook 8,000 and Twitter 3,500. The electronic toys the tech barons make also inspire more affection among consumers than the commodities or infrastructure that the robber barons produced. But there are nevertheless growing rumbles of discontent. Starting in 1994, the American government successfully prosecuted Microsoft for predatory pricing and undermining competition. The EU is currently mulling various ways of reducing Google's dominance in the search market, and has even proposed splitting its search engine operations in Europe from the rest of its business.

Aside from monopoly and inequality, the main gripe against the tech barons concerns privacy. The tech industry makes much of its money from hoovering up private information."We know where you are," says Mr Schmidt. "We know where you've been. We can more or less know what you're thinking about." The EU is drafting a privacy directive, to come into effect in 2016, which could introduce strict rules about data collection.

Despite these growing worries, there is no sign that the trend will reverse. For all the dramatic changes between the railway age and the silicon age, America still has the right formula for producing entrepreneurs. It sucks in talent from all over the world: Carnegie was the son of an impoverished Scottish textile weaver, Mr Brin the son of Russian immigrants. It tolerates failure: the list of barons who failed at least once before they succeeded includes R.H. Macy, H.J. Heinz, Henry Ford and Steve Jobs. And it encourages ambition. Mark Twain and Charles Dudley Warner put their finger on an enduring national trait in "The Gilded Age" (1873): "In America nearly every man has his dream, his pet scheme, whereby he is to advance himself socially or pecuniarily." Walt Whitman did the same: he celebrated "the extreme business energy, and this almost maniacal appetite for wealth prevalent in the United States". And the ability to produce such men has allowed America, once again, to pull ahead of the rest of the West.

At the same time, the backlash against the robber barons points to another enduring theme: the tension between big business and democracy. Americans' admiration for self-made millionaires leads them to be suspicious of huge organisations. Charles Francis Adams, a great-grandson of America's third president, warned that companies were bent on "establishing despotisms which no spasmodic popular effort will be able to shake off".

Louis Brandeis, one of the greatest Supreme Court judges, became the voice of the campaign against "the curse of bigness". "Mere bigness" is an offence against society, he argued, because democracy "cannot endure" when you have huge concentrations of wealth in the hands of a few. Today's Supreme Court is as comfortable with bigness as Brandeis was uncomfortable with it. Presidents habitually cuddle up to huge organisations in order to raise the money they need to run for office. Yet suspicion of size is growing once again on both the Tea Party right and the Democratic left.

So is bigness capable of redeeming itself? The final enduring theme in the story of the American barons is the story of philanthropy. Carnegie pronounced that "the man who thus dies rich dies disgraced". The robber barons (including Carnegie) did not exactly die poor. But almost all of them became philanthropists in old age. Carnegie tried to make equality of opportunity mean something by founding 2,811 public libraries. Rockefeller's intellectual legacy, the University of Chicago, is one of America's greatest.

Mr Gates's foundation is one of the largest in the world; and he and his fellows are following their predecessors by applying the same mixture of imagination and hubris to philanthropy that they applied to business. In America entrepreneurs do not just create bigger fortunes. They also cast longer shadows. ■

美国白手起家的富人

强盗大亨和硅谷苏丹

今天的科技界亿万富翁和当年的一代资本巨头有诸多共性，可能多到对自身不利

从1865年美国南北战争结束到1914年第一次世界大战爆发的50年间，一批企业家引领美国从农业社会转变为工业社会，建造起庞大的商业帝国，聚集起巨额财富。1848年，商人约翰·阿斯特（John J. Astor）拥有2000万美元（相当于今天的5.45亿美元）身家，是当时的全美首富。到美国加入一战时，约翰·洛克菲勒（John D. Rockefeller）已经成为美国第一个亿万富翁。

上世纪60年代末，通用数据（Data General）公司推出了第一台微电脑。自那以后的50年里，一批企业家带领美国从工业时代迈进信息社会，建造起庞大的商业帝国，获得了巨额财富。沃尔玛的创始人山姆·沃尔顿（Sam Walton）于1992年去世时，遗产高达80亿美元，可能是当时全美最富有的人。今天，比尔·盖茨（Bill Gates）以823亿美元的财富占据首富宝座。

第一批人如今被叫做强盗大亨。第二批人——叫他们硅谷苏丹吧——可能面临相似的命运。和他们的前辈一样，他们曾经被推崇为善于创新的破陈规者，把各种数字产品带给大众。然而，恰似洛克菲勒和其他“罪恶大亨”，笼罩在这些新晋资本家身上的夺目光彩正在褪去。他们进入了各种和计算机不相干的行业，同时自负地声称只靠他们就能解决人类从长生不老到太空旅行的各种难题。他们受到更尖锐的指斥，说他们是贪婪的商人，收买政客，开办血汗工厂，诈骗其他股东，尤其还垄断市场。洛克菲勒一度控制了全球80%的石油供应，如今谷歌拥有欧洲搜索市场90%的份额和美国市场的67%。

放在一起，这两批人共同显现了美国历史上最经久不衰的两大主题：这个国家在制造巨额财富上杰出的能力，以及它一直以来对权力集中的摇摆立场。强盗大亨中最年轻的亨利·福特（Henry Ford）曾说历史多少是鬼

扯。他错了。硅谷苏丹们的有利条件是可以从其前辈所犯的错误中习得教训。但他们是否正在这么做并不全然明朗。

历史的回响

所有商业巨头都有些共通点：把梦想变为现实的钢铁意志、对成功的巨大欲望，以及年事渐高后和自己的劳动果实关系复杂。但较之其他人，强盗大亨和硅谷苏丹有更多共性：他们都是过去两百年美国资本主义发展史上的超人，直觉感知未来，并把它们变为现实，但有时也走得太远。

最瞩目的相似之处是他们重塑了文明的物质基础。利兰·斯坦福（Leland Stanford）和E.H.哈里曼（E.H. Harriman）这样的铁路大亨铺设了超过20万英里的铁路，创造出一个全国市场。安德鲁·卡内基（Andrew Carnegie）用远为多用途的钢代替铁。福特开辟了汽车时代。盖茨试图让电脑进入每间办公室和每个家庭。拉里·佩奇（Larry Page）和谢尔盖·布林（Sergey Brin）让人们触手可及全世界的信息。马克·扎克伯格（Mark Zuckerberg）让互联网进入社交时代。就像铁路让众多不知名公司得以变革从食品（亨氏）到保洁（宝洁）的方方面面，互联网让企业家可以颠覆从零售（亚马逊）到运输（优步）的各种事物。

两批人都依赖规模经济强大的逻辑。强盗大亨们以惊人的创新发迹，比如福特找到了把汽油变成动力的更高效方式。但他们真正的天才是把这些创新“规模化”以挤压对手。“压低价格；占领市场；全速生产。”卡内基如是说。硅谷苏丹们更新了这一理念。盖茨明白个人电脑即将变得无所不在，他可以制造电脑软件来赚钱。布林和佩奇深知他们的搜索引擎将为广告客户创造广大受众。扎克伯格预见到Facebook将通过涉入世界一大批人的社交生活而获利。

规模经济让强盗大亨们可以持续减价并提升质量。福特的T型车第一年投产时售价850美元，到1916年降至360美元。1924年，只消290美元就可以买一辆好得多的车。硅谷苏丹们玩的是完全相同的戏码。从1959年到2009年的50年间，在根据质量和通胀做完调整后，电脑设备的价格平均每年下降16%。如今每台iPhone都拥有等同于麻省理工学院在1960年拥有的计算

能力。

强盗大亨们以自由市场之名指斥监管者，而其实垄断更适合他们。洛克菲勒哀叹石油产业的“颠覆性竞争”导致经济经历供给过剩与短缺周期，于是他着手确保持续供应。他在1882年创建了世界首家托拉斯：标准石油公司（Standard Oil），目的就是为说服竞争对手放弃对自己公司的控制权，以换取有保障的收入和轻松的生活。“标准石油是慈悲天使下凡，她说，‘乘上我的方舟。放进你的破船。我们会承担所有风险’。”他写道。

其他人跟风仿效。尽管1890年的《谢尔曼反托拉斯法》以限制自由贸易为由，把这类策略列为非法，但大亨们或者让法律失去实际效力，或者绕道而行，用另一种方法来维持控制权：控股公司。到了20世纪初，托拉斯和控股公司占美国制造业资产的近40%。美国元老级企业史学家艾尔弗雷德·钱德勒（Alfred Chandler）把美国内战后的一百年总结为“10年的竞争和90年的寡头垄断”。

硅谷苏丹们的日子更容易些。他们有时会打法律的擦边球，比如谷歌和苹果被批达成非正式的互不挖角协议。但是网络效应——一项服务拥有的用户越多其价值越大——意味着他们的业务无论如何都会趋向垄断。在数字领域，若不走向垄断，通常就走向灭绝。就像贝宝（Paypal）的创始人、知识分子彼得·蒂尔（Peter Thiel）在《从零到一》（Zero to One）一书中所言：“所有失败的公司都一样：它们没能逃过竞争。”

两种情形的结果都是权力空前集中。一个世纪前，强盗大亨们牢牢掌控运输和能源业。今天，谷歌和苹果一起提供了90%的智能手机操作系统；超过一半的北美人口和超过三分之一的欧洲人在玩Facebook。对比而言，五大汽车公司无一控制超过五分之一的美国市场。

> *百万分之一*

在企业所有权方面，硅谷苏丹是少数能同强盗大亨一较高下的商人。卡内基坚持拥有其公司过半的股权。如今大部分公司普遍由众多股东持有：从标准石油派生的第三代公司埃克森美孚（Exxon）最大的个人股东是公司

CEO 雷克斯·蒂勒森（Rex Tillerson）。他持有公司0.05%的股票。但科技公司不同。今天，谷歌的两大创始人布林和佩奇，以及该公司执行董事长埃里克·斯密特（Eric Schmidt，也是经济学人母公司的董事会成员）控制了谷歌三分之二的有表决权股票。马克·扎克伯格持有20%的Facebook股票，但他几乎持有该公司全部的“B类”股，后者拥有10倍于普通股票的表决权。

以相对值而言，科技巨子不比强盗大亨富有。20世纪初洛克菲勒退休时的净资产相当于美国年度国民生产总值（GNP）的1/30。盖茨于2000年辞去微软CEO一职时，净资产可能等同于该年GNP的1/130。但科技巨子仍然代表了世界上商业财富最集中的部分。2013年，40岁或以下的亿万富翁企业家中，34%从高科技领域发家。

令这两次财富集中格外瞩目的是，它们紧跟在美国历史上两个经济最平等时期后出现。十九世纪三四十年代，美国（南部奴隶制地区除外）把自己打造成了参与性政治和个人主义的国度，就像亚历克西斯·德·托克维尔（Alexis de Tocqueville）在《论美国的民主》（Democracy in America）中所称颂的。从二战到二十世纪70年代末的几十年也是美国收入差距较小的时期。

强盗大亨和硅谷苏丹都推动创造出了一个截然不同的美国：阶层分化、迷恋金钱。托斯丹·凡勃伦（Thorstein Veblen）在《有闲阶级论》（The Theory of the Leisure Class，1899年）中阐述平等社会如何变成贵族社会。在《21世纪资本论》（2013年）中，托马斯·皮凯蒂（Thomas Piketty）对过去40年做了类似的评断。

两个时代的巨头对于由自己推生的文化都感到不安。在17年里从纺织厂小工成长为钢铁大王的卡内基忧心“百万富翁的宫殿和工人的小木屋”之间的反差。当时可能是全球首富的他写了一本小册子《贫穷的优势》（The Advantages of Poverty，1891年），让人觉得故作姿态，但他真诚地担忧阶级分化正在制造“森严的等级”，阶层间“彼此忽略”、“互不信任”。蒂尔对比了自己儿时人人平等的硅谷和今日分化的硅谷。当年大家都住在一模一

样的房子里，到一流的公立学校读书。不过，他们的这类批评也就止步于此。卡内基花了8.5万美元买下了苏格兰荒废的城堡斯基博（Skibo），请了85个工人打理它。蒂尔豪掷2700万美元在茂宜岛（Maui）购置了海景别墅。

强盗大亨们刚从挑战者变成守成者，就屈服于中年成功的两大诱惑：不受约束的增长和漫无边际的自信。洛克菲勒扩张进入了一系列相邻业务：买下林场为自己的公司提供木材，建工厂把木材做成木桶，生产化学品用于炼油，买船和火车来运载自己的产品。哈里曼则从为铁路融资变成广泛涉足金融业。

科技巨子们正在踏上类似的道路。谷歌正把自己的超级利润投入到一系列松散关联的产业中：机器人、能源、家电、无人驾驶汽车和抗衰老。该公司很可能会打造出一个世界，让自己插手人类做的每件事：载他们去上班、调整他们的恒温器、帮他们打电话（同时监控），当然还有整理他们的信息。Facebook花20亿美元收购了一家制造虚拟现实设备的创业公司。贝宝创始人之一的埃隆·马斯克（Elon Musk）转而研制电动车和火箭。亚马逊的创始人杰弗里·贝索斯（Jeff Bezos）也在投资私人太空旅行。

两批人继而构筑越来越大的梦想。强盗大亨开始解决社会问题。福特曾带一支和平车队到欧洲敦促停战。到挪威后，他用磕磕巴巴的挪威语为当地人介绍牵引机制造。长篇大论后，一个当地人评价说："您一定是位非常伟大的人物，才敢讲出这样的蠢话来。"在硅谷，人们满腔热情地要把寿命延长到100或120岁。蒂尔甚至说到消除死亡。改革国家是另一个嗜好，在这方面蒂尔的项目再度走到极致：在不受政府管制的国际海域建造一批由漂浮城市组成的岛国。再造食品尤其是肉的替代品是另一个时尚。布林、盖茨和蒂尔都投资了另类食品公司。

强盗大亨们最具争议的举动是对日常政治的干预。一名批评人士曾经写道，洛克菲勒的公司对宾夕法尼亚州议会无所不为，只差改善它。美国参议院被称做"百万富翁俱乐部"。强盗大亨们收购报纸。福特把《德宝独立报》（Dearborn Independent）变成了宣泄自己古怪反犹观点的传声筒。

他们不满足于建立小阿瑟·施莱辛格（Arthur Schlesinger junior）口中“为企业所有、所治、所享”的政府，越来越多人及其子孙投身政坛。洛克菲勒的两个孩子成了州长：纳尔逊（Nelson）是纽约州州长，温斯洛普（Winthrop）是阿肯色州州长。纳尔逊后来还成了杰拉尔德·福特的副总统。

硅谷苏丹们发誓不会重蹈覆辙，确实在这方面他们全然不像其前辈走得那么远。但是，政治对商业仍必不可少，也令自负者难以抗拒。今年谷歌的政治行动委员会在政治活动上的花费超过了高盛，后者以与政界关系密切著称。扎克伯格创办了政治游说团体fwd.us来推动移民改革。该团体由扎克伯格在哈佛大学的前室友领导，其章程自诩科技产业将成为“最强大的政治力量之一”，因为“我们控制着大量发行渠道，无论以公司还是个人的形式”。这些渠道包括来自旧媒体阵营的《华盛顿邮报》（被贝索斯收购）和《新共和》杂志（New Republic，由Facebook的克里斯·休斯（Chris Hughes）收购）以及新媒体帝国如雅虎。硅谷目前是政客筹款的例行去处，也是美国旋转门文化的既有部分。前副总统阿尔·戈尔（Al Gore）曾是谷歌的高级顾问。Facebook的首席运营官雪莉·桑德伯格（Sheryl Sandberg）的第一份工作是劳伦斯·萨默斯（Larry Summers）担任财政部长时的幕僚长。

反弹

强盗大亨的年代无可避免地导致了民粹反叛：大规模罢工、反垄断立法、社会改革，最终是1930年代的罗斯福新政。强盗大亨们毁了太多人，打破了太多规则。艾达·塔贝尔（Ida Tarbell，父亲是被洛克菲勒击败的油商）的批评最具杀伤力：她在《麦克卢尔》杂志（McClure）上发表的一系列漂亮文章抖出了洛克菲勒的丑事，让“强盗大亨”这个称谓街知巷闻。小说家西奥多·德莱塞（Theodore Dreiser）在《巨人》（The Titan）和《金融家》（The Financier）中尖锐抨击新贵们。一些经济学家担忧美国正变得不平等如欧洲。

一大批政客律师迅速将这种集体抵制写入政策。罗斯福痛斥“有罪的富人”。威尔逊跟随其后，更猛烈地抨击公司主导的美国。宪法第16条修正

案首次引入了个人所得税，第17条修正案规定参议员须由公众投票选举而非地方议会指定。

相比强盗大亨，科技巨子引发的公愤还少得多，这不奇怪：他们雇用的劳动力数量较少、酬劳更高，因而没有陷入和工会的缠斗，正是这种争斗把强盗大亨们塑造成了食人恶魔。1901年，卡内基创办的美国钢铁公司（US Steel）雇用了25万人，超过陆海军之总和。现在，谷歌有5万多名员工，Facebook有8000人，推特有3500人。和强盗大亨制造的大宗商品或基础设施相比，科技巨子生产的电子玩具也更受消费者喜爱。然而抱怨声与日俱增。自1994年开始，美国政府成功起诉微软涉及掠夺性定价和破坏竞争。欧盟目前正在讨论用各种方式削弱谷歌在搜索引擎市场的主导地位，甚至提案把该公司在欧洲的搜索引擎运营和其他业务分拆。

除垄断和不平等外，对科技巨子的怨言主要关乎隐私。科技行业大部分的利润来自获取大量私人信息。“我们知道你是谁，”斯密特说，“我们知道你去过哪里。我们或多或少知道你正在想什么。”欧盟正在起草一项隐私法令，将于2016年生效，可能会推出针对数据收集的严格法规。

尽管忧虑日俱，并无迹象显示趋势将被逆转。尽管从铁路年代到硅谷时代发生了巨大变化，美国仍然拥有打造企业家的良方。它从世界各地吸收人才：卡内基是苏格兰纺织厂一名贫穷织布匠的儿子；布林是俄罗斯移民的儿子。它容忍失败：那些成功前至少失败过一次的巨头包括R.H.梅西（R.H. Macy）、H. J. 亨氏（H. J. Heinz）、福特和乔布斯。它鼓励野心。马克·吐温和查尔斯·杜德利·华纳（Charles Dudley Warner） 在《镀金时代》（The Gilded Age，1873年）中阐述了一种悠久的国民性：“在美国，几乎每个人都有他的梦想、他最热衷的规划，不断推动他提升社会地位或增加财富。”沃尔特·惠特曼（Walt Whitman）也有同样的论调，他赞美“在美国普遍存在的极度商业活力、几近疯狂的财富欲望”。而有能力制造这类人物使得美国能够再次领先其他西方国家。

与此同时，对强盗大亨的反弹显现了另一持久的主题：大企业与民主之间的紧张关系。美国人对白手起家的百万富翁的敬仰让他们对庞大的组织心

存怀疑。美国第二任总统的曾孙查尔斯·弗朗西斯·亚当斯（Charles Francis Adams）警告，企业一门心思要“建立无法被公众的零星努力破除的专制”。

最杰出的最高法院大法官之一路易斯·布兰代斯（Louis Brandeis）成了反“大公司魔咒”运动的代言人。他说，“唯大”是对社会的一种损害，因为当财富集中在极少数人手中时，民主“无法持续”。然而，布兰代斯对这种“大”有多不安，今天的最高法院对它就有多习以为常。总统们惯于巴结超大机构来为竞选筹款。不过，右派茶党和左派民主党对企业规模的疑虑都再度增加。

那么，“大企业”有能力自我救赎吗？美国大亨的故事中最后一个永久主题是慈善。卡内基宣称：“死时富有，死也蒙羞”。强盗大亨们（包括卡内基）死时并不真的穷困。但几乎所有人在暮年都成了慈善家。卡内基尝试创造均等机会，为此创建了2811座公共图书馆。洛克菲勒的知识遗产芝加哥大学是美国最好的大学之一。

盖茨的基金会是全球最大的基金会之一；他和他的科技界同辈正追随前人的脚步，把用在商业上的想象力和狂妄之混合物同样用到慈善事业中。在美国，企业家不仅创造出超越前人的财富，他们也带来愈发深远的影响。

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Zanny Minton Beddoes

Editor-in-chief, The Economist

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您诚挚的，

詹尼·明顿·贝多斯

《经济学人》总编辑■

The real Steve Jobs

Jobs 2.0

A new book attempts to reconstruct one of the world's most celebrated inventors

"NEAR-DEATH experiences can help one see more clearly sometimes," said Steve Jobs. He was speaking about struggling companies. Yet he could easily have been talking about his own life. In 1985 Mr Jobs was pushed out of Apple Computer, the firm he had helped found, only to return after a decade away. In doing so, he mounted one of capitalism's most celebrated comebacks.

Mr Jobs's own professional "near-death" experience helped him learn new skills that enabled him to become probably the most visionary innovator of his time, according to a new book by Brent Schlender and Rick Tetzeli, two business journalists who have long covered America's tech industry. After Mr Jobs's explosive temper and meddling ways had led to his expulsion from the company, he spent years working in the wilderness, away from the spotlight. He tried to build a new computer company, NeXT, and he turned Pixar, an animation firm he bought from George Lucas, creator of "Star Wars" and "Indiana Jones", into a viable business. For years he seemed to fail at both. Messrs Schlender and Tetzeli argue that these experiences helped Jobs become more patient and appreciative of the creative process, enabling him to save Apple from near bankruptcy when he returned.

"Becoming Steve Jobs" is much lighter than the sombre, more dramatic score penned in 2011 by Walter Isaacson. Jobs's official biographer wrote that for years Jobs had refused to acknowledge a daughter born out of wedlock, and all his life he seemed to delight in making pointed attacks on employees and friends. Apple's co-founder, who died in October 2011 just a few weeks before Mr Isaacson's "Steve Jobs" was published, of course cannot say what he thought of it. But his friends are now clearly trying to

spiff up his legacy. Tim Cook, the current boss of Apple, tells Messrs Schlender and Tetzeli that Jobs was far more sensitive than outsiders understand. Apple has given "Becoming Steve Jobs" a de facto endorsement; an Apple store in New York recently hosted a book launch for the authors.

Jobs is said to have matured beyond some of his most bombastic ways. The argument that he evolved as a businessman is more convincing than his transformation as a communicator and moral actor. Much of his success after his return to Apple came not just from embracing virtues such as patience and appreciation of the creative process, but striking hard bargains and knowing how to manipulate opponents as well as friends. As much as the authors try to insist on Jobs's psychological metamorphosis, many of the quotes and anecdotes they use undermine their analysis. One executive describes Apple's executive team as so unified because "we had a common enemy" in Jobs.

Apple's saviour was a master of marketing and the media. One of the book's most salient, original themes is Jobs's singular focus, even during his gloomiest periods, on promotion and storytelling. Much of the book is based on reporting by Mr Schlender, who knew Jobs for 25 years and had a quasi-friendship with him. However, it makes clear that Jobs rarely put his agenda aside. He was in touch with Mr Schlender sporadically over the decades, mostly when he needed something, whether a story on Pixar or an attempt to influence coverage of Apple from the sidelines during his period of exile. He was such a perfectionist that he even took great interest in the photographs that would appear alongside the journalism he wanted to help craft.

Jobs was not unlike Winston Churchill, the British prime minister judged by many to have been a failure before he made a comeback and secured his legacy by defeating Hitler. By any measure, Jobs has been proven

extraordinary, both in his hard-charging personality and his impact on personal computing, music and retail. Any aspiring entrepreneur will enjoy the fact that many of his greatest accomplishments, from the growth of Pixar to his successful re-entry at Apple, were helped not just by luck and a certain Midas touch, but also by good timing and relentless hard work. That Apple's co-founder was able to smooth out a prickly personality makes his rise all the more noteworthy. "Becoming Steve Jobs" does not absolve the protagonist of his foibles, but shows that his accomplishments were indeed legion. ■

真实的乔布斯

乔布斯2.0

一本新书试图重塑全球最著名的发明家之一

“濒死经验有时能让人看得更清楚。”史蒂夫·乔布斯说。他当时说的是挣扎中的企业。但他完全也可以用这句话来描述自己的人生。1985年乔布斯被逐出他帮助创建的苹果公司，却在十年后回归，完成了资本主义最著名的逆转之一。

根据布伦特·施伦德（Brent Schlender）和里克·特策利（Rick Tetzeli）合著的新书，乔布斯自己在职业生涯上的“濒死”经历帮助他学到了新技能，使得他成为或许是他所处的时代最具远见的发明家。这两名商业记者长期报道美国的科技产业。乔布斯的火爆脾气和好管闲事导致他被赶出了苹果，之后多年里远离聚光灯，隐于“乡野”。他尝试创建计算机公司NeXT，并从《星际大战》和《印第安那琼斯》的制作人乔治·卢卡斯（George Lucas）手中买下皮克斯动画（Pixar），把它变成能独立发展的业务。很长时间里，他在这两件事上似乎都失败了。施伦德和特策利认为，这些经历让乔布斯变得更有耐心，也更懂得欣赏创造的过程，让他在回归苹果后能把这家公司从濒临倒闭中拯救回来。

相比沃尔特·艾萨克森（Walter Isaacson）在2011年谱写的阴郁、更戏剧化的基调，《成为乔布斯》（Becoming Steve Jobs）轻巧得多。艾萨克森这位乔布斯的授权传记作者写道，乔布斯多年拒绝承认一名私生女，而终其一生他似乎都乐于尖刻抨击员工和朋友。2011年10月，在艾萨克森的《乔布斯传》出版前仅数周，苹果的联合创办人去世，当然没机会谈一谈他对此书的想法。但他的朋友们如今显然都试图美化他的遗产。苹果现任老板蒂姆·库克告诉施伦德和特策利，乔布斯要比外界以为的更善解人意。苹果公司给了《成为乔布斯》真枪实弹的背书。纽约一家苹果店最近为作者们举办了一次新书发布活动。

作者们说，乔布斯变得成熟，丢掉了一些最为浮夸的作风。他们对乔布斯

作为一名商人演变成熟的立论，比描述他作为沟通者和道德主角的转变历程，更有说服力。他回到苹果公司后所取得的成功并不只是因为有了耐心和欣赏创新过程这类美德，而是因为做成了高难度的交易，以及懂得如何操纵对手和朋友。尽管作者们坚称乔布斯发生了心理蜕变，但他们引用的许多话和轶事同样削弱了他们的分析。据一名高管描述，苹果的执行团队非常步调一致，是因为在乔布斯身上有“我们共同的敌人”。

苹果的救世主是一名营销和媒体大师。这本书最突出和最具独创性的主题是乔布斯一心专注推广和讲故事，即使是在他最灰暗的时期。书的大部分内容基于施伦德的报道，他和乔布斯认识25年，近乎朋友关系。然而这清楚表明乔布斯极少会把自己的目的搁在一边。这几十年里他偶尔和施伦德联络，主要都是他有求于人之时，无论是为了一篇关于皮克斯的文章，还是他在被苹果公司放逐期间想从旁影响对苹果的报道。他是如此的完美主义，想帮着写新闻，甚至于对新闻配发的照片也极有兴趣。

乔布斯很像丘吉尔，这名英国首相在打败希特勒从而实现逆转、稳固自己的遗产前，被许多人视为失败者。无论以何种标尺衡量，乔布斯都已被证实为不同凡响，包括其强悍的个性和对个人电脑、音乐以及零售业的影响。任何胸怀抱负的创业家都会乐见这样一个事实：乔布斯的许多最伟大的成就，从皮克斯的成长到他成功回归苹果，不只受好运气和一些点石成金的魔力推动，也源于良好的时机和不懈地努力工作。而苹果的这位联合创办人能够化解自己敏感易怒的个性，也让他的崛起愈发引人瞩目。《成为乔布斯》并没有赦免主人公的缺陷，但展现其成就确实不胜枚举。 ■

China in Africa

One among many

China has become big in Africa. Now for the backlash

ACROSS Africa, radio call-in programmes are buzzing with tales of Africans, usually men, bemoaning the loss of their spouses and partners to rich Chinese men. “He looks short and ugly like a pygmy but I guess he has money,” complained one lovelorn man on a recent Kenyan show. True or imagined, such stories say much about the perceived economic power of Chinese businessmen in Africa, and of the growing backlash against them.

China has become by far Africa’s biggest trading partner, exchanging about $160 billion-worth of goods a year; more than 1m Chinese, most of them labourers and traders, have moved to the continent in the past decade. The mutual adoration between governments continues, with ever more African roads and mines built by Chinese firms. But the talk of Africa becoming Chinese—or “China’s second continent”, as the title of one American book puts it—is overdone.

The African boom, which China helped to stoke in recent years, is attracting many other investors. The non-Western ones compete especially fiercely. African trade with India is projected to reach $100 billion this year. It is growing at a faster rate than Chinese trade, and is likely to overtake trade with America. Brazil and Turkey are superseding many European countries. In terms of investment in Africa, though, China lags behind Britain, America and Italy (see charts).

If Chinese businessmen seem unfazed by the contest it is in part because they themselves are looking beyond the continent. “This is a good place for business but there are many others around the world,” says He Lingguo, a sunburnt Chinese construction manager in Kenya who hopes to move to

Venezuela.

A decade ago Africa seemed an uncontested space and a training ground for foreign investment as China's economy took off. But these days China's ambitions are bigger than winning business, or seeking access to commodities, on the world's poorest continent. The days when Chinese leaders make long state visits to countries like Tanzania are numbered. Instead, China's president, Xi Jinping, has promised to invest $250 billion in Latin America over the coming decade.

The growth in Chinese demand for commodities is slowing and prices of many raw materials are falling. That said, China's hunger for agricultural goods, and perhaps for farm land, may grow as China's population expands and the middle class becomes richer.

Yet Africans are increasingly suspicious of Chinese firms, worrying about unfair deals and environmental damage. Opposition is fuelled by Africa's thriving civil society, which demands more transparency and an accounting for human rights. This can be an unfamiliar challenge for authoritarian China, whose foreign policy is heavily based on state-to-state relations, with little appreciation of the gulf between African rulers and their people. In Senegal residents' organisations last year blocked a deal that would have handed a prime section of property in the centre of the capital, Dakar, to Chinese developers. In Tanzania labour unions criticised the government for letting in Chinese petty traders.

Some African officials are voicing criticism of China. Lamido Sanusi, Nigeria's former central bank governor, says Africa is opening itself up to a "new form of imperialism", in which China takes African primary goods and sells it manufactured ones, without transferring skills.

After years of bland talk about "win-win" partnerships, China seems

belatedly aware of the problem. On a tour of the continent, the Chinese foreign minister, Wang Yi, said on January 12th that "we absolutely will not take the old path of Western colonists". Last May the prime minister, Li Keqiang, acknowledged "growing pains" in the relationship.

China has few political ambitions in Africa. It co-operates with democracies as much as with authoritarian regimes. Its aid budget is puny. The few peacekeepers it sends stay out of harm's way. China's corporatist development model has attracted few followers beyond Ethiopia and Rwanda. Most fast-growing African nations hew closer to Western free-market ideas. In South Sudan, the one place where China has tried to flex its diplomatic muscle, it has achieved embarrassingly little. Attempts to stop a civil war that is endangering its oil supply failed miserably.

Chinese immigrants in Africa chuckle at the idea that they could lord it over the locals. Most congregate in second-tier countries like Zambia; they are less of a presence in hyper-competitive Nigeria. Unlike other expatriates, they often live in segregated camps. Some thought, after a decade of high-octane engagement, that China would dominate Africa. Instead it is likely to be just one more foreign investor jostling for advantage. ■

中国在非洲

对手众多

中国在非洲影响已很大，但现在遭遇抵触情绪

非洲各地的电台热线电话节目里总能听到人们，通常是男人们，抱怨说自己的配偶或伴侣跟着富有的中国男人跑了。最近在肯尼亚一档节目里有位失恋男子发牢骚："他看起来又矮又丑，像个俾格米人【（pygmy）译注：非洲和东南亚的一个矮小人种】，但我猜他很有钱。"或真或假，这种故事恰恰说明了在非洲的中国商人被公认的经济实力，以及当地人对他们越来越强烈的抵触情绪。

中国已成为非洲最大的贸易伙伴，每年双边贸易额约1600亿美元。过去十年共有超过100万中国人迁到非洲，大多是劳工和商人。中非政府间的相互欣赏仍在继续，更多非洲道路和矿山交由中国企业建设。然而，有人说非洲正日益中国化，或像美国一本书的书名所述，正成为"中国的第二大陆"，这些说法夸大其辞了。

近年在中国的帮助下，非洲经济繁荣，吸引了众多其他投资者。非西方投资者的竞争尤为激烈。今年，非洲与印度的贸易额预计可达1000亿美元，增速高于中非贸易，总额还可能超过美非贸易。巴西和土耳其正在取代许多欧洲国家的角色。不过在对非投资方面，中国落后于英国、美国和意大利（见图表）。

如果中国商人对这种竞争看似处之泰然，部分原因是他们正把目光投向非洲以外。皮肤黝黑的中国建筑经理何岭国（音译）说："这是个做生意的好地方，但全世界好地方多着呢。"他身在肯尼亚，但希望搬去委内瑞拉。

十年前中国经济起飞时，非洲就像中国对外投资无可争议的目的地和试验场。但如今，中国的抱负已不只是在非洲这个世界最穷的大陆上赢得生意或者获取大宗商品。中国领导人在坦桑尼亚这类国家进行长时间国事访问

的日子已屈指可数了。取而代之的是，中国的习近平主席已经承诺未来十年向拉丁美洲投资2500亿美元。

中国对大宗商品需求的增长趋缓，多种原材料的价格在下降。即便如此，随着人口增加和中产阶级越来越富足，中国对农产品或许还有农田的渴求可能有增无减。

但是，非洲对中国企业越来越怀疑，担心不公平交易和环境破坏。加之非洲蓬勃发展的公民社会要求增加透明度以及保护人权，助长了反对声。对于威权的中国而言，这或许是种新挑战。中国的外交政策很大程度上以国家关系为基础，几乎无视非洲统治者与人民之间存在的巨大鸿沟。去年，塞内加尔原打算把首都达喀尔（Dakar）市中心一个黄金地段的地产交给中国发展商，但这笔生意因为居民组织的阻挠而告吹。在坦桑尼亚，工会批评政府允许中国的小商贩进入本国市场。

一些非洲官员也直言不讳地批评中国。尼日利亚前央行行长拉米多·萨努西（Lamido Sanusi）认为非洲正面临一种“新形式的帝国主义”：在非洲，中国拿走初级产品，出售工业制成品，但没有转让技能。

在枯燥无味地谈论了多年“双赢”伙伴关系后，中国似乎才后知后觉地意识到这个问题。中国外交部长王毅1月12日在非洲访问时说：“我们绝不会走西方殖民者的老路。”去年5月，李克强总理承认中非关系存在“成长的烦恼”。

中国在非洲没有什么政治野心。它一视同仁地与民主国家和威权国家合作，对非援助的预算微不足道，派遣的少数维和人员远离危险。除了埃塞俄比亚和卢旺达，中国的社团主义发展模式追随者甚少。快速发展的非洲国家大多更遵循西方自由市场的理念。南苏丹是中国曾经施展外交影响的唯一地区，然而成效小得令人尴尬。中国试图阻止一场威胁自身石油供给的苏丹内战，但以惨败告终。

非洲的中国移民对于他们能向当地人发号施令的说法一笑置之。这些人大多集中在赞比亚这样的二流国家，在竞争极为激烈的尼日利亚却难觅踪

影。与其他外国人不同，他们往往抱团居住在相对隔离的地区。有些人曾认为，在十年的密切交往之后，中国会主导非洲。相反，中国可能只是前来争夺投资优势的众多国家之一而已。 ■

The origins of money

Means of exchange

Monetary systems have always been imposed by the sovereign

MONEY may feel as solid as the Bank of England, but it is an ever-shifting phenomenon. People have gone from using gold or silver coins through paper notes and plastic cards to the modern practice of "quantitative easing" (QE).

To some on the Republican right in America, this evolution is a rake's progress, in which QE is a debasement of the currency leading to hyperinflation and economic ruin. They want a return to the gold standard, whereby the amount of money would be linked to a country's gold reserves. Politicians (and central bankers) would be unable to tamper with it.

But in a new book, "Making Money", Christine Desan, a Harvard law professor, challenges the view of money's history as a fall from grace. She is part of the "cartalist" school which argues that money did not develop spontaneously from below, but was imposed from above by the state or ruler. A sovereign might offer tokens as payments for goods and services, and agree to accept those tokens back to meet taxes or debts. In effect a guarantee from the state, this made such tokens useful for private trade. And governments were able to charge for the service of turning gold and (more usually) silver bullion into coin.

Despite this incentive for the creation of money, the standard medieval complaint was that there was not enough money to go round. The currency was too valuable for everyday trade; back in 13th-century England, one farthing, or a quarter-penny, bought four cups of ale (those were the days). The daily wage was a penny or two.

Modern economists tend to think of money as a real, not a nominal, issue; expanding the money supply may raise prices but not affect the volume of goods and services being traded. But Ms Desan argues that, in medieval times, this was not the case. The lack of coins made it difficult to trade. Coin shortages encouraged the use of money from abroad, the author argues. In addition, the coinage was debased by the medieval practice of "clipping" of coins, or shaving off the edges to save the silver. All this led to the frequent need to reclassify or redenominate the coinage. Sometimes it was the monarchs who were pulling off this trick as a way of boosting their own finances. At other times redenomination also helped to boost activity; an early version of QE.

Nevertheless, every change prompted howls of complaint from the losing parties. Redenominations also led to tricky legal disputes. When repaying a debt, was the borrower obliged to repay a set number of coins? When creditors tried to argue that it should instead be a set amount of silver, the privy council of James I declared that "the king by his prerogative may make money of what matter and form he pleaseth, and establish the standard of it."

This attitude underwent a reversal after the Glorious Revolution, which brought William III to power in 1689 with the help of Whig financiers who set up the Bank of England. The king's creditors naturally had an interest in sound money, and Britain adopted the gold standard, which was to last, in peacetime at least, for much of the next two centuries. Over the long run, prices were remarkably stable during this period; over the short run, however, the discipline required by this standard required some short, sharp slumps which imposed considerable pain on the working classes. The advent of universal suffrage after the first world war made it impossible for democratically elected governments to impose such costs on their voters; commodity money disappeared and "fiat" money (ie, money that is what the government declares it to be) became the norm.

In essence, history has seen a battle between money's role as a store of value (which requires a restricted supply) and its role as a means of exchange (which can require the creation of more money). This battle is still going on. Ms Desan displays exemplary scholarship in detailing money's origins, albeit in an academic style that is hard work for the general reader. But her study is worth the effort. ■

金钱起源

交易手段

货币体系一直由国家推行

金钱也许感觉像英格兰银行般有形有体，但实际是不断变动的现象。人们从使用金币、银币、纸币、塑料卡片到现代的量化宽松政策（QE），一直在变化。

在部分美国右翼共和党人眼中，这演变是连环堕落的过程，其中，量化宽松造成货币贬值，会导致恶性通货膨胀及经济崩溃。他们希望回归到金本位制，让货币供应量与一国的黄金储备挂钩，政客们（以及央行行长们）无法对其干扰左右。

但在新书《创造金钱》（Making Money）中，哈佛大学法学教授克里斯汀·迪珊（Christine Desan）对这种视货币发展史为堕落历程的观点提出了质疑。她是"货币国定理论"学派的一员，认为货币并非自下而上自发而生，而是由国家或统治者自上而下发行规定的。国家可以发行用以支付商品及服务价值的代币，并同意在国民纳税或偿债时接受那些代币。实际上就是国家作出了保证，令这些代币在私人交易中可以通行。同时政府可以收取将金锭及银锭（更常用）铸成硬币的服务费用。

尽管对金钱创制有如此激励，在中世纪，大家普遍抱怨的是没有足够的货币可流通。过去，钱币太珍贵了，不好用于日常买卖；十三世纪时的英格兰，一法新银币，即四分之一便士，就能买到四杯麦酒（那些旧日好时光啊！）。当时，每日工资也就一两便士。

现代经济学家倾向视金钱为实际货币，而非名义货币；扩大货币供应量可能令物价升高，但不会影响商品及服务的交易量。但迪珊认为，在中世纪时期，情况并非如此。她说，硬币紧缺令交易困难，也促成人们使用从国外流入的钱币。此外，中世纪大家刨削硬币边角积攒银屑的"剪币"做法也贬低了钱币的价值。这一切导致国家经常要对硬币进行再分类或重新计价

定值。有时是一国之君使出这一招来改善自己的财政状况，其他时候，重新计价定值也有助刺激经济活动，此为量化宽松的早期版本。

然而，每次变动都会触发失利方怨声迭起。重新计价定值也引发了棘手的法律纠纷。偿还债务时，借款人必须偿还指定数量的硬币吗？当债权人试图争辩说要偿还的是指定重量的银时，英王詹姆士一世的枢密院宣告："国君掌铸钱立币之权，可随喜以各类物料及形式造币并拟定标准。"

这种态度在光荣革命（Glorious Revolution）后发生了逆转。通过这场革命，在创立英格兰银行的辉格党金融家的助力下，威廉三世于1689年登上王位。这位国王的债权人自然希望国内货币稳健，所以英国采用了金本位制，之后差不多两个世纪一直沿用，至少在和平年代是如此。就一个长跨度来看，这段时期的物价相当稳定；然而着眼短期的话，这标准所要求的调整意味着经济会出现一些短期急挫，工薪阶层会因此痛苦难熬。第一次世界大战后，普选制实施，民主选举产生的政府不可能再将此种代价强加于选民；商品货币消失，法定货币（fiat money，即政府指定货币）成为常态。

总的来说，历史见证了货币作为价值载体（要求限制供应量）和交换手段（可以要求发行更多货币）两种角色间的交战。这一斗争还将继续。迪珊不厌其详地探索货币起源，展现了非凡学问，只是这学院派风格对于一般读者来说颇为艰深。但其研究确实值得用心一读。■

Benjamin Lawsky

Shock therapy

A state regulator generates controversy

DESPICABLE criminals, eye-popping sums of money and doughty defenders of the law are a marketable mix, as any comic-book author can attest. They also tend to feature prominently in the speeches of Benjamin Lawsky, the head of New York's Department of Financial Services (DFS). The agency is said to be about to agree on a settlement with Deutsche Bank for its alleged part in the manipulation of LIBOR, a benchmark interest rate. If it does, expect another stentorian statement.

The DFS was created from the merger of two existing state regulators in 2011, at the behest of Andrew Cuomo, New York's governor. He appointed Mr Lawsky, his former chief of staff, to run it. Although the Federal Reserve, the Federal Deposit Insurance Corporation and federal prosecutors typically take the lead in keeping banks honest, any big international bank must have an operation in New York—and it is Mr Lawsky who hands out most licences for that. This has allowed the DFS to elbow in on investigations of all manner of wrongdoing, and along with America's national regulators, extract massive fines.

In 2012 Mr Lawsky inserted himself into negotiations between other regulators and Standard Chartered Bank over transactions it facilitated that may have violated American sanctions on Iran. Although the bank did not admit to any crime, it ended up paying $640m in settlements to the DFS. Subsequent triumphs include similar deals with Bank of Tokyo-Mitsubishi UFJ (which paid $565m in relation to transactions involving Iran), Credit Suisse ($715m, tied to tax evasion by clients), BNP Paribas ($2.2 billion, related to both Iran and Sudan) and Commerzbank ($610m, tied to Iran again). Penalties have also been levied on a handful of American firms for

various infractions. DFS has raised $5.3 billion in this way in just three-and-a-half years.

Mr Lawsky, in turn, has become a figure of some controversy, especially for foreign firms, which believe they have been hit particularly hard because they lack domestic political advocates. The firms he pursues complain that the fines are arbitrary, but that they dare not dispute them, since they cannot risk losing all-important licences. The assumption that Mr Lawsky's crusade against financial crooks is a precursor to a campaign for political office is almost universal. After all, in addition to working for Mr Cuomo, he also served as legal counsel to Charles Schumer, New York's senior senator. Both Mr Cuomo and another recent governor, Eliot Spitzer, made their careers by prosecuting wayward moneymen; so did Rudolph Giuliani, a recent mayor of New York city.

Past state regulators concentrated on duller supervisory matters. But Mr Lawsky, who has also worked as a prosecutor, has a wider vision for the DFS. Explaining his intervention in the Standard Chartered case, Mr Lawsky once said: "We felt the system needed a shock." It "got all the regulators more focused," he added—the sort of statement that makes less showy officials scowl. They contend that the DFS is a legal lightweight, exploiting cases developed by other agencies.

Mr Lawsky is an innovator in several respects, however. He makes much of his efforts to hold individuals to account for financial misdeeds, something federal authorities have tried but failed to do in the wake of the financial crisis. The DFS has no power to prosecute, but BNP, Commerzbank, Credit Suisse and RBS have all agreed to dismiss senior executives as part of their settlements with it. Ocwen, a firm which administers mortgages, agreed to part company with the chairman of its board.

Mr Lawsky also has an eye for controversial new subjects. He has spoken

repeatedly about the need to fight cyber crime and to keep tabs on alternative payment systems such as bitcoin. The DFS's authority over insurers gives it some sway in health care; in recent speeches Mr Lawsky has said his agency will play a "crucial" role in the implementation of Obamacare.

Scalded domestic banks, meanwhile, are mulling swapping their state charters for national ones to escape Mr Lawsky's supervision. Foreign institutions are looking for ways to minimise their business in New York. But such radical steps would take time, and by then Mr Lawsky will surely have moved on to grander things. ■

本杰明•劳斯基

休克疗法

州政府金融监管官员惹争议

卑鄙罪犯、骇人巨款，加上强悍的护法先锋，完全是适销对路的组合，任何漫画书作者皆可印证。美国纽约州金融服务管理局（New York's Department of Financial Services，以下简称DFS）局长本杰明•劳斯基（Benjamin Lawsky）的演讲也突显这一套路。据说该机构将与德意志银行就其涉嫌参与操控基准利率"伦敦银行同业拆借利率"（LIBOR）一事达成和解。若真如此，等着听又一份响亮声明吧。

DFS是在纽约州州长安德鲁•库莫（Andrew Cuomo）的要求下，由州政府两个原有监管机构于2011年合并创建。他任命其前任幕僚长劳斯基为DFS的局长。虽然带头监管银行诚信问题的通常是美联储、美国联邦存款保险公司（FDIC）和联邦检察官，但任何跨国银行都必然会在纽约开展业务，而劳斯基正是审批并发出大部分牌照的人。这让DFS能插手调查一切不当行为，并与美国全国性的监管机构一起抽取巨额罚金。

2012年，劳斯基插手其他监管机构与渣打银行间的谈判，因为渣打银行之前参与促成的交易有违反美国对伊朗制裁条款之嫌。虽然该银行没有承认任何罪行，但最终向DFS支付了6.4亿美元的和解金。随后的谈判胜利包括了与多家银行类似的协议：三菱东京UFJ银行（就涉及伊朗的交易赔付5.65亿美元）、瑞士信贷（7.15亿美元，涉及客户逃税问题）、法国巴黎银行（22亿美元，涉及伊朗和苏丹）及德国商业银行（6.1亿美元，又是涉及伊朗）。少数美国公司也因各种违规行为而受到罚款。仅仅三年半时间，DFS通过此种方式已获得53亿美元。

劳斯基这下成了颇具争议的人物，尤其是在外国企业的眼中，它们觉得自己之所以备受打击，是因为在美国国内缺乏政治利益代言人。这些被劳斯基追击的公司抱怨罚金金额任意武断，但他们不敢反驳，因为冒不起被吊销经营牌照的风险。几乎所有人都认为，劳斯基对金融歪风的连场讨伐其

实是为竞选铺路。毕竟，除了为库莫效力，他还曾担任纽约资深参议员查尔斯·舒默（Charles Schumer）的法律顾问。库莫及近年另一位州长艾略特·斯皮策（Eliot Spitzer）均是靠起诉任意妄为的金融业者而开启政途；前些年的纽约市市长鲁道夫·朱利安尼（Rudolph Giuliani）也是如此。

过去，州政府监管机构关注的是相对普通、乏味的监管事项。但曾担任检察官的劳斯基对DFS持有更广阔的愿景。在解释为何插手干预渣打银行一案时，劳斯基曾说过，“我们觉得金融体系需要来一次震慑”，这“会令所有监管机构变得专注”。这类言辞让较为低调的官员们蹙眉侧目。他们反驳说，DFS只是轻量级的执法机构，却乘其他机构发掘调查案件之机，渔翁得利。

然而，劳斯基在许多方面带动了革新。他花费大量精力对金融违规行为追究个人责任，这是联邦政府在金融危机过后一直欲行而不得的。DFS没有权力起诉，但法国巴黎银行、德国商业银行、瑞士信贷和苏格兰皇家银行都同意撤换高管，作为与DFS和解条件的一部分。按揭管理公司Ocwen甚至与董事长分道扬镳。

劳斯基也独具发掘争议性新课题的慧眼。他多次谈到打击网络犯罪的必要性，并密切关注如比特币这样的另类支付系统。DFS对保险公司的监管权使其在医疗保健方面也有一定的影响力。在最近的一些演讲中，劳斯基表示，DFS将在推行奥巴马医改中扮演“关键”角色。

同时，美国国内银行里的那些惊弓之鸟正酝酿把原本按州政府章程注册改换成按联邦政府章程注册，以此躲避劳斯基的监管。外国机构则在想方设法减少在纽约的业务。但这些大的变化需假以时日才能完成，而在它们完成之前，劳斯基肯定早已奔往更远大的前程了。■

Financial regulation in America

Fed up

A former central banker turns on his own kind

"NO ONE is happy," says Paul Volcker, a former chairman of the Federal Reserve, referring to the chaotic, overlapping and unaccountable sprawl of government agencies regulating America's financial institutions. In late April a group of wise men he assembled released a plan to reshape it. He would like to abolish one agency, merge some others and provide some checks on the growing power of the one he used to run.

Mr Volcker concedes that the odds are against him. Since the second world war, he says, more than 25 attempts to overhaul the regulatory shambles have failed. Politicians, alas, tend to respond to flaws by creating new bodies, without abolishing the old ones. The Dodd-Frank reforms adopted in 2010 in response to the financial crisis, for example, created a new consumer-protection agency and a new committee to monitoring financial stability.

Dodd-Frank also gave more power to the Fed, expanding its role in bank supervision in particular. The Fed has become more involved in markets too; efforts to revive the economy through asset purchases hugely expanded its balance-sheet. Complaints about its meddling are legion.

In a small country, Mr Volcker says, a central bank can take responsibility for monetary policy, the drafting of regulations and the supervision of financial institutions. But he does not think that will work in America. The Fed, he fears, will become too unwieldy and too powerful.

Instead, he would largely confine the Fed to monetary policy and the drafting of new financial regulations. Supervision would be the

responsibility of a separate entity, although the vice-chairman of the Fed would head it. To streamline oversight of financial markets, the Securities and Exchange Commission and the Commodity Futures Trading Commission, which patrol different bits of them, would be merged—a suggestion that seems prescient in light of the claim in late April that a futures trader precipitated a plunge in the stockmarket in 2010.

The Volcker plan would also reconfigure the Financial Stability Oversight Council (FSOC), the new committee created by Dodd-Frank. One of its main jobs is to decide which financial firms should be designated as systemically important, and thus subject to particularly heavy regulation. Mr Volcker would allow the treasury secretary to continue to chair the council, but would also strip him of a vote, in a bid to strengthen its independence. By the same token, the bit of the Treasury that currently provides advice to the FSOC, the Office of Financial Research, would become an independent agency. The intention is to provide an alternative voice to an all-powerful Fed.

There are several gaps in the Volcker plan. The fate of many entities of dubious value, such as the regional Fed banks, remains unclear. More importantly, Mr Volcker is focused on improving the effectiveness and accountability of regulators, and thus the soundness of the firms they regulate. But many in Washington, DC are more interested in expanding the government's power over the financial world, thereby increasing its ability to steer money to politically desirable ends. When Mr Volcker said that no one was happy, he perhaps had not considered the politicians who set the system up. ■

美国的金融管制

厌倦了膨胀的美联储

前央行行长把矛头对准了自己人

“谁都不开心。”前美联储主席保罗·沃尔克（Paul Volcker）说。他指的是监管美国金融机构的政府部门混乱、重叠又随意的扩张。4月底他召集的一批贤人智者发布了一份计划，试图改变这一现状。沃尔克想撤销一个机构，合并另一些，并给他曾经执掌的美联储不断膨胀的权力加上一些束缚。

沃尔克承认自己胜算不大。他说，自第二次世界大战以来，超过25次尝试彻底改变监管乱局的努力都已失败。唉，政客们面对弊端的应对措施往往是叠床架屋，创建新的机构，却不废除旧的。比如，2010年针对金融危机而通过的多德弗兰克改革（Dodd-Frank）创建了一个新的消费者保护机构和一个监测金融稳定性的新委员会。

多德弗兰克改革也给予了美联储更多权力，尤其扩大了它在银行监管中的角色。美联储也更多地参与到市场中。它试图通过购买资产恢复经济活力，这极大地扩大了其资产负债表。它的干涉引发怨声载道。

沃尔克说，在一个小国家，中央银行可以承担起制定货币政策、起草监管规章、监督金融机构的责任。但他认为这在美国不会奏效。他担心美联储会变得无法驾驭、过于强大。

他计划把美联储的职责主要限定于货币政策和草拟新的金融监管规定。实施监督将是另一个机构的责任，虽然美联储的副主席会领导这个机构。为了简化对金融市场的监管，证券交易委员会和商品期货交易委员会（Commodity Futures Trading Commission）这两个分别监督金融市场不同部分的机构将被合并。这一建议似有先见之明，因为4月底一名期货交易员被控造成了2010年股市的一次闪电崩盘。

沃尔克的计划还将改变多德弗兰克改革创建的一个新委员会的运作。金融稳定监管委员会（FSOC）的主要职责之一是决定哪些金融企业应被认定具有系统重要性而须受到尤为严格的监管。沃尔克会让财政部长继续主持该委员会，但会剥夺他的投票权，以求加强该委员会的独立性。同样地，目前向该委员会提供顾问的财政部金融研究办公室（Office of Financial Research）将变成一个独立机构。这些变化的目的是在万能的美联储以外发出其他声音。

沃尔克的计划还有几处留白。许多功用不确定的机构比如地区性联邦储备银行的走向仍不清楚。更重要的是，沃尔克专注于改进监管部门的效率和问责，从而可令它们监管的企业变得更稳健。但在华盛顿，许多人更感兴趣的是如何扩大政府对金融行业的权力，从而能让钱流向政治上更有利之处。当沃尔克说无人开心时，他大概没想到那些创建了金融系统的政客们。 ■

Lending to poor farmers

Seeding the market

A non-profit proves that rural collectives make safe and profitable borrowers

"COFFEE is our gateway drug," jokes Willy Foote, founder of Root Capital. "Then we move on to harder stuff, like cocoa, cashews, quinoa and sorghum." That is how the firm got started in 1999, after Mr Foote quit his job as a Wall Street analyst, lending $73,000 to a coffee (and cardamom) co-operative in Guatemala. It has since expanded to 25 countries in Latin America and Africa, and in December set up shop in Indonesia, with a loan of $550,000 to an organic coffee co-operative.

Root's business is lending to the owners of small farms in poor countries. An estimated 450m of these smallholdings exist worldwide, typically providing a subsistence-at-best income for more than 2 billion of the poorest people on the planet. Mainstream finance has largely ignored them. They face multiple hardships, including land of poor quality, a lack of infrastructure to get their output to market and the constant threat of being wiped out by extreme weather. The lack of access to credit for working capital and investment makes a bad situation worse.

Microcredit outfits dealing in tiny loans of tens or hundreds of dollars have proved that the poorest of the poor can be perfectly responsible borrowers. Root and a few other specialist lenders are showing the same is true of bigger loans to groups of subsistence farmers. The company says that less than 3% of its loans go bad, a failure rate that would be impressive even among much richer clients.

The loans, which come with free advice and training in how best to use the money, are helping farmers increase their productivity and so boost their incomes. The money also protects farmers from having to sell their wares

cheaply to the first available buyer. More than half of Root's borrowers see their income increase by at least 20% a year after receiving a loan; it rises by over 50% for nearly a third of them.

Root has been growing fast, especially since it beefed up its eight offices in poor countries. It has supplied its mixture of credit and technical advice to some 550 borrowers, mostly co-operatives that aggregate the harvests of smallholders. In February its portfolio of loans reached $100m for the first time. Later this year the cumulative total of loans it has made since 1999 should pass $1 billion.

So far, Root has capitalised on the growing enthusiasm for sustainably farmed or organic goods among consumers in the rich world. That requires the sort of certification of origin rarely offered by the bulk commodity dealers that tend to dominate the market for agricultural exports. Most of Root's borrowers have been existing co-operatives hoping to become links in the supply chains of firms such as Whole Foods Market, Costco, Unilever and Starbucks, which has backed Root's expansion with a low-interest loan of $15m.

Root itself is a non-profit that has relied on grants for much of its funding. Mr Foote plans to keep it that way, leaving it to commercial lenders to scale up the business of lending to smallholder exporters. Now that Root has shown that the business is viable, he believes, private investors will pile in. Most of Root's loans of $350,000 or more (around 25% of its portfolio) are profitable at interest rates of no more than 13% a year (well below what microcredit lenders typically charge). Dalberg, a consultancy, reckons the potential market for this kind of lending is $22 billion, based on the 10% of smallholder farmers who are part of some sort of collective sales organisation.

Currently, only around $10 billion of this demand is met, mostly by

regional development banks that tend to grant heavily subsidised loans directly to individual farmers. Root and six other similar but smaller farm-loan firms together supply around $350m in credit. In the next five years, it expects that to rise by over 50%, as more private capital enters the market.

As for Root itself, it will start lending to small farmers who sell their crops locally. Mr Foote hopes to show that they are good borrowers too—something he thinks that is best done as a non-profit. Root does not intend to follow the path trodden by microcredit pioneers such as BancoCompartamos in Mexico, which embraced the idea of profits and went on to have a lucrative IPO. He sees Root's job as seeding markets, leaving others to reap the harvest. ■

借钱给贫穷的农民

在市场上播种

一家非营利性机构证明农村合作社能成为安全且盈利的借款人

“咖啡是我们的入门毒品，”草根资本（Root Capital）的创始人威利•富特（Willy Foote）玩笑道：“然后我们再做更强劲的东西，像可可、腰果、藜麦和高粱。”1999年该公司就是这样开始的，富特首先辞去了华尔街分析师的工作，然后贷款7.3万美元给危地马拉的一家咖啡（和小豆蔻）合作社。此后，其业务扩展到了拉丁美洲和非洲的25个国家，去年12月又在印尼设了点，向一家有机咖啡合作社提供了一笔55万美元的贷款。

草根基金的业务是向贫穷国家的小农户提供贷款。据估计，这样的小农场全球共有4.5亿个，为超过20亿最穷的人口提供仅供糊口的收入。他们基本上为主流融资渠道忽略，又面临多重困难，包括土地贫瘠、基础设施缺失而难以将农产品运到市场上，以及经常受到被极端天气彻底摧毁的威胁。由于无法获得流动资金贷款，无钱投资，情况雪上加霜。

发放几十或几百美元微量贷款的小额信贷机构已经证实，最穷的人可以是完全负责任的借款人。草根资本和少数几家其他专业借贷机构发现，向自耕农群体提供较大额度的贷款也一样。草根资本表示，其贷款坏账率小于3%，即便在富裕得多的客户中，这个比率亦算很低。

这种贷款，再加上给农民提供免费咨询与培训，教他们如何用好这些钱，能够帮助农民提高生产率并因此增加收入。这笔钱也保护了农民，使他们不再需要把产品贱卖给第一个买家。取得贷款后，草根资本超过一半的借款人年收入提高了至少20%；近三分之一的人提高超过50%。

草根资本一直发展迅速，特别在它扩充了位于贫穷国家的八个办事处之后。它已经向大约550名借款人提供了信贷和技术咨询，这些借款人大多是把小农户的收成合并起来的合作社。今年2月，其贷款组合首次达到1亿美元。今年下半年，该机构自1999年以来的累计贷款总额应该会超过十亿

美元。

迄今为止，草根资本利用了发达国家消费者对可持续种殖的或有机的商品不断高涨的热情。这就需要特别的原产地证，而那些通常垄断农业出口市场的大宗商品交易商很少能提供这种证明。草根资本的大多数借款人都是现有的合作社，它们希望成为全食超市（Whole Foods Market）、好市多（Costco）、联合利华和星巴克等公司的供应链中的一环，而星巴克业已提供1500万美元的低息贷款支持草根资本的发展。

草根资本自身是一家非营利性机构，资金来源主要依靠拨款。富特打算保持这种方式，把向出口小农户扩大贷款规模的事留给商业化的贷款机构去做。他认为，现在草根资本已经证明该项业务是可行的，私人投资者将蜂拥而入。草根资本单笔35万美元及以上的贷款（约占其贷款组合的25％）大部分是盈利的，年息不超过13％（远低于小额贷款机构通常的利率）。基于10%的小农户隶属于某种销售合作社，咨询公司Dalberg估算，此类贷款的潜在市场有220亿美元。

目前，这种需求只有大约100亿美元得以满足，贷款主要来自那些倾向于直接向农民个人提供高额补贴贷款的区域性开发银行。草根资本和其他六个较小的同类农场贷款公司一起提供了大约3.5亿美元的信贷。在未来五年里，随着越来越多的私人资本进入市场，它预期信贷规模将上涨50％以上。

至于草根资本自身，它将开始贷款给在本地销售作物的小农户。富特希望能证明他们也是优良的借款人，他认为这项工作最好由非营利性机构来承担。富特不打算再走小额信贷机构先驱走过的老路，如墨西哥的康帕多银行（BancoCompartamos）就成为了营利机构，并在IPO时获利丰厚。他认为草根资本的工作是在市场上播下种子，而把丰收留给别人。 ■

Insurance

Risk and reward

Data and technology are starting to up-end the insurance business

DRIVERS buying insurance from Progressive, an American insurer, get a choice: they can either supply a few bits of information about themselves and receive a quote based on the behaviour of similar people, or they can install a small gadget in their car. The device monitors their driving and adjusts the rate they pay accordingly. Those who refrain from braking sharply and stay off the roads at night can earn a discount of as much as 30% on the generic premium. For those who drive relatively little, Metromile, an insurer based in San Francisco, simply charges by the mile.

Discovery, a South African health insurer that has expanded to Europe and Asia, has 3m policyholders who have opted for a similar scheme. They can earn discounts by showing that they are looking after themselves, for example by wearing a device that monitors their fitness or by joining a gym. Oscar, a health insurer in New York, gives all its policyholders a fitness tracker; whenever they hit a set goal (walking 10,000 steps in a day, say) they get a refund of a dollar.

Insurers typically rely on blunter proxies to assess risk—age, sex and marital status, for instance. But assuming that all young, single, male drivers are reckless, for example, and that middle-aged, married, female ones are cautious is often inaccurate. It also involves unfair cross-subsidies: prudent and responsible young men help to pay for lead-footed mums.

Modern technology enables insurers to gauge individual risk much more precisely. Monitoring devices provide a wealth of data, as do social media, credit-card histories and other digital records. A pilot scheme in America

from Aviva, a British insurer which has since sold its American business, found that analysis of a potential customer's less conventional data, such as online behaviour and spending habits, was as effective in identifying potential health risks as a medical examination including blood and urine tests.

In a similar vein, Michal Kosinski of Stanford University and colleagues at Cambridge University recently found that computers which are fed a person's Facebook "likes" are better than a human analyst at predicting whether they smoke or take drugs. Liking "Big Momma" films, a series of comedies in which a detective disguises himself as a fat, flatulent grandmother, is correlated with drug use; a love of curly french fries is a strong indicator of intelligence; fans of Honda are unlikely to smoke. Such prying is just the beginning: insurers speak with straight faces about a time when sensors in customers' homes will alert plumbers to weak pipes before they burst, and glucose meters in contact lenses will keep a record of how healthily they are eating.

All of which calls into question the basic logic of the insurance industry—that it is impossible to predict who will be hit by what misfortune when, and that people should therefore pool their risks. "Cherry-picking" low-risk customers and spurning those who will prove liabilities is becoming much easier. In the process, insurers may transform themselves from distant, cheque-writing uncles into ever-present and interfering helicopter parents. The prize for the nimblest will be huge: the industry manages more than $30 trillion, nearly as much as the $36 trillion held by pension funds; last year it made $338 billion in profits.

Data mining and monitoring not only allow insurers to price policies more accurately, but also enable them to modify customers' behaviour. "I think of us as Big Mother," says Brian Vannoni of Guidewire, a firm that analyses data for insurers. Last year Guidewire helped predict the path of a hurricane

in Australia, allowing a home insurer to narrow the group of customers whose houses would need extra weatherproofing. Kimberly Harris-Ferrante, an insurance analyst, tells of a client whose database singles out unsafe drivers so that agents can visit them at home in an effort to persuade them to change their habits. Kaiser Permanente, an American health insurer, does something similar with its most at-risk policyholders.

Progressive tells customers who use its monitors where they tend to drive unsafely and what their foibles are (overly sharp turns, for example). Those receiving such advice crash less. AllLife, which insures people with manageable diseases such as HIV and diabetes, offers them free monthly check-ups. If these show that they are not sticking to their doctors' advice, their premiums go up. Happily enough, people tend to respond by looking after themselves better rather than pay more. Discovery policyholders went to hospital less and ran up lower bills after joining its health-monitoring scheme.

As a result of such schemes, risk pools will become smaller, says Jon Hocking of Morgan Stanley, a bank. Together with the Boston Consulting Group it recently produced a report that predicts that damage to insured homes will fall by 40-60% if all the latest technology is adopted. The risk pools for home and car insurance might shrink by as much as $109 billion, the report speculates. It also found that insurers using the latest techniques to cherry-pick the best drivers would receive just a ninth of the claims of the most hidebound firms.

Demand for Progressive's prying car insurance grew by 28% last year alone. It now accounts for over $2 billion in premiums. This is part of a wider growth in such monitoring schemes, albeit from a low base (see chart).

A natural consequence of more precise individual underwriting and pricing is that some risks may stand revealed as being so high that they become

uninsurable. In some instances, this seems right: the world's worst drivers may need to be discouraged from taking to the road. In other cases, however, such outcomes would raise hard questions: if people looking for medical insurance have a genetic predisposition to a deadly disease, there is less they can do about it.

Likewise, those who do not want to let insurers look into their private lives risk being penalised. Honeywell, an American multinational, was recently sued, unsuccessfully, by America's Equal Employment Opportunity Commission (EEOC), for asking employees to provide biometric data in exchange for a discount on health policies. The EEOC claimed the discount was so big that it was tantamount to coercion.

Insurers are nonetheless pressing ahead, in part for fear that if they do not embrace the new technologies, others will. A survey by Gartner, a consultancy, showed that nearly half of British consumers would be happy to buy insurance from data-rich companies like Amazon or Google; less than 20% ruled the idea out flatly. Such firms, observers note, have intimate knowledge of their customers and have earned their trust, leaving them much better placed to play the role of Big Mother. Insurers, in contrast, are in touch with most of their customers once a year. "I'm far more concerned about the Silicon giants than about the AXAs and Generalis," admits one director at a big European insurer.

Google has started to dip its toe in the water. In 2011 it bought a website called BeatThatQuote.com, which allows users to compare insurance quotes, among other things. This month it launched a comparison site for car insurance in California and has licences for many more states.

In response, insurers are busy trying to make themselves more like tech firms. Aviva last year hired a Progressive executive, Adam Kornick, as its first "global insight chief". He will help set up a "digital garage" in a trendy

part of London, where employees can think big thoughts. Allianz, a German insurer, is spending $500m a year to update its digital capacities. Much of this will go on the creation of its own data cloud, supported by five data centres around the world, so that it does not have to entrust its data to anyone else.

Partnerships with non-insurers are another way for conventional insurers to smarten up their act. State Farm, one of America's biggest insurers, has teamed up with ADT, a home-security company which allows people to monitor their homes from a distance. FitBit, which makes watch-like fitness trackers, now works with a number of insurers and employers who want to keep tabs on their policyholders or employees. Andrew Rosenthal of JawBone, a competitor, says American health insurers are getting in touch because they "all want to know how to build relations with their customers".

If any group ought to be worried by these changes to insurance, it is not the customers. Underwriters claim theirs is a unique skill that cannot be easily copied. But any decent health monitor would be flashing frantic warnings by this stage. ■

保险

风险与回报

数据和科技开始颠覆保险业

在美国前进保险公司（Progressive）投保的车主们获得这样的选择：他们可以提供几条个人信息，拿到一份根据同类型人群的行为模式评估得出的报价；也可以在车里安装一个小设备，这个设备能监控他们的驾驶情况，相应调整保费。那些不急踩刹车或者夜晚不上路的车主可以享受基本保费最高30%的折扣。针对开车较少的车主，位于旧金山的保险公司Metromile可按行驶里程收取保费。

南非医疗保险公司Discovery的业务已经扩展到欧洲和亚洲，其300万投保人也选择了类似的保险计划。只要他们能证明会照顾自己，比如佩戴跟踪健康状况的设备或者去健身房，就能获得折扣。纽约的医疗保险公司Oscar给所有投保人一个健康追踪器，只要他们达到某个设定目标（比如在一天内步行了一万步），就可以得到一美元的返款。

一般情况下，保险公司通过一些粗略的指标来评估风险，比如年龄、性别和婚姻状态。但举例来说，以为所有单身的年轻男司机开车都鲁莽，而已婚的中年女司机都小心谨慎，这样的假定常常并不准确。这同时隐含了不公平的交叉补贴：谨慎负责的年轻男司机为爱飚车的妈妈们买单。

现代科技让保险公司能够更精确地评估个人风险。监控设备以及社交媒体、信用卡记录等多种数字记录都可以提供海量数据。英国保险公司英杰华集团（Aviva）在美国进行的一个试验项目发现，在评估目标客户潜在的健康风险时，对诸如在线行为及消费习惯等“另类”数据的分析，与抽血、尿检等医学检测同样有效。这家公司的美国业务部门后来被出售。

与此类似，斯坦福大学的米哈尔•科辛斯基（Michal Kosinski）与其剑桥大学的同事最近发现，在预测人们是否抽烟或吸毒时，用电脑分析Facebook上“点赞”的行为，要比人类分析员的分析得出的结果更准确。喜

欢看电影《卧底肥妈》（Big Momma）的人更可能吸毒。在这部系列喜剧里，一个侦探把自己装扮成一个肥胖的坏脾气祖母。喜欢扭扭薯条是高智商的一个强烈迹象；喜欢本田车的不太可能抽烟。类似这样的窥探只是个开头。保险公司郑重其事地展望将来，说有朝一日客户家里的感应器会在水管破裂前向水管工发出警告，隐形眼镜里的葡萄糖量表会记录人们饮食健康的程度。

所有这些都挑战了保险业的基本逻辑，即因为无法预知何人会在何时遭遇何种风险，人们应当汇聚风险。如今，挑选低风险客户，甄别并放弃那些会带来保险责任的客户，比以前容易多了。在这一过程中，保险公司的角色可能发生转变，从疏离的、负责开支票的叔叔变成了无处不在、时时干预的“直升机”家长。最灵活的公司能得到巨大回报：保险业的资金规模超过30万亿，几乎追平36万亿的养老基金；去年，该行业整体盈利高达3380亿美元。

数据的挖掘和监控不仅能让保险公司更准确地为保单定价，也让它们能够调整客户的行为。为保险商分析数据的Guidewire公司的布赖恩·万络尼（Brian Vannoni）说：“我把我们定位成‘监护妈妈’。”这家公司去年帮助预测了澳大利亚一场飓风的路径，让一家房屋保险公司能够准确地锁定需要增强住房耐候性的客户范围。保险分析师金伯利·哈里斯-费兰特（Kimberly Harris-Ferrante）提到了一家客户，其数据库把具有安全隐患的司机筛选出来，而后保险代理人上门拜访，劝说他们改掉不良习惯。美国医疗保险公司Kaiser Permanente针对风险最大的投保人采取了类似的做法。

前进保险公司告诉使用跟踪设备的客户他们容易在哪里危险驾驶、有什么不良习惯（比如急转弯过度）。收到这类建议的客户发生的车祸事故更少。AllLife提供HIV和糖尿病等可控疾病保险，客户每月可以享受免费检查。如果结果表明他们没有遵循医生的建议，保费就会上升。令人高兴的是，相比掏更多的钱，人们还是倾向于更好地照顾自己。在Discovery投保的客户在参加了该公司的健康监督计划后，更少去医院，积欠的医疗账单也减少了。

摩根士丹利的乔恩·霍金（Jon Hocking）认为，这些计划导致风险汇聚减少。该银行与波士顿咨询公司合作，于近期发布了一份预测报告，认为如果运用所有最新科技，偿付给投保家庭的损害赔偿金将下降40%到60%。报告还推测，房屋和汽车保险的风险池可能会缩水1090亿美元之多。报告还发现，运用最新科技挑选好司机的保险公司接受的索赔数量仅为因循守旧的公司的九分之一。

仅去年一年，要求前进保险公司配备监视装置的车险量增长了28%。目前的保费达20多亿美元。这只是这类监测保险计划更大范围增长的一部分，尽管基数不高（见图表）。

更为精确的个性化承保及定价带来了一个必然结果，即揭示出某些人的风险太大以致不能为其提供保险。在某些情况下，这似乎合乎情理：世界上最糟糕的司机也许就不该开车上路。但在另外一些情况下，这会带来颇费思量的问题：如果寻求医疗保险的人有基因缺陷，易患致命疾病，那么他们会更加无能为力。

同样地，那些不愿意让保险公司窥探个人生活的人有可能吃亏。美国跨国公司Honeywell最近遭到美国平等就业机会委员会（Equal Employment Opportunity Commission，EEOC）控告，因为该公司要求员工提供生物特征数据以获得健康保险的折扣。EEOC认为折扣的力度太大，事实上等同于强求。但控告败诉。

然而，保险公司依然坚定向前，一方面他们担心如果自己不采用新科技，其他公司会。高德纳咨询公司（Gartner）调查发现，近一半英国消费者乐意从数据丰富的公司购买保险，比如亚马逊和谷歌；不到20%的消费者排除了这一选项。有观察家指出，此类公司对自己的客户非常了解，并且已经赢得了客户的信任，这让它们能够更好地扮演“监护妈妈”的角色。形成鲜明对比的是，保险公司和绝大多数客户一年只接触一次。一家大型欧洲保险公司的总裁承认：“比起保险公司安盛（AXA）和Generali，硅谷的巨头让我担心得多”。

谷歌已经开始试水。2011年，谷歌收购了beatthatquote.com，该网站让用户可以比较保险报价，也提供其他功能。本月它在加州的车险比价网站上线，而且它在其他很多州也有执照。

相应的，保险公司正努力让自己变得更像科技公司。英杰华去年聘请了前进保险公司前高管亚当·考尼克（Adam Kornick）担任其第一位“全球洞察总监”。他将帮助公司在伦敦的一个时尚区域设立“数字车库”，员工们可以在那儿思考大问题。德国保险公司安联（Allianz）每年花费五亿美元升级数字能力，其中不少将用于打造自己的数据云，全球有五个数据中心给予支持，因此它无需将数据委托他人。

与非保险商合作也是传统保险公司行事更漂亮的另一个途径。美国另一家大型保险公司State Farm已与ADT联手，ATD是一家家庭安保公司，让人们在外也可以监控住所。生产手表类健身追踪设备的公司Fitbit目前正在和几家想要密切关注其投保人或雇员的保险公司及雇主合作。其竞争对手JawBone公司的安德鲁·罗森塔尔（Andrew Rosenthal）称，美国的医疗保险公司正在和他接洽，因为它们“都想知道怎样与客户建立关系”。

如果有人对保险业的这些变化感到忧虑，那一定不是客户。保险公司宣称自己的专业技能独一无二，无法轻易复制。但到了这个阶段，任何像样的健康监测仪都会疯狂地闪烁示警。■

Schumpeter

Shredding the rules

A striking number of innovative companies have business models that flout the law

PIONEERING entrepreneurs have often had an uneasy relationship with the law. America's ruthless 19th-century "robber barons" believed it was easier to go ahead and do something, and seek forgiveness later, than to ask permission first. (It helps if you take the precaution of buying up the politicians who dispense the forgiveness.) The first carmakers had to battle against rules of the road that had been designed for the horse and cart. Britain's "pirate" radio stations in the 1960s had to retreat to international waters to bring pop music to the masses.

The tension between innovators and regulators has been particularly intense of late. Uber and Lyft have had complaints that their car-hailing services break all sorts of taxi regulations; people renting out rooms on Airbnb have been accused of running unlicensed hotels; Tesla, a maker of electric cars, has suffered legal setbacks in its attempts to sell directly to motorists rather than through independent dealers; and in its early days Prosper Marketplace, a peer-to-peer lending platform, suffered a "cease and desist" order from the Securities and Exchange Commission. It sometimes seems as if the best way to identify a hot new company is to look at the legal trouble it is in.

There are two big reasons for this growing friction. The first is that many innovative companies are using digital technology to attack heavily regulated bits of the service economy that are ripe for a shake-up. Often they do so by creating markets for surplus labour or resources, using websites and smartphone apps: Uber and Lyft let people turn their cars into taxis; Airbnb lets them rent out their spare rooms; Prosper lets them lend out their spare cash. Conventional taxi firms, hoteliers and banks argue,

not unreasonably, that if they have to obey all sorts of regulations, so should their upstart competitors.

The second is the power of network effects: there are huge incentives to get to the market early and grow as quickly as possible, even if it means risking legal challenges. Benjamin Edelman of Harvard Business School argues that YouTube owes its success in part to this strategy. When it launched in 2005, it was one of dozens of video sites competing for both content and viewers. Some, such as Google Video, diligently screened each video for copyright infringement. YouTube was more risk-taking, waiting for copyright owners to complain before taking down videos. The strategy worked: Google bought it for $1.65 billion in stock in 2006; and YouTube, which has just celebrated its tenth anniversary, is now huge, whereas many early rivals have faded away.

Advocates of the strategy calculate that, by providing a better service than incumbents, and by portraying their critics as defenders of vested interests, they can mobilise public opinion and get the rules changed, or interpreted, in their favour. They can also rely on politicians' desire to appear forward-thinking. Last year Eric Pickles, a British government minister, announced the scrapping of restrictions on short-term lettings in response to the rise of Airbnb and similar services. "The internet is changing the way we work and live, and the law needs to catch up," he said. Innovative companies that put growth before legal niceties have money to spend on PR and lobbying. Airbnb has sponsored the New York marathon; Uber has hired David Plouffe, formerly one of Barack Obama's leading advisers, as head of policy.

But the strategy can be risky. Napster, an early music-sharing site, was crushed by lawsuits, even though its efforts paved the way for Apple's legal downloading service, iTunes. It is particularly perilous in financial services, where regulators will crack down at the merest whiff of impropriety. Prosper was once America's biggest peer-to-peer lender, and

Lending Club a distant second. Prosper dashed for growth, initially ignoring the SEC's warnings, whereas Lending Club shut down its operations for months while its founder figured out a way to comply. That helped Lending Club, which is now a listed firm, to overtake Prosper, whose fortunes revived only when its founder was ousted.

There is also the risk that those who do business with the rule-flouting companies may suddenly decide that it suits them to uphold the law after all. In California lawsuits have been filed by some Uber and Lyft drivers, arguing that they should be classified not as mere contractors but as employees—and thus be entitled to have their petrol and maintenance costs reimbursed—because the companies impose all sorts of petty rules on them, as if they were indeed employees: how clean their cars must be, what they can say to passengers, and so on.

On the straight and narrow

Such legal perils mean that companies need to be capable of pivoting rapidly to a new strategy if they cannot get the law changed in their favour. YouTube did so: although it got its start in life through people posting copyright-infringing clips, it now makes its living by sharing advertising revenue with people who post clips they have created themselves. There may be a lot of such pivoting ahead as disrupters are forced to explain themselves in court. The judge presiding over the Lyft lawsuit has noted that, in being asked to decide whether its drivers are employees or contractors, "the jury in this case will be handed a square peg and asked to choose between two round holes."

Uber and Lyft are probably now well-enough established to be able to compete on the basis of convenience and quality even if they are forced to treat their drivers as employees. MyClean, an app that provides house-cleaners on demand in New York, has replaced its contract workers with employees, having concluded that it can provide a better service to its

customers with a better-trained and more stable workforce. But for more fragile firms, it would be better still if legislators and regulators responded to the emergence of so many innovative, law-testing businesses by revving themselves up to internet speed and adapting their rule books for the digital age.

熊彼特

改写规则

商业模式与法律相抵牾的创新公司多得惊人

创业企业家和法律的关系往往不太融洽。美国19世纪无情的“强盗大亨”们认为，大胆做成某件事后寻求宽恕，比事先获得许可更为容易。（如果采取预防措施，收买那些负责宽恕的政客，也会有帮助。）第一家汽车制造商必须与那些专为马和马车设计的道路规则作斗争。为了给大众带来流行音乐，上世纪60年代英国的“海盗”电台不得不躲到公海上播放。

近来，创新者和监管者的关系尤为紧张。优步（Uber）和Lyft受到投诉，说它们的召车服务违反了各类出租车法规；在Airbnb上出租房间的人被控无照经营酒店；电动汽车制造商特斯拉（Tesla）试图不通过独立经销商而是直接向车主销售，却输了官司；P2P借贷平台Prosper Marketplace在创业初期收到了美国证券交易委员会的“停业关门”命令。有时候，要识别一个新公司是否当红，最好的方法似乎就是看它陷入什么样的法律纠纷。

有两大原因造成了这种矛盾的日益加剧。第一，许多创新公司都采用数字技术来进攻那些受到严格监管、重组时机已经成熟的服务领域。它们惯常的做法是利用网站和智能手机应用来为剩余劳动力或资源创造市场：优步和Lyft让人们变私家车为出租车；Airbnb让人们出租空房；Prosper则让人们出借闲钱。传统出租车公司、酒店和银行的辩驳也不无道理，如果它们必须遵守各项规章制度，那么它们新晋的竞争对手也应该那么做。

第二个原因是网络效应的力量：公司受到巨大的激励，要及早进入市场并尽快成长，即使这意味着要冒法律质疑的风险。哈佛商学院的本杰明·爱德曼（Benjamin Edelman）认为，YouTube的成功要部分归功于这一策略。2005年推出时，它只是争夺内容和观众的十几个视频网站之一。谷歌视频等一些网站认真地筛选每一个视频以防侵犯版权。YouTube则更愿意冒险，等到版权所有者投诉才撤下视频。这个策略奏效了：谷歌于2006年以市价16.5亿美元的股票收购了YouTube；刚刚庆祝完十周年纪念的

YouTube现在规模庞大，而它许多早年的竞争对手都已湮没无闻。

倡导这一策略的公司认为，通过提供比既有商业更好的服务，同时把批评者描绘成既得利益的维护者，它们能够调动舆论，改变或重新解释规则，使之对自己有利。政治家总是渴望能显得有远见卓识，这也可以被它们引为助力。去年，英国政府部长白高志（Eric Pickles）宣布取消对房间短期出租的限制，这一政策的出台就是因应Airbnb和类似服务的崛起。他说："互联网正在改变我们的工作和生活方式，法律需要迎头赶上。"那些认为成长重于法律细节的创新公司把钱花在公关和游说上。Airbnb赞助了纽约马拉松；优步聘请了大卫·普鲁夫（David Plouffe）担任政策主管，他之前曾是奥巴马的主要顾问。

但这种策略可能会有风险。早期的音乐分享网站Napster就被诉讼拖垮，即使它的努力为苹果的合法下载服务iTunes铺平了道路。在金融服务领域，这种策略尤为危险，监管部门会打击哪怕是一丁点的不当行为。Prosper曾经是美国最大的P2P贷款公司，远远抛离位居第二的Lending Club。Prosper最初无视美国证券交易委员会的警告，一味追求增长，而Lending Club却关门停业了好几个月，期间创始人想出了办法来满足合规要求。这一做法帮助Lending Club超越了Prosper。Lending Club现在已经上市，而Prosper直到创始人被逐出公司才再度时来运转。

还有别的风险：那些与违反规则的公司做生意的人可能会突然决定，还是维护法律对自己有利。在加州，优步和Lyft的一些司机提起诉讼，认为他们不应被归为单纯的合同工，而应被归为正式员工，因此有权报销加油和维修费用。他们的理由是，公司把各种琐碎的规章强加给他们，似乎他们真的是公司的员工。这些规章包括汽车必须达到何种清洁程度、他们能和乘客说什么，不一而足。

循规蹈矩

这种法律风险意味着，一旦不能使法律改变得对自己有利，企业需要能够迅速重新定位到新的策略。YouTube就是这样做的：尽管依赖人们发布侵权的短片起家，它现在的赚钱方式却是与短片的原创作者分享广告收入。

由于颠覆者必须在法庭上自我辩护，今后可能会有很多这种重新定位。主持Lyft诉讼的法官指出，在决定司机是正式员工还是合同工时，“本案陪审团的处境就像手持一枚方钉，却要在两个圆孔之间做出选择”。

现在，优步和Lyft或许已经足够成熟，即使被迫把司机当成员工对待，它们也能在便利和质量方面与对手竞争。在纽约提供按需清洁工的应用MyClean已经用员工取代了合同工，原因是它得出结论，一支受过更好培训、更稳定的员工队伍能为客户提供更好的服务。但对于较为脆弱的公司而言，更好的办法还是寄望立法者和监管者能够提至互联网的速度，让规章制度适应数字时代，来应对众多新兴创新企业对法律的考验。 ■

Smartphones

Planet of the phones

The smartphone is ubiquitous, addictive and transformative

THE dawn of the planet of the smartphones came in January 2007, when Steve Jobs, Apple's chief executive, in front of a rapt audience of Apple acolytes, brandished a slab of plastic, metal and silicon not much bigger than a Kit Kat. "This will change everything," he promised. For once there was no hyperbole. Just eight years later Apple's iPhone exemplifies the early 21st century's defining technology.

Smartphones matter partly because of their ubiquity. They have become the fastest-selling gadgets in history, outstripping the growth of the simple mobile phones that preceded them. They outsell personal computers four to one. Today about half the adult population owns a smartphone; by 2020, 80% will. Smartphones have also penetrated every aspect of daily life. The average American is buried in one for over two hours every day. Asked which media they would miss most, British teenagers pick mobile devices over TV sets, PCs and games consoles. Nearly 80% of smartphone-owners check messages, news or other services within 15 minutes of getting up. About 10% admit to having used the gadget during sex.

The bedroom is just the beginning. Smartphones are more than a convenient route online, rather as cars are more than engines on wheels and clocks are not merely a means to count the hours. Much as the car and the clock did in their time, so today the smartphone is poised to enrich lives, reshape entire industries and transform societies—and in ways that Snapchatting teenagers cannot begin to imagine.

Phono sapiens

The transformative power of smartphones comes from their size and

connectivity. Size makes them the first truly personal computers. The phone takes the processing power of yesterday's supercomputers—even the most basic model has access to more number-crunching capacity than NASA had when it put men on the Moon in 1969—and applies it to ordinary human interactions. Because transmitting data is cheap this power is available on the move. Since 2005 the cost of delivering one megabyte wirelessly has dropped from $8 to a few cents. It is still falling. The boring old PC sitting on your desk does not know much about you. But phones travel around with you—they know where you are, what websites you visit, whom you talk to, even how healthy you are.

The combination of size and connectivity means that this knowledge can be shared and aggregated, bridging the realms of bits and atoms in ways that are both professional and personal. Uber connects available drivers to nearby fares at cheaper prices; Tinder puts people in touch with potential dates. In future, your phone might recommend a career change or book a doctor's appointment to treat your heart murmur before you know anything is amiss.

As with all technologies, this future conjures up a host of worries. Some, such as "text neck" (hunching over a smartphone stresses the spine) are surely transient. Others, such as dependency—smartphone users exhibit "nomophobia" when they happen to find themselves empty-handed—are a measure of utility as much as addiction. After all, people also hate to be without their wheels or their watch.

The greater fear is over privacy. The smartphone turns the person next to you into a potential publisher of your most private or embarrassing moments. Many app vendors, who know a great deal about you, sell data without proper disclosure; mobile-privacy policies routinely rival "Hamlet" for length. And if leaked documents are correct, GCHQ, Britain's signals-intelligence agency, has managed to hack a big vendor of SIM cards in order

to be able to listen in to people's calls. If spooks in democracies are doing this sort of thing, you can be sure that those in authoritarian regimes will, too. Smartphones will give dictators unprecedented scope to spy on and corral their unwilling subjects.

The naked app

Yet three benefits weigh against these threats to privacy. For a start, the autocrats will not have it all their own way. Smartphones are the vehicle for bringing billions more people online. The cheapest of them now sell for less than $40, and prices are likely to fall even further. The same phones that allow governments to spy on their citizens also record the brutality of officials and spread information and dissenting opinions. They feed the demand for autonomy and help protest movements to coalesce. A device that hands so much power to the individual has the potential to challenge authoritarianism.

The second benefit is all those personal data which companies are so keen on. Conventional social sciences have been hampered by the limited data sets they could collect. Smartphones are digital census-takers, creating a more detailed view of society than has ever existed before and doing so in real time. Governed by suitable regulations, anonymised personal data can be used, among many other things, to optimise traffic flows, prevent crime and fight epidemics.

The third windfall is economic. Some studies find that in developing countries every ten extra mobile phones per 100 people increase the rate of growth of GDP-per-person by more than one percentage point—by, say, drawing people into the banking system. Smartphones will remake entire industries, at unheard-of speed. Uber is a household name, operating in 55 countries, but has yet to celebrate its fifth birthday. WhatsApp was founded in 2009, and already handles 10 billion more messages a day than the SMS global text-messaging system. The phone is a platform, so startups can

cheaply create an app to test an idea—and then rapidly go global if people like it. That is why it will unleash creativity on a planetary scale.

By their nature, seminal technologies ask hard questions of society, especially as people adapt to them. Smartphones are no different. If citizens aren't protected from prying eyes, some will suffer and others turn their backs. Societies will have to develop new norms and companies learn how to balance privacy and profit. Governments will have to define what is acceptable. But in eight short years smartphones have changed the world—and they have hardly begun. ■

智能手机

手机的星球

智能手机无处不在，叫人上瘾，变革世界

智能手机星球的黎明于2007年1月到来：苹果公司执行总监史蒂夫·乔布斯在一批全神贯注的苹果拥趸面前挥舞着一块比奇巧巧克力（Kit Kat）大不了多少的板状物。它由塑料、金属和硅制成。“这将改变一切。”他承诺道。只是这次并无夸大其辞。仅仅八年后，苹果的iPhone成了21世纪初决定性技术的代表。

智能手机的重要性一定程度上源于其普遍性。它们已经成为史上卖得最快的小设备，超越了在此之前普通手机的增长速度。其销量是个人电脑的4倍。如今，约一半成年人口拥有智能手机，到2020年将增至80%。智能手机也已渗透到日常生活的方方面面。普通美国人每天有两个多小时埋首于手机。英国青少年在被问及最让他们牵肠挂肚的媒体时，更多人选择移动设备而非电视机、个人电脑和游戏机。近八成智能手机用户在起床15分钟内查看短信、新闻或其他服务。约10%承认曾在房事中途使用手机。

卧室只是开端。智能手机不止是一种便捷的上网方式，就像汽车不止是车轮上的引擎，而钟表不仅仅是计时工具一样。和汽车、钟表在它们的时代所做的差不多，今天的智能手机也势将丰富大众生活、重塑整体产业、变革人类社会，其方式令沉溺于Snapchat的青少年无法想象。

> *智机人类*

智能手机的变革力量源自其尺寸小和连接性。尺寸小让它们成为首批真正的个人电脑。这种手机拥有昨天的超级计算机所具有的处理能力，即便最基本的型号也拥有比美国国家航空航天局（NASA）在1969年载人登月时更多的计算能力。智能手机把这种能力应用于人们的寻常互动上。数据传输很廉价，因此这种能力可以在移动中获得。自2005年以来，无线传输1兆字节的成本已经从8美元降至几美分，而且还在下降。沉闷地躺在你书桌上的老旧电脑对你知之不多。但手机跟着你到处走，知道你在哪儿、浏

览什么网页、和谁聊天，甚至是否健康。

小型和联网的结合使得这种对你的了解能被分享和积累，在职业和个人层面把虚拟和物理世界衔接起来。优步（Uber）用更低廉的价格把可接单的驾驶员和附近的乘客连接起来；Tinder让人们互相接触，创造约会机会。未来，你的手机可能会建议你改换职业，或者在你意识到身体出状况之前就帮你预约医生诊治你的心脏杂音。

和所有技术一样，这种未来引发了人们的诸多担忧。一些担忧如“简讯颈”（低头看手机给脊柱造成压力）无疑是暂时的。另一些，比如对手机的依赖——智能手机用户在发现手机离手时出现“无手机焦虑症”——尽管是一种瘾，但也同样多地体现了手机的效用。毕竟，人们也讨厌手边没车或忘带手表。

更大的忧惧关乎隐私。手机把你身边的人变成了潜在隐私发布者，曝光你最私密或尴尬的时刻。许多应用供应商拥有关于你的大量数据，不予告知就将它们出售；移动设备隐私政策长度通常堪比《哈姆雷特》。而如果遭泄露的文件所言不虚，那么英国信号情报部门政府通信总部（GCHQ）已经设法入侵了一家大型SIM卡供应商以窃听民众电话。如果民主国家的间谍们正在干这勾当，那么你可以确信威权国家的那些人也会这么干。智能手机会给予独裁者们前所未有的能力来监视和控制他们心有不甘的子民。

“赤裸裸”的应用

不过，三大好处可以抗衡这些对隐私的威胁。首先，独裁统治者们不能为所欲为。智能手机会让上网的人口再增加几十亿。最便宜的智能机如今售价不到40美元，而且价格还会下跌。让政府得以监视公民的手机同样也记录下了官员的暴行，并传播信息和异见。它们满足自治的要求，有助反抗运动联合。给予个人这么多力量的设备有可能挑战威权主义。

第二个好处是企业孜孜以求的所有个人数据。传统的社会科学受到可收集数据集有限的束缚。手机是数字化的普查员，创造出对社会前所未有的更详尽观察，并且实时完成。如果有恰当的监管来治理，那么匿名个人数据

可被用于优化交通流量、防阻犯罪、抗击流行病等许多事。

第三个意外收获是经济效益。一些研究发现，在发展中国家，以100个人为单位，每增加10台手机就会提升人均GDP增速超过一个百分点。手机普及益处良多，比如可以把人们拉进银行系统。智能手机将以史无前例的速度重塑整体产业。优步已经是个家喻户晓的名字，在55个国家运营，但它创立还不到五年。WhatsApp创办于2009年，已经比全球手机短信系统每天多处理100亿条短信。手机是一个平台，让创业公司能够低成本地创造出应用来测试某个创意，如果得到人们喜欢，它将迅速全球化。这是为何手机会在全球范围内解放创造力。

开创型技术的本质决定了它们会向社会提出难题，尤当人们适应它们时。智能手机也不例外。如果民众不被保护而躲过窥探之眼，一些人会遭受损害而另一些人会对此视而不见。社会将必须发展出新规范，企业要懂得如何平衡隐私和利润。政府须界定什么是可接受的行为。然而，在短短八年间，智能手机已经改变了世界，而这种改变才刚刚开始。■

Blockchain

The next big thing

Or is it?

ASKED TO NAME an event that has reshaped finance in recent years, bankers will point to the collapse of Lehman Brothers on September 15th 2008, the nadir of the financial crisis. Fintech types are more likely to mention something that happened six weeks later. On October 31st 2008 Satoshi Nakamoto, a pseudonymous cryptography buff whose real identity remains a mystery, unveiled a project he dubbed bitcoin, "a new electronic cash system that's fully peer-to-peer, with no trusted third party". It described what appeared to be a robust framework for a currency that could run without the backing of any government. Enthusiasts proclaimed that finance was about to enter the era of crypto-currencies. Since the need for a trusted third party has traditionally been a large part of the banks' *raison d'être*, this could mean that in future they will no longer be required—potentially a much more radical change than the other inroads fintech has made on their business.

Six-and-a-half years on, the bankers may feel they can relax a little. Interest in bitcoin has waned. After spiking at $1,100 in November 2013, its value has dropped to $225 (see chart). A few online retailers and trendy coffee bars accept it, but its yo-yoing value is one reason why its use in the legitimate economy is barely measurable (though it remains a favourite with drug-dealers). The general public has not forsaken cash or credit cards.

Interest in the underlying mechanics of the currency, however, has continued to grow. The technological breakthroughs that made bitcoin possible, using cryptography to organise a complex network, fascinate leading figures in Silicon Valley. Many of them believe parts of Mr Nakamoto's idea can be recycled for other uses. The "blockchain"

technology that underpins bitcoin, a sort of peer-to-peer system of running a currency, is presented as a piece of innovation on a par with the introduction of limited liability for corporations, or private property rights, or the internet itself.

In essence, the blockchain is a giant ledger that keeps track of who owns how much bitcoin. The coins themselves are not physical objects, nor even digital files, but entries in the blockchain ledger: owning bitcoin is merely having a claim on a piece of information sitting on the blockchain.

The same could be said of how a bank keeps track of how much money is kept in each of its accounts. But there the similarities end. Unlike a bank's ledger, which is centralised and private, the blockchain is public and distributed widely. Anyone can download a copy of it. Identities are protected by clever cryptography; beyond that the system is entirely transparent.

As well as keeping track of who owns bitcoin today, the blockchain is a record of who has owned every bitcoin since its inception. Units of currency are transferred from one party to another as part of a new "block" of transactions added to the existing chain—hence the name. New blocks are tacked on to the blockchain every ten minutes or so, extending it by a few hundred lines (it is already over 8,000 times the length of the Bible).

The proposed transactions contained in new blocks do not have to be approved by some central arbiter, as in conventional banking. Rather, a large number of computers dedicate themselves to keeping the system running. Rewards are high enough for vast data centres across the world to want to participate. Known as "miners", they authenticate transactions by reaching a consensus on what the latest version of the blockchain should look like. In exchange, they are given newly minted bitcoin.

Chaining blocks together sequentially prevents anyone spending the same bitcoin twice, a bane of previous digital currencies. And the system is beyond tampering by any one party. Unlike a bank ledger, which can be altered by its owner (or a government), the blockchain cannot be changed without simultaneously overwriting all of the thousands of copies used by the miners at any one time. The definitive version of the blockchain is whatever a majority of the participating computers accepts. None of them is connected to any centralised organisation. There is no bitcoin central bank to sway them. To overwhelm the system, someone would need to control 51% of the computing capacity of the 10,000 or so "miners"—not impossible but unlikely.

This system of consensus by distributed co-operation sounds complicated, but it allows something of value to be transferred from one person to another without a middleman to verify the transaction. Fans think this is a way of changing the centralised, institution-dominated shape of modern finance. It is genuinely new. The question is whether it is useful.

Proponents envisage an "internet of value" that can make money flow as freely as data are flowing already. Ridding the world of credit-card fees and foreign-exchange charges would be merely the first step of a much broader revolution. In the same way that e-mail did much more than replace letters sent in stamped envelopes, the internet of value would be a platform for myriad as-yet-unthought-of innovations. Just as nobody forecast social networks, blogging or Netflix in the 1990s, the absence for now of any tangible applications other than bitcoin for the blockchain merely points to humankind's deficient imagination.

All that is needed, blockchain boosters argue, is a "killer app" to find a use for the breakthrough, in the same way that web browsers made the internet useful. Some still think that a currency is the most promising application, but plenty of engineers are throwing other ideas against the wall to see

what sticks. CoinSpark, based in Tel Aviv, is among those who want to be able to add messages to the bitcoin blockchain. That would be a way of cheaply notarising information: once something is in the blockchain, it cannot be removed (crypto-geeks post their wedding vows there). Lighthouse, developed by Mike Hearn, a former Google engineer, runs a decentralised crowdfunding platform on bitcoin. Neither of these are killer apps, but they may lead to something bigger.

Now for the tweaks

Techies are (just about) united in their enthusiasm for decentralised ledgers, but divided on whether bitcoin's blockchain can work in its current form or whether an improved version is needed. Rival blockchains are nothing new: alternative currencies inspired by bitcoin, dubbed "alt-coins", have proliferated ever since it was launched. Some are quasi-Ponzi schemes where the currency's founder (and so default owner of much of the blockchain) profits when he sells bits of it to newcomers. Others have re-engineered Mr Nakamoto's blockchain to make it more suitable for non-currency uses.

Critics point out that bitcoin in its present form can process just seven transactions per second, whereas a large credit-card company like Visa can comfortably take on tens of thousands. Users may have to wait up to half an hour for a transaction to be processed, and mining guzzles a lot of power.

But enthusiasts say the blockchain is so robust precisely because of the large number of miners involved, and point out that it has survived untold numbers of cyber-attacks. Alas, using hacker-proof bitcoin requires going through intermediaries such as exchanges to convert real-world currency into crypto-cash, and "wallets" to store it. These have proved anything but secure, which arguably defeats the purpose of bitcoin's trust-free world.

New blockchains far removed from currencies are being spawned.

Ethereum, widely seen as the most ambitious crypto-ledger project, wants its blockchain to go beyond transferring value: it should also be able to execute simple tasks such as verifying if a party to a contract has fulfilled its side of the bargain. Its boosters think such a machine could support "smart contracts", where a computer can verify or enforce an agreement. The next step is for robots to go into business for themselves, for example a computer server renting out processing capacity, and using the profits to upgrade itself.

That, for now, is science-fiction. In the short term, distributed-ledger technology is far more likely to be used by incumbents in financial services. The New York Stock Exchange in January bought a stake in Coinbase, a bitcoin wallet, in case stock exchanges decided to go for decentralisation. Banks think that some of the plumbing for settling financial contracts could be decentralised, too, perhaps with their own private blockchains. Payment networks are also keeping an eye on blockchains, attracted by their tiny transactions costs. If a network like Visa were to be built today, it would almost certainly be decentralised, says Jim McCarthy, its head of innovation.

One well-funded new blockchain is Ripple Labs, which wants to enable "secure, instant and nearly free global financial transactions". It is working with financial incumbents to draw up a payment protocol based on decentralised ledgers. Its aim is not to supplant the current financial system but to make it more efficient. "We are builders, not disrupters," says its boss, Chris Larsen, a veteran of the fintech scene who founded Prosper, a lending platform. The problem Ripple is trying to solve is not the omnipotence of the banks but the antiquated way that money is transferred among them. At present two banks in different countries have to use one of a handful of large "correspondent banks" to transfer money between them. With Ripple, they should be able to interact directly.

Seasoned crypto-anarchists are not excited by the idea of reforming the global banks' back offices. Some complain that Ripple is taking an idea with the potential for revolutionary innovation and using it for something far more humdrum. Yet if Ripple succeeds in bringing a critical mass of the banks onto its platform, it will have rendered a service similar to the people who turned a raft of disparate academic computer networks into a single internet in the 1990s. That is not to be scoffed at.

All large banks already have teams poring over blockchain. Many of their back-office settlement platforms seem destined for a move to decentralised ledgers. One barrier is the difficulty of finding staff who can get them up to speed on the technology. "The sort of people who understand blockchains don't usually want to put on a suit and go work for a bank," says Gideon Greenspan of CoinSpark. Because they lack central administrators by definition, blockchain-based systems are unforgiving: there is no helpdesk to reset a lost password, say. Bank bosses may be tempted to stick with the slower, pricier systems they know.

Are blockchains here to stay, in one guise or another? "Just because bitcoin didn't succeed as a currency doesn't mean blockchain will succeed as a technology, but the experiment is important to run," says Patrick Collison of Stripe, a payments processor. The possible uses are legion, but the killer app is still missing. ■

区块链

下一件大事

或者不是？

当被问及近年哪个事件重塑了金融业，银行家们会说是2008年9月15日雷曼兄弟的垮台，即那场金融危机最糟的时刻。而金融科技业者更可能提到六周以后发生的事。2008年10月31日，一个自称“中本聪”（Satoshi Nakamoto）但真实身份至今仍是个谜的加密爱好者创建了他称之为比特币的项目：“一个完全是P2P的新电子现金系统，不涉及被信任的第三方”。它描述了一个看似强健的货币框架，这种货币不需要任何政府的支持就能运作。其拥趸宣称金融即将进入加密货币的年代。在很大程度上，需要一个被信任的第三方一直是银行存在的本质原因，因此这可能意味着未来人们将不再需要银行。相比金融科技对银行业务其他方面的介入，这可能是一个远为彻底的改变。

六年半以后，银行家们可能认为自己可以稍稍喘口气了。对比特币的兴趣已经减退。在2013年11月达到1100美元的峰值后，其价值已经跌到225美元（见图表）。一小批网上零售商和时髦的咖啡馆接受这种货币，但其价值忽上忽下，这可能是难以在合法经济中明显看到其运用的原因之一（尽管它一直为毒贩所热衷）。广大民众并没有弃用现金或信用卡。

不过，对于这种货币的内在机制，人们的兴趣持续增长。用加密来组织一个复杂的网络，这种技术突破使得比特币成为可能，让硅谷的领袖们为之着迷。他们中许多人相信中本聪的创意可以被部分复制于其他用途。比特币所基于的“区块链”技术是一种P2P货币运作系统，它被推介为可与企业有限责任制、私有财产权或互联网本身的出现相媲美的一种创新。

从本质上说，区块链是一个巨大的分类账，追踪记录谁拥有多少比特币。这些币本身不是实物，甚至也不是数字文档，而是区块链分类账上的条目。因此，拥有比特币只是拥有区块链上的一条信息。

你可以说银行也是这样追踪每个银行账户中的金额。但是，两者的相似之处到此为止。和银行集中且私有的分类账不同，区块链公开且广泛分布。任何人都可以下载一份拷贝。除了用户身份受聪明的加密保护外，这个系统完全透明。

除追踪目前谁拥有比特币，区块链也记录了自比特币出现以来每个比特币被谁拥有过。随着一个新的交易“区块”被添加到既有的货币单位链上，一定单位的货币从一方转入另一方，这即是“区块链”这个名字的由来。新的区块每10分钟左右被添加到区块链上，令区块链的信息延长几百行（它目前的长度已经是圣经的8000多倍）。

新的区块中包含的交易提议并不像在传统银行业中那样需要某个中央仲裁者批准。相反，一大批计算机致力于维持系统的运行。对于世界各地想要参与其中的巨大数据中心来说，它们获得的回报足够高。被称为“矿工”的这些中心会验证交易，方法是就最新版区块链应该是何模样达成共识。作为交换，它们被给予最新铸造的比特币。

按顺序把区块组成链条能防止任何人两次使用同一个比特币，从而铲除了以前数字货币的祸根。这一系统不会受到任何一方的篡改。不同于能被其所有者（或政府）更改的银行分类账，区块链的变更一定会同时更改在那一刻矿工们使用的所有成千上万份拷贝。区块链的最终版本是被参与其中的大部分计算机认可的版本。而这些计算机无一连接到任何中央化机构。并没有比特币中央银行在支配它们。要压倒性地控制这一系统，将需要某个人控制约一万个“矿工”合共计算能力的51%。这并非不可能，但可能性不大。

这种通过分布式合作达成共识的系统听起来很复杂，但它使得某些有价值的东西可以从一个人转移到另一个人，而无需中介来证实交易。其粉丝认为，这种方式可以改变现代金融中央化、机构主导的形态。它确实全新。问题在于它是否有用。

其支持者构想一种“价值网络”，它能让金钱的流动如同数据的流动般自

由。摆脱信用卡费和汇率的世界，这只会是一场涉及面远为广泛的革命所踏出的第一步。就像电子邮件带来的远不止替代邮寄信件，价值网络会成为一个平台，催生出无数目前还未被想到的创新。正如没有人在上世纪90年代预见社交媒体、博客或Netflix的出现，目前区块链在比特币以外还没有任何切实应用，只说明了人类想象力的不足。

区块链的推动者认为，如今需要的全部东西就是一项能给这种技术突破找到用途的“杀手级应用”，就像浏览器让互联网变得有用那样。一些人仍然认为货币是最有前景的应用，但许多工程师正在测试其他的创意能否成功。总部位于特拉维夫的CoinSpark等企业想在比特币区块链中增加短消息。这会是一种便宜的公证信息的方式：一旦什么内容存在于区块链中，它无法被移除（加密极客们往那里贴了自己的婚礼誓约）。由前谷歌工程师迈克·赫恩（Mike Hearn）研发的Lighthouse运行一个去中央化的比特币众筹平台。它们都不是什么杀手级应用，但可能会导向某些更重大的事物。

现在做些调整

科技迷们对去中央化分类账的热情（几乎）步调一致，但对于比特币的区块链能否以目前的形态运作抑或是需要一个改良版本莫衷一是。已出现的竞争性的区块链都无甚新鲜：由比特币激发的、名为“他币”（alt-coins）的替代性货币自推出以来大量繁殖。一些类似旁氏骗局，其货币的创始人（因此也是区块链的大部分的默认所有者）向新来者出售货币而获利。其他人改造了中本聪的区块链，让它变得更适用于非货币用途。

批评人士指出，以比特币目前的形态每秒只能处理七项交易，而一家大型信用卡公司如Visa卡公司可以毫无困难地处理几万个交易。比特币的用户可能需要为处理交易等上半小时之久，而挖矿还消耗大量电力。

但热衷者说，这种区块链之所以如此稳健，全因为它有大量矿工参与。他们并且指出，它已经扛住了不计其数的网络攻击。唉，可惜使用防黑客的比特币需要经过中介，比如把现实世界的货币兑换成加密货币，并用“钱包”来存储它。这些已被证实一点也不安全，而这可能让比特币交易无需

经过诚信中介的目标告败。

和货币无甚关联的新区块链正在大量涌现。Ethereum被广泛视为是最雄心勃勃的加密分类账项目，它想做的事不止转移价值。它应该也能够执行简单的任务，比如检验合同的一方是否履行了交易职责。其推动者认为，这样一个机制可以支持“智能合同”，让计算机来确认或执行一项协议。下一步是让机器人自己开展业务，比如一台计算机伺服器会出租处理能力，并使用利润来自我升级。

这在目前还只是科幻情节。短期而言，分布式分类账技术被金融服务既有业者使用的可能性要大得多。纽约证券交易所1月入股了比特币钱包Coinbase，以备证券交易决定去中央化。银行认为对金融协议结算的一些探索也可以去中央化，或许可以由它们自己的私有区块链完成。支付网络受到低廉交易成本的吸引，也在持续关注区块链。Visa公司的创新主管吉姆·麦卡锡（Jim McCarthy）说，如果像Visa卡这样的网络在今天创建，那么它几乎一定会是去中央化的。

Ripple Labs是一个资金充裕的新区块链，它想要让“安全、即时、几乎免费的全球金融交易”成为可能。它正和既有金融业者一起草拟一份基于去中央化分类账的支付协议。目标不是要取代目前的金融系统，而是让它变得更高效。“我们是建造者，不是颠覆者。”公司老板克里斯·拉森（Chris Larsen）说。拉森是金融科技领域的老手，曾创办贷款平台Prosper。Ripple试图解决的问题不是银行无所不能，而是货币在银行间流转的方式太过陈旧。目前，位于不同国家的两家银行必须使用一小批大型代理银行中的一家来完成相互转账。有了Ripple，它们应该能够直接互动。

经验老道的加密无政府主义者对于改革全球银行后台服务的主意兴趣缺缺。一些人抱怨，Ripple拿着一个具有革命性潜力的创意，却把它用于某些枯燥得多的东西。但是，假如Ripple能成功地把一大批银行带到它的平台上，那么它所做的就类似于上世纪90年代大量差别迥异的学术计算机网络被转变为单一的互联网。这不该被嘲笑。

所有大银行都已经组建了钻研区块链的团队。它们的很多后台结算平台看来注定要转变成去中央化分类账。一个阻碍是很难找到人员来帮助银行跟上技术进步。“那些懂得区块链的人通常不会想要穿上西装，给一家银行打工。”CoinSpark的吉迪恩·格林斯潘（Gideon Greenspan）说。基于区块链的系统顾名思义就缺少中央管理员，它们因此很无情，比如没有售后服务重设丢失的密码。银行老板们可能会因此继续使用自己熟悉的、更慢更昂贵的系统。

区块链会以这样或那样的伪装保留下来吗？“只因为比特币作为一种货币未能成功，并不意味着区块链作为一种技术就会成功，但运行这样的实验很重要。”支付服务公司Stripe的帕特里克·科利森（Patrick Collison）说。可能的运用不计其数，但杀手级应用仍不见踪影。 ■

International banking

Slings and arrows

Financial technology will make banks more vulnerable and less profitable. But it is unlikely to kill them off, argues Stanley Pignal

FROM THE WAY Silicon Valley talks about banking, you might well conclude that the industry was ripe for oblivion. The T-shirt-wearing whizz-kids and their backers reckon that newcomers will do to JPMorgan Chase, HSBC and the rest what e-mail has done to post offices and Amazon to bookshops. So far bankers have simply failed to notice that their sprawling firms will become tomorrow's low-margin utilities. Finance, all bits and bytes, is at heart a tech problem, the Valley believes, and will be solved by tech companies, not the lumbering banking gerontocrats.

This is not just intemperate youth speaking. Strikingly, many more entrepreneurs and investors now believe that it is possible to take on the banks. In San Francisco, London, New York and elsewhere, venture capital is pouring into financial technology, or "fintech", making it arguably the hottest spot in a bubbly funding environment for startups. Last year firms in this sector attracted $12 billion of investment, up from $4 billion the year before, according to CB Insights, a research firm. A handful of fintech insurgents have already graduated from startups to listed companies, achieving billion-dollar valuations. Plenty of others seem to be heading the same way.

The momentum is such that all of banking's many metiers seem up for grabs. Fancy a loan? Forget your local bank branch and head to Lending Club, a peer-to-peer platform which matches people who need money with those who have some to spare. Want to send cash overseas? Eschew your bank's rip-off foreign-exchange charges in favour of a startup that specialises in international money transfers. And why have a Porsche-

driving wealth manager handling your retirement pot when an algorithm can replicate his advice for a small fraction of the cost? From payments to insurance to business lending, one newcomer or another has its eye on almost everything that financial-services firms offer. AngelList, a website that tracks startups, lists around 4,000 of them in fintech.

This wave of innovation is all the more noteworthy because financial services used to sit above the Silicon Valley fray: an industry so regulated and so politically connected that tiddlers trying to take it on stood little chance. The startup ethos of "move fast and break things", whereby repeated failures are accepted as staging posts to success, seemed incompatible with banking's conservative culture in which a single crash could send the global financial system into convulsions. Regulators, once considered too lax about allowing innovation in finance (synthetic collateralised-debt obligations and other pre-2008 inventions will not soon be forgotten), were expected to deal cautiously with this new burst of financial creativity. Yet so far they have let fintech flourish, and thereby done more good than harm.

All told, financial-services firms in fields that fintech could potentially disrupt generate global revenues estimated at $4.7 trillion a year and profits of $470 billion, according to analysts at Goldman Sachs, a bank. Incumbents once believed that finance was immune from such disruption, but now they are less sure. "Bankers used to think regulation would make financial services less appealing for new entrants. Now the penny is dropping that non-bank rivals can just attack more profitable areas and skim the cream," says Huw van Steenis at Morgan Stanley.

A slide that has been making the rounds in Silicon Valley shows the new competitive landscape for Wells Fargo, a bank based in nearby San Francisco. These days its rivals are not Bank of America or some Chinese newcomer that offers the same wide array of services. Instead, dozens of

startups are each trying to lay claim to a small sliver of the business: saving for college, say, or payroll services for companies.

Few want to take on the central, regulated core of taking deposits. Each may offer a superior or cheaper service in its specialist field. Most of these startups will fail, and even successful ones will be little more than pinpricks for a banking mastodon with trillions in assets. Yet in combination they may amount to something more substantial.

"Silicon Valley is coming," warned Jamie Dimon, JPMorgan Chase's boss, in a recent letter to shareholders. "There are hundreds of startups with a lot of brains and money working on various alternatives to traditional banking." Banks' cost bases—IT systems, smart headquarters, staff, branches and so on—require income from a wide range of services. If even some of those services get "unbundled", in the parlance of fintechers, the economic models that have sustained banks for decades will be under threat. So the incumbents pay lip-service to the newcomers, and some even have in-house teams scouting for innovators to stop them from eating their lunch.

Several factors have made the banks more vulnerable. New technologies such as smartphones and cheap data processing have lowered barriers to entry. However, "technology is necessary but not sufficient" to change attitudes towards finance, says Mike Cagney of SoFi, a peer-to-peer lender based in San Francisco. The financial crisis has left consumers more open to trying alternatives to the banks they had to bail out. Fintech newcomers are tapping into a deep reservoir of consumer mistrust towards incumbents. And as with tech generally, the sector is attracting a lot of bright graduates who would rather not be working on Wall Street or in the City of London.

The coming-of-financial-age of the "millennial" generation, which is both large and perennially glued to its iPhones, certainly plays a part. This

cohort of 18- to 34-year-olds has grown up with the internet and turns to it to find anything from a taxi to world news, turning many established industries upside down. They seem willing to trust web-based newcomers with their financial affairs, too. Few millennials visit bank branches. A third of them do not think they will need a bank account at all before the end of this decade. One survey found that 71% of them would rather go to the dentist than call on their bank. And in so far as they care about financial innovation at all, they expect it to come from tech groups, not today's incumbents.

At the same time the financial crisis has led to a bout of introspection at banks. Some of them have been overwhelmed by successive waves of new regulation requiring immediate management attention. Whatever IT budget they may have is likely to be spent largely on ensuring that ATMs go on spewing cash. Innovation of the sort that will pay off years after the current boss has decamped to his next job is not high on their list of priorities. Newcomers with no legacy systems and no pension deficits to worry about can do things more cheaply.

Don't rest on your laurels

As a rule of thumb, banks make money in three ways, in roughly equal parts. All of these are now under attack. The first is the difference between the rates they charge borrowers and the interest they offer savers, known as the net interest margin. This requires skill in identifying creditworthy customers, which fintech outfits reckon they can do better than banks. "Think about the scenario of a loan officer talking to a prospective client. To software people, that looks like voodoo," said Marc Andreessen, a tech billionaire whose venture-capital fund has made large bets on fintech, at a conference last year. "The idea that you can sit across the table from somebody and get a read on their character is just nonsense." The approach of fintech peer-to-peer lenders is based on using data more adroitly than

banks do. But their methods have yet to pass the test of a serious downturn in the financial sector or the wider economy.

The second way of earning money is by charging for making payments, for example through credit-card fees. Established giants such as Google or Amazon would once have been wary of tarnishing their brands by having anything to do with payments systems, but now all kinds of contestants are getting interested. Apple Pay, launched in America last year, allows people to pay in shops with a mere tap of a phone or watch, gatecrashing a payments ecosystem that used to be the prerogative of the banks. PayPal and others are offering buyers the option of settling in instalments, thus extending credit to customers who might once have looked to their banks for funds.

The third source of profits for banks is a cornucopia of fees, from charging for overdrafts to brokering investments. These look unlikely to survive intact. Human investment professionals are now being challenged by "robo-advisers" doing much the same job for a tiny fraction of the price. Outrageously unfavourable exchange rates imposed by banks when sending money abroad, once unavoidable, can now be circumvented via dozens of online money-changers.

No matter which service fintech newcomers "unbundle" from incumbents, the banks' business model will suffer. For the moment, fintech's leading companies are still doing mere billions in trade where banks handle trillions. To fintech's detractors, that shows the newcomers have not got very far, despite all the hullabaloo. To its fans, it demonstrates that many years of exponential growth lie ahead.

This report will concentrate on new ventures with a consumer or commercial angle, leaving aside the well-established business of providing IT services to banks. It will focus mainly on what is happening in rich

countries, though it will also touch on emerging markets, where technology is providing financial services to billions for the first time. Even so, the spectrum covered will be wide. Some parts, such as peer-to-peer lending, are not all that innovative (the technology has been used by eBay, an auction site, for nearly two decades), but are growing rapidly. There is more genuine innovation in the world of payments, which is likely to have the biggest impact on consumers.

At the extreme end of the spectrum are advances in technology that have yet to find a mainstream application, but soon might. Bitcoin, a digital currency made possible by clever cryptography, has lost its lustre as its price has tumbled from over $1,100 in late 2013 to $225 now. Many have dismissed it as a medium of exchange fit only for anonymity-seeking drug dealers and tax evaders. But enthusiasts imagine something like this will recast the entire financial system. They are bowled over by the technology that underpins the currency, a decentralised, immutable ledger called a "blockchain" that allows people to transact business without the intermediation of a trusted third party.

Banks, which often play just such a third-party role, are watching all these developments closely. They used to dismiss fintech as an amateurish attempt to take on a venerable industry, with no hope of disrupting it, but have stopped scoffing. Enough billion-dollar firms have been created to tempt entrepreneurs. No doubt plenty of venture capital will be squandered on dud fintech companies. But if even a handful of them thrive and take on the banks, it could make a difference. And nowhere is that happening as fast as in the activity at the very core of banks' business: lending. ■

国际银行业

明枪暗箭

金融科技会让银行变得更弱势，盈利减少。但它不太可能让银行完全消失

听一听硅谷谈论银行业，你很可能得出这个行业行将覆没的结论。穿着T恤的年轻怪才及其支持者们认为，行业新进者会给摩根大通、汇丰等银行带去如同电子邮件对邮局、亚马逊对书店的打击。银行家们迄今就是未能意识到，他们庞大蔓生的企业将变成明日的薄利黄花。硅谷人相信，皆为数字信息的金融业本质上就是个技术问题，这一问题将由科技公司而非迟钝的银行老管家解决。

这不只是年轻人的狂妄之言。叫人吃惊的是，如今相信有可能扳倒银行的创业家和投资者大为增加。在旧金山、伦敦、纽约等地，风险资本正涌入金融科技，令其在充满泡沫的创业投资环境中堪称最热点。据研究公司CB Insights统计，这个领域的企业去年吸引到了120亿美元投资，而前年是40亿美元。一小批金融科技"叛乱分子"已经从创业公司晋身上市企业，估价达几十亿美元。其他许多企业看来也在朝着这个方向挺进。

这股势头之强，似乎银行业的诸多特长都将被分抢一空。想贷款？忘了你的本地银行分支，去Lending Club——这个P2P平台为需要钱的人和有闲钱的人牵线。想汇款到海外？不用向银行支付宰人的外汇手续费，找一家专事国际支付的创业公司。为何还要让一个开着保时捷的理财经理打理你的退休金，如果一套算法也能给出同样的建议，而收的钱却少得多？从支付到贷款到商业保险，各类新进者几乎瞄准了金融服务企业所提供的方方面面。追踪创业公司的网站Angel List上罗列着约4000家金融科技公司。

这一波创新之所以格外引人注目，是因为金融服务过去凌驾于硅谷争战之上：这个行业的监管和政治联系之多，想要挑战它的小鱼小虾并没什么机会。创业公司的理念是"快速行动、推陈出新"，据此，反复失败可被接受，它们被视为通向成功的中转站。这似乎和银行的保守文化不相容。在银行业中，一家机构崩盘就可以引发全球金融系统大震荡。监管部门曾被

认为在允许金融业创新上太过宽松（合成债务抵押债券及其他在2008年以前的发明不会被很快遗忘），人们预期它们会谨慎地对待这新一轮金融创新。不过，到目前为止它们还任由金融科技蓬勃发展，所起的作用利大于弊。

根据高盛分析师的估算，在那些有可能被金融科技颠覆的领域，金融服务企业的全球年收入总额达到4.7万亿美元，利润达4700亿美元。既有业者曾认为金融业对这类颠覆免疫，但现在他们对此不那么确定了。“银行家过去认为监管减少了金融服务对新来者的吸引力。现在他们醒悟到，来自银行业以外的对手能进军利润更高的领域，获取厚利。”摩根士丹利的休·范斯蒂尼斯（Huw van Steenis）说。

硅谷流传的一张图片显现了富国银行面临的新竞争局势。这家银行的总部位于毗邻的旧金山，它目前的对手不是美国银行或某个来自中国、同样提供广泛服务种类的新进者，而是几十家创业公司，它们每一家都在试图瓜分其业务的一小块，比如为上大学储蓄，或向企业提供薪资结算服务。

没什么创业公司想挑战存款这个受监管的核心业务。它们可能会在各自擅长的领域里提供更好或更廉价的服务。它们中的大多数都会失败，而即使成功，对于银行业这个资产以万亿计的庞然大物而言，也不过是小打小闹。然而，作为一个整体，它们可能会形成某种更实质的力量。

“硅谷要来了，”摩根大通的老板杰米·戴蒙（Jamie Dimon）最近在一封致股东的信中警告道，“有成百上千的创业公司，拥有很多头脑和金钱，正在钻研传统银行业的各种替代品。”银行的成本基础，包括IT系统、智能总部、人员和分支机构等，需要广泛服务所获的收入作为支撑。如果连这些服务中的一部分也被“拆解”（金融科技业者的行话），那么银行几十年赖以维生的经济模式将受到威胁。为此，既有业者正向新进者施以口惠，一些甚至组建了内部团队专门追击创新者，防止他们吃掉自己的午餐。

几个因素让银行变得更弱势。智能手机和廉价数据处理等新技术已经降低

了准入门槛。但是，总部位于旧金山的P2P贷款公司SoFi的迈克·卡格尼（Mike Cagney）认为，“技术是必要的，但不足以”改变人们对金融的态度。金融危机发生后，不得不用纳税人的钱救助银行，这让消费者变得更愿意尝试银行的替代品。金融科技的新进者正在深入挖掘消费者对银行的这种不信任感。而科技这个行业整体而言正在吸引众多聪慧的毕业生，他们宁可进这一行而不去华尔街或伦敦金融城。

终日埋首iPhone的千禧一代大军将进入理财的年纪，这一点当然有其作用。这批18岁到34岁的人和互联网一起成长，他们用网络找出租车、世界新闻等一切所需，让许多既有行业被彻底颠覆。他们似乎也愿意信任基于网络的新进者处理自己的金融事务。这代人很少会去银行。三分之一的人认为在本个十年结束前自己完全不需要银行账户。一则调查发现，他们中71%的人宁可去看牙医也不愿去银行。如果真有人关心金融创新，也会期待它来自科技团队而非今日的银行业者。

与此同时，金融危机也引发了银行内部自省。一些银行被连串需要立即从管理上做出应对的新监管规章搞得疲惫不堪。无论它们有多少IT预算，大头很可能都要花在确保自动取款机能正常吐出钱来。那些要在现任老板跳槽多年后才收到回报的创新项目，在银行的优先顺序上排名不高。新进者没有传统系统，也无需担心养老金缺口，可以更省钱地做事。

不要吃老本

一般而言，银行通过三种途径赚钱，所占的比例差不多，如今悉数遭到攻城掠地。第一种是银行向贷款人收取的利率和向储户支付的利息之间的差额，称作净息差。这需要能够鉴别可信任的客户，而金融科技团队认为在这方面他们能比银行做得更好。“想象一个信贷员与一个可能成为其客户的人谈话的场景。对软件业者来说，这就像巫术。”科技界巨富马克·安德鲁森（Marc Andreessen）在去年的一次会议上如是说。他旗下的风险资金已向金融科技大举投注。“他们认为坐在一个人对面就能看出他品质如何，这实在滑稽。”金融科技P2P贷款的方式基于比银行更娴熟地运用数据。不过，他们的方法尚需在金融业或更广泛的严重经济衰退中接受考验。

赚钱的第二个方法是就支付收费，比如信用卡收费。像谷歌或亚马逊这样的巨头曾经警惕不和支付系统发生任何关系，以防砸了自己招牌。但现在，各类竞争者都对支付发生了兴趣。去年在美国启用的Apple Pay让人们在店铺里点击一下手机或手表就能下单，打破了过去属于银行特权的支付生态系统。贝宝（PayPal）等企业正向购物者提供分期付款的选择，这样它们就把钱借给了那些可能曾向银行贷款的顾客。

银行利润的第三个来源是品类丰富的收费，从透支罚款到代理投资不一而足。它们看来也难逃一劫。人类的专业投资人士现在受到了“机器人顾问”的挑战，后者做的事差不多，收费却少得多。你向国外汇款时，银行会肆无忌惮地强制使用对你不利的汇率，这曾经不可避免，现在你可以通过几十种网上货币兑换商绕道而行。

无论金融科技的新进者会“拆解”既有业者的哪些服务，银行的商业模式都将承受压力。目前，金融科技的领军企业还只是在做数以亿计的买卖，而银行的交易以万亿计。在对金融科技不以为然的人看来，尽管锣鼓喧天，新进者没能走多远。但对它的拥趸来说，这显示出未来这一领域将迎来多年的指数级迅猛增长。

本报告将聚焦那些从消费者或商业角度出发的新企业，而不讨论向银行提供IT服务这一存在已久的生意。它将主要专注于富裕国家正在发生的事，虽然也会提及新兴市场——在那里科技让几十亿人首次用上了金融服务。即使如此，我们的讨论涉猎广泛。某些部分比如P2P贷款并不那么具有创新性（拍卖网站ebay使用这种技术已近20年），但正在迅速成长。在支付这个领域有更纯正的创新，可能会为消费者带来最大的冲击。

金融科技领域里最极端的例子是那些尚需找到主流应用的技术发展——它们可能很快会找到用武之地。比特币这种由精妙加密实现的电子货币光芒消褪，价格从2013年底的超过1100美元跌到了目前的225美元。许多人认为它是一种只适用于需要匿名的毒贩和逃税者的交易媒介。但在热衷此道者的构想中，类似的东西将重塑整个金融系统。他们醉心于这种货币所基于的技术。它是一种名为“区块链”的去中央化、不可更改的分类账，让人

们无需某个可靠的第三方做中介就能完成交易。

银行就常常扮演这种第三方角色。它们正在密切关注所有这些进展。它们过去认为金融科技只是外行，却想挑战一个值得尊重的行业，全无希望颠覆它。但现在它们已停止嘲笑。已经有足够多的估值几十亿美元的企业创生，吸引着创业家们。无疑，许多风险资金将投向哑弹。但只要少数几家企业能崛起和银行一较高下，就可能带来不同。而在一个环节，变化发生之迅疾是所有其他环节所不能及，那就是银行业务的核心——借贷。■

Peer-to-peer lending

From the people, for the people

But will financial democracy work in a downturn?

SAVERS DO NOT get much in the way of interest from their banks these days. But a different logic seems to apply to borrowers, who still often pay double-digit rates for credit—if they can get it at all. That has attracted a number of outfits offering to connect those who need cash with those who have a surplus of it. The rapid growth of such "peer-to-peer" lenders has been one of fintech's most visible successes. The biggest such firm, Lending Club, based in San Francisco, listed its shares in December to a clamour reminiscent of the 1999 tech boom.

Fans compare peer-to-peer lenders to other pioneers of the "sharing economy". Like Uber with cars and Airbnb with accommodation, the newcomers are making available a commodity they do not provide themselves: in this case, money. Instead of a bank intermediating between savers and borrowers, the two parties deal with each other directly. The platforms do the credit-scoring and make a profit from arrangement fees, not from the spread between lending and deposit rates.

The sector has grown rapidly: the five biggest platforms for consumer lending—Lending Club, Prosper and SoFi, all based in San Francisco, and Zopa and RateSetter in London—have so far issued nearly 1m loans between them and are generating more at the rate of well over $10 billion a year. The Anglo-Saxon countries are the spiritual home of credit, and so of peer-to-peer lending, but smaller platforms exist in mainland Europe and China.

Those loans are still dwarfed by the $3 trillion of consumer debt outstanding in America alone. But the sector is doubling its lending roughly every nine months, and almost everyone expects it to go on

growing rapidly. Having started as a provider of unsecured consumer credit, competing mainly against banks' credit cards, it has expanded into lending to small businesses, student loans and now mortgages.

Though most of the lenders were established before the financial crisis, none thrived until its aftermath. This was partly because the banks' rapid retrenchment after 2008 created unmet demand for loans. In America, even those who could still borrow from conventional sources soon found that peer-to-peer providers offered better deals. Credit-card rates tend to remain stable through the economic cycle, so they have looked especially uncompetitive as central banks pushed interest rates to record lows. Lots of borrowers paying 18% on their credit-card balance found they could take out a peer-to-peer loan charging 14% instead. On the other side of the equation, low interest rates meant savers were open to new investment opportunities, including lending their money to perfect strangers on the internet.

> *Knowledge is power*

More broadly, says Hans Morris, a venture capitalist who sits on Lending Club's board, the declining cost of information-gathering is pushing consumer credit the way corporate credit has gone over the past three decades. In 1980 only a few hundred blue-chip firms could borrow from investors other than banks, by issuing bonds. By the end of that decade, all creditworthy firms could do so, and by 2000 "junk"-rated firms were at it, too. But whereas the incumbents, through their investment-banking arms, played a key part in the lucrative business of helping firms issue bonds, they have no role in peer-to-peer lending.

Those pining for the democratisation of finance have been disappointed by one notable development: most of the money for peer-to-peer no longer comes from the general public but from institutional investors such as hedge funds. The industry makes no secret of this; in America many firms

have dropped the peer-to-peer label and instead describe themselves as "marketplace lenders". The shift has increased the supply of money to borrowers, but also made it harder for the newcomers to present themselves as markedly different from the banks.

Yet from a regulatory point of view, they are indeed very different. There is much to like about peer-to-peer, no matter whether the money is being put up by a hedge fund or by the general public. A bank is fragile by nature: when it faces a slew of defaults on its loans, it rapidly runs into trouble. That is because it cannot pass on losses to its main creditors, often the bank customers who deposited their money on the firm understanding that they would get it back. Even when capital cushions designed to absorb lending losses are bolstered after crises, as happened after 2008, the risk of a taxpayer-funded bail-out or some other state support is ever present.

By contrast, those who lend money through peer-to-peer platforms explicitly accept that they may suffer losses. Unlike bank deposits, their investments are not guaranteed by the state. And whereas banks are subject to runs when too many fickle depositors demand their cash, lenders on peer-to-peer platforms know they will get their money back only when borrowers repay their loans.

A core task

Not all peer-to-peer lenders work the same way. Some platforms allow potential lenders to pick their borrowers, others oblige them to lend to all those approved for credit. British platforms typically feature protection funds, designed to compensate lenders exposed to loans that have defaulted. This twist makes them far more akin to banks. For all their differences, the peer-to-peer platforms perform one of the core tasks of the banking system: they pick the applicants who get credit, and at what interest rate. Many claim to be doing a better job than traditional lenders.

A common refrain is that banks are on the defensive, trying to keep risk-averse regulators happy. The peer-to-peer crowd do not have to contend with that, giving them scope to try new things. All of them start their assessment of potential borrowers by looking at a raft of readily available consumer data from credit bureaus such as FICO and Experian, which track who has welched on past bills or car payments (banks use these too). They overlay that with whatever information they can get their hands on, from employment history to verifying pay cheques directly with employers. Borrowers may be asked to provide their online banking details so their financial history can be downloaded from their bank's website. That means the incumbents no longer have much of an information advantage over anyone else.

Any data can be mined for insights, says Martin Kissinger of Lendable, a British newcomer: how often someone has used a credit card to withdraw cash, say, or whether he makes minimum monthly repayments. Zopa tracks the applicants it has turned down for loans to see if they turned out to be good credit risks when they found another willing lender. "We don't necessarily have better data, but we are far better at analysing what we have," says Giles Andrews, its boss. Social-media activity was once touted as the new frontier for credit-scoring, but is no longer considered so useful except, crucially, to help prove an applicant's identity. In America, rules intended to ensure that credit is allocated fairly—by protecting minorities whose neighbourhoods used to be "red-lined" by bankers—make it harder to use novel techniques.

Kreditech, a German startup which makes short-term loans in countries from Peru to Poland, says it uses 20,000 data points to extend high-interest credit at a rate of $120m a year. Beyond using Facebook data, it says it can "triangulate the truth" about a customer's creditworthiness by using behavioural data such as the way its online application form is filled in. How often a customer uses capital letters, say, or the speed at which he

moves his mouse during the process are useful clues. "We are a tech company that happens to be doing lending," says Lennart Boerner, its head of strategy. If Silicon Valley dismisses the idea that bankers can gauge their customers' creditworthiness by meeting them face to face, bankers may consider fintech's method as sorcery.

Some credit-scoring is more intuitive. SoFi has carved out a niche pitching credit to what the industry calls HENRYs: high income, not rich yet. It built a franchise refinancing student loans for asset-poor but high-potential graduates of top universities, whom it sees as good credit risks. Those loans run to around $75,000, against the $10,000-$15,000 more typical on other platforms. "Our credit assessment looks to the present and the future, not just the past," says Mike Cagney, its boss. That has a harsh flipside: those who default on their loan risk having their name broadcast to the lenders, "so the whole community knows you're a deadbeat." It is the first established platform to branch out into mortgages, offering loans worth up to 90% of the value of a house—much more than a bank.

Many people will feel it is too soon to encourage innovation in underwriting, let alone higher loan-to-value ratios, given what happened in 2008. Sceptics argue, rightly, that divorcing the party which authorises credit from the party which will suffer from a default has proved disastrous in the past. Was the financial crisis not triggered by borrowers being given too much credit by mortgage-brokers who cared little if those loans were repaid? How are peer-to-peer platforms different, given that they immediately offload the loans they have approved?

The comparison is unfair, says Renaud Laplanche, Lending Club's founder. Before 2008 subprime mortgages had long, diffuse chains of intermediation. By the time a mortgage was brokered, sold, sliced, diced, repackaged and resold into the market, few cared or even remembered who had issued it. With peer-to-peer, the chain is much shorter. "If loans we

issue do not perform, we have nobody else to point the finger to," says Mr Laplanche. A platform that issues dud loans will struggle to attract bidders, be they hedge funds or the general public.

The bigger question is what happens when economic conditions turn. Peer-to-peer lending, though enabled by technology, would not have flourished without the benign credit conditions of recent years. For all the talk of superior underwriting, the industry's claims of beating banks at their own game will be tested only when interest rates rise or the economy tanks. The industry is aware of this. "My daughter could come up with an underwriting model based on what band you like and it would work fine right now," says SoFi's Mr Cagney. But for how long?

At best, peer-to-peer lenders may find their advantage over banks becomes eroded. As interest rates rise, credit cards will probably become more competitive (though they may be pricier for less creditworthy borrowers). Peer-to-peer marketplaces will probably have to raise their own rates to attract investors lured by improved returns elsewhere. So the opportunity to arbitrate credit mispriced by banks may narrow, particularly in America.

At worst, a credit shock or a recession will leave existing borrowers unable to repay their loans. One worrying feature as the industry matures is that many borrowers are return customers: they are using peer-to-peer loans to refinance peer-to-peer loans taken out earlier. That is particularly true for riskier borrowers. If the industry were to contract even slightly, those unable to refinance would be pushed to default. If banks were to tighten lending criteria at the same time, the customers' problems would multiply.

That might cause a downward spiral as withdrawals creep up: even a modest rise in dud loans might spook lenders, particularly flighty hedge funds. In the absence of fresh money to repay old loans, more defaults would be inevitable, followed by more exits by investors. That is one reason

why most peer-to-peer lenders are eager to keep some of their loans funded by retail money. Mom-and-pop investors are thought to be "stickier" in a downturn, so their money will remain available for future loans .

All platforms vaunt their superior underwriting skills and boast of having "prime" borrowers, but they are also under pressure to show rapid growth in their loans. The temptation—which all claim to be resisting—is to relax their rules and pitch loans to those at the shadier end of the credit spectrum. This may be encouraged by apparently low default rates, but these are flattered by the rapid growth in lending: a 10% default rate will become 5% if a loan book has doubled in the meantime.

On the other hand, if peer-to-peer can weather the next downturn it should get a fillip. Big-money institutions such as insurance companies and pension funds have so far only dipped their toe into the sector. Many of them need better returns, and have long-term liabilities they are keen to match with long-term assets such as mortgages. If unsecured consumer loans perform as well in a downturn as their boosters hope, some investment titans will be tempted to buy paper from peer-to-peer platforms directly, dwarfing the hedge funds that are already there. A few might buy pools of mortgages from peer-to-peer lenders instead of tapping Wall Street for complex securities whose performance tracks the performance of those same pools of mortgages.

A more surprising investor in this field is the banking sector itself. Small local lenders in America have turned to peer-to-peer marketplaces to gain exposure to consumer credit; Citigroup said in April that it would lend $150m through Lending Club. This might bemuse observers: why would a bank buy a loan rather than issue it itself? Mr Laplanche points out that although banks' cost of capital is lower, its cost of operation is higher. A bank spends roughly 7% of the value of a loan on administration, against Lending Club's figure of just 2.7%. Still, some might question the business

model of a bank that admits it cannot successfully underwrite loans itself.

A piece of the action

Peer-to-peer is the most established of all fintech's branches. Lending Club is listed on the New York Stock Exchange, and has John Mack, a former Morgan Stanley boss, and Larry Summers, a former Treasury secretary, on its board. Goldman Sachs estimates that when peer-to-peer comes of age, it could reduce profits at America's banks by $11 billion, or 7%. That would be troublesome but not unmanageable. Bankers point out that, leaving aside credit cards, unsecured loans to consumers are a fiddly business that is not particularly close to their hearts. The risk, though, is that a graduate who turns to a marketplace for her first loan then also shops there for services banks do care about, such as mortgages or investment advice.

Peer-to-peer lenders have their own problems, even when the economy is steaming ahead. Acquiring customers, which is often done through mailshots, is expensive and erodes margins. Overheads are rising steadily. But regulators have kept reasonably clear so far because the risks around this form of lending are borne by those who put in the money, not by the general public. As long as that remains the case, the challenge they present to banks should be heartily welcomed. ■

P2P借贷

取之于民，用之于民

但金融民主化能扛过经济衰退期吗？

如今储户从银行拿到的利息不多。但一套不同的逻辑似乎施加给了借款人，他们仍然常常要为贷款支付两位数的利率——如果他们真能拿到贷款的话。这吸引了一批机构要为那些需要钱的人和有闲钱的人牵线搭桥。这种“点对点”借贷的迅猛发展是金融科技最显著的成功之一。这类公司中的最大户、总部位于旧金山的Lending Club于去年12月挂牌上市，引发的喧哗让人想起1999年的科技热潮。

粉丝把P2P借贷公司和“共享经济”的其他先锋相提并论。就像汽车业的优步（Uber）和酒店业的Airbnb，这些市场新进者正在提供一种并非源于它们自身的商品。在这一案例中，提供的商品是钱。储户和借款人无需银行做为中介，双方直接做交易。P2P平台则做资信评分，从手续费而非贷款和存款的利息差中获利。

这个领域发展迅速：最大的五个消费者贷款平台迄今共发放了近100万笔贷款，可供贷款的总额每年以远超100亿美元的规模递增。它们包括总部位于旧金山的Lending Club、Prosper和SoFi，以及总部位于伦敦的Zopa和RateSetter。英美国家是贷款业务的发源地，P2P借贷也从这里创生，但在欧洲大陆和中国也有较小的平台。

单单美国就有3万亿美元的消费者负债，相比之下P2P贷款是小巫见大巫。但P2P贷款额大约每九个月翻一番，而几乎所有人都预期它会继续高速增长。它在刚开始时提供无担保消费者信贷，主要和银行的信用卡竞争，后来扩展至小企业贷款和学生贷款，如今涉及抵押贷款。

虽然这类借贷平台大多在金融危机前就已经创建，但在那场危机的后果发酵前，无一发展壮大。在某种程度上，这是因为银行在2008年后迅速收紧了信贷，导致贷款需求无法满足。在美国，即使那些仍能从传统渠道借到

钱的人，不久就发现P2P借贷更优惠。信用卡利息在整个经济周期中往往保持稳定，因此当央行把利率下调至历史新低时，它们尤其显得缺乏竞争力。许多为信用卡借款支付18%利息的人发现，他们可以从P2P平台拿到利率为14%的贷款。而在另一方面，低利率意味着银行储户会去寻找新的投资机会，包括把钱借给网上完全陌生的人。

知识就是力量

更广泛来看，信息收集的成本日益下降，推动着消费者信贷经历企业信贷过去30年的发展轨迹，Lending Club的董事、风投资本家汉斯·莫里斯（Hans Morris）说。1980年，仅有几百家蓝筹企业能从银行以外的投资者那里通过发行债券来融资。到了上世纪80年代末，所有资信可靠的企业都可以这么做了。到了2000年，信用评级为“垃圾级”的企业也参与其中。然而，虽然银行在通过投行业务帮助企业发行债券这一利润丰厚的生意中扮演了关键角色，它们在P2P借贷中却没有一席之地。

一个显著的进展让那些渴望金融民主化的人们失望了：P2P借贷的大部分资金不再来自普罗大众，而来自像对冲基金这样的机构投资者。这个行业对此并不遮遮掩掩。在美国，许多公司已经摘去了P2P的标签，而自称“集市借贷公司”。这种转变增加了可贷资金量，但也让新进者更难体现自身和银行的显著区别。

不过，从监管者的角度来看，他们确实很不一样。P2P借贷有很多讨人喜欢的地方，无论那些钱是来自对冲基金还是普通民众。银行本质上很脆弱：当它提供的贷款大量违约时，它很快就会陷入麻烦。这是因为银行不能把损失转嫁给它的主要债权人——那些坚信能拿回本金的储户。即使2008年金融危机后，银行加强了用以承担贷款亏损的资本缓冲，需要纳税人出资纾困或由国家提供其他援助的风险一直存在。

相比之下，通过P2P平台出借资金的人明白接受自己可能蒙受损失这一点。和银行存款不同，他们的投资不受国家担保。当太多善变的储户要求拿回本金时，银行会发生挤兑，而P2P平台上的出借者知道，唯在借款人还贷时自己才能把钱拿回来。

核心任务

并非所有P2P借贷公司的运作都一样。一些平台允许潜在出借者挑选借款人，另一些迫使他们向所有获得贷款资格的人放贷。英国的平台通常都带有保护基金，用以补偿遭遇违约的放贷者。这种微调让它们变得和银行相像许多。尽管有各种差异，P2P平台执行银行系统的一项核心任务：挑选哪些申请人获得贷款，并设定利率。许多平台声称自己比传统银行做得好。

一种常见的说法是银行总是被动防御，以求规避风险的监管部门满意。P2P平台上的群体则不需要和监管做斗争，这让它们有空间尝试新事物。所有这些平台对潜在借款人的评估都是从FICO、Experian这类信用调查机构已有的消费者数据入手。这些机构追踪哪些人不付账单或汽车贷款（银行也使用这些数据）。它们把这些数据和其他能拿到的任何信息叠加在一起，从工作经历到向雇主直接核实工资收入。借款人可能被要求提供网上银行的账户细节，这样他们的财务记录就可以从银行网站下载获得。这意味着，相比任何其他企业，银行在信息方面都不再具有多大的优势。

英国一家新进P2P公司Lendable的马丁·基辛格（Martin Kissinger）说，从任何数据中都可以挖掘出洞见：比如某人用信用卡提现的频率，或者他是否偿付了每月最低还款。Zopa会追踪那些被它拒绝的贷款申请人，看看他们在从其他借贷渠道借钱后，是否被证明实际上是小风险信贷对象。“我们不一定有更好的数据，但在分析已有数据方面我们强得多。”公司老板贾尔斯·安德鲁斯（Giles Andrews）说。社交媒体曾被捧为信用评分的新前沿地带，如今人们不再认为它那么有用，但在帮助鉴定申请人的身份时仍能发挥关键作用。在美国，一些规章意在确保公平分配贷款，它们保护那些所在街区曾被银行划为“禁区”的少数族裔居民，这使得新奇的技术更难被应用。

德国创业公司Kreditech在从秘鲁到波兰的多个国家提供短期贷款。该公司称，它使用两万个数据点，每年提供1.2亿美元的高息贷款。除使用Facebook数据外，它称自己能“多方比对以发掘真相”，通过分析行为数据比如如何填写网上申请表格来判断客户的信用度。比如客户使用大写字母

的频率，或者填表过程中移动鼠标的速度，都是有用的线索。“我们是一家科技公司，碰巧经营借贷。”公司战略主管伦纳特·博尔纳（Lennart Boerner）这样说。如果硅谷对于银行通过面谈来衡量客户信用度的做法嗤之以鼻，那银行家可能也会认为金融科技公司的这种方法是巫术。

一些信用评分更依赖直觉。SoFi开辟了一个针对特定人群的贷款项目，P2P行业称这群人为“亨利”：高收入，但还不富。它打造了一项为学生贷款提供再融资的业务，针对那些没什么资产但具有高潜质的顶尖高校毕业生，因为SoFia认为他们的风险不高。其贷款额度可高达7.5万美元左右，远高于其他平台常见的1万至1.5万美元。“我们的资信评估会看现在和将来，而不只看过去。”公司老板迈克·卡格尼（Mike Cagney）说。这有严酷的一面：那些贷款违约者可能被广而告之给其他出借者，“这样整个社区都会知道你赖账不还。”它也是已建平台中首个把触角伸向抵押贷款的，所提供的贷款额最高可达房屋价值的90%，远高于银行。

鉴于2008年发生的事，许多人会认为现在鼓励信贷审批创新还过早，更别说提高贷款价值比率。质疑者不无道理地指出，把审批贷款者和将因违约而受损者分离，过去已经引发了灾难。金融危机之所以触发，难道不是因为借款者从那些并不关心还款的抵押贷款经纪人那里获得了太多贷款吗？P2P平台有何不同？他们在审批贷款后，不是立即卸下了责任，转移给了他人吗？

这种比较有失公允，Lending Club的创始人雷诺·拉普朗什（Renaud Laplanche）说。2008年前，次级贷款有很长的、发散式的中介链。等到一项抵押贷款被代理、卖出、分割、再包装、重新卖到市场上，已经没人关心甚至还记得是谁发放了这笔贷款。而在P2P借贷中链条要短得多。“如果我们发放的贷款不成功，我们没有其他人可以怪罪。”拉普朗什说。发放不良贷款的平台将难以吸引到出借者，无论是对冲基金还是普通大众。

更大的问题是，当经济状况改变时会发生什么。P2P借贷虽然是由科技发展促成，但如果没有近几年的良性贷款环境，它也不会繁荣起来。尽管它大谈更高级的信贷审批，但用自己的方式打败银行的说法，唯有在利率上

升或经济崩溃时方能一验真假。这个行业明白这一点。“我女儿能根据你喜欢什么乐队创建一个信贷审批模型，目前用起来不会有什么问题。”SoFi的卡格尼说。但问题是能维持多久？

最好的情形是P2P借贷公司可能会发现自己对银行的优势减少了。随着利率上升，信用卡可能会变得更有竞争力（虽然对于信用差的借款人，它们可能更昂贵）。P2P集市可能需要提高自己的利率来拉拢那些受别处升高的回报率吸引的投资者。这样，它们借银行错定贷款价格而套利的机会可能会减少，尤其是在美国。

最糟的结果是，一次信贷冲击或经济衰退会让既有借款人无力还钱。随着P2P借贷行业日渐成熟，出现了一个令人担忧的特点：许多借款人是回头客，他们利用P2P贷款来为早先获得的P2P贷款再融资。高风险借款人尤其如此。如果这个行业稍稍收紧，那些无法再融资的人会被逼向违约的境地。如果银行同时收紧贷款标准，这些客户的问题会加倍。

随着撤资渐渐增多，这可能导致恶性循环：即使不良贷款少量增加也可能让出借人变成惊弓之鸟，尤其是浮躁的对冲基金。在缺少新钱偿还旧债时，更多违约将无可避免，随之而来的是更多投资者撤离。这是大部分P2P借贷公司热衷于让部分贷款来自散户资金的原因之一。散户投资者被认为在经济衰退期更为“牢靠”，他们的钱仍可用于未来的贷款。

所有平台都自诩有更好的信贷审批技能和“优质”借款人，但它们也有很大的压力要显示自己的贷款规模迅速成长，因而会受到放宽规则的诱惑，即向那些资信评级较差者推销贷款——虽然它们都声称自己会抵御诱惑。这种诱惑可能会受到表面上的低违约率推动，但这些数字因为借贷的快速增长而变得好看：如果贷款总额同时翻番的话，10%的违约率会变成5%。

但反过来，如果P2P借贷能经受住下一次经济衰退，那么它应该被大力推动。财力雄厚的机构比如保险公司和养老基金迄今还只是在试水温。它们中许多都需要更好的回报，它们也有长期负债，很希望能与抵押贷款等固定资产匹配。如果未担保消费者贷款在衰退期的表现如同推动它们的人所

期望的那样，那么一些投资大鳄会受吸引而直接从P2P平台上购买资产，这样一来会令已经在这一市场中的对冲基金相形见绌。一些机构可能会从P2P借贷公司购买大批抵押贷款，而不用再委托华尔街购买复合证券，这种证券的业绩有赖于同一批抵押贷款的表现。

这个领域有一个更意想不到的投资者是银行本身。美国一些地方贷款机构已经转向P2P集市来覆盖消费者信贷。花旗集团4月称，它将通过Lending Club放贷1.5亿美元。这可能会让观察者困惑：为何一家银行要出钱来放贷，而不自己直接放贷？拉普朗什指出，虽然银行的资本成本更低，但运营成本却更高。银行把约7%的贷款价值花费在行政管理上，而Lending Club的这一数字仅为2.7%。不过，面对一家承认无法靠自身成功借贷的银行，一些人可能会质疑其商业模式。

> *分去一杯羹*

在所有金融科技的分支中，P2P借贷最为成熟。Lending Club在纽约证券交易所上市，其董事包括摩根士丹利前任老板麦晋桁（John Mack）和前美国财政部长拉里·萨默斯（Larry Summers）。高盛估计，当P2P借贷成熟后，它会让美国的银行利润减少110亿美元或7%。这会带来麻烦，但不至于不可收拾。银行家们指出，如果不包括信用卡业务，未担保消费者贷款只是与其核心不甚相关的一项小业务。然而风险是，一名从集市获得首笔贷款的毕业生，日后也会在那里选购银行确实在意的服务，比如房贷或投资建议。

P2P借贷公司有其自身的问题，即使当经济发展向好时。它们通常用邮寄广告招徕客户，这种方法耗资昂贵，侵蚀了利润。管理开销正稳步攀升。不过，监管部门迄今仍保持距离，因为围绕这种贷款方式产生的风险是由那些投入资金的人承担，而不是由大众承担。只要这一点不改变，那这些企业带给银行的挑战应该会受到由衷的欢迎。■

Asia's environment

In need of a green revolution

How business can help solve Asia's environmental problems

THE Asian economic miracle has lifted millions out of poverty, but at terrible cost. Deforestation and foul water are just two of the insults to nature resulting from breathless expansion. Air pollution in Beijing has been described by the American embassy as "crazy bad". Asia is one of the biggest contributors to global warming.

Many blame economic growth, and the market forces and corporations that drive it, for this. So it is refreshing to see a clear-headed argument set out by Mark Clifford, a former editor-in-chief of the *South China Morning Post*, that markets and greenery can go together. Asian companies, he says, are ready to clean up.

Three conditions need to be met first. One is public engagement. In China a powerful independent documentary on pollution, "Under the Dome", was viewed online by about 200m people before it was blocked by the authorities. From Korea to Kalimantan, the hyperactive use of social media by ordinary people is becoming a force for change.

The second factor is regulation. Richer countries in the region have cleaned up using policies such as emissions standards and road-congestion pricing. Mr Clifford praises the science-based approach that Singapore has taken to making buildings more energy-efficient. The campaign started modestly in 2005. By late 2013, it had increased the number of efficient buildings from 17 to nearly 1,700—about a fifth of the total building stock. The goal is to have four-fifths of buildings certified as green by 2030, with annual savings of $1.26 billion.

Most of the region's other governments are laggards, though. Mr Clifford gives many examples of how the mispricing of resources leads to inefficiency and environmental harm. In China "land, labour and capital are all underpriced for its favoured industries," he writes. Energy and water are used much more wastefully than if these resources were priced properly. Free electricity for farmers in India has led them to run "ever-deeper pumps that deplete water sources". He contrasts poor government policy with progressive business efforts. Esquel, a Hong Kong textile firm, helps cotton farmers in Xinjiang, an arid Chinese province, fund water-saving drip-irrigation systems.

The author offers a sophisticated critique of China's efforts to create green champions in renewable industries. The government's willingness to spend money without concern for profit has benefited the environment. China invested $125 billion in clean energy in 2012 and 2013, he calculates, considerably more than the $101 billion that America spent. It is now the world's largest manufacturer of wind and solar equipment; soon it will be the largest consumer of clean energy too.

But China's approach also has deep flaws. Central planners could not stop local governments from lavishing subsidies on favoured local firms, so the country ended up with far too many manufacturers scrapping for business. The resultant wars sent Suntech, once the world's biggest solar outfit, into bankruptcy.

The author makes a powerful case for phasing out all perverse subsidies, and for introducing muscular regulation that uses a mix of incentives and punishment to encourage green growth. America offers a good example: a successful trading system for sulphur-dioxide emissions solved America's acid-rain problem by providing polluters with strong incentives to clean up; they could sell credits in the marketplace for a profit if they cleaned up beyond the minimum required by regulation.

The third element is the private sector. Unscrupulous companies deserve as much blame for the current mess as do lousy policies. However, this picture is changing fast. Leading Asian businesses are going well beyond regulatory requirements, showing that sustainable business practices can be profitable, too.

The Kadoories, a family of Iraqi Jews who landed in Hong Kong in 1880, are a good example. Best known for the Peninsula luxury hotels, they also control CLP Holdings, one of Asia's largest energy companies. It owns mostly coal plants, making it one of the biggest polluters on the planet. A decade ago, sensing growing public concern and anticipating future regulation of carbon, the Kadoories took some radical decisions. The company vows to slash the carbon intensity of its power-generating businesses by more than three-quarters by 2050. By 2013 it was the biggest foreign investor in clean energy in China, and the biggest windpower developer in India.

Nor is CLP an isolated example. As Mr Clifford shows, companies like Hyflux, a Singaporean water-treatment and desalination firm, and Goldwind, a wind-energy titan in China's far west, prove that innovative firms are helping to reverse decades of degradation. Manila Water provides three times as many people with safe and reliable supplies after privatisation as the government did before, at a fraction of the price. Infosys, an Indian outsourcing giant, is on its way to getting half its energy needs from renewables. As Mr Clifford writes: "It is well-run businesses that have the manpower, the money and the knowledge to reshape Asia's approach to the environment." There's hope, then, for the future. ■

亚洲的环境

需要一场绿色革命

企业如何能帮助解决亚洲的环境问题

亚洲的经济奇迹使数百万人脱离了贫困，但也付出了沉重的代价。快速扩张导致了多种亵渎大自然的行为，其中包括滥砍滥伐和水体污染。美国驻华使馆用“糟糕透顶”来形容北京的空气污染。亚洲是全球变暖的最主要推动者之一。

许多人把这一问题归咎于经济增长，以及推动增长的市场力量和企业。在这方面，《南华早报》前主编马克·祈福德（Mark Clifford）所阐述的论点思路清晰，令人耳目一新。他认为，市场和环保能够齐头并进，亚洲的公司已经整装待发，要来治理环境。

首先需要满足三个条件。第一是公众参与。在中国，一部有关污染的、极具感染力的独立纪录片《穹顶之下》在被当局屏蔽之前，在线观看人数已达2亿左右。从韩国到加里曼丹，社交媒体被普罗大众踊跃使用，正成为一股变革力量。

第二个因素是监管。亚洲地区的富裕国家已经实施排放标准以及道路拥挤收费等政策来治理环境。祈福德称赞新加坡在提高建筑能效方面的行动，他认为这是以科学为本的方法。这一行动在2005年起步时力度并不大。到2013年底，新加坡高能效建筑的数量已从17栋增加到了将近1700栋，占建筑总数的约五分之一。它的目标是到2030年，五分之四的建筑能获得绿色建筑认证，每年节省12.6亿美元。

但是，亚洲地区的大部分其他政府都很落后。祈福德列举了许多例子，来说明资源的错误定价如何导致效率低下和环境危害。他写道，在中国，“热门行业中，土地、劳动力和资本都被低估了”。如果定价适当，能源和水的使用远不会像现在这么浪费。在印度，农民免费用电，导致他们使用“抽水泵越挖越深，消耗了水资源”。他把蹩脚的政府政策与进取的商业努

力做了比较。香港的纺织公司溢达集团（Esquel）就资助了中国干旱省份新疆的棉农购买节水的滴灌系统。

作者对中国在可再生能源产业中创建环保冠军的努力做了一番精妙的评论。政府愿意花钱而不追求利润的态度有利于环境保护。据他推算，中国2012年和2013年在清洁能源领域投资了1250亿美元，大大超过了美国投资的1010亿美元。中国目前是世界上最大的风能和太阳能设备制造国，很快它也将是最大的清洁能源消费国。

但中国的做法也有深层次的缺陷。中央计划制定者无法阻止地方政府对受偏袒的当地企业滥用补贴，结果国内有太多的制造商争抢生意机会。由此产生的竞争让尚德（Suntech）陷入破产，而它曾经是世界上最大的太阳能公司。

作者提出了强有力的理由，要逐步淘汰所有不合理的补贴，还要引入有力的监管，用奖惩结合的方式鼓励绿色增长。美国提供了一个很好的例子：其成功的二氧化硫排放交易系统解决了酸雨问题，因为它向污染企业提供了有力的激励，促使它们进行治理。如果超额完成法定的最低目标，这些企业可以在市场上出售信用额度来获利。

第三个因素是私营部门。无良企业和糟糕的政策一样，也应该对目前的混乱负责。然而，情况变化很快。亚洲的领先企业已远远超越了监管的要求，证明了可持续的商业行为也可以盈利。

1880年移居香港的伊拉克犹太家庭嘉道理家族（Kadoories）是一个很好的例子。除了最著名的豪华酒店半岛酒店之外，他们还控股亚洲最大能源公司之一的中电控股。中电旗下的电厂大部分是燃煤发电，这使它成为地球上最大的污染者之一。十年前，意识到公众的日益关注，也预见到未来对碳排放的管制，嘉道理家族做出了一些重大决定。该公司承诺，到2050年前，其发电企业的二氧化碳排放强度将削减超过四分之三。截至2013年，它是中国清洁能源领域最大的外国投资者，也是印度最大的风电开发商。

中电控股绝非孤例。祈福德表示，新加坡的水处理和海水淡化公司凯发（Hyflux）和中国西部偏远地区的风能巨头金风科技（Goldwind）等公司证明，创新企业正在帮助扭转几十年以来的环境恶化趋势。和过去由政府运营时相比，马尼拉水务公司（Manila Water）私有化后继续提供安全可靠的供水，覆盖人口相当于原来的三倍，而价格只是以前的几分之一。印度外包巨头印孚瑟斯（Infosys）正在努力利用可再生能源来满足自己一半的能源需求。祈福德写道："正是那些拥有人力资源、金钱和知识，运行良好的企业，在重塑亚洲对环境的态度。"如此，未来是有希望的。■

Free exchange

Scrip tease

Greece could alleviate its shortage of cash by issuing IOUs, but only for a time

FOR the third time in five years, Greece is looking into the abyss. As in 2010 and 2012 the Hellenic Republic looks likely to run out of cash, and may soon miss scheduled debt repayments. But this time Syriza, Greece's new ruling party, has alienated its creditors, making the previous solution (a co-ordinated default, coupled with a bail-out) harder to achieve. Yet a unilateral default might prompt the European Central Bank to withdraw its lifeline from Greece's banks, leaving the country little choice but to abandon the euro—an outcome 84% of Greeks want to avoid. As Syriza scrabbles around for alternatives, a monetary trick sometimes used in such emergencies—issuing temporary IOUs, or "scrip", in lieu of cash—is starting to look tempting.

Scrip can help governments conserve hard cash, something Greece certainly needs to do. It has debts of around €315 billion ($340 billion)—175% of GDP—and must make payments of €2.5 billion before the end of June. To find that cash it could start making some of its regular payments in paper IOUs, which can be used to pay taxes at a later date, rather than euros. The bulk of the Greek state's annual outgoings of €80 billion is paid to its citizens—€22 billion in salaries, €35 billion in benefits. They would have little choice if the government decided to pay them in scrip instead of euros. If all government salaries had been paid in scrip last year, the country would have had a surplus of €27 billion euros, leaving plenty to pay back foreign creditors. Scrip itself would soon become a means of exchange.

Scrip has a rich history. Massachusetts paid its citizens "tax anticipation notes" instead of cash in the 1690s, according to a paper* by Richard Sylla of

the Stern School of Business at New York University. These were swapped for cash once the anticipated tax had been collected. California used scrip in 2009. The recession had sapped revenues, and bickering legislators could not agree on a revised budget. The state began to pay benefits, tax rebates and other bills in "registered warrants" rather than dollars. In all, it issued 450,000 IOUs with a value of $2.6 billion.

California made the scrip more palatable by promising to pay annual interest of 3.75% on it. This persuaded some recipients to hold on to it, meaning that Californian residents were, in effect, lending to the state. For those who wanted cash, local banks initially agreed to exchange the scrip for dollars, thereby acquiring the right to the interest due. Within two months the budget impasse was over and the scrip was redeemed. That was only just in time: the big banks, worried about their growing exposure to the scrip, had stopped buying it.

Greek scrip would face bigger problems. California's economy is eight times the size of Greece's and its decent credit rating lent its IOUs some credence. A better analogue for Greece, which has an unemployment rate of 26% and a reputation for default, is Argentina. In 2001 the Argentine government, struggling to service its debts, started paying its citizens by issuing a tax voucher, the *lecop*. The country's provinces began to pay salaries and pensions in scrip. According to IMF analysis the value of these new quasi-monies rose to 7.5 billion pesos ($2.4 billion) by the end of 2002, or around 50% of the value of pesos in circulation.

Argentina's experience was much less encouraging than California's. One problem was the proliferation of scrips: there were soon a dozen of them, including Buenos Aires's *patacon*, Corrientes's *cecacor* and Formosa's *boncafor*. That made trade between provinces difficult. What is more, Argentines spent scrip of any sort as soon as they could, and hoarded pesos.

Centuries of experience suggest that such a response is typical. In the 16th century Sir Thomas Gresham, an English financier, argued that if a country had two types of coin made of different alloys but with the same face value, the one containing more precious metal would cease to circulate. Citizens would spend the "bad" coins, and hoard the "good" ones. "Gresham's law"—that bad money chases out good—applies to paper cash too. Shikuan Chen of Taipei University cites paper IOUs issued by China's government in 1287 with a face value of a fixed number of silver coins. The people responded by hoarding coins, so the paper drove the coins out of circulation.

The euro, terminated

The history of scrip suggests two problems if Greece resorts to it. In Argentina, the rise of scrip helped undermine the public's confidence in cash in general. A system of national bartering based on an informal token, the *crédito,* blossomed. This system was created at a local level by merchants, not by the cash-strapped state. And rather than lift the government's revenue the informal cash made it tougher to track income and profits, and thus harder to calculate and collect taxes. The euro area has small-scale informal currencies: Bavarians with misgivings about the soundness of the euro, for instance, can use the *chiemgauer*; Bremen has the *roland*. It would be ironic if Greece issued scrip to get around a revenue shortfall, only to find that scrip exacerbated the problem.

The second problem is bigger. Since any Greek scrip would clearly be less desirable than euros (it would be accepted by the Greek government for tax payments, but could not be used to buy foreign goods or services), Gresham's law would apply. If Greek banks accepted scrip, they would soon be flooded with it and drained of euros, making it hard to pay the interest on their own debts. Scrip would have solved the state's euro shortage, but only by shifting it to the banking system. So scrip is no silver bullet. It

might be a way to buy Syriza a few months breathing-space, but the only long-term solution to the cash crunch is the tough one: the state must earn more euros and spend fewer.

* Studies cited in this article can be found at www.economist.com/scrip15 ■

自由交流

“欠条”诱惑

希腊或许可以靠打欠条缓解现金短缺，但这只能解燃眉之急

五年来第三次，希腊走到了悬崖边缘。与2010年和2012年时一样，希腊共和国貌似现金流枯竭，可能无法偿还即将到期的债务。但这次，希腊的新执政党左翼激进联盟（Syriza）因为疏远了债权人，较难再通过以前的方案（协议违约，加上纾困方案）来解决问题。而单方违约可能促使欧洲央行取消对希腊银行的救助，令该国别无选择只能放弃欧元，这是84%的希腊国民不愿看到的结果。正当左翼激进联盟挣扎摸索出路之际，在此类危急关头有时会派上用场的一种货币手段渐显诱人——发行欠条，即代替现金的“临时凭证”。

欠条可以帮助政府节省硬通货，这是希腊绝对需要做的。该国所欠债务约为3150亿欧元（3400亿美元），相当于GDP的175%，6月底前必须偿还25亿欧元。要凑出这些现金，希腊可以先把一部分定期付款项目以欠条而非欧元的形式支付，这些欠条可供日后缴纳税款之用。希腊政府每年支出的800亿欧元中大部分支付给民众——220亿欧元用于支付薪酬，350亿欧元用于福利。政府如果决定以欠条而非欧元支付，民众将别无选择。假如去年政府工资全部以欠条支付，希腊将可有270亿欧元盈余，足够向外国债权人还钱。欠条本身随即也可成为一种交换手段。

“欠条”有着悠久的历史。纽约大学斯特恩商学院（Stern School of Business）的理查德·西拉（Richard Sylla）在一篇论文*中提到，早在17世纪90年代，美国马萨诸塞州就曾以“税收预期票据”（tax anticipation notes）代替现金支付给民众。在预期税款收齐后，这些票据可换回现金。加州在2009年也发行过欠条。当时经济衰退令州政府收入大减，议员又对财政预算修订案争执不下，无法达成共识。州政府于是开始以“登记权证”（registered warrants）而非美元支付福利、退税及其他开支项目。当时发出共计45万张欠条，总值为26亿美元。

加州政府许诺给欠条支付年利率为3.75%的利息，令其更易被接受。这说服了开条对象继续持有这些欠条，实际上就意味着加州居民贷款给政府。对于那些希望拿到现金的人，当地银行一开始同意以美元兑换政府欠条，同时获得相应利息权益。不到两个月，预算僵局结束，欠条被赎回。这一结束时间恰到好处，避免了问题恶化：那些大银行因担心欠条风险敞口加大，已停止兑换。

希腊政府的欠条面临更大的问题。加州的经济规模是希腊的八倍，同时加州较好的信用评级为其欠条提供了一定的信心保证。拿阿根廷的情况与希腊类比更适合，其失业率为26%，而且以债务违约出名。2001年，阿根廷政府偿债力不从心，就通过发行“还债债券”（LECOP）这种税收凭证来向国民付款。当时该国各省开始以这种临时凭证支付薪金和养老金。根据国际货币基金组织的分析，截至2002年底，这些新型“准货币”的价值已上升至75亿比索（24亿美元），约占流通中比索总值的50%。

阿根廷的经验与加州相比黯淡无光得多。一大问题是政府欠条五花八门地涌现：很快就出现了十几种，包括有布宜诺斯艾利斯的patacon、科连特斯省的cecacor、福尔摩沙省的boncanfor。这给各省间的交易带来了困难。而且，阿根廷国民都以最快速度把手上的政府欠条花出去，而把比索囤积起来。

数百年的经验表明这是一种典型反应。16世纪，英国金融家托马斯·格雷欣（Thomas Gresham）爵士认为，如果一个国家流通着两种同等面值但以不同合金制成的硬币，含更多贵金属的那种硬币将停止流通。市民会使用“劣”币而囤积“良”币。“格雷欣法则”（Gresham's Law，即“劣币驱逐良币”法则）也适用于纸币。台北大学的陈思宽引述说，1287年元朝政府发行面值为固定金银数额的纸质凭证。当时人们的反应是把金银囤积起来，这样纸币就把金银逐出流通之外。

欧元，被终结

假如希腊要走上打欠条之路，欠条的历史显示要注意两大问题。在阿根廷，欠条的兴起总体上削弱了民众对现金的信心。基于crédito这种非正式

代币的一套全国性以货易货贸易体系蓬勃发展。这一系统由商人在地方层面发起，而非由现金短缺的政府创建。政府收入并未因而得到提升，这些非正式现金反而令追踪收入和利润变得更为困难，税金计算和征收都成了难题。欧元区存在较小规模的非正式货币：德国巴伐利亚的民众若对欧元稳健性怀有疑虑，可使用chiemgauer；德国不来梅则有roland。假如希腊以发行欠条来解决收入不足却最终发现问题因而加剧，那将是一大讽刺。

第二个问题更大。希腊无论发行哪种临时凭证，接受度都显然不及欧元（欠条可用于纳税，被希腊政府接受，但不能用来购买进口商品或服务），因此“格雷欣法则”将会显现。如果希腊的银行接受这些暂时凭证，马上会为之淹没，同时大量流失欧元，令银行支付自身债务利息也成问题。政府欠条可以解决欧元短缺问题，但只是把问题转嫁到银行系统上。因此，政府欠条不是什么灵丹妙药。希腊左翼激进联盟或许可以借此得到几个月的喘息空间，但要长远解决现金短缺问题，唯一的办法甚为艰难：政府必须开源节流，节省欧元。

*本文引用的研究可参见www.economist.com/scrip15 ■

China's motor industry

The coming crash

For carmakers, the profits bonanza from China will not last

"THIS is one of the most advanced and sustainable car factories in the world." So declares Karsten Engel, chief executive of BMW China, as he greets visitors to his firm's newish manufacturing facility in the grim north-eastern city of Shenyang. The plant, run by a joint venture with a local firm called Brilliance, is indeed spotless and efficient, with robots and humans together producing nearly 40 cars each hour. China is the largest market in the world for the firm's big 5 Series and 7 Series models, and source of perhaps half of its global profits in recent years. Unsurprising, then, that the firm is hoping to double the number of models built locally.

The bosses of many big foreign car firms were in China this week for the Shanghai Auto Show, and they too offered a pretty rosy view of the Middle Kingdom. China has overtaken America as the world's largest car market, and it has contributed between a third and a half of the global profits of many big automobile manufacturers in recent years. Like BMW, other foreign firms are also betting heavily that the good times will continue by expanding production capacity in the joint ventures that the Chinese government requires them to form with domestic firms. Jochen Siebert of JSC Automotive, a consulting firm, estimates that the joint ventures will open $12 billion-worth of new factories in China this year and next.

And yet the hard truth is that these firms may now be headed for a car crash, shattering their dreams of never-ending profits. The first reason for this is that sales growth is slowing. The days of double-digit annual increases are over. In the first quarter of this year sales of new vehicles slowed to single-digit annual growth. Paul Gao of McKinsey, another Western consulting outfit, forecasts that growth rates will remain in the

“mid-to-high single digits” for the next decade.

That is a higher rate of increase than many other countries can look forward to. However, given the new plants being opened, it looks like being insufficient to correct a worrying excess of capacity that is building up. Enough new plants to make another 5.3m light vehicles a year are due to come online in 2015 and 2016, compared with sales last year of 22.8m.

A rough rule of thumb in carmaking is that assembly plants need to be working above about 75% capacity, assuming two eight-hour shifts each normal working day, to be profitable. America’s closures of car factories, followed by a sharp recovery in sales, mean that its plants are now working at above 100% of that capacity. In contrast the average for Chinese assembly plants has now slipped to below 70% (see chart).

So a squeeze is coming. One sign of trouble is a backlash among dealers, who are unhappy about having their bonuses tied to unrealistic sales goals set by the joint ventures during headier times. In January BMW had to offer over $800m in payments to its dealers to quiet their complaints. Toyota is expected to hand $200m to dealers affiliated to FAW, one of its joint-venture partners. Other foreign firms are expected to do the same.

Used cars, once shunned, are now taking off, as motorists realise they can be a better-value alternative to a new set of wheels. In March, Uxin, an online-auction firm specialising in used cars in China, won $170m in funding from Baidu, a local internet-search giant, and KKR, an American private-equity firm.

As new-car buyers have become scarcer, some of the biggest-selling foreign brands in China, such as Ford and VW, have had to start offering rebates and discounts to shift the metal. Second-tier brands and local firms are sure to follow suit. Max Warburton, an industry analyst at Sanford C.

Bernstein, a research firm, warns that "price reductions are almost always one-way, so these cuts will lock in lower margins." Mr Siebert estimates that Western firms will see their profits from China plunge by half this year versus last.

Despite BMW's expansion plans, in a closed briefing for analysts, its soon-to-retire boss, Norbert Reithofer, recently warned how bad things were looking. Pricing pressures were especially dramatic for the firm's most luxurious models, such as its British-built Rolls-Royces. "Something has changed in China," he told them.

As for those Chinese firms not in a joint venture with foreign ones, they have for years had to suffer from their cars being spurned by consumers. A few independent local manufacturers have recently benefited from the rising popularity of small, cheap sport-utility vehicles (SUVs). As it happens, in China such vehicles are mostly built by domestic firms. Great Wall, arguably the best of a bad bunch, has decided to cut its output of saloons to concentrate on its better-known range of SUVs.

However, look beyond this brief respite (Western firms will surely bring their own mini-SUVs to China quickly), and it becomes clear that local firms are in even bigger trouble than foreign ones. Of the dozens of motor manufacturers in China, most are smallish local outfits cranking out lousy cars. Many of these are bleeding red ink. They are able to stay afloat only because of subsidies, and favourable procurement policies, from the authorities in their home cities and provinces.

A handful of the best state-owned carmakers—like Shanghai Automotive, which has joint ventures with both GM and VW—do make handsome profits. However, they are viable only because the government forces foreigners into these joint ventures. The idea was that, by now, the Chinese firms were supposed to have learned from the foreign ones how to design,

build and sell great cars. Instead, the cosseted domestic firms have failed to learn, and have been relegated to mere contract manufacturers.

If market forces were allowed to function in the Chinese motor industry—both by ending the subsidies and letting the foreign carmakers either buy up their Chinese partners, or dump them and go it alone—there would surely be a drastic consolidation. Many Chinese firms would cease to exist, though a few, forced to live on their wits, might learn to innovate, and flourish. Even without reform, the increasing squeeze on carmakers in China may prompt a more limited shake-out. In what may be an early sign of this, rumours flew this week that VW was in talks to take a stake in Great Wall.

If China's dreams of having its own, world-class car brands are not going to be fulfilled by its domestic motor companies, then perhaps it ought to be looking elsewhere—for instance to its innovative and nimble technology firms. Cars are increasingly bundles of software on wheels, and in the future they will increasingly be connected wirelessly to all manner of navigational aids. So if Apple is looking to get into carmaking, why not Xiaomi, a Chinese maker of mobile devices, or Tencent, a social-media and gaming giant?

Or indeed Alibaba. Of all the companies at this week's Shanghai Auto Show, among those attracting the greatest buzz was the e-commerce company, which unveiled partnerships with GM and BMW to offer Chinese consumers online tools to find, buy, finance and service their cars. What it did not mention publicly this week is that there is also a stealth team working on an AliCar. Watch this space. ■

中国的汽车产业

快要撞车

对汽车制造商而言，来自中国的滚滚利润不会持续

“这是世界上最先进和可持续的车厂之一。”在中国东北部阴冷的城市沈阳，宝马中国区首席执行官卡斯滕·恩格尔（Karsten Engel）在他公司的新厂房中欢迎访客时这样说道。这间工厂由宝马和本土企业华晨组建的合资企业运营，堪称零瑕疵、高效率，机器人和工人们一起每小时生产近40辆车。中国是宝马5系和7系两大系列车型的全球最大市场，近些年可能还是该公司全球一半利润的来源。因此，该公司希望把在中国本地生产的车型数量翻倍也就不足为奇了。

许多外国大车企的老板上月到中国参加上海车展，也对中国表达了颇为乐观的看法。中国已经取代美国成为全球最大的汽车市场，最近几年贡献了许多大车企全球利润的三分之一至一半。和宝马一样，其他外国公司也在加重下注，认为扩大合资企业的生产能力会让好日子继续。中国政府要求外资车企与中国国内企业共同组建合资企业。捷实汽车咨询（JSC Automotive）的约亨·西伯特（Jochen Siebert）估计，这些合资企业将在今明两年投资120亿美元设立新工厂。

然而，残酷的真相是，这些企业可能正驶向撞车，粉碎他们不停获利的美梦。首要原因是销售增长正在放缓。年增长率为两位数的日子已经到头。今年第一季度，新车销售的年增长率跌至个位数字。另一家西方咨询公司麦肯锡的保罗·高（Paul Gao）预测，未来十年这一增长率将保持在“5-9%”。

这一增长率要高于许多其他国家可以期待的销售数字。然而，鉴于新投产的工厂数量，看来它并不足以扭转生产力日益过剩这一令人担忧的趋势。将于2015至2016年间投产的新工厂每年足以再生产530万辆轻型车，而去年的销量是2280万辆。

汽车制造业一个大致的经验法则是，假设组装厂的最大生产能力是每个正常工作日运行两个八小时班制的话，它需要使用超过约75%的产能才能盈利。美国关闭许多车厂后，销量又出现大幅回升，意味着剩余的工厂如今正在超负荷运转。相比之下，中国组装厂如今的平均使用率已经跌至产能的70%以下（见图表）。

因此一轮挤压即将来袭。麻烦的预兆之一是经销商反弹。他们对把红利和不现实的销售目标绑定不满，这些目标是合资企业在销售大热期定下的。1月，宝马不得不向经销商支付超过8亿美元以平息抱怨。丰田预期将向合资伙伴之一的中国一汽的经销商支付2亿美元。其他外国企业预期也会这么做。

曾经为人不屑的二手车如今日益流行，因为开车者意识到它们比新车的性价比更高。3月，中国二手车网上拍卖公司优信（Uxin）从国内网络搜索巨头百度和美国私募股权投资企业KKR集团那里获得了1.7亿美元投资。

新车买家已经减少，像福特和大众这类在中国卖得最好的外国品牌已经不得不开始提供回扣和打折来促销。二级品牌和本土企业势必跟风。调研公司Sanford C. Bernstein的行业分析师马克斯·沃伯顿（Max Warburton）警告："降价几乎总是不可逆的，所以这些折扣会把利润率锁定在更低的水平。"西伯特估计，西方企业会看到今年来自中国的利润比去年猛跌一半。

尽管宝马计划扩张，在近日的一次分析师闭门通报会上，公司即将退休的老板诺伯特·赖特霍费尔（Norbert Reithofer）警告大家事情看来很糟。该公司最豪华的车型如英国造劳斯莱斯受到的价格压力尤其大。"在中国，有些事起了变化。"他告诉分析师们。

对于那些没有和外国公司组建合资企业的中国公司，多年来它们不得不忍受自己生产的汽车被消费者轻视。几家独立的本土制造商近来从小型、便宜的运动型多功能车（SUV）的日益流行中受益。碰巧在中国这种汽车多由国内企业制造。长城汽车应该是糟糕的中国国内车企中最好的一家，它

已经决定减产三厢车，主攻它更为知名的SUV系列。

不过，等到过了这段短暂的喘息期（西方企业必定很快会把自己的迷你SUV带到中国），有一点会变清晰，那就是本土企业将比外国公司陷入更大的麻烦。中国的几十家汽车制造商大多是些小型地方企业，造出一些差劲的车。其中许多都在亏损，之所以还能继续存活，仅仅是因为所在省市政府提供的补助和有利的采购政策。

少数几家最好的国有汽车制造商，比如和通用汽车及大众都组建了合资企业的上汽集团，确实有可观的利润。不过，之所以能如此，仅仅是因为中国政府逼迫外国公司与之建立了合资企业。中国政府的想法是，到现在中国企业应该已经从外国公司那里学到了如何设计、制造和销售很棒的汽车。但是，被宠坏的国内企业并没有学到，它们被降级到了仅仅是合同制造商的位置。

如果允许市场力量在中国汽车产业中发挥作用，包括停止补助、让外国汽车制造商或者买下中国伙伴或者丢下它们单干，那么无疑会发生剧烈的整合。许多中国企业将关门大吉，而有少数几家，因为被逼着要自力更生，可能学会创新，从而蓬勃发展。即使不发生变革，在华的汽车制造商因为日益受到挤压，也可能会促发相对小规模的淘汰潮。4月下旬就有传言称大众正为入股长城汽车展开谈判，这可能就是个早期迹象。

如果国内车企无法完成中国拥有自己的世界级汽车品牌的梦想，那么或许它应该看向别处，比如有创造力又灵活的技术公司。汽车正日益变成车轮上的软件集合，而未来它们会越来越多地和各种各样的导航辅助无线连接。因此，如果苹果正思量着进军汽车制造业，中国的手机制造商小米、社交媒体和游戏巨头腾讯为什么不行？

或者恰恰是阿里巴巴。上月参加上海车展的所有企业中，这家电商企业是引来最多议论的公司之一。该公司宣布与通用汽车及宝马合作，向中国消费者提供网上选车、买车、购车融资和服务的工具。它此次没有公开提及的是，它还有一个团队正在悄悄地研发阿里汽车。拭目以待吧。■

Gazprom

Margrethe and the bear

The European Union's trustbuster turns her fire on Gazprom—marking a big change in European policy and the gas business

GAZPROM revelled in its untouchability. It was the main supplier of imported gas to the European Union, benefiting both from close Kremlin patronage (the Russian state is its largest shareholder) and from a web of business and political relationships in countries it sold gas to, notably Germany. Alternatives to Russian gas were scant, as was customers' willingness to resist Gazprom's dominance.

Now the EU is taking on the Russian gas beast. The first blow fell on April 22nd when the EU's competition commissioner, Margrethe Vestager, sent the company a long-expected "statement of objections" (Euro-parlance for a charge-sheet) alleging market abuses. The unpublished document runs to hundreds of pages. They detail the murky world of Russian gas exports, featuring lucrative intermediary companies with unknown beneficial ownership, deals struck by politicians not businessmen, and a hefty dose of geopolitical favouritism.

The EU claims Gazprom is "pursuing an overall strategy to partition central and eastern European gas markets." It curbs customers' ability to resell gas, which allows it to charge "unfair prices" in five countries: Bulgaria, Poland and the Baltic states of Estonia, Latvia and Lithuania. Moreover, the EU says, Gazprom abused its dominant market position to try to keep control of the Yamal transit pipeline across Poland, and to bully Bulgaria into supporting South Stream, a now-cancelled Kremlin project to bring gas across the Black Sea into the EU.

Gazprom had put out feelers to Brussels in previous months to see if it

could reach a settlement. But those talks broke down amid the freeze in East-West relations over Ukraine. Now Gazprom has 12 weeks to deal with the charges—by rebuttal, concessions or both. If it fails to satisfy the commission, the next stage is enforcement. This could mean fines of €1 billion ($1.1 billion) or more—in theory up to 10% of its turnover—and legally mandated changes to its business model. Such options are still in reserve. "All roads are open," says Ms Vestager. "We would like Gazprom to answer and we would like to talk."

Gazprom's initial response was icy. It said the EU's complaint was "unfounded", insisted that it already abides by international law and the domestic legislation of the countries where it does business, and argued that the dispute should be settled at a governmental level. Gazprom was established "beyond the jurisdiction of the EU", it noted. Revealingly, it said that Russian law gave it "special, socially significant functions…and the status of a strategic government-controlled business entity". Back in 2012 President Vladimir Putin banned such "strategic" companies from disclosing information to foreign regulators or obeying their orders.

The EU began its move against Gazprom with the launch of the "Third Energy Package" in 2007. That was a deceptively bland title for a series of measures that "unbundled"—in fact, upended—Europe's energy market. The main effect was to ban the same company from owning both the gas pipelines and the molecules that flow through them. Russia objected harshly to this, seeing it as a politicised, unprovoked and confiscatory attack on Gazprom's assets and business model.

However, rather like Microsoft, which fell foul of EU competition law for bundling its Internet Explorer browser with its Windows operating system, the company and its political masters did not grasp the EU's ferocious prosecutorial powers. And the more the EU looked at Russian gas imports, the less it liked what it saw. In 2011, in the biggest antitrust raid in the EU's

history, officials with search warrants seized documents and computers from dozens of offices belonging to Gazprom and its affiliates. In 2012 the EU followed this up by opening a formal investigation.

The statement of objections has been largely ready since 2013, but was subject to a long and timorous delay. Ms Vestager's predecessor, Joaquín Almunia, repeatedly promised to launch charges, but left office in November with that pledge unfulfilled. Senior people in the commission thought a deal would be better than worsening relations with Russia.

Now Europe is in a more robust frame of mind. Ms Vestager, a steely Dane, insists that her directorate is part of the justice system and acts without fear or favour. The move against Gazprom came only a week after it launched a statement of objections against another corporate giant, Google.

For Gazprom the most petulant option would be to ignore the EU. That brings speedy penalties—and also potential lawsuits from customers who have been overcharged, notes Alan Riley, a British law professor. Another option is to mount legal challenges—including ones claiming abuse of property rights. Vaclav Bartuska, the Czech Republic's energy envoy, forecasts a climbdown, masked by a showy but empty deal on future exports to China to show the Russian public that the Kremlin is punishing Europe for its impudence.

Russia may also press ahead with Turk Stream, a Black Sea pipeline which would deliver gas just as far as the Turkey-Greece border, to avoid the EU rules that stymied South Stream. The Kremlin is wooing Greece to support the project, with a $5 billion sweetener. More such divide-and-rule tactics in Europe are likely: Russia's pipelines export political influence even when they are still mere lines on a map.

But turning off the gas taps, to punish the EU, seems unlikely. Russia is

losing market share in Europe already, and cannot afford to annoy its customers or endanger its $40 billion export revenues.

A cold climate

Worries about dependence on Russian gas have in any case diminished. Not only is the winter over but Europe is generally in better shape to withstand a Russian tantrum. It has improved storage, and built north-south gas links, so that a cut in shipments across, say, Ukraine, can be made up with other supplies. Lithuania, once wholly dependent on Russian gas, has built a terminal to import liquefied natural gas (LNG), gaining a swift price cut from Gazprom. This year America will start LNG exports, creating yet more supply options.

For Mr Putin, the commission's move underlines the scale of Russia's isolation. Trust and patience have ebbed, even in Germany. His friends are fewer in number. By using energy as a weapon, he has prompted defence and counter-attack. The bear is not as feared as it was. ■

俄罗斯天然气工业股份公司

玛格丽特与熊

欧盟反垄断专员向俄罗斯天然气工业股份公司开刀，带来欧洲政策及燃气业大变革

俄罗斯天然气工业股份公司（GAZPROM，以下简称“俄气”）过去陶醉于自己稳如泰山无人敢撼的地位。该公司曾经是欧盟进口燃气的主要供应商，既受惠于克里姆林宫的保护（俄政府是其最大股东），又得益于各燃气采购国尤其是德国的政商关系网。俄气的对手几乎绝迹，顾客也无意抗拒其支配地位。

现在，欧盟盯上了这头俄罗斯燃气巨兽，展开了一番对垒。首轮攻击发生在4月22日，欧盟反垄断专员玛格丽特·韦斯塔格（Margrethe Vestager）向俄气发出人们期待已久的一份“反对声明”（指控书的欧盟叫法），指责该公司滥用市场支配地位。这份不公开的声明文件有几百页之厚，详述了俄气出口燃气的黑幕，尤其指出在其中获利丰厚的中介公司实际所有权不明、交易由政客而非商人确定，还牵涉大量地缘政治偏袒的问题。

欧盟称俄气现在“所循的总体战略旨在分割中欧和东欧的燃气市场”。该公司限制客户转售燃气，使其可在五个国家以“不合理的价格”出售燃气：保加利亚、波兰以及波罗的海诸国中的爱沙尼亚、拉脱维亚和立陶宛。此外，欧盟表示，俄气滥用其市场主导地位，企图控制横跨波兰的亚马尔（Yamal）输气管，又威逼保加利亚支持俄政府提出的“南线”（South Stream）项目，跨越黑海输气到欧盟。该项目现在已经取消。

前几个月，俄气曾派人到布鲁塞尔探听风声，看能否达成和解。但乌克兰问题导致俄罗斯和欧盟关系冻结，俄气与欧盟的谈判也随之破裂。如今俄气有12周时间来应对这些指控——可以抗辩也可以让步，或者兼而有之。如果公司未能令欧盟委员会满意，下一阶段便是强制执行，这可能意味着10亿欧元（11亿美元）或以上的罚款（理论上罚款最高为其营业额的10%），还要依法强制改变俄气的商业模式。这些仍只是备选方案。“一切道路是开放的，”韦斯塔格说，“我们希望俄气作出回应，我们愿意谈判。”

俄气最初反应冷淡。该公司表示欧盟的指控“没有根据”，坚称自己遵守国际法律及营商所在国的本地法规，认为纷争应该在政府层面解决。俄气指出，它“不在欧盟管辖区内”成立。引人深思的是，俄气称俄罗斯法律赋予其“特殊的、具有重大社会意义的职能……以及政府控股的战略性企业实体地位”。早在2012年，俄罗斯总统普京便发出禁令，禁止此类“战略性”企业向外国监管机构披露信息或服从其命令。

欧盟在2007年推出《第三次能源改革方案》（Third Energy Package）并从此开始针对俄气展开行动。方案标题看似平淡无奇，其实包含了一系列措施，对欧洲的能源市场进行“分拆”，实际上是一种颠覆。主要作用是禁止同一企业既拥有输气管道又拥有流经其中的燃气。俄罗斯对此强烈反对，认为这是对俄气资产及业务模式的无端攻击，带有政治性和征用目的。

然而，与微软因把互联网浏览器和Windows操作系统捆绑销售而触犯欧盟竞争法一样，俄气及其背后的政治主导者不了解欧盟凶狠的检察权。而且欧盟对俄罗斯燃气进口越是审视就越是不满意。2011年，在欧盟历史上最大的一次反垄断突击搜查中，持搜查令的欧盟官员从俄气及其附属机构的几十个办公地点查获了文件和电脑。2012年，欧盟对此跟进，展开正式调查。

自2013年，欧盟的“反对声明”就已大致准备就绪，但胆怯拖延了很长时间才推出。韦斯塔格的前任乔奎因·阿尔穆尼亚（Joaquín Almunia）屡次答应起诉，但未及兑现承诺便于去年11月离职。欧盟委员会的高层认为，与其和俄罗斯交恶，不如争取达成协议。

如今欧洲的心态更强硬。韦斯塔格是坚决果断的丹麦人，她坚称自己统领的部门是司法系统的一部分，行事不偏不倚。就在向俄气作出行动之前一周，他们刚向另一企业巨头谷歌发出了反对声明。

对俄气而言，最冥顽不灵的选择是无视欧盟。那样会立刻招致处罚，而且被该公司过高收费的客户也可能会发起诉讼，英国法学教授艾伦·莱利

（Alan Riley）指出。另一对策是提出法律质疑，包括宣称欧盟侵犯产权。捷克政府能源安全特使瓦茨拉夫·巴图斯卡（Vaclav Bartuska）估计俄政府会让步，但以一宗将向中国出口燃气的协议作掩饰，这份高调但缺乏实质的协议将向俄罗斯民众显示俄政府对肆意妄为的欧洲作出惩罚。

俄罗斯也可能推进"土耳其线"（Turkish Stream）项目以规避曾阻碍"南线"项目的欧盟法规，这条横跨黑海的管道将可输气远至土耳其—希腊边境。俄政府正以50亿美元的预付款拉拢希腊支持该项目。类似分而治之策略的个案在欧洲很可能会越来越多：俄罗斯的输气管已开始出口政治影响力，即便这些管道还只是纸上谈兵。

关上气阀以惩欧盟？似乎不太可能。俄罗斯在欧洲的市场份额正在丧失，没有资本惹恼客户或者危及自己400亿美元的出口收入。

气候寒冷

无论怎么说，对俄燃气依赖的忧虑已经减轻。不只冬天已过，欧洲总体状态也已好转，禁得起俄罗斯的勃然大怒。欧盟已经提高了库存，建立了连接南北的输气管道，所以即使某一条出口管道中断，比如乌克兰，也有其他供给来源可以弥补。立陶宛曾经完全依赖俄罗斯天然气，但现在已建立起液化天然气（LNG）进口港，并因而获得俄气迅速降价优惠。今年，美国将开始出口液化天然气，令市场供应更加多元。

对普京而言，欧盟委员会的举措凸显了俄罗斯的孤立无援。盟友们的信任和耐心均已减退，即使德国也是如此。他的朋友更少了。他以能源作武器，却促使大家防守反击。这头大熊不再像以前那样令人惧怕。■

Mining and corruption

Crying foul in Guinea

Africa's largest iron-ore mining project has been bedevilled by dust-ups and delays

"AN emblematic tragedy" is how Sir Paul Collier, an adviser to the British government, describes the situation in Guinea—referring not to the Ebola outbreak (awful though he considers that to be) but the saga of Simandou, a mining project mired in allegations of corruption, expropriation and corporate espionage.

Simandou, a mountainous area in southern Guinea (pictured), has been called the El Dorado of iron ore. It is the world's largest known untapped deposit of the stuff, with enough ore to sustain annual production of 200m tonnes—7% of global iron-ore output—for more than a quarter of a century. Better still, the ore there has unusually high iron content. The potential project cost for the mine, and the railway and port that would be needed to get ore on to ships, is $20 billion, making it Africa's largest ever proposed mining venture. Guinea could do with the investment: it ranks 179th out of 187 countries in the UN's human-development index. Wags, alas, have taken to calling Simandou "Simandon't". Exploration rights were first granted in the 1990s, yet the earliest anyone expects production to begin is 2019.

The saga oozes intrigue. Among its cast of characters: two of the world's biggest mining groups, the Anglo-Australian Rio Tinto and Vale of Brazil; Beny Steinmetz, an Israeli diamond tycoon; George Soros, a billionaire philanthropist; Mark Malloch-Brown, a former deputy head of the UN; the wife of Guinea's former leader; and, possibly, members of South Africa's elite and security services. It is, as one lawyer involved in the case wryly puts it, "a slightly Hollywood story".

The opening chapter was the awarding of exploration licences for four blocks at Simandou to Rio Tinto in 1997. The northern two blocks were snatched back from the company in 2008, as the then dictator, Lansana Conté, lay on his deathbed. The ostensible reason was that Rio was not developing the site quickly enough. Months later the rights to these blocks were assigned to BSG Resources (BSGR), a firm indirectly owned by a Steinmetz family trust. With no upfront payment required, the deal appeared to be very attractive for BSGR. Mo Ibrahim, an African billionaire, asked whether the Guinean officials who agreed to it were "idiots, or criminals, or both". After Conté's death, BSGR sold 51% of its interest to Vale for $2.5 billion, $500m of which was paid immediately.

A new government, led by Alpha Condé, took power in 2010, after Guinea's first democratic elections, and set up a committee to review past contracts. This concluded that BSGR got its blocks through bribery. As a result, the firm was stripped of its concession earlier this year. The government signed a new deal with Rio and its Chinese partner, Chinalco, to develop the two southern blocks they had held onto. This involved Rio having to pay $700m, part of which was upfront taxes.

This wrangling has generated lots of work for lawyers. Rio has filed a racketeering suit in New York against BSGR and Vale, claiming they conspired to steal the northern blocks. BSGR has an arbitration suit against Guinea; Vale has one against BSGR. The latter is sealed but understood to argue that BSGR duped Vale into buying an asset that was presented as legitimate but had been corruptly obtained. (Vale never paid the remaining $2 billion to BSGR, but says it spent a further $700m on Simandou.) In an interview with *Piaui*, a Brazilian magazine, Vale's former boss, Roger Agnelli, said of the union with BSGR: "A guy can marry a former hooker and only discover years later that his wife used to be a prostitute."

On top of these actions, BSGR sued Global Witness last year. The firm

claims that the group violated Mr Steinmetz's privacy by publishing "personal" data in its investigative reports on the case, arguing that since Global Witness is not a bona fide journalistic outfit, but an advocacy group, it needs to comply with higher data-protection standards. Global Witness denies this. The case, which is before Britain's information commissioner and the High Court, could break new legal ground on the free-speech rights of lobby groups. In 2013 a related case was settled out of court when Mr Steinmetz received a portion of his costs—but no admission of fault—from Lord Malloch-Brown (a former employee of this newspaper) and FTI Consulting, the public-relations firm of which he was a regional chairman. The tycoon had sued for breach of contract and defamation, accusing Lord Malloch-Brown of persuading FTI to cancel a contract to represent BSGR, in response to pressure from Mr Soros (an associate, and a patron of Global Witness).

And then there are government investigations into Simandou, in America, Britain and elsewhere. In the end of 2014, a court in Florida allowed prosecutors to seize property owned by Mamadie Touré, the widow of Conté, the late dictator, including restaurant equipment and houses, which the prosecutors believe was bought with the proceeds of corruption. The firm alleged to have given the bribes in the American government's complaint is not named, but it is unmistakably BSGR. The next legal development, expected any day, will be a ruling by a judge in New York on a motion by defendants to have Rio's racketeering suit moved to London, where the bar for proving its allegations would be higher.

Rio's legal complaint is spicy stuff. It alleges that BSGR doled out $100m in bribes and that Frédéric Cilins, an associate of Mr Steinmetz, befriended staff at the business centre of the Novotel hotel in Conakry, the Guinean capital, to obtain copies of faxes detailing Rio's plans at Simandou. The complaint also claims that Vale feigned interest in buying assets from Rio, months after the Brazilian group had begun secret negotiations with BSGR,

in order to hoodwink Rio into showing it confidential information about Simandou's geology. Seeing an opportunity to wrest control of part of the site from its rival "on the cheap", Vale shared this data with BSGR in violation of a confidentiality agreement, Rio alleges.

Testimony and surveillance transcripts from an FBI investigation, made public by the Guinean investigating committee, are particularly illuminating. Ms Touré (who has turned co-operating witness) says BSGR offered her millions of dollars, jewellery, two Toyota Land Cruisers and a 5% stake in the project to persuade her dying husband to sign over the Simandou rights. Some of her allegations are supported by photocopies of cheques. In one transcript, Mr Cilins, having flown to Florida to meet her, urges her to destroy apparently corrupt contracts: "You have to destroy everything, urgently, urgently, urgently." He promises more money if she does, saying the message comes "directly from the number 1". When she asks who that is, he whispers "Beny". In March 2014, Mr Cilins pleaded guilty to obstruction of justice and received a two-year prison sentence.

BSGR denies wrongdoing. The company says the seemingly damning documents were "fabricated" and plays down its relationship with Mr Cilins, saying he never signed a formal contract to represent the firm. The Guinean committee was established "to provide a pretext to illegally seize our assets in Guinea", the company states. BSGR says it "looks forward to testing the evidence" at a forthcoming arbitration tribunal.

As for Rio's racketeering claims, a lawyer for BSGR describes them as "amazingly fictitious". Nevertheless, the trust that controls BSGR is said to have hired Joe Lieberman, a former United States senator, and Louis Freeh, former head of the FBI, to conduct an internal probe of the bribery allegations—though the firm will not say whether they have begun their work.

Spooky

The narrative being pushed by BSGR became clearer when it filed its defence in the Rio suit and a request for arbitration. It alleges that the election that brought Mr Condé to power was rigged with help from South African interests. These provided Mr Condé with financial and other support—including altering voter registers—in return for a promised stake in the nation's mining assets, including the blocks snatched from BSGR, its arbitration filing states. In another document it names 83 individuals and companies, including South African politicians, businessmen and spies, who could have "discoverable information" that might support its claims.

A spokesman for Guinea's government says of the alleged election-rigging: "BSGR has never provided Guinea with any evidence to back its allegations." A spokesman for the Rainbow Coalition, of which Mr Condé's party is a member, says: "The suggestion that an outsider like Alpha Condé rigged the elections against a military insider [Cellou Diallo] beggars belief." Guinea's supreme court certified the poll result, and the Carter Centre, which promotes democracy worldwide, said the electoral process was "broadly consistent with the country's…obligations for genuine democratic elections."

Mr Condé has insisted he is cleaning up government after many years of corrupt dictatorship. But some of the regime's dealings with business raise questions about its judgment. Last May, for instance, the Common Court of Justice and Arbitration, the highest tribunal of a west African body overseeing commercial law, ruled that the government acted illegally in tearing up a container-terminal management contract with Getma International, a French company, in 2011 and handing it shortly afterwards to Bolloré, another French firm. The panel awarded Getma $49m in damages. Guinea scored just 25 out of 100 in Transparency International's latest corruption-perceptions index, placing it below Ukraine.

The closest thing the drama has to a central character is Mr Steinmetz. But seen from another angle, the colourful individuals, and even BSGR, are a sideshow. The big-picture story is a titanic battle between the giants of iron-ore mining—a business in which BSGR is a minnow—for control of the world's richest deposits. Some analysts think Rio's intention all along was to go slow with Simandou, holding it as a defensive play to frustrate global competitors.

The company may have grown less inclined to mine the site: the iron-ore price has fallen by 60% from record highs in 2011. But it is probably also loth to let it fall into the hands of a rival that could reap rewards once the price rebounds. Tellingly, Mr Agnelli said of the joint venture with BSGR: "It was strategically important for Vale not to leave Rio Tinto alone with all that ore." So important, in fact, that some of the contract terms with BSGR were rushed (or even agreed only verbally), leading to much executive disquiet at Vale.

Rio says it is committed to developing its two remaining blocks. It is less clear how keen it is to regain the other two. The firm has said it no longer wants to increase its exposure to Guinea, but not everyone believes that. If the government were to auction them off—it is preparing a tender—interest could come from, among others, Vale, ArcelorMittal and Glencore.

But prospective investors will have to weigh up the risks. One is the outstanding legal challenge from BSGR. Bigger ones are political uncertainty—a presidential election is due to be held next year—and Ebola.

> *Tunnel vision*

Company accountants worry more about the project's steep costs. Simandou sits in a thickly forested mountain range—difficult terrain that greatly raises the cost of building the 650km railway (with 35 bridges and 24km of tunnels) to the coast. It doesn't help that Mr Condé has insisted the

tracks run through Guinea to a domestic port, rather than taking a shorter, easier route through Liberia (see map). The government had wanted to take a big stake in the infrastructure but could not afford to. With help from the World Bank's International Finance Corporation (IFC), Simandou's managers are now looking to assemble a private consortium to finance, build and operate the railway and port. Roadshows for potential contractors begin this month. The estimated infrastructure costs are $13 billion. Whether the project is economically viable will depend on the future trajectory of the iron-ore price.

Simandou could do wonders for Guinea's emaciated economy (GDP per person is a mere $530). Tom Butler of the IFC, which has a 5% stake in Rio's project, describes it as "potentially transformational": even at today's deflated iron-ore price, it would produce annual revenue for the state of "a multiple of the current annual budget". It could generate tens of thousands of jobs and, thanks to the railway, make agri-business in the country's interior competitive for export. Moreover, success would encourage investment in Guinea's sizeable deposits of other minerals, such as bauxite, graphite and manganese.

But nothing will come out of the ground for at least five years. It could be closer to ten. A recent presentation by Glencore, seen by Reuters, predicted that Rio will not rush to produce iron ore from Africa because its focus in coming years will be on growth projects in Australia.

Meanwhile, the legal skirmishes will continue. The arbitration cases, for instance, could grind on for up to five years—prolonging this cautionary tale of the ugly recriminations that can follow when the rights to vast mineral riches are handed out in questionable circumstances. The beleaguered people of Guinea deserve better. ■

采矿与腐败

几内亚“喊犯规”

非洲最大的铁矿石开采项目受纷争困扰，工程一再延误

“典型的悲剧”，英国政府顾问保罗·科利尔爵士（Sir Paul Collier）如此形容几内亚的情况。他指的不是埃博拉疫情（虽然他也认为那很可怕），而是那里深陷贪腐、侵占及企业间谍指控的西芒杜（Simandou）矿业项目。

西芒杜是位于几内亚南部的一个山区（如图），一直被誉为“铁矿石的黄金国”。那里拥有全球已知最大的未开发铁矿石矿藏，以年产量两亿吨（占全球铁矿石产量的7%）计算，足够开采25年以上。更令人欣喜的是，那里的铁矿石含铁量极高。矿区开发加上运输矿石装船所需的铁路及港口建设，整个项目成本估价为200亿美元，使其成为非洲迄今最大的采矿投资计划。几内亚亟需此项投资：在联合国人类发展指数的187个国家中，几内亚排名179。然而，爱打趣的人都管西芒杜叫“西忙堵”。这里的探矿权早在上世纪90年代获批，但项目投产最快要到2019年才能启动。

这个传奇故事散发着阴谋气息。粉墨登场的有：全球最大的两家矿业集团——英澳力拓（Anglo-Australian Rio Tinto）和巴西淡水河谷公司（Vale of Brazil）、以色列钻石大亨班尼·斯坦梅茨（Beny Steinmetz）、亿万富翁慈善家乔治·索罗斯（George Soros）、联合国前任常务副秘书长马克·马洛赫-布朗（Mark Malloch-Brown）、几内亚前领导人的妻子，而且可能涉及南非的精英分子和安全机构。一位知情律师嘲讽道，这一切“有点好莱坞故事的感觉”。

开场第一幕是1997年力拓公司获得西芒杜四个铁矿区块的勘探许可证。其中北部两个区块在2008年几内亚独裁者兰萨纳·孔戴（Lansana Conté）病重临终时被政府从力拓公司手上收回。表面理由是力拓公司没有及时开发矿区。数月后，这些区块的探矿权被转授予由斯坦梅茨家族一个信托基金间接持有的BSG资源公司（简称BSGR）。无需支付任何预付款，该项目

对BSGR而言无疑极具吸引力。非洲亿万富翁穆·易卜拉欣（Mo Ibrahim）质疑首肯这一方案的几内亚政府官员们究竟是“傻瓜、罪人，还是兼而有之”。独裁者孔戴离世后，BSGR将项目所有权的51%以25亿美元卖了给淡水河谷公司，其中5亿美元当场付清。

几内亚经过首次民主选举，由阿尔法·孔戴（Alpha Condé）领导的新政府在2010年上台，之后成立了一个委员会，对过往的政府合同进行复查。结果认定BSGR当时通过贿赂获得了矿产区块，该公司因而在今年初被褫夺矿权。政府又和力拓公司及其合作伙伴中国铝业签订了新的合同，让他们开发政府保有的南部两个区块。力拓公司为此必须支付7亿美元，其中包含预付税金。

此番角力引发连串的法律行动。力拓已在纽约提出针对BSGR及淡水河谷公司的欺诈诉讼，声称两者合谋窃取其在几内亚的北部区块矿权。BSGR则针对几内亚政府提请了仲裁；淡水河谷公司又针对BSGR提请了仲裁。后者属不公开审理个案，但据了解，淡水河谷公司指控BSGR诱骗其购入表面合法而实为行贿取得的资产。（淡水河谷一直未向BSGR支付余下的20亿美元，但称已另花了7亿美元在西芒杜项目上。）在接受巴西杂志《彼奥》（Piaui）的采访时，淡水河谷公司的前任老板罗杰·阿涅利（Roger Agnelli）谈到与BSGR的合作：“一个男人可能懵懂娶了曾操皮肉生意者为妻，直到几年之后才发现她曾经是妓女。”

这些行动之外，BSGR又在去年对全球见证组织（Global Witness）提出了诉讼。公司称该组织在对该事件的调查报告中公布了“私人”信息而侵犯了斯坦梅茨的隐私，认为该组织只是维权组织而非真正的新闻机构，所以必须遵循更高的数据保护标准。全球见证组织否认指控。案件由英国信息专员及高等法院处理，可能将为游说组织的言论自由开辟法律先例。2013年一宗相关案件以庭外和解终结，斯坦梅茨获马洛赫-布朗勋爵及公关公司FTI咨询公司赔偿部分费用，但不涉及承认错误。马洛克-布朗勋爵是本报前雇员，并曾任FTI咨询公司地区主席。这位大亨本来以违约及诽谤的罪名提出诉讼，指控马洛克-布朗勋爵在索罗斯（全球见证组织的合作伙伴及赞助人）的施压下游说FTI咨询公司撤销一份代表BSGR的公关业务合

同。

然后还有美英等国政府纷纷对西芒杜项目展开调查。美国佛罗里达州一个法庭在去年底批准检察官没收几内亚已故独裁者孔戴的遗孀玛玛迪·图雷（Mamadie Touré）拥有的餐厅设备及房屋财产，检方认为那些是以腐败所得购入。美国政府的诉状中并未公开被指行贿的公司名称，但毫无疑问就是BSGR。事件的下一法律进展随时会发生，纽约法官将作出裁决，决定力拓公司提出的欺诈诉讼是否按辩方请求把案件转移至证据标准要求更高的伦敦审理 。

力拓公司的诉状中充满了猛料。它指称BSGR花了一亿美元作行贿之用，又指斯坦梅茨的一位关联人士弗雷德里克·西林斯（Frédéric Cilins）在几内亚首都科纳克里结交了当地诺富特酒店（Novotel）商务中心的工作人员，以取得力拓公司西芒杜项目详细计划的传真件副本。诉状同时声称，巴西淡水河谷公司在已与BSGR展开秘密磋商数月后，假装有意从力拓公司购入资产，从力拓骗取了有关西芒杜地质情况的机密信息。眼看有机会从对手那里“便宜”抢得部分矿区的控制权，淡水河谷公司不惜违反保密协议向BSGR披露了这些信息。

几内亚政府调查委员会公开的一份美国联邦调查局的证词及监听文字记录尤其确凿。图雷（已转为控方污点证人）称BSGR为了让她说服垂死的丈夫批准西芒杜的矿权而向她提供了数百万美金、首饰、两辆丰田陆地巡洋舰越野车，以及项目5%的股权。她的一些指称有支票复印件为证。一份监听记录显示，西林斯从佛罗里达飞往几内亚与她见面，力促其销毁明显腐败的合同：“你要销毁所有东西，现在，立刻，马上。”他承诺只要她依计行事，即可获得更丰厚的金钱回报，又称这是“头号人物直接放话”。当她问及那是谁，他耳语道“班尼”。2014年3月，西林斯就妨碍司法公正的指控认罪，被判监禁两年。

BSGR否认任何不当行为。公司表示那些看似确凿的文件皆属“捏造”，又撇清与西林斯的关系，说他从没签署正式合约代表BSGR公司行事，还声言成立几内亚调查委员会为的是“寻找借口非法掠夺我们在几内亚的资产”。

BSGR表示，公司“期盼着”在即将开庭的仲裁庭上“检验证据”。

至于力拓公司指控的欺诈行为，BSGR的一名代理律师形容那是“信口雌黄”。然而，控制BSGR的信托基金据说已聘请美国前参议员乔·利伯曼（Joe Lieberman）及美国联邦调查局前局长路易斯·弗里（Louis Freeh）对行贿指控开展内部调查。但公司不愿公布调查是否已经开始。

诡异

当BSGR就力拓的指控提出抗辩并提请仲裁时，它一直力主的说法更显清晰。BSGR称使孔戴获得几内亚最高权力的那场选举涉及由南非利益集团协助舞弊。他们为孔戴提供财力及其他帮助——包括更改选民登记册——换取可对几内亚矿藏资源分一杯羹的承诺，其中包含从BSGR手里夺来的矿产区块，其仲裁申诉档案上如是陈述。在另一文件内，BSGR列出了83名个人及公司名字，其中有南非政客、商人及间谍，他们或许拥有能支撑其说法的“可取证信息”。

几内亚政府发言人对于选举舞弊一说表示：“BSGR从没就其宣称的内容向几内亚提供任何证据支持。”彩虹联盟（孔戴所属党派为联盟成员）的发言人说道：“说阿尔法·孔戴这样的圈外人面对军方圈内人[塞卢·迪亚洛（Cellou Diallo）]能操控选举，那难以置信。”几内亚最高法院确认了投票结果，而在全球致力推动民主的卡特中心（Carter Centre）也表示那一次选举的过程“大致符合该国……为真正民主选举肩负的义务。”

孔戴坚称，在经历多年腐败独裁统治之后，自己正努力净化政府。但该政权对商业事务的一些处理却让人对其判断产生质疑。例如，西非监督商业法律实施的最高法庭——司法与仲裁普通法院——在去年5月份作出裁决，指几内亚政府在2011年撕毁与法国捷特玛国际公司（Getma International）的集装箱码头管理协议并随即转让予另一法国公司波洛莱集团（Bolloré）属违法行为。法庭判捷特玛国际公司获4900万美元赔偿。据透明国际（Transparency International）最新公布的清廉指数，满分100分中，几内亚只得到25分，排名在乌克兰之后。

事件中最像主角的人物就是斯坦梅茨。但从另一角度看，这些多姿多彩的角色以至BSGR都只能算是跑龙套的。纵观全局，上演的实际是铁矿大鳄之间对全球最丰富矿藏控制权的争夺战，BSGR在其中只是一条小鱼。一些分析师认为力拓公司在西芒杜项目上一直采取拖延战术，把它作为一着守棋来挫败全球竞争者。

力拓公司对开采矿产的意愿或许已有消减：铁矿石价格已从2011年的历史高位下降了60%。但公司可能也不愿意让项目落入对手手中，以防他们可能在日后价格反弹时得利。阿涅利谈到与BSGR的合作开发项目时明确指出："淡水河谷公司不能让力拓公司独享那么多的铁矿石，这具有战略重要性。"事关要紧，以至于与BSGR签订的某些合约条款实为匆匆而就（或甚至只是口头约定），导致淡水河谷公司高层甚为不安。

力拓公司表示将致力开发拥有的余下两个区块。并不清楚它有多大意愿去重夺另两个区块。公司已表明不想再扩大在几内亚的业务，但并非所有人都相信这一表态。如果政府要把区块拍卖出去（正准备招标），其他公司可能会有兴趣，如淡水河谷公司、安赛乐米塔尔钢铁集团（ArcelorMittal）以及嘉能可公司（Glencore）。

但准投资方必须权衡风险。一方面是BSGR提出的法律挑战仍悬而未决。更大的风险是政局未知——新一轮总统选举将在明年进行，还有埃博拉疫情。

一孔之见

公司会计师更担心的是项目的巨额成本。西芒杜矿区位于丛林茂密的山区内——全长650公里通往海岸的铁路（包括35座桥梁及24公里隧道）要在这复杂地形中修建，成本会大大提高。而更麻烦的是，孔戴坚持要求铁路横跨几内亚抵达一个本国港口，而非取道利比里亚走距离更短、施工更易的路线（见地图）。政府曾希望在基建项目中加大参与，但无力投资。在世界银行国际金融公司（IFC）的资助下，西芒杜项目的管理方正在寻求组建一个私人财团负责铁路及港口的融资、建设和运营。招揽潜在承包商的路演在这个月开始。基建成本估计为130亿美元。项目在经济上是否可

行将视乎铁矿石价格的未来走势。

西芒杜项目也许能为几内亚羸弱的经济（人均GDP仅为530美元）带来奇迹。国际金融公司在力拓公司的项目中拥有5%的股权，其全球矿业总监汤姆·巴特勒（Tom Butler）形容该项目“可能带来翻天覆地的转变”：即便按如今低迷的铁矿石价格计算，每年也可以为几内亚政府带来“数倍于现在年度预算”的收入。项目可造就数以万计的就业机会，另外，得益于铁路的修建，可使该国内地的农企更具出口竞争力。而且，如果项目成功，将鼓励更多资金投入到几内亚开采其他丰富矿产，如铝土矿、石墨和锰。

但至少未来五年这片地域仍将无所产出。等待可能要接近十年。据路透社消息，嘉能可公司最近的一份报告预测力拓公司不会急于开采非洲的铁矿石，因为它未来发展的重点是澳洲的增长项目。

同时，法律冲突将继续。举例来说，仲裁案件最长可能耗上五年时间。政府对丰富矿藏开采权的分配令人质疑，可能招致难堪的相互控诉。这一令人警醒的故事仍将持续。挣扎交困的几内亚人民理应获得更好的结果。■

Liquidity in markets

Frozen

Regulators have made banking safer. But has that made markets riskier?

TO ENSURE that it meets the 750 new rules on capital imposed in the aftermath of the financial crisis, JPMorgan Chase employs over 950 people. A further 400 or so try to follow around 500 regulations on the liquidity of its assets, designed to stop the bank toppling over if markets seize up. A team of 300 is needed to monitor compliance with the Volcker rule, which in almost 1,000 pages restricts banks from trading on their own account.

The intention of all these rules is to prevent a repeat of the bankruptcies and bail-outs of 2008. But some observers, including JPMorgan's boss, Jamie Dimon, and Larry Summers, a former Treasury secretary, argue that in their rush to make banks safer, regulators may have created a riskier financial system. By throttling the bits of banks that "make markets" in bonds, shares, currencies and commodities, the theory goes, watchdogs have made such assets less liquid. Investors may not be able to buy and sell them quickly, cheaply and without moving the price. The consequences in a downturn, when markets are less liquid anyway, could be severe.

Banks have undoubtedly cut back as the plethora of new rules has made it difficult for their trading arms to eke out a satisfactory profit. They used to "warehouse" lots of bonds and other securities they had bought from one client and hoped to sell to another. But they must now hold more capital and liquid assets to offset the potential losses from trading, so keep much smaller inventories and place fewer bets. Broadly speaking, trading desks are still happy to match buyers and sellers but are reluctant to commit to a purchase before lining up a buyer.

Meanwhile, the value of outstanding bonds has swollen to record levels,

most of them in the hands of asset managers (see chart). That is in part a corollary of banks trimming lending, and so pushing borrowers to the bond market instead, and in part a natural response to low interest rates. Even firms with patchy credit records are issuing "high-yield" debt to investors clamouring for returns. Governments have remained eager borrowers, too.

The result is an imbalance. In America, investment funds used to hold only three times as many bonds as banks. Now they hold 20 times as many, according to the Federal Reserve (see chart). Mr Dimon paints an even starker picture for Treasuries. In 2007 JPMorgan and its peers used to have $2.7 trillion available to make markets. Now they have just $1.7 trillion—while the American national debt has doubled. In Europe, where banks have trimmed investment banking even more, the situation is if anything worse.

The result of this lopsidedness, pessimists say, are events like the "flash crash" last year, during which yields on Treasuries suddenly tumbled by 0.34 percentage points for no apparent reason—an extraordinary shift for the bedrock security of the global financial system. They are worried about bonds of all sorts, which are much less heavily traded than shares, currencies and commodities. Funds that track corporate bonds often promise their investors their money back whenever they want it, despite the relative illiquidity of their assets. The IMF recently calculated that it might take 50-60 days for a fund holding American high-yield corporate bonds to find buyers for its securities. Meanwhile, investors are typically entitled to their money back within seven days of asking for it. "No investment vehicle should promise greater liquidity than is afforded by its underlying assets," says Howard Marks, boss of Oaktree, a debt fund.

Regulators are mindful of all this. The Securities and Exchange Commission in America has called for stress tests of asset managers to ensure they can muddle through a crisis. The Bank of England wants them

to look closely at redemption policies. They also suspect, however, that the high level of liquidity before the crisis was an anomaly that bankers are harping on about in an effort to roll back regulation.

Asset managers are also aware of the risks of diminished liquidity. BlackRock, the world's biggest, has said it is limiting its exposure to certain bonds as a result. Others are breaking up big trades into smaller orders, to prevent them moving prices in an adverse direction, or trading less than they might otherwise. Funds tracking bond indices hold cash to meet redemptions. They can also invest in derivatives linked to the index, which are typically more liquid than individual bonds. If faced with a rash of redemptions, these can be sold off without much loss.

Another solution is for the asset managers to bypass the banks. Many are trying to "cross-trade", exchanging assets with one another directly, instead of using banks as go-betweens. But matching buy and sell orders electronically is tricky for bonds: whereas most firms have only one or two classes of shares, many have issued dozens of bonds, in different currencies and with different maturities. There have been several attempts to set up trading platforms, but few have attracted much volume.

Even if such schemes get off the ground, asset managers cannot fully substitute for banks. They do not have as much purchasing power, since their balance-sheets are not swollen with borrowed money. Relatively few of them have a mandate to be contrarian: most (especially those passively tracking an index) want to enter or exit the same positions at the same time.

All this may mean that asset managers are indeed forced to offload securities at fire-sale prices in times of turmoil. But unlike banks, which can fail due to trading losses, asset managers are mere custodians of money. Any losses in their funds are passed on directly to investors. Having

banks—highly leveraged and interconnected institutions—sit on top of that risk proved a disastrous recipe during the crisis. Maybe their retrenchment has indeed made markets riskier. Yet that may be an acceptable price for making banks safer. ■

市场流动性

冻结

监管令银行更安全，但令市场风险更高？

金融危机后对资本管理提出了750项新规则。为了合规，摩根大通（JPMorgan Chase）聘请了超过950人。然后又聘用约400人来保证公司能够遵守有关资产流动性的约500条规则，这些规则的初衷是防止银行在市场失去流动性时倾覆。另外，还需要300人的团队来监督沃尔克法则（Volcker rule）的合规问题，这部近1000页的法则对金融机构从事自营业务作出了限制。

所有这些规则意在防止2008年连串破产及纾困救市那一幕重演。但摩根大通的老板杰米·戴蒙（Jamie Dimon）和前美国财政部长拉里·萨默斯（Larry Summers）以及其他一些观察家均认为，监管机构在急于提高银行稳健性的同时，可能使金融体系产生更高的风险。理论上，通过限制银行相关部门在债券、股票、外汇及大宗商品上“做市”，监管机构降低了这些资产的流动性。投资者可能无法在不造成价格波动的前提下，以低价快速买卖这类资产。在经济低迷时，市场流动性本来就较差，这些举措可能会带来严重后果。

银行无疑“瘦身”不少，那些铺天盖地的新规则已令其交易部门难以维持令人满意的利润。过去，他们会“持有”从一个客户手上购入的债券及其他证券，以期出售给另一个客户。但现在，为弥补交易可能带来的损失，他们必须持有更多资本和流动资产，所以其存量证券大为缩小，押注也相应减少。一般来说，银行交易部门仍愿意匹配买卖双方，但在找到买家之前并不愿意购入资产。

同时，存量债券的价值已涨至历史新高，大部分掌握在资产管理公司的手上（见图表）。这种情况一方面是银行减少放贷而把借款人推向债券市场的必然结果，另一方面也是对低利率的自然反应。即便信用纪录劣迹斑斑的公司也在向渴望收益的投资者发行“高收益”债券。同时，政府依旧急于

借债。

结果是陷于失衡。据美联储的数据（见图表），在美国，投资基金持有的债券曾经只是银行所持的三倍，如今是20倍之多。戴蒙描述的国债情况更为严重。2007年摩根大通及其同行一度拥有2.7万亿美元国债用于做市，如今他们仅有1.7万亿美元，而美国国债规模已经翻倍。在欧洲，银行对投行业务的削减更甚，情况只能说是更为糟糕。

悲观者会说，这种失衡会导致出现像去年“闪电崩盘”的情形，当时在没有任何明显原因的情况下，国债收益率下跌了0.34%——对全球金融体系的基础证券而言这是个不寻常的变动。他们对各类债券均表示忧心，因为债券远不像股票、外汇及大宗商品那样频繁交易。追踪企业债券的基金尽管资产流动性相对较低，却往往向投资者保证可随时赎回。国际货币基金组织最近的计算结果显示，持有美国高收益企业债券的基金要为手中证券找到买家需要50至60天。同时，投资者通常有权在提出赎回债券后的七天内收到资金。“任何投资工具对流动性的承诺都不应该超过标的资产的实际流动性。”债务基金公司“橡树”（Oaktree）的老板霍华德·马克斯（Howard Marks）说。

监管机构注意到了这一切。美国证券交易委员会一直呼吁资产管理公司做压力测试，以确保他们能熬过危机。英格兰银行希望他们能细察赎回政策。监管机构还怀疑，金融危机前资产的高流动性实为异常现象，银行总纠缠于此，目的是希望能放松监管。

资产管理公司也意识到流动性降低的风险。全球最大的资产管理公司黑石集团（BlackRock）表示已对公司投资特定债券的风险敞口设限。其他公司则把大额交易分散为小单，或者刻意降低交易量，以防引发价格反向变动。追踪债券指数的基金会保留现金来应付赎回。他们也可以投资和指数挂钩的衍生品，这通常比单个债券更具流动性。如果出现大量赎回，将衍生品抛售也不会有太大损失。

资产管理公司的另一出路是绕过银行。许多已试图“对敲交易”：直接与其

他资产管理公司作资产交易，不用银行做中间人。但就债券而言，电子化匹配买盘卖盘是个棘手难题。若论股票，大多数公司都只发行一两个类别而已，但许多公司却会有好几十种债券，有不同币种和久期。建立交易平台的尝试已经有过好几次，但没有几家能吸引足够大的交易量。

即便这些计划都顺利起航，资产管理公司也不可能完全替代银行。他们不具备银行的购买力，因为他们无法借钱来放大资产负债表。他们很少有逆市操作的授权：大多数公司（尤其被动追踪指数的那些）建仓和平仓的时间相同，仓位相当。

所有这一切意味着，在动荡时期资产管理公司的确会被迫低价抛售证券。银行有可能因为交易损失而倒闭，但资产管理公司不一样，它们只是做资金托管。基金的任何亏损都会直接转嫁到投资者身上。把银行（高度杠杆化且各家银行相互关联）曝露在此风险之下，已在金融危机期间被证明是灾难性的措施。也许银行“瘦身”的确已令市场风险加大。然而，为使银行变得更安全，这也许是可以接受的代价。■

Schumpeter

The business of business

An old debate about what companies are for has been revived

IN 2000 two American law professors, Henry Hansmann of Yale University and Reinier Kraakman of Harvard, pronounced that the most hotly-contested debate in corporate law had been resolved. For decades conservatives and progressives had argued over whether the purpose of a company is to maximise shareholder value or pursue broader social ends. Now, the conservatives had won. Anglo-Saxon capitalism was sweeping all before it. And the world's legal systems were converging on the shareholder-value model. The duo could hardly have been more unlucky in their timing. Not long after their article was published, several companies that proudly practised shareholder-value maximisation went up in flames: Enron, Arthur Andersen and WorldCom, among others. Six years later the collapse of Lehman Brothers triggered a global crisis. Jack Welch, GE's former boss and a poster boy of the conservative school, said pursuing shareholder value as a strategy was "the dumbest idea ever".

Defenders of the model might retort that a few bad apples don't spoil the bunch. These have now been dealt with and the laws strengthened. But the shareholder-value model has conceptual as well as practical problems. Its proponents argue that companies are owned by shareholders, when in fact they are "legal persons" that own themselves. Shareholders just own shares—that is, bundles of entitlements such as the right to receive dividends and to vote on certain issues. Corporate personhood gives shareholders the benefit of limited liability: creditors can only enforce their claims against the firm's assets rather than against the shareholder's assets. It also gives companies the benefit of capital "lock-in", so they can pursue long-term projects: if shareholders want their money back they have to sell

their shares.

Shareholder-value arguments are often used to press a company to do something that would create a short-term profit for shareholders, such as accepting a takeover bid. However, in America most legal jurisdictions have some version of the "business judgment rule" which gives directors discretion to act in the long-term interests of the company even if this means sacrificing short-term gains. In practice, of course, shareholders are often not a homogeneous block with a collective interest: traders who buy on the whiff of a bid may have a different perspective from investors who have held the shares for decades.

With conservatives on the defensive, progressives are now pressing their advantage. In a new book, "How Good We Can Be", Will Hutton, a British newspaper columnist, calls for a "Companies Act for the 21st century": firms should be required to declare on incorporation their intention "to deliver particular goods and services that serve a societal or economic need". In a recent lecture to the British Academy, Colin Mayer, a management professor at Oxford University, called for companies to be required to "articulate their purposes". Directors should be held to account for the delivery of these stated purposes. Controlling ownership should be in the hands of people who can ensure that directors discharge their responsibilities. Mr Mayer says a striking number of what he sees as the world's best firms, such as Bosch, Carlsberg, Bertelsmann and Tata, are owned by foundations that are pledged to pursue the public good. Darrell West of the Brookings Institution in Washington, DC, notes the decline of the idea that companies are creatures of the state, given the privilege of incorporation in return for pursuing a broad public purpose.

This all sounds very enlightened. But who will decide whether new companies are likely to serve the public good? Will a committee of the great and the good interrogate young app designers about the social benefits of

their inventions? Will foreign competitors who are not required to pass a public-interest test be barred from the market? Or domestic entrepreneurs who choose to incorporate abroad?

Nor are foundations the paragons that Sir Colin imagines: they are frequently created to reduce corporate tax burdens and invariably hand power to a select group of insiders. Carlsberg is struggling, after going heavily into the Russian market, and recently replaced its CEO. Bertelsmann remains highly dependent on its German television stations despite repeated attempts to join the digital revolution. Tata has lots of underperforming businesses as well as some excellent ones. As for Mr West and the supposed virtues of companies as creatures of the state, the one-word response to that is: Petrobras.

> *...is business*

The secret of the modern company's success is precisely that it is such an open-ended organisation. Until the 19th century companies had to pursue a public purpose (imperial domination, usually) in return for limited liability. But various governments, starting in Britain and America, swept away these restrictions and let companies form for no other purpose than to engage in business. This simple act of liberalisation did as much as anything to create the modern economy. Open-endedness lets companies evolve: startups have very different purposes to mature businesses.

Open-endedness reflects the realities of corporate life: far from being slaves to the share price, as progressives imagine, most companies are engaged in a constant process of negotiation between managers and investors over their strategy and time horizons. Mature companies such as Shell, Intel and Nestlé often invest for the long term without a squeak from fund managers. New-economy companies such as Google, Facebook and, particularly, Amazon have had no difficulty in persuading investors to sacrifice short-term returns (and indeed any control whatsoever) in return for long-term

rewards.

That businesses do not have to declare a lofty purpose so as to enjoy the privilege of incorporation is not a bug but a feature. Indeed, it is the defining feature of the modern corporation. Change it and you wreck the entire machine. ■

熊彼特

在商言商

公司何所为，争论复争论

2000年，耶鲁大学的亨利·汉斯曼（Henry Hansmann）及哈佛大学的莱纳·卡拉克曼（Reinier Kraakman）这两位法学教授宣称，公司法中争辩最激烈的议题已得到解决。几十年来，保守派和进步派一直就公司是以实现股东价值最大化还是追求更广的社会意义为目的争论不休。目前，保守派胜出。盎格鲁-撒克逊资本主义席卷一切。世界法律体系也集中于股东价值模式。两位学者发布成果的时机却无比糟糕。其文章发表后不久，大张旗鼓奉行股东价值最大化的几家公司纷纷毁于一旦：安然（Enron）、安达信（Arthur Andersen）、世通（WorldCom）等等。六年后，雷曼兄弟的倒闭引发了全球危机。通用电气的前总裁杰克·韦尔奇（Jack Welch）曾是保守派的代言人，却改口说以追求股东价值为战略是“史上最笨的主意”。

该模型的捍卫者可能会反驳说，少数害群之马不代表一切。问题已处理，法律也已加强。但股东价值模式无论在概念还是在操作上均存在问题。其支持者称，公司为股东所有，但实际上，是“法人”拥有公司。股东只是持有股份——也就是一系列的权利，例如获得分红及在某些议题上的投票权。法人赋予股东有限责任这一好处：债权人只能针对公司资产索偿，而不能针对股东资产。这也有利于公司“锁定”资本，方便其推进长期项目：股东若想撤资则必须卖出其持有股份。

股东价值论调常被用来向公司施压，让其执行为股东创造短期利润的某些行动，例如接受收购要约。但在美国大多数法律管辖区域内，都有某种版本的“经营判断法则”，赋予公司董事自由裁量权，即便牺牲短期收益，也可按企业长远利益行事。实际操作上，当然，股东们往往不是奔着同一集体利益的同质群体：听到收购风声而购入股份的投机商人和持股数十年的投资者可能视角不尽相同。

随着保守派转入守势，进步派正乘胜追击。在新书《我们能有多好》（How Good We Can Be）中，英国报纸专栏作家威尔·赫顿（Will Hutton）呼吁建立“为21世纪而设的公司法”：应该要求公司在成立之际申明其目的是“为满足社会或经济需求而提供特定商品及服务”。牛津大学管理学教授科林·迈耶（Colin Mayer）最近在英国国家学术院（British Academy）作的一场讲座中呼吁规定公司“申明经营目的”。并要求董事们为履行这些明言的目的负起责任。控股权应落在能督促保证董事完成任务的人手中。迈耶指出，他心目中的世界最优企业，如博世、嘉士伯、贝塔斯曼和塔塔，大多数由致力追求公共利益的基金会所有。华盛顿特区布鲁金斯学会（Brookings Institution）的达雷尔·韦斯特（Darrell West）指出，公司由政府授权组建，目的为追求广泛的公共利益，但这种观念日渐式微。

这一切听起来相当开明。但新公司会否服务于公众利益，这由谁来裁量定夺？会有某个要人云集的委员会来质问年轻的应用设计师，探究其发明有何社会效益吗？无须通过本地公共利益审查的外国竞争者难道就此被排除在市场之外？本地企业家选择在国外组建公司又将如何？

科林教授想象的基金会控股模式也非完美典范：基金会创建的目的往往在于减轻企业税负，而且总是把权力转到小部分内幕人士手上。嘉士伯在大举进军俄罗斯市场后陷入经营困境，最近更换了CEO。贝塔斯曼多番尝试融入数字革命，但依然高度依赖其德国电视台业务。塔塔虽有一些业务成绩斐然，但也有许多表现不佳。至于韦斯特，还有他认为公司作为政府产物的所谓优点，一个名字就可驳倒：巴西国家石油公司（Petrobras）。

> *经商乃为……*

现代公司的成功秘诀恰恰在于其为开放式组织。直到19世纪，企业还必须服务公共目的（通常是效力帝国统治）以换取有限责任。而后来，始于英美，各国政府纷纷扫除这些限制，让公司可只为营商而成立，别无他责。在造就现代经济方面，这一自由化的简单举措厥功甚伟。开放式经营让企业发展进化：论经营目的，创业公司与成熟企业大不相同。

目的开放性反映了企业生活的现实：大部分公司远非进步派想象的那般甘当股价奴隶，而是由管理者和投资者就企业战略和投资期限不断商议修正。壳牌、英特尔、雀巢这类成熟企业往往从事长期投资，不容基金经理置喙。新经济公司，如谷歌、Facebook，尤其是亚马逊，可轻易说服投资者牺牲短期回报（甚至任何控制权）来换取长期收益。

无须宣称崇高目的即可享有组建公司的权力，这并非漏洞，而是一份特质。事实上，这正是现代企业的典型特质。改变这一点，整台机器便分崩离析。■

Contemporary Russia

Red sky in the morning

A salutary tale of robbery and redress

BILL BROWDER was a happy man in 2003. He had the perfect job and was making himself rich. He bought underpriced shares in badly run Russian companies and chivvied the management into behaving better so the share price would go up. It worked. Between the depth of Russia's financial crash in 1998 and the end of 2003, his investment fund had grown more than 12-fold. What could go wrong? Plenty, it turned out, including expropriation, beatings, intimidation and death.

"Red Notice" is a sizzling account of Mr Browder's rise, fall and metamorphosis from bombastic financier to renowned human-rights activist. Born into a leftish academic household (his grandfather led the American Communist Party), he rebelled by turning to capitalism. He spotted the potential of eastern Europe before it became fashionable, took big risks and reaped the rewards. He describes the exhilaration of buying scruffy little privatisation vouchers with suitcases of cash and watching their value soar when everyone else cottoned on to the size of the enterprises involved. He learned how to use the media to voice concerns about corruption, hit back at tycoons who tried to bully him, and to promote Russia as a vastly under-valued market. Some journalists can still remember Mr Browder's hectoring late-night phone calls.

The book begins with Mr Browder's surprise deportation from Moscow in late 2005. It was not the first sign that something was awry in Russia, but the first time it affected him. The intervention came directly from the FSB, the state security service. Russian officials then raided his offices, beat up someone who unwisely resisted them and confiscated documents.

Mr Browder rightly assumed that he had overstepped the mark in his lambasting of Russian tycoons for corruption and asset-stripping. He secretly liquidated his holdings and shifted his investments to other countries. But his downfall in Russia was the beginning of the story, not the end. Corrupt officials were interested in the fact that Mr Browder's companies had been some of the country's largest taxpayers. Using the stolen documents and a bewildering series of phoney lawsuits, they took over the companies and wiped out the previous year's profits, allowing officials to reclaim the tax paid. The $230m refund, the largest in Russian history, was paid out in a single day.

All this would have remained a mystery, had it not been for the dogged efforts of Mr Browder's Moscow tax lawyer, Sergei Magnitsky, who pieced together what was happening and began to seek redress. In response Magnitsky was arrested and told that he would be freed only if he gave evidence against his client. He held out for a year while he was kept in pre-trial detention in abominable conditions. On November 16th 2009 Magnitsky died of untreated pancreatitis, aggravated by a severe beating. In a particularly grotesque touch, the Russian authorities then prosecuted him posthumously for perpetrating the fraud he had uncovered.

Mr Browder's obsessive streak, a fault in other circumstances, has made him a formidable adversary for the regime in Russia. He blames himself for Magnitsky's death and has paid for a mammoth (and continuing) investigative effort that has been more successful than anything tried by Western intelligence agencies and police forces. He has shown how the money was stolen, who did it and, more to the point, how they laundered it in the West. He has publicised these findings in documentary films and spread them in acres of news coverage. When one of the culprits, a seemingly humble policeman, hired one of London's swankiest law firms to silence him with a libel suit, Mr Browder succeeded in having it struck out, making a footnote in legal history. When the Kremlin tried to use

Interpol to have him extradited to Russia on trumped-up fraud charges, he fought back, bringing about another change in the rules.

Mr Browder has lobbied lawmakers to impose visa sanctions and asset freezes on the beneficiaries of the fraud and on Magnitsky's persecutors. Congress ignored the timorous Obama administration and pushed through sanctions in the "Magnitsky Act" in 2012. Other countries followed suit. Seeing your stock go up ten times is the "financial equivalent of smoking crack cocaine", writes Mr Browder. But visiting the European Parliament with Magnitsky's widow and son in April 2014 and watching Europe's largest lawmaking body unanimously back his campaign was "orders of magnitude better than any financial success I have ever had".

Ably ghostwritten, "Red Notice" reads more like a financial thriller than a real-life story. But it skates over some mistakes, including the author's initial failure to see that Vladimir Putin's authoritarian kleptocracy was far from an investors' paradise. He blames himself for being "completely naive" and "not paying attention" and for assuming that as a foreigner, he was "somehow exempt" from the informal rules that applied to locals. "I believed I could do things that a Russian in my position would never have been allowed to do." Another view would be that Mr Browder was blinded by greed and his own ego; he did not want to see deeply troubling trends that others had already decried.

Yet two central messages of the book are moving and simple. The first is that Mr Browder and his team have made Magnitsky's fate into an international *cause célèbre*. The second is that the book exemplifies both the corrupt and brutal way in which the Putin regime does business at home and the cynical help it gets from foreigners when it launders profits abroad. Mr Browder says he has changed. He has befriended human-rights activists and others who have given him "a whole new perspective on humanity". His life in finance, he says, was like watching television in black

and white. “Now I’ve installed a wide-screen colour TV and everything in my life is richer, fuller and more satisfying.” In short, the perfect job: making himself poorer, but the world a better place. ■

当代俄罗斯

晨曦中的红色天空

有关抢掠和纠正的励志传奇

比尔·布劳德（BILL BROWDER）在2003年还是个幸福的人。他有无可挑剔的工作并倚之发家致富。他找到经营不善的俄罗斯公司，收购其被低估的股票，敦促管理层更好地履责，最终使股价上扬。这行之有效。从1998年俄罗斯金融危机的谷底到2003年底，他的投资基金增长超过12倍。会出什么差错呢？最终证明有很多，包括资产被剥夺、有人被打、被恐吓，还有人丢了性命。

《红色通告》（Red Notice）热情洋溢地描述了布劳德的崛起、衰落，以及他从夸夸其谈的金融家到知名人权活动家的转变。布劳德出生于一个左派知识分子家庭，他的祖父领导过美国共产党，而他背离了家庭传统，转投资本主义。在东欧的潜力受到广泛追捧之前，布劳德就抢先意识到了这一点，甘冒巨险，终有斩获。他以成箱的现金收购破旧的小张私有化凭证，当其他人开始意识到这些企业所包含的价值之时，他只需坐看其价值飙升。他在书中记述了这一过程中的欣喜之情。他还学会了如何利用媒体表达对贪腐的担忧，回击威吓他的企业大亨，并且把俄罗斯作为一个被极大低估的市场加以推广。一些记者仍然记得布劳德煞有介事的夜半来电。

2005年底，布劳德出人意料地被莫斯科驱逐出境，全书以此开篇。这不是第一次有迹象显示在俄罗斯事情不对劲了，但这是他头一回受波及。俄罗斯联邦安全局（FSB）直接介入此事。俄罗斯的官员们随后突袭了他的办公室，痛殴了某个做出不明智抵抗的人，没收了所有文件。

布劳德清楚地预见到，在痛斥俄罗斯大亨的腐败和资产倒卖时，自己越过了雷池。他秘密地清空了自己的持股，并将投资转移至其他国家。但他在俄罗斯的衰落只是故事的开始，而非终结。布劳德的公司位居该国的纳税大户之列，贪官污吏们对此兴趣十足。利用偷来的文件以及一系列令人眼花缭乱的虚假诉讼，官员们接管了这些公司，并抹掉了前一年的利润，继

而要求退回已缴纳的税金。2.3亿美元，俄罗斯历史上最大的一笔退税，一日之间便清付了。

如果不是布劳德在莫斯科的税务律师谢尔盖·马格尼茨基（Sergei Magnitsky）的不懈努力，这些事情可能仍然秘而不宣。他把这些秘事搜集起来并开始寻求纠正。作为回应，官方逮捕了马格尼茨基，并告知他只有提供对其委托人不利的证据才可获释。尽管在恶劣的条件下被审前羁押，他仍坚持不妥协长达一年。因患胰腺炎未获治疗，且因受刑讯而病情恶化，马格尼茨基于2009年11月16日去世。异常荒诞可笑的是，俄罗斯当局在他身故后把欺诈罪名反扣在他头上，对他起诉。

布劳德偏执的个性在其他情况下是个缺点，但却使他成为俄罗斯政府的可怕对手。他因为马格尼茨基的死而自责，于是出资进行了规模巨大且持续的调查，这些调查比西方情报机构和警察部门以往所做任何尝试都更见成效。他揭露了金钱如何被窃取，谁是窃贼，而且更切中要害的是，窃贼们如何在西方洗钱。他以纪录片的形式公布了这些发现，并通过大量的新闻报道加以传播。元凶之一，一个貌似谦谦君子的警察聘请伦敦最气派的律师事务所，欲以诽谤罪令他禁言。布劳德成功地将其驳回，在法律史上写下了一笔。当克里姆林宫试图通过国际刑警组织以莫须有的欺诈罪名将他引渡到俄罗斯时，布劳德奋起反击，又一次改变了规则。

布劳德已游说议员，对欺诈受益者和迫害马格尼茨基的人实施签证制裁和资产冻结。美国国会无视懦弱的奥巴马政府，于2012年通过了《马格尼茨基法案》以实施制裁。其他国家也循例而行。看着手里的股票攀升十倍就像是在“吸食金融可卡因”，布劳德如此写到。但在2014年4月偕马格尼茨基的遗孀孤子访问欧洲议会时，看到欧洲最大的立法机构全体一致地支持他的行动，他发现这种感觉“比以往任何金融成功带来的感受都要好上几个数量级”。

由于代笔精妙，《红色通告》读起来更像是金融惊险小说，而非真实故事。但书中对一些错误一笔带过，包括作者没有在早期预见到普京的独裁腐败统治不会造就投资者的天堂。他责备自己“太天真”，“没有留意”，自

以为作为外国人，可“以某种方式豁免”于运用于本国人的潜规则。“我相信自己做的一些事，换一个俄罗斯人在我的位置上，他永远不能获准去做。”而另一种看法可以是布劳德被贪欲和自负所蒙蔽。他却不愿意看到那些别人已经责难的令人不安的趋势。

然而，书中传递的两个核心信息简单感人。第一个是布劳德和他的团队让马格尼茨基的命运成了轰动国际的大案。第二个是书中例证了普京政权在国内腐败而残忍的经商手段，以及在国外洗钱时得到了外国人见利忘义的帮助。布劳德说自己变了。他友待人权活动家，还有那些带给他“全新人道观点”的人们。回顾他的金融生涯，就好像在看黑白电视，他说道。“现在，我有了宽屏彩色电视机，我整个人生都更丰富、充实和满足。”简言之，这份完美的工作使他不那么富有，但让世界更为美好。 ■

Investing in agriculture

Barbarians at the farm gate

Hardy investors are seeking a way to grow their money

IN THE next 40 years, humans will need to produce more food than they did in the previous 10,000 put together. But with sprawling cities gobbling up arable land, agricultural productivity gains decreasing, and demand for biofuels increasing, supply is not keeping up with demand. Clever farmers, scientists and entrepreneurs are bursting with ideas. But they need money to make this jump.

Financiers more often found buying and selling companies have cottoned on to the opportunity. Farm gates have traditionally been closed to capital markets: nine in ten farms are held by families. But demography is forcing a shift: the average age of farmers in Europe, America and New Zealand is now in the late fifties. They often have no successor, because offspring do not want to farm or cannot afford to buy out family members. In addition, adopting new technologies and farming at ever-greater scale require the sort of capital few farmers have, even after years of bumper crop prices.

Institutional investors such as pension funds see farmland as fertile ground to plough, either doing their own deals or farming them out to specialist funds. Some act as landlords by buying land and leasing it out. Others buy plots of low-value land, such as pastures, and upgrade them to higher-yielding orchards. Investors who are keen on even bigger risks and rewards flock to places such as Brazil, Ukraine and Zambia, where farming techniques are often still underdeveloped and potential productivity gains immense.

Farmland has been a great investment over the past 20 years, certainly in America, where annual returns of 12% caused some to dub it “gold with a

coupon". In America and Britain, where tax incentives have distorted the market, it outperformed most major asset classes over the past decade, and with low volatility to boot (see chart). Those going against the grain warn of a land-price bubble. Believers argue that increasing demand and shrinking supply—as well as urbanisation, poor soil management and pressure on water systems that are threats to farmland—mean the investment case is on solid ground.

It is not just the asset appreciation and yields that attract outside capital, says Bruce Sherrick of the University of Illinois at Urbana-Champaign: as important is the diversification to portfolios that farmland offers. It is uncorrelated with paper assets such as stocks and bonds, has proven relatively resistant to inflation, and is less sensitive to economic shocks (people continue to eat even during downturns) and to interest-rate hikes. Moreover, in the aftermath of the financial crisis investors are reassured by assets they can touch and sniff.

Some are already getting their boots dirty. In 2009 Hassad, part of Qatar's sovereign-wealth fund, asked Bydand Global Agriculture to buy nearly 50 farms in Australia and merge them into a single investment portfolio. Terrapin Palisades, a private-equity firm, bought a dairy company and some vineyards and tomato fields in California, and converted all to grow almonds, whose price has soared as the Chinese have gone nuts for them. Such conversions require up-front capital and the ability to survive without returns for years.

The private-equity approach can take the form of simple improvements, such as changing irrigation from antiquated dykes and canal networks to automatic spray systems: these are the equivalent of picking low-hanging fruit. Pricey robots can boost milk per cow by 10-15%. Using "big-data" analytics to plant and cultivate seeds can push crop yields up 5%. "This is an industry where the gap between the top and bottom quartile is greater

than anywhere else," says Detlef Schoen of Aquila Capital, an alternative-investment firm.

And yet the 36 agriculture-focused funds, with $15 billion under management, pale in comparison to the 144 funds focused on infrastructure ($89 billion) and 473 targeting real estate ($163 billion), according to Preqin, a data provider. TIAA-CREF, an American financial group, is a market leader with $5 billion in farmland, from Australia to Brazil, and its own agricultural academic centre at the University of Illinois. Canadian pension funds and Britain's Wellcome Trust are among those bolstering their farming savvy.

Most investors are put off by the sector's peculiar risks and complexities. Weather, commodity prices, soil health, water access, dietary fads and animal health are not the forte of the average pension-fund investment officer. Political risks abound: cash-strapped governments in Europe and America may (belatedly) get around to cutting farm subsidies. In poor countries, land titles may give outsiders dubious protection—if those countries even allow foreign ownership of land in the first place.

Some liken the sector to real estate and infrastructure 20 years ago. It lacks indices, consultant reports and track records. But unlike skyscrapers or pipelines, farming offers few of the multi-billion-dollar deals that are needed to entice mega-investors.

For more money to flow in, financiers and farmers will have to learn a lot more about each other. Money managers need to get their hands dirty and find out more about crops. Only a handful have the expertise needed; farmers gleefully share stories of Wall Street types wondering how chicks are planted. And farmers can do more to attract capital, for example by seeking out financial deals where investors' incentives are aligned with their own, such as through joint ventures.

Investors need to separate the wheat from the chaff, too. Farm investing requires patience; it is ill-suited to flipping and trading. But those willing to climb over the barriers could reap big rewards. The investment thesis is as simple as they come, as Mark Twain realised long ago: “Buy land, they’re not making it any more.”

投资农业

农场门口的野蛮人

吃苦耐劳的投资者正在寻求生财之道

今后40年，人类需要生产的粮食比之前一万年的总和还要多。但是随着不断扩张的城市吞噬耕地，农业生产力增幅持续缩减，对生物燃料的需求不断上涨，供应渐渐赶不上需求。聪明的农场主、科学家和企业家都想法多多。但他们需要钱来实现这一飞跃。

长于买卖公司的金融家已经对这一机会产生兴趣。农场大门历来都对资本市场关闭：十分之九的农场由家族所有。但是人口结构迫使其转变：目前欧洲、美国和新西兰的农场主平均年龄已近六十。他们通常后继无人，因为子女不愿意务农，或者买不起家庭成员的全部产权。而且，要采用新技术、推进更大规模的耕作，极少农场主拿得出这么多资金，尽管这些年来粮食价格高企。

机构投资者如养老基金将农场视为富饶土地来耕种，无论是买下来自己经营，还是将土地外包给专业基金。有的通过买地租地当起了地主，有的买进低价值的小块土地，例如牧场，将其升级为收益更高的果园。热衷于高风险高回报的投资者纷纷涌入巴西、乌克兰和赞比亚等地，那儿的耕种技术通常还不发达，生产力增幅潜力巨大。

过去20年农田已成为一项丰厚的投资，在美国确实如此，12%的年回报率让有些人称之为“带着息票的金子”。在美国和英国，税收优惠已经让市场扭曲，过去十年农田的业绩比大多数主要资产种类要好，而且波幅较低（见图表）。有些人背道而驰，警告说土地价格有泡沫。信徒争辩说需求增长，供应缩减，加上城市化、土地管理不善以及水系统的压力都威胁着农田，意味着这项投资根基稳固。

伊利诺伊大学香槟分校的布鲁斯·谢瑞克（Bruce Sherrick）认为，吸引外部资本的不仅仅是资产增值和收益：同样重要的是农田提供了多元化的投

资组合。它跟股票债券之类的纸面资产没有关联，事实证明它相对更能抵御通胀，它对经济冲击和利率上升不那么敏感（就算经济低迷，人也要吃饭）。并且，在经历了金融危机之后投资者对这种看得见摸得着的资产更放心。

有些人已经卷起袖子下了田。Hassad是卡塔尔主权财富基金的一部分，2009年它通过Bydand Global Agriculture购买了澳大利亚近50个农场并把它们合并成一项单一投资组合。私募股权公司Terrapin Palisades买下加州一家乳业公司、一些葡萄园和西红柿地，把地里都种上扁桃树，因为中国人的热捧，这种坚果的价格一路飙升。这样的转换需要前期资本的投入，还要能承受若干年没有经济回报。

私募股权的投资可以采用简单改良的形式，例如将陈旧的堤坝和沟渠网络改为自动喷淋设备，以此改变灌溉系统：这相当于采下伸手可及的果子。价格不菲的机器人能将每头奶牛的产奶量提升10%到15%。利用“大数据”分析种植和育种能让作物产量增长5%。另类投资公司Aquila Capital 的德特勒夫·舍恩（Detlef Schoen）表示：“在这个行业，排名前25%与最后25%之间的差距比其他任何行业都大”。

不过据数据提供商Preqin称，36支重仓农业的基金共有150亿美元的规模，远小于144支重仓基础设施的基金（890亿美元），更小于重仓房地产的473支基金（1630亿美元）。作为市场领先者，美国金融集团TIAA-CREF在从澳大利亚到巴西的众多田地上投入了50亿美元，还在伊利诺伊大学设立了自己的农业学术中心。加拿大养老基金和英国的维康信托基金会（Wellcome Trust）等都在增强农业经营上的能力。

因为这一产业特有的风险和复杂性，大多数投资者都望而却步。天气、大宗商品价格、土壤健康、水供给、饮食风尚和动物健康，诸如此类都不是普通养老金基金投资官的特长。政治风险也很大：虽然被延搁，现金短缺的欧美国家政府可能会开始考虑削减农业补贴。在贫穷国家，就算政府允许外国人拥有该国土地，这样的所有权对外来人士的保护也靠不住。

有些人把这一行业比作20年前的房地产和基础设施行业。它缺乏指数、咨询报告和跟踪记录。但是，与摩天大楼或管道系统不同，农业生产提供不了足以诱惑投资大鳄的动辄几十亿美元的交易。

为了让更多的资金流入，金融家和农场主必须努力互相学习。基金经理要走上田间地头，多多了解农作物。只有极少数人拥有这一行所需的专业技能；农场主兴高采烈地分享华尔街人想不通小鸡是怎么种出来的故事。而农场主也可以做更多努力来吸引资金，例如找到让投资者和自己休戚与共的金融交易，像是成立合资企业。

投资者也要去芜存菁。投资农场需要耐心；不适合快速炒卖。但那些愿意跨越壁垒的人会获得丰厚的回报。投资的主题显而易见，正如马克·吐温很久以前就意识到的：“买地吧，它们不可再生。”■

Energy efficiency

Green around the edges

To slash electricity use, both utilities and their customers must play their part

POWER consumption used to march in lockstep with economic growth. As the world recovers from financial crisis, that link is weakening. Though the average conceals wide variations, in 2014 advanced industrialised countries used 0.9% less electricity than in 2013, and slightly less even than in 2007, since when their combined economies have grown by 6.3%.

A new study for the UN Environment Programme concludes that two factors are at work. One is thrift. Faced with rising prices, consumers use less. British electricity prices increased by 44% over the period; consumption fell by 12%. The other is greater use of energy-saving technology. This includes better insulation, advanced heating and cooling systems, and energy-efficient device s, notably light-emitting diodes (LEDs), which, unlike incandescent bulbs, turn most of the power they use into light rather than wasting much of it as heat.

But if global warming is to be held to no more than 2° C by 2050—the level above which most scientists think that climate change risks being dangerous and irreversible—energy use and economic growth need to part ways once and for all. The best hope, experts agree, is a huge increase in energy efficiency. This ought to be straightforward. The technology is getting cheaper and better all the time. Many energy-efficiency measures quickly pay for themselves. Yet progress is frustratingly slow.

The International Energy Agency (IEA), a research organisation for countries which import fossil fuels, reckons that for the 2050 target to be met, global spending on energy efficiency needs to rise from $300 billion a year today to $680 billion. But on current trends, the UN report concludes,

the chance of that is “very slim”.

The potential gains are huge. Transport accounts for 27% of global energy demand. Lighting, heating, cooling and ventilating buildings account for roughly another third. New vehicles and buildings are far more efficient than old ones. The average annual consumption of an American light commercial vehicle built to 2010 standards is the equivalent of 1.5 tonnes of oil, but standards to be introduced in 2016 will cut that to 1.1 tonnes. A house with a floor area of 300 square metres built to America’s 2006 standards consumes the equivalent of 1.1 tonnes of oil a year; one built to 2012 standards, just 0.7 tonnes. Even the newer standards seem timid when set next to “passive houses”, which use insulation and heat exchangers to capture and reuse thermal energy generated by the inhabitants’ activities. Add solar panels and geothermal energy, and it is possible to create “net-zero” buildings that put as much power into the grid as they draw from it.

Vehicles are replaced every few years. But half the buildings standing today will still be there in 2050. So big efficiency gains can come only from making existing buildings less wasteful. The simplest measure is to persuade consumers to stop throwing energy away, for example by heating or cooling empty rooms. Spotting such waste and helping to cut it is becoming a decent business. Opower, a data-analytics firm, crunches figures on size, occupancy, location and energy bills to find trends and make suggestions to 50m, mostly American, households. Pacific Gas and Electric, a utility in California, says that in 2013 Opower saved it 500 gigawatt-hours, or nearly 75,000 homes-worth, of consumption. Its customers saved more than $50m.

Efficiency gains in the first year are typically 2%, says Alex Laskey, Opower’s chief executive. This is a mere nibble out of the 20% of energy use thought to be wasted in a typical American home. But once customers’ attention is engaged it is easier to interest them in bigger changes, such as replacing

inefficient appliances or installing efficient cooling and heating systems.

Further gains can come from managing demand rather than simply ramping up supply to meet it. In places with poor interconnections, such as Britain, this saves on dirty, costly standby diesel-fired power. But in any system, it saves money, since satisfying peak demand requires costly generating capacity that is unused most of the time. According to the UN Report, global investment in "smart systems"—hardware and software that adjust power consumption in response to price signals—rose by 5% in 2014 to a record $37 billion. That includes smart appliances, such as boilers that switch off when power is costly, and distributed storage, such as batteries to be charged during off-peak hours.

Storing off-peak energy as ice is particularly useful for air-cooling systems, one of the industrialised world's biggest energy hogs. Air conditioning in commercial buildings accounts for about 5% of America's electricity use. But in some parts of the country, on a hot day, the figure can reach 30%. Cooling systems from Calmac, a firm that used to make furnaces, store energy by cooling water mixed with antifreeze when power is cheap, and release it when it is needed, rather than relying on power-hungry compressors to cool the building during peak daytime hours. Mark MacCracken, the firm's boss, likens the approach to preparing ice cubes before a party rather than waiting until a guest asks for a drink.

At first glance, it is puzzling that more of this sort of thing is not already happening. The IEA reckons that only one-third of the available energy-saving opportunities with a cost-effective payback period are taken up. For businesses and residents alike, factors including ignorance, inertia and misaligned incentives still rule. A recent study commissioned by McDonald's suggested that a typical outlet could cut its energy use by at least a fifth—and by up to four-fifths by using solar power. But that depends on decisions made by individual franchisees, who will struggle to assess

the potential savings from measures such as capturing heat from a fryer to provide hot water. Some savings can seem too low to be worth the hassle, such as buying a new appliance to halve a small running cost. And tenants are unlikely to invest in energy-saving measures that will benefit their successors most.

Yet behind the scenes, utility companies are preparing for change. Their new business models must encourage consumers to use less energy rather than rely on them to use ever more. At the same time, to replace elderly, inefficient power plants and transmission lines, they need margins healthy enough to support massive investment. Rocky Mountain Institute, a think-tank and research firm, reckons that upgrading America's creaking grid alone will take $2 trillion by 2030. And in many countries, including America, utilities are having to accommodate consumers who also produce energy, typically from solar panels, and sell it to the grid—regardless of whether it is needed or not.

This was a trivial obligation a few years ago. Now it is becoming burdensome. The solar eclipse in Europe last month demonstrated the problem well. In Italy, which has one of Europe's best-developed solar-power industries, as the sunlight faded from the sky, solar output collapsed, and other generators had to take up the slack, of around 27 gigawatt-hours. The eclipse cost Italian consumers around €10m ($10.9m), Cosma Panzacchi of Bernstein, a research firm, reckons. Overall the boom in solar has increased the cost of "balancing" Italy's network—keeping capacity in reserve for cloudy days—by half.

One way for utilities to keep their profit margins as consumption falls is to increase fixed charges, which users pay regardless of how many kilowatt-hours they consume. Consumption-based tariffs hit poor customers hardest, since they are unlikely to have the sort of homes or businesses that can accommodate large installations of solar panels, or the spare cash to

invest in fancy energy systems. Another option is to charge users by the capacity of their connection to the grid, rather than the electrons that actually flow across it.

> *Power switches*

The good news for utilities is that for the nimblest, at least, there will be plenty of opportunity to profit. Managing demand via smart systems, together with distributed generation and storage, could be a huge business, Mr Panzacchi reckons—€40 billion annually for European utilities alone, and much more worldwide. With their large scale, utility firms can build storage and solar capacity far more economically than individual consumers can. They have the balance sheets to support big investments. And they have the information on behaviour and technology to guide their customers through the increasingly mystifying choices they must make. That is the kind of muscle needed to make a real difference to the future of the planet. ■

能效

边缘泛绿

要大幅减少用电，电力公司及其客户都须履行自己的职责

用电量曾和经济增长步调一致。随着世界从金融危机中复苏，这种关联正在变弱。尽管平均数字遮盖了巨大的差异，但发达工业化国家2014年的用电量比2013年减少了0.9%。这一数字甚至略低于2007年，而自那一年以来，这些国家的经济总和已经成长了6.3%。

联合国环境规划署开展的一项新研究总结称，有两个因素在起作用。一是节省。面对价格攀升，消费者减少用电。自2007年以来，英国的电价攀升了44%，用电量减少了12%。另一个因素是节能技术的推广，包括更好的隔热、先进的加热和冷却系统，以及节能设备尤其是LED灯的使用。和白炽灯泡不同，LED灯把它们消耗的大部分电变成了光，而不是产生热量散发掉。

但如果要让全球变暖在2050年前不超过2°C，则能源使用和经济成长必须永远脱钩。大部分科学家认为，如果变暖超过2°C，气候变化可能会变得危险和不可逆转。专家们认同，最大的希望是能源效率极大提升。这一点应该不难理解。技术日益低廉，不断改善。许多提升能效的措施很快收回了成本。然而这方面的进展之慢令人沮丧。

化石燃料进口国的研究机构国际能源署（IEA）认为，如果要达到2050年的目标，全球在能源效率上的投资需从目前的每年3000亿美元增加到6800亿美元。但是，联合国的报告总结道，以目前的趋势来看，实现这一点的几率“非常小”。

潜在的收益巨大。在全球能源需求中，交通运输占27%。给楼房照明、取暖、制冷和通风占了另外约三分之一。新的交通工具和楼房远比旧的高效。一辆以2010年标准制造的美国轻型商用车平均一年的能耗相当于1.5吨的石油，将于2016年推行的标准会把这一数字削减至1.1吨。一栋以美国

2006年标准建造、建筑面积300平方米的房子每年耗能相当于1.1吨石油，而以2012年标准建造的房子仅消耗0.7吨。若与“被动式房屋”相比，那么即使这些新标准也显得缩手缩脚。“被动式房屋”使用隔热和热交换器，能捕捉并再利用居民活动产生的热能。如果加上太阳能板和地热能，就可能创造出“净零耗能”的建筑：它们输送给电网的电和从电网获取的电一样多。

交通工具每隔几年就更新。但今天矗立着的建筑中，有一半到2050年还会存在。因此，只能通过让现有房屋减少浪费来实现大幅节能。最简单的方法是说服消费者停止浪费能源，比如不在空房间里开暖气或冷气。发现并减少这类浪费正在成为一门不错的生意。数据分析公司Opower处理有关房屋大小、入住率、位置和能源账单的数据来发现规律，并向5000万家庭（大部分是美国人）提供建议。加州的公用事业公司太平洋煤电（Pacific Gas and Electric）称，2013年Opower帮助它节省了500吉瓦时【即五亿度】电，相当于7.5万户家庭的年用电量。公司客户共节省了5000多万美元。

第一年的节能幅度通常为2%，Opower的首席执行官亚历克斯·拉斯基（Alex Laskey）说。和一个典型美国家庭据信高达20%的能源浪费相比，这点节省不算什么。然而，一旦引起了用户注意，那就更容易把他们吸引到更大的变化中来，比如更换低效的电器，或者安装高效的制冷和取暖系统。

进一步的节能可以来自需求管理，而不是仅仅增加供给来满足需求。在电网互联程度差的地区如英国，这会节省使用肮脏又昂贵的备用柴油发电。但这种方法在任何电力系统中都能省钱，这是因为要满足高峰时段的用电需求需要拥有昂贵的发电容量，但在大部分时间里这些容量都是闲置不用的。根据联合国的报告，全球对“智能系统”的投资在2014年增加了5%，达到创纪录的370亿美元。“智能系统”是能根据价格调整用电量的软硬件设施，包括智能电器，比如会在电价高时自动关掉的烧水壶，以及分布式蓄电，比如会在低谷期充电的电池。

在用电低谷期把电像冰块一样存储起来，对冷气系统尤其有用。冷气系统

是工业国家最大的耗能设备之一。商业楼宇的空调系统占美国用电量约5%。但在美国某些地区，这个数字在一个大热天能冲到30%。曾经生产熔炉的高美公司（Calmac）制造的制冷系统在电价便宜时冷却混合了抗冻剂的水，待到需要时释放能量，而不依靠大功率压缩机在白天高峰时段给大楼制冷。公司老板马克·麦克拉肯（Mark MacCracken）说这种方法好比在聚会前就准备好冰块，而不是等到客人想喝一杯的时候。

乍眼看去，这些方法还没被更广泛地使用叫人困惑。国际能源署估计，在现有具备划算投资回报期的节能机会中，仅三分之一已被利用。不论企业或居民，无知、惯性和激励措施不到位等因素仍在操纵局面。麦当劳最近委托开展的一项新研究显示，一家典型的麦当劳店铺能将其耗能减少至少五分之一，而如果使用太阳能则能够减少能耗多达五分之四。但这得看每个加盟商怎么做，而他们很难评估一些方法能省多少钱，比如利用煎锅产生的热量供应热水。有时省下的钱看起来太过微不足道，而不值得费心费力，比如只为把很小的一笔运行成本砍掉一半而去购置一件新电器。而现有租户不太可能投资那些对下家最有利的节能措施。

不过，电力公司正在悄悄地备战。它们的新商业模式必须鼓励客户减少用电，而不是依赖它们而使用更多。与此同时，要更换老旧、低效的电厂和输电线路，它们需要足够多的利润支撑大笔投资。智库和调研公司洛基山研究所（Rocky Mountain Institute）估计，单是升级美国运转不灵的电网就将在2030年前耗资2万亿美元。而在许多国家包括美国，电力企业已经不得不开始接受那些自己发电的客户。这些用户通常用太阳能板发电，然后把电卖给电网，不管电网是不是需要这些电。

几年前这项义务还微不足道，现在它正在变成一种沉重的负担。欧洲上月出现的大规模日蚀就很说明问题。意大利拥有欧洲最成熟的太阳能产业。在那里，当阳光从天空中隐去，太阳能产出暴跌，其他发电设备不得不填补约27吉瓦时【即2700万度】电的缺口。调研公司Bernstein的科斯马·潘扎基（Cosma Panzacchi）估计，意大利民众因日蚀损失了约一千万欧元（1090万美元）。总体而言，太阳能的繁荣已经让意大利电网的“平衡”成本增加了一半。所谓“平衡”即保持发电能力以应付阴雨天的需要。

在用电量下跌时，电力公司维持利润率的方式之一是增加固定收费：无论用户用多少度电，都必须付费。以用电量计费对穷人冲击最大，因为他们不太可能拥有可以安装大型太阳能板的住宅或企业，也不太会有额外现金来投资新奇的节能系统。另一个选择是根据用户的最大用电需求而非实际用电量收费。

夺回主导地位

对电力公司而言，好消息是会有大量盈利的机会，至少对那些最敏锐灵活的企业是如此。潘扎基认为，用智能系统管理需求，加之分布式发电和蓄电，会是一门庞大的生意，单单对欧洲的电力公司就值每年400亿欧元，全世界而言该数字则大得多。凭借自身的大规模，电力公司建造蓄电和太阳能发电设备要远比个人用户更经济。它们有资产负债表来支持大笔投资。它们还掌握着客户的行为数据以及技术，能引导客户在乱花迷人眼中做出正确的选择。要为地球的未来带来真正的不同，需要这样的实力。 ■

Urban land

Space and the city

Poor land use in the world's greatest cities carries a huge cost

BUY land, advised Mark Twain; they're not making it any more. In fact, land is not really scarce: the entire population of America could fit into Texas with more than an acre for each household to enjoy. What drives prices skyward is a collision between rampant demand and limited supply in the great metropolises like London, Mumbai and New York. In the past ten years real prices in Hong Kong have risen by 150%. Residential property in Mayfair, in central London, can go for as much as £55,000 ($82,000) per square metre. A square mile of Manhattan residential property costs $16.5 billion.

Even in these great cities the scarcity is artificial. Regulatory limits on the height and density of buildings constrain supply and inflate prices. A recent analysis by academics at the London School of Economics estimates that land-use regulations in the West End of London inflate the price of office space by about 800%; in Milan and Paris the rules push up prices by around 300%. Most of the enormous value captured by landowners exists because it is well-nigh impossible to build new offices to compete those profits away.

The costs of this misfiring property market are huge, mainly because of their effects on individuals. High housing prices force workers towards cheaper but less productive places. According to one study, employment in the Bay Area around San Francisco would be about five times larger than it is but for tight limits on construction. Tot up these costs in lost earnings and unrealised human potential, and the figures become dizzying. Lifting all the barriers to urban growth in America could raise the country's GDP by between 6.5% and 13.5%, or by about $1 trillion-2 trillion. It is difficult to

think of many other policies that would yield anything like that.

Metro stops

Two long-run trends have led to this fractured market. One is the revival of the city as the central cog in the global economic machine. In the 20th century, tumbling transport costs weakened the gravitational pull of the city; in the 21st, the digital revolution has restored it. Knowledge-intensive industries such as technology and finance thrive on the clustering of workers who share ideas and expertise. The economies and populations of metropolises like London, New York and San Francisco have rebounded as a result.

What those cities have not regained is their historical ability to stretch in order to accommodate all those who want to come. There is a good reason for that: unconstrained urban growth in the late 19th century fostered crime and disease. Hence the second trend, the proliferation of green belts and rules on zoning. Over the course of the past century land-use rules have piled up so plentifully that getting planning permission is harder than hailing a cab on a wet afternoon. London has strict rules preventing new structures blocking certain views of St Paul's Cathedral. Google's plans to build housing on its Mountain View campus in Silicon Valley are being resisted on the ground that residents might keep pets, which could harm the local owl population. Nimbyish residents of low-density districts can exploit planning rules on everything from light levels to parking spaces to block plans for construction.

A good thing, too, say many. The roads and rails criss-crossing big cities already creak under the pressure of growing populations. Dampening property prices hurts one of the few routes to wealth-accumulation still available to the middle classes. A cautious approach to development is the surest way to preserve public spaces and a city's heritage: give economists their way, and they would quickly pave over Central Park.

However well these arguments go down in local planning meetings, they wilt on closer scrutiny. Home ownership is not especially egalitarian. Many households are priced out of more vibrant places. It is no coincidence that the home-ownership rate in the metropolitan area of downtrodden Detroit, at 71%, is well above the 55% in booming San Francisco. You do not need to build a forest of skyscrapers for a lot more people to make their home in big cities. San Francisco could squeeze in twice as many and remain half as dense as Manhattan.

Property wrongs

Zoning codes were conceived as a way to balance the social good of a growing, productive city and the private costs that growth sometimes imposes. But land-use rules have evolved into something more pernicious: a mechanism through which landowners are handed both unwarranted windfalls and the means to prevent others from exercising control over their property. Even small steps to restore a healthier balance between private and public good would yield handsome returns. Policymakers should focus on two things.

First, they should ensure that city-planning decisions are made from the top down. When decisions are taken at local level, land-use rules tend to be stricter. Individual districts receive fewer of the benefits of a larger metropolitan population (jobs and taxes) than their costs (blocked views and congested streets). Moving housing-supply decisions to city level should mean that due weight is put on the benefits of growth. Any restrictions on building won by one district should be offset by increases elsewhere, so the city as a whole keeps to its development budget.

Second, governments should impose higher taxes on the value of land. In most rich countries, land-value taxes account for a small share of total revenues. Land taxes are efficient. They are difficult to dodge; you cannot stuff land into a bank-vault in Luxembourg. Whereas a high tax on property

can discourage investment, a high tax on land creates an incentive to develop unused sites. Land-value taxes can also help cater for newcomers. New infrastructure raises the value of nearby land, automatically feeding through into revenues—which helps to pay for the improvements.

Neither better zoning nor land taxes are easy to impose. There are logistical hurdles, such as assessing the value of land with the property stripped out. The politics is harder still. But politically tricky problems are ten-a-penny. Few offer the people who solve them a trillion-dollar reward. ■

都市用地

空间和城市

世界最大城市对土地的不当使用带有巨大的代价

买地，马克·吐温忠告道，他们不再生产更多地了。实际上，土地并不真的稀缺：美国全部人口都可以移到得克萨斯州，每户人家享有一英亩多土地。推动地价飞涨的是伦敦、孟买和纽约这样的大都会里疯狂的需求和有限的供给之间的矛盾。过去十年香港的土地实际价格上升了150%。伦敦中心区域的梅菲尔区（Mayfair）的住宅物业最高可达每平方米5.5万英镑（8.2万美元）。曼哈顿每平方英里住宅物业售价165亿美元。

即使在这些大城市，稀缺也是人为造成。对建筑高度和密度的监管限制了供应，抬高了价格。伦敦政治经济学院的学者在一项最新分析中估计，伦敦西区的土地使用规定把写字楼价格推高了约800%，在米兰和巴黎这一比例约为300%。土地所有者之所以能够攫取巨大的价值，大多是因为几乎没有可能建造新的办公楼，通过竞争拉低利润。

这种失灵的房产市场带来了高昂的代价，主要是因为它们对个人造成的影响。高房价迫使员工搬到更便宜但生产力更低下的地区。一项研究称，如果不严格限制建设，旧金山湾区的就业数字会比现在高5倍左右。把损失的收入和人们未实现的潜力加起来，会得到令人晕眩的数字。移除美国所有的城市发展障碍，会令该国的GDP增长6.5%至13.5%，或者约1万亿至2万亿美元。很难想象能有许多其他政策带来这样的收益。

> *城市失灵*

两个长期趋势导致了这一断裂的市场。一是城市复兴，成为全球经济机器的核心齿轮。20世纪，暴跌的运输成本削弱了城市的吸引力。21世纪，数字革命重塑了这种吸引力。科技和金融等知识密集型产业的兴旺发展倚赖员工聚集起来分享创意和专长。伦敦、纽约和旧金山这类大都会的经济和人口因此反弹。

这些城市却没能重新拥有过去的能力：延展以容纳所有想来这里的人。这有一个重要原因：19世纪末，不受限制的都市扩张助长了犯罪和疾病传播。因此有了第二个趋势：绿化带和区划规则激增。过去一个世纪中，土地使用规则堆积如山，拿到规划批准比在一个下雨的午后叫车还难。伦敦有严格规定，不许新建筑从某些角度挡住圣保罗大教堂。谷歌曾计划在硅谷山景城的总部园区建造住宅，却遭到反对，理由是居民可能养宠物，从而危害当地的猫头鹰群落。在低密集度城区，“邻避分子”可以利用从照明水平到停车位的各种规划条例来阻止建设计划。

这也是好事，许多人这么说。道路、铁路纵横交错的大城市已经在人口增长的重压下运转失灵。压制房产价格会损害中产阶级尚存极少的积累财富途径。谨慎开发是保护公共空间和城市遗产的最可靠方式。如果让经济学家做主，那他们会很快把中央公园夷为平地。

这类观点在地方规划会议上受到欢迎，但它们却经不起仔细推敲。拥有住房的情况并不特别平等。许多家庭因为负担不起高房价而无法住在更有活力的地方。萧条的底特律都会区的住房拥有率为71%，明显高于欣欣向荣的旧金山的55%。这并非巧合。并不需要建造一大堆高楼大厦来让更多人在大城市安居。旧金山可以挤进两倍的人口，而仍然只有曼哈顿一半的密度。

房产之弊

在一个扩张的、有生产力的城市，人们过去认为区划法规能平衡社会公益和增长有时给私人带来的损失。但土地使用规定已经演变成一套更有害的机制：通过它，土地所有人不仅不合情理地大发横财，他们也可以阻止其他人控制自己的地产。在重建个体和公益之间更健康的平衡时，即使小小的一步也能带来可观的回报。政策制定者应当专注两件事。

首先，他们应当确保城市规划决策自上而下制定。当决策是在地方层面制定时，土地使用规定往往会更严格。单个区从都会人口增加中获得的益处（工作机会和课税）要少于它们付出的代价（被阻挡的视野和拥挤的街道）。把住房供给的决策上移到市的层面，应该会让扩张带来的益处受到

充分重视。一个区争得的任何建筑限制应该由其他区的增建来弥补，这样城市作为一个整体将能坚持落实其土地开发预算。

其次，政府应当对土地价值征收更高的税赋。在大部分富裕国家，土地价值税占全部收入的一小部分。土地税很有效。它们很难避开。你不能把土地塞进卢森堡的银行保险柜里。虽然高房产税可能抑制投资，但高土地税制造出开发未用地段的动力。土地价值税还可帮助城市新移民。新的基础设施提升了附近土地的价值，这会自动反映在税收收入中，从而可以用来改善设施。

更好的区划和更高的土地税都不易实施。存在算法上的障碍，比如评估除去房产后的土地价值。政治问题就更麻烦了。但政治上的棘手问题分文不值。没有哪个会给解决它的人们带来万亿美元的回报。■

Information technology

The cheap, convenient cloud

As cloud-computing prices keep falling, the whole IT business will change

IF THERE were a prize for corporate secrecy, Amazon would have an excellent chance of winning. Interviewing its executives can be like pulling teeth. Even trivial details are not revealed, such as the approximate location of the office of Jeff Bezos, the founder and chief executive, in the company's headquarters in Seattle. Unsurprisingly, then, its quarterly earnings calls are mostly a dull affair. But financial analysts and many in the information-technology (IT) industry will pay close attention when the e-commerce giant releases results for this year's first three months, on April 23rd. Nearly a decade after it launched Amazon Web Services (AWS), the company will enlighten its shareholders about the size, growth and profitability of its cloud-computing business.

The disclosure is meant to reassure investors: they are getting worried about Amazon's chronic lack of profits and the amount of money it is spending—last year the company as a whole invested nearly $9 billion. But the announcement will also signal that cloud-computing (in which data are stored and crunched on remote servers) has come of age: AWS's revenues are thought to have reached $5 billion in 2014 and to be growing at more than 50% annually. Analysts have already assigned AWS a valuation of $44 billion—putting it in the same league as incumbent computer-makers such as Hewlett-Packard, which has a market capitalisation of $60 billion.

Although AWS is much larger than the cloud business of rivals such as Microsoft and Google, they are also growing quickly (see chart). Gartner, a market-research firm, expects the global market for cloud-computing services to reach $176 billion this year. That is still only 4% of all IT spending, but it is growing fast, as most other parts of the industry are

stagnant or even declining. By 2017 cloud spending will total $240 billion, Gartner predicts.

As cloud providers rush to build new data centres, and battle for market share, businesses are finding that the cost of putting their computing and data storage into the online cloud is getting ever cheaper. In the past three years prices are down by around a quarter, according to Citigroup, a bank; and further significant falls look all but inevitable. Some providers, such as Microsoft, have started providing their services free to startups, in the hope of turning them into paying customers as they grow.

The IT industry is going through a wrenching change, in a sense reversing the trend of the 1990s in which corporate computing shifted from giant, centralised mainframes to smaller, dispersed desktops and servers. Like most advances in IT, the advent of cheap online processing and storage has been brought about by Moore's Law—the rule of thumb that the density of transistors on a microchip doubles about every two years, which celebrates its 50th anniversary on April 19th. And fortunately, Moore's Law seems to have some life left in it yet (see next article).

But for providers of cloud services, and their shareholders, the question is: will we ever make any money from this? So far, all that many of them have done is run up losses. The providers may find it hard to differentiate their services, forcing them to compete on price and thus to expand rapidly to achieve economies of scale. The risk is that they end up somewhat like airlines and mass-market carmakers: chronically afflicted by overcapacity, constantly struggling to achieve a decent margin and perennially hoping that their competitors will keel over first.

Just as airlines' and carmakers' losses are tourists' and motorists' gains, businesses and other organisations that make heavy use of IT services will enjoy big savings. Rather than buying lots of servers and hiring armies of

engineers to maintain them, they will increasingly rent processing power and storage space cheaply; and whereas a system administrator might now manage a few dozen in-house servers, he will be able to oversee hundreds of "virtual machines" in the cloud.

This is not to say that all corporate computing will be pushed into the cloud immediately. Thanks to early cloud providers like Salesforce, many firms already manage and store in the cloud such things as their customer accounts, mailing lists and employee-monitoring systems. Companies have also put into the cloud many of what are called their "systems of engagement", that is, the services that handle their interfaces with the public, such as smartphone apps. Any software that companies design for themselves—for instance, in "sharing economy" firms like Uber—is increasingly being developed and tested in the cloud, as well as run there.

However, many businesses are stuck running important parts of their operations on ancient bits of software, and are aware that replacing such legacy systems can be fraught with difficulty. Many such applications would need to be rewritten to run in the cloud, says John Rymer of Forrester, another market-research firm. And they are often too embedded in a firm's day-to-day operations to be replaced easily with newer, cloud-ready software.

Heavily regulated businesses, such as banks, face a different problem. Although they may be convinced by the cost advantages and convenience of moving their systems into the ever-cheaper cloud, they will have to persuade both their regulators and the insurers which cover them against any data leakages or system breakdowns.

Cloud geeks, legacy geeks

So businesses are beginning to split their IT departments into two groups, explains David Mitchell Smith of Gartner. One lot grapples with keeping a

diminishing number of creaking, legacy systems going, while the other develops and manages the snazzy new systems that run in the cloud.

Similarly, there are now two kinds of IT firm: those native to the cloud, led by Amazon, on the one hand; and the incumbent sellers of hardware and software, on the other, which are struggling to adapt to the new age. Software firms are not just having to rewrite their applications so they can run in the cloud, but also to switch from a business model in which they get much of their revenue from large, upfront licence fees to one in which they receive smaller, recurring subscription payments. A few have already made headway in this, such as Adobe, a maker of publishing software. Others are only at the beginning of the journey, including Oracle and SAP, two big providers of business applications.

Adapting is going to be harder for makers of corporate computer hardware like HP and Dell. Businesses that used to buy servers from them, perhaps a dozen or two at a time, will increasingly rent computing services in the cloud instead. And although the cloud providers will need huge quantities of servers themselves, they are increasingly designing their own, and having them built by low-margin contract manufacturers. As for the software that the cloud-computer providers use to manage their giant data centres, they are tending to go for free, "open source" software instead of the paid-for variety.

Computer-makers face a hard choice: try to establish a strong position in the cloud, or focus on their legacy business. IBM has opted for the former: in 2013 it bought SoftLayer, a cloud-service provider, and has invested in it heavily since. HP seems confused: earlier this month it seemed to announce that it would stop competing with AWS and other cloud-service providers—only to recant a few days later. Catching up will be hard for both firms: unlike Google they do not have a lucrative business in internet-search advertising to rely on as they make the change. Neither do they have

cash-cows like Microsoft's Windows and Office software, nor shareholders as patient as Amazon's.

Meteorologically speaking, then, big IT users can look forward to blue skies containing cheap, fluffy cumulus clouds. Providers of online computing may be under a grey, drizzly stratus of low profitability. And legacy makers of hardware and software should expect stormy cumulonimbus formations overhead. ■

信息技术

低价便利在云端

云计算价格持续下跌，IT行业格局生变

如果有对公司保密性的评奖，亚马逊将有极大机会夺魁。采访该公司的高管好像挤牙膏一般。即便是无关紧要的细节他们也不会透露，比如公司创始人兼首席执行官杰夫·贝佐斯（Jeff Bezos）的办公室在西雅图公司总部大楼中的大致位置。一以贯之，其季度业绩电话会议也大多沉闷乏味。但金融分析师及众多IT界人士将在4月23日紧盯这一电子商务巨头，密切注视其发布的今年前三个月业绩。在推出亚马逊网络服务（AWS）近十年之际，公司将昭告股东其云计算业务的规模、增长及盈利能力。

这次的信息披露意在安抚投资者：他们对亚马逊长期缺乏利润但却支出庞大越来越担心——去年公司整体投资近90亿美元。但这次公告也将显示云计算（在远程服务器上存储及运算数据）已经发展成熟：2014年AWS收入估计已达50亿美元，而且年增长率将超过50%。分析师对AWS业务的估值为440亿美元——这与现在主要的计算机制造商处于同一量级，比如市值为600亿美元的惠普。

虽然对手微软和谷歌的云计算业务规模比AWS小得多，它们的增长也非常迅速（见图表）。市场调查公司Gartner预计今年云计算服务的全球市场将达1760亿美元。那也只占所有IT支出的4%，但该行业的其他业务大都陷入停滞乃至衰退，而云计算业务增长迅猛。Gartner预测，到2017年，云计算支出总额将达2400亿美元。

随着云服务提供商蜂拥赶建新数据中心及争抢市场份额，商家们发现把计算能力和数据存储放在云端的成本越发低廉。据花旗银行分析，过去三年，云服务价格下降约四分之一；而且进一步的大幅下降看似在所难免。包括微软在内的一些云服务提供商已开始向创业企业提供免费服务，以期这些企业壮大后能转为付费客户。

IT业正在经历痛苦的转型期。上世纪90年代，企业数据计算的潮流是从集中式巨型计算机向分散式小型桌面电脑和服务器转移。从某种意义上说，现在发生了反转。与IT业的大多数进步一样，廉价的在线数据处理及存储也都遵循摩尔定律。摩尔定律预测集成电路中的晶体管密度大约每隔两年会翻倍，该定律的发表到今年4月19日刚好50周年。幸好，摩尔定律似乎还能焕发一些生命力。

但对云服务提供商及其股东而言，疑问在于：我们到底能否从中赚钱？到目前为止，许多云提供商都只是亏损不断。他们也许觉得难以实现差异化服务，被迫进行价格战，因此需要快速扩展，实现规模效益。就怕他们最后多多少少会像航空公司和大众市场汽车制造商一样：长期受困于产能过剩，合理的利润总是求之不得，永远寄望对手先一步倒下。

航空公司和汽车制造商的损失正好让旅客和车主们获益。同理，大量使用IT服务的企业和机构将大幅节省开支。他们将愈加倾向以低廉价格租用云端处理能力和数据存储空间，而非自己购入大量服务器并聘用一大批工程师来维护。现在一个系统管理员也许只是管理几十台公司内部服务器，而将来他可以管理在云端的几百台“虚拟机器”。

这并不是说所有企业计算将立即被推到云端。由于早期云服务提供商如Salesforce的出现，许多公司已经把顾客账户、邮件列表及员工监控系统等数据放在云端管理并储存。企业放到云端的还有所谓的“交互系统”，即处理企业与大众之间互动的服务，例如智能手机上的应用。越来越多企业自行设计的软件不仅在云端运行，而且在云端开发测试，比如像优步（Uber）这样的“分享经济”公司。

然而，许多企业仍不得不依赖过时的软件实施重要的运营工作。它们很清楚这些旧系统替换起来将会困难重重。许多这些应用程序需要经过重新编写才能在云端运行，另一家市场研究公司弗雷斯特（Forrester）的约翰·雷默（John Rymer）说道。因为这些程序与公司日常运作结合紧密，新的云端适用软件难以轻易取代它们。

像银行这类备受严格监管的企业则面对另一个问题。虽然他们可能相信把系统转移到费用日益低廉的云端会带来成本优势及使用便利，但他们还必须说服监管部门，以及为数据泄露及系统崩溃风险承保的保险公司。

云极客、旧极客

所以企业开始将IT部门分为两组人马，Gartner的分析师大卫·米切尔·史密斯（David Mitchell Smith）解释道。一组人员维护日渐式微、疲态尽显的旧系统，另一组则开发管理时髦的云端新系统。

同样，IT公司现在也分为两类：一种为云端土著，以亚马逊为首；另一种是在新时代挣扎求存的既有软硬件企业。软件公司不仅仅需要重新编写应用程序令其适用于云端，还必须改变商业模式。以往他们的收入大部分来自前期收取的大额许可证费，现在需要变成来自金额较小的重复性订购付费。有部分IT公司已经在这方面抢先取得进展，如出版软件厂商Adobe。其他的才刚刚启程，包括商业应用软件的两大供应商甲骨文（Oracle）和SAP。

惠普和戴尔这类商用计算机硬件制造商将更难以适应新环境。以往企业从这些公司购买服务器，也许一买就是十几二十台，如今渐渐都转往云端里租用计算服务了。而虽然云服务提供商本身也需要数量巨大的服务器，但他们越来越多会自行设计并以低价外包给制造商制造。至于云计算提供商用以管理庞大数据中心的软件，他们倾向于采用免费的“开源”软件，而非收费软件。

计算机制造商面临着一个艰难的抉择：是要在云端建立强势地位，还是专注于自己的传统业务？IBM已经选择了前者：它在2013年收购云服务提供商SoftLayer，自此对其投入巨资。惠普则似乎犹豫不决：本月初，该公司貌似要宣布放弃与AWS及其他云服务提供商同场逐鹿，但几天之后又澄清说没这回事。两家公司要迎头赶上都颇有难度：不同于谷歌，它们在转型时没有利润丰厚的互联网搜索广告业务可依赖。它们既不像微软那样拥有Windows及Office软件这样的摇钱树，股东也不如亚马逊的有耐性。

以气象术语来描述的话，IT服务的大型用户都可以期待一片蓝天，积云朵朵舒展其间，费用低廉。在线计算服务提供商可能会受到低盈利这一灰色层云的影响，细雨潇潇。软硬件传统制造商则面临暴雨积雨云压顶，大有风雨欲来之势。■

Renewable energy

Looks swell

A new project off the coast of Australia may make wave power a reality

NO LAND stands between Antarctica and Australia's west coast—just a vast ocean, rippled and rocked by the Roaring Forties. For centuries these westerlies, which blow between latitudes 40° S and 50° S, powered ships sailing from Europe to Asia. These days, they are also creating waves in the world of renewable energy. At the end of February, a demonstration project designed to use the ocean swell they produce went live. As a result Australia's largest naval base now gets part of both its electricity and its fresh water courtesy of the 'Forties.

Carnegie Wave Energy, in Perth, has been working since 1999 on what it calls CETO technology. Ceto was the ancient Greek goddess of sea monsters, and Carnegie's particular monsters are buoys that resemble giant macaroons. They float a metre or two below the ocean's surface, bobbing up and down in the swell and generating electricity as they do so. The current version, CETO 5, has a capacity of 240kW per buoy. Three of the beasts are now tethered to the sea bed 3km from *HMAS Stirling*, on Garden Island. They also help to run a desalination plant on the base, for fresh water is a valuable commodity in Western Australia's arid climate.

The buoys themselves are 11 metres across, made of steel and filled with a mixture of seawater and foam to give them a density slightly below that of water, so that they float. Being submarine means that, unlike previous attempts to extract power from waves, they are not subject to storms and the constant battering that life at the interface between sea and air brings. As Michael Ottaviano, Carnegie's boss, observes, savvy swimmers in Australia know to dive under—not through—an approaching wave, to avoid getting smashed. The same applies to buoys.

Even below the surface, though, the swell is enough to generate power. Each buoy's rising and falling drives, as the diagram shows, a pump attached to the seabed at the bottom of that buoy's tether. This pump pushes water through a pipe to a power station on Garden Island. There, the water's pressure spins turbines that turn a generator. This arrangement produces about 5% of the base's electricity.

The pressure can be put to a second use, too—to run a process called reverse osmosis, which removes salt from water. Osmosis happens when a solution of salt and a body of pure water are kept apart by a membrane permeable to water molecules, but not to the ions of which salt is composed. The resulting "osmotic" pressure on the water propels it into the brine through the membrane. Apply sufficient physical pressure to the brine, though, to overcome the osmotic pressure, and H2O will go the other way—which is a neat trick if you want to desalinate seawater.

Creating the necessary pressure requires a lot of energy. Reverse-osmosis desalination plants thus tend to guzzle diesel or electricity. But CETO 5 dispenses with all that. It delivers water at a high enough pressure for reverse osmosis to happen automatically. As a result, about a third of *Stirling*'s freshwater comes from desalination driven by wave power.

Carnegie aspires to bigger and better buoys it hopes will generate a megawatt each when launched in 2017. These versions, CETO 6, will be 20 metres across and will produce electricity inside themselves instead of at an onshore power plant. That means no pipe is needed; a submarine power cable will do instead.

This is just as well, because the idea is to site CETO 6 further offshore, where the swell is greater but the difficulties of installing a pipe are too. Nor is there any need, in the case of CETO 6, for machinery on the seabed to regulate the flow of water into the pipe. That reduces both capital and

maintenance costs. And CETO 6 units are designed to be self-contained, so they can be towed back to land for upkeep.

The lack of a water pipe means, of course, that CETO 6 will not be able to run a desalination plant directly. But in most of the world, where rain is more plentiful than it is in Western Australia, reverse osmosis is a niche application. And, if desalination really is desired, part of the electricity produced can be diverted to that use.

The extra swell and lower running costs mean that CETO 6's electricity will be cheaper than CETO 5's. Mr Ottaviano reckons that if CETO 5 were deployed en masse, in "wave farms" with a capacity of 25MW, it could produce electricity at a cost of 30-40 US cents a kW-hour, which is competitive with diesel. At a similarly large scale, CETO 6's electricity would, Mr Ottaviano says, cost about 20 cents a kW-hour. Ultimately, he thinks, economies of scale could bring that down to 12-15 cents a kW-hour for a 100MW wave farm. That is about the same as the cost of grid electricity in this part of Western Australia, allowing for the subsidy now given to renewable energy sources.

Carnegie also has its sights on markets farther afield. Military bases around the world need secure supplies of energy and water. And wave energy is attractive to island countries like the Maldives that must, at the moment, import fossil fuel at some expense. Whether submarine wave power of this sort will ever become truly mainstream is moot. But Carnegie is showing that, in appropriate circumstances, it could indeed have the wind behind it. ■

可再生能源

看上去很潮

澳大利亚沿海的一处新项目可能实现波浪发电

南极洲和澳大利亚西海岸之间没有陆地，只有一望无际的海洋，在“咆哮西风带”的作用下时而泛起涟漪，时而波涛汹涌。几个世纪以来，这一在南纬40度到50度之间形成的西风带为从欧洲驶往亚洲的船只提供了动力。现在，它们也在可再生能源的世界里掀起风浪。2月底，一个利用西风带产生的海洋涌浪的示范项目投入运行，它让澳大利亚最大的海军基地既获得了部分电力，也获得了部分淡水。

位于珀斯（Perth）的卡内基海浪能源公司（Carnegie Wave Energy）自1999年开始就专注于它所谓的CETO技术。Ceto是古希腊代表海怪的女神，而卡内基公司独有的怪物是像巨大的马卡龙一样的浮标。它们漂浮在洋面一到两米以下，在涌浪中起伏不定，从而产生电力。最新一代的CETO 5每个浮标的发电能力为240千瓦。三头这样的怪兽目前被拴在距离花园岛（Garden Island）的澳大利亚皇家海军斯特林基地（HMAS Stirling）三公里处的海床上。它们还用来支持基地一座海水淡化厂的运转，西澳大利亚气候干燥，淡水是宝贵的商品。

浮标直径11米，由钢制成，内部充满海水和泡沫的混合物，这样其密度略低于海水，才能在水中漂浮。位于洋面以下意味着它们与以往从波浪中提取能量的尝试不同，可以免受暴风雨以及海洋与大气交界面处的生物的不断冲击。卡内基的老板迈克尔·奥塔维亚诺（Michael Ottaviano）发现，澳大利亚的游泳行家知道，当海浪涌来时，要潜入浪底而非穿过浪头，以避免撞击。同样的道理也适用于浮标。

但即使是在洋面以下，涌浪也足够产生电力。如图所示，每个浮标的起伏会驱动固定在海床上的水泵，水泵通过系绳与浮标底部相连。水泵将海水通过管道推送到花园岛上的发电厂里。在那里，水压让涡轮机旋转，启动发电机。这套设备为基地提供了约5%的电力。

这一压力还可另作他用，即采用一种称作反渗透的技术，将海水中的盐分除去。用一种半透膜将盐溶液与纯水隔开，这种半透膜可以渗透水分子，但不能渗透组成盐的离子，而后渗透作用发生。由此产生的“渗透”压将淡水通过半透膜压向海水。然而如果对海水施加足够的外压，以克服渗透压，那么水分子会反过来渗透到淡水中。要是你想淡化海水，这是个巧妙的方法。

要产生足够的压力需要大量能量。因此反渗透海水淡化厂常常是柴油或电力的消耗大户。但CETO 5完全无需这些。它以高压输送的水足够自动产生反渗透作用。斯特林基地大约三分之一的淡水来自由波浪能驱动的淡化厂。

卡内基公司冀望在2017年推出更大更好的浮标，单个发电量可达一兆瓦。这些新版的CETO 6直径将达20米，自身就能发电而不是通过岸上的发电厂。这就不再需要管道，只需一条海底电缆即可。

这可能更合适，因为目前的设想是将CETO 6置于离岸更远处，那里的涌浪更强劲，但也更难安装管道。CETO 6也不再需要在海床安装设备将水流引进管道。这既降低了成本也节省了维护费用。CETO 6机组均设计为独立自给型，因此可以拖回陆地维护。

当然，不用水管意味着CETO 6不能直接运行海水淡化厂。但是世界上大多数地方降水比西澳大利亚丰沛，应用反渗透技术的市场较窄。而且如果真的想要淡化海水，所产生的部分电力也能转化为这一用途。

涌浪更强劲、运营成本更低意味着CETO 6产生的电力比CETO 5更便宜。据奥塔维亚诺推算，如果批量安装CETO 5，那么一个发电容量为25兆瓦的“波浪场”能以每千瓦时30至40美分的成本发电，可与柴油竞争。奥塔维亚诺说，同样规模，CETO 6发电的成本约为每千瓦时20美分。他推算规模经济最终能将一个100兆瓦波浪场的发电成本降至每千瓦时12至15美分。将目前给予可再生能源的补贴计算在内，这与西澳大利亚这部分电网的成本相当。

卡内基公司还将目光投向更远的市场。世界各地的军事基地都需要稳固的能源和淡水供应。波浪能对于像马尔代夫这样目前必须花钱进口矿物燃料的岛国来说颇具吸引力。这类海下波浪能是否能成为真正的主流尚未可知。但卡内基公司的成果表明，适宜的条件下，它的确可以乘风而起。■

Battery technology

A whiff of brimstone

Adding sulphur to electrical cells may quintuple their performance

BUILD a better battery, to paraphrase Ralph Waldo Emerson, and the world will beat a path to your door. For consumer goods, from computers to cars, "better" means "better than lithium-ion". And several groups of engineers think they have one: it is based on lithium and sulphur.

A lithium-ion (Li-ion) battery works by shuttling the eponymous ions, which are positively charged, through an electrolyte that links two electrodes, one made of carbon and the other of a substance containing a heavy metal such as cobalt, manganese or nickel. Such metals have multiple oxidation states, meaning they can lose or gain different numbers of electrons in different circumstances. To balance the movement of lithium ions, electrons (which are negatively charged) move to or from the heavy metal through an external circuit that also links the electrodes, changing the metal's oxidation state as they do so. When the battery is discharging, both ions and electrons travel spontaneously in one direction, creating a current and releasing energy. When it is being recharged they are forced, by the application of a voltage, to go the other way and thus to store energy.

Lithium-sulphur batteries work in a similar fashion, but dispense with the heavy metal. Instead, they use sulphur, which also has multiple oxidation states—more of them, indeed, than many metals do. This fact, combined with sulphur's lightness, means lithium-sulphur batteries can, in principle, store four or five times as much energy per gram as lithium-ion ones manage. And, since sulphur is cheap, they can do so at lower cost.

Turning that principle into practice, though, has been a hard slog.

Experimental lithium-sulphur cells tend to wear out, because the sulphur in their electrodes gradually dissolves into the electrolyte. There are also questions about their safety. Part of the cycle of a lithium-sulphur battery involves some lithium ions turning into metallic lithium. This metallic form of the element may grow into filaments called dendrites that cause short circuits, and thus overheating and fires.

Various academic groups are working on these problems. Chengdu Liang, at the Oak Ridge National Laboratory, in Tennessee, has developed a solid electrolyte that stops the sulphur dissolving. The dendrite problem, meanwhile, can be ameliorated by adding carbon to the electrode where the lithium is deposited. At Stanford University, Yi Cui employs buckminsterfullerene, a form of the element in which the atoms are organised into spheres, to do this. Cheng Huang at Pacific Northwest National Laboratory use lithiated graphite, which traps lithium atoms within its structure. OXIS Energy, of Oxford, Britain, meanwhile, is experimenting with a lithiated version of graphene, a recently discovered form of carbon that consists of sheets a single atom thick.

Huw Hampson-Jones, OXIS's boss, hopes the firm's batteries will go into production in 2015. If they do, they may be the first to reach the market. But they are unlikely to be alone for long. Larger companies, less in need of publicity, are more secretive about their battery programmes. But an unguarded remark by Carlos Ghosn, in a television interview he gave in November, suggests Nissan, the carmaker that he runs, also has a lithium-sulphur battery that is close to production, and will soon be installed in the firm's LEAF electric cars, doubling the vehicles' ranges.

At the moment, a LEAF's Li-ion batteries can store about 140 watt-hours per kilogram. OXIS's store more than 300 Whr/kg and Dr Hampson-Jones hopes to raise this to 500 Whr/kg by 2018. Whether that will be enough to fend off the likes of Nissan remains to be seen. But whoever wins the race, whale or

minnow, the days of the Li-ion look numbered. ■

电池技术

点“硫”成金

往电池里加硫可能将它们的性能提升五倍

拉尔夫·沃尔多·爱默生（Ralph Waldo Emerson）的名句可以这样改：如果能造出一块更好的电池，全世界都会找上门来。对于从计算机到汽车的各类消费品，“更好”意为“优于锂电池”。几批工程师认为他们已经找到了这样的电池：它基于锂和硫。

锂电池的运作是通过电解质来回传输带正电荷的锂离子。电解质连接两个电极，一个由碳制成，另一个是包含钴、锰或镍之类重金属的材料。这类金属有多种氧化价态，即能在不同情况下失去和获得不同数量的电子。为平衡锂离子的移动，电子（带负电荷）通过一条同样连接两个电极的外电路移向重金属或从重金属移开，从而改变该金属的氧化价态。当电池放电时，离子和电子自动向同一个方向移动，由此产生电流，释放电能。当电池充电时，离子和电子在电压的作用下向相反的方向移动，从而存储电能。

锂硫电池以类似的方式运作，但不使用重金属。它转而使用硫。硫也有多种氧化价态，事实上比许多金属的氧化价态更多。这种特性再加上硫很轻，意味着每克锂硫电池理论上能存储的电能是锂电池的四五倍。而由于硫较便宜，它们能以更低的价格存储更多电能。

然而，把这一理论转化为现实是一个艰难的历程。实验中的锂硫电池常常损耗，因为电极中的硫会逐渐溶于电解质。另外还有对这种电池是否安全的疑虑。在一块锂硫电池的充放电周期中，有部分过程会发生一些锂离子变成金属锂的情况。锂元素的这种金属形态可能会变成被叫做枝晶的枝状体，它们会引发短路，从而导致过热和起火。

各种学术团体正在尝试攻克这些问题。来自美国田纳西州橡树岭国家实验室（Oak Ridge National Laboratory）的梁成都（Chengdu Liang，音译）

研发了一种固态电解质，防止了硫的溶解。与此同时，枝晶的问题可以通过往存放锂的电极中添加碳而得以改善。斯坦福大学的崔屹使用了富勒烯【碳60】，一种碳原子排列成球状结构的碳分子形态。美国太平洋西北国家实验室（Pacific Northwest National Laboratory）的黄程使用锂化的石墨，会把锂原子困在其结构中。同时，英国牛津的OXIS能源公司正在试验锂化版本的石墨烯。这种近期发现的碳结构由仅为单个碳原子厚度的片状物构成。

OXIS的老板休·汉普森-琼斯（Huw Hampson-Jones）希望该公司的电池会在2015年投产。若能如愿，那么它们可能成为首批进入市场的锂硫电池。但它们不太可能独领风骚太久。较大的公司不那么需要宣传，对自己的电池工程更为保密。不过，日产汽车的老板卡洛斯·戈恩（Carlos Ghosn）在11月的一次电视访谈中不小心透露了口风，显示日产也有一款锂硫电池接近投产，并且不久会被装设在该公司的聆风电动车中，让这款电动车的里程数翻倍。

目前，聆风的锂电池每千克能存储约140瓦时的电能。OXIS的每千克存储量超过300瓦时，汉普森-琼斯博士希望在2018年前提升到每千克500瓦时。这是否足以打败日产这类大公司还需拭目以待。但无论谁赢得这场竞赛，是行业巨鳄还是不起眼的小公司，锂电池看似时日无多了。 ■

Free exchange

Still, not stagnant

Economic history suggests that talk of American secular stagnation may be overblown

IS AMERICA stuck in a rut of low growth, feeble inflation and rock-bottom interest rates? Lots of economists believe in the idea of "secular stagnation", and they have plenty of evidence to point to. The population is ageing and long-run growth prospects look dim. Interest rates, which have been near zero for years, are still not low enough to get the American economy zipping along. A new paper published by the University of Chicago's Booth School of Business, however, reckons that secular stagnation is not quite the right diagnosis for America's ills.*

A country in the grip of secular stagnation cannot find enough good investments to soak up available savings. The drain on demand from these underused savings leads to weak growth. It also leaves central banks in a bind. If the real (ie inflation adjusted) "equilibrium" interest rate (the one that gets an economy growing at a healthy clip) falls well below zero, then central bankers will struggle to push their policy rate low enough to drag the economy out of trouble, since it is hard to push nominal (ie, not adjusted for inflation) rates deep into negative territory. Worse, in the process of trying, they may end up inflating financial bubbles, which lead to unsustainable growth and grisly busts.

Stagnationists argue that this is not a bad description of America since the 1980s. Real interest rates have been falling for years, they note, a sign of a glut of savings. Recoveries from recent recessions have been weak and jobless. When growth has perked up, soaring asset prices and consumer borrowing appear to have done the heavy lifting.

The authors of the Chicago paper—James Hamilton, Ethan Harris, Jan

Hatzius and Kenneth West—dispute this interpretation of events. Stagnationists are right, they note, that real interest rates have been falling, and have in fact been negative for much of the past 15 years. But low real rates do not necessarily imply that future growth will be weak, as many economic models assume. The authors examine central-bank interest rates, inflation and growth in 20 countries over 40 years. They find at best a weak relationship between economic growth and the equilibrium rate. If there is a long-run link, they argue, it tends to be overshadowed by other factors.

After the second world war, for example, government controls on rates ("financial repression") prevented the market from having its say. In recent years short-run woes have dragged down the equilibrium rate, such as the "50-miles-per-hour headwinds" that Alan Greenspan, the chairman of the Federal Reserve, described in 1991, when bad loans pushed big American banks to the brink of insolvency. The authors note that such stormy periods are usually short-lived, and that when the headwinds abate the equilibrium rate tends to pop back up.

They also reckon the stagnationists are misinterpreting some of the evidence. Growth in the 1990s was not illusory, they argue. The stockmarket boom only really got going in 1998, after America's unemployment rate had already fallen below 5%.

The expansion of the 2000s looks like a better example of secular stagnation. Investment in housing, which rose from 4.9% of GDP in 2001 to 6.6% at the market's peak in 2006, helped sustain the boom. Rising house prices made Americans feel flush, propelling consumer spending. Expanding credit added about one percentage point to growth each year, says the paper.

Yet the behaviour of the economy in this period looks more like a product of distortion than stagnation. At the time China and oil-producing states

were running enormous current-account surpluses with America and building up large foreign-exchange reserves, contributing to what Ben Bernanke, Mr Greenspan's successor as Fed chairman, labelled a "global saving glut". Expensive oil and rising Chinese imports placed a drag on growth that more or less offset the boost from housing. Take away the savings glut and the housing boom, and the American economy would not necessarily have grown any faster or slower, just more healthily.

Wallowing

What about the situation now? Some of the distorting forces of recent years are slowly fading. Household finances are certainly in better shape after a long period of deleveraging. That is helping to power a consumer-driven recovery in America that will eventually lead to higher interest rates.

On the other hand, stagnationists argue that the effects of demographic change are intensifying. Baby-boomers approaching retirement may be stashing more money away. Longer lifespans continue to spur saving. Axel Gottfries and Coen Teulings of Cambridge University have found that the increase in life expectancy over the past 40 years in rich and middle-income countries has raised the desired stock of savings by two times GDP.

Global conditions must also be taken into consideration. The authors of the Chicago paper calculate that over the long term, America's real interest rate tracks the one prevailing across the world as a whole (see chart). Yet since about 2000 the real rate in America has generally been well below that of the world as a whole. The authors argue that thanks to the mobility of international capital that gap should soon close (albeit in part because global rates will probably fall). On their best estimates America's equilibrium rate has probably fallen a little, relative to the average from the 1960s until 2007 of about 2%. But, they argue, the decline is smaller than many stagnationists believe, and the rate is almost certainly positive. Nor is a lower rate now a sign that growth will permanently fall below past

averages.

That is still no reason to breathe easy. A low equilibrium rate raises the risk that central-bank interest rates will sometimes become stuck at zero, leaving an economy in a prolonged slump. Even if the risk of secular stagnation is overdone, the authors reckon that the Fed has good reason not to raise rates too soon.

* Studies cited in this article can be found at www.economist.com/secstag15 ■

自由交流

停止，而非停滞

经济史表明，美国长期停滞的说法可能被夸大了

美国是不是陷入了低增长、弱通胀、极低利率的老套路？许多经济学家都相信“长期停滞”的观点，并能列举出大量论据。人口正在老年化，长期增长前景暗淡。利率已多年接近于零，但仍然不够低以推动美国经济走上快车道。然而，芝加哥大学布斯商学院（Booth School of Business）发表的一篇新论文指出，美国的问题是经济长期停滞这一诊断并不十分正确。

一个国家如果饱受长期停滞之苦，就找不到足够多的好投资来使用现有储蓄。这些未得到充分利用的储蓄对需求形成巨大消耗，导致经济增长疲软，也让央行左右为难。如果（扣除通胀因素后的）实际均衡利率（它能让经济以健康的速度增长）降至远低于零，那么为了使经济走出困境，央行须努力将政策利率降至足够低的水平，因为（未扣除通胀因素的）名义利率很难降为负数。更糟的是，在这一尝试的过程中，央行可能最终吹胀了金融泡沫，进而导致不可持续的增长和可怕的萧条。

停滞主义论者认为，对于二十世纪80年代以来的美国，这个描述还算准确。他们指出，实际利率已连续多年下滑，这是储蓄过剩的表现。最近几次衰退后的复苏都很疲软，也不创造就业。当增长开始提振后，后期看起来主要是靠飞涨的资产价格和个人借贷来拉升。

芝加哥大学的这篇论文的作者詹姆斯·汉密尔顿（James Hamilton）、伊桑·哈里斯（Ethan Harris）、简·哈祖斯（Jan Hatzius）和肯尼斯·韦斯特（Kenneth West）质疑对事件的这种解读。他们指出，实际利率一直在降，而且实际上过去15年的大部分时间都是负数，这一点停滞主义论者说得对。但实际利率低迷并不意味着未来增长一定疲软，像许多经济模型假设的那样。作者研究了20个国家过去40年里的通胀和增长情况。他们发现经济增长和均衡利率顶多是弱相关。他们认为，即使有长期关联，也往往被其他因素冲淡。

比如，二战以后，政府的利率调控（“金融压抑”）不让市场有发言权。近年，短期困难拉低了均衡利率，例如前美联储主席格林斯潘在1991年所描述的“时速50英里的逆风”，当时大量坏账把美国大银行推向了破产边缘。作者指出，这种风暴期通常很短暂，一旦逆风平息，均衡利率往往再度反弹。

他们还认为停滞主义论者误读了一些现象。他们说，二十世纪90年代的增长不是虚幻的。在1998年美国失业率降至5%以下之后，股市繁荣才真正开始。

二十一世纪头10年的经济扩张看上去好像是一个更能支持长期停滞观点的例子。房产投资占GDP的比例从2001年的4.9%上升到2006年市场高峰时的6.6%，帮助维持了经济繁荣。住宅价格上扬让美国人感觉一下子有钱了，推动了消费增长。论文指出，信贷扩张对每年经济增长的贡献约为一个百分点。

然而，那个时期的经济行为不像是因为停滞，而更像是扭曲的结果。当时，中国和产油国对美拥有庞大的经常项目盈余，并建立起大量的外汇储备，导致了格林斯潘继任者伯克南所说的“全球储蓄过剩”。昂贵的石油和中国进口的不断上升对美国经济的下拉，或多或少地抵消了住房市场带来的增长。如果剔除全球储蓄过剩和住房市场繁荣的因素，美国经济增长未必会加速或减缓，不过会更健康。

沉迷其中

现在的情况如何？一些近年的经济扭曲影响正缓慢消退。在长期去杠杆化之后，家庭财务无疑更健康了。这会帮助推动由美国消费者主导的复苏，最终推动利率上升。

另一方面，停滞主义论者认为，人口结构变化的影响正在加剧。婴儿潮一代即将退休，他们或许会存更多的钱。寿命的延长继续刺激储蓄。剑桥大学的阿克塞尔·戈特弗里斯（Axel Gottfries）和科恩·特林斯（Coen Teulings）发现，在过去40年里，富裕国家和中等收入国家预期寿命的延

长意味着理想储蓄总量需要提高，提高量为GDP的两倍。

全球的情况也必须要纳入考虑。芝加哥大学论文的作者计算得出，从长远来看，美国的实际利率与全球利率水平发展趋同（见图表）。但是，大约2000年以后，美国的实际利率就远低于世界总体水平。作者认为，由于国际资本不断流动，这个差距应该很快弥合（虽然一方面也因为全球利率可能下跌）。根据他们的最佳估计，相对于二十世纪60年代至2007年之间约为2%的平均值，美国的均衡利率很可能已经略有下降。但是，他们认为，下降幅度比许多停滞主义论者相信的要小一些，而且利率几乎肯定为正。而且目前较低的利率水平也并不意味着经济增长将长期落后于过去的平均水平。

那仍不是松一口气的理由。均衡利率过低，会增加央行利率不时会持续为零的风险，从而使经济陷入长期衰退。作者认为，即便长期停滞的风险被夸大了，美联储也有充分理由不太快加息。

本文引用的研究可参见www.economist.com/secstag15■

Brazil's coming recession

The crash of a titan

Brazil's fiscal and monetary levers are jammed. As a result, it risks getting stuck in an economic rut

IT IS easy for a visitor to Rio to feel that nothing is amiss in Brazil. The middle classes certainly know how to live: with Copacabana and Ipanema just minutes from the main business districts a game of volleyball or a surf starts the day. Hedge-fund offices look out over botanical gardens and up to verdant mountains. But stray from comfortable districts and the sheen fades quickly. *Favelas* plagued by poverty and violence cling to the foothills. So it is with Brazil's economy: the harder you stare, the worse it looks.

Brazil has seen sharp ups and downs in the past 25 years. In the early 1990s inflation rose above 2,000%; it was only banished when a new currency was introduced in 1994. By the turn of the century Brazil's deficits had mired it in debt, forcing an IMF rescue in 2002. But then the woes vanished. Brazil became a titan of growth, expanding at 4% a year between 2002 and 2008 as exports of iron, oil and sugar boomed and domestic consumption gave an additional kick. Now Brazil is back in trouble. Growth has averaged just 1.3% over the past four years. A poll of 100 economists conducted by the Central Bank of Brazil suggests a 0.5% contraction this year followed by 1.5% growth in 2016.

Both elements of that prediction—the mild downturn and the quick rebound—look optimistic. The prospects for private consumption, which accounted for around 50% of GDP growth over the past ten years, are rotten. With inflation above 7%, shoppers' purchasing power is being eroded. Hefty price rises will continue. Brazil is facing an acute water shortage; since three-quarters of its electricity comes from hydroelectric dams, this is sapping it of energy. To avoid blackouts the government plans to deter

use by raising prices: rates will increase by up to 30% this year. With the real losing 10% of its value against the dollar in the past month alone, rising import prices will bring more inflation.

There is little hope of disposable income keeping pace. One reason is that Brazilian workers' productivity does not justify further rises. In the past ten years wages in the private sector have grown faster than GDP; cosseted public-sector workers have done even better (see chart 1). Since Brazil's minimum wage is indexed to GDP and inflation, a recession will freeze real pay for the millions who earn it.

Austerity will bite, too, as Brazil's new finance minister, Joaquim Levy, tries to balance the books. Higher taxes on fuel are being phased in, a blow for a car-loving country. If Mr Levy reforms the generous state pension, the incomes of older Brazilians will stall.

Debt payments add to the woes. Total credit to the private sector has jumped from 25% of GDP to 55% in the past ten years. With total household debt at around 46% of disposable income, Brazilian households are much less indebted than those in Italy or Japan. Yet the price of this borrowing is sky-high. Four-fifths of it is punishingly costly consumer credit (the average rate on new lending is 27%, according to the Central Bank). Once hefty principal payments are added in, debt service takes up 21% of disposable income. With the economy slowing and the Central Bank reluctant to cut interest rates because of high inflation, consumers will feel the pinch, says Arthur Carvalho of Morgan Stanley. On February 25th a survey put consumer confidence at a ten-year low.

There are few compensating sources of demand. Investment, which rose in eight of the ten years to 2013, often substantially, will sink in 2015. Petrobras, the partially state-owned oil giant that is Brazil's largest investor, is mired in a corruption scandal that has paralysed spending: the affair may

cost up to 1% of GDP in forgone investment. On February 24th Moody's, a credit-rating agency, cut its debt to junk status; if Petrobras fails to publish audited results soon it may be unable to borrow at all.

Exporting is no answer, despite the falling real. Five countries—China, America, Argentina, the Netherlands and Germany—buy 45% of Brazil's exports. Ten years ago these economies' average GDP growth, weighted by their heft in Brazilian trade, was 12%; this year 5% would be good.

Yet the biggest worry is not that Brazil has a bad year, but that its broken policy levers mean that it gets stuck in a rut. Brazil spent 311.4 billion reais (6% of GDP) on interest payments in 2014, a 25% increase on 2013. This means that even if Mr Levy's fiscal drive works—he is aiming for a primary surplus of 1.2% of GDP—Brazil will be nowhere near the black. The state's outgoings have proved hard to control, with benefits payments rising despite falling unemployment. In a recession it will be harder still.

Brazil's parlous finances leave no room for debt-financed stimulus. At 66% of GDP its gross public debt is the highest of the BRIC countries. Its bonds yield 13%—more than Russia's. Rates could rise further. Fitch, a credit-rating agency, puts Brazil one notch above junk, but it has more debt, bigger deficits and higher interest rates than most countries in that category. If growth evaporates, a downgrade would be a certainty, raising debt costs even more.

Such predicaments are not uncommon, but Brazil's monetary problems are. The governor of the Central Bank, Alexandre Tombini, must choose between two nasty paths. The first is a hard-money approach: keeping interest rates high despite the weak economy. This would prop up the real and boost the bank's inflation-bashing credentials. But it is not just households that are hurt by high rates; firms are, too. In aggregate the big Brazilian firms Fitch rates have had negative cashflow since 2010. They

have plugged the gap by running down savings and issuing debt. Borrowing is up by 23% in five years. With the risk of default rising, a fifth of these firms face a downgrade, in many cases imminent.

In reality, a tough monetary stance would have to be softened by an extension of Brazil's lavish financial subsidies. State-owned banks like BNDES, a development bank, and Caixa Econômica Federal, a retail one, made 35% of loans in 2009. Today their share is 55%. Since many Brazilian firms cannot pay private market rates (the average rate for new corporate loans is 16%) BNDES lends at a concessionary rate, currently 5.5%. That makes banking in Brazil a fiscal operation, says Mansueto Almeida, an expert on the public finances. The funding comes from the state, which borrows at a much higher rate than firms pay. The difference, a loss, is borne by taxpayers.

The alternative path for Mr Tombini to go down is to cut rates despite rising inflation—a daring move given Brazil's history. The cause of price increases, after all, is not an overheating economy, but the real's fall, rising taxes and the drought. The textbook response would be to "see through"—ie, ignore—this inflation.

But soft money would hurt, too. It would cause the real to fall further, and thus accelerate increases in the prices of imported goods. Foreign debts, which Brazilian firms and local governments have accumulated due to the lower interest rates on offer, would become harder to bear. Data collected by the Bank for International Settlements show dollar debts rising from $100 billion to $250 billion over the past five years. But the burden in local-currency terms has jumped much more, from around 210 billion reais to 655 billion reais (see chart 2). The state lends a hand here too, with the central bank offering swap contracts to insure firms against a falling real. The scheme cost the bank 38 billion reais in the second half of last year alone.

Faced with these poisonous options, a middle path is most likely. Interest rates will be too high for households and firms, so subsidised funding will grow. But they will be too low to protect the real, so swap costs will rise, too. Both subsidies put extra pressure on the government's finances. By mixing monetary and fiscal policy in this way, Brazil is slowly rendering both ineffective. In an economy heading for recession, that is not a good place to be. ■

巴西的萧条将至

巨人跌落

财政与货币杠杆相继失灵，巴西经济恐重陷覆辙

在里约热内卢，访客往往不觉巴西有何不妥。中产阶级自然懂得生活之道：中心商务区离科帕卡巴纳海滩（Copacabana）和伊帕内玛海滩（Ipanema）仅几分钟路程，可以先打一局沙滩排球或做一次冲浪，再开始一日之计。对冲基金公司的办公室近瞰植物园美景，远眺翠绿山峰。但只要离开这些舒适区域，光辉瞬间黯然。饱受贫困与暴力折磨的大小贫民窟紧傍山麓。巴西的经济亦如是：愈深审视，愈见险恶。

过去25年里，巴西历经大起大落。20世纪90年代初，其通胀水平达2000%以上；直至1994年启用新货币，通胀才得以消退。到了世纪之交，巴西赤字严重，深陷债务泥潭，迫使国际货币基金组织在2002年出手相救。而之后，疾苦消散，巴西成为增长的巨人，随着铁、石油和糖出口畅旺，以及国内消费锦上添花，2002至2008年间，经济年增长率达4%。如今，巴西却重临困境。过去四年的平均增长率仅为1.3%。巴西中央银行请来100位经济学家作出的估计显示，今年巴西将出现0.5%的负增长，2016年的增长率则为1.5%。

温和下滑、快速反弹——专家预测的这两方面均显乐观。过去十年，私人消费贡献了GDP增长的50%，如今前景堪虞。随着通胀升至7%以上，人们的购买力被日渐销蚀。物价高涨仍将持续。巴西目前旱情严峻；由于四分之三的电力来自水电，这令巴西能源吃紧。为避免停电，政府计划提高电价促使人们减少用电：今年电价将最高提升30%。仅过去一个月，巴西货币雷亚尔兑美元就贬值10%，进口价格上涨将加重通胀问题。

可支配收入增长赶上通胀的希望渺茫。一个原因是，巴西工人的生产力不足以推动薪资水平进一步上升。过去十年，私营部门的薪资水平比GDP上升得还快；备受偏爱的公营部门雇员的薪酬升幅更甚（见图表1）。由于巴西的最低工资与GDP及通胀水平挂钩，经济衰退将冻结数以百万计工人

的实际工资。

随着巴西新任财政部长若阿金·利维（Joaquim Levy）极力平衡收支，紧缩政策也将来势汹汹。燃油税逐步上调，对这个爱车国度无疑是个打击。如果利维对现行的优厚国家养老金制度作出改革，巴西老年人的收入将陷入停滞。

偿债支出令局面雪上加霜。过去十年，私营部门信贷总量占GDP的比例从25%跃升至55%。巴西的家庭债务总额约占可支配收入的46%，比意大利或者日本的家庭负债水平低得多。然而借贷利率已达天价。其中五分之四是代价惊人的消费信贷（据巴西央行数字，新借贷平均利率为27%）。一旦加上巨额本金还款，还本付息占可支配收入的21%。随着经济放缓，央行又因高通胀而不愿降息，消费者将感受到压力，摩根士丹利的阿瑟·卡瓦略（Arthur Carvalho）如是说。2月25日的一项调查显示，巴西消费者信心降至十年来最低位。

能够弥补需求不足的来源甚少。截至2013年的十年中有八年巴西的国内投资呈上升势态，往往是大幅上升，但2015年，投资将下降。巴西国家石油公司（Petrobras）这家部分国有的石油巨头是巴西最大的投资者，目前却陷于贪腐丑闻而令企业支出瘫痪：此事件致其放弃投资，可能造成高达1% GDP的损失。信用评级机构穆迪于2月24日将其债务评级降至“垃圾级”；如果巴西石油不尽快公布审计结果，可能连贷款也无法获批。

尽管雷亚尔在贬值，出口也并非答案。巴西45%的出口流向中国、美国、阿根廷、荷兰、德国这五个国家。十年前，按其在巴西贸易的权重计算，这些经济体的平均GDP增长率为12%；今年能达到5%已经算好了。

然而，巴西遭遇“歉年”还不是最大的担忧，问题在于其政策杠杆失灵，将导致国家深陷覆辙。2014年巴西在偿付利息上支出3114亿雷亚尔（占GDP的6%），比2013增加了25%。这意味着即使利维的财政手段起效（其目标是实现相当于GDP 1.2%的基础预算盈余），巴西仍远未达至收支平衡。尽管失业率下降，但福利开支仍然上升，事实证明政府难以收紧支出。经济

萧条，政府要控制支出将更为艰难。

巴西危险的财政状况令债务融资刺激手段无从谈起。其国债总额占GDP的66%，是金砖四国中最高的。其国债收益率为13%，超过俄罗斯。这一数字可能还会进一步上升。信用评级机构惠誉国际（Fitch）对巴西的评级是“垃圾”之上一级，而巴西的债务、赤字及利率均高过同级别的大多数其他国家。若经济增长落空，其信用评级势必被降低，进一步抬高债务成本。

这种困境并不少见，但巴西的货币问题却非同寻常。巴西央行行长亚历山大•通比尼（Alexandre Tombini）必须在两条险径中择一而行。一是走硬通货之道：尽管经济疲弱，仍让利率保持高位。这令雷亚尔得到支撑，并提高央行抗击通胀的能力。但高利率之下，受到影响的不只是家庭，还有企业。看总的数字，被惠誉国际评级的大型巴西企业自2010年以来均出现过负现金流情况。这些企业通过调用储备资金和发行债券来填补缺口。五年时间内，借贷上升了23%。随着债务违约风险升高，这其中五分之一的企业面临降级风险，许多更是迫在眉睫。

在现实中，强硬的货币立场还是得通过巴西政府慷慨的财政补贴来软化。像巴西国家开发银行（BNDES）和零售银行“联邦储蓄银行”（Caixa Economica Federal）这样的国有银行在2009年的放贷占信贷总额的35%。如今这一比例达55%。因为许多巴西企业无法支付私人市场利率（新企业贷款平均利率为16%），巴西国家开发银行以优惠利率放贷，目前为5.5％。公共财政专家曼索托•阿尔梅达（Mansueto Almeida）认为，这使银行借贷在巴西变成了一项财政操作。放贷资金来自国家借款所得，而国家付出的利率比企业贷款的利率要高得多。两者差额，即亏损，实由纳税人承担。

通比尼可选的另一路径是降息，尽管通胀在上升。从巴西的历史来看，这无疑是个大胆之举。毕竟，物价飙升的原因不是经济过热，而是雷亚尔贬值、赋税升高，以及旱灾来袭。教科书式的标准应对是“熬过”这场通胀危机，也就是对其视而不见。

但软通货也有其弊端。这将导致雷亚尔汇率进一步下跌，从而加速进口商品价格上升。巴西企业及当地政府因相对低利率而累积借下的外债变得愈加沉重难偿。国际清算银行（Bank for International Settlements）收集的数据显示，过去五年间，巴西的美元债务从1000亿上升至2500亿。而以当地货币结算的债务负担跃升更大，从2100亿雷亚尔上升至6550亿雷亚尔（见图表2）。在这方面，政府也伸以援手，央行提供掉期合约，帮助国内企业对抗雷亚尔贬值的困局。该计划令巴西央行单在去年下半年就耗资380亿雷亚尔。

面对这些两难选项，巴西最可能走上的是折衷之道。利率过高，家庭和企业无法承受，因此政府补贴融资将加大。但要保障雷亚尔币值，利率又太低了，所以掉期成本亦将提高。两种补贴方式都对政府财政带来额外压力。巴西政府将货币杠杆与财政政策如此混搭，令两者日渐失灵。经济走向衰退之际，陷此局面，实为不妙。■

Expanding the internet

Sky-Fi

A number of companies have bold ambitions to use satellites, drones and balloons to bring the internet to the unconnected

EVER since the early 1990s, when it moved out of universities and was embraced by the general public, the internet has grown relentlessly. Only 2% of the world's population was online in 1997. By 2014 the proportion had risen to 39%, or about 3 billion people (see chart below). But that still leaves another 4 billion who live an internet-free existence.

Most of the bereft are in the developing world, where only 32% of people are online, compared with 78% in rich countries. And those numbers disguise plenty of local variation. Just 19% of people in Africa were internet users in 2014. Like most infrastructure, the internet is easiest to provide in cities. People scattered in the countryside—even those in rich countries—must often do without.

Yet that may be about to change. Four technology companies are pursuing ambitious plans that could, eventually, provide reasonably fast, high-quality connections to almost everyone on Earth. Google dreams of doing so with a globe-circling flock of helium balloons. Facebook's plan requires a fleet of solar-powered robotic aircraft, known as drones. And two firms—SpaceX, a rocket company, and OneWeb, a startup based in Florida—aim to use swarms of cheap, low-flying satellites. By providing an easy route to the internet at large, local telecoms firms should be able to provide high-speed, third- or fourth-generation mobile-phone coverage to areas far away from the big cities.

The top-down approach makes sense, for the familiar terrestrial technologies are not well-suited to covering the globe with lots of fast

connections. Providing the sort of cabling common in rich cities to every home on Earth would be prohibitively expensive. Mobile-phone masts do away with much of the wiring, but the masts themselves still require "backhaul"—a high-bandwidth connection to the internet. As a result, fast mobile networks are far from ubiquitous even in rural parts of the rich world. They are almost unheard of in poor-country villages.

A satellite, however, can see (and be seen from) huge chunks of the planet's surface. In theory, that allows the provision of data to millions of people at once. And satellite internet services are already widely available, but prices tend to be high, bandwidth limited and data allowances small. Many existing communications satellites fly in geostationary orbits, some 36,000km high, where they stay over a fixed point on the Earth's surface. This has two unavoidable drawbacks. The strength of a radio signal falls off rapidly with distance, so beefy transmitters and good power supplies are needed to contact them. The second problem is called latency, which is a delay in the signal. It can take at least half a second for a request for, say, a webpage to travel from the ground to the satellite and back down again, and then the page itself to make the same trip in reverse. That may not sound like much, but it is a tenth or less of the speed of a wired connection, even before other internet latencies. "No one uses a geostationary satellite and says 'I've solved my problem for ever,'" says Greg Wyler, the founder of OneWeb.

Lower they go

Mr Wyler's firm plans to launch 648 small, relatively simple satellites into much lower orbits of 1,200km. This will provide a latency similar to that offered by a fixed-line connection. And it will allow the use of much less-powerful aerials on the ground. OneWeb will offer its services to airlines and military customers, as well as emergency services and disaster-relief organisations, although it plans to attract individual customers, too,

through deals with local telecoms firms. Because a single satellite will be able to provide backhaul to dozens of villages at a time, Mr Wyler hopes that local operators will be able to afford to build phone masts or internet base-stations in rural schools, village centres and the like. In the most remote areas, the masts might be powered by solar panels. Those who are still disconnected in the rich world could sign up, too.

But although low orbits offer much better latency, they are also more complicated. Unlike geostationary satellites, low-flying ones move relative to the ground, so hundreds of them would be required to provide reliable coverage across the entire planet. When one satellite disappears over the horizon, radio equipment on the ground needs swiftly to connect to another one in view without the user noticing (rather as mobile phones do when they move out of the range of one mast and into the range of another). Doing that successfully requires a lot of tricky signal processing, says Mr Wyler. It is only in recent years that aerials and chips have become so sophisticated and cheap enough to make such a system possible. OneWeb is helped in this by Qualcomm, an American firm that makes chips for mobile phones and has the necessary expertise—and is one of its early investors.

Mr Wyler is not alone in backing low-flying satellites. Elon Musk, a billionaire co-founder of PayPal whose firms now include Tesla, a maker of electric cars, and SpaceX, wants to do something similar. His constellation would orbit at a similar altitude, but the satellites would be slightly more sophisticated than the sort that Mr Wyler intends to fly. Besides providing the internet to the unconnected, they would serve another market, too. Mr Musk has pointed out that light travels more than 40% faster in space than it does inside a fibre-optic cable. His low-flying satellites could offer faster transmission of data over long distances than a cabled connection could on the ground. For time-sensitive information, such as that used in some financial trades where split seconds count, such a service might be highly

appealing.

Mr Musk and Mr Wyler both seem to have the technical expertise to make these new satellite services a reality. One of Mr Wyler's existing firms, O3B, specialises in providing satellite-internet to oil rigs, cruise ships and other businesses with remote operations. OneWeb has already been granted a slice of precious radio spectrum in which to transmit its data (SpaceX has not, although there is a rumour that it hopes to work around this by communicating with lasers instead.) Mr Musk is an experienced disrupter of technological industries, and SpaceX's rockets offer some of the cheapest launch prices. With hundreds of satellites to put into orbit, that would keep his outgoings down.

Indeed, costs will ultimately determine whether such projects can be successful. SpaceX and OneWeb's potential customers in poor countries will not be able to pay much for their connections. Both firms hope to take advantage of cheap, off-the-shelf parts, rather than the expensive bespoke electronics typically employed in big satellites. Economies of scale should also help. OneWeb reckons its hundreds of satellites might cost just $350,000 each, with a total cost for the project of around $2 billion. Mr Musk's system could end up costing around $10 billion. Both will have to fight off competition from incumbent satellite operators such as Intelsat, which are busy launching new, more potent geostationary satellites.

There will also be rival technologies in the air. Yael Maguire, the engineering director of Facebook's Connectivity Lab, thinks that satellites are inherently inefficient: the world is 70% ocean, for one thing, so satellites will spend some of their time flying over places where no one lives. And even among poor countries, rudimentary connectivity is often available: about 85% of the world's population has access to at least a second-generation mobile-phone network, he says, which can provide limited access.

Send in the drones

So, rather than trying to provide global coverage, Facebook plans to plug specific gaps in the existing infrastructure. Despite its misgivings, it is investigating the use of satellites, as well as doing deals with mobile operators in poor countries to provide basic access to a small number of sites free for users of its Internet.org app. But Facebook's most ambitious project is for a fleet of solar-powered, propeller-driven drones that will fly at altitudes of 20km or more, which is well above the level used by commercial aviation, beaming an internet connection down to users on the ground.

The drones will be able to communicate with each other using lasers, relaying data until it can be passed to a ground station and on to the rest of the internet. The firm has already carried out flight tests in Britain, where its drones are built by Ascenta, a firm that Facebook bought for $20m in 2014.

Being solar-powered, the drones will be able to stay aloft for months at a time, coming down only for repairs and maintenance. That downtime offers another benefit: drones can be upgraded a lot more easily than a satellite, which, once launched, is stuck in space. Although their "footprint" of coverage will be much lower than even a low-orbiting satellite, drones can circle above one specific location that lacks connectivity. And, says Mr Maguire, launching a drone is always going to be cheaper than putting a satellite into orbit.

Google has also been experimenting with drones. But its chief idea is perhaps the simplest of all. "Project Loon"—so called because, when it was first suggested, the idea seemed crazy—is to gird the Earth with a swarm of thousands of helium-filled balloons. Each will carry a solar-powered wireless transmitter and, like Facebook's drones, will be capable of relaying traffic from other balloons. In contrast to the rival companies, which are

mostly concentrating on providing ways to deliver the internet to mobile-phone towers or Wi-Fi relays on the ground, Loon balloons may be used as flying base stations, capable of talking directly to mobile devices on the ground. In February 2014 the record duration for a flight was 50 days. Google's latest models are capable of remaining airborne for six months or more.

Unlike Facebook's drones, the balloons will not have engines. But that does not mean they cannot be steered. The winds in the stratosphere, where the balloons will fly, are, as the name suggests, stratified. The balloons will have the ability to change altitude, letting them hitch a ride on winds blowing in different directions at different speeds. A constantly updated computer model will keep track of each balloon, directing their trips around the world so that there will never—or only very rarely—be holes in the coverage.

By taking advantage of different wind speeds, the balloons should be able to minimise the time they spend over uninhabited areas, drifting in slow winds over populated areas while rising or falling into faster currents to speed them across oceans or deserts. "We have 30 years of wind-speed data to do this with," says Mike Cassidy, the man in charge of the project. And the balloons themselves will be able to measure wind speed, improving the ability of Google's computers to marshal them around the world (and giving the firm the most comprehensive set of wind data held by any organisation—which it has promised to share with weather forecasters and climatologists).

It all sounds grand on paper—perhaps too grand. The satellite projects, in particular, are not a new idea: in the late 1990s, during the heady days of the technology boom, several companies planned something similar, but none of their plans came to fruition. Yet the internet is a much more important part of the global economy now. The hope is that demand for the myriad

services available online will continue to grow strongly, helping the business case.

Rules and regulations

Regulatory approval will also be crucial to the success of the projects. Facebook must contend with regulators in some countries that heavily restrict the use of drones. And Google will need to develop an infrastructure capable of launching and retrieving what could amount to hundreds of balloons a day. Satellites must be disposed of at the end of their lives, whether by boosting them into a stable "graveyard" orbit or having them burn up in the atmosphere. Drones and balloons can crash, so safety regulators will need to be persuaded that the risks are acceptable.

The involvement of Google and, especially, Facebook, which run some of the most popular sites on the web, has caused some raised eyebrows. Facebook's Internet.org app allows mobile-phone users to connect to the internet without incurring charges. But only a handful of websites can be visited, one of which is Facebook itself, raising concerns about attempts to lock customers in. Perhaps to allay such suspicions, Mr Maguire says that Facebook is considering making its drone designs available for anyone to copy, much as the firm did in 2011 with its designs for advanced computer servers.

The companies are optimistic that they will succeed in spreading the internet: all say that telecoms firms in poor countries are enthusiastic. SpaceX reckons its satellites will be ready in five years. OneWeb thinks it can open for business in 2019. Facebook will not specify a date, other than saying that its drones could start flying commercially "fairly soon". And Google expects to begin commercial trials of its balloons next year. If any of them succeeds, then the idea of the internet as a "global village" will be more than just a quaint metaphor. ■

扩展互联网

空中网络

一批企业怀有大无畏的雄心壮志，要用卫星、无人机和气球把互联网带给尚未联网的人群

上世纪90年代初，互联网从大学院校走向普罗大众，自此开始持续不断地成长。1997年世界人口中仅2%上网。到了2014年该比例已升至39%，或约30亿人（见图表）。但仍有40亿人完全接触不到互联网。

这一缺口大部分位于发展中国家，在那里仅有32%的人口上网，而富裕国家的这一比例为78%。而这些数字还掩盖了许多地区差异。2014年非洲仅19%的人口是互联网用户。和大部分基础设施一样，在城市里最容易提供互联网。散布在农村的人口往往用不上网络，甚至富裕国家的农村也一样。

但这可能即将改变。四家技术企业正在谱写宏伟蓝图，最终可能向地球上几乎每个人都提供较为高速的、高质量的网络连接。谷歌梦想用围绕地球飞翔的氦气球群来实现这一愿景。Facebook的计划需要用到一批太阳能供电的机器人飞行器，即无人机。而另外两家公司的目标是使用一大批低成本的低轨卫星。它们是开发火箭的SpaceX和总部位于佛罗里达的创业公司OneWeb。通过提供与互联网整体更便捷的连接，地方电信企业应该能向远离大城市的地区提供高速的第三代或第四代移动电话网络。

这种从高空而下的方法合情合理，因为我们熟悉的地面技术并不适合提供大量快速联网以覆盖全球。向地球上的每个家庭都提供富裕城市中常见的网线是极为昂贵的工程。有了手机基站后，已经不需要大部分连线，但这些基站本身仍然需要“回程线路”（backhaul），也就是与互联网的高速宽带连接。因此，即使在富裕国家的农村，高速手机网络也远非随处可见。而在贫穷国家的农村，它们甚至闻所未闻。

但一颗卫星却可以俯视地球上的一大块面积（这一大块土地上的人们也能

看到它）。理论上，这使得数据可以被一次传输给数百万人。卫星网络服务已经广泛存在，但往往价格昂贵、带宽有限、数据额度低。许多现有的通讯卫星在距地面约3.6万公里的地球静止轨道上飞行，和地面某个点保持相对位置不变。这有两个无可避免的缺陷。无线电信号的强度随距离增加而迅速减弱，因此要和这些卫星联系需要强大的传输器和充足的供电。第二个问题称作“延时”，即信号的延迟。比如，打开一个页面的请求从地面传至卫星再传回地面，以及之后页面本身的逆向传输，至少需要半秒钟。这听起来好像不算很久，但却比有线连接的速度慢10倍或更多，而这还是在其他网络延时发生之前。“没有哪个使用地球静止轨道卫星的人会说‘我已经一劳永逸地解决了我的问题’。” OneWeb的创始人格雷格·怀勒（Greg Wyler）说。

飞得更低

怀勒的公司打算把648颗较简单的小卫星发射到距地面1200公里、比地球静止轨道低得多的轨道上。这里的延时与固定线路连接类似，而地面上的天线也远不需要那么强大了。OneWeb会把服务提供给航空公司和军方客户，以及紧急服务和救灾机构，尽管它也准备通过和地方电信公司签订协议来吸引个人用户。因为一颗卫星能同时向几十个村庄提供“回程线路”，怀勒希望本地运营商会有资金在郊区学校、农村中心地带等地方建设手机基站或互联网基站。在最偏远的地区，这些基站可能会由太阳能板供电。富裕国家尚未联网的人群也可以加入这一服务。

但是，尽管低轨道提供了短得多的延时，它们也更复杂。和地球静止轨道卫星不同，低轨卫星和地面的相对位置不断变化，因此需要成百上千这样的卫星来给整个地球提供可靠的覆盖。当一颗卫星消失在地平线，地面的无线电设备就必须迅速连接到视线可及的另一颗卫星，而不让用户注意到这种变化（就像手机从一个基站覆盖的区域移出，进入另一个那样）。要成功做到这一点需要大量复杂的信号处理，怀勒说。一直到近年，天线和芯片才变得足够精密又便宜，让这样的系统可能实现。在这个领域，OneWeb获得了高通（Qualcomm）的帮助。这家美国企业为手机制造芯片，拥有所需的技能。它是OneWeb的早期投资方之一。

支持低轨卫星方案的不止怀勒一人。贝宝（PayPal）的联合创始人、亿万富翁埃隆·马斯克（Elon Musk）也想做类似的事。他名下的企业如今包括电动汽车制造商特斯拉和SpaceX。他的卫星群会在类似的高度飞行，但要比怀勒的卫星更复杂。除了向未联网的人群提供网络连接，它们还会服务另一个市场。马斯克指出，光在太空中传播的速度要比在光缆中快40%。他的低轨卫星能比地面电缆更快速地远距离传输数据。对于那些具有高度时间敏感性的信息，比如在一些金融交易中使用的瞬息万变的数据，这样的服务可能会非常吸引人。

马斯克和怀勒似乎都拥有让这些新型卫星服务梦想成真的技术专长。怀勒现有的企业之一O3B专门向钻井台、邮轮等涉及远程操作的企业提供卫星网络。OneWeb已经获批取得了资源稀缺的无线电频谱的一部分来传输它的数据（SpaceX没拿到，但有传言称，该公司希望转而用激光传输数据来解决这个问题）。马斯克是颠覆技术行业的老手，而SpaceX的火箭可提供行业中最低的发射价格。随着成百上千的卫星被送进轨道，他的开支也会下跌。

实际上，成本会决定这些项目最后能否取得成功。SpaceX和OneWeb位于贫穷国家的潜在客户将无力为这类联网支付多少钱。但这些企业希望利用便宜、现成的部件，而不是在大型卫星通常使用的定制电子部件。规模经济应该也会提供帮助。OneWeb估计它的卫星可能每颗耗资35万美元，整个项目的成本总计20亿美元左右。马斯克的系统可能最终会花费约100亿美元。两个项目都要和既有的卫星运营商竞争，比如Intelsat，该公司正忙着发射新的、更强大的地球同步轨道卫星。

天空中还会有其他的竞争技术。Facebook的连接实验室（Connectivity Lab）的工程主管耶尔·马圭尔（Yael Maguire）认为卫星天生低效：一则因为世界的七成面积是海洋，因此卫星将花费部分时间飞行在那些无人居住的地区。而即使在贫穷国家，初级连接常常已经存在。马圭尔说，全球人口的约85%至少可以接入提供有限接入的第二代移动电话网络。

派出无人机

因此，相比努力提供全球化的覆盖，Facebook计划填补现有基础设施中的漏洞。即使心存疑虑，它仍在研究卫星的使用，也和贫穷国家的移动运营商达成协议，让使用它的应用Internet.org的人免费使用一小批网站。但该公司最宏大的项目是一批由太阳能供电、螺旋桨驱动的无人机，它们将飞行在20公里或更高的空中——远高于商业航空使用的高度，向地面上的用户发送网络连接。

这些无人机将使用激光彼此通讯，接力传输数据，直至传达地面基站，继而接入互联网。Facebook已经在英国展开飞行测试。那里的无人机由Ascenta制造。Facebook在2014年以2千万美元收购了这家公司。

这些由太阳能供电的无人机将能在空中连续飞行数月，只在需要维修时返回地面。这样的停飞期有另一个好处：无人机升级会比卫星容易得多。卫星一旦发射就困在了太空。虽然这些无人机的飞行“足迹”相比低轨卫星仍然低得多，它们可以在某个联网不足的地点盘旋。而且，马圭尔说，飞行无人机总要比发射卫星便宜。

谷歌也已经开展了无人机的实验。但它的主要创意可能是所有这些主意中最简单的。“疯子计划”（Project Loon）要让成千上万个氦气球缠绕地球。这个项目之所以会有这样的名字，就是因为最初提出来时，被认为是在发疯。每个气球会载着太阳能供电的无线传输器。和Facebook的无人机一样，它也会从其他气球那里获得信息流。与对手公司的一大不同是，那些公司大多专注于向地面上的手机基站或Wi-Fi中继设施传送网络，而“疯”气球可能被用作飞行的基站，能直接和地面的移动设备通讯。2014年2月，这种气球创下了连续飞行50天的记录。谷歌最新的模型能在空中待六个月或更久。

和Facebook的无人机不同，这些气球没有引擎。但这并不意味着它们就不能操控方向。它们将飞行在平流层中，而平流层中的风顾名思义是分层的。气球将能够改变高度，让自己在不同方向、不同速度的气流里搭上顺风车。一个不断升级的计算机模型会追踪每只气球，引导它们在世界各地

的旅程，这样就可以确保联网覆盖全球，没有漏洞，或者漏洞极少。

通过利用不同的风速，这些气球应该能够把它们花费在渺无人烟地区的时间减至最少。到了人口稠密区，它们会漂流在和缓的风中，然后在遇到海洋或沙漠时，它们上升或下降至更快的气流中，加快穿越速度。“我们有30年的风速数据来做这件事。”负责该项目的迈克·卡西迪（Mike Cassidy）说。而这些气球本身也能测量风速，改善谷歌的计算机能力来管理它们在全球各地的旅程（这也将让该公司获得相比任何机构都更全面的风力数据。谷歌已经承诺把它和天气预报机构及气候学家分享）。

这些纸上大计听来都很宏伟，或许太过宏伟了。卫星项目尤其不是什么新创意：上世纪90年代末，技术繁荣让人们兴奋沉醉，几家企业计划做类似的事，结果无一实现。不过，互联网如今已经是全球经济一个远为重要的组成部分。但愿人们对大量网络服务的需求会持续强劲增长，为这些创意提供商业合理性。

规则和监管

监管审批对这些项目的成功与否也很关键。在严格限制使用无人机的国家，Facebook必须应对监管机构。而谷歌必须研发出能够每天发送和召回至多数百只气球的基础设施。卫星在使用寿命到期时必须被处理掉，无论是把它们送进一个稳定的“墓地”轨道，还是让它们坠入大气层中烧毁。无人机和气球可能相撞，因此需要说服安全监管部门风险尚可接受。

谷歌和Facebook的参与引发了一些质疑。尤其是Facebook，它在网上运行最受欢迎的一些网站。Facebook的Internet.org应用让手机用户免费联网，但只能访问一小批网站，其中之一是Facebook自身，这让一些人质疑它试图锁住客户。也许是为减少这种怀疑，马奎尔说，Facebook正在考虑公开其无人机设计，让任何人都能模仿，就像2011年它公开其先进电脑服务器的设计那样。

这些企业都乐观地认为他们会在传播互联网这件事上取得成功：它们都说，贫穷国家的电信企业对此满腔热情。SpaceX认为它的卫星会在五年后

准备就绪。OneWeb认为自己会在2019年开张营业。Facebook不愿明说日期，只说它的无人机可能会“很快”开始商业应用。而谷歌预期明年启动气球的商用测试。如果它们中任何一家成功了，那把互联网称作“地球村”就不会只是个古怪的比喻了。■

Drones

The buzz of something new

Small drones need to fly free of human operators. Insects suggest to engineers how that might be done

THIS year, some predict, will be the year of the microdrone. Small, pilotless aircraft—most of them helicopters with four or more sets of rotors and a payload slung between them—are moving out of the laboratory and into practical use. They are already employed for aerial photography and surveillance, particularly in Europe. In Paris, earlier this month, drones flying around the Eiffel tower caused a security scare. And in America, on March 19th, Amazon, a retailer, was given permission to test a drone designed to deliver its goods.

These drones, though, rely on an operator on the ground. Indeed, this is often a legal requirement. But it is also a constraint. If a world of microdrones really is to come about, then the craft will need to be able to cut the surly bonds of Earth and fly unsupervised. For that, they are going to have to get a lot more intelligent.

The problem is not navigation. The Global Positioning System and Google Earth can tell a drone where it is and what large, permanent obstacles it might encounter, and it can be programmed with its course before it lifts off. The problem, rather, is the unexpected: an unwary bird; an unmapped tree; a gust of wind. Part of making drones able to fly by themselves will be to give them the senses they need to deal with such hazards.

One approach is to ask how natural drones do it. The word, after all, referred originally to a male bee, and bees and other insects rarely blunder into things or fall out of the sky. Copying their tricks makes sense. And laboratories around the world, using bees, blowflies and hawk moths as

their models, are trying to do just that.

Joining the drones' club

Ashutosh Natraj's idea is to give his drones vision. Dr Natraj, who works at Oxford University, drew his inspiration from a bee he saw buzzing around his house one day. He wondered how the animal avoided the many hazards a human dwelling presents.

The answer, he found after a few days perusing the apidological literature, is fairly straightforward, at least in principle. Bees rely on optic flow. This is the perception, familiar to anyone who has looked out of a train window, that nearby things are moving faster than distant ones.

To build optic-flow perception into a drone, Dr Natraj had first to fit it with an eye and a brain. The eye is a video camera that weighs a mere 8g. This sends a stream of images, at a rate of 25 a second, to the brain. At the moment this is a computer on the ground that is linked to the camera by Wi-Fi. Dr Natraj, though, plans to replace it by a Raspberry Pi—a device the size of a credit card—on board the drone itself.

The computer, whether terrestrial or airborne, extracts from the incoming images features salient to optic flow. In particular, it identifies objects' edges and tracks them from frame to frame. This way, it can work out how quickly the drone is approaching something and, if a collision is likely, how the drone's path needs to shift to avert it. It then uses this information to change the pitch of the rotors.

That sounds easy in principle, but collision-avoidance, especially when what is to be avoided is moving as well, requires good manoeuvring skills. This is where the flies and the moths come in. Adjusted for size, blowflies are better at manoeuvring than any fighter aircraft yet built. Hawk moths are superb at hovering. Both insects use the same method: they combine

vision with an inertial guidance system.

Inertial guidance relies on measuring the position of something that, because of its inertia, resists following the object it is part of. Man-made systems use gyroscopes. Moths use their antennae. Flies use a pair of tiny organs called halteres that have evolved from the animals' hind wings and are shaped like balls on sticks.

Several groups of researchers are looking into insect inertial guidance. Those studying blowflies are based in London. Those studying moths are based in Baltimore. The London group, led by Holger Krapp of Imperial College, has used micro-electrodes to follow the insects' nerve impulses, and high-speed photography and computed tomography (an advanced form of X-raying) to follow the movements of their external body parts and their muscles. That, with the addition of a bit of computer modelling, has shown them how dipteran inertial guidance works.

Flies do it using input from hundreds—possibly thousands—of sensors. These are the elements of their compound eyes, and also the many cells at the bases of their halteres. The signals from these, it turns out, do not have to pass through the brain to be processed. Instead, they act as a series of reflexes controlling the insect's speed, attitude and heading directly. That is the opposite of most approaches to engineering drone avionics. But it suggests that true drone manoeuvrability might be better created without trying to imitate the functions of a brain. Dr Krapp's colleague Mirko Kovac is now attempting to do this.

Hovercraft

One way manoeuvrability might be engineered into a drone's airframe is shown by the work on hawk moths. These insects, when hovering over flowers to drink nectar from them, employ a similar control system to flies—though in this case information from their antennae substitutes for

that which flies get from their halteres. Hawk moths are being studied independently by two groups at Johns Hopkins University—one led by Rajat Mittal and the other by Noah Cowan. They have found that the moths hold their heads and thoraxes steady with respect to a flower by making minute changes to the orientation of their abdomens.

Dr Cowan, indeed, has gone further than mere analysis. He has used knowledge garnered about how moths hover to fit a drone with the equivalent of an abdomen. The drone's battery pack hangs beneath it, and is fitted with servo motors that adjust its position in the way that a moth moves its abdomen. That stabilises the drone in mid air.

At Harvard, meanwhile, Robert Wood has taken a different approach to the problem of hovering. Though referred to as microdrones, quadcopters and their kin are usually tens of centimetres across. Dr Wood's drones really are micro. They measure 3cm from wingtip to wingtip. Moreover, their wings flap like those of real insects, rather than rotating.

Dr Wood has built simple eyes into his drones, and these act like occelli, which are small eye spots that insects use to take bearings on the sun or the moon, so that they can fly at a constant angle to these distant light sources and thus maintain a straight course. (Confusion of the ocelli is thought to be the reason moths circle bright artificial lights at night.)

Dr Wood's artificial eyes are pyramid-shaped and have a photosensor on each face. They are thus able, like real ocelli, to track the sun. Dr Wood has not yet translated that ability into an on-board navigation system, but it should not be too hard to do so—so long, of course, as his drones do not come across any candles. ■

无人机

新时代临近

小型无人机需要摆脱人类操作员自主飞行。昆虫告诉工程师们如何可能实现这一点

一些人预测今年是微型无人机之年。微小的、无人驾驶的飞机正飞出实验室，运用到实践中。它们大多是有四套或更多水平旋翼的直升机，旋翼之间悬挂配备。它们已经用于航拍和监视，尤其在欧洲。三月较早时，在巴黎环绕埃菲尔铁塔飞行的无人机引发了安全恐慌。在美国，3月19日零售商亚马逊获准测试一种专门用来送货的无人机。

但这些无人机都依赖地面上的操作人员。实际上这常常是法律要求。但它也是一种局限。微型无人机的时代若要真正来临，这种飞行器必须摆脱地球的束缚，在无人监督的情况下飞行。为此，它们需要变得远为智能化。

问题不在导航。全球定位系统和谷歌地球能告诉一架无人机在哪里，可能会碰上何种固定存在的大型障碍物。它可以在起飞前被编程设定路线。问题在于那些无法预期的事物：一只对危险浑然不觉的鸟；一棵没在地图上标识的树；忽然吹起的一阵风。要让无人机自己飞，得给它们对付这类危险所需的感官。

一种方法是问问自然界的无人机是怎么做的。毕竟，“drone”这个词最初是指雄蜂，而蜜蜂等昆虫极少会撞上什么或从空中跌落。模仿它们的技巧是合理的方法。而世界各地的实验室正把蜜蜂、丽蝇和天蛾当作模本，就是在做这一尝试。

> *加入无人机俱乐部*

阿舒托什·纳特拉依（Ashutosh Natraj）的办法是让他的无人机具备视觉。在牛津大学工作的纳特拉依博士某天看到一只蜜蜂绕着他家嗡嗡地飞，从中获得了灵感。他好奇这个小动物如何能避开一栋房子带给它的诸多危险。

他看了几天的蜜蜂学文献，发现答案很简单，至少原理上如此。蜜蜂依靠“光流”。任何曾从火车的窗户向外望的人都熟悉这种知觉：附近的物体比远处的物体移动更快。

要为无人机添加光流知觉，纳特拉依必须先给它装上眼和脑。这只眼睛是一个仅8克重的摄像头。它以每秒25帧的速度向大脑传送图片流。目前，这个大脑是地面上的一台计算机，用Wi-Fi和摄像头连接。不过纳特拉依计划代之以无人机自带树莓派微型计算机（Raspberry Pi），这种设备和一张信用卡一般大。

这台计算机无论位于地面或空中，都会从传来的图像中抓取对光流知觉最重要的特征。它尤其鉴别物体的轮廓，在每一帧图片中跟踪它们。这样它就能判断无人机正在以多快的速度靠近某个物体，如果有碰撞风险，那么无人机的路线需要如何改变来躲避。而后，它使用这一信息来改变水平旋翼的俯仰角度。

这从原理上听来很容易，但避免碰撞需要很好的操控技能，尤其当要躲避的物体也在移动时。在这一点上，苍蝇和蛾给我们带来了启示。计入尺寸这个因素后，丽蝇的操控力超过人类已建成的任何战斗机。天蛾的悬浮能力很杰出。这两种昆虫使用同一种方法：把惯性制导系统和视觉相结合。

惯性制导有赖于测量某个部件的位置，这个部件因惯性而不跟随整个物体移动。人造系统使用陀螺仪。蛾用触角。苍蝇用一对我们称之为平衡棒的微小器官，它们从苍蝇的后翼进化而来，形似球形棒棒糖。

几批科研人员正在研究昆虫的惯性制导。研究丽蝇的队伍总部在伦敦，研究蛾子的主要在美国的巴尔的摩。伦敦的团队由帝国理工学院（Imperial College）的霍尔格·克拉普（Holger Krapp）领导，用微型电极测量丽蝇的神经脉冲，并用高速摄影和计算机断层扫描（一种先进的X射线透视）跟踪其外部身体部位和肌肉的移动。再加上少量计算机建模，这种方法向研究人员展示了双翅目昆虫的惯性制导如何运作。

苍蝇的惯性制导使用来自数百甚至可能是成千上万个传感器发送的信息。这些传感器包括组成其复眼的众多小眼，以及其平衡棒底部的许多细胞。研究发现，它们发出的信号并不需要经脑部处理。相反，它们充当一系列的条件反射装置，直接控制了苍蝇的速度、姿势和方向。这和建造无人机航空电子设备的大部分方法都截然相反。但它显示出，不模仿大脑的功能或许会更好地打造无人机真正的灵活操控度。克拉普的同事米尔可·科瓦奇（Mirko Kovac）正在尝试这件事。

悬浮机

对天蛾的研究显示了在无人机机身中建构灵活操控的一种可能方式。当这些昆虫悬浮于花瓣之上吸食花蜜时，它们用的控制系统和苍蝇的类似，虽然它们的信息来自触角，而苍蝇的来自平衡棒。约翰霍普金斯大学两个相互独立的团队正在研究天蛾，分别由拉贾特·米塔尔（Rajat Mittal）和诺亚·考恩（Noah Cowan）领导。他们发现，天蛾之所以能让自己的头和胸相对花的位置保持稳定，是因为它对自己腹部的方向做了细微调整。

考恩博士不只做分析，他更近一步，用研究天蛾悬浮获得的知识给一架无人机配备了腹部等同物。无人机的电池组悬挂于它的下方，上面安装了伺服马达，用天蛾移动腹部的方式调整位置。这让无人机能在半空中稳定盘旋。

与此同时，哈佛大学的罗伯特·伍德（Robert Wood）采用了另一个方法来解决悬浮问题。虽然被叫做微型无人机，但四轴飞行器及其同类通常都宽几十厘米。而伍德博士的无人机真正堪称微型：从翼梢到翼梢仅3厘米长。此外，它们的机翼像真正的昆虫那样扑腾，而不是旋转。

伍德在他的无人机上安装了简单的眼睛，作用就似昆虫的单眼。昆虫用这些微小的眼睛定位太阳或月亮，这样它们就能用相对这些遥远光源的恒定角度飞行，以保持直线飞行。（人们认为是单眼引发的混淆使得蛾子在夜晚绕着明亮的人造光打转。）

伍德的人工眼为金字塔形状，每一面都有一个光电传感器。因此它们能像

真正的单眼那样追踪太阳的位置。伍德尚未把这一能力转化为无人机自载导航系统，但这应该也不会太难——当然，只要他的无人机不遇上任何蜡烛。■

Brain scan

Tesla's electric man

JB Straubel is charged with more than electrifying the Californian carmaker. He wants to take batteries to a new dimension

PUT your foot down in a Tesla Model S and the experience is rather different to other cars. The usual exhaust roar is replaced by a hushed whooshing sound as the car accelerates rapidly—and relentlessly—thanks to the high torque of an electric motor making gear changes unnecessary because there is no gearbox. And inside, instead of multiple dials and switches, a large touchscreen dominates the centre console. Established carmakers have tended to make modest electric vehicles, usually small ones to eke out the range available from their pricey batteries. But it was Tesla, a Silicon Valley startup, which realised that many early adopters of new technologies are likely to be well heeled and would prefer a large high-performance saloon that is both luxurious and extremely high-tech.

Why did Tesla act differently? For a start, it does not think of itself as a carmaker. "I see us more as an energy-innovation company," says Jeffrey "JB" Straubel, the firm's chief technology officer, and one of the co-founders of Tesla, along with Elon Musk, the chief executive. "If we can reduce energy-storage prices, it's the most important thing we can do to make electric vehicles more prevalent," says Mr Straubel. "Add in renewable power and I have a direct line of sight towards an entire economy that doesn't need fossil fuels and doesn't need to pay more to do it."

Mr Straubel's captivation with energy storage is understandable. He is cagey about the exact cost of the lithium-ion (Li-ion) battery pack powering the Model S, but it is believed to represent around a quarter of the $70,000 starting price of the basic version. A smaller car, the Model 3, is due in 2017. Although the new car will have some self-driving features like the Model S,

it is aimed more at the mass-market. But to hit the Model 3's expected price of around $35,000, Mr Straubel now needs to reduce the cost of his battery packs by at least a third.

The best way to do that and to meet expected demand, Mr Straubel believes, is for Tesla to make its own batteries. And to make them big time. This is why he and Mr Musk are gambling on building a $5 billion "gigafactory" in Nevada in a joint venture with Panasonic, a Japanese battery supplier. By 2020 the gigafactory is set to produce as many Li-ion batteries as the entire world used this year.

The determination to act boldly and independently has worked for Mr Straubel in the past. When researching a charging system for the Model S he rejected existing industry standards because they delivered too little power. And instead of waiting for an agreement with other carmakers for a universal recharging plug, he designed his own proprietary connector. The company's Superchargers, which provide free recharging in public locations to Tesla owners, can top up a battery to about 80% of capacity in 40 minutes. These now comprise the largest fast-charging network in the world.

Mr Straubel also takes a different view on the batteries themselves. Whereas most manufacturers of electric vehicles have opted for large-format batteries, both the Model S and its predecessor, the Tesla Roadster, are powered by around 7,000 individual Li-ion cells. The Roadster's were originally the standard Li-ion cells widely used in industry and found in devices such as laptop computers. For the Model S, however, the cells have been significantly redesigned. Mounted inside a battery pack, the cells are interconnected and interwoven with liquid cooling systems to prevent fires in the event of an accident (damage resulting in short circuits and faulty charging can cause Li-ion batteries to burst into flame).

The electric Porsche

Teslas were always going to be unique. Mr Straubel, who is 38, made his first full-sized electric vehicle 14 years ago (a golf cart which he resurrected at the age of 14 doesn't count). This was a 1984 Porsche 944 fitted with twin electric motors and 380kg of old-fashioned lead-acid batteries: a weighty proposition, but one that went on to become the fastest electric car in the world at a drag-racing event in California.

"I love immersive experiences where you're engaged with the thing that you're engineering. If you are driving, riding or flying it, it's even more exciting and fun," says Mr Straubel, who holds a private pilot's licence. After graduating with a master's degree in energy engineering from Stanford University, he worked with Harold Rosen (the designer of the first geosynchronous satellite) on a novel hybrid-drive system for cars. This used a turbine to generate electricity and a fast-moving flywheel to store and release kinetic energy when needed. Although the innovative combination worked, it was a leap too far for conservative carmakers, which declined to invest in it. Nevertheless, the pair licensed the technology to a company that makes flywheels for commercial vehicles. Mr Straubel and Mr Rosen went on to build a hydrogen-powered electric engine for aircraft, which was subsequently licensed to Boeing.

It was then that Mr Straubel met Mr Musk, a freshly minted multimillionaire from the sale of his PayPal digital-payments company to eBay. "One lunch was the beginning of what eventually became Tesla," says Mr Straubel. "We spent most of the meal talking about electric aeroplanes. But as we were wrapping up, I said I was working on a fun crazy project with cars, trying to build a lithium-ion battery pack that could last 1,000 miles."

That dream is still some way off. The Model 3 is likely to have a range of 322km (200 miles) compared with the 440km claimed for a top-of-the-line

Model S. But with Tesla intending to sell ten times as many Model 3s, the need for a reliable battery supplier is paramount. Hence the gigafactory. Tesla will have to innovate in battery chemistry and manufacturing techniques even as it ramps up production. Although the new cells are likely to remain small, their exact specifications are still undecided.

Mr Straubel insists that this strategy is less risky than it might seem. He notes that Model S cells today are produced on equipment very similar to that used for the Roadster cells almost ten years ago, even though the energy from the cells has increased by half and their chemistry has changed substantially. The Roadster cells used cobalt oxide as a cathode whereas the Model S uses a nickel-cobalt-aluminium oxide. The difference, says Mr Straubel, is a much improved energy density, a longer lifetime and a higher operating temperature (which means less cooling is required). Besides the chemistry, Tesla is also developing other new features for the batteries.

The idea is that, benefiting from economies of scale, the gigafactory's cells will be significantly cheaper than those from more established manufacturers. "Over the next ten years, it's going to change to the point where we're focused on production to meet the world's energy-storage needs rather than waiting for a cost reduction from a radical change in battery technology," says Mr Straubel.

Not everyone agrees. A report by Lux Research, a firm of technology analysts, has predicted that the gigafactory will bring about only a modest cut in battery costs and suffer more than 50% overcapacity. "Most other companies do not believe that battery volume will grow as fast as it's going to," Mr Straubel counters. "They don't understand the tight linkage between cost and volume. We're at this crossing-point where a small reduction in cost is going to result in a ridiculously big increase in volume, because the auto industry is so big."

Not all the cells made by the gigafactory are destined for vehicles. Some will end up in the company's Superchargers, allowing Tesla to cope with sudden bursts of demand should multiple vehicles need to recharge at once. Others will be used at Tesla's assembly plants to store energy when it is cheap, typically at night, and release it when the price rises.

Keeping the lights on

The use of batteries to store renewable power (see TQ cover story) may provide Tesla with its biggest opportunity in the years ahead. The potential is huge, says Mr Straubel. "The economics in many cases have already crossed a threshold where battery packs can effectively store renewables on a very big scale." The main problem with renewable-power sources, such as wind or solar, is that the wind does not always blow or the sun shine when demand for electricity is high. This requires utility companies to maintain additional power stations, usually running on fossil fuels, to meet the shortfall. Batteries, however, could store the power from renewables when it is generated and release it when needed.

Around 1,000 households in California already have a Tesla battery pack installed alongside photovoltaic panels leased from Solar City, another company owned by Mr Musk. The battery packs allow householders to run appliances if the power goes out or switch when electricity prices are high. But they are also designed to maximise the return from "net metering" rules that allow residential customers to sell excess energy to utilities.

Tesla's residential batteries have been plagued by interconnection problems with utilities and are not being adopted as swiftly as Mr Straubel had hoped. "Utilities tend to be very conservative by nature," he says. Nevertheless, Mr Straubel thinks that favourable economics will persuade utilities of the benefits.

As batteries improve in terms of safety and the amount of energy they can

store, this will allow new electrically powered products to be produced, reckons Mr Straubel, returning to another of his interests: “In the foreseeable future, electric aeroplanes become an interesting and pretty compelling proposition.” A variety of small electric aircraft have been built in America, China and Europe. Airbus recently set up a subsidiary in France to build a two-seater pilot-training aircraft called the E-Fan. It is powered by electric motors driving a pair of ducted fans on either side of the rear fuselage. The European aerospace giant is also looking at the potential of building an electric helicopter and a 90-seat electrically powered passenger plane for short journeys.

A number of developments are under way which have the potential to boost the amount of energy a battery can store. For instance, a team at Stanford University is investigating enclosing the lithium-based anodes used by Li-ion batteries in a thin film of carbon “nanospheres”. This would allow more lithium to be used safely in the anode (it is lithium’s high chemical reactivity that puts the batteries at risk of catching fire). The coating, researchers think, would allow a Li-ion battery to hold about five times as much energy as those used today, weight-for-weight.

Such innovations are still at the laboratory stage and remain some way from commercial reality. In time, perhaps, even lithium may be replaced by more exotic new materials in batteries. “No one wishes we could come up with a technology that makes today’s chemistry obsolete more than me,” says Mr Straubel. “We could sell more cars at a lower price. But we’re not waiting.” ■

智力扫描

特斯拉的电池大师

JB•施特劳贝尔不止肩负把这家加州车厂的产品电动化的任务。他想把电池带进一个新领域

坐在一辆斯特拉Model S中踩下油门，你的体验和驾驶其他车迥然不同。通常的排气轰鸣变成了低哑的嗖嗖声，车子迅速加速，并且是一鼓作气。这得益于电动马达的高扭矩，不再需要换挡，因为车里没有变速箱。车厢内，中央控制台上不再有多个按钮和开关，而被一个大型触摸屏占据。成熟的车厂倾向于制造规模适度的电动车，通常是小型车，以便达到昂贵的电池所能支持的续航里程。然而特斯拉，这家硅谷的创业公司，意识到许多新技术的早期使用者多半是有钱人，会更喜欢高性能的四门轿车，既豪华又极为高科技。

为何特斯拉选择不同的做法? 首先，它不认为自己是一家汽车厂商。“我更多把我们视为一家能源创新公司。”杰弗里（“JB”）• 施特劳贝尔（Jeffrey “JB” Straubel）说。他是特斯拉的首席技术官，和CEO埃隆 • 马斯克（Elon Musk）一样是公司的联合创始人。“如果我们可以降低能源存储的价格，这将是我们让电动交通工具变得更普及所能做的最重要的事，”施特劳贝尔说，“再加上可再生能源，我可以一眼望见经济整体不再需要化石燃料，也不需要花更多钱来实现这种转变。”

不难理解施特劳贝尔对能源存储的痴迷。他小心回避Model S所用锂电池组的确切造价，但据信约为Model S基础款7万美元起价的四分之一。更小的Model 3 将在2017年上市。虽然这款新车会和Model S一样具有一些自动驾驶功能，它更多地面向大众市场。但它若要达到预期3.5万美元左右的价格，施特劳贝尔需要把他的电池组成本减少至少三分之一。

施特劳贝尔相信，要做到这一点并满足预期的需求，最好的方法是特斯拉生产自己的电池，而且要规模宏大。这是为何他和马斯克正在一件事上押注：和日本的电池供应商松下共同出资在内华达建造价值50亿美元的“超

级电池工厂”（gigafactory）。该工厂计划在2020年前生产出等同于全世界今年一年用量的锂电池。

坚持大胆、独立行事在过去就为施特劳贝尔带来了成功。当为Model S研究充电系统时，他否绝了现有的行业标准，因为它们传输的电量太少。他没有等着和其他车商达成协议来寻求通用的充电插座，而是设计出了自己的专用插座。该公司的超级充电站在公共场所为特斯拉车主提供免费充电，能在40分钟里充电约80%。它们如今组成了全世界最大的快速充电网络。

施特劳贝尔对电池本身也持不同见解。大部分电动车制造商选择大尺寸的电池，但Model S以及它之前的特斯拉Roadster车型由约7000颗单个锂电池供电。Roadster的电池起初是在行业内广泛使用的标准锂电池，可以在笔记本电脑这样的设备中找到。但Model S的电池被彻底重新设计。许多电池排放在电池组内，它们相互连接，而液态冷却系统则交织铺设在它们之间，以防在事故中起火（车辆损坏导致的短路和充电错误会引发锂电池起火）。

电动保时捷

特斯拉汽车总会变得与众不同。38岁的施特劳贝尔在14年前建造了他的第一辆全尺寸电动车（他在14岁时重新组装的高尔夫球车不算）。这是一辆1984年产的保时捷944，配备了两套电动马达和380公斤的旧式铅酸电池：一个笨重的设计，但之后在加州举行的直线竞速赛车中，它成了全世界最快的电动车。

“我热爱沉浸在正在建造的东西之中的感受。如果你驾驶、骑行或者飞翔它，还会更兴奋有趣。”有私人飞行执照的施特劳贝尔说。他从斯坦福大学能源工程系硕士毕业后，和哈罗德•罗森（Harold Rosen，第一颗同步轨道卫星的设计师）一起建造全新的车辆混合驱动系统。该系统使用涡轮机发电，并用高速转动的惯性轮按需存储和释放动能。虽然这种创新组合成功了，但保守的车商拒绝投资，因为这一步跨越得太远了。不过，两人把这项技术授权给了一家为商用车辆制造惯性轮的公司。施特劳贝尔和罗森

接着又为飞机制造氢电池供电的电动引擎，后来授权给了波音公司。

这时施特劳贝尔遇到了马斯克。马斯克因为把他的PayPal数字支付公司卖给了eBay而刚刚晋身为亿万富翁。“一顿午饭是特斯拉的起源，”施特劳贝尔说，“大部分时间我们都在聊电动飞机。但快聊完时我说，我正在搞一个有趣而疯狂的汽车项目，尝试建造能跑1000英里的锂电池组。”

距离这个梦想尚有差距。相比顶级Model S宣称的440公里里程数，Model 3的里程数可能只有322公里（200英里）。但因为特斯拉计划销售10倍于Model S数量的Model 3，对可靠的电池供应商的需求就变得至关重要。因而有了超级电池工厂计划。即使在扩大生产之时，特斯拉仍需创新电池化学和制造技术。虽然新电池很可能仍是小尺寸，它们确切的规格还没有定下来。

施特劳贝尔坚称这一策略的风险没有看上去可能的那么大。他指出，如今生产Model S电池的设备和近10年前生产Roadster电池的设备很相似，即使电池产生的能量增加了一半，且它们的化学过程显著改变。Roadster电池使用氧化钴做阴极，而Model S使用氧化镍铝铜。所带来的差异，施特劳贝尔说，是能量密度极大提升，寿命变长，运行温度更高（意味着需要更少的冷却）。除化学外，特斯拉也在为电池研发其他新特征。

其思路是，受益于规模经济，超级电池工厂生产的电池会明显比成熟厂商生产的电池便宜。“今后10年，事情将会变成：我们专注于生产以满足世界能量存储的需求，而不是等待电池技术发生彻底变化带来成本降低。”施特劳贝尔说。

并非所有人都认同这一点。技术分析师公司Lux Research的报告预测，超级电池工厂只会带来电池成本的小幅下降，而其超过50%的产能会过剩。“其他企业大多不相信电池数量的增长会达到它实际将增长的那么快，”施特劳贝尔反驳道，“他们不明白成本和产量之间的紧密联系。我们正处在一个重要关口，成本的小幅下降会带来数量上不可思议的极大增长，因为汽车工业如此庞大。”

超级电池工厂生产的电池并不都会被装进汽车中。一些会安置在该公司的超级充电站，以应对几辆车同时需要充电造成的需求突增。另一些会在特斯拉的装配工厂中使用，在电力价格便宜时尤其是晚间存储能量，以便在电力价格上涨时使用。

保持灯亮

用电池存储可再生能源可能在未来几年里给特斯拉带来最大的机遇。潜力是巨大的，施特劳贝尔说。“在许多情况下，经济效益已经越过了临界点，能在非常大的规模下用电池组有效存储可再生能源。”可再生能源如风力或太阳能的主要问题是当用电需求高时，风不总在吹，太阳也不总在照耀。这要求公用事业公司维持额外的发电站以弥补缺口，通常是用化石燃料发电。电池却能在可再生能源发电时存储电能，并在需要时释放电能。

加州约1000户家庭已经在光伏发电板旁装设了特斯拉电池组，这些电板是从马斯克的另一家公司“太阳城市”（Solar City）租赁的。这些电池组让居民们可以在断电时继续运行电器，或在电价高时转用电池。但它们也意在扩大居民从净用电量计费（net metering）政策中获得的回报，该政策让居民用户可以把多余的电卖给公用事业公司。

特斯拉的居民用电池因为与电网连接不顺，被采纳的速度没有像施特劳贝尔希望的那么快。“公用事业公司往往天生非常保守。”他说。不过，他认为良好的经济效益会说服公用事业公司明白其益处。

施特劳贝尔认为，随着电池改善其安全性，增加可存储的能量，新的电动产品将被生产出来。他的话题又回到了他的另一个兴趣：“在可预见的未来，电动飞机会成为一个有趣又非常吸引人的选择。”美国、中国和欧洲已经建造了各种电动小飞机。空客公司最近成立了法国分公司来制造名为E-Fan的机师培训两人座飞机。这架飞机由电动马达驱动装在后机身两侧的一对函道风扇。这家欧洲航空巨头还在研究建造一架电动直升机和90座电动短途客机的可能性。

目前有几项进展可能会增加一块电池可存储的能量。比如，斯坦福大学的一个团队正在研究把锂电池中使用的锂基阳极包裹在一层碳“纳米球”薄膜中。这会让更多的锂在阳极中安全使用（正是锂的高化学反应性让电池有起火风险）。研究人员认为，这一覆盖层会让同等重量的一块锂电池存储的能量达到目前的约5倍。

这类创新仍处在实验室阶段，要成为商业现实尚需时日。未来，或许甚至连锂都可能被新奇的电池材料取代。“没人比我更希望我们能拿出一种新技术，把今天的化学方式淘汰掉，”施特劳贝尔说，“那样我们可以以更低的价格卖出更多车。但我们不会坐等这一天。”■

Financing American firms

Open the floodgates

New rules on raising equity make life easier for firms and riskier for investors

IN 1980, Massachusetts banned a new technology company from selling shares to the public there, worried that gullible residents would get swept up by the hype surrounding the venture. In retrospect, that proved a regrettable decision for Bay Staters: the firm in question, Apple, is now the single most valuable public company in the world. Future generations of startups seeking to raise money by selling equity should be given a smoother ride under new rules soon to come into force.

For all of America's perceived openness to innovation and finance, regulators have energetically restricted the ways corporate tiddlers can raise money. The general public has been banned from risky, early-stage investment opportunities, all in the name of consumer protection. That will largely be reversed from May when rules approved by the Securities and Exchange Commission (SEC) on March 25th come into force. These will overhaul the process of raising equity in ways that will make it far easier for firms to finance themselves, even if consumers will have to keep their wits about them.

Under one of the (long-delayed) provisions of the JOBS Act, a compendium of enterprise-boosting laws passed in 2012, companies will be able to raise up to $50m in what is commonly referred to as a "Mini IPO", or initial public offering. Although SEC agreement will still be required, many of the intrusive constraints found in garden-variety IPOs will be waived.

The most controversial aspect of the rules is tied to who may invest in such offerings. Typically access to anything out of the ordinary requires an investor to be "qualified", meaning those with a net worth of $1m or an

annual income in excess of $200,000. Now anyone will be able to invest up to 10% of their income in early-stage ventures, a type of investment that makes stockmarket gyrations look dull.

The new rules will galvanise crowdfunding, websites that allow the general public to invest in promising companies. The likes of Kickstarter and Indiegogo already allow people to back small firms, but punters typically get rewarded with early-release versions of their products. Now they could get shares, too.

Plenty of other barriers will be lifted for small firms. Pernickety state watchdogs of the sort that kept Apple out of Massachusetts will lose their say. Companies will no longer have to list on an SEC-accredited exchange, which often comes with onerous disclosure standards. Financial results will have to be filed twice a year, rather than quarterly. And firms can forgo an "independent" audit committee of board members, a costly requirement under the Sarbanes-Oxley Act, which was passed in the wake of Enron's implosion in 2001.

Taken together, observes Sam Guzik, an attorney who represents companies going public, the reforms will make it cheaper for firms to raise money. That should enable faster growth and an easier path to a conventional stockmarket listing.

Sceptics worry that crowdfunding venues will become a playpen for fraudsters targeting the poor and credulous. Much the bigger worry is that startups have a tendency to go bust. In Britain, where equity crowdfunding is already thriving, regulators have warned investors it is "very likely" they will get wiped out. For every Apple, in other words, there will be many, many more lemons. That will still sound like a reasonable trade-off to lots of American investors. ■

为美国公司融资

开闸放水

新股发行立新规，公司融资更易，投资风险更高

1980年，美国马萨诸塞州禁止一家新技术公司向公众出售股份，原因是担心民众轻信围绕该企业的炒作。回过头看，这对于“海湾州民”而言是一个令人遗憾的决策。这家公司就是苹果，现在已成为全球市值最高的上市企业。在即将实施的新规则下，未来的创业公司在进行股权融资时应该可以更加顺风顺水。

在外界看来，美国对创新及融资的态度积极开放，但一直以来美国的监管机构极力限制新兴企业的融资方式。美国一贯以保护消费者为名，禁止普罗大众参与高风险的早期投资。美国证券交易委员会（SEC）3月25日通过的规则在5月生效后，上述情况将大为逆转。这些规则彻底革新了发行新股的过程，大大便利了公司融资，消费者则须保持清醒警觉。

2012年美国通过了旨在扶助创业企业的《工作法案》（JOBS Act，全名为《创业企业扶助法》），这一姗姗来迟的法案有一项条款规定，企业将可通过所谓“微型IPO”的形式募集最多达5000万美元的资金。虽然依然须经美国证券交易委员会审批，但普通IPO中的许多烦扰的限制将被免除。

规则中最具争议性的方面在于谁可以投资。一般情况下，任何非常规项目都要求投资者必须“符合资格”，即净值达100万美元或年收入超过20万美元。现在，任何人均可投资创业公司，只要投资额在自己收入的10%以内。这类投资的风险令股市震荡也相形失色。

这些新规则将刺激众筹——这类网站让大众可以投资潜力企业。人们已经能通过诸如Kickstarter和Indiegogo等众筹网站在小公司上下注，但通常给赌客们的回报只是这些公司的早期产品。而现在他们还能得到公司的股份。

小公司面对的很多其他障碍也将被解除。像当初把苹果公司挡在马萨诸塞州外的那些吹毛求疵的州监管机构将失去发言权。企业将不需要在美国证券交易委员会认可的交易所上市，因而无须承担繁重的信息披露责任。财务业绩不必每季度披露，一年两次即可。公司也无需成立由董事会成员组成的“独立”审计委员会，这是2001年安然丑闻爆发后通过的《萨班斯法案》（Sarbanes-Oxley Act）中一项成本高昂的要求。

代表上市企业的律师萨姆·古济克（Sam Guzik）认为，总的来看，这些改革将降低公司的融资成本。这应该会有利于公司快速发展，更容易走向传统意义上的上市之路。

持怀疑态度的人士则担心众筹平台会变成骗子的乐园，财少力弱又盲目轻信的人们将成为受害者。更大的忧虑在于创业公司往往是昙花一现。在英国，股权众筹已遍地开花，监管机构已警告投资者说，这些公司“非常可能”被淘汰掉。换句话说，许多许多的“柠檬”里面才能找到一个“苹果”。但对许多美国投资者而言，这听上去仍是不错的交易。■

Growth in America

Careful now

Unless wages grow, America's economic blip could become a trend

THE people of Royersford are feeling pinched. In the Main Street Café, in the town centre, a man complains that his pension payments will soon be frozen. Sheena, a waitress, says business is brisk, but rues the "teeny tiny" pay rises she and her friends have received. The worries of those in this Pennsylvanian borough are familiar across America. Although it has chugged along far better than other rich countries, the world's largest economy still fails to instil confidence in its workers. Add to this sour economic data from the beginning of 2015, and some question the strength of the American recovery. Wages hold the answer.

GDP is made up of four things: government expenditure, net exports, investment and consumer spending. One component, government largesse, is doing better. After years of weighing on growth, higher spending is now helping the economy.

The other components tell another story. Start with exports (see chart 1). On a trade-weighted basis, the dollar has appreciated by 13% in the last year. America is not especially exposed to the vagaries of international trade—exports of goods and services equal just 14% of GDP, compared with 26% for the euro zone. But the dollar's recent rise, which makes American products less competitive on world markets, has been so dramatic that problems are emerging. Paul Ashworth of Capital Economics, a consultancy, is expecting a 14% annualised, inflation-adjusted decline in exports over the first quarter of this year. With the euro zone expected to grow by just 1.4% this year, and the Canadian economy also slowing, demand for American wares from important trading partners threatens to be lacklustre.

Businesses are already feeling the pain. A third of the sales of companies in the S&P 500 index come from abroad. Corporate profits fell by 1.6% in the fourth quarter of 2014 and were 6.4% lower than in the same quarter of 2013. As profits have been squeezed, so investment, the third component of GDP, has stalled.

Figures released at the end of March show that orders for "durable" goods—things that last a long time, like industrial machinery—dropped by 1.4% in the previous month. "Core" orders of durable goods (which exclude transportation equipment) have fallen every month since October. And with the oil-price slump, spending on energy projects has crashed. Declining investment in mining will wipe 0.8 percentage points from GDP growth in the first quarter, say researchers at Capital Economics. Steven Ricchiuto of Mizuho Securities, an investment bank, expects corporate investment to drop: "Companies are not in a mood to add to capital stock."

All this sounds bad. However, the American economy lives or dies by what happens to consumer spending, which makes up the lion's share of GDP. If buoyant, it could prevent the economic blip from turning into something more serious. Economists had expected strong consumption growth in 2015: Americans have seen a windfall from a halving of the price of oil and outstanding consumer credit has grown for 42 straight months. Despite that, consumption growth has slipped.

Unusually bad weather earlier this year partly explains what is going on. A freezing winter forced Americans to stay indoors instead of going to the shops. But the biggest thing working against stronger and more sustainable consumption growth is pay. In Royersford's part of Pennsylvania, real hourly earnings fell by 1% last year. Down the road from the café (and past a few vacant lots) in Sweet Ashley's Chocolate, the shop's owner says that she would like to hire, but can only afford to pay the minimum wage. One of her friends has three jobs, one of them full-time, to make ends meet. Across

America, median inflation-adjusted wages are no higher today than they were when the financial crisis hit (see chart 2).

Economists struggle to explain why wages have not taken off. The most recent jobs report, for March, was muted, but that served to highlight just how robust the data have been over the past two years. The unemployment rate stands at 5.5%, below its historical average. Economists expect that wages should rise faster in such circumstances, since employers have to compete for workers. A research paper from the Federal Reserve Bank of Chicago estimates that, if real wage growth had followed its historical relationship with the unemployment rate, by mid-2014 it would have been 3.6 percentage points higher than it actually was. Three big things, though, have held back pay: changes to America's unemployment-insurance system, the behaviour of firms, and the persistence of labour-market "slack".

America's unemployment-insurance system underwent a big change at the end of 2013. Before then, the average American could get 53 weeks' worth of unemployment benefits; in three states they could get 73 weeks' worth. Congress then decided to make benefits stingier: the average limit dived to 25 weeks, cutting off 1.3m Americans immediately. With nothing to fall back on, the wage expectations of many unemployed people fell, says Iourii Manovskii of the University of Pennsylvania. Employers in some sectors quickly took advantage of this newly cheap pool of workers. A big chunk of the 3m extra jobs created during 2014 were in poorly paid industries (see chart 3).

Even firms in typically well-paying sectors are being tight-fisted with their workers. A recent paper by Mary Daly and Bart Hobijn, both of the Federal Reserve Bank of San Francisco, looks at the problem of "nominal-wage rigidity". The paper argues that when the financial crisis hit, employers found it difficult to reduce the cash value of the wages paid to their staff.

(Foisting a pay cut on your entire workforce hardly boosts morale.) Inflation was too low to take a big bite out of real wages by keeping nominal wages flat. Instead, employers fired their least productive workers, keeping the best ones happy. That helps to explain why, counterintuitively, median wages did well even as unemployment shot up. Now, to compensate for the high wages paid to those staff that got through the recession, firms are willing to offer new recruits only low wages. The survivors do not see raises, either.

Pay it forward

Firms may be able to get away with offering measly pay since the labour market still has a lot of "slack" (ie, there are workers on hand to fill additional jobs, should they be needed). The number of part-time workers who would rather be full-timers—so-called "part-time for economic reasons" (PTER)—fell much more slowly than the official unemployment rate following the recession (see chart 4). The same goes for "discouraged" workers, those who want a job but say that there is no point in looking. Though few in number, their involvement—or not—in the labour market can sway wages. Both measures have fallen since the recession ended, but are still much higher than before the crisis.

According to a Chicago Fed paper, the PTER rate is a particularly important determinant of wage levels. It finds that a 1% increase in the PTER rate is associated with a 0.4% fall in real wage growth, even after controlling for the effects of other measures of unemployment. The impact is especially strong for worse-off workers. David Blanchflower of Dartmouth College and Andrew Levin of the IMF found similar results in a paper published in March. When the PTER rate is high, workers may feel unable to ask for higher wages, since what they really want is more hours. Nervousness about asking for more pay may ripple through the labour market, says Daniel Aaronson of the Chicago Fed.

Economists also debate the effect of America's "participation rate", defined as the number of people in work or actively looking for jobs as a proportion of the population over 16. Now at 62.7%, it has been falling for over a decade. It is 3 percentage points lower than in mid-2009.

Some economists argue that a low participation rate is bad for wages. A pool of idle workers, though not officially looking for jobs, stops those in work from pushing for better pay, since they are worried that their employers will replace them. And if wages do rise, those out of the labour force can simply rejoin it, pushing them back down. However, this assumes that low labour-force participation is down to economic conditions. A paper by the Brookings Institution, a think-tank, disputes this. It posits that the falling participation rate among working-age people mainly reflects structural factors, such as technological changes that push some workers out of the labour market permanently.

The Brookings research also tackles the question of why the participation rate fell so sharply around 2007-08. The recession had an impact, but demographic factors may have been more important. About that time, the first baby-boomers turned 62, the minimum age to receive retirement benefits. Using similar reasoning, the paper suggests that the participation rate will fall further in coming years. If its explanation is right, then as the economy improves wages should grow, since there will be fewer workers willing to be sucked back in to the labour force.

If so, the latest data suggest pay could be about to take off. One survey found that 70% of American companies expected to increase wages by at least 3% in the year from March. Pay rises are hitting the headlines: McDonald's boosted the wages of its burger-flippers on April 1st.

Where big business leads, others will follow. The boss of Comfort Keepers, a social-care provider a short drive from Royersford, notes employees at

Walmart, a supermarket, are getting a pay rise, a move he may be forced to emulate. David Doyle of Macquarie, a bank, says that the change in average hourly earnings of private-sector workers during the first quarter of this year was the fastest since the recession. If healthier wage data keep coming, interest-rate rises from the Federal Reserve will soon follow. That would suggest that America's economy, despite the blip, is on the way back to normal. ■

美国的增长

现在要小心

除非工资上涨，否则美国的经济波动可能成为一种趋势

罗耶斯福德（Royersford）的人们现在感觉生活拮据。在镇中心的“大道餐厅”（Main Street Café），一位男士抱怨说他的养老金给付很快就要被固定。服务员希娜（Sheena）说生意挺好，但抱怨自己和朋友的工资涨得太少。这个宾州小镇居民的担忧在美国颇具代表性。尽管美国的经济一路前行，比其他富裕国家好出不少，但世界最大的经济体依然未能令就业者重燃信心。加上2015年初就令人失望的经济数据，一些人怀疑美国经济复苏的能力。从工资那里可以找到答案。

GDP由四个部分构成：政府支出、净出口、投资，以及消费支出。其中政府慷慨解囊这个部分发挥了明显作用。拖累增长多年之后，高政府支出正在推动经济发展。

其他三个部分的情况大不相同。从出口说起（见图表1）。以贸易加权计算，美元去年升值了13%。美国并没有特别受到国际贸易震荡的冲击——产品和服务出口仅占GDP的14%，而欧元区这一数字为26%。但是美元最近的升值幅度太大，使得美国产品在国际市场上竞争力下降，问题频现。咨询机构凯投宏观（Capital Economics）的保罗·阿什沃思（Paul Ashworth）认为，经过通胀调整后今年第一季度的出口会出现年化14%的下降。预计欧元区经济今年仅会增长1.4%，而加拿大经济也在放缓，重要贸易伙伴对美国商品的需求很可能会低迷。

工商企业已经感受到了寒意。标准普尔500指数企业有三分之一的销售额来自国外。2014年第四季度企业利润下降了1.6%，比2013年同期低6.4%。随着利润被挤压，GDP的第三个部分——投资——也停滞不前。

三月底发布的数据表明，耐用品也就是像工业机械这样使用时间较长的商品，其订单在前一个月下降了1.4%。将运输设备除外，耐用品的“核心”订

单自去年10月以来逐月下降。同时，随着油价下跌，能源项目的支出也大幅减少。凯投宏观的研究人员称，矿业投资的下滑会导致GDP增长减少0.8个百分点。投资银行瑞穗证券（Mizuho Securities）的史蒂芬·里乔托（Steven Ricchituo）预测企业投资会下降:“公司没心情增加资本存量。”

所有这些听起来很糟。但是，真正决定美国经济成败的是消费支出，这也是GDP的最大组成部分。如果这部分坚挺，就能防止暂时的经济起伏演变成更大的灾难。经济学家曾预期2015年的消费将强劲增长：油价降了一半，消费信贷42个月持续上涨，为美国人带来了额外的购买力。尽管如此，消费增长依然受挫。

原因之一是今年年初罕见的恶劣天气。寒冬迫使美国人呆在室内，不能外出购物。但是薪酬才是最重要的因素，它阻碍了更强劲、更可持续性的消费增长。在宾州的罗耶斯福德，实际时薪比去年下降了1%。从大道餐厅沿路前行，经过几小块空地就到了“甜心阿什利巧克力店”（Sweet Ashley's Chocolate）。店主说她想请人帮忙，但是只付得起最低工资。她的一个朋友在全职工作之外还打着两份零工，才能勉强度日。在全美，扣除通胀后的工资中位数并没高过金融危机来袭时的水平（见图表2）。

经济学家们很难解释为什么工资未能大幅上升。最近出炉的3月份就业报告反应平淡，但却恰恰反衬出过去两年的数据多么强劲。失业率为5.5%，低于历史平均水平。经济学家预计在这种情况下工资应当加速增长，因为雇主必须抢夺雇员。芝加哥联邦储备银行的一份研究报告推算，如果实际工资增长与失业率的关系遵从历史规律，那么到2014年中期，工资应当比现实数据高出3.6个百分点。然而三个主要因素压制了薪资增长：美国失业保险制度的变革、公司的行为，以及劳动力市场的持续“疲软”。

美国的失业保险制度在2013年底经历了一次巨变。此前，普通美国人可领取53周的失业津贴；在三个州可以领取73周的失业津贴。后来国会决定缩减津贴：平均期限锐减到25周，130万美国人顿时失去了救济。宾夕法尼亚大学的尤里·马诺夫斯基（Iourii Manovskii）认为，无所依靠的情况下，失业人员对工资的期望值降低了。一些行业的雇主迅速利用了这批新

增的廉价劳动力。2014年创造的300万份新工作中，相当一部分都在工资微薄的行业（见图表3）。

甚至在通常高薪的行业里，公司也对雇员吝啬起来。旧金山联邦储备银行的玛丽·达利（Mary Daly）和巴特·霍布金（Bart Hobijn）最近的一份报告探讨了了“名义工资刚性”的问题。这份报告认为，当经济危机来袭时，雇主发现很难降低付给员工薪水的现金价值。（对所有雇员实行减薪很难鼓舞士气。）通胀率太低，雇主无法通过保持名义工资不变的方法达到大幅缩减实际工资的目的。他们只能炒掉效率最低的员工，以确保优秀的员工满意。这就能解释为什么与直觉恰恰相反，工资中位数即便在失业率猛涨时也保持在较好水平。现在，为了抵扣付给那些挺过经济萧条期的员工的高工资，公司只愿意付给新进人员较低的薪水。幸存下来的员工也见不到工资增长。

薪资提升，经济向好

由于劳动力市场相当疲软（只要需要，就有人等待填补空出来的工作岗位），公司只需要给员工开微薄的工资。在衰退之后，更愿意成为全职工的兼职工作者，即所谓的“因经济原因从事兼职的就业者”（PTER），其人数的下跌比官方失业率的下降慢得多（见图表4）。消极的失业者也是同样，他们想要一份工作但是又说找工作没意义。尽管他们人数不多，但他们是否进入劳动力市场也会影响工资。这两部分人群在衰退结束以来都有所减少，但是依然比经济危机前高得多。

根据芝加哥联储的报告，PTER比率是工资水平一个非常重要的决定因素。报告发现，即使控制了其他失业措施影响之后，PTER比率每增长1%，实际工资增长会下滑0.4%。这种影响对于中下阶层工人尤其明显。达特茅斯学院的大卫·布兰奇福劳（David Blanchflower）和国际货币基金组织的安德鲁·莱文（Andrew Levin）在3月份发布的文章里也有类似的发现。当PTER比率高的时候，工人会觉得无法争取更高的工资，因为他们真正需要的是更多的工时。芝加哥联储的丹尼尔·阿伦森（Daniel Aaronson）认为，对是否要求加工资的犹豫不决会在就业市场上传播开来。

经济学家同样还在争论美国就业“参与率”的影响。“参与率”被定义为就业或积极寻求就业人数在16岁以上总人口中的比例。现在这一比例为62.7%，已经持续下降了超过10年，和2009年中期相比下降了3个百分点。

一些经济学家认为，低参与率不利于工资提升。大量赋闲的劳动者尽管表面上没在找工作，但却妨碍了就业人员争取更高的薪酬，因为他们担心雇主会换掉他们。而且即便工资确实上涨，就业人口之外的人也能重返职场，将工资水平重新压低。这种理论是假定低就业参与率是经济状况的结果。然而，智库布鲁金斯研究所（Brookings Institution）的一份报告对此提出质疑。该报告认为不断下降的就业参与率主要反映的是结构性因素，比如科技革命让一些就业者永久地退出了劳动力市场。

布鲁金斯研究所（Brookings Research）的研究也试图解释为何参与率在2007至2008年间下降得如此迅速。衰退确实起到了作用，但更重要的可能是人口结构因素。在那个时期，婴儿潮的那一代中最长者已年满62岁，也就是达到了领取退休金的最低年龄。基于同样的推理，报告认为参与率在未来数年内将会继续下滑。如果这种解释是对的，那么随着经济的改善，工资水平应该提高，因为愿意重返就业大军的人数会越来越少。

果真如此，最近的数据已有迹象表明工资可能会开始上涨。一项调查发现，从3月起的未来一年里，有70%的美国公司希望把工资提高至少3%。工资上涨成为了头条新闻：麦当劳在4月1日提高了员工的工资。

有大公司带头，其他公司也会跟上。“舒适看护”（Comfort Keepers）是一家提供陪护服务的公司，离罗耶斯福德车程很近，该公司老板提到，沃尔玛超市正在给员工涨工资，他可能也得跟着为员工加薪。麦格理银行（Macquarie）的大卫·多伊尔（David Doyle）说，今年第一季度私营部门员工平均时薪的变化是衰退以来最为迅速的。如果更为健康的工资数据不断涌现，美联储的加息将会紧随而至。那将意味着美国经济尽管小有起伏，但已走在回归正常的轨道上。 ■

Global housing markets

Property puzzles

Housing markets across the globe both underperform and overwhelm

EXHIBIT A is a powerhouse of the world economy whose GDP has grown by 158% over the past ten years. Exhibit B is a basket-case whose economy has contracted by 18% over the same period and where a quarter of the workforce is unemployed. China may think Greece an unlikely bedfellow, but the weakness of their housing markets ties the two together in our latest roundup of global house prices.

The Economist tracks the health of housing in 26 markets around the world, encompassing a population of over 3 billion. Prices are now rising in 19 of these markets at a median pace of 5.2% a year. But in China, whose decade-long construction boom appears to be coming to an end, and in much of the periphery of the euro area, which is just starting to recover from an especially severe bust, prices are falling.

Although the nuances of each market are many and varied, a single unifying theme is the cheapness of borrowing. In their efforts to support weak global demand, central bankers have kept monetary policy ultra-loose. That has left mortgage rates at historic lows: the interest rate on a 30-year fixed-rate mortgage in America is just 4%. Instead central bankers are relying on "macroprudential" policies, such as stringent lending criteria for banks, to stem irrational exuberance in housing markets.

To test whether they have succeeded, *The Economist*'s housing index compares the path of house prices against two measures: rents and income. If house prices rapidly outpace either one, a bubble may be forming. According to our measure, property is more than 25% overvalued in seven of the markets we track, notably in Australia, Britain and Canada.

After a steep correction, prices are roughly at fair value in America, having risen 24% from their trough in 2011. But sales are running at around 4% of the housing stock a year, compared to an average of 6% between 2004 and 2008. In the 12 months to February, builders started work on fewer than 1m homes, a level that would once have signalled a recession. Completions have been below that level for 74 months.

Prices are rising fastest in Ireland, but they still have not reached their pre-crisis peak. Moreover, as in many countries with seemingly buoyant markets, the capital is doing much better than the rest of the country. Prices increased by 21% in Dublin in the year to the end of February, but by just 8% elsewhere in Ireland.

A similar story is true of Britain, where property is something of national obsession. Prices in London have risen by 40% in four years, but by just 15% everywhere else. Prices have outpaced incomes in recent years, causing the proportion of households owning their own home to fall from 76% in 1999 to 64% in 2013. The current coalition government has done much to spur demand, reducing transaction taxes on cheaper houses and subsidising the mortgages of first-time buyers. Most parties promise more of the same after elections next month. But supply remains crimped.

It is in Australia and Canada, however, where prices seem most out of kilter. They are 61% overvalued relative to rents in the former, and 89% in the latter. Presumably the IMF had such places in mind when it warned this month that macroprudential measures might not be enough to prevent bubbles.

Meanwhile, although Spain's economy is growing again, prices there are still falling, as they are in France and Italy. Spain's population shrank by 200,000 last year, as the unemployed emigrated to find work. In the three years before the crisis it grew by 800,000 a year. ■

全球楼市

房地产迷题

全球各地楼市表现不佳和繁荣过度并存

例子A是世界经济的发动机，过去十年其GDP成长了158%。例子B是一只病猫，同一时期经济缩水了18%，目前四分之一的劳动者失业。中国可能想不到会和希腊为伍，但在我刊最新的全球房价总汇中，两个国家低迷的楼市把它们放到了一起。

《经济学人》追踪全球26个市场的楼市健康状况，覆盖30多亿人口。目前在其中19个市场，以中位数计算，价格每年增长5.2%。但在中国和欧元区外围的大部分国家，房价正在下跌。在中国，持续十年的建设大潮看似走到了尾声。欧元区则刚刚开始从尤为严重的衰退中复苏。

各个市场的差异众多，且细微不同，但它们有一个共通的主题：便宜的融资。为推动疲弱的全球需求，各地央行把货币政策维持在超宽松水平。这使得按揭利率跌至历史新低：美国30年期按揭贷款固定利率仅为4%。央行行长们转而倚赖"宏观审慎"政策，以抑制房地产市场的非理性亢奋，比如要求银行执行更严格的放贷标准。

要测试他们成功与否，《经济学人》的房价指数比较了房价趋势和另两个衡量指标：房租和收入。如果房价增长迅速赶超其中任一，那么泡沫可能正在形成中。根据我们的测量结果，房地产在我们追踪的其中七个市场被高估超过25%，澳大利亚、英国和加拿大尤为突出。

在经过大幅调整后，美国的房价大致处于公允水平，比2011年的谷底上升了24%。但年销量为房屋存量的约4%，而在2004年到2008年间该比例平均为6%。在截至今年2月的12个月里，新屋开工量不到一百万套。跌至一百万套的水平曾被视为是衰退的迹象。新屋建成量则已经连续74个月低于该水平。

房价在爱尔兰上涨最快，但仍未达到金融危机前的峰值。此外，在许多看似繁荣的市场，首都的上涨比其他地区高得多。在截至2月底的一年里，都柏林的房价上涨了21%，但在爱尔兰其他地区仅上涨了8%。

英国的情况类似。在这个全民沉迷房地产的国度，伦敦的房价在四年里上涨了40%，但在其他地区只上涨了15%。近年来房价已经赶超收入增长，导致自有房屋家庭的比例从1999年的76%下降到2013年的64%。英国目前的联合政府已经做了很多事来拉动需求，包括减少低价房屋的交易税，以及为首次买房者提供按揭补助。该国大部分政党都承诺下个月大选后会在这方面做得更多。但供给仍然受到抑制。

不过，价格扭曲最严重的市场是澳大利亚和加拿大。和租金相比，澳大利亚的房价被高估61%，加拿大被高估89%。国际货币基金组织（IMF）本月警告宏观审慎措施可能不足以防止泡沫生成，应该是指这类市场。

与此同时，虽然西班牙的经济再度开始成长，那里的房价仍在下跌，和法国和意大利一样。去年西班牙人口缩减了20万，因为失业者纷纷搬到海外找工作。而在金融危机发生前的三年里，该国人口每年增长80万。■

Financial technology

Connect 450

A tech startup helps rejig America's capital markets

ORCHARD PLATFORM, a financial technology company founded in 2013, occupies a small office in Manhattan between two art studios. It is Orchard's third home and soon its 25 employees will relocate a few blocks away to a space that can hold 78 people. It thinks it will have to move again within a year.

Orchard is just one of many "fintech" firms sprouting in Wall Street's shadow. But it stands out due to the prominence of its seed investors, including former chief executives of Citigroup (Vikram Pandit) and Morgan Stanley (John Mack). In their former jobs, they struggled to adapt vast, complex institutions to new regulations and fast-changing markets. Orchard, in contrast, is one of the agents of change. It serves as a conduit between large entities that have money to invest and an emerging world of firms that originate loans.

In 2011 Matt Burton, Orchard's boss, lent $700 via Lending Club, an online platform which links borrowers and creditors. He was pleased with his return of 8% until he discovered it was half that of Angela Ceresnie, now Orchard's chief financial officer, who was working at the time in small-business lending at Citigroup. That prompted two insights: first, that there was money to be made by working with "originators", meaning startups providing credit in novel ways; and second, that institutional investors would struggle to seize on this opportunity without an intermediary.

There are now at least 450 originators, Mr Burton estimates, focusing on half a dozen niches including loans to consumers, small businesses, students and property investors. To the extent the originators resemble one

another, it is that they tend to make relatively small loans and use innovative methods to evaluate risk. For example, SoFi, based in San Francisco, refinances law-school debt for graduates who have passed the bar and are thus particularly likely to repay. OnDeck Financial provides advances to merchants and collects (in tiny increments) each time their customers pay with a credit card. Kabbage also provides credit to merchants, monitoring borrowers' solvency by tracking PayPal receipts and UPS shipment records.

So far Orchard's platform is connected to seven of these originators and 36 institutional investors. It expects both numbers to multiply rapidly. It collates information on the loans being offered in forms that big institutions can use to invest on a suitable scale. In the brief period it has operated, it has channelled several hundred million dollars of investment into loans of as little as $2,000. Its profits come from collecting a fee of a few hundredths of a percentage point on the sums lent with its help.

Conventional banks will remain a force in all of the niches that are being targeted. They retain a huge marketing advantage in the form of their branches, and can raise money cheaply thanks to government backing for deposits and implicit government guarantees on their own debt. Still, neither of these advantages is without cost, and the price of government engagement is becoming particularly stiff. The level of capital banks must hold is rising and the overall process of extending credit is becoming an increasingly politicised, bureaucratic quagmire.

Most originators, in contrast, are not regulated as banks, and are not subject to the same expensive capital requirements or suffocating red tape. Indeed, regulators like them, since they are unlikely to need bail-outs. They do not take in deposits backed by a government guarantee and cannot make big losses on loans, since those are passed directly to other investors.

Banks retain an advantage in the case of large, complex loans that must be individually structured, but room for incursion exists even here. Within a year, Mr Burton predicts, originators will enter the mortgage market, which will not prevent defaults but might add a level of transparency lacking in the once vast market for mortgage-backed bonds. The scope for banks to be "disintermediated" is enormous. In time, of course, intermediaries like Orchard could be cut out of transactions too. Some of the biggest originators, including Lending Club, already do business directly with institutional investors. ■

金融技术

连接450

一家科技创业公司有可能更改美国的资本市场

成立于2013年的金融技术公司“果园平台”（Orchard Platform）在曼哈顿的两间画廊中间有一件小小的办公室。这是果园的第三个家，很快它的25名员工就要搬到几个街区以外的新场地，那里能容纳78人。果园估计年内还会再搬家。

果园是在华尔街阴影下迅速发展起来的众多“金融技术”公司之一。它脱颖而出是因为其天使投资人声名卓著，包括花旗集团前首席执行官潘伟迪（Vikram Pandit）和摩根士丹利前首席执行官麦晋桁（John Mack）。在之前的工作中，这些人曾尝试让庞大复杂的机构适应新的规则和迅速变化的市场，却不成功。相反，果园是变革的推动者之一。它充当通道，嫁接有钱投资的大型实体与新兴的大量贷款承揽公司。

2011年果园的老板马特·伯顿（Matt Burton）通过Lending Club这一撮合借款人和债权人的网上平台借出700美元。他对自己8%的回报率很满意，直到他发现这只是安吉拉·赛瑞斯妮（Angela Ceresnie）的收益率的一半。赛瑞斯妮现任果园的首席财务官，当时在花旗的小企业贷款部工作。这让他认清了两件事：第一，与“贷款承揽人”共事有利可图，这些承揽人是以新颖的方式提供贷款的创业公司；第二，没有中介，机构投资者难以抓住这个机会。

据伯顿估计，至少有450家贷款承揽人专注于六个利基市场，包括对消费者、小企业、学生和房地产投资者的贷款。贷款承揽人之间的相似度在于他们倾向于借小额贷款，并且用创新的方法评估风险。例如位于旧金山的SoFi为已经通过律师资格考试，因此很有可能还款的法学院毕业生提供再融资贷款。OnDeck金融公司为商户提供预付款，然后在它们的客户每次使用信用卡付款时收回贷款（金额很小但逐笔增加）。Kabbage也为商户提供贷款，通过跟踪PayPal发票和UPS运单记录监控借款人的偿付能力。

迄今为止，果园的平台已与七家这样的贷款承揽人和36家机构投资者建立了联系。它期望这两个数字都能迅速增长。它按照适合大型机构投资的规模梳理所提供贷款的信息。创业至今短短时间内，果园已经帮助数亿美元的投资投向各类贷款，最小的贷款金额只有2000美元。果园的利润来自收取的手续费，占通过它完成的贷款总额的万分之几。

传统银行仍将是所有目标利基市场的主力。银行由于拥有分支网络而保有巨大的市场优势，且由于政府支持存款，并且对银行自身债务有隐性担保，所以银行能够以低成本揽存。不过，这些优势都不是没有代价，而且政府参与的成本正变得相当高昂。银行必须持有的资本金比例正在上升，提供贷款的整个流程变得越来越政治化，陷入官僚主义的泥潭。

相反，大多数贷款承揽人不受银行业监管，也不需要满足同样昂贵的资本要求，无需为繁文缛节所束缚。的确，监管者喜欢它们，因为它们不太可能需要注资救援。贷款承揽人不吸纳由政府担保的存款，也不会在贷款上有巨大损失，因为贷款直接由其他投资者出资。

对于必须定制的大额复杂贷款，银行仍有优势，但即便如此也有侵入的空间。伯顿预计，一年以内贷款承揽人将进入抵押贷款市场，这无法阻止违约，但可能会增加透明度，而这一点恰恰是一度庞大的抵押债券市场所缺乏的。银行“脱媒”的规模是巨大的。当然，类似果园这样的中间人可能迟早也会被从交易中排挤出去。一些最大的贷款承揽人，包括Lending Club，已经开始直接和机构投资者做生意了。 ■

Reform in China

The quiet revolution

A slowing economy commands headlines, but the real story is reform

WITH China, the received wisdom belongs to the pessimists. Figures this week revealed that growth has slowed sharply and deflation set in, as the economy is weighed down by a property slump and factory production is at its weakest since the dark days of the global financial crisis. In the first three months of 2015, GDP grew at "only" 7% year-on-year. Growth for 2015 will probably be the weakest in 25 years.

Fears are rising that, after three soaring decades, China is about to crash. That would be a disaster. China is the world's second-largest economy and Asia's pre-eminent rising power. Fortunately, the pessimists are missing something. China is not only more economically robust than they allow, it is also putting itself through a quiet—and welcome—financial revolution.

The robustness rests on several pillars. Most of China's debts are domestic, and the government still has enough sway to stop debtors and creditors getting into a panic. The country is shifting the balance away from investment and towards consumption, which will put the economy on more stable ground. Thanks to a boom in services, China generated over 13m new urban jobs last year, a record that makes slower growth tolerable. Given China's far bigger economy, expected growth of 7% this year would boost the global economy by more than 14% growth did in 2007.

However, the real reason to doubt the pessimists is China's reforms. After a decade of dithering, the government is acting in three vital areas. First, in finance, it has started to loosen control over interest rates and the flow of capital across China's borders. The cost of credit has long been artificially low, squashing the returns available to savers while, at the same time,

succouring inefficient state-owned firms and pushing up investment. Caps on deposit rates are becoming less relevant, thanks to an explosion of bank-account substitutes that now attract nearly a third of household savings. Zhou Xiaochuan, the governor of China's central bank, has said there is a "high probability" of full rate-liberalisation by the end of this year.

China is also becoming more tolerant of cross-border cash flows. The yuan is, little by little, becoming more flexible; multinational firms are able to move revenues abroad more easily than before. The government's determination to get the IMF to recognise the yuan as a convertible currency before the end of 2015 should pave the way for bolder moves.

The second area is fiscal. Reforms in the early 1990s gave local governments greater responsibility for spending, but few sources of revenue. China's problem of too much investment stems in big part from that blunder. Stuck with a flimsy tax base, cities have relied on sales of land to fund their operations and have engaged in reckless off-books borrowing.

The finance ministry now says it will sort out this mess by 2020. The central government will transfer funds to provinces, especially for social priorities, while local governments will receive more tax revenues. A pilot programme has been launched to clear up local-government debt. It lays the ground for a municipal-bond market—despite the risks, that is better than today's opaque funding for provinces and cities.

The third area of reform is administrative. In early 2013, at the start of his term as prime minister, Li Keqiang pledged that he would cut red tape and make life easier for private companies. It is easy to be cynical, yet there has been a boom in the registration of private firms: 3.6m were created last year, almost double 2012's total.

In time, these reforms will lead to capital being allocated more efficiently. Lenders will price risks more accurately, with the most deserving firms finding funds and savers earning decent returns. If so, Chinese growth will slow—how could it not?—but gradually and without breaking the system.

Yet dangers remain. Liberalisation risks breeding instability. When countries from Thailand to South Korea dismantled capital controls in the 1990s, their asset prices and external debts surged, ultimately leading to banking crises. China has stronger defences but nonetheless its foreign borrowing is rising and its stockmarket is up by three-quarters in six months.

And then comes politics. Economic reforms have high-level backing. Yet the anti-corruption campaign of President Xi Jinping means that officials live in fear of a knock on the door by investigators. Many officials dare not engage in bold local experiments for fear of offending someone powerful.

That matters because reform ultimately requires an end to the dire system of *hukou*, or household registration, which relegates some 300m people who have migrated to cities from the countryside to second-class status and hampers their ability to become empowered consumers. Likewise, farmers and ex-farmers need the right to sell their houses and land, or they will not be able to share in China's transformation.

Ever fond of vivid similes, Mr Li says economic reforms will involve the pain a soldier feels when cutting off his own poisoned arm in order to carry on fighting. "Real sacrifice", he says, is needed. China's quiet revolution goes some of the way. But Mr Li is right: much pain lies ahead. ■

中国改革

静悄悄的革命

经济放缓理应上新闻头条，但背后真正的故事是改革

就中国问题，公认的智慧来自悲观主义者。本周发布的数字显示，中国的经济增长已经大幅放缓，并出现通货紧缩。这是因为经济因楼市低迷受压，而工业产量降至全球金融危机以来最低点。2015年第一季度，GDP同比增长“仅”为7%。2015年全年的增速可能会创下25年新低。

担忧在增加：经历连续30年的高速发展后，中国经济行将崩溃。这会是一场灾难。中国是全球第二大经济体、亚洲最强势的崛起力量。所幸，悲观主义者错过了一些东西。不仅中国经济要比他们以为的稳健，中国还在展开一场悄无声息、也是乐见的金融革命。

经济的稳健倚赖几大支柱。中国大部分债务在国内，而政府仍有足够影响力防止债务人和债权人陷入恐慌。中国经济的侧重正从投资转向消费，这会让经济的基础变得更稳定。受益于服务业的繁荣，中国去年创造了1300多万个新的城市就业机会，这一记录使得放缓的增长率更可接受。由于中国经济的规模远大于几年前，今年预期7%的增长比2007年14%的增长对全球经济的贡献更大。

然而，质疑悲观者的真正理由是中国的改革。在经过10年的犹豫不决后，中国政府正在三个至关重要的领域里有所动作。首先是金融。它已经开始放宽利率控制和跨境资本流动管制。信贷成本长期以来被人为拉低，挤压了存款人可获得的回报，同时援助了低效的国有企业，并推高了投资。存款利率上限正变得不那么重要，因为出现了大量替代银行账户的储蓄方式，已经吸引了中国家庭近三分之一的存款。中国央行行长周小川说过，有“极大可能”在今年年底前实现利率完全自由化。

中国也在放宽对跨境现金流动的管制。人民币正在逐渐地变得更有弹性；跨国企业现在更容易把收益转移到国外。中国政府决意要在2015年底前让

国际货币基金组织（IMF）把人民币纳入可兑换货币，这应该会推动更大胆的资金流动。

第二个领域是财政。上世纪90年代初的改革赋予地方政府在支出方面更大的责任，但给予它们的收入来源很少。中国投资过度的问题很大程度上源于这一失误。受制于税基脆弱，城市依靠卖地资金来支持日常运作，并从事大量高风险的影子贷款。

财政部现在表示，它会在2020年前解决这个烂摊子。中央政府将向省级政府转移资金，尤其优先满足社会需求，而地方政府将会获得更多税收收入。已经有一个试点项目启动，清理地方政府债务，为市政债券市场铺路。尽管有风险，这仍要好过目前对省市的不透明注资。

改革的第三个领域是行政。2013年初，走马上任的总理李克强誓言减少官僚作风，让私营企业日子更好过。对此冷嘲热讽并不难，但是，私营企业注册已经大增：去年创办了360万家企业，几乎比2012年翻番。

踏上低增长的大道

经过一段时间后，这些改革将使得资本被更高效地配置。债权人会更准确地评估风险，让最应获得贷款的企业获得资金，而存款人能赚取可观的回报。果真这样的话，中国的成长将放缓——如何不会呢？但那会是逐渐地放缓，而不至于让系统崩溃。

但危险会继续存在。放松监管可能滋生不稳定。上世纪90年代，当从泰国到韩国这类国家解除资本管制时，它们的资产价格和外债都激增，最后导致了银行业危机。中国有更强大的防御体系，但它的外债还是在增加，而股市在过去六个月上涨了四分之三。

政治因素也必须考虑。中国非常支持经济改革，但国家主席习近平的反腐运动让官员们害怕引来调查人员敲门。许多官员不敢展开大胆的地方实验，害怕会得罪某个高层人物。

这一点有其影响，因为改革最终需要废除糟糕的“户口”即户籍登记制度。

这一制度把三亿从农村涌入城市的农民工贬为二等公民，阻碍了他们成为有实力的消费者。同样地，农民和曾经是农民的人群需要获得出售房屋和土地的权利，否则他们无法分享中国转变的果实。

一直喜欢做生动比喻的李克强说，经济改革会有壮士断腕之痛，需要“真正的牺牲”。中国静悄悄的革命已经启动。但李克强是对的：前路还会有很多痛。■

Special economic zones

Political priority, economic gamble

Free-trade zones are more popular than ever—with politicians, if not economists

RWANDA has developed a strategic plan for them. Myanmar is embracing them as it opens up. Countries that have long been fans, from China to the United Arab Emirates, are doubling down. India's plans in the area are "revolutionary" and could add 2% to its GDP, says a minister. Special economic zones (SEZs) are all the rage among governments hoping to pep up their trade and investment numbers. Such havens are appearing even within havens: the Cayman Islands has a new one. "Any country that didn't have [an SEZ] ten years ago either does now or seems to be planning one," says Thomas Farole of the World Bank.

Studying history may give eager trade ministers pause. SEZs—enclaves in which exporters and other investors receive tax, tariff and regulatory incentives—create distortions within economies. Other costs include required infrastructure investment and forgone tax revenues. The hope is that these are outweighed by the boost to jobs and trade. In reality, many SEZs fail. Performance data are elusive because the effects of zones are hard to disentangle from other economic forces. But anecdotal evidence suggests they fall into three broad categories: a few runaway successes, a larger number that come out marginally positive in cost-benefit assessments, and a long tail of failed zones that either never got going, were poorly run, or where investors gladly took tax breaks without producing substantial employment or export earnings.

SEZs have a long pedigree: the first free-trade zones were in ancient Phoenicia. The first modern one was set up at Shannon airport in Ireland in 1959, but the idea took off in the 1980s after China embraced them. There are now more than 4,000 SEZs (see chart). A study conducted in 2008

estimated that 68m people worked in them. They come in many forms, from basic "export processing zones" to "charter cities", urban zones that set their own regulations in all sorts of areas that affect business.

The biggest success story is China, whose decision in 1980 to create a zone in Shenzhen transformed the city (pictured) into an export powerhouse. Dozens of SEZs have since popped up across the country. In March, Xi Jinping, the president, urged a faster pace of roll-outs. Other successes include the United Arab Emirates, South Korea and Malaysia. The Philippines has won praise for its "PEZA" zones, which offer a streamlined permit process for foreign investors, says Shang-Jin Wei of the Asian Development Bank.

Most economists agree that SEZs catalysed liberalisation in China, which used them to test reforms that were seen as too hard to unveil nationwide. In the Dominican Republic they helped create a sizeable manufacturing sector in an economy previously reliant on agriculture.

The overall impact of SEZs on trade is poorly understood. A paper published in 2014 by economists at Paris-Dauphine University found that, for a given level of tariff protection, SEZs increase exports for the countries they are in and for other countries that provide intermediate goods or components. This helps explain why the World Trade Organisation generally tolerates SEZs, even though many breach its subsidy rules. However, the paper also concluded that zones sometimes give countries an excuse to retain protectionist barriers around the rest of the economy.

More prosaic problems pop up, too. Bureaucracy can be excessive, and the bureaucrats underfunded—sometimes at the same time. Too little is often spent on railways, roads and ports to link the zone to the rest of the world. Many African SEZs have struggled for such reasons. One in Senegal flopped because of a combination of excessive bureaucracy, high electricity costs

and its distance from a good port.

Developers have withdrawn from 61 of the 139 approved SEZs in the Indian state of Maharashtra because of capricious policymaking, a murky screening process and concern over economic prospects. One survey found that firms sometimes had to deal with 15 different agencies to do business in an Indian zone. Violent protests by locals over land acquisition for zones have also deterred investors.

Moreover, governments sometimes embrace SEZs for the wrong reason: to win praise for reform (and votes) without having to risk full liberalisation. Partial liberalisation can also be a way to preserve some of the rents earned elsewhere by shielding businesses from competition.

Some officials see zones as vehicles for graft. In 2005 some 60% of firms in Indian SEZs reported having to make "irregular" payments to zone authorities. Last month Ukraine's prime minister said he opposed SEZs because of corruption. SEZs in Nigeria were firmly resisted by the customs agency, which did not want to lose its clout. Another concern is the use of zones to launder money, by inflating export values.

The SEZ concept appears to have natural limits, too. What works in manufacturing may not work in other sectors. The Shanghai Free Trade Zone, launched in 2013 and focused on finance, has been disappointing. Economists fret that it is impossible to tinker within the zone with China's capital controls, for instance, without the effects spilling over to the rest of the economy. Perhaps as a result, the authorities have been cautious: in a recent survey, three-quarters of American firms in Shanghai said the zone offered them no benefits.

That hasn't stopped China approving plans for more financial SEZs. The government is also promoting zones abroad: it is helping six African

countries to set some up. Although its are state-run, ever more SEZs are likely to be privately owned and operated. The Philippines already has more than ten times as many private zones as public ones. This shift may go further, if privately run charter cities and other so-called "special governance zones" gain traction. The idea is to create enclaves that write their own rules in all business matters, from labour regulation to anti-corruption codes—"to look at laws as services that companies demand", says Lotta Moberg of George Mason University. Such ventures will provide competition more effectively than zones focused on fiscal incentives, says Shanker Singham, founder of Enterprise Cities.

Mr Singham is in talks to develop sites in the Dominican Republic, Colombia, Morocco, Bosnia, India and Oman. But these are mostly at an early stage. The most advanced charter-city project, backed by a group of American libertarians, is in Honduras. But it has yet to start and is already controversial: many Hondurans worry that it will operate as a state within a state, milked by business interests. In most countries, such parastatal ventures are likely to encounter political difficulties.

Whether or not such freewheeling zones catch on, expect more experiments. South Korea and Thailand are developing eco-industrial parks. Others are considering SEZs for refugee populations. For better or worse, the number of zones could top 5,000 before long. ■

经济特区

政治优先，经济冒险

自由贸易区比以往任何时候都更受政客们的欢迎，一些经济学家也热衷于此

卢旺达为经济特区制定了战略规划。缅甸在开放的同时也欣然接受它们。从中国到阿联酋，其长期粉丝正在加倍下注。印度一位部长表示，该国在这方面的计划是“革命性的”，并可能让GDP增长2%。在希望振兴贸易和投资的政府中，经济特区风靡一时。甚至在避税天堂里也有经济特区：开曼群岛就有一个新特区。世界银行的托马斯·法罗尔（Thomas Farole）说：“十年前没有（经济特区）的国家，现在要么已经有了，要么正在计划建一个。”

研究一下历史可能会让热衷于此的贸易部长们三思而行。经济特区作为飞地，让出口商和其他投资者获得税收和关税优惠以及监管激励，扭曲了各国的国内经济。其他成本包括必要的基础设施投资和放弃的税收收入。人们希望就业和贸易增长能够超过这些成本。现实中，许多经济特区都失败了。经济特区的表现数据难以获取，原因是它们的影响很难与其他经济力量相区分。但零星的证据表明，经济特区有三大类：少数几个特区大获成功；更多一些特区的成本效益评估略微为正；剩下的长尾里有一批失败的特区，它们要么从未走上正轨、运行不佳，要么投资者仅乐享减税优惠，并未创造大量就业或出口收入。

经济特区源远流长：最早的自由贸易区出现在古代的腓尼基。第一个现代经济特区于1959年在爱尔兰的香农机场成立。但20世纪80年代被中国采纳后，经济特区的想法才得以腾飞。目前有4000多个经济特区（见图表）。2008年的一项研究估计有6800万人在其中工作。这些特区形式多样，从基本的“出口加工区”，到“特许城市”（charter cities）这种在影响商业的各个领域里自定规则的城市区域。

最大的成功来自中国，它于1980年决定在深圳（如图）建立经济特区，使该市转型为出口发动机。此后，中国各地涌现出几十个经济特区。今年3

月，中国国家主席习近平敦促特区以更快的速度铺开。其他的成功例子包括阿联酋、韩国和马来西亚。亚洲开发银行的魏尚进表示，菲律宾因其“经济特区管理委员会”（PEZA）下辖特区为外国投资者简化许可程序而赢得了赞誉。

大多数经济学家认为，经济特区推动了中国的自由化，特区用来试行一些被认为太难而无法在全国推行的改革。在多明尼加共和国这样以往依赖农业的经济体中，经济特区帮助该国建设起规模可观的制造业。

经济特区对贸易的总体影响如何，人们尚知之甚少。巴黎第九大学（Paris-Dauphine University）的经济学家在2014年发表的一篇论文发现，在一定水平的关税保护下，经济特区能够帮助所在国和其他提供中间产品或部件的国家扩大出口。这有助于解释为什么世贸组织通常容忍经济特区，尽管许多特区违反了其有关补贴的规定。不过，论文也得出结论，有时一些国家会以经济特区为借口，在特区外保留保护主义壁垒。

更加乏味的问题也会冒出来。官僚主义过度，或者官员资金匮乏，有时两者并存。连通经济特区和世界其他地方的铁路、公路和港口往往投入太少。非洲的许多经济特区因此而苦苦挣扎。由于过度的官僚主义、高昂的电费以及远离良港，位于塞内加尔的一个特区以失败告终。

在印度马哈拉施特拉邦（Maharashtra）139个获批的经济特区中，开发商已从其中的61个撤出，原因是政策朝令夕改、筛选过程不透明，以及对经济前景的担忧。一项调查发现，要在印度特区里做生意，企业有时必须和15个不同的机构打交道。再者，在特区征地问题上当地人的暴力抗议也令投资者望而却步。

此外，政府有时支持经济特区是出于错误的理由：为了通过改革而赢得赞扬（和选票），同时无须冒全面自由化的风险。部分自由化也可以作为一种方式，通过保护企业免受竞争来保留别处的寻租所得。

有些官员把特区看作贪腐的工具。据报道，在2005年，印度经济特区里大约60%的企业曾向特区当局支付过“不正当的”款项。上个月，乌克兰总理

表示因为腐败问题而反对经济特区。尼日利亚的海关坚决抵制经济特区，原因是不想失去自身的影响力。另一个顾虑是担心有人用虚报出口货值来利用特区洗钱。

经济特区的概念似乎也有与生俱来的限制。对制造业有效的措施对其他行业不一定有效。于2013年推出的、侧重金融业的上海自贸区令人失望。经济学家们担心，比如说，在中国资本受管制的情况下，不可能只在上海自贸区内小打小闹，而结果不渗透到全国其他地方。或许因此，当局一直很谨慎：最近一次调查中，四分之三的在沪美国公司认为上海自贸区没给他们带来任何好处。

这并没有阻止中国批准更多金融特区的计划。政府还在海外推动经济特区：中国正在帮助六个非洲国家设立特区。尽管中国的特区是国营的，越来越多的经济特区可能由私人拥有经营。菲律宾的私营特区数量已经是公营特区的10倍多。如果私营的特许城市和其他所谓的“特别治理区”越来越受欢迎，那么这个转变可能会更进一步。其理念是建立一些飞地，从劳动法到反腐败等所有商业事务上都自定规则，“把法律看作企业所需的服务。”美国乔治梅森大学（George Mason University）的洛塔·莫伯格（Lotta Moberg）如是说。企业城市（Enterprise Cities）的创始人夏恩克·辛根（Shanker Singham）表示，这种项目比侧重财政激励的特区有更强的竞争力。

辛根正在多明尼加共和国、哥伦比亚、摩洛哥、波斯尼亚、印度和阿曼商谈建立这种项目。但它们大多仍处于初级阶段。最先进的特许城市项目位于洪都拉斯，由一群美国的自由主义者支持。它尚未启动，但已引起争议：许多洪都拉斯人担心它将在商业利益集团的压榨下成为国中之国。在大多数国家，这种半国营的项目可能会遭遇政治困难。

无论这种不受约束的区域能否流行，人们都期待会有更多的实验。韩国和泰国正在发展生态工业园。其他国家则考虑用经济特区安置难民。无论如何，经济特区的数量可能很快会超过5000个。 ■

Free exchange

Meeting up

New research hints at ways of making meetings more effective

WORKING life often seems like an endless sequence of tiresome meetings. Catch-ups, kick-offs and reviews litter the calendars of most professionals. Effectiveness around the conference table can determine success in almost every career. Chief executives spend a third of their time in pow-wows of one sort or another, by one estimate. Monetary policy is usually set by committee; juries deliberate behind closed doors before voting. Yet despite our reliance on meetings, most decisions made by committee are subject to serious and pervasive bias.

In 1785 the Marquis de Condorcet, a French mathematician and philosopher, noted that if every voter in a group has a better-than-even chance of choosing the preferable of two options, and if voters do not influence each other, then large groups of voters are very likely to make the right choice.* The bigger and more diverse the group the better: more people bring more information to the table which, if properly harnessed, leads to improved decisions. But ever bigger meetings imply more time spent in them: few workers would welcome that. And even with more people in the room, all manner of behavioural flaws stand in the way.

One problem that obstructs sensible decision-making is the "halo effect"—"owning the room" in the parlance of Silicon Valley. If one aspect of an idea or argument seems appealing, people tend to judge its other features more favourably too. Polished slides, for example, will make a presentation seem more compelling. Good-looking speakers win audiences over more easily.

A second problem is called "anchoring". In a classic study Amos Tversky

and Daniel Kahneman secretly fixed a roulette wheel to land on either 10 or 65. The researchers span the wheel before their subjects, who were then asked to guess the percentage of members of the United Nations that were in Africa. Participants were influenced by irrelevant information: the average guess after a spin of 10 was 25%; for a spin of 65, it was 45%. In meetings, anchoring leads to a first-mover advantage. Discussions will focus on the first suggestions (especially if early speakers benefit from a halo effect, too). Mr Kahneman recommends that to overcome this, every participant should write a brief summary of their position and circulate it prior to the discussion.

Even this cumbersome procedure may not prevent bias if members are more worried about their reputations than about making good choices. Participants may want to avoid disagreement, lest others interpret their qualms as a personal slight. Similarly, the desire to look competent may cause people to suppress comments they fear others will think foolish.

A preference for agreement can lead to a bias towards the obvious. Suppose a panel is rating an applicant for a job before discussing her. Some of the candidate's merits—such as the extent of her experience—will be clear to all. Others, such as her personal appeal, will be more subjective. The best way for panellists to be confident of aligning their views with those of others is to concentrate on objective traits, and to discard their private insights. Panellists seeking agreement will thus put too much weight on what is public knowledge, whether or not there is any discussion.

Until now, this was just a theory. But new research has documented the phenomenon. Tom Gole of the Boston Consulting Group and Simon Quinn of Oxford University studied the votes of judges at international school debating tournaments. In these tournaments, three judges are randomly assigned to each debate (with some controls to ensure each panel has a mixture of experience, gender and so on). Judges watch the debate, then

immediately vote on the winner before conferring. Crucially for the experiment, the participating teams are seeded. Using some whizzy statistical modelling, the authors find that if a judge disagrees with her fellow panellists in a given round, she is more likely to vote for the pre-tournament favourite—the higher-seeded team—in later debates. That suggests, say the authors, an unspoken desire to avoid "too much" disagreement.

Career concerns may distort incentives even if votes are secret. In a 2007 paper Gilat Levy of the London School of Economics noted that observers can work out how likely it is that committee members have voted one way or another from ballot rules. If unanimity is required for a measure to pass, and it does, then outsiders will know with certainty how every member has voted. A simple majority rule means that observers can assign at least a 50% probability to any one committee member having given their assent; if a majority of two-thirds is required, the probability that any given member has supported the proposal goes up. The incentive to vote against controversial measures rises the greater the likelihood that each member will be blamed for its passage.

Meet market

That makes designing an ideal procedure hard. Yet Condorcet's basic insight rings true: committees work best when they harness and combine the unique insights of every member. To that end, chairmen might do several things. First, they should follow Mr Kahneman's advice, and have every participant note their views in advance. Second, they should pick at random who will speak first. This would not prevent anchoring, but would at least stop any one individual from repeatedly dominating. Alternatively, members could be called on in reverse order of seniority (justices in America's Supreme Court used to vote this way). Finally, they should encourage and reward disagreement, to offset the personal costs of discord.

Given the time and energy invested in meetings, the returns to running them better are high. And if calling a meeting required more effort from the person convening it, workers might find their calendars a little less crowded.

* Studies cited in this article can be found at www.economist.com/meetings15 ■

自由交流

开会

新研究揭示出一些让开会变得更高效的方法

职业生涯常常看似一系列没有尽头的、累人的会议。大部分专业人士的日程表排满了各种例行会议、项目启动会和评估会。会议桌上的效率几乎可以决定每种职业生涯成功与否。有一项估测称，首席执行官们花三分之一的时间开各种会议。货币政策通常由委员会制定；陪审团在投票前闭门商议。然而，尽管我们如此依赖开会，委员会的大部分决策都受制于严重而普遍的偏见。

1785年，法国数学家、哲学家孔多塞侯爵（Marquis de Condorcet）指出，如果一个团队中的每个投票者都有超过五成的几率选出两个选项中更好的那个，且投票者之间互不影响，那么，人数众多的投票者很可能做出正确的选择。* 投票的人数越多、越多元化，结果越好。这是因为更多人把更多信息拿到台面上来，而如果这些信息被恰当利用，就会改善决策。但会议规模越大意味着要耗费更多时间，而没有几个员工会喜欢这一点。而即使会议室里有更多人，仍有各种各样的行为缺陷妨碍决策。

其中一个妨碍明智决策的问题是“光环效应”。用硅谷的行话说就是“办公室之主”。如果一个主意或论点的一个方面看来很吸引人，那么人们在评价它的其他特点时往往也会做出更有利的判断。比如，精美的幻灯片会让一个报告看来更有说服力。长得好看的发言人更容易赢得听众。

第二问题被称为“锚定效应”（Anchoring）。在一个经典研究中，阿莫斯·特沃斯基（Amos Tversky）和丹尼尔·卡内曼（Daniel Kahneman）偷偷设置了轮盘赌，让它每次转动后都会停在数字10或65上。研究人员在实验对象前转动轮盘，然后让他们猜一猜联合国中非洲国家的比例。参与者被不相干的信息影响：看到轮盘转到10后的人猜测的平均数字是25%，看到65的人猜的平均数是45%。开会时，“锚定”导致了先行优势。商讨会集中在最先提出的几个建议上（尤其如果最早发言的人还因为光环效应受益

的话）。要克服这一点，卡内曼建议每个与会者在开会前写一个概要表述自己的立场，并广发给与会者。

即使是这个繁琐的程序可能也无法防止偏颇，如果与会者爱惜自己的羽毛胜过做出好的选择。他们可能想要避免分歧，以免其他人把自己的疑虑误读为轻视。同样，人们希望自己看起来胜任工作，害怕自己的某些意见会让别人觉得愚蠢，因而话到嘴边又吞回去。

对和谐一致的偏好可能导致人们偏重显而易见的事物。假设一个小组在讨论一个应聘人之前先要给她做出评判。这位候选人的优点比如阅历对所有人都显而易见。而其他特点如个人魅力则是更为主观的判断。评审人若想确保自己的观点和其他人一致，那么最好的办法是专注客观特征而抛弃个人洞察。寻求一致的评审人因而会过多地强调公开的信息，无论大家对此有没有开展讨论。

说到这里都还只是理论。但新研究已经实录了这种现象。波士顿咨询公司（Boston Consulting Group）的汤姆·格莱（Tom Gole）和牛津大学的西蒙·奎因（Simon Quinn）研究了国际学校辩论比赛中评委投票的过程。在这些比赛中，每场辩论会随机分配三名评委（但也有一些调控，以确保每个评委组混合了不同的经历、性别等）。评委们观看辩论，然后未经商议就立即投票选出胜者。对这个实验至关重要的是，参加比赛的辩论队都是种子队。研究人员使用了一些出色的数据建模，结果发现，如果一名评委在某轮比赛中做出的选择和其同伴不一致，那么在后面的比赛中她更可能给赛前呼声最高的队伍也就是更被看重的种子队投票。研究人员称，这显示人们有一种潜在的欲望，要避免“过多”的分歧。

即使当投票秘密进行时，对职业前途的担忧也可能扭曲动机。伦敦政治经济学院的吉拉特·利维（Gilat Levy）在2007年的一篇论文中指出，局外人可以根据投票规则估算委员会成员如何投票。如果一个方案的通过须全体同意，而它确实通过了，那么他们当然知道每个成员投了什么票。如果须简单多数同意，那么他们会认为任何成员至少有50%的可能性投出了赞成票。而如果须三分之二多数赞成，那么他们支持提案的可能性更高了。

在就一个争议性方案投票时，当每个成员因为方案通过而被指责的可能性愈大时，他们投出反对票的动机就会增加。

可行方案

由此，要设计一个理想的程序很难。但孔多塞的基本观点所言不虚：当委员会能把每个成员独一无二的洞见利用和综合起来时，他们能获得最好的效果。要达成这一目的，委员会主席可以做几件事。首先，他们应遵从卡内曼的忠告，让每个与会者提前记录下自己的观点。其二，他们应当随机挑选谁先发言。这不会杜绝“锚定”，但至少能防止某个人重复扮演主导地位。另一替代方案是可以让资历最浅者最先发言（美国最高法院的法官过去就是按这一顺序投票）。最后，他们应当鼓励和奖赏分歧，以弥补不一致带来的个人损失。鉴于人们在会议上花费了那么多时间精力，更好地运转会议将带来高回报。而如果开一次会需要其召集人花费更多的精力，那么员工们可能会发现他们的日程表变得不那么拥挤了。

*本文引用的研究可参见www.economist.com/meetings15 ■

The future of Factory Asia

A tightening grip

Rising Chinese wages will only strengthen Asia's hold on manufacturing

A SMALL factory in an industrial park outside Shanghai, churning out widgets you never see but probably use, provides a perfect snapshot of the state of global manufacturing today. Some workers at the Integrated Micro-Electronics (IMI) facility affix pieces by hand to circuit boards bound for digital displays on European stoves. Others stand at computers, guiding machines that press together components for cars' steering systems. But IMI is important less for what it makes than for what it represents. A cog in long supply chains, it produces part, but never all, of brand-name consumer goods. It has operations around the world, but makes its most money in China. And it is starting to automate its factories there as wages rise.

Cheap Chinese labour has been crucial to the building of "Factory Asia", the name given to the region's complex of cross-border supply chains. Asia first emerged as a manufacturing power in the 1960s, when Japan began exporting electronics and consumer goods. Taiwan and South Korea followed its lead. By the 1980s Japanese firms were building plants across South-East Asia. But China's opening up was the gamechanger. In 1990 Asia accounted for 26.5% of global manufacturing output. By 2013 this had reached 46.5%. China accounts for half of Asia's output today. The region's share of the global trade in intermediate inputs—the goods that are eventually pieced together into final products—rose from 14% in 2000 to 50% in 2012.

The China price is under pressure, though. Since 2001, hourly manufacturing wages in China have risen by an average of 12% a year. The yuan has risen to an all-time high against a trade-weighted basket of

currencies. Some believe this means that China's days as a manufacturing powerhouse are numbered, adding to the list of worries for an economy already weighed down by heavy debts and a property slump. But whereas the housing market is built on wobbly foundations, manufacturing has under-appreciated strengths. The future of Chinese manufacturing, and of Factory Asia more generally, is bright.

A persistent myth about Chinese manufacturing is that the country is only good for assembly, with the more profitable parts of the operation, such as design and marketing, remaining in the West and Japan. According to a study published in 2010, Chinese workers contributed just 3.6% to the cost of an Apple iPhone.

But more detailed studies reveal greater two-way flows with Japan at earlier stages of production. Although Chinese-made smartphones often include chips imported from Japan, those chips typically include plastic casing and wiring imported from China. Today, 65% of the ingredients in goods China sells to the world are made at home, up from 40% in the mid-1990s. As domestic consumption rises, moreover, its own firms are getting better at designing the products its consumers want (think Xiaomi, China's smartphone giant).

By hosting more of the supply chain, China boosts its manufacturing competitiveness and attracts more investment. IMI, for instance, is headquartered in the Philippines and would have preferred to scale up its manufacturing there, where wages and worker turnover are lower. But Michael Hansson, a director, notes that after adding in other costs, such as shipping and tax, China is still cheaper—thanks to the dense cluster of suppliers and customers that IMI now has around Jiaxing, a 40-minute train ride from Shanghai.

Despite fast-rising wages, China's factories are still far cheaper than their

rich-world rivals. Many pay their employees just above the minimum wage, which at about $270 a month in China is less than a quarter that in America. And they are more efficient than many rivals in the developing world. McKinsey, a consultancy, found that labour productivity increased by 11% a year in China from 2007 to 2012, compared with 8% in Thailand and 7% in Indonesia. With Chinese factories just starting to pour money into automation, there is scope to improve productivity further. China became the biggest market for robots in 2013, buying 20% of all those made that year, according to the International Federation of Robotics. But it still has just 30 robots per 10,000 workers in manufacturing, compared with 323 in Japan. Foxconn, the Taiwanese firm that makes iPhones and has more than a million employees in China, says that it wants robots to complete 70% of its assembly-line work within three years.

Firms are also pursuing lower wages deeper into China. Foxconn once based its China operations mostly in Shenzhen, the manufacturing hub near Hong Kong. It now has large plants in Henan and Sichuan provinces, and is building a facility in Guiyang, one of China's poorest regions.

Cities in China's interior use tax breaks and cheap land to lure foreign investors. They also have a huge labour pool, excellent transport links and a reliable supply of inputs. Hewlett-Packard has shifted from Shanghai to Chongqing, a city of 30m people in China's southwest. Stuart Pann, an HP executive, says that wages are lower and the workforce more stable, since most employees are local (among other things, that means factories can restart quickly after the Chinese New Year, when workers return to their home villages—a perennial headache in coastal China). At HP's prodding, Chongqing built a railway line to carry products overland through Kazakhstan into Europe, reducing transit time from 35 days to 22. Today roughly one in every four laptops in the world is made there. "It would be hard to recreate what China has done," says Mr Pann. "The economics aren't there, nor are the sub-suppliers."

As a result, China has remained surprisingly competitive in low-end production: its share of global clothing exports, for instance, rose from 42.6% in 2011 to 43.1% in 2013, while the price of Chinese-made goods sold in America has fallen by almost 2% over the past three years. That stems partly from China's ability to control costs, not least because of its first-rate infrastructure: six of the world's busiest ten ports by tonnage are in China. But it also points to squeezed margins for Chinese factories.

China cannot hold onto such work forever, nor does it want to. The working-age population peaked in 2012, and the endless stream of people moving from country to city has slowed. Expectations have risen along with incomes; fewer young Chinese are willing to endure the same drudgery their parents did. A series of strikes and disputes over the past year—affecting factories producing goods for Nike, Adidas, IBM and Nokia—show that Chinese workers are increasingly vocal about their rights.

The southward haul

Hence the incipient rise of South-East Asia, which offers a big labour pool with low wages and mostly market-friendly policy environments. The average factory worker in China earns $27.50 per day, compared with $8.60 in Indonesia and $6.70 in Vietnam. Demography is another advantage: China may be ageing rapidly, but South-East Asia's workforce is largely below the global median age of 29.7.

The region's biggest advantage over the rest of the world as production leaves China is simple: it is nearby. For all the benefits of telecommuting, geography matters, both to ensure quick shipment of goods and to let managers hop back and forth between factories. Rising Chinese consumption is particularly helpful to manufacturers located in its environs. As the purchasing power of Chinese buyers grows, the average distance travelled by consumer-goods exports is changing, depending on

whether they are shipped from Asia, Europe or North America. From 2008 to 2012, the average journey length for Asian exports fell by 4.5%, while those from Europe and North America rose by 25.9% and 13.7%, respectively. That makes transportation costs cheaper for Asian factories.

Garments are a natural first step in the spread of production out of China: they are low-skill, low-cost and highly transportable. For countries just starting to industrialise, such as Myanmar, they offer an early test of potential. Myanmar's clothing exports jumped from $700m to $1.7 billion between 2011 and 2014. H&M, a European retailer, recently shifted sweater production from China to the Myanmar Century Liaoyuan Knitted Wear factory, a Chinese-run facility in outer Yangon. Parts of it look surprisingly like black-and-white pictures of old garment factories: women sit at sewing machines stitching sweater arms to bodies and attaching labels to necklines. Steven Shen, the production manager, says staffing such factories in China has grown difficult: Chinese workers now have "other, better jobs". His factory runs 24 hours a day. He plans to open a similar facility in Bago, north-east of Yangon, later this year.

Advanced manufacturing, too, is starting to trickle out of China: Vietnam, Thailand and Indonesia are picking up electronics work. Indonesia's new president, Joko Widodo, has made no secret of his desire to see his country capture higher-value activities. He has vowed to use money freed by subsidy cuts for infrastructure improvements, and has been wooing investors for his country's port system.

No one country will replace China's role in Factory Asia—the ten-country ASEAN (Association of South-East Asian Nations) region is home to 630m people, less than half China's population—but neither does any single country need to. Advances in communications technology mean that manufacturing can be sliced and diced more easily than in the past.

But the region will have to grow better integrated. ASEAN countries have made progress in removing tariffs, especially on goods, but non-tariff barriers on consumer goods, electronics and the car industry remain high, as do restrictions on services, investment and labour mobility, as well as customs regulations. According to the McKinsey Global Institute, import/export costs (clearing customs, port fees, inland transportation, and so on) are 24% higher in ASEAN than in China, and the region's customs procedures take 66% longer than the OECD average. Its workers also tend to be less productive. Across the region, countries will have to invest more in education. The mediocrity of infrastructure—compared with China—adds costs.

> *Trade more, not war war*

Politics could yet complicate matters, too. Long-simmering tensions between China and Japan have pushed Japanese firms toward ASEAN; in 2013 Japanese investment doubled in South-East Asia and shrank by 40% in China. Chinese maritime claims have angered neighbours, particularly the Philippines. Some 15 foreign-owned factories were set alight during anti-Chinese protests in Vietnam last year.

But the success of Factory Asia over the past two decades is a sign that Asian countries have been able to put business ties above political disputes. Commerce has brought them closer together. ASEAN nations have a free-trade agreement with China. Japan, China and South Korea are negotiating a deal among themselves. There are also talks, still early, about a broader pact that would tie all countries in the region together, including India. America has left China out of talks to create a pan-Pacific trade zone for now, but its eventual inclusion seems inevitable.

One of the first lessons in Economics 101 is the concept of comparative advantage. Countries with lots of cheap workers should produce labour-intensive goods; rich countries should focus on those requiring plenty of

capital. Richard Baldwin, an economist, argues that simply comparing national advantages is outdated. As supply chains spread across borders, regional comparative advantage matters even more. With its bounty of both labour and capital, Asia has already built up a huge lead in manufacturing. It only stands to grow. ■

“亚洲工厂”的未来

更牢固的掌控

中国的工资增长只会巩固亚洲的制造业主导地位

在上海市外的一个工业园区内，一家小工厂正在大量生产你从未见过但可能用过的小部件。它是今天全球制造业现状的一个完美缩影。在综合微电子公司（Integrated Micro-Electronics）的这家工厂里，一些工人用手把零部件贴到电路板上，这些电路板将用于欧洲炉灶上的电子显示屏内。一些人站在计算机旁，指挥机器把汽车转向系统的部件挤压在一起。但是，比起它制造的产品，这家公司所代表的更为重要。作为长供应链上的一个齿轮，它只生产品牌消费品的一个部件，而从不生产整体。它在世界各地设有工厂，但大部分收入来自中国。随着中国工资的增长，它正开始将当地的工厂自动化。

廉价的中国劳动力对“亚洲工厂”的建立至关重要。“亚洲工厂”是指亚洲地区跨境供应链的集群。上世纪60年代，日本开始出口电器和消费品，亚洲制造业崛起。台湾和韩国跟随日本的脚步。到了80年代日本企业在东南亚各地开设工厂。但中国的对外开放完全改变了这一格局。1990年亚洲贡献了全球制造业总产值的26.5%，到2013年这一比例达到46.5%。今天，中国贡献了亚洲总产值的一半。2000年，亚洲在半成品即最后将被组装成品的零部件的全球贸易中占14%，到2012年升至50%。

但“中国制造”的价格正承受压力。自2001年起，中国制造业小时工资平均每年上涨12%。人民币对一篮子贸易加权货币升至历史最高值。一些人相信这表示中国作为制造业强国的地位已时日无多。这个经济体已经被沉重的债务和低迷的房市拖累，如今其引发担忧的因素又增一条。但是，虽然该国的房地产市场建立于不稳定的基础之上，制造业却具有被低估的优势。中国制造业，以及更广泛的“亚洲工厂”，前景光明。

关于中国的制造业，有个长期存在的谬见是该国只擅长组装，而制造业中更赚钱的部分如设计和营销仍被西方国家和日本主导。根据2010年发表的

一项调查，中国工人只贡献了一台苹果iPhone手机造价的3.6%。

但是，更详尽的调查揭示，在生产的更早期阶段，在中国和日本之间有更多的双向流动。虽然中国生产的智能手机常包括进口自日本的芯片，但这些芯片通常都带有进口自中国的塑料外壳和电线。今天，中国售往全世界的商品中，65%的组件在本国制造，而该比例在上世纪90年代中期为40%。此外，随着中国消费的增长，该国企业在设计本国消费者想要的产品时也在进步（想想小米这个中国智能手机大鳄）。

通过扩大供应链的占比，中国提升了其在制造业中的竞争力，吸引了更多投资。举例而言，综合微电子公司的总部设在菲律宾，那里的工资和工人的流动率都更低，它本该选择在菲律宾增加生产规模。但该公司的一名主管迈克尔·汉森（Michael Hansson）指出，算上其他成本如运费和税费后，中国仍然更便宜，因为公司如今在嘉兴一带拥有密集的供应商和客户群。嘉兴距上海为40分钟的铁路车程。

尽管工资迅速增长，但中国工厂相比富裕国家的竞争对手仍远为便宜。许多工厂支付员工的钱刚刚超过国家的最低工资标准：约为每月270美元，不到美国最低工资的四分之一。而它们比发展中国家的许多对手更高效。咨询公司麦肯锡发现，中国的劳动生产率在2007至2012年间年增加11%，而泰国和印度尼西亚的增长分别为8%和7%。中国工厂才刚刚开始投资自动化，还有很大的余地进一步提升生产率。根据国际机器人学联合会的数据，中国在2013年成为最大的机器人市场，购买了该年生产的20%的机器人。不过，该国制造业中每万名工人对应的机器人数量仅为30台，相比之下日本为323台。制造iPhone手机的台湾企业富士康在中国有超过100万名员工。该公司称计划在三年内由机器人完成70%的装配流水线作业。

企业也在深入中国更广阔的内地寻求低工资。富士康曾将其大部分制造业务放在深圳这个毗邻香港的制造业中心。如今它在河南、四川省都开设了大型工厂，并正在中国最贫困的地区之一贵阳建造厂房。

中国内陆城市利用税务优惠和廉价土地吸引外国投资者。它们也有巨大的

劳动力储备、上佳的交通枢纽和可信赖的原材料供给。惠普把厂房从上海搬到了重庆这个位于中国西南部、拥有3千万人口的城市。公司高管斯图尔特·潘（Stuart Pann）称那里的工资更低而劳动力更稳定，因为大部分员工来自重庆本地（其中一个好处是工厂能在中国农历新年后迅速复工。中国工人春节返乡探亲是沿海城市一年一度的头痛问题）。在惠普的敦促下，重庆修建了一条铁路，把商品经由哈萨克斯坦陆路运至欧洲，将运输时间从35天缩减至22天。今天，全世界大概每四台手提电脑中就有一台是在重庆制造。“要复制中国所做到的很难，”潘说，“其他地方没有那样的规模效应，也没有那些供应商。”

其结果是中国在低端产品制造中保有惊人的竞争力。比如，它在全球成衣出口中的占比从2011年的42.6%升至2013年的43.1%，而过去三年在美国销售的中国制造产品价格下跌了近2%。这在一定程度上缘于中国控制成本的能力，尤其要归功于其一流的基础设施：全世界以吨位计前十大最繁忙港口有六个在中国。当然，中国工厂利润受挤压也是因素之一。

中国不可能永远占据这类工作，它也无意如此。该国的劳动年龄人口已在2012年达到顶峰，从农村涌向城市的无止境人流已经减缓。期望值随着收入的增加而增长，如今中国的年轻人不太愿意忍受父辈们从事的苦差事。过去一年里发生的一系列罢工和争端影响了为耐克、阿迪达斯、IBM和诺基亚制造产品的工厂，显示中国工人越来越多地发声维权。

向南迁移

由此，东南亚开始初步崛起，提供了一个广阔的低薪劳动力储备，以及极大程度上有利市场的政策环境。中国的工厂工人平均日薪为27.5美元，而印度和越南分别为8.6美元和6.7美元。人口结构是另一个优势：中国人口可能会迅速老龄化，但东南亚的大部分劳动力年龄低于全球中位数29.7岁。

随着生产部门离开中国，亚洲区相比世界其他地方的最大优势很简单：邻近中国。尽管远程操作有诸多好处，但地理位置仍然重要，它不但能确保快速运送货物，也能让经理们在各个工厂间随时迅速往返。中国上升的消

费力对位于其周边地区的制造商尤有助益。随着中国买家的购买力增加，从亚洲、欧洲或北美发货的出口消费品的平均旅程正在变化。从2008年到2012年，亚洲出口货物的平均旅程减短了4.5%，而自欧洲和北美出口的货运旅程分别增加了25.9%和13.7%。这使得亚洲工厂的运输成本下降。

生产向中国以外的地区转移，成衣业是自然而然的第一步，因为这个行业低技能、低成本、易运输。对于那些刚刚开始工业化的国家比如缅甸，这个行业是对其潜力的初步测试。缅甸的成衣出口额在2011年至2014年间从7亿美元跃升至17亿美元。欧洲零售商H&M最近把毛衣制造从中国搬到了位于仰光外围、由中国人运营的缅甸世纪燎原针织厂（Myanmar Century Liaoyuan Knitted Wear）。这家工厂的某些地方看起来很像黑白照片上的老服装厂：女工们坐在缝纫机旁，把毛衣袖子缝到衣服的躯干部分，把衣服标牌缝到领口。生产经理史蒂文·沈（Steven Shen，音译）说，在中国为这类工厂配备人员变难了，因为中国工人现在有“其他更好的工作”。他的工厂24小时运作。他计划今年晚些时候在仰光东北方向的勃固（Bago）开设一家类似的工厂。

高级制造也开始缓慢流出中国，越南、泰国和印度尼西亚正在接手更多电子产品类的制造。印尼新总统佐科·维多多（Joko Widodo）并不掩饰他希望印尼能赢得更富价值的生产活动。他已经誓言要把从削减补贴中省下来的钱用到改善基础设施上，并且已经在为该国的港口系统争取投资人。

没有哪个国家会取代中国在“亚洲工厂”中扮演的角色，但也没有哪个国家需要这么做。由十个国家组成的东盟区拥有6.3亿人口，还不到中国人口的一半。由于通讯技术的发展，制造业比以前更易切割。

但该地区必须变得更一体化。东盟成员国在取消关税方面已经有所进展，但消费品、电子产品和汽车产业的非关税壁垒仍然很高，对服务、投资、劳动力流动性的限制以及海关管制也很多。根据麦肯锡全球研究所的数据，东盟的进出口成本（包括清关、港口费、内陆运输等）比中国高24%，而海关手续耗时比经合组织成员国平均耗时长66%。其工人的生产效率往往也更低。东盟国家都必须增加教育投资。而和中国相比，该地区

的基础设施仍然一般，这也增加了成本。

更多贸易，而非战争

而政治也会增加状况的复杂度。中国和日本之间长久发酵的紧张关系已经把日本企业推向东盟地区。2013年日本在东南亚地区的投资翻番，而在中国的投资缩减了40%。中国的领海主张已经触怒了邻国，尤其菲律宾。去年在越南的一次反华示威中，约15家外资工厂被纵火。

但是，“亚洲工厂”过去二十年取得的成功显示，亚洲国家能够把商业关系放在政治争端之上。贸易已经把它们变得更紧密。东盟国家和中国有自由贸易协定。日本、中国和韩国正在谈判三边协议。此外还有更广泛、将包括印度在内的该地区所有国家关联在一起的公约也在商谈中，虽然尚处于早期阶段。美国推动打造泛太平洋贸易区，目前把中国排除在谈判之外，但最终似乎无可避免会把中国包括进来。

在经济学入门课程中，比较优势理论是最先传授的概念之一。拥有大量廉价劳动力的国家应该生产劳动力密集型产品，而富裕国家应该专注于那些需要大量资本的商品。经济学家理查德·鲍德温（Richard Baldwin）认为，仅仅只是比较国家优势已经过时。随着供应链实现跨国扩张，地区间的比较优势变得更重要。亚洲同时拥有富足的劳动力和资本，已经在制造业建立起巨大的龙头地位。它只会继续成长。■

Mobile services

The message is the medium

Messaging services are rapidly growing beyond online chat

"I PROPOSE, if and when found, to take him by his beastly neck, shake him till he froths, and pull him inside out and make him swallow himself." It is not often that Silicon Valley's denizens quote P.G. Wodehouse. But this is what Benedict Evans of Andreessen Horowitz, a venture-capital firm, expects the success of messaging services could do to both mobile and corporate software.

The most striking example so far of this process came on March 25th when Facebook announced at a conference in San Francisco that it has started to turn its Messenger service into a "platform" that can carry, and be integrated with, all manner of apps created by other software firms. So Facebook Messenger, which is itself an app for smartphones that run on Apple's iOS and Google's Android operating systems, will then be competing with those operating systems' services for buying apps and downloads. In plain language, it could become the app that ate Apple's app store.

The prospect may surprise those who thought messaging apps were just another way for teens to share this week's tragic news about One Direction (a pop group, apparently). But their continuing explosive growth suggests that they will be a lasting phenomenon. According to Flurry, a market-research firm, the total number of users grew by more than 100% last year (which explains why old-style text messages seem to have peaked, see chart). Together the ten biggest messaging apps, which include KakaoTalk, Viber and WeChat, now boast more than 3 billion users. WhatsApp, the leader of the pack, alone has 700m—a big reason why Facebook last year paid $22 billion for the firm, despite continuing to develop its own

Messenger app.

As the number of users has grown, specialised versions of messaging apps have emerged. What made Snapchat popular was the ability to exchange pictures that vanish after a few seconds (and often contain nudity). Secret, Whisper and Yik Yak let users remain anonymous (including bullies, unfortunately). Telegram stands out because of its strong encryption (making intelligence services unhappy). And FireChat works without cellular service: users' phones communicate directly, which was a popular feature during recent protests in Hong Kong.

The time users are spending on messaging services has encouraged investors to value them highly, even though it is not yet clear how some of them will make money—much as happened with the rise of Twitter and with Facebook's original service, its social network. WhatsApp handled more than seven trillion messages last year, about 1,000 per person on the planet. In Britain users spent as much time on WhatsApp as on Facebook's social-networking app, according to Forrester, another research firm. In China subscribers to WeChat are estimated to use the app for about 1,100 minutes a month on average.

Although the numbers are smaller, something similar is happening in the business world. Slack, a messaging service that works on both smartphones and personal computers, seems to be succeeding where other attempts to create "corporate social networks" have failed, by replacing e-mail as the main communications channel inside firms. Just over a year old, Slack now has 500,000 users. It says they typically spend 135 minutes each working day on the service and altogether send 300m messages a month—which is why investors valued the firm at more than $1 billion when it raised capital in October.

Instead of inundating workers with individual messages, Slack divides the

digital deluge into more manageable “channels”, each dedicated to a project or a team. Users can create and subscribe to such channels, exchange messages, post links and upload files—all of which are saved. Besides reducing the time everyone spends handling e-mail, the channels also help new employees to get up to speed quickly, instead of starting with an empty inbox.

Slack is not the only service of its kind. Other startups, including Quip and HipChat, offer similar features. Established firms are not far behind. Cisco, a maker of networking gear, recently launched a service called Spark, which looks and feels a bit like Slack, but lets users switch to voice and video communication if needed. IBM will soon follow suit with Verse, a web-based e-mail service which lets users exchange instant messages, but also employs the firm’s artificial-intelligence engine, Watson, to sort messages and even reply, to reduce the communication burden.

To please investors as much as they evidently please their users, messaging services, in their consumer and corporate incarnations, will eventually need to turn a profit. There are several ways in which they aim to do this. One is by selling add-ons, at a modest price but in large volumes: for instance, in Asia some messaging services sell “stickers”, little pictures that let users make their messages more expressive, for something like a dollar a dozen.

Another way to make a living is to take a cut of any e-commerce or money transfers that take place over their networks. WeChat users have long been able to order taxis and buy air tickets over the service, and as its popularity keeps growing, so will its ability to start charging businesses for sending customers their way. Snapchat already lets CNN, *National Geographic* and other news media publish articles on its service in return for a share of any advertising revenue. Line and Snapchat have recently added a payment service, as has Facebook Messenger.

Although most messaging services are free, WhatsApp charges a small subscription fee, of 99 cents a year, something the main social networks have shied away from. Once users, and all their friends and contacts, have grown accustomed to using a particular messaging service, it should become easier to get them to cough up a small annual payment. Multiplied by a huge user base, with only modest running costs to subtract, that could provide a handsome profit.

For corporate messaging services, there is even more potential for charging such recurring fees, since businesses are already used to paying annual licensing and maintenance charges for the e-mail systems and other software that these services aim to replace. Companies large and small have all sorts of online functions, from customer support to the tracking of software bugs, that bombard them with alerts and queries—so anything that helps them deal with these more efficiently is worth paying for. Slack's customers, for $7 a month for each user, can pump unlimited numbers of external messages into channels, turning the service into a hub for all the flows of information that make a company tick.

Yet the juiciest prospects may lie in the example Facebook set—allowing messaging services to become platforms on top of which other firms can develop content and apps, with all sorts of means to generate revenues. WeChat, with its various add-ons, is already a platform of sorts. Facebook now intends to go even further and wants its Messenger to become the point of integration for other services and apps. Users will, for instance, be able to open another app simply by tapping a link embedded in the flow of messages.

Such moves to become the platform that supersedes other platforms are a natural evolution in software, says Venkatesh Rao of Ribbonfarm, a consulting firm. Similar battles have happened before, most notably in the "browser wars" of the mid-1990s, when Netscape's Navigator tried to usurp

a dominant platform, Microsoft's Windows operating system. This time the incumbents are Android and iOS, and they will certainly fight back. ■

移动服务

信息即媒介

简讯服务的迅速增长已超过在线聊天

“我建议，一旦发现就抓住他恶心的脖子猛摇，直到他口吐白沫，把他内脏掏出来，让他自己吞下去。”硅谷居民们并不经常引述P·G·沃德豪斯的话。但是，风险投资公司安德森·霍洛维茨基金（Andreessen Horowitz）的本尼迪克特·埃文斯（Benedict Evans）预计，简讯服务的成功对移动软件和企业软件的影响就是这样。

3月25日，Facebook在旧金山的一次会议上宣布已开始将其Messenger服务变为一个“平台”，可以搭载和整合其他软件公司开发的各种应用。这是迄今为止这个过程中最令人瞩目的例子。本身作为在苹果iOS和谷歌安卓操作系统上运行的一种应用，Facebook Messenger今后将在购买应用和下载方面与这些操作系统相竞争。通俗地说，它可能成为一款吃掉苹果App Store的应用。

有人认为简讯应用只是又一种方式，让青少年可以分享比如“单向组合”的不幸消息，而它的发展前景可能让这些人大跌眼镜。简讯应用持续的爆炸性增长表明，它们将是一种长久的现象。市场研究公司Flurry表示，去年简讯应用的用户总量增幅超过100%（这解释了为什么传统短信似乎已经达到峰值，见图表）。目前，KakaoTalk、Viber和微信等十大简讯应用的用户总量超过30亿。单是其领头羊WhatsApp就有7亿用户。这是Facebook去年斥资220亿美元收购WhatsApp的一个重要原因，尽管它仍在继续发展自己的Messenger应用。

随着用户数量的增长，专用版简讯应用已经出现。Snapchat之所以大行其道是因为它能交换照片（经常包含裸照）并在几秒钟后销毁。秘密（Secret）、Whisper和Yik Yak允许用户保持匿名（遗憾的是，也包括恃强凌弱者）。Telegram因其强大的加密功能（这让情报部门不满）脱颖而出。FireChat无须依靠移动通讯服务也能工作：用户的手机能直接交流，

在香港最近的抗议活动中这一功能受到欢迎。

用户在简讯服务上花费的时间已引起了投资者的高度重视，尽管其中一些服务将如何盈利尚不明朗，就像Twitter崛起时以及Facebook最初的社交网络业务所经历过的那样。WhatsApp去年处理了超过7万亿条消息，大约相当于全球每人1000条。另一家研究公司弗雷斯特（Forrester）发现，在英国，用户花在WhatsApp和花在Facebook的社交网络应用上的时间一样多。据估计在中国，用户平均每月使用微信的时间约为1100分钟。

尽管数字较小，类似的情况也在商界上演。在智能手机和个人电脑上运行的简讯服务Slack取代电邮成为公司内部主要的沟通渠道，它似乎成功了，而其他打造“企业社交网络”的努力却失败了。Slack成立刚满一年，目前拥有50万用户。Slack表示，典型的用户每个工作日花135分钟使用其服务，每月发送消息总量达3亿条。正因如此，该公司去年十月融资时，投资者对其估值超过10亿美元。

Slack把海量数据分成更易于管理的“频道”，每个频道专属于某个项目或团队，令员工免于被过多的个人信息淹没。用户可以创建和订阅频道、交换信息、发布链接和上传文件，而所有这些都保存下来。除了减少处理电邮的时间，这些频道还帮助新员工迅速上手，而不是从空空如也的收件箱起步。

Slack并非唯一的这类服务。包括Quip和HipChat在内的其他创业公司也提供类似功能。老牌企业亦不甘落后。网络设备制造商思科最近推出了一款名为Spark的服务，外观和体验都有点像Slack，但用户可以按需切换到音频和视频通信。IBM亦紧跟其后，推出基于网络的电邮服务Verse，让用户能够交换即时信息，以及利用该公司的人工智能引擎沃森（Watson）来分类甚至回复信息，以减轻通信负担。

简讯服务显然深得用户欢心，要能同样取悦投资者，则消费者版和企业版最终都要盈利。它们致力于此的方法有几种。其一是以适中的价格大量销售附加功能。例如在亚洲，一些简讯服务销售“表情贴图”，这些小图片能

让用户的信息更有表现力，售价大概一美元一打。

另一种盈利的方法是从在自己的网络上进行的电子商务或资金转移里分一杯羹。用户早就可以在微信上预约出租车和购买机票了，随着受欢迎程度不断提高，它也将有能力开始向企业收取客户介绍费。Snapchat让CNN、《国家地理》等新闻媒体在其上发表文章，如果有广告收入则可以分成。与Facebook的Messenger一样，Line和Snapchat最近也新增了支付服务。

虽然大多数简讯服务都免费，但WhatsApp每年收取99美分的少量订阅费，这是主流社交网络一直不愿意做的。一旦用户及其所有朋友和联系人习惯了使用特定的简讯服务，让他们支付小额年费应该更为容易。如果乘上庞大的用户群，再减去不太高的运营成本，就有可能带来可观的利润。

在企业简讯服务方面，收取这种经常性费用的可能性甚至更高，原因是企业已经习惯了为电邮系统以及这些服务准备取代的其他软件每年支付授权和维护费用。无论规模大小，公司都有各类在线功能，从客户支持到软件漏洞跟踪，种类繁多，随之而来的是大量警报和查询，使公司疲于应付。因此，能帮它们更有效应对这一切的任何服务都值得掏钱。Slack的客户每人每月交7美元，就可以向频道输入数量不限的外部信息，把这项服务变成为所有信息流的枢纽，使公司运转起来。

但是，最美好的前景可能在于Facebook树立的榜样，即让简讯服务成为平台，而让其他公司在上面开发内容和应用，这样就有各种方法创收了。由于提供各种附加功能，微信已经差不多算是一个平台了。Facebook目前打算更进一步，让其Messenger成为其他服务和应用的结合点。例如，只需点击信息流中嵌入的链接，用户即可打开其他应用。

咨询公司Ribbonfarm的文卡泰什·劳（Venkatesh Rao）表示，这类取代其他平台的做法是软件业的一种自然发展。类似的较量以前也发生过，最著名的是20世纪90年代中期的“浏览器大战”，当时网景导航者（Netscape's Navigator）浏览器试图夺取微软Windows操作系统的主导平

台地位。而这一次，在位者是安卓和iOS，它们势必会予以反击。■

Professional services

Attack of the bean-counters

Lawyers beware: the accountants are coming after your business

CONSULTING has its Big Three; accounting the Big Four; and executive search a Big Five. But there is no corresponding clutch of dominant law firms. None has amassed as much as 0.5% of an industry with global revenues of around $650 billion a year. Even the biggest law firms may be anachronistically inefficient. They are run by lawyers, not professional managers, insist on charging by the "billable hour" rather than by results and use little technology more advanced than e-mail. Nonetheless, most big law firms have continued to be highly profitable.

In recent years, clients have begun to rebel against the billable hour, and at being charged senior lawyers' rates for work done by juniors. Some have started sending basic legal paperwork to cheap, offshore processing centres. But only now is a serious threat to the law firms' cosy existence emerging.

It comes from none other than the Big Four accounting networks (Deloitte, EY, KPMG and PwC), whose combined annual revenues of $120 billion exceed the $89 billion generated by the 100 largest law firms combined (see charts). Having already dipped a toe into the legal business a couple of decades ago, only to retreat, the accountants have been stealthily building up legal-services divisions. These have now reached a size where they outgun most law firms: by headcount, PwC's legal arm is the world's tenth-biggest, and all four networks' law divisions are in the top 40 by this measure.

The accountants insist that they do not want to compete with law firms, and that legal services will remain a small chunk of their revenues in the

medium term. So far, they have focused on mid-tier, process-oriented work rather than the big deals and lawsuits that elite law firms chase. Moreover, regulation has restricted their growth: they cannot practise law in America, which accounts for over a third of global legal spending, and most European countries restrict their freedom to do so. Only a few countries allow full integration of accounting and law firms (see table).

Nonetheless, as the accountants run out of room to grow in other businesses, they will have trouble resisting this inefficient and lucrative market. And the law firms will find it hard to fend them off. To Michael Roch of Kerma Partners, an outfit that advises professional-services firms, the Big Four are "the biggest underestimated threat to the legal profession today".

The idea of accounting firms doing legal work is hardly new. The Big Four have long employed lawyers to work on European clients' tax returns. In the 1990s the then Big Five, led by the late, unlamented Arthur Andersen, sought to diversify from auditing and tax by expanding into both consulting and law. With America off-limits, all but Deloitte founded or acquired law firms in Britain.

That trend ended abruptly when the Enron scandal took down Andersen in 2002. Garretts, an English legal practice it had affiliated with, suffered a harrowing dissolution, in which its staff had to find new jobs and its partners faced personal bankruptcy. Observers attributed Andersen's demise to conflicts of interest between its consulting and audit arms. The accountants' legal divisions were seen as presenting similar risks. Moreover, the Sarbanes-Oxley corporate-governance reform America passed in the wake of the scandal transformed the business environment for the surviving Big Four. Besides restricting the auxiliary services they could offer to audit clients, it granted them a windfall in new regulatory work. In response, the accountants mostly closed or sold their non-tax legal

practices.

Over the following decade, however, incentives increased for the firms to revisit their abandoned experiment. Revenues in their audit and tax divisions flatlined, forcing them to seek new business lines to keep growing. As their corporate clients globalised, the Big Four's international scale—together, they employ about 700,000 people in more than 150 countries—became an increasingly valuable selling-point.

The recession following the 2008 financial crisis prompted businesses' general counsels to rebel against the padded bills they get from the law firms they use. In the same decade, several countries passed laws opening up their legal industries. Britain and Australia authorised "multidisciplinary practices" (MDPs), which let attorneys share profits, without restriction, with members of other professions. So, the Big Four moved back in, buying small law firms, poaching partners from others and recruiting on campuses. With the flexibility to offer discounted, fixed fees, they started to win lots of corporate legal work. In recent years the quartet's combined legal revenues have grown at double-digit rates.

Since 2013 EY Legal has expanded from 23 countries to 64. It merged with a Chinese law firm, Chen & Co, and hired a partner from Freshfields, one of the "Magic Circle" of posh London solicitors. In 2012 Deloitte scooped up Raupach & Wollert-Elmendorff in Germany, while PwC recently took over an immigration-law boutique, Bomza, in Canada. KPMG was the first of the four to register an MDP in Britain, which lets it give its lawyers there full-fledged partnerships in the firm. Now, as a proportion of the combined revenues of the ten largest firms in each country, Kerma Partners calculates that the Big Four's aggregate market penetration ranges from 4% in China and 6% in Britain to 20% in Germany and 30% in Spain.

The Big Four are taking a more focused approach this time. Rather than

building full-service firms, they are concentrating on areas of law that complement their existing services: immigration, which sits nicely with expatriate tax work; labour, which goes with human-resources consulting; compliance; commercial contracts; and due diligence. So far they have resisted taking on the priciest law firms for high-value work on capital-markets transactions or mergers and acquisitions. They are also steering clear of non-tax litigation, which could result in them suing potential audit or consulting clients. But they are seeking to build broader practices in under-lawyered emerging markets where the international law firms do not have a presence but the accountants do.

Kill billable hours

For now the Big Four seem content with stealthy growth. By tiptoeing around the strongest firms, they have planted a flag on the margins of the profession without setting off alarms. "I don't think we disrupt the existing law business that much," says Leon Flavell, the head of PwC Legal. But his goal is to more than double its revenues by 2020, to $1 billion a year. The legal business is not growing fast enough for PwC and the other three accounting giants to reach this sort of turnover unnoticed. Eventually, they will go head-to-head with law firms.

So far, law firms have been sanguine about this looming risk. Those in America can afford to be complacent: the accountants' lobbyists are too busy advancing the interests of their existing businesses to push for an opening of the legal profession. Even if they tried, America's legislative bodies are infested with lawyers, who would surely fight back. This should ensure that the market remains protected for the foreseeable future. Similarly, the Magic Circle firms in London can rest easy for now: Europe's finest lawyers can still name their price for the most challenging, "bet-the-company" work.

Those most at risk from the attack of the bean-counters are the profusion of

mid-tier legal firms in liberalised markets. Since their profit margins are already low, they cannot afford even a modest loss of market share. Unfortunately for them, much of their business is high-volume, repetitive tasks—just the sort of work that the Big Four excel at standardising and automating.

Most of these vulnerable law firms have been slow to react. That may be because their clients are telling them not to worry: in a recent survey by *American Lawyer* magazine, 90% of companies' general counsels did not think their business would buy legal advice from an accounting network. However, those general counsels may themselves be cut out of the loop, as the Big Four sell their companies' finance departments a "one-stop shop" service, with legal work bundled together with consulting and tax filing.

A handful of innovative law firms have tried to "self-disrupt", to pre-empt new entrants. In 2011 Allen & Overy, a Magic Circle member, set up a service centre in Belfast to handle routine aspects of big deals. It now employs almost 400 people there, including 70 lawyers, at a fraction of London salaries and rent. At the other end of the market, in recent years groups of mid-tier firms across the globe have linked up to form loosely integrated networks. In January Dacheng of China joined a Western confederation, Dentons, to create an alliance that employs 6,600 attorneys.

Although the giants of the legal world have sought to mimic the accountants' cost and scale advantages, they remain minnows compared with the Big Four. Only the likes of PwC and Deloitte can muster the capital and technology (and relatively cheap labour) to industrialise the artisanal model of legal practice that has endured so long. Businesses that spend heavily on legal advice stand to save a fortune. But law firms that are sub-scale and inefficient risk ruin. The Walmarts and Amazons of professional services are at their gates, and the legal industry's halting pace of creative destruction is set to accelerate as a result. ■

专业服务

会计师的进攻

律师们小心了：会计师要来抢生意

咨询业有三大咨询公司；会计业有四大会计师事务所；猎头行业则有五大猎头公司。但律师事务所中却没有几家能如上述巨头一样占据行业主导地位。法律行业的全球年收入约为6500亿美元，没有一家律所的总收入能占到全行业的0.5%。即使最大的律师事务所也可能低效且落伍。其管理者不是职业经理人，而是律师，他们坚持按小时而不按结果收费，而且很少使用比电邮更先进的技术。尽管如此，大多数大型律师事务所仍然利润丰厚。

近年来，客户开始反对按小时收费，也反对按资深律师的费率收费、却由初级律师完成工作的做法。有些客户开始把基本的法律文书交给廉价的离岸处理中心。但是，直到现在才出现了一个对律师事务所惬意生活的严重威胁。

这个威胁正是来自四大会计师事务所（德勤、安永、毕马威和普华永道），它们的年收入总和达1200亿美元，超过了100家最大的律师事务所890亿美元的年收入总和（见图表）。几十年前，会计师事务所曾对法律业务浅尝辄止，但它们已经悄悄建立起法律服务部门。现在，这些部门的规模已经超过了大多数律师事务所：以雇员人数计算，普华永道的法律部门排在全球第10位，而四大会计师事务所的法律部门均进入世界前40位。

会计师们坚持说，他们不打算与律师事务所竞争，而且从中期来看，法律服务仍将只是他们收入的一小部分。到目前为止，他们一直专注于以流程为导向的中层业务，而不是精英律师事务所争夺的大交易和大官司。此外，监管环境也制约了他们的发展：他们不能在美国从事法律业务，而美国占全球法律支出的三分之一强；大多数欧洲国家都限制他们从事法律业务的自由。只有少数国家允许会计师事务所和律师事务所全面整合（见表）。

尽管如此，随着会计师在其他业务领域的发展空间逐步耗尽，他们将很难拒绝进入这个效率低下又利润丰厚的市场。而且律师事务所将难以抵挡其攻势。为专业服务公司提供咨询的科尔曼合伙公司（Kerma Partners）的迈克尔·罗奇（Michael Roch）认为，四大会计师事务所是“当今法律界最大的、被低估的威胁”。

会计师事务所从事法律业务的主意并不新鲜。四大会计师事务所长期聘用律师负责其欧洲客户的纳税申报。上世纪90年代，当时以安达信为首的五大会计师事务所试图多元化，把业务从审计和税务扩大到咨询和法律。如今安达信业已解体，无人惋惜。由于进入美国受到限制，德勤以外的其他几大事务所均在英国成立或收购了律师事务所。

2002年安然丑闻拖垮安达信之时，此趋势戛然而止。隶属于安达信的英国加里特斯律师事务所（Garretts）惨遭解散，员工不得不另找工作，合伙人则面临个人破产。观察家把安达信的倒台归咎于其咨询和审计部门之间的利益冲突。他们认为会计师事务所的法律部门也存在类似的风险。此外，丑闻后美国通过的萨班斯-奥克斯利公司治理改革法案彻底改变了幸存的四大会计师事务所的商业环境。在限制它们向审计客户提供辅助服务的同时，法案也在新的合规工作方面给了它们意外的收获。结果，会计师事务所大多关闭或出售了非税务方面的法律业务。

然而，在随后的十年里，激励的增加促使这些事务所重拾曾经放弃的试验。审计和税务部门的收入增长乏力，迫使它们寻求新业务以保持增长。随着其企业客户的全球化，四大会计师事务所在150多个国家雇用约70万员工的全球规模已成为一个越来越有价值的卖点。

2008年金融危机之后的经济衰退促使企业总法律顾问反对其雇用的律师事务所虚增费用。同样在这十年里，几个国家颁布法令，开放法律行业。英国和澳大利亚批准“跨专业合伙”（MDPs），这让律师与其他行业的合伙人分享利润而不受限制。因此，四大会计师事务所卷土重来，收购小律师事务所，挖角其他事务所的合伙人并在校园招聘。由于能提供打折的固定收费，有灵活性，它们开始赢得大量企业法律业务。近年来，四大事务所

的法律业务收入一直以两位数的速度增长。

自2013年以来，安永法律业务已从23个国家扩展到64个。它合并了中国的瑛明律师事务所，还从富而德律师事务所（Freshfields）聘请了一位合伙人。富而德是伦敦法律界“魔术圆圈”（Magic Circle）的时髦律师事务所之一。德勤于2012年合并了德国的Raupach & Wollert-Elmendorff律师事务所，普华永道则在最近接手了主营移民法业务的加拿大小型事务所博萨（Bomza）。四大事务所中，毕马威最早在英国注册了跨专业合伙，这让它能给予旗下律师全面合伙人的地位。据科尔曼合伙公司计算，四大事务所目前在各国法律业务市场的占比依次为：中国4%、英国6%、德国20%以及西班牙30%。科尔曼合伙公司根据每个国家四大会计师事务所法律业务的收入占该国前十大法律事务所总收入的比例计算出市场份额。

这一次，四大会计师事务所采取的策略更有针对性。它们没有建立提供全方位服务的事务所，而是专注于能够补充其现有服务的法律领域。例如：可与外籍人士税收业务搭配的移民法；可与人力资源咨询业务协同的劳动法；法律合规；商业合同法；尽职调查。到目前为止，它们一直保持克制，不在资本市场交易与并购等高价值业务上挑战最贵的律师事务所。它们还避开非税务诉讼，这些诉讼可能导致它们控告潜在的审计或咨询客户。但它们正寻求在缺乏律师的新兴市场开展更广泛的业务，国际律师事务所尚未进入这些市场，会计师事务所却已捷足先登。

停止按时收费

目前，四大会计师事务所似乎满足于悄无声息的增长。通过小心翼翼地在顶尖律师事务所的周边开展业务，它们已经在这个行业的边缘地带树立了一面旗帜，而且没有拉响警报。“我不认为我们过多地颠覆了现有的法律业务。”普华永道的法律部门负责人列昂·弗拉维尔（Leon Flavell）说。但是，他的目标是到2020年收入翻一番多，达到每年10亿美元。对普华永道和其他三大事务所而言，法律业务的增速并没有快到能够在他人警醒前就达到这种收入规模。最终，它们将与律师事务所正面交锋。

迄今为止，律师事务所对这个正在显现的风险仍抱持乐观态度。美国的事

务所还可以满不在乎：会计师的说客们正忙于推进现有业务，无暇推动法律行业的开放。即便他们试图去做，美国的立法机构里律师成群，一定会反击。这应该会确保美国市场在可预见的将来仍受保护。同样，伦敦“魔术圆圈”中的事务所也可暂时宽心：在最具挑战、“赌公司存亡”的业务上，这些欧洲最好的律师们仍能漫天要价。

最有可能遭到会计师攻击的是那些开放市场里的大量中层律师事务所。由于利润率已经很低，它们经不起失去哪怕不太大的市场份额。不幸的是，它们大部分的业务都是大批量、重复性的任务，恰好是四大事务所擅长的标准化和自动化的工作。

这些弱势的律师事务所大多反应缓慢。这可能是因为客户告诉它们不要担心：《美国律师》杂志（The American Lawyer）最近的一次调查显示，90%的企业总法律顾问都认为公司不会雇用会计师事务所提供法律咨询。然而，这些总法律顾问可能自己都茫然不知，四大事务所正向他们公司的财务部门出售把法律业务、咨询和报税打包的“一站式”服务。

几家富有创新精神的律师事务所曾试图“自我颠覆”，旨在对新进者先发制人。2011年，“魔术圆圈”成员之一的安理国际律师事务所（Allen & Overy）在北爱尔兰的贝尔法斯特建立了一个服务中心，处理大宗交易的日常事务。目前它在那里雇用近400名员工，包括70名律师，而工资和租金仅为伦敦的一小部分。在市场另一端，全球范围的中层律师事务所群体近年联合起来，组成松散的统一网络。今年1月，中国的大成律师事务所加入了西方联盟德同律师事务所（Dentons），缔造的新联盟雇用律师6600名。

尽管法律界的巨头试图模仿会计师们的成本和规模优势，但是与四大事务所相比，它们仍是小鱼小虾。只有普华永道和德勤这类企业才能集中足够的资金和技术（和相对廉价的劳动力），使法律业务历经岁月洗礼的手工艺模式工业化。为法律咨询花费巨资的企业很可能会省下一大笔钱。而不上规模和效率低下的律师事务所则有破产的风险。专业服务方面的“沃尔玛”和“亚马逊”已经兵临城下，法律行业在创造性颠覆方面迟疑不决的步伐

将不得不加快。■

Berkshire Hathaway

The post-Buffett world

Succession is the biggest challenge

WHEN Warren Buffett no longer "tap dances to work", as he describes it, what will become of Berkshire Hathaway, the company he created? The "Sage of Omaha" is 84 and his firm is one of America's most valuable companies, with a market capitalisation of over $350 billion. Its success has defied the conventional wisdom that conglomerates do not work. Berkshire Hathaway is a hotch-potch of 600 different businesses that deal in everything from private jets to low-cost carpets and insurance. Investors love the way the firm's share price keeps going up, but they are beginning to fret that the founder's departure will bring the good times to an end.

Mr Buffett has long argued that he has built a company designed to thrive after he has gone, as he explains. Many of the people who run his businesses have also been encouraged to tell their stories to the author of "Berkshire Beyond Buffett". The result is an unusually detailed description of Mr Buffett's management ideas and his long efforts to embed them permanently into the firm's internal systems.

Though best-known as a "value investor", with an eye for underpriced shares, as a manager Mr Buffett cares mostly about values. He believes that corporate culture matters; if a business does not have a strong, proven ethical culture, he will not buy it, whatever its other attractions. He has a strong preference for taking over firms that have been family-run for generations, and for managers with a commitment to lifelong self-improvement. Berkshire Hathaway's managerial ranks boast several winners of the Horatio Alger award given to business leaders who epitomise the dream of moving from poverty to prosperity in a single generation. Famously hands-off, Mr Buffett believes in giving his managers

plenty of autonomy and trusting them to do the right thing, which despite the occasional well-publicised ethical lapse, they mostly tend to do.

Lawrence Cunningham identifies nine key ingredients in the Buffett way of management: counting every penny; keeping promises; maintaining a good reputation at all costs (losing that is far worse than losing money); kinship or behaving like a well-functioning family; self-starting; delegation; investment savvy; keeping things simple and sticking to your knitting; and long-termism. Indeed, Berkshire Hathaway is arguably the leading example of a company run to maximise its long-term value, rather than yielding to the short-termist pressures of the stockmarket.

There is much to learn from Mr Cunningham's stories about the companies that Berkshire Hathaway owns. These include GEICO, an insurer, and Dairy Queen, an ice-cream retailer, as well as less familiar businesses, such as McLane, a grocery wholesaler with revenues of $49 billion in 2013, and MiTek, which has transformed the technology of house-building.

However, the author seems too easily convinced by Mr Buffett's claims that the firm's culture will keep it on track after he has gone. Berkshire Hathaway's decentralised structure may stop it suffering the sort of problems experienced by more centralised conglomerates, such as GE and Teledyne, after their great leaders left. But without Mr Buffett there may be no force to hold those businesses together.

Mr Cunningham concedes that activist shareholders may try to tear the firm apart, and he suggests that it might be better off becoming a private company. Yet in the end, he thinks that the succession plan Mr Buffett and the board are said to have up their sleeves will produce people well able to fill his massive shoes.

The author names at least ten potential internal candidates he considers

good enough to be the next chief executive. He also thinks “it is hard to see a better choice” than Mr Buffett’s selection of his son, Howard, as the next chairman. ■

伯克希尔哈撒韦公司

后巴菲特时代

接班是最大的挑战

当巴菲特不再如他自己所说的那样“跳着踢踏舞去上班”，他一手创建的公司伯克希尔哈撒韦将何去何从？这位美国“奥马哈市的圣人”已经年届84岁，他的公司是美国最具价值的公司之一，市值超过3500亿美元。该公司的成功已颠覆了大企业失灵的传统认知。伯克希尔哈撒韦公司是管理着600种不同业务的大杂烩，从私人飞机到廉价地毯和保险，无所不包。投资者对该公司股价的持续攀升备感欣慰，但他们也开始烦恼，担忧该公司的黄金时代将会随着创始人的离开而终结。

长期以来，巴菲特一直辩称，他已经将公司打造成型，使其能在自己离开后依然繁荣昌盛。帮他打理生意的很多人也受到鼓励，向《后巴菲特时代的伯克希尔》（Berkshire Beyond Buffett）的作者讲述了他们的经历。因此，在书中对巴菲特的管理理念有着异常详尽的描述，还包括他把其理念永久地植入公司内部体系的长期努力。

作为最负盛名的“价值投资者”，巴菲特拥有能发现被低估股票的慧眼，而作为管理者，巴菲特最关心价值观。他相信企业文化至关重要；如果一家公司没有强盛而久经考验的伦理文化，无论它在其他方面多么吸引人，他都不会购买其股票。对于由家族经营、历经数代的公司，以及终生致力于自我提升的经理人，巴菲特都有着强烈的偏好要收入囊中。伯克希尔哈撒韦的管理层中有几位霍雷肖·阿尔杰奖（Horatio Alger award）的获得者，该奖项颁发给在一代之内实现了从贫穷到成功梦想的商界领袖。巴菲特以放权闻名，他认为应给予高管足够的自主权，相信他们能够做正确的事。尽管偶有被广泛宣传的道德滑坡，高管们基本都按期望办事。

坎宁安从巴菲特的管理之道中发现了九个要点：锱铢必较；恪守承诺；不惜代价维护声誉（名誉受损远比金钱损失后果严重）；亲人情谊，或像运转良好的家庭般行事；自我启动；授权下属；投资悟性；奉行简单原则，

做好本业；长线主义。实际上，在坚持最大化公司的长期价值，而非屈服于股票市场的短期主义压力方面，伯克希尔哈撒韦公司可能是领先范例。

坎宁安记述了很多有关伯克希尔哈撒韦旗下公司的故事，其中有很多可借鉴之处。这包括保险公司GEICO、冰激凌零售商冰雪皇后，以及其他一些不太为人熟知的公司，如食品杂货批发商McLane，2013年收入达490亿美元，还有变革了房屋建筑技术的MiTek。

然而，作者似乎太过轻易地信服于巴菲特的断言，即在他离开后，其公司文化将能保证公司平稳发展。伯克希尔哈撒韦公司的分权结构可能会保证它不步那些更为集权化的企业集团的后尘，如GE公司和美国Teledyne，它们都在伟大领袖离任后遇到了问题。但是没有了巴菲特，可能就没有什么能把这些业务凝聚在一起的力量了。

坎宁安承认激进股东可能会设法分拆公司，而且他认为该公司私有化可能会更好。然而在书末，他认为巴菲特和董事会据称已储备的接任计划会产生合适人选，继承他的大任。

作者点出了至少十位内部潜在候选人，他认为这些人有能力成为下一任首席执行官。他也认为，如果巴菲特选择他的儿子霍华德（Howard）作为下任董事长，那么“很难有比这更好的选择了”。 ■

New business models

All change

The power industry's main concern has always been supply. Now it is learning to manage demand

THE BASIC MODEL of the electricity industry was to send high voltages over long distances to passive customers. Power stations were big and costly, built next to coal mines, ports, oil refineries or—for hydroelectric generation—reservoirs. Many of these places were a long way from the industrial and population centres that used the power. The companies' main concern was to supply the juice, and particularly to meet peaks in demand. Most countries (and in America, regions) were energy islands, with little interconnection to other systems.

That model, though simple and profitable for utilities and generators, was costly for consumers (and sometimes taxpayers). But it is now changing to a "much more colourful picture", says Michael Weinhold of Siemens, a big German engineering company. Not only are renewables playing a far bigger role; thanks to new technology, demand can also be tweaked to match supply, not the other way round.

As a result, the power grid is becoming far more complicated. It increasingly involves sending power at low voltages over short distances, using flexible arrangements: the opposite of the traditional model. In some ways the change is akin to what has happened in computing. A 2010 report for BCG, a consultancy, drew a parallel with the switch from mainframes and terminals to cloud storage and the internet.

Traditional power stations and grids still play a role in this world, but not a dominant one. They have to compete with new entrants, and with existing participants doing new things. One example is the thriving business of

trading what Mr Lovins of Rocky Mountain Institute has named "negawatts": unused electricity. The technique is known as "demand response"—adjusting consumption to meet supply, not the other way round.

Flattening the peaks

The most expensive electricity in any power system is that consumed at peak time, so instead of cranking up a costly and probably dirty power station, the idea is to pay consumers to switch off instead. For someone running a large cooling, heating or pumping system, for example, turning the power off for a short period will not necessarily cause any disruption. But for the grid operator the spare power gained is very useful.

This has been tried before: in France, after a heatwave in 2003 that hit the cooling systems of nuclear power stations and led to power shortages. In response, big energy consumers agreed to cut their power consumption at peak times, in exchange for generous rebates. The Japanese have installed 200,000 home energy-management systems that do something similar on a domestic scale. But new technology takes it to another level, allowing a lot of small power savings from a large number of consumers to be bundled together.

In South Africa companies can sell such spare power themselves, through a company called Comverge. Elsewhere consumers earn rebates either from their own power company or from a third-party broker which manages their consumption. In Austin, Texas, for example, 7,000 households have signed up for a scheme in which they get an $85 rebate on an internet-enabled thermostat, such as the Nest, which costs $249. This has other benefits for them too, such as allowing them to control their home heating and cooling remotely. But it also means that the power company, Austin Energy, can shave 10MW from its summer peak demand, typically between 3pm and 7pm.

Nest is selling its programmes all over North America, and more recently in Britain too. Customers of its "Rush Hour Rewards" programme can choose between being given notice a day in advance of a two- to four-hour "event" (meaning their thermostat will be turned down or up automatically) or being told ten minutes ahead of a 30-minute one. This can cut the peak load by as much as 55%. In another scheme customers agree to a change of a fraction of a degree over a three-week period.

At an auction in May 2014 at the PJM interconnection, America's largest wholesale electricity market, 11GW of "negawatts" were bid and cleared, replacing capacity that would have come from conventional power stations. In other words, instead of buying in capacity from power stations that operate only to meet peak demand, it was paying customers not to use electricity at that time. In 2013 PJM took $11.8 billion off electricity bills through demand response and related efficiency savings. The figure for 2014 is likely to be $16 billion.

NRG, America's biggest independent power company, is also moving into the market. David Crane, its chief executive, admits that some consumers find the idea of saving power "un-American", but thinks that for companies like his the "mindless pursuit of megawatts" is a dead end. In 2013 NRG bought a demand-response provider, Energy Curtailment Specialists, which controls 2GW of "negawatts", for an undisclosed sum.

The big question for demand-response companies is the terms on which they compete with traditional generators, which argue that markets such as PJM are starving the power system of badly needed investment. For example, FirstEnergy, a company in Ohio, suspended modernisation plans at a coal-fired plant which failed to win any megawatts in the auction for 2017-18. Such plants are viable only if utilities are paying top dollar for peak electricity—a cost which is eventually passed on to the consumer. Companies like FirstEnergy hope that the Supreme Court will overturn a

ruling by the Federal Energy Regulatory Commission that negawatts be treated like megawatts in capacity auctions. These worries are already spooking the market. EnerNOC, which bundles together small energy savings from many different customers to offer negawatts, has seen its share price fall by half since May.

Sara Bell, who represents Britain's demand-response companies, notes a market failure: the same companies that generate power also supply it. She argues that their interest is selling at peak demand and peak prices—which is the opposite of what a customer would want.

In any case, the days of the vertically integrated model of energy supply are numbered, observes Dieter Helm. Thanks to abundant solar power, he argues, the energy market increasingly resembles the economics of the internet, where marginal costs are zero. That "undermines the very idea of wholesale electricity markets". The future model will be much more fragmented. Independent generators, plus new entrants, are already "revolutionising the way electricity is sold and used"; new technologies will make the 21st-century model even more different. "No wonder many of the energy giants of the past are already in such trouble," he says.

No longer so useful

The combination of distributed and intermittent generation, ever cheaper storage and increasingly intelligent consumption has created a perfect storm for utilities, particularly those in Europe, says Eduard Sala de Vedruna of IHS, a consultancy. They are stuck with the costs of maintaining the grid and meeting peak demand, but without the means to make customers pay for it properly. Their expensively built generating capacity is oversized; spare capacity in Europe this winter is 100GW, or 19% of the constituent countries' combined peak loads. Much of that is mothballed and may have to be written off. Yet at the same time new investment is urgently needed to keep the grid reliable, and especially to make sure it can

cope with new kinds of power flow—from "prosumers" back to the grid, for example.

To general surprise, demand is declining as power is used more efficiently. Politicians and regulators are unsympathetic, making the utilities pay for electricity generated by other people's assets, such as rooftop solar, to keep the greens happy. At the same time barriers to entry have collapsed. New energy companies do not need to own lots of infrastructure. Their competitive advantage rests on algorithms, sensors, processing power and good marketing—not usually the strong points of traditional utilities. All the services offered by these new entrants—demand response, supply, storage and energy efficiency—eat into the utilities' business model.

For an illustration, look at Hawaii, where solar power has made the most inroads. On a typical sunny day, the panels on consumers' rooftops produce so much electricity that the grid does not need to buy any power from the oil-fired generators that have long supplied the American state. But in the morning and evening those same consumers turn to the grid for extra electricity. The result is a demand profile that looks like a duck's back, rising at the tail and neck and dipping in the middle.

The problem for the state's electricity utilities is that they still have to provide a reliable supply when the sun is not shining (it happens, even in Hawaii). But consumers, thanks to "net metering", may have an electricity bill of zero. That means the utilities' revenues suffer, and consumers without solar power (generally the less well-off) cross-subsidise those with it.

Rows about this are flaring across America. The Hawaiian Electric Power Company, the state's biggest utility, is trying to restrict the further expansion of solar power, telling new consumers that they no longer have an automatic right to feed home-generated electricity into the grid. Many

utilities are asking regulators to impose a fixed monthly charge on consumers, rather than just let them pay variable tariffs. Since going completely off-grid still involves buying a large amount of expensive storage, the betting is that consumers will be willing to pay a monthly fee so they can fall back on the utilities when they need to.

Consumers, understandably, are resisting such efforts. In Arizona the utilities wanted a $50 fixed monthly charge; the regulator allowed $5. In Wisconsin they asked for $25 and got $19. Even these more modest sums may help the utilities a bit. But the bigger threat is that larger consumers (and small ones willing to join forces) can go their own way and combine generation, storage and demand response to run their own energy systems, often called "microgrids". They may maintain a single high-capacity gas or electricity connection to the outside world for safety's sake, but still run everything downstream from that themselves.

Some organisations, such as military bases, may have specific reasons to want to be independent of outside suppliers, but for most of them the main motive is to save money. The University of California, San Diego (UCSD), for example, which until 2001 had a gas plant mainly used for heating, changed to a combined-heat-and-power (CHP) plant which heats and cools 450 buildings and provides hot water for the 45,000 people who use them. The system generates 92% of the campus's electricity and saves $8m a year. As well as 30MW from the CHP plant, the university has also installed more than 3MW in solar power and a further 3MW from a gas-powered fuel cell. When demand is low, the spare electricity cools 4m gallons (15m litres) of water for use in the air-conditioning—the biggest load on the system—or heats it to 40° to boost the hot-water system. Universities are ideal for such experiments. As autonomous public institutions they are exempt from fiddly local rules and from oversight by the utilities regulator. And they are interested in new ideas.

Places like UCSD not only save money with their microgrids but advance research as well. A server analyses 84,000 data streams every second. A company called ZBB Energy has installed innovative zinc-bromide batteries; another company is trying out a 28kW supercapacitor—a storage device far faster and more powerful than any chemical battery. NRG has installed a rapid charger for electric vehicles, whose past-their-prime batteries are used to provide cheap extra storage. And the university has just bought 2.5MW-worth of recyclable lithium-ion iron-phosphate battery storage from BYD, the world's largest battery manufacturer, to flatten peaks in demand and supply further.

In one sense, UCSD is not a good customer for the local utility, San Diego Gas & Electric. The microgrid imports only 8% of its power from the utility. But it can help out when demand elsewhere is tight, cutting its own consumption by turning down air-conditioners and other power-thirsty devices and sending the spare electricity to the grid.

UCSD is one of scores of such microgrids pioneering new ways of using electricity efficiently and cheaply through better design, data-processing technology and changes in behaviour. The IEA reckons that this approach could cut peak demand for power in industrialised countries by 20%. That would be good for both consumers and the planet. ■

新商业模式

大变

电力产业的主要关注点从来都是供给，如今变成了学习如何管理需求

电力产业的基本模式是向被动的用户远距离高压输电。发电站大而昂贵，建造在煤矿、港口、炼油厂，或者水库——如果是水力发电的话——旁边。许多这类地点远离用电的工业中心和人口稠密地区。这些企业主要关心的是供电，尤其是满足尖峰期需求。大部分国家（在美国是不同的地区）都是能源孤岛，和其他系统鲜少互联。

这一模式对电力公司和发电厂而言简单又有利可图，但对消费者（有时还有纳税人）来说却代价高昂。但它现在正在转变成一幅“远为五彩斑斓的图景”，德国大型工程企业西门子的迈克尔·温霍尔德（Michael Weinhold）说。不仅可再生能源正在扮演远为重大的角色，由于有新技术，可以反过来微调需求以适应供给。

其结果是，电网正变得复杂得多。它越来越多地利用灵活的配置来短距离低压输电。这和传统模式恰恰相反。在某些方面这种变化和计算行业发生的变化类似。波士顿咨询公司（BCG）2010年的一份报告把电力产业的变化类比为从主机和终端转为云端存储和互联网。

传统的发电站和电网仍在这个世界中扮演角色，但不再占绝对优势。它们不得不和新进者以及尝试新事物的现有参与者竞争。例子之一是一门正在蓬勃发展的生意：交易省下来的电。洛基山研究所（Rocky Mountain Institute）的洛文斯（Lovins）把这种电称作“负瓦特”（negawatts）。这种方式被称为“需求响应”——调整消费以匹配供给，而不是反过来。

压平尖峰

在任何供电系统中，最贵的电是尖峰期用电，因此，新方式不是启动一家昂贵又可能带来污染的发电站，而是付费给用户让他们关掉电源。比如，对于运行一个大型的制冷、供暖或泵压系统的人，把电关掉一小段时间不

一定会造成任何破坏。但对于电网运营商，由此获得的备用电非常有用。

这在以前已经被尝试过：在法国，2003年的一次热浪引发了核电站制冷系统故障，导致发电不足。用电大户遂同意在尖峰期减少用电以换取慷慨的返利。日本人已经装配了20万套家庭能源管理系统，在家庭层面取得类似的作用。但新技术把这种方式带到了另一个层级，能把来自大批用户的小量节省合并在一起。

在南非，企业可以通过Comverge公司自行出售多余的电。在其他地方，用户从给自己供电的公司或者管理他们用电的第三方代理那里赚得返利。比如，在德州奥斯汀，7000户家庭已经加入了一项计划，在购买一个通过互联网运作的温控器比如售价249美元的Nest时，获得85美元的返利。他们还享受到其他的好处，比如能遥控家里的冷暖气设备。而同时，这也意味着电力公司奥斯汀能源（Austin Energy）能让其夏季尖峰时段用电需求减少10兆瓦。夏季尖峰通常在下午3点到晚上7点间。

Nest正在北美各地销售其项目，最近还打入了英国市场。其“高峰时段奖励”项目的客户可以选择在一个持续二到四小时的“事件”（意即他们的温控器会被自动调低或调高）前提前一天收到通知，或者在一个持续30分钟的事件前提前10分钟被告知。这可以把尖峰负荷减少55%之多。在另一个项目中，用户同意在为期三周的时间里对温度做微小调整。

在美国最大的电力批发市场PJM于2014年5月举行的拍卖会上，11吉瓦【1吉瓦=100万千瓦】的“负瓦特”被投标卖出，取代了原本会由传统发电站提供的发电量。换言之，这不是从为满足尖峰需求而运作的发电站那里买入电能，而是付钱给用户，让他们不要在尖峰时段用电。2013年，PJM通过需求响应和相关的增效节约，让用户支付的电费减少了118亿美元。2014年这一数字可能达到160亿美元。

美国最大的独立供电商NRG能源公司也在进入这一市场。公司CEO 戴维·克兰（David Crane）承认部分用户认为节约用电这个主意“很不美国”，但他认为对于像NRG这样的公司，“盲目追求发电量”是一条死路。2013年，

NRG以一笔未披露数目的金额收购了需求响应供应商“限能专家”（Energy Curtailment Specialists），后者掌控着2吉瓦的“负瓦特”。

需求响应公司面对的大问题是如何与传统发电厂竞争。后者称PJM这样的市场使得电力系统得不到亟需的投资。比如，位于俄亥俄的第一能源公司（ FirstEnergy）下属的一家燃煤电厂未能赢得任何2017至2018年电力竞标，该公司于是搁置了对该厂的现代化改造计划。这类电厂唯有在电力公司向它们高价购买尖峰期电力时才能存活，而这一花费最终被转嫁给消费者。像第一能源这样的公司希望最高法院能推翻联邦能源管理委员会的一项裁定，让人们无法在电力拍卖会上像交易兆瓦特那样交易负瓦特。这些担忧已经让市场受惊。EnerNOC自5月以来股价跌去一半，该公司把许多不同用户省下的小量电汇集在一起来提供负瓦特。

代表英国的需求响应企业的莎拉·贝尔（Sara Bell）指出了一大市场失灵：同一家企业既发电也供电。她认为这些企业的利益在于在尖峰时段以最高价格售电，而这和用户想要的相反。

无论如何，迪特尔·赫尔姆（Dieter Helm）表示，电力供应的垂直整合模式已经时日无多。他认为，得益于丰沛的太阳能发电，电力市场越来越像边际成本为零的互联网经济。这“削弱了电力批发市场这一概念”。未来的模式将变得远为碎片化。独立发电厂加之新进者已经在“变革售电和用电的方式”；新技术将让21世纪的模式变得甚至更为不同。“难怪许多过去的电力巨头日子那么难过了。”他说。

不再那么有用

分散又断续的发电、日益廉价的蓄电，以及越来越智能化的用电一同来袭，电力公司祸不单行，尤其那些欧洲的企业，咨询公司IHS的爱德华·萨拉·德·维德伦纳（Eduard Sala de Vedruna）说。它们无法摆脱维护电网和满足尖峰需求的成本，却又没法让客户能够恰当地为此买单。它们造价高昂的发电产能规模过度；欧洲在这个冬天的剩余产能达100吉瓦，也就是欧洲国家尖峰负荷总和的19%。其中大部分都被闲置，可能不得不勾销。而与此同时却亟需新投资来维持电网的可靠性，尤其是确保它能应付

新型电流，比如从“生产消费者”那里回流到电网的电。

让众人普遍意想不到的是，用电需求正在下跌，这是因为电力被更高效地使用。政客和监管者冷漠无情，为讨好环保用户，让电力公司为其他人的资产比如屋顶太阳能板的发电付费。同时，进入产业的门槛已被拆除。新的电力企业不需要拥有许多基础设施。它们的竞争优势在于算法、传感器、处理能力和好的营销，这些通常都不是传统电力公司的强项。这些新进者提供的所有服务，包括需求响应、供电、存储和用电效率，都在侵蚀着电力公司的商业模式。

举例而言，在夏威夷，太阳能发电对传统电网的侵蚀最甚。在一个寻常的晴天，消费者屋顶上的太阳能板产出了那么多电，电网完全不需要再从燃油发电厂那里买电，而这些电厂在过去很长时间里都为这个美国的州供电。但在早晨和傍晚，同样的这群消费者要向电网购买额外的电。结果形成这样一条需求曲线：它看起来就像鸭子的侧影，在尾巴和脖颈处上升，中间部分下陷。

该州电力公司面临的问题是它们仍然需要在没有日照时（即使在夏威夷这也会发生）提供可靠的供电。但是受益于“净用电量计费”项目，其用户所要支付的电费可能是零。这意味着电力公司的收入受损，而那些没有装配太阳能发电的用户（通常是较不富裕者）为有太阳能板的用户提供了交叉补助。

由此引发的争议正在全美发酵。该州最大的电力公司“夏威夷电力公司”正试图限制太阳能发电的进一步扩张，告知新客户他们不再有自动生效的权力来把家庭产电卖给电网。许多电力公司请求监管部门同意对用户征收固定月费，而不是让他们能支付浮动的费用。由于完全脱离电网仍需要大量昂贵的存储，这些公司预计客户会愿意支付一笔月费以求在有需求时回头求助于电力公司。

用户理所当然地抵制这类努力。在美国亚利桑那州，电力公司要求征收50美元的固定月费，监管部门允许他们收取5美元。威斯康辛州的电力公司

要求25美元，最后拿到19美元。即使这些不大的数目也可能为电力公司提供一些帮助。但更大的威胁是更大型的用户（以及那些愿意联合力量的小用户）可以自行其事，把发电、蓄电和需求响应结合起来运行自己的电力系统，通常称之为“微电网”。他们可能出于安全考量而和外部世界维持一个单一的高容量燃气或电力连接，但自此向下的供应全由他们自己运营。

一些机构，比如军事基地，可能出于某些原因而想要独立于外部供电部门，但它们的主要动机多为省钱。比如，加州大学圣地亚哥分校（UCSD）在2001年前一直有一家天然气工厂主要用于供暖，后来改造成热电联产工厂，为450栋建筑供应冷暖气，并为这些楼房里的4.5万人供应热水。该校92%的用电来自这个系统，每年节省800万美元。除了这间工厂提供的30兆瓦电力，该校还建造了超过3兆瓦的太阳能发电，以及另外3兆瓦来自天燃气燃料电池的发电。当用电需求低时，多余的电量被用来冷却400万加仑（1500万升）用于调节气温的水——这是该系统调温的最大负荷，或者用来把这些水加热到40摄氏度来助力热水系统。大学是开展这类实验的理想场所。作为自治的公共机构，它们不受繁琐的地方法规约束，也不受公用事业监管部门的监督。它们还对创意感兴趣。

像UCSD这样的机构不仅靠微电网省钱，也靠它推动研究。一台服务器每分钟分析8.4万个数据流。ZBB能源公司已经装配起创新的溴化锌电池；另一家公司正在测试28千瓦的超级电容器，这个存储设备的充放电速度远超任何化学电池，也更为强大。NRG能源公司已经为电动车制造了快速充电器，而一些淘汰的电动车电池又被用来提供额外的廉价存储。而UCSD刚从全球最大的电池制造商比亚迪（BYD）那里购买了2.5兆瓦功率的可循环利用磷酸铁锂电池存储，以进一步压平需求和供给尖峰。

从某种意义上说，UCSD不是当地电力公司圣地亚哥燃气电力（San Diego Gas & Electric）的好客户。其微电网仅有8%的用电从该公司购入。但当别处需求吃紧时它可以提供帮助，通过把空调和其他高耗电设备调小来减少自身用电，把多余的电量输送给电网。

一大批这样的微电网正在尝试新方式，通过更优的设计、数据处理技术和

行为改变来更高效也更便宜地用电。UCSD只是其中之一。国际能源署（IEA）认为，在工业化国家，这一方式能让尖峰期用电需求减少20%。这对消费者和地球都是好事。■

Berkshire Hathaway

Corresponderous

Warren Buffett's 50th annual missive to his company's shareholders obfuscates rather than illuminates

THE annual letters Warren Buffett sends to shareholders of Berkshire Hathaway are among the most influential documents in business. For 50 years they have offered a ruthlessly honest review of the company he runs. In 1999 Mr Buffett reflected on the worst year of his tenure. "Even Inspector Clouseau could find last year's guilty party: your chairman." In his latest letter, released on February 28th, he admits making a "big mistake" by hanging on to shares in Tesco, a troubled British retailer.

The letters have also provided an unfailingly intelligent explanation of the broader principles of investing, stripped bare of mumbo-jumbo. Little wonder that they are read around the world. Guo Guangchang, the boss of Fosun Group, a Chinese conglomerate, is a fan. Jamie Dimon, the boss of JPMorgan Chase, models his own letters on the sage of Omaha's.

Yet Mr Buffett's 50th letter to shareholders is an exception, serving to muddy rather than clarify, for two reasons. First, because it does not tackle the questions that hang over Berkshire's conglomerate model and its durability. Second, because of the uncharacteristic coyness with which Mr Buffett and his partner Charlie Munger —respectively aged 84 and 91—discuss how or when they will give up their jobs.

First, the conglomerate question. Berkshire has gradually shifted from being an investment vehicle that owns traded shares to a collection of wholly- or partly-owned businesses, such as Heinz, a food manufacturer. Listed equities now make up only 22% of Berkshire's assets, down from 72% in 1994. Mr Buffett offers a barnstorming defence of Berkshire as a

conglomerate, which he says is sprawling, "and constantly trying to sprawl further." It buys businesses to hold on to them for ever, avoids getting involved in weak or hard-to-understand companies, gives managers autonomy, ignores the advice of investment bankers and keeps central overheads lower than a limbo stick. Berkshire's head office employs just 24 people.

But the letter offers little analysis on how much of Berkshire's success is due to Mr Buffett rather than its business model. He makes "all major capital-allocation decisions", according to the statutory annual report. The culture that keeps managers happy surely owes a lot to him, as does Berkshire's reputation as a fine custodian, which is one reason why family-run firms like selling out to it. Mr Munger, who writes his own letter, insists that there is a "Berkshire system" that will endure his and his boss's eventual departure, but he posits rather than proves this.

Mr Buffett used to argue that Berkshire's book value per share, rather than its share price, was a good proxy for its long-term worth. But the group's book value has stopped outperforming the broader stockmarket—in fact it has underperformed it in five of the past six years (see chart). So now Mr Buffett has begun to argue that book value is no longer such a good measure, and to give greater prominence to Berkshire's share price. This sort of goalpost-moving is a habit of lesser conglomerates than Berkshire, and is hardly a promising sign.

As for the succession question, the message is cryptic. In his letter Mr Buffett says that "I believe we now have the right person to succeed me," but declines to specify who that is. Mr Munger's letter is less vague than that message but not entirely consistent with it. He mentions two individuals, Ajit Jain (who runs the group's main insurance business) and Greg Abel (who is in charge of its energy business), who he says are "world-class" managers.

Despite his stated confidence in the next generation, Mr Buffett seems insecure about their likely performance. His letter all but pre-commits his successor to a fixed strategy, stating that no dividend or buy-backs are likely to occur for 10-20 years. He is keen for his son, Howard, to take over eventually as non-executive chairman, to act as a safeguard in case "the wrong chief executive should ever be employed". Mr Buffett owns about 34% of Berkshire's voting rights, but he has also pledged to give away much of his wealth—so it is unclear how much influence the family will have in the long run.

Berkshire has always been an unconventional firm, from its early investments in the unfashionable area of insurance, to its takeover of Burlington Northern Santa Fe, a railway operator, during the 2009 slump, and its unshakable confidence in America, which receives 90% of its capital investment and where it says "the mother lode of opportunities" lies. Berkshire is worth $360 billion and is America's fourth most valuable firm—so perhaps it has earned the right to do as it pleases. Yet judged by the fine standard of its predecessors, Mr Buffett's 50th letter to shareholders, like Mr Munger's, leaves them with more questions than answers. ■

伯克希尔哈撒韦公司

含糊其辞的长信

巴菲特的第50封致股东公开信引发困惑多过阐明

巴菲特致伯克希尔哈撒韦公司股东的年度公开信是商界最具影响力的文件之一。50年来它们对他运营的这家公司做了极为坦诚的审视。1999年巴菲特反思了其任期中最糟糕的一年。“即使糊涂大侦探克鲁索也能抓出去年的罪人：你们的董事长（我本人）。”在他于2月28日发布的最新一封公开信中，他承认自己犯下“大错”：没有及时卖掉陷入困境的英国零售商特易购（Tesco）的股票。

这些公开信也解释了投资的宽泛原则，一贯睿智而毫无繁冗晦涩的空话。难怪它们在全世界广为传阅。复星集团的老板郭广昌就是其粉丝。摩根大通的老板杰米·戴蒙（Jamie Dimon）给投资者的信也模仿了这位“奥马哈的圣人”的手笔。

但巴菲特的第50封信却是个例外，它意在混淆而非澄清，原因有二。首先，它没有处理笼罩于伯克希尔企业集团模式和可持续性之上的疑问。其次，巴菲特和其搭档查理·芒格（Charlie Munger）在谈及两人将如何及何时退位时一反常态地吞吞吐吐。巴菲特今年已84岁，芒格91岁。

首先，企业集团的问题。伯克希尔已逐渐从持有流通股份的投资平台转变为全资或部分控股的企业集合，如食品制造商亨氏就是其旗下企业之一。上市公司股权如今只占伯克希尔资产的22%，而1994年这一比例为72%。巴菲特热切维护伯克希尔的企业集团身份，称它正在扩张，“并且不断地试图进一步扩张”。该集团并购各种企业并坚持永久拥有它们，它避开那些成长乏力或叫人看不明白的公司，给予主管自治权，无视投资银行家的建议，维持极低的中央管理开支。伯克希尔总部办公室只有24名雇员。

但是，对于伯克希尔的成功在多大程度上归功于巴菲特本人而非其商业模式，这封信并未提供多少分析。根据这份法定的年度报告，巴菲特做出

“所有重大的资本配置决策”。让主管们高兴的文化当然要极大地归功于他，此外伯克希尔作为优秀监护人的声名也是一样，而后者是家族企业喜欢被其收购的原因之一。自己也写了一封信的芒格坚称存在一个“伯克希尔体系”，能够承受住他和巴菲特最终离开，但他只是如此断言，而没有提供论证。

巴菲特过去曾称，伯克希尔的每股账面价值而非股价是衡量其长期价值的好指标。但该集团在账面价值上的表现已经不再优于更广泛的股市，实际上过去六年中有五年都不如后者（见图表）。所以，现在巴菲特开始辩称账面价值已经不再是那么好的衡量指标，而改为重视集团股价了。这种人为改变规则是比伯克希尔更小的企业集团才有的习惯，它也不是什么好兆头。

而对于继任人的问题，其释出的信息是神秘含混的。巴菲特在信中说“我相信我们现在有了接替我的恰当人选”，但未明言此人是谁。芒格的信不至于同样含糊，但信息与此不全然一致。他提到了两个人：阿吉特·贾因（Ajit Jain，管理集团的主要保险业务）和格雷格·阿贝尔（Greg Abel，主管集团能源业务）。他称两人为“世界一流”的主管。

尽管巴菲特表达了对公司下一代管理人的信心，他对他们可能的表现似乎并无把握。他的信几乎预先认定其继任人会使用固定策略，他说没有哪种派息或股份回购可能持续一二十年。他很希望自己的儿子霍华德（Howard）最终能够接任非执行董事长，扮演保卫人的角色，以防“公司在聘用执行总监时选错了人”。巴菲特持有伯克希尔约34%的表决权，但他也已誓言捐出大部分身家，因此长期而言巴菲特家族会拥有多大影响力尚不明朗。

伯克希尔从来都是一家非同寻常的公司，从它最初投资于并不时髦的保险领域，到2009年经济衰退期间收购伯灵顿北方圣太菲铁路运输公司（BNSF），还有它对美国从不动摇的信心——其90%的资本投资都在美国，并称美国是“机遇的主矿”所在。伯克希尔市值3600亿美元，是美国市值第四高的企业，因此它可能有资本随心所欲行事。但是，以过去那些公

开信的优质标准来衡量，巴菲特的第50封信就和芒格的信一样，留给股东们的疑问比答案多。■

Schumpeter

Authorpreneurship

To succeed these days, authors must be more businesslike than ever

THE mystery is worth a book in itself. How could a hitherto unknown novel by Harper Lee, writer of "To Kill a Mockingbird", remain hidden for 60 years, and why was it not published before? For all the swirling questions, there is one certainty. The book will become a blockbuster without Ms Lee so much as signing a copy. If only every author could be so lucky.

Standing out as a book writer today requires more than a bright idea and limpid prose. Authors need to become businesspeople as well, thinking strategically about their brand, and marketing themselves and their products. There is more competition for readers' and reviewers' attention, and fewer bookshops to provide a showcase for new titles. In 2013 some 1.4m print books were published in America, over five times as many as a decade earlier. Publishers are increasingly focusing their efforts on a few titles they think will make a splash, neglecting less well-known authors and less popular themes.

Many authors dream of a happy ending in which, having delivered their *magnum opus*, they sit back and enjoy an endless stream of royalties. But these days, writing a book is just a prologue to more work. Even the most successful writers need to invest large amounts of time and resources in promoting themselves. Authors mostly used to rely on public-relations staff provided by the publishing house. Now, wise writers hire their own publicists, whether they are unknowns just starting out in the business or stars such as J.K. Rowling of "Harry Potter" fame.

Authors must court an expanding variety of "influencers"—people whose opinions can determine a book's success. Once a select group of newspaper

reviewers were the principal arbiters of literary taste. Now, as the amount of newsprint devoted to reviews keeps shrinking, a host of bloggers and social-media pundits fill the gap. The most important are the celebrity endorsers. Oprah Winfrey used to help books soar up the charts by discussing them on her television show. More recently Mark Zuckerberg of Facebook has become an important endorser. Steven Pinker, a psychologist, enjoyed a "Zuckerberg bump" in sales of his book, "The Better Angels of Our Nature", after the social network's boss told his online followers he was reading it.

Prizes like the Pulitzer and Man Booker may send sales as high as a librarian's neckline, but are notoriously hard to win. So are Hollywood film deals. Entrepreneurial authors find it more effective to devote themselves to a more achievable aim: getting onto the bestseller lists. The secret of such lists, the most prominent of which are those in the *New York Times*, is that they do not measure total sales, but their velocity. Books that fly off the shelves in their first week make the lists, and that in turn boosts their subsequent sales. Pre-orders of books all count toward the first week's sales figures, so canny authors try to get people to buy copies in advance of publication. Eric Ries, a lecturer on entrepreneurship and innovation, went on a "pre-book" book tour to drum up interest before his work, "The Lean Startup", even had a firm name, and started selling it online more than a year in advance of its publication. It worked. The book's cover is now able to boast "the *New York Times* bestseller" above the title.

Ruthless authors can go even further. The *Times* compiles its lists by tracking sales at a few thousand shops, wholesalers and online retailers. It is not hard for writers to find out which outlets feed their numbers into the rankings; indeed, there are firms that provide such information, for a fee. Wordsmiths can then route their book tours accordingly, and encourage buyers to place orders at those shops. Another way of working the system is to release a book in a quiet period—such as this month—when there is less

competition for a place on the bestseller lists.

It is easier than it used to be to get onto these lists. Last year the *Times* added 12 new bestseller categories, including travel, humour and spirituality. It has also expanded its main lists, to 20 books, which gives more authors a shot at making the charts. Shrewd authors have realised that "bestseller" is a relative term: in some months and some categories they can make the bottom of a list by selling merely a few thousand copies.

Authors, like other entrepreneurs, should not let failure get to them. If they fail to make a *Times* bestseller list, they can always try for another one, such as Amazon's. Cheap e-books can shoot up the website's real-time lists, which is how many self-published authors have gained attention. Their moment of glory may have lasted a mere few seconds, but no one needs to know that.

Chapter and purse

The open secret of publishing is that very few authors can live by books alone. Even some of the most successful ones make most of their money from public speaking, consulting or teaching, and use the publicity gained by their books to justify higher fees. Take Chris Anderson, an author (and former journalist at *The Economist*), who is paid tens of thousands of dollars for each lecture; or Alain de Botton, a writer on philosophy, whose profile brings paying customers to his School of Life. Last month Simon & Schuster, a publisher, announced it would sell online video courses led by some of its authors. Things are more difficult for fiction writers: the organisers of conferences and other events pay good speaking fees to non-fiction writers with a bit of name recognition, but not to the average novelist.

Authors are becoming more like pop stars, who used to make most of their money selling albums but who now use their recordings as promotional

tools, earning a living mainly from concerts. The trouble with many budding writers is that they are not cut out for this new world. They are often introverts, preferring solitude to salesmanship. Readers these days want to get to know the creators of the books they buy. Diffident authors may feel uncomfortable with getting so close to their fans. But only the likes of Ms Lee can afford to stay mysterious. ■

熊彼特

善贾文人

如今要成功，作家必须比以往更具商业精神

下面这个谜本身就值得写成一本书。《杀死一只知更鸟》的作者、小说家哈珀·李（Harper Lee）的另一本小说怎么能封藏60年，至今无人知晓？为什么之前一直没有得到出版？虽有谜团种种，但有一点是肯定的。即使李不签名售书，这本书也会畅销。要是每位作家都这么幸运就好了。

如今要从众多作家中脱颖而出，文如泉涌妙笔生花还远远不够。作家要像商人一样，对自身品牌有战略性思考，还要会推销自己与作品。吸引读者和书评家注意力的竞争愈发激烈，而提供新书上架的书店却日见稀少。2013年，美国出版的图书约有140万册，是十年前的5倍多。出版商把精力更加集中在他们认定会引起轰动的少数几本书上，而忽略那些不甚出名的作者以及不够风靡的主题。

许多作家都梦想有个大好结局，代表作一经推出，他们就能坐享版税收入滚滚而来。但是如今，写出一本书只能算是开了个头，大量工作还在后面。即使最成功的作家也需要投入大量时间和资源来推销自己。作家过去主要依靠出版社提供的公关人员。现在，无论是刚出道的无名之辈，还是像《哈利·波特》的作者罗琳这样声名显赫的明星，聪明的作家都雇有自己的宣传团队。

作家必须取悦越来越多样化的“影响者”，这些人的观点能决定书的成败。曾几何时，少数精英评论员就是文学品味的主要仲裁人。而现在，随着报纸用于评论的篇幅不断缩小，一批博主和社交媒体达人填补了这个空白。最重要的是名人的推荐。奥普拉·温弗瑞（Oprah Winfrey）曾通过在自己电视节目中讨论某本书来帮助提升其榜单排名。最近，Facebook的马克·扎克伯格成了重要推荐人。这位社交网络老板告诉在线追随者他正在读心理学家史蒂芬·平克（Steven Pinker）的《人性中的善良天使》（The Better Angels of Our Nature），之后该书的销量迎来了一次“扎克伯格飙

升”。

像普利策奖和布克奖（Man Booker）这样的奖项可能会推动销量蹿升，但是众所周知，得奖非常困难。拿到好莱坞电影合同也同样可望不可及。富于企业家精神的作家们发现致力于更易达成的目标更加有效：那就是挤进畅销书榜，其中《纽约时报》畅销书排行榜最为著名。这些榜单有个秘密，它们不统计图书总销量，而统计销售速度。那些上市第一周即被抢购一空的图书会上榜，而榜上有名反过来又提升随后的销量。新书预售均计入第一周的销售数字，因此，精明的作家会设法让人们在出版前就预先购买。企业家精神和创新课程的讲师埃里克·莱斯（Eric Ries）甚至在其作品《精益创业》（The Lean Startup）书名尚未确定时就进行了一次新书预售推介会以引起注意，并在出版前一年多就开始在线售书。这样做奏效了。这本书如今能在封面书名上方印上“《纽约时报》畅销书”的字样。

不择手段的作家更是变本加厉。《纽约时报》通过跟踪几千家书店、批发商和在线零售商的销量来整理畅销书榜。作家想了解销售量数据来自哪里并非难事；实际上，有公司会收费提供这类信息。作者可以接着相应地安排签书会路线，并鼓励读者在那些书店下订单。钻系统空子的另一个方法是在淡季出书，比如说这个月（二月），这时闯进畅销书榜要面临的竞争比较小。

如今上榜要比以前容易些。去年，《纽约时报》新增了12个畅销书类别，包括旅游、幽默和精神生活等。它还把主榜单扩大到20本书，给更多作家上榜的机会。精于盘算的作者意识到“畅销书”只是相对而言：在某些月份或某些类别里，他们只需售出几千本书即可跻身榜末。

与其他企业家一样，作家不应因失败而气馁。如果不能登上《纽约时报》畅销书单，他们总能努力挤进其他榜单，例如亚马逊的榜单。廉价电子书在亚马逊实时榜单上的排名可能迅速攀升，许多自出版的作家都是这样受到关注。他们的光辉时刻可能只持续几秒钟，但没人需要知道这个。

一边写书，一边赚钱

出版业公开的秘密就是，很少作家能光靠写书为生。即便是一些最成功的作家，他们的收入也大部分来自公众演讲、咨询或教学，他们还利用作品带来的关注度名正言顺地提高收费。比如：作家（也是《经济学人》前记者）克里斯·安德森（Chris Anderson）一场演讲的收入就有数万美元；哲学作家阿兰·德波顿（Alain de Botton）的履历引来客户掏钱就读他的“人生学校”（School of Life）。出版商西蒙与舒斯特（Simon & Schuster）上月宣布即将推出由旗下作家主讲的在线视频课程。对小说家而言，事情更加困难些：会议和其他活动的组织者会支付可观的演讲出场费给小有名气的非小说类作家，却不付给一般的小说家。

作家越来越像流行歌星，歌星过去主要靠卖唱片赚钱，但现在，他们把唱片作为推销工具，主要靠演唱会谋生。许多崭露头角的作家的问题是，他们不具备开拓这个新领域的才能。他们往往性格内向，喜欢独处而不善营销。现在的读者想要了解他们所购书籍的创作者。与粉丝如此近距离接触，羞怯的作家或许会感到不自在。但是，也只有李这样的作家才有底气能一直保持神秘。 ■

Power distribution

Grid unlocked

American utilities mimic the tech industry to make systems more resilient

AMERICA'S electricity grid is a mind-boggling mess. For one thing, it is two large and three small grids, rolled into one. Two types of organisation, independent system operators and regional transmission bodies, control their slices, which may cover several states. Each state has its own utility laws. Then there are eight regional reliability councils that work with the North American Electric Reliability Corporation, which is overseen by the Federal Energy Regulatory Commission. The two break down the grid into different, overlapping regions.

Nobody knows the true state of the national grid until something goes badly wrong, as it did in October 2012 when Hurricane Sandy left almost 8m people powerless, some for weeks. The number of big outages, defined as those affecting more than 50,000 people, has more than doubled in the past ten years.

America's power industry talks about creating a "smart grid", a digitally connected network, automatically monitored and balanced, to solve the problems. This would involve individual utilities—the country has over 3,000—putting in modern control systems and installing "smart meters" to track consumption. This helps to manage demand, improves efficiency and enables renewables to connect to the grid. But it has little effect on the grid's overall ability to handle weather-related onslaughts that hit wide areas or a big cyber-attack.

Microgrids, with their own electricity-generating capacity, are a better bet. Most of these local grids are operated by private organisations such as military bases, industrial plants and universities, which need more

dependable power than the national grid can offer (see chart). America's biggest such microgrid powers 150 buildings at the University of Texas at Austin with almost complete reliability.

Bringing microgrids to the masses is harder. Capital costs are high. So some utilities, with a nod to the trend in the computer industry to offer software as a service, now want to provide customers with microgrids as a service.

Central Hudson Gas & Electric has 300,000 customers in New York state. It plans to build, own and operate such systems in areas that are remote or have facilities that need reliable power. In return, customers will pay an extra fee on their bill. Taking another cue from the tech industry, the utility is also building a mesh network to control its systems. These can still communicate even if one or more individual connections fail.

Regulators in states from California to Connecticut are nudging their utilities in the same direction. In Maryland a state taskforce recently recommended that utilities be permitted to own and operate "public purpose" microgrids that serve places with high reliability needs, such as hospitals. The state will offer financial incentives and eventually wants to see independent companies run them too.

Big Maryland utilities such as Pepco and Baltimore Gas and Electric are showing interest. The last thing they want is other operators grabbing revenues the utilities view as theirs by regulatory right. They also smell higher profits. Microgrids offer utilities the best chance to recapture sales they lose to customers who hitherto had no choice but to build and run their own facilities. Through economies of scale they might offer customers a cheaper way to break free from America's greying grid. ■

供电

破解电网

美国的电力公司模仿技术行业，让供电系统变得更强韧

美国的电网混乱得令人难以置信。首先，它是由两个大电网和三个小电网合并而成。两类组织——独立系统运营商和地区输电机构——控制着各自的份额，每家可能覆盖几个州。每个州有自己的公用事业法规。然后是八个地区可靠性委员会，它们和联邦能源监管委员会（Federal Energy Regulatory Commission）监督下的北美电力可靠性公司（North American Electric Reliability Corporation）协同运作。后两者将电网划分成不同的、部分重叠的区域。

无人知道全国电网的真实状态，直至出现严重问题，比如2012年10月飓风桑迪过境后近800万人断电，部分人断电数周。影响逾五万人的大规模断电次数在过去10年中增加了一倍多。

美国的电力产业探讨创建“智能电网”。这是一个数字化连接的网络，会自动监测和平衡以解决问题。它需要单个的发电企业——全国有三千多家——铺设现代控制系统并装设“智能电表”来监测用电量。这有助于管理需求、提升效率，以及让可再生能源得以并网供电。不过，它无助于提升电网应对覆盖大范围地区的气候灾害或重大黑客袭击的整体能力。

自身带发电能力的微型电网有更好的发展前景。大部分这类地方性电网由私人机构运作，比如军事基地、工厂和大学，它们需要国家电网无法提供的更可靠的电力（见图）。美国这类微型电网中的最大户为德州大学奥斯汀分校的150栋楼房供电，有几乎百分之百的可靠性。

把微型电网带给普罗大众则更为困难。投资成本很高。因此，一些电力公司认同计算机行业软件即服务的趋势，想把微型电网作为一种服务提供给用户。

中央哈得逊燃气电力公司（Central Hudson Gas & Electric）在纽约州拥有30万用户。它计划在偏远或建有需要可靠供电设施的地区建造、拥有并运作这类系统。而用户将为此支付额外费用。该公司还从技术行业汲取了另一个灵感，正在建造一个网状网络来控制其系统。这些系统在出现一处或更多处单个连接故障时仍能通讯。

从加利福尼亚到康涅狄格，多个州的监管部门正在推动电力企业向这个方向发展。在马里兰州，一个州特别工作组最近建议，允许电力公司拥有及运作“公共用途”微型电网，服务那些有高度可靠性需求的场所比如医院。该州会提供财政激励，希望最终看到独立企业也运营这类电网。

马里兰的大型电力企业比如Pepco和巴尔的摩燃气电力公司（Baltimore Gas and Electric）正显现出兴趣。他们最不想看到的事就是被其他运营商抢走自己的收入，这些收入在他们看来是监管法规赋予他们的权利。他们也嗅到了更高的利润。微型电网为电力企业提供了最佳机会，让他们可以从那些迄今除了建设、运营自己的发电设备别无选择的用户手中重新获得销售额。有了规模经济，他们可能会为用户提供更便宜的途径来摆脱美国日益老化的电网。■

Schumpeter

On the cards

Why the business card is thriving in the electronic age

THE details may vary. Americans sling their business cards casually across a table; the Japanese make the exchange of cards as elaborate as a tea ceremony. Some cards are discreet. Guangbiao Chen, a Chinese tycoon, crams his with titles such as “China earthquake rescue hero”, “Most prominent philanthropist of China”, “China’s foremost environmental preservation demolition expert” and, in case you didn’t get the message, “Most influential person of China”. But the swapping of business cards is as close to a universal ritual as you can find in the corporate world.

Business cards have been around a long time in one form or another. The Chinese invented calling cards in the 15th century to give people notice that they intended to visit. European merchants invented trade cards in the 17th century to act as miniature advertisements. They can provoke strong emotions. Nothing will provoke more discussion at a board meeting than the design of the company’s business cards, says a veteran director. In Bret Easton Ellis’s novel, “American Psycho”, the serial-killer antihero tries to impress some fellow masters of the universe with his new business card. He is crestfallen when they all whip out equally fancy ones—and aghast when one produces an absent colleague’s card, which is on thicker paper and has a watermark.

Lots of companies try to turn their cards into miniature plugs for their products. Employees at Lego give out miniature plastic figures with their contact details stamped on them. McDonald’s business cards are shaped like a portion of fries. Bon Vivant, a Brazilian cheesemonger, uses a miniature cheese-grater as its card. A Canadian divorce lawyer once gave out cards that can be torn in two—one half for each of the feuding spouses.

Such gimmicks can quickly pall—or grate, in the case of Bon Vivant's cards. For techno-utopians, they just go to show that the physical business card is in its death throes. After all, why bother exchanging bits of thick paper at all when you can simply swap electronic versions by smartphone?

However, one can just as well argue the opposite: that business cards are here to stay, and in a blizzard of meetings and correspondence, it is more important than ever that your card stands out. Attempts to reinvent business cards for the digital age have got nowhere. Even at the trendiest of Silicon Valley tech gatherings, people still greet each other by handing out little rectangles made from dead trees rather than tapping their phones together. Facebook's boss, Mark Zuckerberg, who briefly had a business card printed with "I'm CEO, bitch", now hands out a sensible, grown-up version.

That business cards are thriving in a digital age is a forceful reminder that there is much about business that is timeless. Take, for instance, the eternal and inescapable question of whether you can trust someone. The number of things that machines can do better than humans grows by the day. But they cannot look people in the eye and decide what sort of person they are. And they cannot transform acquaintanceships into relationships. A good deal of business life will always be about building social bonds—having dinner with people, playing sport with them, even getting drunk with them—and the more that machines take over the quantitative stuff the more human beings will have to focus on the touchy-feely.

The rapid advance of both globalisation and virtualisation means that this trust-building process is becoming ever more demanding. Managers have to work harder at establishing trust with people from different cultures: chief executives of global organisations routinely spend three out of every four weeks travelling. They also have to get better at using personal meetings to reinforce bonds that were first formed over the phone or

internet.

Here, business cards are doubly useful. They can be a quick way of establishing connections, particularly in Asia, where they are something of an obsession. The Chinese are following the Japanese in treating them as semi-sacred objects. Some businessmen hand out 24-carat gold cards. Nursery-school children sometimes carry cards not only with their own contact details, but also with the job descriptions of their parents and even grandparents.

Cards can also act as a physical reminder that you have actually met someone rather than just Googled them. Rifling through piles of different cards helps to summon up memories of meetings in ways that simply looking through uniform electronic lists never would. They can even raise a smile: David Cheesewright, the boss of Walmart's international division, hands out miniature cards made of recycled paper and emblazoned with the name "Dave", presumably in an attempt to persuade people that, in spirit at least, Walmart is just like your friendly corner shop.

> *Don't you know who I am?*

Business cards are also proof of a second timeless principle—that hierarchy still matters. Management gurus such as Gary Hamel of the London Business School preach the virtues of flatter management structures. Firms like Zappos, an online shoe-shop, try to run themselves as a collegial "holacracy". But business cards tell a different story: that someone's job title is an essential part of his identity (even Mr Cheesewright's jokey card leaves you in no doubt about his importance). Exchanging business cards is not just a way of sparking a conversation. It is a way of placing people correctly in the pecking-order without the embarrassment of asking them their formal title. As "wearables" go, this is a killer app.

The business world is obsessed with the notion of disruptive innovation.

But there are lots of things that do not need to be disrupted or innovated. Your columnist finds paper diaries less fiddly than electronic ones. Having dinner with someone is a better way of getting to know them than Skypeing. And exchanging business cards still seems to be an excellent way to initiate a lasting relationship. The ritual swapping of paper rectangles may be old-fashioned but on it will go. ■

熊彼特

名片一席谈

电子时代，为何名片仍大行其道

细节或不尽相同。美国人会隔着桌子随手把名片丢来丢去；日本人交换名片有如茶道般细致讲究。有些名片谨小慎微。中国富豪陈光标的名片上则堆满头衔，如“中国抗震救灾英雄模范”、“中国最杰出慈善家”、“中国首席环保拆迁专家”，生怕你不懂，还加上“中国最具影响力人士”。但交换名片是你能在商界中找到的最近乎放之四海而皆准的礼仪。

名片由来已久，形式各异。中国人在15世纪创制出“名帖”，知会他人自己将造访。欧洲商人在17世纪发明了“交易卡片”，用作小型广告。名片能激发强烈情感。在董事会会议中引发最多讨论的莫过于公司名片的设计，一名资深董事说道。在布雷特·伊斯顿·埃利斯（Bret Easton Ellis）的小说《美国精神病人》（American Psycho）中，身为连环杀手的反派主角试图用自己的新名片震慑华尔街的精英同行们。当他们都掏出同样花哨的名片时，他如坠谷底，看到有人拿出某位不在场的同事那张带有水印的加厚名片，他更是骇然失色。

许多公司企图把名片变为产品的微型广告。乐高的员工派发的名片是一块印有自己联系方式的塑料小人。麦当劳的名片状如一份薯条。巴西奶酪门店Bon Vivant以微型奶酪刨丝器作为其名片。加拿大一位离婚律师曾派发可一分为二的名片——反目的夫妻双方一人一半。

对这些噱头，大家可能很快便兴头不再，像Bon Vivant那样的刨丝器名片，看着就令人烦心。在科技乌托邦主义者眼中，这一切正昭示着实体名片在垂死挣扎。毕竟，当人们可以简单地用智能手机互换电子名片，何必还要费事交换一张张厚纸片？

然而，我们也完全可以反过来争辩：名片不会消失，在势如暴风雪的大量商务会议和通讯中，一张名片能脱颖而出比以往任何时候都更重要。大家

为数字时代而重塑名片的尝试毫无进展。即使在硅谷最时髦的科技聚会上，人们相互问候时还是派发着一张张木浆制成的长方形小纸片，而非一起点击手机交换资料。 Facebook的老板马克·扎克伯格的名片曾一度印着“婊子，我是CEO”，现在他派发的是不再孩子气的体面版本。

名片在数字时代仍大行其道，这强烈印证着商务往来中有许多东西会永不过时。比如你能否信任某人这一永恒而不可避免的问题。机器能比人类完成得更好的任务一天比一天多，但它们无法看眼识人，也无法把相识变为相交。商务生活的很大一部分都着眼于建立社交关系——与人聚餐，一起运动，甚至一醉方休——而机器越是接手量化领域，人类就越应着重人心人情。

全球化和虚拟化同时快速推进，令这种建立信任的过程变得越来越困难。经理人员必须更努力赢得不同文化背景之人的信任：全球性机构的高管们经常四周有三周在出差。通过电话或网络初识客户和同事后，他们还得更好地利用私人会面的机会加深情谊、强化关系。

在这方面，名片倍加有用。那可能是建立联系的快捷方式，尤其在亚洲，人们乐此不疲。日本人最好此道，中国人也跟风视其为近神圣之物。一些商人散发24K纯金打造的名片。有时候，幼儿园小孩携带的卡片不只写着自己的联系方式，还有父母甚至祖父母的职位详情。

名片也可作为一个实物见证，提醒自己真正遇见过某人，而非仅仅在谷歌上搜索过其信息。翻看一叠叠各色名片有助回忆起当初会面时的情景，这是查看统一式样的电子名片无法比拟的。实体名片甚至会让人会心而笑：沃尔玛国际业务总裁大卫·切斯莱特（David Cheesewright）发出的名片是以再生纸做成的微型卡片，上面印着自己的昵称Dave，这应该是要说服人们，至少在精神上沃尔玛跟那些亲切的街角小店无异。

> *你不知道我是谁？*

名片也证明了另一个永恒原则——等级地位依然重要。像伦敦商学院的加里·哈默尔（Gary Hamel）这样的管理大师鼓吹建立更扁平的管理架构。

网上鞋商Zappos这类公司尝试以同僚式“全体共治”来运营。但名片却透露了另一回事：职位头衔是个人身份的重要部分（切斯莱特先生的名片即便是半带玩笑，也不会让你怀疑他的重要身份）。交换名片能打开话匣子，也不用尴尬询问对方职衔即能准确了解各人地位高下。论“可穿戴设备”，这无疑是个杀手级应用。

商界沉迷于颠覆性创新这一观念。但有许多事情无须颠覆，也无须创新。本专栏作者就觉得纸质日程本比电子的简单好用。与人聚餐会面比在Skype上网聊更能了解对方。而交换名片似乎依然是启动一段持久关系的绝佳方式。互换长方形纸片的礼仪或许老套，但将永续如常。■

Schumpeter

The network effect

Being a good networker pays off—but it requires skill as well as shamelessness

THE purported theme of the World Economic Forum (WEF) changes every year. At this year's gathering, on January 21st-24th, it was "the new global context". Last time, it was "reshaping the world". But the forum's real theme is less ponderous, and more constant: the power of networking. Many people protest that they would rather devote their time to real work than to schmoozing. But the fact that more than 2,500 of the world's busiest people fly out to the small Swiss resort of Davos for the shindig each year is proof that schmoozing gets results. As a veteran of the WEF once put it, "contacts ultimately mean contracts."

Networking is not just for the elites. A study of staff at a range of German workplaces, carried out over three years by Hans-Georg Wolff and Klaus Moser of the University of Erlangen-Nuremberg, found a positive correlation between the amount of effort the workers said they put into building contacts—inside and outside their offices—and their pay rises and career satisfaction. "Networking can be considered an investment that pays off in the future," it concludes. Indeed, Reid Hoffman has become a billionaire by investing in a series of companies that have brought networking to the masses—Friendster, SocialNet and LinkedIn.

How does one make the most of a networking opportunity, whether it is in a charming village in the Swiss Alps or in the conference hall of a soulless hotel next to a motorway? A few people are natural networkers. Bill Clinton is the superman of this world. He wraps people in his psychic embrace, persuading them, momentarily, that they are the most important person in the world to him. A few business leaders are also naturals. For example, Goldman Sachs's boss, Lloyd Blankfein, has a knack of making people feel

he has taken them into his confidence. But most people are more like Hillary than Bill; they have to work at it.

The first principle for would-be networkers is to abandon all shame. Be flagrant in your pursuit of the powerful and the soon-to-be-powerful, and when you have their attention, praise them to the skies. Academic research has found that people's susceptibility to flattery is without limit and beyond satire. In a study published in 1997, B.J. Fogg and Clifford Nass of Stanford University invited people to play a guessing game with a computer, which gave them various types of feedback as they played. Participants who received praise rated both the computer and themselves more highly than those who did not—even those who had been warned beforehand that the machine would compliment them regardless of how well they were doing. Yes, even blatantly insincere, computer-generated flattery works.

But shamelessness needs to be balanced with subtlety. Pretend to disagree with your interlocutor before coming around to his point of view; that gives him a sense of mastery. Discover similar interests or experiences. People are so drawn to those like themselves that they are more likely to marry partners whose first or last names resemble their own. Go out of your way to ask for help. Lending a helping hand allows a powerful person to exercise his power while also burnishing his self-esteem. In his time in the Senate, in 2005-08, Barack Obama asked about a third of his fellow senators for help and advice.

The second principle is that you must have something to say. Success comes from having a well-stocked mind, not just a well-thumbed Rolodex. It is tempting to treat the conference's official topic as a bit of a joke. Wrong. The more seriously you take it, the more you will succeed in your, and the gathering's, true purpose. Go to the main sessions and ask sensible questions. Reward the self-styled "thought leaders" in each session by

adding them to your Twitter "follow" list. But don't get carried away. It is a mistake to lecture people on your own pet subjects, as this columnist has discovered. It is an even bigger mistake to question the shibboleths of the global elite. There is a case to be made that homogeneous organisations can do better than ones with diverse workforces, for example. But don't go there. The aim is to fit in by saying the right things, not to challenge the received wisdom.

The third principle is that you need to work hard at networking. Swot up in advance on the most important people who will be at an event. If you manage to meet them, follow up with an e-mail and a suggestion to meet again. Mukesh Ambani, the boss of Reliance Industries, one of India's largest conglomerates, makes sure that he is briefed on people he is about to meet, and asks them about their interests. Mark Tucker, the boss of AIA, one of Asia's biggest insurers, follows up conversations with detailed e-mails, sent at all times of the day and night. Julia Hobsbawm of Editorial Intelligence, a firm which coaches executives on how to network, says that it is like exercise and dieting. You need to incorporate it into your daily routine.

Brown-nosing ahead

Although successful networkers must be calculating, ruthless and shameless, they do better when they somehow make it all seem spontaneous, accidental even. One trick is to engineer "chance" meetings that get you closer to your prey. If he is a fitness fanatic, for example, be working out in the hotel gym when he arrives for his early-morning session. Another is to make sure the people you socialise with happen to be able to introduce you to people who are useful. One of the best guidebooks on this subject, by Keith Ferrazzi, is called "Never Eat Alone".

The perfect solution is to make networking a fundamental part of your job, perhaps by becoming some sort of ambassador for the company or maybe

even by founding a global network of your own. In 1971 Klaus Schwab was a 32-year-old business professor, who might have spent his life publishing obscure academic articles. But instead Mr Schwab organised a meeting of European executives, which grew into the WEF. It now has an annual budget of $200m, and the bosses of the world's biggest firms pay tens of thousands of dollars each to rub shoulders with him. ■

熊彼特

人脉效应

人脉网络好处多，手腕厚颜不可少

世界经济论坛（WEF）打出的主题每年都不一样。今年1月21日至24日召开的论坛以“新全球格局”为题。去年探讨的则是“重塑世界”。但世界经济论坛真正的主旋律没那么严肃，而且更为永恒：人脉力量。许多人对此表示抵触，称自己宁愿花时间做实事，而不是磨嘴皮套近乎。而事实上，超过2500位全球顶级大忙人每年会抽空飞往瑞士度假胜地达沃斯（Davos）盛大相聚，这足以证明经营人脉有所回报，正如该论坛一位资深与会人士曾说的：“交际最终会带来合同。”

经营人脉并非精英专属。埃尔朗根-纽伦堡大学（University of Erlangen-Nuremberg）的汉斯-格奥尔格·沃尔夫（Hans-Georg Wolff）和克劳斯·莫泽（Klaus Moser）花了三年多时间对德国各类职场员工展开一项研究，结果发现，职员在办公室内外对人脉网络的经营与其收入的提升及职业的满足感成正比。“积累人脉可视为一份投资，收益在未来。”报告如此总结道。的确，雷德·霍夫曼（Reid Hoffman）通过投资Friendster、SocialNet、领英（LinkedIn）这些为大众聚合人脉力量的公司，现已坐拥亿万身家。

无论人脉聚会的地点是在瑞士阿尔卑斯山上的迷人村庄，还是公路旁乏善可陈的酒店会议厅，怎样才能充分利用这样的机会？有些人天生善于笼络人脉。比尔·克林顿（Bill Clinton）是这个领域的超人。他以心念臂膀拥人入怀，让他们觉得那一刻最受其重视。一些商界领袖也是天生的人脉高手。例如，高盛（Goldman Sachs）的老板劳埃德·布兰克费恩（Lloyd Blankfein）就有令人感觉被纳入其心腹圈子的能耐。但大多数人不像克林顿，而像希拉里，必须不断修炼人脉技巧。

踏足人脉圈的第一原则是要舍弃一切羞耻感。明目张胆地追捧拥有权势或权势在望的人士，得到其关注时，把他们捧上天。学术研究发现，人们乐

于被恭维的天性没有上限，且不惧讽刺。1997年发表的一项研究中，斯坦福大学的B·J·福格（B.J. Fogg）和克利福德·纳斯（Clifford Nass）邀请人们玩电脑猜谜游戏，过程中电脑会给参与者各类反馈信息。获称赞的参与者对自己和电脑的评分均高过没获称赞的人——即便是那些在游戏一开始就已经被告知无论表现如何机器都只夸不贬的人，情况也一样。是的，连由电脑生成的这类堂而皇之的假意奉承也能奏效。

但厚颜还需巧腕相平衡。先摆出不同意对方观点的姿态，再慢慢扭转顺从，给予对方征服感。发掘共同兴趣或经历。人们对与自己相像的人有好感，很多人会跟姓名与自己相似的人结婚，往往就是这个道理。刻意求助，给予权势人士施以援手的机会，让其施展能力，满足自尊。奥巴马于2005年至2008年任参议员，在此期间就曾向约三分之一的参议员同僚咨询求助。

第二个原则是言之有物。成功不仅在于勤联络善走动，还得头脑充实。若把世界经济论坛的官方议题视为儿戏，那可是大错特错。你越认真对待议题，就越有机会达成你的（也是论坛的）真正目的。到论坛的主要会场上明智地发问。把每场讨论中那些自诩为“思想领袖”的人物在推特上加以关注，以示欣赏。但别得意忘形。正如本专栏作者所发现的，把自己偏爱的话题拿到会场上长篇大论是不对的。公开质疑世界精英的陈词滥调更是大忌。举例而言，即便你想反驳说员工背景同质化的机构比多元化的机构其实表现更佳，但别真这么说出来。发言的目的在于以中听之言融入其中，不在于挑战定见。

第三个原则是要努力经营人脉。预先研究好参加活动的最重要人士的背景资料。如果成功会面的话，事后要发邮件，提议再见面。印度最大的企业集团之一信实工业公司（Reliance Industries）的老板穆克什·安巴尼（Mukesh Ambani）每次接见宾客前总要确保自己知悉对方背景，交谈时能投其所好。友邦保险是亚洲最大的保险公司之一，老板马克·塔克（Mark Tucker）总会在面谈后继之以详细电邮，无论昼夜，毫不耽搁。训练高管提升人脉技巧的“编辑情报”公司（Editorial Intelligence）的朱莉娅·霍布斯鲍姆（Julia Hobsbawm）表示，这就像锻炼与节食一样，你需

要将其融入到日常工作之中。

> *谄媚先行*

虽说人脉高手必须有心计、够狠心、脸皮厚，但若能显得自然而然，甚至是无心而为，则效果更妙。一个诀窍是策划接近目标人物的“偶然”碰面机会。例如，假若他是健身狂热分子，早上他到酒店健身房晨练的这个时间你也该在那里锻炼。另一点，确保你身边的朋友能把你介绍给有用的人认识。这方面的最佳指南之一是基思·法拉奇（Keith Ferrazzi）所著的《别独自用餐》（Never Eat Alone）。

完美的解决方案是，通过成为公司的某种形象大使或者甚至建立自己的全球人脉网，让经营人脉成为你工作的基本组成部分。1971年，32岁的克劳斯·施瓦布（Klaus Schwab）只是一位商学教授，本来终其一生也就是发表些晦涩难懂的学术文章。但他组织了欧洲的企业高管聚首论道，后来这个会议发展为世界经济论坛。如今论坛每年预算达两亿美元，全球大公司的老板们为与他“擦肩”而遇，一掷千金在所不惜。 ■

European business and the recovery

Green shoots, risk of frost

Companies in the euro zone are finally enjoying the benefits of a tentative recovery, but its continuance is by no means assured

LESS than a year ago most global investors looked at stagnant Europe, shuddered and passed by. Now European share prices are soaring (see chart 1). The euro area's top 50 blue-chips gained almost 18% in the first three months of the year. American mutual funds are yanking their money out of other assets to invest it in European stockmarkets. More cash may be heading the continent's way. In January a net 18% of the global fund managers regularly polled by Bank of America Merrill Lynch chose Europe as the region they would most like to go overweight on in the coming 12 months. In March 63% did so.

In part this newfound enthusiasm for Old World equities simply reflects drearier prospects elsewhere, plus a bet that the quantitative easing belatedly launched last month by the European Central Bank (ECB)—which plans to buy €60 billion ($65 billion) of financial assets a month until September 2016—will raise asset prices in the euro zone as similar programmes did in America and Britain. But it is also a response to signs that the euro zone, long a drag on world growth, is starting to help it.

One cause of the turnaround is the weakness of the euro, which has fallen by 12% against the currencies of the zone's principal external trading partners in the past year. The euro area is a net exporter of goods, and the currency's weakness is helping it to sell more abroad. Another is that the price of crude oil has fallen, even against a weakening euro, cutting firms' energy and raw-material costs and raising consumers' purchasing power (see chart 2). The ECB's bond-buying is pushing already-low borrowing rates even lower. Credit conditions are easing, including for small and

medium-sized firms.

European business activity is increasing at its fastest pace since May 2011, according to Markit's latest composite purchasing-managers' index, with new orders driving growth in manufacturing and services. Retail sales are rising too. Economists are falling over themselves to revise their growth forecasts upward. The region as a whole grew by a mere 0.9% in 2014. The OECD, a rich-country think-tank, now reckons the euro area will grow by 1.4% in 2015 and by 2% in 2016. The ECB and the credit-rating agencies and investment banks think along similar lines. Germany, where real wages are rising, will do most to pull the euro zone out of the mire, but France and Italy, hitherto laggards, are expected to show slightly perkier growth too. Spain's central bank thinks its economy could expand by as much as 2.8% this year.

All of this is helping companies which produce the goods and services that customers buy when they have a little more cash in their wallets, and confidence in the future. Analysts are upgrading earnings estimates for carmakers and their suppliers, technology companies, hotel and leisure groups, media and financial-services firms, with health care and chemicals joining their ranks, says Sharon Bell of Goldman Sachs, an investment bank.

The benefits of this changing mood are not evenly distributed, however. Much depends on size, sector and sales patterns. Start with size. Europe's myriad small firms are still in a wait-and-see mood rather than a go-for-growth one. An index of business conditions compiled by UEAPME, a small firms' lobby group, has been inching upwards since early 2013. Chloé Magnier of CM Economics, a research outfit, explains that bigger firms always benefit first from an uptick in demand; it takes time before they pass orders on to smaller suppliers.

Larger firms are more likely to reap gains from a weaker euro, too. Sanofi, a French drugmaker, reckons foreign-exchange movements added three percentage points to its revenue growth in the fourth quarter of 2014. Though many large European firms hedge their currency exposures to some extent, both by using financial instruments and by moving production to where their customers are, almost all enjoy a boost to their bottom lines from translating foreign-currency earnings back into a weaker home currency.

Sector is the second determinant of success. Among those benefiting from lower oil prices is Continental, a German maker of car tyres and other parts. Its chief financial officer, Wolfgang Schäfer, says cheap fuel has been especially helpful in America, where sales of new cars have soared. In Europe, it has prompted an increase in miles driven, which means more tyres needing replacement. Last year sales of new cars began growing again in the European Union, after falling for six years. The recovery should speed up this year.

Although automotive share prices have risen most vertiginously so far this year of all the Stoxx Europe 600 sectors, the reverse is true for oil and gas stocks. Total, a French oil company, reported sharply lower revenue in the last three months of 2014, for example, and has been busily downsizing since then. Companies that make capital equipment destined for the oil sector are struggling, too.

But such firms are outnumbered by those gaining from the combination of cheap energy and a cheap euro. This is where sales patterns come in. The largest businesses in the euro zone's 19 member countries are among the world's most internationalised. Over three-fifths of the sales of the companies that make up the main stockmarket indices in Germany, France, Italy and Spain are from outside their home markets. They are often prime movers in a global market with little dependence on the European

economy. “Airbus and aeronautics didn’t have a crisis,” says Marwan Lahoud, a senior executive at the aircraft-maker. Indeed, booming demand for planes from emerging Asia and elsewhere has kept its factories, and those of its suppliers, going at full tilt.

Generally, such globalised firms have fared a lot better than ones more dependent on Europe (see chart 3). Better opportunities outside their sluggish domestic economies have encouraged many once-parochial companies to seek new export markets. This is especially visible in Spain. Rafael Doménech, an economist at BBVA, a bank, says it has witnessed “a drastic change in culture”. Spain’s exports grew from the equivalent of 24.4% of GDP at the start of 2009 to 32% by the end of 2014 (in Germany the figure is 45.7%).

A similar realisation has dawned on Italian businesses, says Nino Tronchetti Provera of Ambienta, a private-equity fund. Sales to non-EU countries are growing by around 7% a year, though Italy’s exports are still equivalent to just 29.3% of GDP. Five years ago Elemaster Group, an electronics firm, was almost wholly focused on Europe and made 60% of its revenues in Italy. It brought in a private-equity fund to help it become more international. Today Italy accounts for 35% of sales, the rest of Europe another 35%, and more distant markets the rest. The firm has plants in America, China, India and Tunisia. Revenues rose by 18% last year, to €175m.

Although the prolonged downturn has prompted many European businesses to look farther afield for customers, they typically have not used the crisis as an opportunity to restructure and wring out excess capacity to the extent that American businesses did, says Stefano Aversa of AlixPartners, another consulting outfit. Political and social constraints have prevented large-scale labour-shedding. Partly as a result, profits have been slow to rebound.

Many European manufacturers are continuing to make progress in reducing non-labour costs. Germany's three big carmakers—Volkswagen, Daimler and BMW—are sticking to their cost-cutting targets despite the gathering recovery at home and record sales abroad. They are doing so by relying on a German speciality: making production processes more efficient.

Consolidation, to improve pricing power and profits, is also in the wind and has been for a year or so. The value of mergers and acquisitions with euro-zone companies as their targets is still well below the pre-crisis peak, but it has near-doubled from its low (see chart 4). Some highly fragmented European industries—mobile telecoms and airlines come to mind—are surely prime targets for takeover activity. This week's mammoth bid by Shell, an Anglo-Dutch oil firm, for BG Group may prompt further consolidation among Europe's struggling oil and gas firms.

Non-European buyers are also sniffing around, in part because fears that a Greek exit from the euro might send shock waves across the region seem to have subsided. This week FedEx, an American parcel-delivery firm, launched a €4.4 billion offer for TNT Express, a Dutch rival, saying it wanted to strengthen its presence in Europe. Among Italy's recent spate of bids from abroad, the €7.1 billion Chinese takeover of Pirelli, a tyremaker, stands out.

France's government, however, is still ambiguous about foreign takeovers. It welcomed the investment in PSA Peugeot-Citroën, an ailing carmaker, by a Chinese firm last year. It reluctantly came to terms with an American firm, GE, buying most of Alstom, an energy and transport conglomerate. But it has just stymied an Asian bid for Dailymotion, an online-video firm. And, in another move bound to make foreign investors think twice, it decided this week to spend up to €1.23 billion increasing its stake in Renault, to force the carmaker to implement a new rule granting extra

rights to long-term shareholders.

European firms are themselves beginning to do big deals once more. Merck, a German pharmaceutical company (not to be confused with a similarly named American one), said in September that it would buy Sigma-Aldrich, an American life-sciences firm, for $17 billion. But Marcus Kuhnert, Merck's chief financial officer, insists that a return to pre-crisis exuberance is not on the cards: the aim now is profitable growth, not a spending spree, he says.

For all these promising signs, there are two big concerns. One is that unemployment across the euro zone—11.3% in February, down from 11.8% a year earlier—is not falling more quickly towards its 2002-07 average of 8.6%. If households remain anxious about their prospects, they may be reluctant to start spending properly again.

The second is that business investment is also slow in picking up. There are reasons for this. Capacity utilisation in European industry is still only 80%. With banks still somewhat hesitant to lend, many firms hoard cash in case they need it later. A scheme announced in November by the European Commission president, Jean-Claude Juncker, to mobilise €315 billion of private and public money for investments in infrastructure, energy and other "strategic" areas, is well-intentioned, but the EU's contribution looks too small to prompt businesses to provide their share.

Investment in digital infrastructure has been especially weak. Spending on improving broadband in Europe fell from €106 per person in 2008 to €90 in 2013, while Japan raised its investment to €226 and America to €178, says Business Europe, a pressure group. For Michel Combes, the boss of Alcatel-Lucent, a telecoms-equipment maker, to have underinvested in digital infrastructure is Europe's real weakness. If it misses out on trends like the "internet of things"—embedding miniature computers in everyday objects

and connecting them wirelessly—it "will lag for a very long time".

The big question is not whether the euro-zone economy can grow, given the current, extraordinarily favourable combination of a cheap currency, low oil prices and low financing costs. It is whether that expansion will be self-sustaining by the time the euro and oil prices steady and the ECB's bond-buying stops. Have countries and companies cleaned house sufficiently during the dark days since 2008—liberalising labour and product markets, cutting taxes and red tape, on the one hand, and streamlining corporate structures, processes and costs, on the other?

Klaus Wiener, chief economist at Generali Investments Europe, is among those who believe that a rising tide of higher exports and improving domestic demand will eventually raise all boats, but at very different speeds. Countries that have made their labour markets, in particular, more flexible offer the best chances of success: their ranks include Germany and Spain. Italy has just embarked on serious reform after a decade and a half of stagnation; to many foreigners with cash to spend it is now the bloc's most interesting market, with France a big step behind. Firms that have reduced costs and become more efficient, and expanded into new markets far beyond their home countries, will enjoy the biggest gains. In other words, Europe's recovery will most benefit those businesses and places that have used the crisis to become less European. ■

欧洲企业与复苏

复苏萌芽，霜打之忧

欧元区企业终享复苏之惠，暖流是否持续未成定局

不到一年前，眼见欧洲却步不前的境况，大多数全球投资者会不寒而栗，避之不及。现在，欧洲股市飙升（见图表1）。欧元区排名前50的蓝筹股在今年前三个月内上涨近18%。美国的共同基金纷纷从其他资产中抽出资金投入到欧洲股市中。也许将有更多资金奔向欧洲。今年1月，在美银美林的定期调查中，18%的全球基金经理人选择欧洲作为未来12个月里他们最想侧重投资的区域。到3月，这一数字上升至63%。

对旧世界股市重燃热情，这一方面纯粹反映了其他地区相对黯淡的前景，另一方面则是押注期望上月欧洲央行姗姗来迟的量化宽松政策会推高欧元区的资产价格，就像类似计划在英美推行后那样。欧洲央行计划每月购入600亿欧元（650亿美元）的金融资产，直至2016年9月。同时这种热情也是对欧洲经济复苏迹象的反应，欧元区长久以来一直拖累全球增长，如今开始发挥助力。

转向的原因之一是欧元疲软，过去一年里欧元兑区外主要交易伙伴货币的汇率下跌了12%。欧元区是商品净出口国，本币疲软有助于增加出口。另一原因是，即使考虑欧元贬值的因素，原油价格实际也已下降，这令企业的能源及原材料成本降低，消费者购买力提高（见图表2）。欧洲央行购买债券的行动则令本来就不高的借款利率变得更低。信贷条件变得宽松，对中小企业也是如此。

根据金融数据提供商Markit最新公布的采购经理人综合指数，欧洲商业活动正以自2011年5月以来最快的速度增长，新订单源源不断，驱动制造业和服务业成长。零售业也在增长。经济学家正忙于上调增长预测。2014年欧元区整体增长仅为0.9%。富裕国家智库经合组织（OECD）如今预计欧元区在2015年和2016年的增长率将分别为1.4%和2%。欧洲央行、信用评级机构和投资银行也持类似看法。德国的实际工资正在上涨，它将为欧元

区脱离泥潭做出最大贡献，而一直落后的法国和意大利预期增长也将略为乐观。西班牙央行估计今年该国经济增幅可达2.8%。

消费者钱包里有了些闲钱，对未来也有信心之后，自然会增加消费。对于那些为这些消费者提供产品和服务的企业，宏观经济的改善无疑颇有帮助。分析师正在上调对多个行业的盈利预测，包括汽车制造商及其供应商、科技企业、酒店及休闲服务集团、媒体和金融服务公司，就连医疗及化工业也被纳入其中，投资银行高盛的莎伦·贝尔（Sharon Bell）表示。

氛围向好带来的利益并不是人人均沾。很大程度上要看规模、行业及销售模式。先说规模。欧洲的无数小公司仍采取静待观望的态度，而非进击求成。小企业游说团体UEAPME编制的一项商业环境指数自2013年初起一直缓步爬升。研究机构“CM经济”（CM Economics）的克洛伊·马尼耶（Chloé Magnier）解释道，需求上扬总是最早惠及大公司；需要一些时间，大笔订单才能传递到较小的供应商。

同时，较大型的公司也更可能因欧元贬值而获益。法国制药公司赛诺菲（Sanofi）估计，外汇走势为其2014年第四季度的收入增长增加了三个百分点。欧洲许多大公司都有做某种程度的汇率风险对冲，既有以金融工具对冲，也有把生产转移至客户所在地。把外汇所得换回弱势本国货币，几乎所有这些企业的利润都因此提升。

行业是成功的第二个决定因素。德国的汽车轮胎及零部件制造商大陆集团（Continental）是受益于油价下跌的企业之一。该集团首席财务官沃尔夫冈·舍费尔（Wolfgang Schäfer）表示，廉价燃料的好处在美国尤其明显，新车销售因此飙升。在欧洲，油价下降令汽车行驶里程增加，意味着更多的轮胎需要更换。去年，欧盟内新车销量在连跌六年后开始掉头回升。今年复苏的速度应该还会加快。

今年以来，欧洲斯托克600指数所涵盖的行业中，汽车业股价的升势最为迅猛，与之相对的则是石油及燃气股票的大跌。例如，法国石油企业道达尔公司2014年最后三个月录得的收入锐减，此后一直忙于裁员。向石油行

业供应资本设备的制造商也举步维艰。

但这些公司还是少数，更多企业还是因廉价能源和欧元贬值而获益。这与销售模式有关。欧元区19个成员国里最大的一些企业也是世界上最为国际化的公司。在德国、法国、意大利和西班牙，其主要股指中的企业有五分之三的销售额来自本土之外的市场。这些公司往往是全球市场的推动者，对欧洲经济的依赖度很低。“空客公司和航空业没有危机。”飞机制造商空中客车公司（Airbus）的高管马尔万·拉胡德（Marwan Lahoud）说。的确，亚洲和其他新兴地区对飞机的旺盛需求令空客及其供应商的工厂保持满负荷生产。

总体来说，比起较为依赖欧洲市场的企业，这些全球化公司的表现要好得多（见图表3）。在低迷的本国经济之外还有更好的机遇，这吸引了众多原本固守本土的企业寻求新的出口市场。这种情况在西班牙尤其明显。西班牙对外银行（BBVA）的经济学家拉斐尔·多梅内克（Rafael Doménech）表示，西班牙见证了“文化上的剧变”。2009年初，西班牙出口占GDP比例为24.4%，2014年底时上升至32%（德国的这一数字为45.7%）。

意大利企业也已逐渐明白了这一状况，私募基金Ambienta的尼诺·特朗彻提·普罗维拉（Nino Tronchetti Provera）表示。意大利对非欧盟国家的销售每年约增长7%，但该国出口仍只占GDP的29.3%。五年前，电子企业Elemaster集团几乎完全只着眼于欧洲，60%的营收来自意大利。后来该集团引入一家私募公司帮它拓展国际化经营。今天，意大利市场占其销售的35%，欧洲其他地区占35%，其余份额来自欧洲以外的市场。该公司在美国、中国、印度和突尼斯均设有工厂。去年收入上升18%至1.75亿欧元。

虽然长期低迷的经济促使许多欧洲公司放眼远方寻觅客户，他们通常都没有借此机会进行重组，挤掉过剩产能，不像美国企业那样充分地转危为机，咨询公司AlixPartners的斯特凡诺·阿韦尔萨（Stefano Aversa）表示。政治及社会因素的制约阻碍了大规模裁员。这在一定程度上导致利润

反弹迟缓。

许多欧洲制造商将继续在降低非劳动力成本上取得进展。尽管国内市场逐渐复苏，海外销售破纪录增长，德国三大汽车制造商大众、戴姆勒、宝马仍坚守成本削减目标。要达到这些目标，靠的是一份德国专长：令生产流程更高效。

为提高定价能力和利润，最近一年左右，企业整合也蔚然成风。以欧元区公司为目标的并购交易额仍比经济危机前的高峰时期低得多，但已从低位接近翻倍（见图表4）。欧洲一些高度分散的行业，如移动通讯及航空业，必然成为并购行动的首要目标。4月初，英荷合资的油企壳牌公司对英国天然气集团（BG Group）提出了巨额的收购要约，这可能促使欧洲经营惨淡的油气公司之间做更进一步的整合。

非欧洲买家也在四处寻找机会，这一方面是因为对希腊退出欧元区引发冲击的担忧似乎已经消退。4月初，美国的包裹快递公司联邦快递向荷兰对手TNT快递提出了44亿欧元的收购要约，表示希望加强在欧洲的市场地位。意大利最近一轮的海外买家收购热中，最引人瞩目的要数中国企业以71亿欧元收购轮胎制造公司倍耐力（Pirelli）。

然而，法国政府对外资收购依然态度暧昧。去年，一家中国公司向处境堪忧的汽车制造商标致雪铁龙集团（PSA Peugeot-Citroën）注资，法国政府持欢迎态度。美国GE公司收购能源运输企业集团阿尔斯通（Alstom）的多数股份时，法国政府勉为其难地达成了交易。但最近该国政府却阻挠了亚洲买家对网络视频公司“每日影像”（Dailymotion）的收购。还有另一举措肯定会令海外投资者再三考虑：法国政府4月初宣布将向雷诺集团（Renault）注资以提高持股份额，金额最高达12.3亿欧元，以迫使该汽车制造商执行一条新规则，赋予长期股东额外权利。

欧洲公司本身也开始重启大宗交易。德国制药公司默克（Merck，别和名字相似的美国默沙东公司[Merck & Co]搞混）去年9月宣布将以170亿美元购入美国一家生命科学公司西格玛奥德里奇（Sigma-Aldrich）。但默克的

首席财务官马库斯·库纳特（Marcus Kuhnert）坚称，不会像危机前那般狂热：现在的目标是可盈利的增长，而非大肆挥霍。

一派可喜迹象之下，仍有两大问题。第一，整个欧元区的失业率回落速度不理想。今年2月份失业率为11.3%，仅比去年同期的11.8%略微下降，距2002至2007年平均水平8.6%仍差很远。如果家庭还要担忧未来生计，重启正常消费则可能无从谈起。

第二，企业投资增长速度依然缓慢。这是有原因的。欧洲工业的产能利用率仍只有80%。银行放贷依然谨慎迟疑，因此许多公司会储备现金以防不时之需。欧盟委员会主席让-克洛德·容克（Jean-Claude Juncker）去年11月宣布一项计划，表示将动用3150亿欧元的私人和公共资金投资到基建、能源及其他“战略性”领域。计划固然用心良苦，但欧盟贡献的公共资金份额似乎过小，难以吸引企业参与投资。

欧洲在数字基础设施方面的投资一直相当薄弱。压力团体“商业欧洲”（Business Europe）表示，欧洲用以改善宽带设施的投资从2008年的人均106欧元下跌至2013年的90欧元，而日本和美国的数字则分别上升至226欧元和178欧元。电信设备制造商阿尔卡特朗讯（Alcatel-Lucent）的老板米歇尔·孔布（Michel Combes）认为，数字基建投资不足是欧洲真正的弱点。要是错失“物联网”（在日常物品中植入微型电脑并以无线连接）这样的热潮，欧洲“将在很长时间内落后于人”。

关键问题不在于欧元区经济能否增长，毕竟目前欧元、油价、融资成本均处于低位，构成极为有利的局面。问题在于当欧元和油价走势稳定时，以及欧洲央行停止购买债券后，这番增长是否还可持续？2008年以来的这些黑暗日子里，国家和企业有没彻底地清理整顿？这一方面包括开放劳动力及产品市场、减税、简化手续，另一方面则是精简企业架构、流程及成本。

欧洲忠利投资（Generali Investments Europe）的首席经济学家克劳斯·维纳（Klaus Wiener）相信，出口增长加上国内需求改善的最终结果会是

水涨船高、人人得利，只是快慢不一而已。调整了劳动力市场使其更灵活的国家胜算最高：德国和西班牙属于此类。意大利经历了15年的停滞不前，如今已着手认真改革，成为意欲投资欧洲的外国买家最感兴趣的市场。法国则落后一大步。已降低成本、提高效率，并扩展到远离本国的海外新市场的公司将有最大的收获。换言之，在欧洲经济复苏中，受益最大的将是借危机之际变得不那么依赖欧洲的那些企业和地区。■

Microsoft at middle age

Opening Windows

A once-dominant software giant is determined to prove that life begins again at 40

"WHAT are you on? The 'fuck Windows' strategy?" Back in the late 1990s, when Bill Gates was still Microsoft's boss, any employee who had the temerity to suggest something that could possibly weaken the firm's flagship operating system was sure to earn his wrath. Even after Steve Ballmer took over from Mr Gates in 2000, that remained the incontestable law at the company's headquarters in Redmond, in Washington state. Everything Microsoft did had to strengthen Windows, to make it ever more crushingly dominant. Many of the company's best innovations were killed because of this "strategy tax", as it was known internally.

Today the rules are different in Redmond. The new boss who took over last year, Satya Nadella (pictured, centre, with Mr Gates to the left and Mr Ballmer on the right), recoils when he hears the term "strategy tax" and says he now tells his staff simply to "build stuff that people like". Some of the things he has done would surely have been seen by his two predecessors as "fuck Windows" strategies. Office, the company's popular suite of word-processing, spreadsheet and other applications, now runs on mobile devices that use competing operating systems. The company is embracing free, "open-source" software, which it used to regard as anathema. At an event in San Francisco last October Mr Nadella showed a slide that read: "Microsoft loves Linux". In contrast, Mr Ballmer once called the open-source operating system a "cancer".

As Microsoft celebrates its 40th birthday on April 4th, its executives and shareholders will be looking back wistfully to their company's lost youth. Born in the year that Captain & Tennille topped the American charts with "Love Will Keep Us Together", by its 20s it had leapt ahead of the stumbling

behemoth of information technology, IBM, only to slow in its 30s and be overtaken by its eternal arch-rival, Apple, a company barely a year younger than itself (see charts).

Mr Nadella's formula for reinvigorating Microsoft is to move as quickly and as far as possible away from being a Windows-only company to be a global network of giant data centres that provide a broad range of online services for companies and individuals. So far he has done well in beginning to turn round a supertanker of a company, with 123,000 employees and $87 billion in annual revenues.

Microsoft's transition is being watched by other tech giants, old and new—because they are either going through similarly wrenching changes or worry that they may have to reinvent themselves in the future. Cisco, EMC, Hewlett-Packard, Oracle, IBM and SAP—all these have to navigate the shift from a world where computers lived on people's desks or in companies' basements to one in which number-crunching mostly resides in the "cloud", meaning remote data centres, and in people's hands, in the form of mobile devices.

Amazon, Apple, Facebook, Google and others like them are constantly on guard for the emergence of a new technology "platform" that allows rival businesses to build applications that lure away their customers. That is why the 11-year-old Facebook recently spent $22 billion on WhatsApp, a fast-growing messaging service, and $2 billion on Oculus VR, a maker of virtual-reality headsets.

That Microsoft is just about Windows has always been somewhat of a simplification. A more accurate image is that the operating system was the core of a tight bundle of programs the firm built over the years. After Windows had achieved dominance of desktop personal computers in the 1980s, it was packaged with Office, which became just as ubiquitous. As

high-powered PCs, called servers, became standard equipment in companies' internal data centres, Microsoft repeated the trick: it created a suite of server software, including e-mail systems, databases and all manner of other business applications, that were tightly integrated with Windows. It was this bundling that helped Microsoft overtake IBM as the most valuable tech company in the mid-1990s.

All the programs can be made to work with rival products, but work best together. That boosted Microsoft's business (and got it into antitrust troubles)—but has also been a benefit for customers. Yet as computing is moving into the cloud, this model is breaking down. Software is becoming a service delivered over the internet and mostly based on open standards. "It is easier than it has ever been to use programs from multiple vendors," explains George Gilbert of TechAlpha Partners, a consulting firm. "And the idea of an operating system is much less relevant."

Ironically, Microsoft was among the first software firms to recognise the potential of cloud computing. But its vision was distorted by its obsession with protecting its existing product line. So from 2006, when it began working on Azure, its cloud-computing service, it was mainly an online replication of Microsoft's bundle of proprietary programs. That left open a market for other cloud providers—in particular Amazon—to sell businesses raw computing power, on which they could run whatever mix of programs they wished. Likewise, Microsoft was among the first to see the promise of hand-held computers, as smartphones were once called. But it tried to force users to run Windows on them, rather than developing a new operating system better suited to mobiles, as Apple did.

Before becoming chief executive Mr Nadella had been in charge of Azure, and he revived its flagging fortunes by cutting the price of its cloud services and letting customers use their own choice of software. Since assuming the top job, besides making Office available on Apple and Android mobiles, he

has moved it towards a "freemium" model: for personal users (though not businesses) the basic version costs nothing, but you pay for extras. Under Mr Nadella the company is showing flexibility in other ways, such as by cutting deals with rivals. For instance, users of the online version of Office, called Office 365, can now save their files on the servers of Box, another cloud-storage firm. "They used to treat us like arch-enemies," says Aaron Levie, Box's boss.

Mr Nadella is also seeking to rejuvenate Microsoft's internal culture, to make it more like the startup it was back in the days of flared trousers and outsized lapels. Far from having them stamped on, Microsofties are now encouraged to test their "wild ideas" on a public website called Garage. It rushes early versions of products out of the door, so customers can try them out, and help spot any bugs. Microsoft has also bought some hot young startups. One such is Mojang, the maker of Minecraft, a popular online game. Another is Acompli, whose e-mail app has been renamed Outlook and is now Microsoft's e-mail service for Apple and Android mobiles.

Yet Mr Nadella's biggest achievement so far is that he has given Microsoft a coherent purpose in life, as it enters its fifth decade. He sums it up in two mottos. One is "mobile first, cloud first": since these are where the growth is going to come from, all new products need to be developed for them. The other is "platforms and productivity". Windows is still an important platform, and Office still an important set of productivity tools. But Azure is an increasingly significant, and more flexible, platform. And among a new range of productivity applications Microsoft offers is Cortana, an intelligent personal assistant much like Apple's Siri and Google Now. It already recognises natural language, answers questions and issues reminders; in future it will increasingly anticipate what a user needs, for instance by pulling together the documents for a meeting.

Talent competition

Although industry observers mostly praise what Mr Nadella has done so far, they have several nagging questions. One is about talent. "Microsoft has lost a lot of great people," explains Marco Iansiti of Harvard Business School. Although it has also gained fresh blood by buying startups, it will have to work hard to keep up in the battle to hire the best programmers. Another problem may be the quality of its software. In the past Microsoft has worked hard to prove to commercial customers that its programs are reliable, says Rob Helm of Directions on Microsoft, a research firm. As it tries to function like a startup, releasing products early and often, they may become less "trustworthy", to quote another of Microsoft's mottos.

What should happen to Microsoft's other businesses is also an open question. Analysts have called for them to be hived off. Bing, the firm's search engine, seems safe: after losing billions, it will soon be profitable; and it provides important data inputs for Cortana and other services. The Xbox, a gaming console, is recovering from misguided attempts to turn it into a hub for the digital living room. But Nokia's handset business, which Microsoft bought last year to save the last big maker of Windows-powered phones, now looks like a mistake after the changes in the firm's strategy.

The biggest question is about Microsoft's finances. As people and businesses buy ever fewer, and cheaper, PCs, the revenues from Windows are falling. In the quarter to December 31st they were down by 13% on a year earlier. Sales in the commercial cloud business, including Office 365, more than doubled year-on-year, to reach an annual run-rate of $5.5 billion. But this is only a small fraction of total revenues, and the division is still thought to be losing money. Furthermore, says Rick Sherlund of Nomura, an investment bank, it is unclear how newer applications, such as Cortana, will make a living. "The business models have yet to be invented."

They are unlikely to be as much of a cash cow as Windows and Office,

which still generate 44% of revenues and 58% of profits. The gross margin of classic Office is 90%; that of Office 365 is currently only 53%. In other cloud businesses profits will be elusive, given the intense competition from Amazon, Google and increasingly IBM. Citigroup, another bank, recently estimated that Amazon's margin in the cloud was between -2% and -3%. In other businesses Amazon has shown a high tolerance for losses as it strives for growth.

As other tech firms, young and not so young, seek to learn from Microsoft's middle-aged decline, the main lesson they will draw is that it was too protective, for too long, of its main franchise, which led it to ignore threats that eventually became unignorable. Mr Gates was most to blame for this; Mr Ballmer was adept at continuing to milk the Windows cash-cow for longer than might have been expected, but he too was slow to respond to the rising threat from the moves to mobile and the cloud. Now Mr Nadella is having to move rapidly to dispel the impression, among customers, analysts and tech talent, that his company's better days are behind it. ■

微软不惑

打开视窗

曾独领风骚的软件巨头决心证明，四十不惑仍可重新开始

“你怎么回事？要让Windows操蛋吗？”上世纪90年代末，比尔·盖茨仍是微软老板之时，哪个员工要胆敢提出可能削弱公司旗舰操作系统地位的设想，一定会遭到他怒言相向。即使2000年史蒂夫·鲍尔默（Steve Ballmer）接替盖茨后，这依然是微软在华盛顿州雷德蒙德总部内不容挑战的金科玉律。微软所做一切必须唯强化“Windows”马首是瞻，令其更具压倒性优势。许多绝佳创新全因这种在公司内部被戏称为“策略税”的顾虑而被扼杀。

如今在雷德蒙德，规矩变了。去年，萨帝亚·纳德拉（Satya Nadella，图中中间者。左为盖茨，右为鲍尔默）接任微软CEO，他对“策略税”一说甚为反感，表示会放手让员工尽管“制作人们喜欢的东西”。他接任后的一些举动在两位前任眼中绝对是属于“Windows操蛋”的策略。包含文字处理、电子表格等应用的微软热门办公软件Office目前已可在运行对手操作系统的移动设备上使用。以往微软视免费的“开源”软件为大忌，如今已在拥抱这一潮流。去年10月旧金山的一次活动中，纳德拉演示的幻灯片里写着这样的字句：“微软爱Linux。”对比之下，鲍尔默当年曾把这开源操作系统称为“毒瘤”。

4月4日，微软庆祝成立40周年之际，其高管和股东会不舍回望，感慨该公司流逝的青春。1975年，夫妻组合Captain & Tennille凭一首《爱让我们在一起》（Love Will Keep Us Together）登上美国各大金曲榜榜首，同年，微软诞生。20余年后，微软已一跃领先踯躅不前的IT巨头IBM，30年过后，业绩放缓，更被宿敌苹果公司超越，后者只比微软晚成立不到一年（见图表）。

纳德拉让微软重振雄风的策略是，尽快从仅依赖Windows操作系统的公司彻底转型，成为由巨型数据中心构成的全球化网络，为企业及个人提供多

样化的在线服务。目前看来，他让这拥有123,000名员工、年收入870亿美元的“巨轮”转向的努力初见成效。

其他新老科技巨头正密切关注微软的转型——因为他们有的也正经历类似的挣扎改变，有的则担忧自己未来也许要再造重生。思科、EMC、惠普、甲骨文、IBM、SAP——所有这些公司都必须寻觅出路，因为大部分数字运算正从桌上摆放台式电脑或公司地下室里堆放服务器的旧世界走进“云计算”的新时代，在远程数据中心（即“云端”）以及在人们手上的移动设备中进行。

亚马逊、苹果、Facebook、谷歌和其他类似公司时刻警惕着新科技“平台”的诞生，担心这些平台帮助对手构建新应用，从而抢走自己的顾客。正是出于这一原因，成立11年的Facebook最近以220亿美元收购了成长迅猛的简讯应用WhatsApp，又以20亿美元收购了虚拟现实头戴设备制造商Oculus VR。

说微软只在乎Windows，这其实一直有点以偏概全。更准确地说，是微软这些年来建构的一系列捆绑紧密的程序均以Windows操作系统为核心。上世纪80年代Windows统治台式个人电脑后，微软把Office办公软件与操作系统绑定销售，令此软件同样遍地开花。随着高性能电脑（即服务器）成为企业内部数据中心的标配，微软故技重施：开发出一套与Windows操作系统紧密集成的服务器软件，包括电邮系统、数据库及各式商业应用程序。正是这种捆绑策略令微软在上世纪90年代中期超越IBM成为市值最高的科技企业。

微软所有程序均可与对手产品兼容，但自家程序搭配使用效果最好。这刺激了微软业绩增长（也令其陷入反垄断控诉），顾客也有所得益。但随着云计算的兴起，此模式日渐瓦解。软件变为通过互联网传递的服务，大多基于开放标准。“现在要兼用不同厂商的程序前所未有地方便，”咨询公司TechAlpha Partners的乔治·吉尔伯特（George Gilbert）解释道，“这和操作系统关系不大。”

讽刺的是，微软正是首批觉察到云计算潜力的软件公司之一。但它执迷于保护现有产品线，扭曲了自己的愿景。2006年微软开始开发云计算服务Azure，但充其量只是微软专有程序的在线复制版。这为其他云服务商留下了市场空间，尤其是亚马逊，他们可以向企业提供原始计算能力，方便其随心所欲地运用各种程序组合。同样地，微软也最早预见到掌上电脑（智能手机的旧称）的大好前途。但公司硬是逼迫用户在移动设备上使用Windows操作系统，而不像苹果公司那样开发出更适合这些设备使用的新操作系统。

在成为微软首席执行官前，纳德拉一直主管Azure项目，通过降低云服务费用并让顾客自主选择软件，他令项目起死回生。自接任高位后，除了让Office可供苹果和安卓系统移动终端使用外，他还朝着“免费—增值”的模式迈进：个人用户（非商业用户）可免费使用基本版，但额外功能须付费。在纳德拉的管治下，微软的灵活处事还表现在其他方面，比如与竞争对手达成合作。举例来说，使用网络版Office（名为Office 365）的用户可在云存储公司Box的服务器上储存文件。“以前他们把我们看成死对头。”Box的老板亚伦·利维（Aaron Levie）说道。

同时，纳德拉也在努力重振微软的企业内部文化，使其更具当年喇叭裤大翻领时代的创业公司氛围。微软人的创意不再被践踏，而是被大加鼓励把“奇想”放到名为“车库”（Garage）的公共网站上去测试。这推动了产品雏形的面世，顾客可参与试用，帮助发现漏洞。微软也收购了一些热门的年轻创业公司。流行网络游戏Minecraft的制造商Mojang是其中之一。另一家被收购的是Acompli公司，其电邮应用已更名为Outlook，成为微软在苹果及安卓移动设备上的电邮服务。

但纳德拉迄今最大的成就在于，在微软步入第五个十年之际，他赋予了公司一个继往开来的使命。他将之概括为两句口号。一是“移动为先，云端为先”：既然这些是将来的增长点所在，所有新产品的开发必须服务于这两方面。另一口号为“平台与效率”。Windows仍是重要的平台，Office仍是一套重要的效率型工具。但Azure是日益强势且更灵活的平台。在微软推出的一系列效率型应用产品中，有一款类似苹果Siri和Google Now的智

能个人助理应用Cortana。它已能辨识自然语言，回答问题，发出提醒；将来，其预测用户需求的能力还将不断提高，比如为会议准备相关文件。

人才竞争

尽管业界观察家对纳德拉迄今的表现大多持赞赏态度，还是有几个问题让他们久久存疑。一是关于人才。“微软流失了许多优秀人才。”哈佛商学院的马尔科·扬西蒂（Marco Iansiti）解释道。尽管微软通过收购创业公司补充了新鲜血液，但在争抢最优秀的程序员上还须加把劲。另一问题可能是软件质量。研究公司“微软追踪”（Directions on Microsoft）的罗伯·赫尔姆（Rob Helm）表示，微软过去努力向商业用户证明其程序可靠，现在它仿效创业公司的运行，更早更频繁地发布产品，也许质量会变得不如微软另一个口号所称的那么“值得信赖”。

微软其他业务的前景也是个未知之数。分析师曾呼吁将这些业务分拆出售。公司的搜索引擎必应似乎是平安无虞了：亏损数十亿美元后，眼见即将盈利；而且它为Cortana和微软其他服务提供重要的数据输入。Xbox游戏机则回到正途上来，不再试图成为数字客厅控制中心。但是，去年微软收购了诺基亚的手机业务，试图挽救这最后一家Windows系统手机大型制造商，这一举动现在看来似乎是个错误，毕竟公司策略已变。

微软最大的问题在于其财务状况。随着个人和企业购买电脑的数量及价格下降，Windows的营收也在减少。截至去年12月31日的第四季度收入相比前年同期下降了13%。而包含Office365在内的商业云服务销售额则同比增长超过一倍，全年达55亿美元。但这只占公司总收入的一小部分，该部门仍被认为在亏钱。而且，投资银行野村证券的分析师里克·薛伦（Rick Sherlund）表示，还不清楚微软旗下像Cortana这类新型应用如何生存盈利。“相应的商业模式还没有创立。”

这些应用不太可能成为Windows和Office那样的摇钱树，到现在，这两者仍能为微软带来44%的收入和58%的利润。传统Office软件的毛利率为90%；Office365目前的毛利率仅为53%。在与亚马逊、谷歌，还有近来势头越劲的IBM的激烈较量下，微软的其他云业务盈利艰难。花旗银行最近

估计亚马逊的云业务利润率介乎-2%至-3%之间。在其他业务上，亚马逊更注重增长，对亏损的容忍度较高。

其他新老科技公司都希望从微软的中年颓势中得到借鉴，主要教训在于微软在太长时间里过于保护其主打产品线，忽视了各种威胁，任其发展壮大。造成这一局面，盖茨应担首责；鲍尔默虽然善于以Windows这棵摇钱树继续生财，维持时间超过预期，但对于移动终端和云技术崛起带来的威胁，他同样反应迟钝。现在，纳德拉不得不急起直追，奋力消除顾客、分析师、高技术人才对微软的观感——公司韶华已逝，成了明日黄花。■

Schumpeter

Philosopher kings

Business leaders would benefit from studying great writers

IT IS hard to rise to the top in business without doing an outward-bound course. You spend a precious weekend in sweaty activity—kayaking, climbing, abseiling and the like. You endure lectures on testing character and building trust. And then you scarper home as fast as you can. These strange rituals may produce a few war stories to be told over a drink. But in general they do nothing more than enrich the companies that arrange them.

It is time to replace this rite of managerial passage with something much more powerful: inward-bound courses. Rather than grappling with nature, business leaders would grapple with big ideas. Rather than proving their leadership abilities by leading people across a ravine, they would do so by leading them across an intellectual chasm. The format would be simple. A handful of future leaders would gather in an isolated hotel and devote themselves to studying great books. They would be deprived of electronic distractions. During the day a tutor would ensure their noses stay in their tomes; in the evening the inward-bounders would be encouraged to relate what they had read to their lives.

It is easy to poke fun at the idea of forcing high-flying executives to read the classics. One could play amusing games thinking up titles that might pique their interest: “Thus Spake McKinsey”, or “Accenture Shrugged”, perhaps. Or pairing books with personality types: “Apologia Pro Vita Sua” for a budding Donald Trump and “Crime and Punishment” for a budding Conrad Black. Or imagining what Nietzschean corporate social responsibility would look like. Or Kierkegaardian supply-chain management.

Then there are practical questions. Surely high-flyers are decision-makers rather than cogitators? And surely they do not have time to spend on idle thought? However, a surprising number of American CEOs studied philosophy at university. Reid Hoffman, one of the founders of LinkedIn, was a philosophy postgraduate at Oxford University and briefly contemplated becoming an academic before choosing the life of a billionaire instead. Anyway, executives clearly have enough time on their hands to attend gabfests such as Davos, where they do little more than recycle corporate clichés about "stakeholders" and "sustainability". Surely they have enough time for real thinkers.

Inward-bound courses would do wonders for "thought leadership". There are good reasons why the business world is so preoccupied by that notion at the moment: the only way to prevent your products from being commoditised or your markets from being disrupted is to think further ahead than your competitors. But companies that pose as thought leaders are often "thought laggards": risk analysts who recycle yesterday's newspapers, and management consultants who champion yesterday's successes just as they are about to go out of business.

The only way to become a real thought leader is to ignore all this noise and listen to a few great thinkers. You will learn far more about leadership from reading Thucydides's hymn to Pericles than you will from a thousand leadership experts. You will learn far more about doing business in China from reading Confucius than by listening to "culture consultants". Peter Drucker remained top dog among management gurus for 50 years not because he attended more conferences but because he marinated his mind in great books: for example, he wrote about business alliances with reference to marriage alliances in Jane Austen.

Inward-bound courses would do something even more important than this: they would provide high-flyers with both an anchor and a refuge.

High-flyers risk becoming so obsessed with material success that they ignore their families or break the law. Philosophy-based courses would help executives overcome their obsession with status symbols. It is difficult to measure your worth in terms of how many toys you accumulate when you have immersed yourself in Plato. Distracted bosses would also benefit from leaving aside all those e-mails, tweets and LinkedIn updates to focus on a few things that truly matter.

Looking for answers

The business world has been groping towards inward-bound courses for years. Many successful CEOs have made a point of preserving time for reflection: Bill Gates, when running Microsoft, used to retreat to an isolated cottage for a week and meditate on a big subject; and Jack Welch set aside an hour a day for undistracted thinking at GE. Clay Christensen of Harvard Business School was so shocked at how many of his contemporaries ended up divorced or in prison that he devised a course called "How will you measure your life?". It became one of HBS's most popular courses and provided the basis of a successful book.

"Mindfulness" is all the rage in some big corporations, which have hired coaches to teach the mix of relaxation and meditation techniques. Big ideas are becoming as much of a status marker in high-tech hubs as cars and houses are in the oil belt. Peter Thiel, a Silicon Valley investor, holds conferences of leading thinkers to try to improve the world. David Brendel, a philosopher and psychiatrist, offers personal counselling to bosses and recently penned a blog for the *Harvard Business Review* on how philosophy makes you a better leader. Damon Horowitz, who interrupted a career in technology to get a PhD in philosophy, has two jobs at Google: director of engineering and in-house philosopher. "The thought leaders in our industry are not the ones who plodded dully, step by step, up the career ladder," he says, they are "the ones who took chances and developed unique

perspectives."

Inward-bound courses would offer significant improvements on all this. Mindfulness helps people to relax but empties their minds. "Ideas retreats" feature the regular circus of intellectual celebrities. Sessions on the couch with corporate philosophers isolate managers from their colleagues. Inward-bound courses offer the prospect of filling the mind while forming bonds with fellow-strivers. They are an idea whose time has come. ■

熊彼特

哲王

向伟大作家学习，商业领袖将从中受益

要升到商界高层，不参加一些拓展式课程是很难的。你把一个宝贵的周末花在一些诸如划艇、爬山和绳降等让人汗流浃背的活动上。你忍受着关于性格考验和信任建立的各种课程。结束后，你会以最快的速度跑回家。这些奇怪的程式或许可以为你创造一些闲聊时的谈资。但是总体而言，它们除了能让组织这些活动的公司赚到钱外，别无他用。

是时候用更有力的方式来代替这种管理生涯中的惯例了，那就是：内省式课程。与其与大自然斗勇，商业领袖们倒不如从大想法中激荡脑力。要证明自己的领导力，与其带领员工穿越峡谷，倒不如带领他们跨越心智上的鸿沟。形式可以很简单。几个未来领袖可以聚集在一家远离尘嚣的酒店，全身心投入名著的学习中。他们将远离电子产品的干扰。白天，一位导师将确保他们埋头苦读；晚上，导师将鼓励这些内省者把白天读到的内容和现实生活联系起来。

逼着雄心勃勃的高管们去阅读经典著作的主意很容易被人嘲笑。想想什么样的书名能勾起高管们的兴趣可能是个好玩的游戏：如《麦肯锡如是说》，或者《埃森哲耸耸肩》之类的。不然，还可以来个巨著和人格类型的拉郎配：让年轻时代的唐纳德•特朗普（Donald Trump）们阅读《为吾生辩》，再让年轻时代的康瑞德•布莱克（Conrad Black）们研究《罪与罚》。再不然，想象一下尼采哲学体系里的企业社会责任会是怎样的，或者齐克果（Kierkegaard）的供应链管理是什么样子。

然后，还存在实际问题。确实，高管们是决策者而不是慎思者。而且他们确实也没有时间胡思乱想吧？但是，在大学学习过哲学的美国CEO人数惊人。领英（LinkedIn）创始人之一的里德•霍夫曼（Reid Hoffman）是牛津大学哲学研究生，他在选择亿万富翁的生活之前，曾短暂地考虑过成为学者。无论如何，高管们显然手上有大把时间去参加达沃斯之类的冗长会

议，在那里除了重复地讲“利益相关者”和“可持续发展”之类的企管套话外，鲜有新意。他们当然会有足够的时间向真正的思想者取经。

内省式课程会对“思想领导力”产生奇妙的作用。商界目前如此专注于以下这个观念是有充分原因的：唯一能防止你的产品陷入同质化，或防止你的市场被颠覆的方法，就是要比竞争者想得更远。但是，那些俨然一派思想领袖模样的公司往往是些“思想落后分子”：回炉昨天旧报纸的风险分析师们，以及推崇昨日成功案例的管理顾问们，却罔顾这些昨日之星即将出局的事实。

唯一能成为真正思想领袖的方法就是要对所有这些噪音充耳不闻，而只聆听少数几位伟大思想家的真知灼见。阅读修昔底德（Thucydides）写给伯里克利（Pericles）的赞美诗，能比你从上千个领导学专家那里学到更多的领导哲学。阅读孔子的著作，能比你从所谓的“文化顾问”身上获得更多在华经商的知识。彼得•德鲁克（Peter Drucker）在五十年里能保持管理大师中翘楚的地位，不是因为他参加更多的会议，而是因为他的思想长期浸淫在名著之中：比如他在写关于商业联盟的内容时，联系到的是简•奥斯丁（Jane Austen）笔下的婚姻联盟。

内省式课程所起的作用甚至比这更重要：它们为企业高管既提供了立身之锚，又提供了远离喧嚣的庇护所。企业高管们存在这样的风险：他们变得对物质成功过于执着，以致于忽视了自己的家庭，甚至违法。以哲学为基础的课程会帮助企业高管们克服对身份象征的执着。当你沉浸在柏拉图（Plato）中的时候，就很难以收集了多少大玩具来衡量自身的价值。抛开所有的电邮、推文和领英的更新，专注于少数几件真正重要的事，这将对思绪烦乱的老板们有所助益。

寻找答案

商界探寻内省式课程已经很多年了。许多成功的CEO都特别注意留出时间做反省。 在执掌微软时，比尔•盖茨经常到一间偏僻小屋里退居一周，专心冥想某个重大问题；杰克•韦尔奇在通用电气时，每天都留出一个小时不被打扰的时间来思考问题。哈佛商学院的克雷•克里斯丁森（Clay

Christensen）对同辈人离婚或入狱的人数之多感到非常震惊，以致于设计出一门叫做“如何衡量自己的生活”的课程。它成为哈佛商学院最受欢迎的课程之一，还成为了一本畅销书的基础。

“正念”在一些大公司正风靡一时，这些公司还聘请了教练来教授一些揉合了放松和冥想的技巧。大想法正成为高科技中心地区的一种身份标志，正如汽车和房子在“油带地区”是身份的象征一样。硅谷的一位投资者彼得•提尔（Peter Thiel）通过举办思想领袖们参加的会议来试图改善世界。哲学家和心理学家大卫•布兰戴尔（David Brendel）为老板们提供私人辅导服务，他最近为《哈佛商业评论》杂志写了个博客，内容是：哲学如何使你成为更好的领导。半路中断技术事业去攻读哲学博士的德门•和洛维茨（Damon Horowitz）目前在谷歌身兼两职：工程业务总监和内部哲学家。“我们行业中的思想领袖不是埋头苦干、一步一步爬上来的那些人，”他说，“而是勇于冒险，独具视野的那些人。”

内省式课程可以为所有这些带来明显改善。正念能够帮助人们松其身而虚其心。“思想务虚会”经常是思想名流们的圈子会。与公司哲人面对面的疗程能把管理者们从同事中隔离出来。内省式课程有望让你在与同道中人形成默契的过程中充实头脑。它们是一种正当其时的想法。■

Electricity companies

Adapting to plug-ins

Electric cars could help save power utilities from a "death spiral"

AFTER "rate hikes", the most common phrase in America's electricity industry these days is "death spiral". The recession clobbered demand, and it has not recovered. Last year Americans used 2% less electricity than in 2007. The government's Energy Information Administration reckons demand will grow by less than 1% a year between now and 2040 (see chart).

Consumers are buying more electric gadgets than ever, but the power these machines use is tumbling. Electricity consumed by TVs has fallen by a quarter in five years. Tablets and laptops use less than desktop computers, and cloud computing means businesses need fewer power-hungry servers. And then there is "distributed generation", which covers everything from household solar and geothermal systems to on-site electricity generation by large businesses and college campuses. All steal sales from power companies.

The utilities are required to guarantee continuity of the electricity supply, which means they must keep spending on infrastructure and maintenance even as customers build their own power sources. So far the main response of the companies' generally risk-averse bosses has been to propose building conventional generation and distribution projects, and to lobby regulators to let them raise their prices to pay for these—including imposing extra charges on customers who have solar panels.

But this only makes "home-brew" electricity more competitive—so consumers buy even less power from the utilities, deepening the death spiral. Small wonder that analysts at Barclays bank recently downgraded the bonds of the entire American electricity industry. Given the utilities'

endless need for cheap funding, this was dire news: if investors switch off, that supply of money will shrivel.

What the industry needs is a new business model. The best prospect, thinks Elias Hinckley, an energy-finance specialist at Sullivan and Worcester, a law firm, is plug-in electric vehicles. Today, Americans' daily spending on energy can be split into two large chunks: about $1 billion on electricity and $1.4 billion on fuel for their vehicles. In the past, electricity providers had no way to tap into the latter market. Plug-in cars should change that.

A modest 250,000 plug-in cars now glide silently along American roads, and they currently account for fewer than 1% of vehicles sold. But sales have been almost doubling each year (compared with about 5% annual growth for the entire car industry), and homes that own a plug-in car typically consume 58% more electricity, according to Opower, a seller of energy-conservation software. The Edison Electric Institute, a power-industry trade body, recently issued a report that called plug-ins a "quadruple win" for utility companies. In other words, they could help the industry increase demand, meet environmental goals, get closer to customers and cut costs by electrifying its own vast vehicle fleets.

Missing a trick

Power companies are not exactly rushing into the market. Some big ones, including Dominion, NRG Energy and Duke Energy, have between them installed a few hundred plug-in car-charging stations; some of them have pilot programmes that let owners sell power stored in the cars' batteries back to the grid at times of peak demand. But none is partnering with plug-in carmakers to offer cheap installation of home chargers, and fewer than one in ten offers special tariffs to plug-ins' owners—two lost opportunities that, says Mr Hinckley, "boggle my mind".

The utilities are standing by as firms such as ChargePoint, CarCharging and SemaConnect build networks of thousands of fast public and private chargers—inserting themselves into the customer relationship that plug-in car owners might have with electricity providers. The utilities, thinks Mr Hinckley, fail to understand that "they could literally own America's future transportation infrastructure".

The picture is somewhat confused because, in America at least, early adopters of plug-in cars are often among the first to start generating their own electricity. Opower found that 32% of plug-ins' drivers (admittedly in the wealthier, sunnier, western parts of the country that it surveyed) also have rooftop solar panels. The reduction in these consumers' purchases of electricity from the grid, as a result of owning solar panels, slightly outweighs the increase from having plug-in cars, so they end up buying a little less power from the utilities than households with neither.

What this may mean is that utilities enjoy a recovery in demand as plug-in cars become popular, then a renewed fall as solar kits (whose price has halved in the past five years) also become ubiquitous. Rich, sunny bits of America will see this phenomenon first, but it will surely come to the rest of the country, and other parts of the world, too.

Nevertheless, it still makes sense for the power utilities to move swiftly into providing charging systems for electric cars, contracting with their owners to buy back energy stored in the vehicles' batteries and indeed into installing and maintaining solar-power kits (as some already do). For these businesses have many years of growth ahead of them, unlike the power companies' existing business. The utilities have a stark choice: sit back and be disrupted, or embrace the shock of the new. ■

电力公司

适应电动汽车带来的改变

电动汽车能够避免电力公司陷入“死亡漩涡”

在“涨价”之后，美国电力行业最近最流行的词是“死亡漩涡”。由于经济不景气，用电需求受到抑制，这种情况尚未好转。去年美国的用电总量比2007年低2%。美国能源信息署预测，从现在到2040年，用电需求的年增长率将低于1%（见图表）。

消费者购买的电子产品越来越多，但这些产品的耗电量却在快速下降。电视机的耗电量在五年内下降了四分之一。平板电脑和笔记本的耗电量低于台式机，云计算则意味着企业不再需要那么多大功率的服务器。此外，还有“分布式发电”，涵盖小到家用太阳能和地热系统，大到大型企业和大学校园的现场发电机等各类设施。这些都侵蚀了电力公司的销售额。

电力公司须保障连续的电力供给，也就是说，即使客户建立了自己的发电源，电力公司仍需在基础设施和维护上持续投入。电力公司的老板们总体而言厌恶风险，迄今为止他们的主要反应是提议建设传统的发电和配电项目，同时游说监管机构允许他们通过提价来为这些项目买单——包括向使用太阳能板的客户强制性收取附加费。

但这只会令自产电力更具竞争力——从而使消费者减少在电力公司的购电量，进一步加剧死亡漩涡。最近巴克莱的分析师下调了整个美国电力行业的债券评级也就不足为奇了。由于电力公司需要源源不断的低成本资金，这是一个糟糕的信息：一旦投资者停止投资，资金流就将枯竭。

电力行业真正需要的是一个新的商业模式。萨利文和伍斯特律师事务所（Sullivan & Worcester LLP）的能源金融专家埃利亚斯·希克雷（Elias Hinckley）认为，最可能的前景在于电动汽车。今天，美国人每天消耗的能源可分为两大块：电力为10亿美元，汽车燃料为14亿美元。过去，电力供应商不可能插足燃料市场。而电动汽车应该改变这一点。

目前只有25万辆电动汽车悄然行驶在美国的道路上，此类汽车仅占所有汽车销量的1%不到。但是其销量每年近乎翻一番（相比而言，整个汽车行业年增长率仅为5%）。根据节能软件销售公司Opower的统计，拥有电动汽车的家庭耗电量一般会高出58%。爱迪生电力协会（Edison Electric Institute）在最近发布的一项报告中称电动汽车对于电力公司将是“四赢”。换言之，它们会增加电力行业需求，满足环保要求，贴近用户，而且可以通过将其庞大的车队电动化来降低成本。

棋差一着

电力公司并没有大举冲进这个市场。几家大的电力公司，包括道明尼（Dominion）、 NRG能源（NRG Energy）和杜克能源（Duke Energy），一起安装了数百个电动车充电站；有些还推出了试点项目，允许车主在用电高峰期将汽车蓄电池里储存的电力回售给电网。但还没有一个公司与电动汽车制造商合作，为用户提供便宜的家用充电装置安装服务。能为电动汽车用户提供优惠电费的公司更是不足十分之一——这是两个错失的商机，正如希克雷所说：“我为此感到困惑”。

当电力公司袖手旁观时，诸如充电点（ChargePoint）、汽车充电（CarCharging） 和赛玛互联（SemaConnect）等公司却取而代之，他们建立的服务网络拥有数千个公用和私用快速充电装置。希克雷认为，电力公司没有意识到“他们实际上是可以将美国未来的交通设施收入囊中的”。

让事情变得复杂的是，较早买电动汽车的人往往也是最早开始自行发电的那批人，至少在美国是这样。Opower发现32%的电动汽车车主（当然他们调查的区域是更富裕、阳光更充沛的西部地区）同时装有屋顶太阳能板。因为有自己的太阳能板发电，他们减少了从电网购买的电量，而这个减少量稍稍大于电动汽车的耗电量，结果就是他们从电网购买的总电量稍稍低于既没有购买电动汽车也没有安装太阳能板的家庭。

这有可能意味着随着电动汽车的普及，电力公司的供电需求量会上升。不过，当太阳能发电装置（价格在过去五年里已下降了一半）也普及起来后，供电需求量会重新下降。这种现象会首先发生在美国一些富裕且阳光

充沛的地区，继而将肯定蔓延到美国其他地区，然后是世界上的其他国家。

不过，电力公司还是应当快速行动，为电动汽车提供充电系统，和车主签订协议，回购汽车电池中的电量，并安装和维护太阳能发电装置（有些公司已经这么做了）。不同于电力公司现有的业务，这些业务在未来很多年都有很好的发展前景。电力公司面临严峻的抉择：坐以待毙，还是拥抱新生。■

The future of work

There's an app for that

Freelance workers available at a moment's notice will reshape the nature of companies and the structure of careers

HANDY is creating a big business out of small jobs. The company finds its customers self-employed home-helps available in the right place and at the right time. All the householder needs is a credit card and a phone equipped with Handy's app, and everything from spring cleaning to flat-pack-furniture assembly gets taken care of by "service pros" who earn an average of $18 an hour. The company, which provides its service in 29 of the biggest cities in the United States, as well as Toronto, Vancouver and six British cities, now has 5,000 workers on its books; it says most choose to work between five hours and 35 hours a week, and that the 20% doing most earn $2,500 a month. The company has 200 full-time employees. Founded in 2011, it has raised $40m in venture capital.

Handy is one of a large number of startups built around systems which match jobs with independent contractors on the fly, and thus supply labour and services on demand. In San Francisco—which is, with New York, Handy's hometown, ground zero for this on-demand economy—young professionals who work for Google and Facebook can use the apps on their phones to get their apartments cleaned by Handy or Homejoy; their groceries bought and delivered by Instacart; their clothes washed by Washio and their flowers delivered by BloomThat. Fancy Hands will provide them with personal assistants who can book trips or negotiate with the cable company. TaskRabbit will send somebody out to pick up a last-minute gift and Shyp will gift-wrap and deliver it. SpoonRocket will deliver a restaurant-quality meal to the door within ten minutes.

The obvious inspiration for all this is Uber, a car service which was founded

in San Francisco in 2009 and which already operates in 53 countries; insiders say it will have sales of more than $1 billion in 2014. SherpaVentures, a venture-capital company, calculates that Uber and two other car services, Lyft and Sidecar, made $140m in revenues in San Francisco in 2013, half what the established taxi companies took (see chart 1), and the company shows every sign of doing the same wherever local regulators give it room. Its latest funding round valued it at $40 billion. Even in a frothy market, that is a remarkable figure.

Bashing Uber has become an industry in its own right; in some circles, though, applying its business model to any other service imaginable is even more popular. There seems to be a near-endless succession of bright young people promising venture capitalists that they can be "the Uber of X", where X is anything one of those bright young people can imagine wanting done for them (see chart 2). They have created a plethora of on-demand companies that put time-starved urban professionals in timely contact with job-starved workers, creating a sometimes distasteful caricature of technology-driven social disparity in the process; an article about the on-demand economy by Kevin Roose in *New York* magazine began with the revelation that the housecleaner he hired through Homejoy lived in a homeless shelter.

This boom marks a striking new stage in a deeper transformation. Using the now ubiquitous platform of the smartphone to deliver labour and services in a variety of new ways will challenge many of the fundamental assumptions of 20th-century capitalism, from the nature of the firm to the structure of careers.

The young Turks

The new opportunities that technology offers for matching jobs to workers were being exploited well before Uber. Topcoder was founded in 2001 to give programmers a venue to show off. In 2013, it was bought by Appirio, a

cloud-services company, and now specialises in providing the services of freelance coders. Elance-oDesk offers 4m companies the services of 10m freelances. The model is also gaining ground in the professions. Eden McCallum, which was founded in London in 2000, can tap into a network of 500 freelance consultants in order to offer consulting services at a fraction of the cost of big consultancies like McKinsey. This allows it to provide consulting to small companies as well as to concerns like GSK, a pharma giant. Axiom employs 650 lawyers, services half the *Fortune* 100 companies, and enjoyed revenues of more than $100m in 2012. Medicast is applying a similar model to doctors in Miami, Los Angeles and San Diego. Patients order a doctor by touching an app (which also registers where they are). A doctor briefed on the symptoms is guaranteed to arrive within two hours; the basic cost is $200 a visit. Not least because it provides malpractice insurance, the company is particularly attractive to moonlighters who want to top up their income, younger doctors without the capital to start their own practices and older doctors who want to set their own timetables.

The Los Angeles-based Business Talent Group provides bosses on tap for companies that want to tackle a specific problem without adding another senior executive to the payroll: Fox Mobile Entertainment, an online-content provider, turned to it for a temporary creative director to produce a new line of products. Creative companies add a twist to the model: they demand ideas, rather than labour and services, and give a prize or prizes only to the ones they find interesting. Innocentive has applied the prize idea to corporate R&D; it turns companies' research needs into specific problems and pays for satisfactory solutions to them.

A job for the afternoon

Tongal does the same thing with its network of 40,000 video-makers. In 2012 Colgate-Palmolive, a consumer-goods company, offered $17,000 to

anyone who could make a 30-second advertisement for the internet. The ad was so good that the company showed it at the Super Bowl alongside blockbuster ads that cost hundreds of times more. Members of the Quirky network post their product ideas on the company's website. Other members vote on the attractiveness of each idea and come up with ways of turning it into reality. Since its birth in 2009 the company has acquired over a million members and brought 400 products to the shops.

Perhaps the most striking of all the on-demand services is Amazon's Mechanical Turk, which allows customers to post any "human intelligence task", from flagging objectionable content on websites to composing text messages; workers on the site choose what to do according to task and price. The set-up uses to the full most of the capabilities and advantages that make on-demand business models attractive: no need for offices; no full-time contract employees; the clever use of computers to repackage one set of people's needs into another set of people's tasks; and an ability to access spare time and spare cognitive capacity all across the world.

The idea that having a good job means being an employee of a particular company is a legacy of a period that stretched from about 1880 to 1980. The huge companies created by the Industrial Revolution brought armies of workers together, often under a single roof. In its early stages this was a step down for many independent artisans who could no longer compete with machine-made goods; it was a step up for day-labourers who had survived by selling their labour to gang masters.

These companies introduced a new stability into work, a structure which differentiated jobs from one another more clearly than before, thus providing defined roles and new paths of career progress. Many of the jobs were unionised, and the unions fought to improve their members' benefits. Governments eventually built stable employment along these lines into the heart of welfare legislation. A huge class of white-collar workers enjoyed

secure jobs administering the new economy.

For a while after the second world war everybody seemed to benefit from this model: workers got security, benefits and steady wage rises; companies got a stable workforce in which they could invest with a fair expectation of returns. But the model started to get into trouble in the 1970s, thanks first to deteriorating industrial relations and then to globalisation and computerisation. Trade unions have lost power in the private sector, particularly in America and Britain, where legislation has reduced their ability to take action (see chart 3). Companies kept stricter control of their labour costs, increasingly contracting out production in industrial businesses and re-engineering middle-management. Computerisation and improved communications then sped the process up, making it easier for companies to export jobs abroad, to reshape them so that they could be done by less skilled contract workers, or to eliminate them entirely.

This has all resulted in a more rootless and flexible labour force. Pensioners and parents wanting or needing to spend more time on child care swell the ranks of students and the straightforwardly unemployed. A recent study by the Freelancers Union, a pressure group for freelance workers, suggests that one in three members of the American workforce (and a higher proportion of younger people) do some freelance work.

The on-demand economy is the result of pairing that workforce with the smartphone, which now provides far more computing power than the desktop computers which reshaped companies in the 1990s, and to far more people (see chart 4). According to Benedict Evans of Andreessen Horowitz, the new iPhones sold over the weekend of their release in September 2014 contained 25 times more computing power than the whole world had at its disposal in 1995. Connected to each other and to yet more data and processing power in the cloud, these devices are letting people design or find ad hoc answers to all sorts of business problems previously

solved by the structure of the firm.

Coase and effect

The way economists understand firms is largely based on an insight of the late Ronald Coase. Firms make sense when the cost of organising things internally through hierarchies is less than the cost of buying things from the market; they are a way of dealing with the high transaction costs faced when you need to do something moderately complicated. Now that most people carry computers in their pockets which can keep them connected with each other, know where they are, understand their social network and so on, the transaction costs involved in finding people to do things can be pushed a long way down.

This has a range of knock-on consequences, all of which are becoming key features of the on-demand economy. One is further division of labour. Thomas Malone, of the MIT Sloan School of Management, argues that computer technology is producing an age of hyper-specialisation, as the process that Adam Smith observed in a pin factory in the 1760s is applied to more sophisticated jobs.

Another is the ability to tap underused capacity. This applies not just to people's time, but also to their assets: to drive for Lyft or Uber, you do need a car. The on-demand economy is in many ways a continuation of what has been called the "sharing economy" exemplified by Airbnb, a company which turns apartments into guesthouses and their owners into hoteliers. For people with few assets, though, on-demand labour markets matter more.

And new areas are being opened to economies of scale. SpoonRocket prepares its food in two central kitchens in San Francisco and Berkeley. It delivers food quickly because it keeps a fleet of cars, equipped with thermal bags to keep the food warm, roaming the streets of San Francisco. "We're

like a gigantic cafeteria serving all of San Francisco," says Anson Tsui, one of the company's founders.

Scheduling success

The aim of the on-demand companies is to exploit low transaction costs in a number of ways. One key is providing the sort of trust that encourages people to take a punt on the unfamiliar. Customers worry about the quality of their temporary employees: nobody wants to give the key to their apartment to a potential burglar, or their health details to a dud doctor. Potential freelances, for their part, do not want to have to deal with deadbeats: about 40% of freelances are currently paid late.

On-demand companies like Handy provide customers with a guarantee that workers are competent and honest; Oisin Hanrahan, the company's founder, says that more than 400,000 people have applied to join the platform, but only 3% of applicants get through its selection and vetting process. The workers, for their part, can hope for a steady flow of jobs and prompt payment with minimal fuss. Handy's computer system also tries to schedule each worker's jobs in such a way as to minimise travel time.

Despite these capabilities, Handy is not necessarily looking at huge success, any more than the other Ubers-of-X are. There are three reasons for scepticism about their chances.

The first is that on-demand companies trying to keep the costs to their clients as low as possible have difficulties training, managing and motivating workers. MyClean, a cleaning service based in New York City, tried using purely contract workers, but discovered that it got better customer ratings if it used permanent staff. The company thinks that better services justify higher labour costs. Uber drivers complain that the company pays them like contract workers while seeking to manage them like regular employees: they are told to take regular rather than premium

fares, but are not reimbursed for their fuel. America's gathering economic recovery may make it harder for companies to attract casual labour as easily as they have done in the past few years.

The second problem is that on-demand companies seem likely to be plagued by regulatory and political problems if they get large enough for people to notice them. American on-demand companies are terrified that they will be stuck with retrospective labour bills if the courts force them to reclassify their workers as regular employees rather than contract workers (a classification which is not always consistent from jurisdiction to jurisdiction, raising the level of anxiety). Handy at one point included a clause in its contracts imposing any such retrospective costs on its clients, though it has now withdrawn it.

Faced by the threat of Uber, established taxi companies around the world have organised strikes, filed lawsuits and leant on regulators. In the Netherlands Uber has been banned; South Korea is treating it as an illegal taxi service. In Germany anti-Uber feeling has nurtured a broader criticism of "Plattform-Kapitalismus"; its perceived readiness to reduce all aspects of people's lives, from spare rooms to spare time, to assets to be auctioned off is seen as deeply dehumanising. But such protests often act as advertising for the services they are aimed against. And a recent study revealed that American politicos spend more on Uber than on regular taxis when campaigning, a strong indication that the road ahead is likely to remain clear.

The third issue is size. The on-demand model obviously has network effects: the home-help company with the most help on the books has the best chance of providing a handyman at 10:30 sharp. Yet scaling up may be difficult when barriers to entry are low and bonds of loyalty are non-existent. It will be hard to get workers to be loyal to just one middleman. A number of Uber drivers also work for Lyft.

In many service industries it is hard to see obvious economies of scale on a national or global level. Being the best dry-cleaning service in Cleveland does not necessarily offer a killer edge in Cologne. And taste can be fickle, especially with companies that often look like positional goods that trade, at least in part, on the cachet that they confer to their consumers. Many of the people who currently regard SpoonRocket as cool may drop it if it becomes a national brand. On-demand companies may find themselves stuck in a world of low margins, high promotional costs and labour churn as they struggle to attain the sort of market dominance that locks in their network advantages. Alfred, a subscription service, is already aggregating the work of specific on-demand companies such as Instacart and Handy to offer its Boston members a one-stop shop; such aggregation could drive down prices for the basic on-demand providers yet further.

Everyone a corporation

Even if the eventual on-demand victors do carve out profitable domestic-service businesses, many observers doubt that their model is more broadly applicable. Some critics argue that on-demand companies like BloomThat and Handy may be capable of delivering flowers or cleaning houses, but when it comes to companies in the main flow of the knowledge economy they are destined to remain marginal. This objection, though, is not very convincing. The sort of people currently using Uber are subject to the same forces as the people who drive them from place to place.

The knowledge economy is subject to the same forces as the industrial and service economies: routinisation, division of labour and contracting out. A striking proportion of professional knowledge can be turned into routine action, and the division of labour can bring big efficiencies to the knowledge economy. Topcoder can undercut its rivals by 75% by chopping projects into bite-sized chunks and offering them to its 300,000 freelance developers in 200 countries as a series of competitive challenges.

Knowledge-intensive companies are already contracting out more work to the market, partly to save costs and partly to free up their cleverest workers to focus on the things that add the most value. In 2008 Pfizer, a pharma company, undertook a huge self-examination under the heading PfizerWorks. It realised that its most highly skilled workers were spending 20% to 40% of their time on routine work—entering data, producing PowerPoint slides, doing research on the web. The company now contracts out much of this work.

Thus more and more of the routine parts of knowledge work can be parcelled out to individuals, just as they were previously parcelled out to companies. This could be bad news for the business models of professional-service companies which use juniors to do fairly routine work—thus providing the firm with income and the juniors with training—while the partners do the more sophisticated stuff. As on-demand solutions and automation prove applicable to more and more routine work, that model becomes hard to sustain. InCloudCounsel undercuts big law firms by as much as 80% thanks to an army of freelances that processes legal documents (such as licences, accreditation and non-disclosure agreements) for a flat fee.

The key role that cutting things up into routines plays in both spheres suggests that the interaction between the on-demand economy and automation will be a complex one. Gobbetising jobs with the aim of parcelling them out to people who don't see or need to see the big picture is not that different from gobbetising them in a way that allows automation. Often the first activity may prove a prelude to the second; it is easy to see Uber as a forerunner to an eventual system that has no drivers at all. In other cases, though, the cost-efficiency of contracting out may reduce the incentives to automate.

What sort of world will this on-demand model create? Pessimists worry

that everyone will be reduced to the status of 19th-century dockers crowded on the quayside at dawn waiting to be hired by a contractor. Boosters maintain that it will usher in a world where everybody can control their own lives, doing the work they want when they want it. Both camps need to remember that the on-demand economy is not introducing the serpent of casual labour into the garden of full employment: it is exploiting an already casualised workforce in ways that will ameliorate some problems even as they aggravate others.

The on-demand economy is unlikely to be a happy experience for people who value stability more than flexibility: middle-aged professionals with children to educate and mortgages to pay. On the other hand it is likely to benefit people who value flexibility more than security: students who want to supplement their incomes; bohemians who can afford to dip in and out of the labour market; young mothers who want to combine bringing up children with part-time jobs; the semi-retired, whether voluntarily so or not.

Megan Guse, a law graduate, says that the on-demand model allows her to combine a career as a lawyer with her taste for travel. "A lot of my friends that have gone the Big Law route have these stories about having to cancel weddings, vacations and miss family events. I can continue working while being in exotic places." Flexibility is also valuable for elite workers who want to wind down after decades of selling their soul to their companies. Jody Greenstone Miller, the founder of Business Talent Group, says that her company's comparative advantage lies in rethinking corporate time: by breaking up work into projects, she can allow people to work for as long as they want.

A limited Utopia

The on-demand economy is good for outsiders and insurgents—and for entrepreneurs trying to create new businesses using such people. Matt

Barrie, the founder of Freelance.com, links the fate of two groups of potential winners: entrepreneurs in the rich world who have few resources will be able to link up with workers in the poor world who have little money. In Europe the labour market drives a wedge between insiders who have lots of protections and outsiders who don't; on-demand arrangements may give outsiders a chance of breaking in. Thus in countries such as France, Italy and Spain, on-demand companies may improve the job chances of the young unemployed.

If this seems attractive, it is also a measure of the way that the on-demand economy will contribute to pressure to reduce labour rights in all sorts of situations; a growing abundance of on-demand employees with no normally accepted rights such as sick-pay and overtime will give employers at firms with more standard structures an incentive to cut back. The more such pressures spread, the more protests against "Plattform-Kapitalismus" the world is likely to see.

The on-demand economy will inevitably exacerbate the trend towards enforced self-reliance that has been gathering pace since the 1970s. Workers who want to progress will have to keep their formal skills up to date, rather than relying on the firm to train them (or to push them up the ladder regardless). This means accepting challenging assignments or, if they are locked in a more routine job, taking responsibility for educating themselves. They will also have to learn how to drum up new business and make decisions between spending and investment.

At the same time, governments will have to rethink institutions that were designed in an era when contract employers were a rarity. They will have to clean up complicated regulatory systems. They will have to make it easier for individuals to take charge of their pensions and health care, a change which will be more of a problem for America, which ties many benefits to jobs, than Europe, which has a more universal approach. They will also

have to encourage schools to produce self-reliant citizens rather than loyal employees.

One of Gilbert and Sullivan's oddest operettas, "Utopia Limited—or the Flowers of Progress", focuses on an exotic South Sea island which, under the influence of Victorian industrialism, sets about turning all the inhabitants into limited companies. It is rarely performed today, in part because the targets of its on-the-nose-in-1893 satire seem remote. But perhaps, after a century in which companies were vast things, such a satire of corporate individualism is due for a revival or two. If so, the piece will be easier than ever to stage: if there are not already on-demand services that can provide Polynesian props, semi-retired set designers and down-on-their-luck tenors at the swipe of a screen, there soon will be. ■

工作的未来

样样有应用

自由职业者随叫随到，将重塑企业本质与职业结构

Handy公司正在创造小零工的大产业。该公司适时适地寻找自由职业者为客户做家庭帮手。户主只需要一张信用卡和一部装有Handy公司应用的手机，从大扫除到板式家具安装的所有家务都可以由“服务专员”完成，这些服务专员平均时薪为18美元。Handy公司的业务遍及美国最大的29个城市，以及多伦多、温哥华和6个英国城市，在册工人5000名。大部分工人每周工作5至35小时，工作量前20%的工人月入2500美元。公司全职员工200人，成立于2011年，融得风投4000万美元。

Handy是众多创业公司之一。这类公司创建系统，把工作和实时在线的独立合同工进行匹配，按客户需要提供人手和服务。Handy创立于纽约，纽约与旧金山是这种按需经济的起源地。在旧金山，为谷歌或者Facebook工作的年轻职业人群可以使用手机上的应用预定各类服务：找Handy或Homejoy打扫住所；找Instacart购买食品杂货并送货上门；洗衣服可以找Washio；送花可以找BloomThat。Fancy Hands可以为他们提供私人助理服务，比如预定行程或者和有线电视公司讨价还价。TaskRabbit可以派人在最后一分钟搞定礼物，然后Shyp会把礼物包装好送出去。SpoonRocket只需要10分钟就能把大厨水准的饭菜送上家门。

优步（Uber）是最明显的一个例子，这家租车公司2009年成立于旧金山，目前业务遍及53个国家。知情人透露该公司2014年销售额将突破10亿美元。据风投公司SherpaVentures计算：优步与另外两家同业Lyft和Sidecar2013年在旧金山的收入合计1.4亿美元，是传统出租车公司收入的一半（见图表1）。而且，只要所在地监管部门给予空间，该公司业务都会所向披靡。公司在最新一轮融资中估值为400亿美元。即使在当前有泡沫的市场，这一估值数目也令人瞠目。

虽然攻击优步本身已自成一行业，在一些圈子里，把优步的商业模式应用

于任何能想象到的其他服务领域更为流行。源源不断的年轻人向风险投资家们承诺自己能成为“X行业里的优步”，而X可以是任何聪明的年轻人能想象到的任何想干的事业（见图表2）。他们创立了太多的按需服务公司，把急缺时间的城市专业人士和急缺工作的工人及时连接，而这过程中技术导致的社会不平等几近一幅幅碍眼的讽刺画。凯文·鲁斯（Kevin Roose）在《纽约》杂志（*New York*）上撰写过一篇关于按需经济的文章，开篇即点明他通过Homejoy雇用的清洁工住在流浪汉收容中心。

此类现象的兴起标志着一个更深层次的转型进入了显著的新阶段。通过无处不在的智能手机平台用各种新方式提供劳动力和服务，这将改变20世纪资本主义的诸多基本假设，从公司的性质到职业的结构。

少壮派

利用技术把工作与工人匹配，这方面的新机遇在优步之前就已经得到了良好利用。Topcoder成立于2001年，为程序员提供炫技的平台。2013年它被云服务公司Appirio收购，现在专门提供自由程序员服务。Elance-oDesk网罗了1000万自由职业者为400万家公司服务。在专业服务领域，这一模式也在发展。Eden McCallum于2000年在伦敦成立，建立了有500名自由咨询顾问的网络，其咨询服务的价格仅相当于麦肯锡这样的大咨询公司的零头。这使该公司既可为像制药巨头葛兰素史克这样的公司排忧解难，也能为小企业提供咨询。Axiom雇用了650位律师，为财富100强公司中的一半提供服务，2012年收入超过1亿美元。在迈阿密、洛杉矶和圣地亚哥，Medicast正在为医生引入类似模式。患者可以在应用上点选医生（应用会记录病患所在的位置）。医生对症状简单了解后保证两小时内上门，每次出诊基本费用是200美元。由于Medicast提供医疗事故保险，所以对以下人群很有吸引力：想要增加收入的兼职人士、没钱开诊所的年轻医生，以及想自由安排时间的老医生。

总部位于洛杉矶的商业人才集团（Business Talent Group）为想要解决特殊问题的公司提供随需而用的老板，使它们不必再额外雇用高管。在线内容供应商福克斯移动娱乐（Fox Mobile Entertainment）通过该公司找到了一位临时创意总监，制作出一个新的产品线。创意公司微调了这一模式：

他们需要创意，而非劳力和服务，并且只为公司感兴趣的创意付费。Innocentive已把这种悬赏理念应用于公司研发；它把公司的研发需求转化为具体的问题，并且只为满意的解决方案付费。

> *半日之工*

Tongal利用其40,000名视频制作人的网络做同样的事。2012年，消费品公司高露洁为制作一段30秒的网络广告，奖赏17,000美元。这段广告做得非常棒，高露洁在美国橄榄球超级碗大赛中播放了它，同一时段播出的都是耗资数百倍的大制作。Quirky网络的成员在其公司网站上发帖展示他们的产品创意。其他成员可就创意的吸引力投票，并想办法将其实现。自2009年成立以来，该公司已经召集了上百万成员，上架了400件产品。

所有按需服务中最惊人的可能是亚马逊的土耳其机器人（Amazon Mechanical Turk），用户可通过它发布任何人工智能任务，从标记网站中的负面内容，到编写手机短信；聚集在该平台上的自由职业者可根据内容和价格选择任务。按需商业模式的吸引力来自其能力和优势，这一设定将这种能力和优势用到了极致：不需要办公室；不需要全职员工；巧妙地利用计算机把一批人的需求转化为另一批人的任务；并能在世界各地利用人们富余的时间和脑力。

认为一份好工作就是成为某家公司的雇员，这是大约从1880年到1980年代遗留下来的旧观念。工业革命中诞生的超大公司汇聚了海量劳工，且大批工人往往聚于一隅。在早期，众多个体工匠无法与机械制品竞争而走向衰微；对日薪工人而言则是进步，他们可以向工头出卖劳动力维生。

这些公司为工作引入新的稳定性，搭建体系把各项工作划分得比以往更为清晰，由此提供了明确的职位和新的职业晋升通道。工会把许多工种纳入进来，并为改善成员的福利而奋斗。上述逻辑即是福利法案的核心，政府依之最终实现了稳定就业。庞大的白领阶层得到了工作保障，管理着新经济。

二战后的一段时期，似乎人人都从这种模式中受益：工人们得到了保障和

福利，薪水稳定上升；公司获得了稳定的劳动力，可以根据合理的预期回报进行投资。但在上世纪70年代，这一模式开始陷入困境，首先是由于日益恶化的劳资关系，而后又受到全球化和计算机化的影响。工会在私营产业已经失势，特别是在美国和英国，这两个国家的立法削弱了工会采取行动的能力（见图表3）。公司对用工成本的控制日渐严苛，在工业领域不断增加生产外包，再造中级管理层。计算机化和通讯技术的进步加速了这一进程，使公司更容易将工作外包至海外，或重塑工作使之可以由不太熟练的合同工完成，或干脆将一些工作完全削除。

这些都造就了更多漂泊不定和灵活就业的劳动力。已退休人群和想要或需要花更多时间照看孩子的父母加入了学生和完全失业者的队伍。自由从业工人的压力团体自由职业者联盟（Freelancers Union）最近的研究发现：三分之一的美国劳动人口都从事一些自由职业工作，这一比例在年轻人中更高。

劳动力和智能手机的相得益彰成就了按需经济。相比在上世纪90年代重塑公司的台式电脑，如今的智能手机可以为更多的人提供更强的运算能力（见下页图表4）。风险投资公司Andreessen Horowitz的本尼迪克•特埃文斯（Benedict Evans）表示，2014年9月新款iPhone发布的那个周末售出的手机所搭载的运算能力相当于1995年全世界可用运算能力的25倍多。这些设备互相连接，还可以连往云端的更多数据和处理能力，使得人们可以为各式各样的商业问题进行设计并可随时寻求答案，这些问题之前都是在公司架构内得以解决。

科斯是因，此为果

经济学家对企业的理解主要基于已故的罗纳德•科斯（Ronald Coase）的见解。只有当企业内部按层级组织工作的成本低于市场购买成本时，企业的存在才有意义。当需要进行比较复杂的工作时，企业是一种解决高交易成本问题的方式。现在由于大部分人口袋里都有计算机，它可以将人们互相连接起来，识别人们的地理位置，了解人们的社交网络等，继而大幅降低找人完成工作的交易成本。

这会产生连锁影响，且这些影响正成为按需经济的关键特征。其中之一是劳动分工更细。麻省理工斯隆管理学院的托马斯•马龙（Thomas Malone）认为计算机技术正带来超级专业化时代，这相当于把亚当•斯密（Adam Smith）于18世纪60年代在一家制针厂所看到的生产流程运用到更加复杂的工作中。

另一特征是利用闲置产能的能力。这不仅适用于人们的时间，也适用于其资产：你要先有车才能给Lyft或者优步当司机。按需经济在许多方面是“共享经济”的延续，房屋租赁网站Airbnb是个好例子，该公司把业主的公寓变成私营旅馆，业主自己就是旅馆老板。然而对于没什么资产的人而言，按需供应的劳动力市场更加重要。

同时，更多领域正开始得益于规模经济。SpoonRocket的食物在旧金山和伯克利的两个中央厨房里处理。公司配送食物的速度很快，因为它拥有车队疾驰在旧金山的街道上，这些车配备有保温袋以保持餐点的热度。“我们就像个超大的自助餐厅，服务整个旧金山市。”公司的创始人之一安森•崔（Anson Tsui）说道。

成功日程

按需公司的目标是以各种方式充分降低交易成本。其中一个关键是提供信任，鼓励人们尝试雇用不熟悉的人。顾客对这些临时雇员的质量心存疑虑：没人愿意把自家大门钥匙交给可能是小偷的人，或者同庸医费口舌说明自己的健康情况。而从潜在自由职业者的角度看，他们不想与赖账者纠缠：目前约40%的自由职业者收款都会逾期。

诸如Handy这样的按需公司向客户保证工人称职且诚实；该公司的创始人奥辛•汉拉恩（Oisin Hanrahan）表示，已有超过40万人申请加入其平台，但只有3%的申请人通过了筛选和审批流程。工作者可以获得持续稳定的工作机会并及时、顺利地拿到报酬。Handy的计算机系统也会设法规划每个工人的工作，最小化他们的出行时间。

尽管有这些能力，Handy未必能比其他行业的同类公司获得更大成功。对

他们成功机会的怀疑出于三个理由。

首先，按需公司要尽可能降低客户端成本，这会让公司在员工培训、管理和激励方面遇到困难。位于纽约的清洁服务公司MyClean试图完全使用合同工，但却发现使用固定员工能获得更高的客户评价。该公司认为为提供更好的服务支付更高的人工成本值得。优步的司机抱怨公司付薪水时把他们看作合同工，进行管理时却把他们当作正式员工：他们被告知收取常规车费而非溢价车费，但却不报销油费。美国经济正在逐渐复苏，这些公司吸引闲散劳动力不会像前几年那么容易了。

其次，如果按需公司的发展足够大而引起了人们的关注，则可能陷入监管和政治问题的困扰。美国的按需公司极为担心，如果法院强制他们把合同工重新分类为正式员工（这一划分在不同管辖区域并不一致，这加深了焦虑），他们将不得不支付追溯工资成本。Handy一度在其合同中设立条款，把此类追溯成本强加给客户，但如今这一条款已被取消。

面对优步的威胁，全世界的传统出租车公司组织罢工、提起诉讼并求助监管部门。优步在荷兰已被禁；韩国将其列为非法出租车营运。在德国，反优步的情绪滋生出对“平台资本主义”（Plattform-Kapitalismus）的广泛批评；平台资本主义时刻压缩人们生活的方方面面，从空余房间到富余时间，乃至待拍卖资产，这被视为极为反人性化。但是对这些服务的抗议往往反为其推波助澜。最新研究显示，美国政客在竞选期间在优步上的花费超过传统出租车公司，这是一个有力的指向，前路何方，已渐清晰。

第三个问题是规模。按需模式显然具有网络效应：拥有最多记录在册工人的家政服务公司最有可能准时在10点半安排工人上门。但如果行业准入壁垒低且完全缺乏忠诚度，那么扩大业务规模就很困难。同时，让工人仅忠诚于一家中间商也很难。大量的优步司机也同时为Lyft工作。

在很多服务业，遍布全国或全球的规模经济并不显见。美国克利夫兰市最好的干洗公司未必能在德国科隆拥有同业杀手锏。消费者品味易变，尤其是对于本身像位置商品般的那些公司，他们做生意的基础至少部分基于向

消费者传递的口碑。如果SpoonRocket成为了全国性品牌，许多现在认为它很酷的顾客可能会甩手而去。按需公司在奋力利用网络优势获取市场支配地位的同时，可能会发现自己陷于低利润、高促销成本和高人员流失的境地。订阅服务公司Alfred已在整合特定的按需服务，如Instacart和Handy，为其在波士顿的会员提供一站式服务；此类聚合服务可能会进一步压低基础按需服务商的价格。

人人是公司

即使按需服务的最终胜利者开拓出了有利可图的国内服务业务，许多观察家仍质疑他们的模式是否可以推广。一些批评者称，像BloomThat和Handy这样的按需公司可能能够递送鲜花或清洁房屋，但要说起知识经济中的主流公司，按需公司注定还处在边缘地带。但这样的异议不太令人信服。目前使用优步叫车的人，以及为他们开车的人，都受同样的力量支配。

知识经济和产业与服务经济一样，都受同样的力量支配：程式化、分工合作与合同外包。专业知识中可被转换为程式工作的比例高得惊人，分工合作可以为知识经济带来极高效率。Topcoder把项目分解为小块任务，作为一系列竞争挑战，交给其分布于200多个国家的30万名自由开发人员完成，这使它的价格可比竞争对手低75%。知识密集型公司也在向市场外包更多的工作，部分为了节省成本，部分为了解放最优秀的员工，让他们投入到最能增加价值的工作之中。2008年辉瑞制药公司开展了一项浩大的自查项目，名为辉瑞工作（PfizerWorks）。该公司发现其最具能力的员工有20%至40%的时间用于常规工作——录入数据、制作ppt和做网上调查。辉瑞如今已将很多此类工作外包。

这样，知识工作中越来越多的常规工作可以外包给个人，就像之前外包给公司一样。这对于专业服务公司的商业模式而言是个坏消息，这些公司使用资历较浅的员工做大量常规工作，这既可以为公司带来收入，又可使这些员工受到培训，而合伙人则从事更为复杂的工作。当按需解决方案和自动化被证实适用于越来越多常规工作，这种模式将难以为继。由于有一批自由职业者按固定费率处理法律文件（诸如许可、资质认可和保密协

议），InCloudCounsel的服务价格比大律师事务所低80%之多。

在按需经济和自动化这两个领域中，关键性工作都是如何把工作分解为常规行为，从中可看出这两者的交互将很复杂。分解工作，外包给看不到或不需要看到整体情况的人，这与分解工作以适应自动化并没有很大区别。前者经常是后者的铺垫；不难预见作为先行者的优步，最终将做成一个根本无需司机的系统。然而，在其他情况下，外包的成本效益可能会减少进一步自动化的动力。

按需模式将会创造一个怎样的世界？悲观者担忧人们会沦为19世纪的码头工人，黎明时分聚集在码头周围，等待工头雇用。支持者坚称这会开辟一个新世界，每个人都可以控制自己的生活，自行决定做什么以及什么时候做。两大阵营都需要记住，按需经济并不会把临时劳动力的毒蛇带进充分就业的花园：它是在利用业已存在的临时劳动力，只是这种方式在改善一些问题时又加重了另一些问题。

对于珍视稳定性甚于灵活性的人们，按需经济不可能是一种幸福体验，比如背负子女教育和房贷重担的中年专业人士。另一方面，它又可能造福珍视灵活性甚于稳定性的人们，比如想赚外快的学生、把工作当调剂的闲云野鹤、想在照料孩子的同时做些兼职的年轻母亲，以及半退休人士，无论他们是否出于自愿。

法律系毕业生梅根•古瑟（Megan Guse）说，按需经济使她在律师生涯和旅游爱好之间得以两全。“我的很多朋友进入了大型律所，他们都有诸如取消婚礼、假期和错过家庭聚会之类的经历。而我可以在国外逍遥的时候继续工作。”灵活性对于精英人士也弥足珍贵，在为公司卖命数十年后，他们希望放松一下。商业人才集团的创始人乔迪•格林斯通•米勒（Jody Greenstone Miller）表示，该公司的优势在于反思公司时间：通过把工作分解为一个个项目，可以让人们在想工作时才工作。

有限的乌托邦

对于职场局外人和叛逆者，以及试图利用这些人群开创新事业的企业家而

言，按需经济是个好东西。富裕世界的企业家乏人可用，贫穷世界的工人囊中羞涩；网站Freelancer.com的创始人马特•巴里（Matt Barrie）让这两群可能的赢家命运相连。在欧洲，劳动力市场使享有诸多保护的局内人和缺乏保护的局外人产生隔阂；按需安排可能会给局外人带来破局的机会。所以在法国、意大利和西班牙这样的国家，按需公司可能会为年轻的失业者提供更多就业机会。

如果这看起来有吸引力，按需经济还会增加全面缩减各种劳工权益的压力；按需工作的雇员不断增长，他们不享受带薪病假和加班工资等惯常的权利，对于公司结构规范的雇主而言，这会刺激他们缩减人员。这样的压力传播越多，世界就将出现越多对平台资本主义的抗议。

按需经济必然会加剧被迫自力更生的趋势，这一趋势从上世纪70年代起就已加速。想要谋求发展的雇员将不得不自行更新工作技能，而非依赖公司培训，或者需要公司不顾一切地推他们上位。这意味着雇员要接受更具挑战性的工作，如果他们在普通岗位工作，则要主动自我进修。他们还必须学习如何招徕新生意以及在支出和投资间做决策。

同时，各国政府必须反思现行体系，在设计这一体系时合同工还颇为罕见。他们必须清理复杂的监管体系。他们还必须让个人能更方便地管理自己的养老金和医疗保险，这一改变对美国而言问题更大。与欧洲所采取的更普适性的方法不同，美国把更多福利与工作绑定。政府还必须鼓励学校培养能够自立的公民而非忠实的雇员。

吉尔伯特与萨利文写过一出荒诞歌剧《乌托邦有限公司——或进步之花》（Utopia Limited—or the Flowers of Progress），描写南海的一个异域小岛受到维多利亚时代工业主义的影响，要让所有居民都成为有限公司。现在这部剧几乎停演了，部分原因是它所讽刺的内容在1893年很合时宜，现在已太过遥远。但是，庞然大物般的公司存在了一个世纪之后，这一有关公司个人主义的讽刺作品理应得到些许复兴。如果这样，这出剧将比以往更容易上演：就算现在还不能只滑动几下屏幕就找到按需服务来提供波利尼西亚道具、半退休的布景师和时运不佳的男高音，但很快就可以

了。

Schumpeter

The quantified serf

Management by goal-setting is making a comeback, its flaws supposedly fixed

THINK of it as the workplace equivalent of the Fitbit or Nike FuelBand: a way to set your goals and monitor your progress, and to share the journey with colleagues, who will cheer you on and give you a helpful nudge whenever you fall behind. Or, for the more sceptically inclined employee, think of it as a way to make the big boss even more like Big Brother.

"Quantified work" is the vision of BetterWorks, a Silicon Valley startup that aims to bring "goal science" to offices everywhere. Its software lets groups of employees collaborate in setting each other's objectives. Everyone can see how everyone else is doing, by means of a smartphone app. This sort of collegial, real-time performance measurement has already been introduced at some of the Valley's most prominent firms, such as Google, Twitter and Intel. BetterWorks' version is so far being used by 50 businesses, from Vox, a media company to Kroger, a grocery chain.

"The traditional once-a-year setting of employee goals and performance review is totally out of date," says Kris Duggan, one of BetterWorks' founders. "To really improve performance, goals need to be set more frequently, be more transparent to the rest of the company, and progress towards them measured more often."

Working out how best to set targets for employees has long been an obsession of management thinkers. In 1954 Peter Drucker came up with a theory of "management by objectives". He proposed that bosses should set the company's overall goals and then, in discussion with each worker, agree on a subset of goals to align what they were supposed to do with the goals of the firm. Drucker believed that these goals should be SMART (specific,

measurable, actionable, realistic and time-sensitive). His idea was briefly the height of corporate fashion. Yet its results were often disappointing and even Drucker lost some of his enthusiasm for it. One problem was that it was too bureaucratic. Another, according to today's management thinkers, was that Drucker focused only on outcome goals (say, increase sales by 20% a year), whereas the ideal outcome is often uncertain. It is sometimes better to set workers indirect goals, such as gathering data, that will point to what the final objective should be.

There is nonetheless a wealth of evidence that setting well-designed objectives does improve employees' performance. There have been more than 1,000 academic experiments in goal-setting, of which over 90% have produced positive results, says Gary Latham of the University of Toronto. If so, it must surely be one of the most tested, and proven, ideas in the whole of management theory. The studies show that an employee with a goal that is clear and simple, and challenging yet attainable, will perform better than one whose only instruction is to do as good a job as possible. Among other things, such a goal helps an individual or team to focus, to evaluate performance, to assess whether to maintain or change course, and to enjoy a sense of achievement when they succeed.

Recent evidence also supports Mr Duggan's argument that it pays to set goals more frequently than once a year. A study of big companies by Deloitte, a consulting firm, found that those which set goals quarterly were nearly four times more likely to be in the top quartile of performers. (It also found that more than half of senior executives have their goals revised in the course of the year, but only one-third of middle managers do so.)

Then again, there is also ample evidence of the nasty consequences that can follow when employees are given poorly chosen objectives. For instance, a recent study by Mr Latham and others found that managers who believe they have been set a goal that is unattainable are more likely to

abuse their subordinates. “It’s like taking out your frustrations by kicking the dog,” he says.

It can be hard to judge the dividing line between goals that are suitably stretching and ones that are excessively demanding, says Max Bazerman of Harvard Business School. He was one of the authors of a 2009 study in failure, “Goals Gone Wild”, which found several adverse side-effects of poor objective-setting. These included employees neglecting important matters that happened not to be included among their goals; the corrosion of a workplace’s internal culture; reduced motivation among employees; and the temptation to indulge in unethical or risky behaviour. For example, an hourly revenue goal for car-repair workers at Sears in the 1990s led to systematic overcharging, often for work that was not needed. A goal of getting the Ford Pinto to market by 1970 led to the car being launched in a hurry without safety checks that might have revealed a deadly tendency for it to burst into flames in accidents.

Measured response

Mr Duggan argues that the BetterWorks system, by letting everyone in a firm see everyone else’s goals, harnesses crowdsourcing to ensure that the objectives are neither too hard nor too easy. Goal-setting should also be separate from performance reviews that influence salary and bonuses, he says, to give workers permission to test themselves and sometimes to fail. Google expects its goals to be met only 60-70% of the time, for example.

Letting employees set and monitor their goals in collaboration, and giving them licence to fail occasionally, may well be feasible at young, innovative firms, such as Google, with a high-performance culture. It is harder at businesses where staff are disengaged and managers less open to experimentation. And even Google sometimes gets its goals in a twist. Reports on its recent decision to withdraw Google Glass temporarily from the market suggest that the wearable computer was launched too soon.

Sergey Brin, one of the firm's founders, was said to have insisted on pressing ahead, despite his engineers' protests that they could not make the product good enough by his deadline. Even the most motivated and dedicated workers may fail to meet their goals if the boss demands the impossible. ■

熊彼特

量化员工

目标管理卷土重来，旧有缺陷似已修复

将之视为职场上的“Fitbit”或“耐克FuelBand”智能手环吧：一种设定目标、监控进度、与同僚分享征程的方式，同事们将给你打气，在你落后时推你一把。对于持怀疑倾向的员工而言，这却让大老板变得更像“老大哥”一样无处不在。

“量化工作”是硅谷创业公司BetterWorks的愿景，其目标是要把“目标科学”传递到各地职场。其软件让员工组群协作设定彼此目标。通过智能手机应用，每个人可以看到其他人的进度表现。这类同侪实时绩效衡量手段已被硅谷部分最杰出的公司引进使用，如谷歌、推特和英特尔。迄今采用BetterWorks目标管理模式的公司有50家，既有媒体公司Vox，又有连锁杂货店克罗格（Kroger）。

“传统上按年度给员工设定目标和评估绩效的方法完全过时了，”BetterWorks的创始人之一克里斯·杜根（Kris Duggan）说，“要真正提高表现就需要更频繁地设立目标，更透明，让公司其他人都知道，而且要更频繁地测量目标进度。”

管理学家们长期以来潜心构想为员工设定目标的最佳方式。1954年，彼得·德鲁克（Peter Drucker）提出了“目标管理”理论。他建议老板们应先定下公司的总体目标，然后与各员工商讨，就一系列子目标达成共识，使员工在公司的总体目标之下工作。德鲁克认为这些目标应符合SMART法则，即“明确具体、可衡量、可操作、现实可行、具时效性”。他的想法曾一度风行企业界。但结果却往往令人失望，连德鲁克本人也对该理论热情减退。问题之一在于这种做法过于官僚。而在今天的管理学家们看来，另一问题是德鲁克只注重结果性目标（比如，销售要每年增长20%），但理想的目标往往却不确定。给员工们设定指向最终目标的间接目标，例如让其收集数据，有时候效果更佳。

尽管如此，大量证据表明，良好设定的目标确实有助提高员工绩效。多伦多大学的加里·莱瑟姆（Gary Latham）称，学术界就目标设定做的实验已有1000多个，其中超过90%均得出正面结果。如果这样，它无疑会是整个管理学上最万试万灵的良方之一。这些研究显示，如果给员工定下的目标清晰简明、具有挑战而又现实可达的话，其表现将比那些仅被指示要“尽量好地完成任务”的员工为优。原因之一是，这样的目标有助个人或团队专注投入，有利绩效评定，方便评估是维持原方案还是改变方向，而且还能够享受达成目标的成就感。

最新的证据也支撑了杜根的论调，显示每年不止一次频繁设定目标卓有成效。由咨询公司德勤对大企业做的一项调查发现，按业绩表现评判，每季度设定目标的公司跻身前四分之一的几率几乎是其他公司的四倍。（调查也发现，过半高管在一年当中会修改目标，但只有三分之一的中层管理者会这样做。）

但另一方面也有充分证据显示，若给员工的目标选择不当，可能带来糟糕后果。例如，由莱瑟姆等人最近做的一项研究发现，若经理们觉得下达到身上的目标不可企及，他们欺压下属的可能性会更高。“就像人们踢打小狗来发泄挫折愤懑一样。”他说道。

哪些目标属合理延展，哪些是过分苛求，两者的分界线有时很难判断，哈佛商学院的马克斯·巴泽曼（Max Bazerman）如是说。他是2009年一份研究报告《疯狂的目标》（Goals Gone Wild）的作者之一。这份探究“失败”的报告指出了目标制定不当将带来的几个不良副作用。其中包括：员工会忽视恰巧没包含在目标中的重要事项；侵蚀职场内部文化；降低员工主动性；引诱人陷入不道德或高危行为。例如，在20世纪90年代，西尔斯公司（Sears）汽车维修工人的每小时收入目标导致系统性的超额乱收费，常以不必要的项目宰客。而1970年，福特公司为了赶在当年度把其平托车型（Ford Pinto）投入市场，未作充分的安全测试便匆匆推出，而这些测试本有可能发现在事故中容易起火的致命缺陷。

审慎反应

杜根认为，BetterWorks的系统让公司里每个人都可以看到其他人的目标，利用众包的方式确保目标难易适中。他说道，目标设定也应该独立于影响工资和奖金的绩效考核，允许员工挑战自我，也允许他们有时失败。比如，谷歌对于目标实现的预期只有60%至70%。

让员工联手设定目标并监控实现进程，并允许其偶尔失败，对于像谷歌这样具备高绩效文化的年轻创新型企业来说，是很可行的。但如果企业里员工冷淡疏离而管理层又保守不愿尝试，这样的改革就较难推行。即便是谷歌公司，实践目标有时也是一波三折。最近谷歌决定暂时把谷歌眼镜撤出市场，相关报告显示该款可穿戴电脑设备实际上推出过早。据说，当初是该公司创始人之一谢尔盖·布林（Sergey Brin）一意孤行要推出产品，尽管工程师们一再反对，认为在其设定的限期内无法充分优化产品的设计。若上司要求的是不可能完成的任务，那即便是最积极敬业的员工也可能无法达成其目标。■

Schumpeter

Brazil's business Belindia

Why the country produces fewer world-class companies than it should

BRAZILIANS make up almost 3% of the planet's population and produce about 3% of its output. Yet of the firms in *Fortune* magazine's 2014 "Global 500" ranking of the biggest companies by revenue only seven, or 1.4%, were from Brazil, down from eight in 2013. And on *Forbes*'s list of the 2,000 most highly valued firms worldwide just 25, or 1.3%, were Brazilian. The country's biggest corporate "star", Petrobras, is mired in scandals, its debt downgraded to junk status. In 1974 Edmar Bacha, an economist, described its economy as "Belindia", a Belgium-sized island of prosperity in a sea of India-like poverty. Since then Brazil has done far better than India in alleviating poverty, but in business terms it still has a Belindia problem: a handful of world-class enterprises in a sea of poorly run ones.

Brazilian businesses face a litany of obstacles: bureaucracy, complex tax rules, shoddy infrastructure and a shortage of skilled workers—to say nothing of a stagnant economy (see next story). But a big reason for Brazilian firms' underperformance is less well rehearsed: poor management. Since 2004 John van Reenen of the London School of Economics and his colleagues have surveyed 11,300 midsized firms in 34 countries, grading them on a five-point scale based on how well they monitor their operations, set targets and reward performance. Brazilian firms' average score, at 2.7, is similar to that of China's and a bit above that of India's. But Brazil ranks below Chile (2.8) and Mexico (2.9); America leads the pack with 3.3. The best Brazilian firms score as well as the best American ones, but its long tail of badly run ones is fatter.

Part of the explanation is that medium and large firms tend to be better-organised than small ones, and not only because well-run ones are likelier

to grow. Brazil offers incentives aplenty to stay bitty, such as preferential tax treatment for firms with a turnover of no more than 3.6m reais ($1.3m). As they expand, many firms split rather than face increased scrutiny from the taxman. According to the World Bank, a midsized Brazilian firm spends 2,600 hours filing taxes each year. In Mexico, it is 330 hours.

Ownership patterns play a part too. Many Brazilian concerns are controlled by an individual shareholder, or one or two families. Two-thirds of those with sales of more than $1 billion a year are family-owned, notes Heinz-Peter Elstrodt of McKinsey, a consulting firm. That is less than in Mexico (96%) or South Korea (84%) but more than in America or Europe. Mr Van Reenen's research shows that where family owners plump for outside chief executives, their firms do no worse than similarly sized ones with more diverse shareholders. But all too often they pick kin over professional managers—and performance suffers. This is particularly true in "low-trust" societies like Brazil, where bosses hire relatives instead of better-qualified strangers to avoid being robbed or sued for falling foul of overly worker-friendly labour laws.

Decades of economic turmoil—which ended when hyperinflation was vanquished in 1994—meant that companies were managed from crisis to crisis. This forced Brazilian firms to be nimble. But it also encouraged short-termism, which management consultants and academics finger as Brazilian managers' number-one sin. Faced with a record drought in 2014, and a subsequent spike in energy prices in a hydropower-dependent country, Usiminas, a steelmaker, stopped smelting and started selling power it had bought on cheap long-term contracts. Energy sales made up most of its operating profits that year. Such short-term stunts are hardly the path to long-term greatness.

Worse, crisis management all too often consists of going cap in hand to the government. Brazilian bosses continue to waste hours in meetings with

politicians that could be better spent improving their businesses. In January 2014, as vehicle sales flagged, the automotive industry's reflex reaction was to descend on the capital, Brasília, and demand an extension of its costly tax breaks. Thanks to lifelines cast by the state, feeble firms stay afloat rather than sink and make room for more agile competitors. Shielded from competition by tariffs, subsidies and local-content rules, they have little reason to innovate. A locally invented gizmo which lets cars run on both petrol and biodiesel is nifty. But, asks Marcos Lisboa of Insper, a business school, does that really justify six decades of public support for the motor industry?

The dead hand of government

Indeed, a glance at the "Belgian" end of Brazil's corporate landscape suggests that successful firms cluster in sectors the state has not tried desperately to help, such as retail or finance. Bradesco, a big lender, is internationally praised as a pioneer of automated banking. Each month Arezzo creates 1,000 new models of women's shoes, and picks 170-odd to sell in its shops.

Brazil's other world-beaters are in industries like agriculture and aerospace, which are free to compete at home and abroad, and in which the government sticks to its proper role. In 1990 farms were allowed to consolidate and to buy foreign machines, pesticides and fertiliser. Efforts by Brazil's trade negotiators opened up export markets. JBS, a meat giant, can slaughter 100,000 head of cattle a day, selling more beef than any rival worldwide. Thanks in part to Embrapa, the national agriculture-research agency, Brazilian farms have been raising productivity by about 4% a year for two decades. Similarly, a supply of skilled engineers and know-how from the government's Technological Institute of Aeronautics has helped turn Embraer, privatised in 1994, into one of the world's most successful aircraft-makers.

The success of businesses such as these offers a lesson for the state. The best way to make Brazil's underperforming firms more competitive would be to make them compete more. Coddling by the state can be more a curse than a blessing. Ronald Reagan's dictum that the nine most terrifying words in the English language are, "I'm from the government and I'm here to help," translates well into Flemish, Hindi and Brazilian Portuguese. ■

熊彼特

巴西的商业“富岛”

为何该国创造出的世界一流公司比应有的少

巴西人口占全球的近3%，巴西人创造的产出也占全球的约3%。不过《财富》杂志2014年“全球五百强”榜单上，按营业收入排名的最大公司中只有七家，也就是1.4%来自巴西，比2013年还少了一家。在《福布斯》全球企业2000强的名单上仅有25家，即1.3%是巴西公司。该国最大的明星企业巴西国家石油公司（Petrobras）深陷丑闻，其债务评级已被下调至垃圾级。1974年经济学家埃德马·巴查（Edmar Bacha）将巴西经济形容为“比利印度”（Belindia），意指巴西的繁荣部分仅有比利时大小，如小岛置身于有印度之大的贫困海洋中。彼时至今，巴西在缓解贫困方面已经比印度出色得多，但就商业而言，它仍面临着“比利印度”的问题：经营不善的企业多如牛毛，世界一流者寥寥无几。

巴西企业面临着重重阻碍：官僚主义、复杂的税收规则、落后的基础设施以及熟练工人短缺，更不用说停滞不前的经济。但是巴西公司表现不佳的一个重要原因却鲜有详述：管理不善。2004年起，伦敦政治经济学院（the London School of Economics）的约翰·范·瑞内恩（John van Reenen）和他的同事调查了34个国家的11,300家中型企业，根据如何监控运营状况、设定目标和奖励绩效将它们按五分制评级。巴西公司的平均分为2.7，与中国相当，比印度略高。但是巴西的排名低于智利（2.8）和墨西哥（2.9）；而美国以3.3分领先。巴西最好的公司与美国最好的公司分数相当，但巴西经营不善的公司形成的长尾更为庞大。

原因之一是大中型企业往往比小企业更加组织有序，而并不仅仅因为运营良好的公司更有可能发展壮大。巴西为保持企业小规模提供了丰富的激励政策，例如营业额不超过360万雷亚尔（130万美元）的公司享有税收优惠。一旦规模扩大，很多公司宁愿分拆，否则就要面对税务员越来越详尽的审查。世界银行称，巴西一家中型公司每年要花2,600小时报税。而在墨西哥只需要330小时。

所有权模式也是原因之一。巴西很多正在运营的公司由一位个人股东，或是一到两个家庭控股。咨询公司麦肯锡的海因兹-彼得·埃尔斯特罗特（Heinz-Peter Elstrodt）指出，销售额每年超过10亿美元的公司中有三分之二是家族所有。这一比例低于墨西哥（96%）和韩国（84%），但高于美国和欧洲。范·瑞内恩的调查显示，如果家族企业拥有者选择外部首席执行官，相比规模类似而股东更多元的企业，他们的公司不会表现得更差。但他们通常都会选择亲属而非专业管理人员，这样一来业绩堪忧。在像巴西这样"信任度低"的社会尤其如此，老板们雇用亲戚而不是资质更佳的陌生人，以免被洗劫一空，或是因为和过度保护劳工的劳动法冲突而被起诉。

1994年随着恶性通货膨胀受到控制，数十载的经济动荡终于结束，但这也意味着巴西企业经历过重重危机。这迫使它们保持敏捷。但这也鼓励了短期行为，管理顾问和学者视之为巴西管理人员的头宗罪。2014年巴西经历了创纪录的干旱，随后在这个依赖水利发电的国家里能源价格飙升，钢铁公司米纳斯吉拉斯（Usiminas）停止冶炼，转手销售它依赖长期合同买到的廉价电。能源销售去年占其经营利润的大部分。这样的短期之举恐非构筑长期伟业之路。

更糟的是，危机管理常常意味着向政府要援助。巴西的老板们不停浪费时间和政客们会面，这些时间还不如用来提升公司业务。2014年1月，由于汽车销售萎缩，汽车业的反射性反应是赶往首都巴西利亚，要求延长昂贵的税收减免政策。多亏了国家抛出的救生索，疲弱的公司才得以苟延残喘，而非沉没后让位于更为灵活的竞争者。关税、补贴和地方法律令它们免于竞争，它们没什么理由去创新。当地一项让汽车既能用汽油也能用生物柴油的小发明精妙非常。但是，Insper商学院的马科斯·里斯本（Marcos Lisboa）问道，这真的能证明政府六十年来对汽车制造业的支持正当有理吗？

政府的死亡之手

的确，向巴西企业格局的"比利时"那端看一眼就会明白，成功的企业聚集在国家没有拼命试图援助的产业，如零售业或金融业。巴西大型银行布拉

德斯科银行（Bradesco）在国际上被誉为自动化银行的先行者。巴西著名女鞋品牌Arezzo每个月会新创制1000款女鞋，从中挑出170款左右在其店里销售。

巴西另一些全球领先的行业是农业和航空航天业，在国内外均可自由竞争，且政府在其中恪守本分。1990年巴西允许农场合并且购买外国机械设备、农药和化肥。巴西贸易谈判代表的努力打开了出口市场。肉类生产巨头JBS每天可屠宰10万头家畜，牛肉的销量超过全球任何一家竞争对手。巴西农场20年来每年生产率提高约4%，这部分要归功于Embrapa的成果。同样地，由政府航空技术学院提供的熟练工程师和专业知识已经帮助在1994年私有化的巴西航空工业公司（Embraer）成为全球最成功的飞机制造商之一。

诸如此类的企业获得的成功给政府上了一课。令巴西业绩不佳的公司更具竞争力的最好途径就是让它们更多地竞争。国家的娇养溺爱更像恶咒而非祝福。罗纳德•里根曾说过，英语中最可怕的九个字是“我来自政府，我来帮忙。”这句话在佛兰德语、印地语和巴西葡萄牙语中都有精妙翻译。■