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Politics

With strong support from Germany and France, and opposition from east European governments, the European Commission proposed a mandatory quota system that distributes **refugees** among the EU's member states. An initial intake will number 160,000 though the figure is expected to rise. Refugees from Africa and the Middle East continued to enter the borderless Schengen area of the EU in ever greater numbers, appearing at times to overwhelm officials and security forces in countries from Hungary to Denmark. Train services frequented by refugees have been shut down selectively, but those who reached Germany received a warm welcome.

The National Front, a far-right party in **France**, was charged with defrauding the state over expense claims for elections in 2012. Its leader, Marine Le Pen, has been riding high in the polls for months after attacking her opponents over corruption claims.

Clashes between **Kurdish** separatist forces and the Turkish army intensified following rebel attacks that killed 30 soldiers and policemen. Nationalist mobs damaged the offices of a pro-Kurdish political party. Turkey sent troops and jets across the Iraqi border where rebels train and shelter.

Queen Elizabeth II's reign reached its 23,226th day, surpassing the record set by Queen Victoria as Britain's longest-serving monarch. Prince Charles already holds the record, at age 66, for oldest heir to the throne.

Still a pariah state

Ayatollah Ali Khamenei, **Iran's** supreme leader, caused outrage in **Israel**, and perhaps some doubts among supporters of the deal with Iran on nuclear weapons, when he said in a speech that Israel will not exist in 25 years. He also stressed that the nuclear deal will not lead to talks with America on other issues.

Britain's government revealed that it had killed two of its own citizens, and another man, who were fighting for Islamic State in Syria, with a **drone strike**. The two Britons were said to have been plotting imminent attacks on British targets, but the killing marks the first time that Britain has hit IS in Syria (it has been attacking the group in Iraq for months).

Egypt sent 800 ground forces to join the Saudi-led coalition in **Yemen** that is fighting the Iranian-backed Houthi rebels there, who in March drove out the internationally recognised government. Egypt had long resisted becoming involved.

Joice Mujuru, a leading member of **Zimbabwe's** ruling Zanu PF party, was set to form a new party to contest power in a country that has been ruled continuously since its independence in 1980 by Robert Mugabe. Ms Mujuru was one of Mr Mugabe's closest allies until her dismissal from the government last year following vitriolic attacks on her by Mr Mugabe's wife, Grace, a contender to succeed him to the presidency.

The main opposition party in **Rwanda** brought a case before the Supreme Court to prevent changes to the constitution that might allow Paul Kagame, the president, a third term in office. The country's parliament has voted to allow Mr Kagame to stand again, although he has not yet said whether he will do so.

Police in **Kenya** arrested three men who allegedly tried to carry a bomb into a shopping mall in Nairobi, the capital. Security at most malls has been tight since an attack two years ago by the Shabab, a Somali jihadist group, on the Westgate shopping mall that resulted in at least 63 deaths.

It's no joke

In **Guatemala** a political outsider and comic actor, Jimmy Morales, came top in the first round of a presidential election, capitalising on the mood of disgust with old-time politicians. Otto Pérez Molina has been ordered to stand trial on the charges of customs fraud, racketeering and bribery which forced him to resign as president recently.

A diplomatic crisis between two Latin American neighbours deepened after **Venezuela's** President Nicolás Maduro closed another border crossing with **Colombia**, alleging that criminal gangs were infiltrating the area. The Venezuelans have deported more than 1,000 Colombians living near the border. Critics say Mr Maduro is looking for a scapegoat at a time when the economy is floundering.

An international inquiry poured huge doubt on the **Mexican** government's account of the disappearance last year of 43 trainee teachers who are assumed to have been massacred. It rejected the government's claim that all the students' bodies were incinerated and said more investigation was needed.

Death rained down

Officials in **Afghanistan** claimed that at least 11 policemen were killed in an American air strike, potentially the highest toll from a friendly fire incident in the country since 2001. The police were apparently operating undercover on an anti-drugs mission. American military officials are investigating.

The Supreme Court of **Pakistan** enforced a ban on hunting the Houbara bustard, an endangered bird. Hunting parties from the Gulf states on the Arabian peninsula, where the bustard is thought to be an aphrodisiac, have often flouted laws in Pakistan, killing it in great numbers.

Just do your job

A county-court clerk in **Kentucky** spent a week behind bars for refusing a judge's order to issue marriage licences to gay couples. The clerk maintains that her religious beliefs stop her from sanctioning gay marriage, which was legalised by the federal Supreme Court in June. Many wondered why she just didn't simply resign if she was so offended.

Hillary Clinton apologised for using a private e-mail server when she was secretary of state, admitting it was a "mistake". The front-runner for the Democratic presidential nomination also outlined plans to make political donations more transparent should she be elected. On the Republican side, **Jeb Bush** proposed simplifying the tax code by reducing the number of tax brackets, cutting the top rate to 28% from 39.6% and lowering corporate tax from 35% to 20%.

The pilot of a **British Airways** jet that caught fire as it was about to take off from Las Vegas for London was praised for his actions. Smoke billowed through the aircraft when an engine malfunctioned, but a swift evacuation saved all 172 people on board.

Business

Stockmarkets rallied after the Chinese government promised a "more forceful" policy to counter a slowdown in **China's** economy that has sent a chill through global markets recently. The Nikkei surged by 7.7%, its biggest one-day increase since 2008, a welcome relief for investors in **Japan's** benchmark share index following a sharp drop in August. But trade data suggested a big decline in China's imports and exports in August. The central bank said that its foreign-exchange reserves dropped by a record $94 billion last month, due to interventions in currency markets.

Will they, won't they?

Some investors were also buoyed by speculation that the Federal Reserve will delay raising **interest rates** at its next policy meeting on September 16th-17th. Echoing similar advice to the Fed from the IMF, the chief economist of the World Bank warned that increasing rates now would add to the "panic and turmoil" in markets. Fed officials have given contrasting views of late about the timing of a rise, undermining the central bank's attempt to provide markets with a clear signal ahead of an increase.

Complicating the outlook for interest rates, new figures showed that joblessness in America is now roughly at the Fed's estimate of its "natural rate", which stands at 5-5.2%. If **unemployment** falls much further, the Fed's models predict that wage growth and inflation will accelerate.

Puerto Rico presented a five-year plan to restructure its $72 billion of debt. As well as proposing cuts to public spending under the auspices of an independent board, the plan asks creditors to accept a "consensual compromise" that will force them to take a haircut on the bonds they hold, including on general-obligation bonds that hitherto were considered safer bets.

Standard & Poor's cut **Brazil's** credit rating to "junk" status. The economy has plunged into recession in part because commodity and energy companies have curtailed investment in response to weaker commodity prices. The downgrade is another headache for the government, which is also trying to tackle rising prices and high unemployment.

Oil prices pared back some of their recent gains when Russia scotched speculation that it would co-ordinate with OPEC to lower oil production and ease a worldwide glut that has caused the price of oil to plummet. The Russian economy relies heavily on oil revenues.

Tarnished metal

Glencore unveiled a strategy for reducing its $30 billion debt pile. The commodities-trading and mining company plans to sort out its finances by closing two **copper-mining** operations in Africa as well as shedding other assets, postponing its dividend and raising $2.5 billion in new capital. Glencore's share price has slumped over the past year as commodities prices dived. The announcement that it will shut two mines, taking 400,000 tonnes of the metal out of the market, lifted copper prices.

Tesco, Britain's biggest supermarket retailer, also took action to pay down its net debt, which stood at £8.5 billion ($13 billion) in its latest fiscal year. It is selling its operations in South Korea to a private-equity consortium led by **MBK Partners**, which, at $6.1 billion is South Korea's biggest private-equity deal.

Li Ka-shing, Hong Kong's richest man, carried out another big restructuring of his business empire by merging two companies in a $12 billion transaction. The deal frees up a mountain of cash for Mr Li to make acquisitions as part of his pivot towards Europe and away from China.

In the latest instance of Japanese insurance companies buying foreign assets to offset slow growth at home, **Mitsui Sumitomo** said it would buy London-based **Amlin** for £3.5 billion ($5.3 billion). Japanese firms have featured prominently in a wave of merger activity in the insurance industry, which has seen $100 billion in acquisitions since January.

A new study suggested that **Alzheimer's disease** might possibly be transmitted through certain medical procedures. Scientists called for more testing to verify the theory.

Jeff Smisek resigned as the boss of **United Airlines** as a federal investigation began into whether the carrier had reinstated flights on a loss-making route to curry favour with New Jersey's port authority, in exchange for improvements to Newark airport.

Caught inside

Quiksilver's American operations filed for bankruptcy protection. The surf-clothing company, which is based in Huntington Beach, or Surf City USA, was totally tubular in the 1990s, but its success prompted a wave of competition from copycat firms that marketed their apparel at the swelling hordes of hodads.

Other economic data and news can be found on pages 90-91


She's a fan.
MANDARIN ORIENTAL
THE HOTEL GROUP

Exodus

Europe should welcome more refugees and economic migrants—for the sake of the world and itself

FOR too long Europe has closed its eyes to Syria's foul and bloody civil war, and tried to keep the suffering multitudes out. Suddenly the continent's gates have been pushed open by two political forces. One is moral conscience, belatedly wakened by the image of a drowned Syrian child on a Turkish beach. The other is the political courage of Angela Merkel, the German chancellor, who told her people to set aside their fear of immigrants and show compassion to the needy.

Tens of thousands of asylum-seekers flowed towards Germany by rail, bus and on foot, chanting "Germany! Germany!", to be welcomed by cheering crowds. Germany is showing that old Europe, too, can take in the tired, the poor and the huddled masses yearning to breathe free. It says it can absorb not thousands, but hundreds of thousands of refugees.

Such numbers will inevitably raise many worries: that cultures will be swamped by aliens, economies will be overburdened, social benefits will have to be curbed and even that terrorists will creep in. Anti-immigrant parties have been on the rise across Europe. In America, too, some politicians want to build walls to keep foreigners out.

Yet the impulse to see migrants as chiefly a burden is profoundly mistaken. The answer to these familiar fears is not to put up more barriers, but to manage the pressures and the risks to ensure that migration improves the lives of both immigrants and their hosts. The starting point is a sense of perspective.

Willkommen, bienvenue, salaam alaikum

As a wealthy and peaceful continent surrounded by large areas of poverty and chaos, Europe is a strong draw for many seeking a better life. The 4m Syrian refugees compare with 1.2m from the Balkan wars of the 1990s and 15m after the second world war. The UN refugee agency, UNHCR, counts 59.5m refugees and other forcibly displaced people worldwide. Europe cannot take everybody in. But in truth, most people prefer a decent life at home. In addition, the history of migration is a catalogue of overblown fears (see page 22), with countless examples of exiles forming vibrant communities that enrich their host countries: the Jews, the Armenians, the Vietnamese boat-people and the Ugandan Asians, to name but a few. Germany's *Willkommenskultur* is right morally, economically and politically. It sets an example to the world.

Policymakers need to think about three groups: refugees, economic migrants and voters at home. Start with refugees. Syrians make up the largest contingent of asylum-seekers in Europe. Oppressed by the barrel-bombs of Bashar al-Assad's regime and the jihadists of Islamic State, Syrians meet any standard for recognition as refugees with a "well-founded fear of persecution", under the terms of the UN convention on refugees of 1951. Helping Syrians is a clear moral duty.

That responsibility falls not on Europe alone, but the world as a whole. It needs a co-ordinated policy to manage the Syrian crisis along the entire chain of displacement. There must be a concerted effort to contain the war, starting with the creation of protected havens. UN agencies, buckling under the strain, must be properly funded. Syria's neighbours, which have taken in the largest share of refugees, need help to provide education and jobs, not just camps in the desert. America, Western countries and especially the rich monarchies of the Gulf should resettle many more Syrians—just as 1.8m Indochinese refugees were resettled in the 1970s and 1980s. Transit countries need help to manage human flows and absorb at least some people. Refugees should be able to apply for asylum in Europe without risking their lives at the hands of people-smugglers; that may mean establishing processing centres in transit countries. In Europe refugees should be shared across the EU fairly (see Charlemagne); other migrants denied entry should be speedily repatriated. The countries of the western Balkans (Albania, Kosovo, Serbia) should be deemed safe.

Refugees are intertwined with economic migrants. They get on the same boats and resentment of migrants erodes support for refugees. How, then, to deal with those who want a better life rather than a safer one?

Whereas states may not be able to pick who comes in search of protection, they want to choose who comes to work. A willingness to accept legal migrants gives countries more scope to turn back the illegal sort; issuing more work visas gives neighbouring countries a stake in the system and hence a reason to co-operate in curbing illegal flows. But the fundamental point is that Europe needs economic migrants. It has too few workers to pay for its citizens' retirement and to provide the services they want. Migrants are net contributors to the public purse. They inject economic dynamism. They are, almost by definition, self-starters.

Voters may not be so sanguine, though. Newcomers need housing, schools and health care. There is evidence that they depress wages for the low-paid—though barely. Where labour markets are rigid, migrants can become an underclass. Yet this strengthens the case not for fortress Europe, but for good public policy—and especially for the sort of open, flexible labour markets that Europe needs whether or not it accepts migrants.

Voters fear that immigrants will not fit in. An old idea of Christendom still lurks within modern European identity. Since the 9/11 attacks on America, and terrorist murders in Europe, relations with Muslim minorities have become strained. Yet compassion towards needy Muslims is part of the antidote to a hateful jihadist ideology. By contrast, millions of brutalised Syrians left to fester on Europe's fringe would be a source of extremism that will not respect any border.

Love ye the stranger

There are surely limits to how many migrants any society will accept. But the numbers Europe proposes to receive do not begin to breach them. The boundaries of social tolerance are fuzzy. They change with time and circumstance and leadership. *Willkommenskultur* shows that the people of Europe are more welcoming than their nervous politicians assume. The politics of fear can be trumped by the politics of dignity. Mrs Merkel understood this; so should the rest of the world. ■

Gay marriage: the aftermath

Some martyr

Gays, not Christians, are still America's truly embattled minority

JAILING Kim Davis for five nights has made her a misleading martyr to a misguided cause. Ms Davis is a clerk in Kentucky who adamantly refused to dispense marriage licences to same-sex couples. Her offence—to break the law in order to preserve her conscience—was even more wrongheaded than her punishment. Though she is now free again, her supporters, including several Republican presidential candidates who ought to know better, see her brief incarceration as the brutal triumph of secular tyranny. They exaggerate both Ms Davis's nobility and the threat faced by Christian America.

After the Supreme Court in effect legalised same-sex marriage throughout the country in June, several local officials—among them Ms Davis, the clerk of Rowan County, Kentucky—stopped supplying marriage licences to any couples, gay or straight. She was sued; she lost, predictably and repeatedly. When, after a convoluted legal process, she still refused to comply, she was judged to be in contempt of court and locked up. For all the adulation it has garnered, her stance is deeply confused, not least because issuing licences to pairs of men or women who want to get hitched would not imply her moral approval of their unions. It would signify only that the couples had met the legal requirements for marriage. Ms Davis is fully entitled to her horror, but it is irrelevant to her duties.

If that distinction failed her, she should have resigned, as others in her position have (since her post is elected, she cannot easily be sacked). She might even have stayed out of jail by letting her deputies process the offending paperwork in her stead (and might go back inside if she prevents them doing so now). That choice does not amount to a tyrannical imposition on her freedom. It simply means that, as a public official, she is bound to uphold the law. To compare her recalcitrance, as some admirers have, to the refusal of Rosa Parks to give up her seat on a Montgomery bus, or to the 19th-century figures who declined to return runaway slaves, is absurd.

Absurd because, unlike slavery or segregation, gay marriage is almost completely victimless. Therein lies another fallacy of Ms Davis's martyrdom: she makes it seem that Christians have been persecuted by the Supreme Court's ruling, directly and en masse, when, in reality, only a few have been inconvenienced (and many more gay Christians stand to benefit). There is a difficult question about whether the handful of devout bakers and florists who would prefer not to cater to same-sex nuptials should be compelled to. The law must either require shopkeepers to treat everyone alike or condone their intolerance—equality is surely better. Meanwhile, despite much scaremongering to the contrary, those pastors who do not wish to oversee such ceremonies are already exempt. Ms Davis's predicament is not only self-inflicted. It is also wholly unrepresentative.

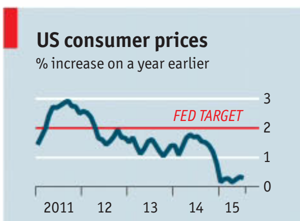
Victim complex

Still, the furore in Kentucky shows the extent to which some Christian Americans feel besieged by what they perceive as a strangulating godlessness. Given the freshness of the gay-marriage ruling, perhaps that paranoia is understandable. The truth, though, is that Americans' freedom to practise their faiths is robustly defended by both the constitution and federal law (see page 40). The rights of the godly are actually much more secure than those of gay Americans—who still lack federal protection from prejudice like that granted to other groups by the Civil Rights Act of 1964. In most states of America homophobes can still legally discriminate against homosexuals, married or otherwise. That is a much graver scandal than Ms Davis's theatrical refusal to do her job. ■

The Federal Reserve

False start

The Fed should wait until inflation is closer to target before raising rates



THE last time the Federal Reserve raised its benchmark interest rate, there was no one to tweet about it. That rise, in June 2006, predated Twitter's public release by a month. Nine years on, as the Fed readies itself to raise rates again, the public debate between hawks and doves is much noisier. Markets reckon that the Fed will raise its benchmark rate at least once this year, from the 0-0.25% range it has targeted since December 2008—and perhaps do so as soon as its next rate-setting meeting on September 16th-17th. But here, it does not pay to go early: a rise now would needlessly risk America's recovery.

On the face of it, the case for a rise looks perfectly respectable. The American economy is at its fittest in more than a decade. It grew at a 3.7% annualised pace in the second quarter of 2015; after a brutal period of post-recession deleveraging, consumers are spending again. Firms have been hoovering up workers, creating jobs at a rate of about 3m a year, the best performance since 1999 (see page 69). In August the unemployment rate fell to 5.1%. The Fed has repeatedly assured markets that its rate increases will be gradual and gentle: hawks argue that slightly higher rates will not derail the economy.

They also brush aside low inflation. The Fed's preferred measure, which has been below its 2% target for more than ▸▸

three years, stood at 0.3% in July. Yet the central bank is meant to look ahead when making its decisions. With unemployment so low, the Fed is confident that firms will find themselves forced to boost pay to attract workers. That should lead to higher prices. Meanwhile, the effects of falling oil prices and a rising dollar, which have depressed inflation over the past year, should soon abate, allowing inflation to climb back to 2%—and perhaps higher, if the Fed does not act soon.

Hawks make a third argument for speedily escaping the abnormal world of near-zero interest rates. With borrowing costs so low, they say, it is only a matter of time before yield-hungry investors take on extravagant risks, laying the groundwork for a future financial calamity. The sooner the economy permits a return to higher rates, the better.

Act in haste

Look closer, however, and this case is flawed. A looming rise in inflation is anything but certain. Although the unemployment rate is low, other labour-market measures suggest willing workers are waiting in the wings. Labour-force participation among workers aged 25 to 54 has yet to recover from its recession swoon. Wage growth, at 2.2%, has scarcely risen in four years and remains well below levels reached during the previous three recoveries. That suggests firms can still draw on a reservoir of underemployed workers—which should keep a lid on wages and prices. The financial risks from ultra-low rates have been reduced by tougher regulation.

In addition, the Fed is moving to tighten just as the global economy is weakening. That is not just a concern to wobbly emerging markets, which fear that rising interest rates in America will prove a magnet for foreign capital. The dollar, up by nearly 20% over the past year on a trade-weighted basis, may float even higher, squeezing American exporters and dragging down inflation. Small wonder markets signal that they expect inflation to remain below 2% for the next few years.

On its own, therefore, the balance of probabilities argues against a rise. But the clinching argument against the hawks is that they ignore a fundamental asymmetry of risks. If the Fed waits too long to tighten, then inflation will rise above 2%. Were that to happen, the Fed has unlimited capacity to raise rates and could do so safe in the knowledge that it had pushed the American economy to its speed limit. If rates then had to rise steeply, the central bank would at least have more room to respond to future troubles by cutting again.

Raising rates too soon would be much costlier. A slowdown in growth could turn low inflation into deflation. To perk the economy back up, the Fed would have little option but to restart quantitative easing. That sort of backtracking is precisely the fate that has befallen other central banks which moved to tighten too swiftly (see page 72). Years of rock-bottom interest rates in Japan might have been avoided had the Bank of Japan been a little more patient in 2000, when it lifted rates in response to quickening growth (and higher stockmarkets) despite falling prices.

Low interest rates have risks. But premature rate increases can make them a near-permanent feature of economic life. For months Fed statements have declared that inflation will soon return to 2%. There is little harm in waiting to be sure. ■

Business in China

The China that works

If the economic miracle is to continue, officials must give the private sector more freedom

AFTER a summer of tumbling stockmarkets and gloomy data, the Chinese economy has the rest of the world on edge. The value of imports sank by 14.3% in August year on year, reinforcing worries that a sharp slowdown is under way. Those years of double-digit growth are firmly in the past. The question many ask is whether China can find a new model of growth to replace the old one. The good news is that it already exists. It is called the private sector.

In our special report in this week's issue we show how the private sector has created almost all new urban jobs in the past decade, and now employs about four-fifths of urban workers. Average growth in output at private industrial firms since 2008 has been double that seen at state-owned enterprises (SOEs). The returns on assets at private firms are higher than those at SOEs, where they are below the cost of capital. The country's manufacturing sector, which is almost entirely controlled by private firms, remains the world's most formidable: China's share of global exports rose from 11.5% in 2011 to 14.3% in June.

Important as private firms already are, the onus on them to propel China's economy forward will only grow, for three reasons. The first is China's transition away from investment-led growth and towards consumption-led industries and services. SOEs have been central to China's long investment boom: they account for perhaps a third of capital spending, against a figure of 5% or less in most rich countries. Consumer industries, by contrast, are the province of world-class private enterprises such as Tencent, an online-gaming and social-media giant, and Xiaomi, a smartphone trailblazer.

Second, China needs to become more inventive. McKinsey Global Institute, a think-tank, reckons that, if China is to sustain annual growth of 5.5-6.5% until 2025, a third to a half of this increase must come from improvements in total factor productivity—essentially, innovation. China's nimble entrepreneurs are brilliant at coming up with new products and services to cater to exacting consumers: a Chinese firm commands half the burgeoning global market for commercial drones, for example. Chinese businesses are also good at business-process innovations designed to increase efficiency.

The third reason for thinking that private firms will become more central is that China's debt-driven growth model is sputtering. The SOEs are the channels through which much official credit has been shovelled into the economy, often aimed at white-elephant projects. The average debt-to-equity ratio at state firms is roughly 1.6; at private firms it is below 0.8. If China is to keep growing fast, credit will need to be withdrawn from state-owned zombies and directed to flourishing private firms. ▸▸

China's leaders know all this, of course. The lash of competition is what turned Chinese exporters into world-beaters. Officials have publicly vowed to give markets a "decisive role" in the domestic economy, too. The problem for them is that, if China Inc is fully to realise its potential, the Communist Party must ease its grip. The tension between liberalisation and control has long existed—successful private firms themselves carefully cultivate good relations with the party. But the slowdown has sharply raised the cost of sacrificing output for dominance.

Brain not brawn

Take innovation. China's central planners are spending more than $200 billion a year on R&D, and want to triple the number of patents awarded in China by 2020. But patents and PhDs get you only so far. If world-class innovation is to flourish, private companies must have access to the best ideas and the brightest people in the world. Yet the party ultimately controls what is taught at the country's universities, and state censors routinely block access to international websites and useful collaborative tools like Google Docs. China also makes it too difficult for foreigners to immigrate.

It is a similar story in other areas. The government has embarked on much-needed reform of the SOEs, of China's legal regime and of the country's financial system. But conflicts, compromises and questions abound. On SOEs, the details are fuzzy but reports this week suggest that the government is minded to split firms into two camps, one commercially oriented and the other focused on something vaguely defined as the public good. The real problem is that vested interests inside the SOEs parry reform. Even if the proposed changes were fully implemented, they do not go far enough. The leadership is still loth to see any state-owned firms go bust, for example.

On the rule of law, the government wants to curb the meddling of city and provincial party officials in local courts. That is welcome, yet China's legal system and courts remain subservient to the party. On financial reform, interest rates are being liberalised and internet finance is vibrant, but what investors will remember from this summer are the bans on selling shares and the investigations into market participants.

If China is to sustain strong growth—and with it the high employment that buttresses social stability—the only option is to encourage more enterprise and innovation. Such dynamism will not come from stodgy state firms. It can be generated only by the China that works. ■

Biodiversity

Growing pains

Storing wild seeds will save harvests—and lives

FARMING is more efficient than ever. But the search for high yields has also made it more concentrated. From the wheat in steaming noodles to the maize of fresh tortillas, just 30 crops now sate almost all of humanity's nutritional needs.

But monoculture carries great risks. A single disease or pest can wipe out swathes of the world's food production, an alarming prospect given that its growing and wealthier population will eat 70% more by 2050 (see page 59). The risks are magnified by the changing climate. As the planet warms and monsoon rains intensify, farmlands in Asia will flood. North America will suffer more intense droughts, and crop diseases will spread to new latitudes. Pests are on the move, too. Since the 1960s, unwanted beasties, spared harsh winter frosts, have moved polewards at an average of around 3km (2 miles) a year.

The solutions to some of these problems lie in the genes of wild relatives of food crops. Botanists can screen them for valuable traits, and use the genes to breed new domestic varieties. Asian paddy fields were saved from the brown planthopper 40 years ago thanks to one wild Indian rice species. This is often cheaper and less controversial than genetic modification. But success depends on having thousands of varieties to test.

The burden of preserving biodiversity must fall on governments. Biotech firms focus on just a few commercial crops, and control the distribution of their seeds. Developing and maintaining seed banks, which currently hold 7.4m samples of the Earth's bounty in their vaults, is essential. But most seed banks were built in the 1970s and 1980s and have seen little investment since. Some have disappeared altogether owing to war, as in Afghanistan, and fire, as in the Philippines. And keeping samples healthy requires regular propagation, not just dehydration and freezing. That means hiring and training plenty of botanists—who can also search for new species.

The world's seed banks co-ordinate their work through the International Seed Treaty, which came into effect in 2004 and has been signed by 135 countries and the European Union. It identifies 35 food crops as so essential to global food security that their genetic diversity should be shared widely.

But some countries' regulations on "biopiracy"—the uncompensated commercialisation of plants and seeds—stop the treaty from being properly implemented. In the 19th century rubber barons enriched themselves by sneaking seeds out of the Amazon. One explorer, Sir Henry Wickham, got 70,000 of them through customs; many were used to establish rubber plantations in Asia, breaking Brazil's monopoly. India, among others, now offends too far the other way. Scientists working there struggle to get permission to export samples, even when they cite the treaty's provisions, for fear of piracy. And the list of 35 essential crops fails to include some important ones, such as soyabeans and peanuts. It needs to be expanded.

Money well spent

Much harm has been done. In the past century about three-quarters of global crop genetic diversity is thought to have been lost, and with it many potentially beneficial traits. Preserving what remains is an insurance policy against the effects of climate change: Britain's Millennium Seed Bank, the world's largest, cost £73m ($112m) to complete in 2010. The damage from the brown planthopper came to $1 billion in today's money. Governments should share species and fund seed banks. Their work is a vital safeguard against hunger. ■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Hunger strikers in Israel

In response to your article on Palestinian hunger strikers, "To feed or to free" (August 22nd), it should be pointed out that around two dozen of Israel's leading bioethicists, doctors and legal experts have issued a position paper favouring the imposition of life-saving feeding on hunger-striking prisoners when there is a clear threat to their life. They declared that in Israeli culture the value of human life should take priority over that of autonomy. This position, in opposition to that of the Israeli Medical Association, is supported by several Israeli court decisions, by the Israeli Patients Rights Law and is in keeping with the position of the European Court of Human Rights.

SHIMON GLICK
Professor, emeritus active
Faculty of health sciences
Ben-Gurion University of the Negev
Beer Sheva, Israel

Not quite Blake's Jerusalem

Bagehot (September 5th) believes that Labour's Jeremy Corbyn "misreads (or worse, does not like) modern Britain and its instincts". Britain is described as a country of "rampant consumerism" where "the route to happiness is through personal fulfilment". How could Mr Corbyn fault a nation that is, according to Bagehot's sources, increasingly sceptical of organised religion (preferring disorganised, I suppose), of the welfare state (deploring the practice of giving succour to the least fortunate) and of government in general (following the lead of the Tea Party brain trust)?

Sarcasm aside, we can only hope that it is Bagehot who is misreading his compatriots. It is disheartening to think that this mindset has become dominant in a people who opened the way for democracy, led the fight against African slavery, recognised early the rights of workers and women and instituted one of the world's first systems of universal health care.

LELA STROMENGER
Lexington, Kentucky

How we respond to ads

It is worth bearing in mind that although spending on different marketing media has changed fundamentally ("A brand new game", August 29th), advertisers are not so much choosing one medium over another as working out how each of us consumes, and responds to, different combinations of media. Some people first notice a product on social media, then research it further online, then buy it in store. Some are inspired by what is offered through direct mail and buy through e-commerce.

Our research over the past ten years finds that stereotypical preconceptions are on the wane. Older people are doing as much online, if not more, as the young. Younger people are more responsive to all media than cynical older buyers.

PAUL LINDSELL
Managing director
MindMetre Research
London

Streamlining taxes

Many agree with the aim of the OECD's Base Erosion and Profit-Shifting project to reduce the scope for canny tax managers who avoid their tax liability by finding discrepancies between national corporate-tax codes ("Patently problematic", August 29th). But others fear that it is arbitrary and distortionary to insist that tax competition must operate on headline rates or thresholds.

Not only are rates falling inexorably as globalisation intensifies competition for capital, but taxing profits also creates a harmful debt bias, which can only be fixed by inelegant, problematic allowances for corporate equity, and is among the most economically damaging of taxes. A government which recognised the fundamental flaw in using profits as a base, and replaced it with a tax on distributions, could reap substantial tax-simplification and economic-efficiency benefits.

RORY MEAKIN
TaxPayers' Alliance
London

Invasion from the sea

"A bigger, better Suez Canal" (August 8th) lauded the economic benefits of the expansion of the canal, but there was no mention of the environmental effect on the Mediterranean Sea. Marine scientists agree that the canal's enlargement will increase invasions of species from the Red Sea, resulting in a range of harmful effects on the ecosystem structure and functioning, with real implications for humans.

Some 450 such species have already been recorded in the Mediterranean, many of which are noxious, venomous or ecologically ruinous and pose clear threats to human health, tourism, fisheries and littoral installations. For example, swarms of venomous jellyfish clogging bathing beaches, fishing nets and intake pipes at power plants.

The better canal of your headline augurs ill for the Mediterranean Sea.

BELLA GALIL
Marine biologist
National Institute of Oceanography
Haifa, Israel

Getting kids to stay in school

There is a big structural explanation for why so many British children leave school early in addition to the factors you outlined ("Hiding in plain sight", August 22nd). This is the fact that kids "graduate" at 16 with their GCSE exams and often need to change school to continue until 18 with their A-level exams. This gives many pupils a systemically mandated decision point at which they can opt out of education. Were high school to be a consolidated progression, such as in America and Australia, students would naturally move on to the next grade with a lower chance of leaving.

SIMON GOLDMAN
Cambridge, Cambridgeshire

Learning from the octopus

Reading your report on the decentralised control system and brainpower of certain cephalopods, especially the octopus ("Tentacles that think", August 15th), brought to mind an outside-the-box analysis of what we can learn from nature about protecting ourselves from terrorist threats, natural disaster and pandemics.

In "Learning from the Octopus" the late Rafe Sagarin, a marine ecologist and security analyst at the University of Arizona, developed these ideas in a provocative work documenting the way that certain natural species have survived in a world of predators, adversaries and surprise attacks. His conclusions stress the importance of adaptable, flexible control systems, decentralised decision-making, redundant capabilities and symbiotic relationships with potential enemies.

CHESTER CROCKER
Professor of strategic studies
Georgetown University
Washington, DC

A classics argument

Petronius's lampooning of Trimalchio's feast in "Satyricon" is less an ancient example of "anti-business sentiment" and more an attack on the nouveau riche ("What's the alternative", August 15th). Since Roman times plenty of us have loved capitalism, while disliking those who garishly flaunt their capitalist gains.

MIKE GATTO
Glendale, California ■

Letters are welcome and should be addressed to the Editor at
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“Germany! Germany!”

Also in this section
22 Europe’s challenge

BERLIN

Ordinary Germans, not their politicians, have taken the lead in welcoming Syria’s refugees

IN THE end, it was not the hell that they came from that mattered. It was the hope their destination inspired. “Germany! Germany!” the refugees chanted on the crowded platform of a Budapest train station, and Germany heard them. Many in the country, like many around the world, had been moved to a new level of compassion for Syria’s refugees by pictures of Alan Kurdi, a little boy washed up dead on a Turkish shore. Many more had felt shame as neo-Nazis set fire to some asylum homes. But what mattered most were the goose bumps the nation got as they saw that throng chanting.

For 70 years the Germans have atoned for their dark past and yearned to be seen as good. Hearing their name cried out neither in fear nor in a football stadium but in gratitude and hope touched the public enough to turn them, at least for now, in favour of a *Willkommenskultur* (“welcome culture”). Catching the mood, Angela Merkel, the German chancellor, declared an “exception” to EU asylum rules, allowing the refugees bottled up in Hungary out through Austria into Germany. More than 20,000 arrived in the first weekend of September alone—about as many as Britain’s prime minister, David Cameron, has just pledged to take in over the next five years. Thousands of Germans turned out to welcome the newcomers in Munich, Dortmund and other cities with sweets and toys and smiles.

Germany was already doing more than its fair share. It takes 40% of the EU’s refugees. 413,000 applied for asylum in Germany in the first eight months of 2015 and 800,000 are expected to do so over the full year. No matter; for now, the people want to do more. A recent opinion poll shows that the share of Germans who want to accept as many or more refugees as have come so far has increased from 57% to 59% since August; 96% feel that all those fleeing war or violence are entitled to asylum.

Celebrities are volunteering to help. Corporate bosses are demanding that rules be loosened so that they can hire refugees as apprentices or workers. Even sport has got in on the act. Bayern Munich, the country’s richest football club, will donate €1m ($1.12m) to the cause. When its players walk out on to the pitch to play FC Augsburg on September 12th each will be holding hands with both a refugee child and a German one.

If foreigners see Mrs Merkel as leading in this crisis, Germans see her instead as following her electorate, as is her wont. During the summer the hashtag #Merkelschweigt (“Merkel is silent”) trended on Twitter. Now, though, she leaves no doubt about her commitment. On September 7th she thanked the many citizens who welcome the refugees and “can make us rather proud of our country”. She said she was “moved” that Germany has become a land of hope, especially in view of its past, and that she knows “that this is not about me but about this country and the people here, the many who stand at the train stations, the many who give welcome.”

That said, the *Willkommenskultur* is not universal. Within Mrs Merkel’s governing coalition, she speaks only for her own Christian Democrats (CDU). Her centre-left partners, the Social Democrats, are even more liberal on the issue. But the conservative Christian Social Union, which exists only in Bavaria, takes a harder line. It criticised Mrs Merkel’s snap decision to let in trains from Hungary. And it wants a tougher approach toward those whom it sees as undeserving, which it thinks would keep numbers down.

But on September 6th these three coalition partners hammered out a sweeping compromise. To meet the logistical crisis, the federal government will spend an additional €6 billion. Add in extra spending at other levels and the total could be €10 billion. At the same time, Germany will replace cash handouts to refugees with vouchers for food, clothes and housing. It ▸▸

will process asylum applications faster—in weeks rather than months—and swiftly repatriate those who are rejected. This will mostly affect the Balkan applicants, who nowadays tend to be fleeing poverty rather than violence and discrimination. Germany wants to declare Kosovo, Albania and Montenegro as "safe". At the same time—in a concession to the Social Democrats—Germany will open an alternative legal route by which economic migrants from the Balkans can enter the German labour market. All these changes are to be finalised this month and passed by parliament in October.

But Germany's biggest political push will be to reform the EU's rules so that all member states share refugees based on a binding quota system. This vision is aligned with the plan that Jean-Claude Juncker, the president of the European Commission, proposed on September 9th (see page 38). Domestically, Germany already has a working prototype: it allocates refugees among the 16 federal states according to population and economic strength. Thus mighty North-Rhine Westphalia takes the most and tiny Bremen the fewest. In this campaign, Germany has the support of Sweden, Austria and now France, as well as Italy and Greece, where most of the refugees first come ashore. But it faces opposition from other countries, notably in the east.

For now most Germans are staying focused on the logistics of housing all the refugees they have welcomed in. Tent cities that have sprung up, sometimes in one day, must be converted to permanent housing before winter. Social tensions will inevitably arise along the way. But the refugees recognise and appreciate the effort, and many are finding ways to say thank you. When Ophelya Ade, now living in a shelter in Lower Saxony, recently gave birth to a girl, she named the baby Angela Merkel Ade. The chancellor, she explained, "is a very good woman. I like her." ■

Europe's challenge

Strangers in strange lands

The world's institutional approach to refugees was born in Europe seven decades ago. The continent must relearn its lessons

IN 1951 a group of diplomats in Geneva committed their countries to absorbing huge numbers of refugees from a region plagued by ethnic hatred, fanatical ideologies, and seemingly interminable war: Europe. The second world war left millions of people wandering across the ravaged continent. Poland, Czechoslovakia and the Soviet Union deported 14m Germans in the years after Germany's defeat. Redrawn borders saw millions of Ukrainians, Serbs and others kicked out of their homes. Six years on, 400,000 people were stranded in "displaced persons" camps with no clear prospect of resettlement.

The UN-mandated Geneva conference came up with a convention that required its signatories to assess claims to refugee status made by anyone in their territory, and to grant it whenever a refugee had a "well-founded fear of being persecuted" in his or her country of origin. To begin with the right of asylum was limited to Europeans, but this limitation was removed when a new protocol gave the convention global scope in 1967. The Refugee Convention has now been ratified by 147 countries; over 64 years it has framed the international response to humanitarian crises around the world (see chart 1 on next page).

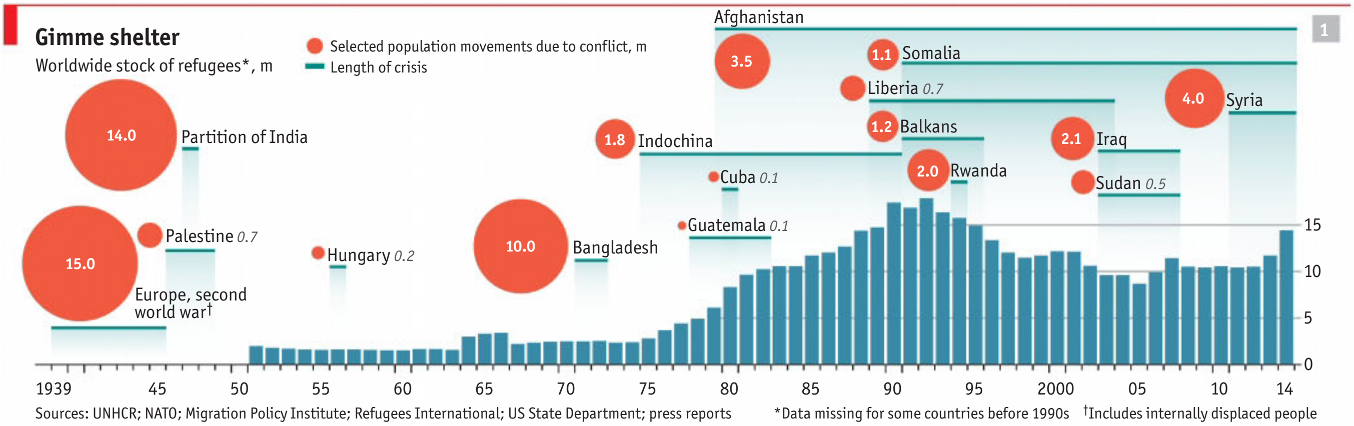
The convention's adoption marked one of the "never again" moments of the post-war era, with states pledging themselves to overcome the modern evils their war had made manifest. The hundreds of thousands of refugees who have streamed across Europe this summer have both recalled that pledge and called it into question. For months refugees from Syria, Afghanistan and Eritrea have been retracing the routes used by European refugees in the 1940s. They pick their way through razor-wire fencing on Serbia's northern border, where ethnic Hungarians once fled Titoist partisans. They are smuggled in trucks across Austria, just as Jews headed from Poland to Palestine once were. But this time the flow is moving in the opposite direction: towards Germany.

In early September a new mood of welcome for these refugees sprang up in western European countries, and especially in Germany (see previous story). But central and eastern Europe have not joined in the enthusiasm. Viktor Orban, Hungary's prime minister, has turned into a bête noire for liberal Europeans, putting up barbed wire and walls against refugees and treating those who get in like cattle, appearing insensitive to associations with Nazi concentration camps or East Germans fleeing across Hungarian barbed wire 26 years ago. A poll this month in the Czech Republic showed 71% of the population opposed to taking in any refugees at all.

Slovakia has made it known that, if it must have refugees at all, it would rather not have Muslims, a sentiment echoed by right-wing politicians across the continent happy to play on animosity towards Muslims and fears that Europe is incapable of absorbing them. The migrants are looking for European social benefits, the populists say, not fleeing persecution. The Netherlands' Geert Wilders calls them *gelukszoekers* ("happiness-seekers"), while Mr Orban says the "overwhelming majority" are economic migrants. After all, the argument runs, those fleeing Syria mostly cross into Greece from Turkey, where they face no physical threats. Surely that means they are not real refugees?

Wrong. For one thing, a quirk of history means that though Turkey has signed the convention, it does not grant Syrians the right to stay there as refugees. It is the only country that, when ratifying the 1967 proto- ▸▸

It has all been seen before



col to the convention, retained the original geographical limitations. Thus the convention only obliges Turkey to deal with asylum applications from Europeans. More generally, state signatories to the convention are obliged to let those who have applied for asylum stay while their applications are evaluated, whether they have arrived via other countries where they might not face persecution or not. Soviet Jews who requested asylum in America in the 1970s were not rejected simply because they had first passed through Austria.

There are exceptions. The European Union's Dublin rule says that people applying for asylum in an EU country other than the one they first entered should be returned to that first country. And international law permits applicants to be sent to "safe" countries that afford equivalent opportunities for asylum. But this does not mean they can be returned to the Middle East—where most of Syria's refugees remain (see chart 2). Neither Lebanon nor Jordan is a signatory to the convention, and though both have taken in far more refugees than Europe, the situation in both is now far from welcoming.

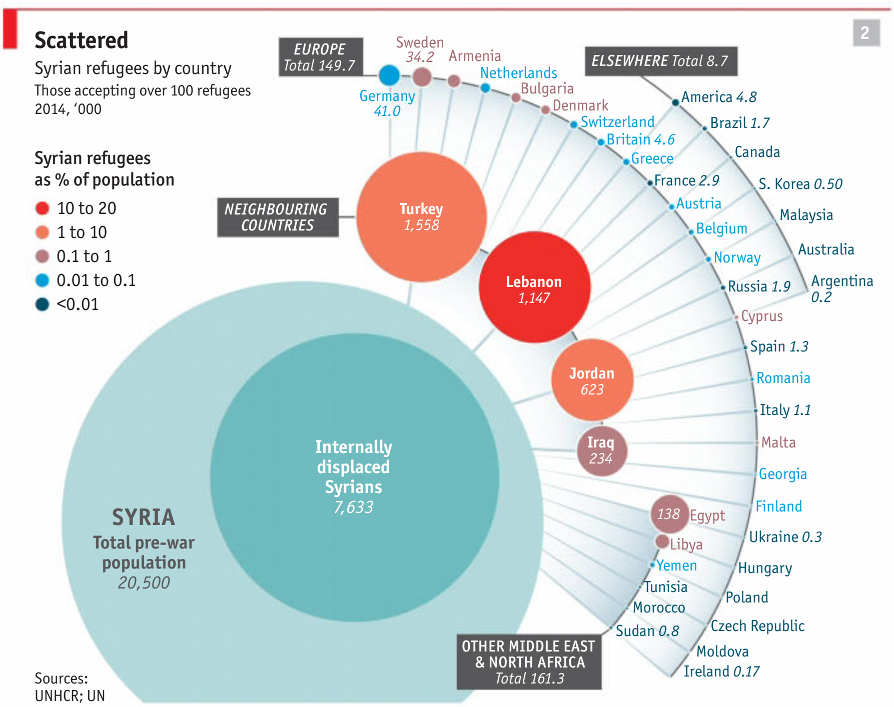
Over the past year Lebanon has put into place tortuous rules that require its 1.5m Syrians either to pledge not to work or to find Lebanese sponsors—which often means getting exploited as unpaid labour. Jordan, with 629,000 refugees living mainly among local communities, has been ramping up restrictions that seem aimed at squeezing them into camps or forcing them to leave. Lacking the convention's protections, most Syrians in Jordan, Lebabon and Turkey are unable to work legally, and live in dire poverty. The World Food Programme has halved its assistance to the neediest Syrian refugees, providing just $13.50 per person per month. In Turkey, Kurdish Syrian refugees are vulnerable to the government's renewed war against its own Kurds. Arrivals in Europe have rocketed this year not so much because the civil war is worse than ever—though it is (see page 49)—as because the situation in the countries neighbouring their homeland has grown desperate.

For all this, some reluctant Europeans continue to be certain the new arrivals are not "real" refugees. If so something is gravely wrong with EU asylum authorities, which are convinced that most of the applications they are seeing are genuine. European countries grant asylum to 94% of Syrian migrants who ask for it, along with the vast majority of Eritreans, Afghans and Iraqis (see chart 3 on next page).

A less-than-one-percent solution

This is not to say there are no economic migrants trying to get into the EU. Most applications for asylum from Serbia, Albania and Kosovo are rejected. Many sub-Saharan Africans who make it across the Mediterranean to Italy and Malta do not try to show that they are persecuted, hoping instead to make their way undocumented. As a prosperous continent next door to much poorer places, Europe can expect ever more such migration over the years and decades to come. But that does not mean that it can ignore the growing flux of refugees who have a claim to protection under the convention.

When the fear that few of the migrants will qualify as refugees proves unfounded, it is likely to be followed by a fear that too many of them will—especially now that Germany has put out the welcome mat. There are 4m Syrian refugees outside Syria. Even if they all came to the EU they would amount to a small demographic change in a club of more than 500m people—if evenly spread. Under the Dublin rule Greece and Italy have handled a share of asylum-seekers they see as deeply unfair, but Germany has already put those rules to one side as far as Syrians are concerned, and the rest of the EU is working on a quota system to make the distribution more even (see page 38). Yet on a continent where, for a decade and a half, politicians have been preoccupied with the failure to integrate Muslim communities—and where that failure has boosted the likes of Marine Le ▸▸

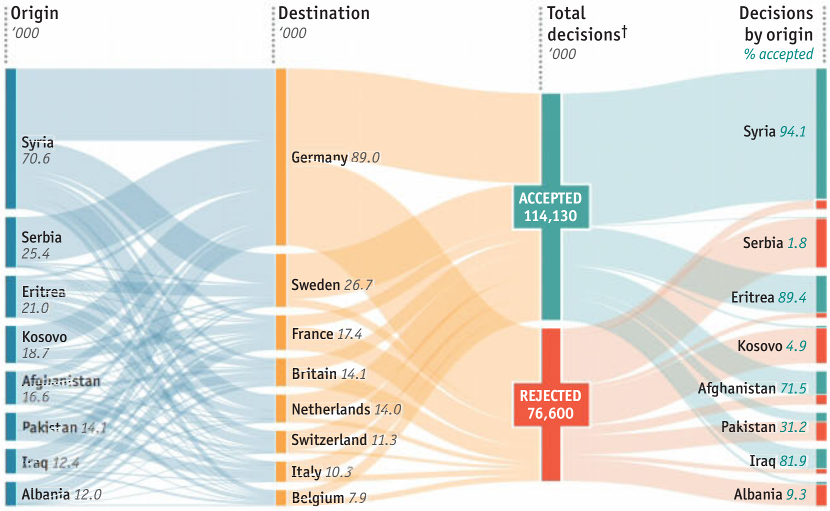


Pen's National Front in France and Mr Wilders's Party for Freedom—the prospect of more such communities worries many.

How easily Europe can absorb more Muslims depends largely on how the absorbing is done. To appease anxieties over costs and crime governments often restrict asylum applicants' work permits and house them in isolated refugee centres. This is the most expensive and least effective approach possible. Putting asylum-seekers into government-run centres is not only alienating, it also costs a lot more than housing in the community—about €100 a day per person, according to a British study. Letting asylum-seekers work—if, in areas of chronic unemployment, they can find jobs—replaces the costs of government relief, and leads them to learn the local language much faster. That said, letting them work has costs that are not evenly shared. German studies of the labour effects of immigration suggest that while it raises the incomes of better off workers with complementary skills, it does some harm to those who already have low wages.

The ins and outs 3

European asylum applications and decisions, main origin and destination countries*
April 2014 - April 2015



Source: Eurostat *Making up 47% of EU-28 decisions †First-instance decisions only

Success also depends on who does the absorbing. European nation-states have been coping with acute refugee flows at least since the Protestant exoduses of the Thirty Years' War—that is, for as long as there have been European nation-states. But the immigrant nations of the Americas and Australia have tended to do a better job, and any resolution of the Syrian crisis should probably involve them as well.

One model might be the Vietnamese "boat people" crisis that started in the late 1970s and unfolded in much the same way the Syrian diaspora has. Initial uncontrolled emigration led to resistance from neighbouring countries and tragic drownings that mobilised public opinion in the West. So the international community set up camps for processing and distributing asylum applicants. Some were repatriated, while deals with Vietnam let others leave legally. Some 1.3m refugees from Indochina ended up in America; many others went to Australia, Canada and France, and some to other parts of Europe.

The boat people had fewer skills than the refugees who had first fled the fall of South Vietnam in 1975, and less ideological identification with the West. In Australia they became the first large group of Asian immigrants in an overwhelmingly white colonial population sensitive to preserving its ethnic identity. Yet today the boat people are for the most part a success everywhere they ended up. Vietnamese-Americans have lower levels of educational attainment and English proficiency than the average American immigrant, but higher income levels and naturalisation rates.

If an analogy between Vietnam's boat people and Syria's migrants seems glib, it is because of a widespread sense in Western countries that Muslims are more threatening than other immigrants. The fear is not just of Muslims' cultural differences, but of the development of anti-Western political sentiment in Muslim communities. Islamist terrorist attacks in Europe this year have intensified such anxieties.

But every wave of immigration has been accompanied by fears. In 1709 the War of the Spanish Succession sent thousands of refugees from lower Saxony down the Rhine and across the North Sea to London. Believing that they would then be offered free passage to America, the so-called "Poor Palatines" instead ended up in refugee camps. Daniel Defoe and other Whigs argued that they were Protestant refugees from Roman Catholic oppression and should be settled in England—an argument that suffered a blow when, on closer inspection, half the Palatines turned out to be Catholic themselves. A Tory faction meanwhile argued that they were economic migrants, low-skilled undesirables who would prove an endless burden on the Crown. Ultimately, investors were found to put some of them on boats to America, where they founded Germantown, New York.

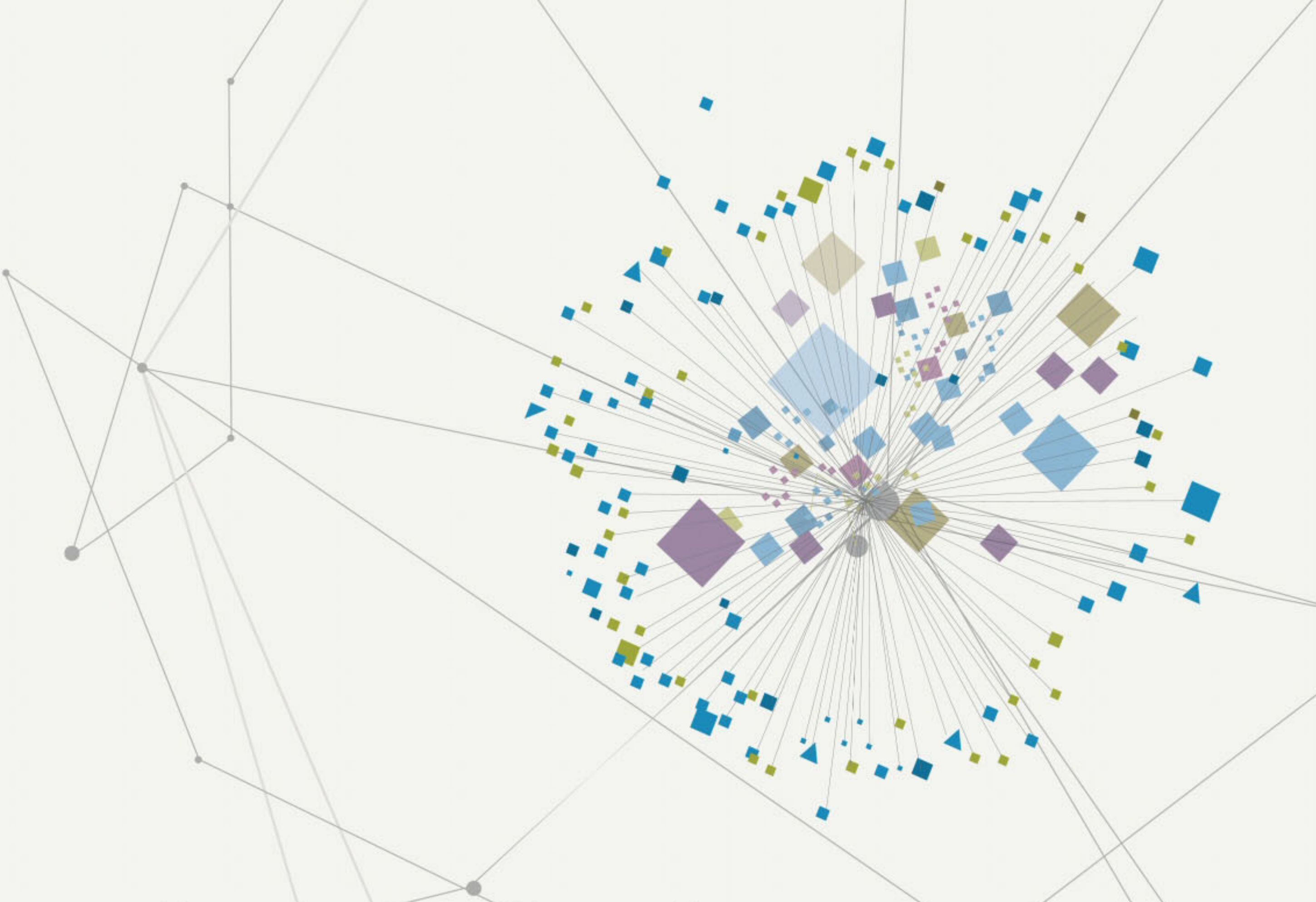
Continuously connected

America itself, though often welcoming, has also had its periods of doubt. The millions from southern and eastern Europe who arrived at the end of the 19th century provoked fears that the "English-speaking race" could not withstand such pollution. After 1945 America refused for years to accept any refugees from eastern Europe: Senator Chapman Revercomb of West Virginia warned it would be "a tragic blunder to bring into our midst those imbued with a communistic line of thought". These fears, like those over Islamist terrorism today, were not baseless. In the 19th century some eastern European immigrants in Western countries engaged in anarchist terrorism; in the 20th some spied for the Soviet Union. But these were not, in the end, huge problems.

In one respect, though, today's refugees and migrants truly are different from those of earlier eras. Many have some higher education, material resources and networks of family or friends already in Europe with whom they can keep in touch through phone and Facebook. Some are working out their plans as they go, others have coherent strategies. In a word, they have agency.

On September 6th, at the railway station of the small Austrian village of Nickelsdorf, Waleed al-Ubaid stood waiting to catch a train towards the German city of Kiel. He had researched it on his phone: "So many Syrians are going now to Munich and Berlin. It's better to go where there aren't too many." Nearby on the platform Hussein Serif plans to find a job in Germany, then apply for a scholarship at the French business school, INSEAD (he had just finished a marketing degree when, at risk of being drafted, he left Damascus).

Millions of Mr Serif's compatriots are still waiting in Turkey, Lebanon and Jordan, gradually despairing of their prospects there. They are aware of their rights under the convention; they know of the successes and failures of their friends and family through social media. Many of them will probably be coming west soon. Europe has the capacity to welcome them; at the moment, in many places, it has the inclination to do so, too. The challenge is to turn that warm and decent impulse into a programme that will make the newcomers safe, productive and accepted. ■



The new Elizabethans

Longest to reign over them

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Bagehot is on holiday

LEICESTER AND STOKE-ON-TRENT

Queen Elizabeth II's reign has seen the United Kingdom become a diverse, fragmented one

ON THE occasion of Queen Elizabeth II's coronation on June 2nd 1953, a year and four months after she had become queen on the death of her father, 82 towns and villages in Britain roasted an ox—the Ministry of Food having loosened post-war food rationing rules only for places that could show they had a tradition of doing so on such occasions. Others gathered at street parties, crowded around new television sets in homes smelling of Bakelite and tobacco and strung bunting from buildings black with soot.

On September 9th 2015 Queen Elizabeth II's reign reached its 23,226th day, surpassing the record set by Queen Victoria. It is a landmark being passed over without much official fanfare—there is little dignity in celebrating knocking one's great-great grandmother into second place. Nevertheless, it provides an occasion for Britain to think about its queen and itself, as the end of the second Elizabethan age draws near.

Four hallmarks of the era stand out: the transformation of Britain from the industrial hub of a global empire into a cultural power and entrepôt; its development into an ethnic melting pot; the relaxing of interpersonal relations and moral codes; and the loosening of the United Kingdom itself. These connected trends have all, on the whole, been good for the queen's subjects, who are wealthier, longer lived and freer than they were. That said, some are in a sorry state: though many places, most notably London, have thrived in post-industrial, post-imperial Britain, others are depressed. Today 16% of households have no member in work, up from 4% 63 years ago.

From shore to shore

During her reign the queen has travelled near-ceaselessly around Britain and beyond; Robert Hardman, a biographer, estimates that she has met 4m people. To revisit her early destinations illustrates the changes six decades have brought.

The queen went to Stoke-on-Trent in November 1955. The copious commemorative plates and teapots made in the city's potteries two years earlier to mark her coronation had heralded the end of wartime restrictions on the production of painted and coloured wares. On a freezing, windy day (so cold that several boys at a football match she watched collapsed on the pitch) the monarch toured the Wedgwood factory, where mass production still meant men engraving patterns with scalpels and spatulas, their forearms caked in wet clay, and women painting the rims and handles of recently fired teapots by hand.

The city was a product of the British Empire. It was here that porcelain-making techniques from China, imported by the East India Company, had been adapted by the likes of Josiah Wedgwood in the 18th century. The city had then taken advantage of the protected markets opened up by the Company. As Tristram Hunt, a historian and local MP, notes: "It was from the kilns and pot banks of Stoke-on-Trent that the forts, bungalows and government houses of the Empire were supplied with ceramics." Stoke still bears the traces of that period: ornate schoolhouses, a fine brick market-hall and, suburban enough to be out of smelling distance of the black sludge that filled the waterways, villas of industrialists made rich by laying the Raj's dinner table.

The Empire was in already in decline—India had gained its independence in 1947—but its reach persisted: 46 now-sovereign nations (including Malaysia, Nigeria and Qatar) were ultimately governed from Whitehall, whose ministerial buildings retain the grandeur of an imperial capital. British schoolboys could buy an "Empire Youth Annual" of tales of derring-do; the country celebrated an annual Empire Day; students at Oxford University took courses designed to prepare them for careers as colonial administrators. The Victorian age ▸▸

still loomed over Elizabeth's Britain: Victoria had reigned for longer than the four intervening monarchs put together.

The Duchess of Cambridge (Kate Middleton, wife of Prince William) visited Stoke this year. The city that greeted her is not the confident, prosperous place it was in 1955. In 1997 the Duke of Edinburgh, the queen's consort, pronounced it "ghastly". Without access to sheltered imperial markets, and outbid by cheaper Asian rivals, Stoke has struggled. In 2009 Wedgwood went into administration. Whereas the city enjoyed full employment in the 1950s, the unemployment rate after the 2009 crisis topped 10%. A quarter of premises on the now-shabby high street are vacant.

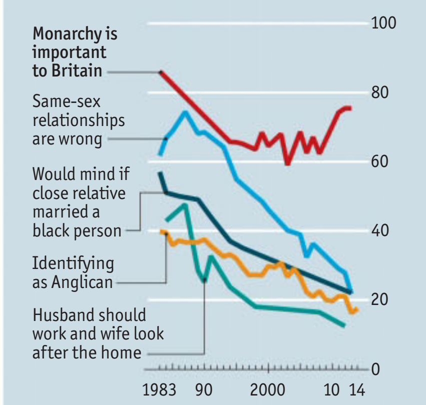
Other former centres of manufacturing tell a similar story. The global shocks of the 1970s, followed by the domestic ones of Margaret Thatcher's premiership in the 1980s, made this central third of the queen's reign the most economically transformative. It was the point at which the cradle of the Industrial Revolution stopped mass-producing things and concentrated on selling services instead.

Big cities, with their clusters of firms doing what the country does best (banking, business services, retailing and creative work), are booming: in Leeds and Manchester former mills and factories are now smart offices, flats and shopping centres. In smaller post-industrial settlements, especially those with poor connections, old factory-workers' houses sell for a symbolic £1 and social problems—poor health, illiteracy and underemployment—are concentrated. The result is a richer but more unequal Britain, with pockets of deprivation that are among western Europe's most severe.

The wide world over

Yet in recent years Stoke has experienced a modest revival, one that points to the role into which Britain seems to be settling. The designs and wares of the Potteries have found favour in Asia, especially among Chinese and South Koreans, busloads of whom arrive every week for factory tours and shopping trips. Wedgwood—now revived and turning a profit—will soon have 56 shops in China. Stoke has even acquired a Chinese name: Wan Bo Tao Ci ("diverse and plentiful ceramics"). These links are luring more than just tourists; last year a delegation from Chongqing and Dalian visited to spot investment opportunities.

Stoke thus represents Britain's evolution during the queen's reign from a trade-based empire, with all the pomp and gunships that implies, to a trading post where foreigners come to invest and do business with other foreigners. British pottery sits on the sideboards of Kuwaitis and Beijingers just as British programmes play on their television screens and British universities welcome their sons and daughters. The country may be diminished but, as



Liberal, but not republican
Britain, respondents agreeing, %

Source: British Social Attitudes survey, NatCen

Stoke shows, it is managing to pay its way as a sort of factotum to the wealthy from around the world: entertaining them, educating their children, looking after their money and firing their imaginations—as well as their decorative porcelain.

If Britain enjoys such a role, it is at least in part thanks to the far-flung origins of so many of its people. Footage of the queen's visit to the Corah hosiery factory in Leicester in 1958 will strike any Briton today as utterly alien: all the women at the banks of sewing machines are white. In that same year the recent arrival of modest numbers of West Indian immigrants in nearby Nottingham brought 4,000 people out onto the streets, supposedly angered about a black man flirting with a white woman in a pub. Unable to find many black people, they ended up brawling with each other.

Today Corah is mostly derelict, part of it charred and roofless after a fire in 2012. Its main yard is graffitied and broken-windowed. Outside, however, the city's present is more cheering. Cafés and restaurants offering *shisha* and *kothu roti* do a roaring trade. Worshippers pour out of the Salahuddin mosque. Over the doors of terraced houses and around the neck of a statue of Gandhi hang Hindu garlands. At Milan Enterprises an elderly Indian man explains that, though lots of people worked for Leicester's textiles industry when they first moved in, his shop's saris are all imported from the subcontinent.

Britain today is increasingly ethnically diverse—unrecognisably so, to a time-traveller from the 1950s, when according to one study half of Britons had never met a black person. Like other cities, Leicester received a trickle of immigrants from Britain's former colonies in the 1950s and 1960s. They were followed by 10,000 Asians expelled from Uganda by Idi Amin in 1972—despite the city's advertisements in the *Ugandan Argus* newspaper insisting that it was, in fact, pretty lousy. Today Leicester is Britain's first big settlement with a non-white majority. The queen visited her first Sikh temple there in 2002 and came back in 2012 to launch her diamond-jubilee tour with a spectacle featuring Sikh *dhol* drummers and a Hindu Holi festival dance.

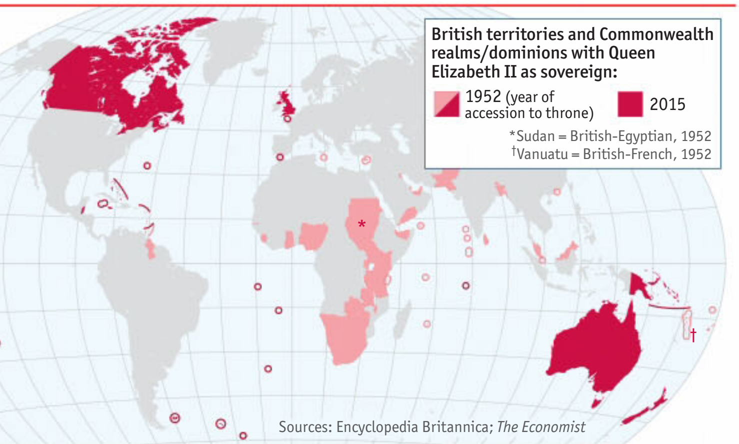
Leicester is increasingly normal in a country that, in contrast to its sluggish response to today's crisis in the Mediterranean, has taken in several waves of migrants during Elizabeth's reign. In 1951 Britain had 74,500 non-white residents; today the figure is 8m, and rising. Philip Rees, a geographer at Leeds University, reckons that by 2051 about half of the country's local-authority areas will be as diverse as places like Leicester and London are now.

The choicest gifts in store

The growing cultural diversity of Britain is part of a bigger story of social change. At the Ideal Home Exhibition of 1957, the queen was shown pyramids of food tins and rows of fridges by a delegation of middle-aged men who, one suspects, had little experience of operating either (the most exotic showpiece was a gadget that could fashion a potato into the shape of a corkscrew). She returned to the annual exhibition in 2015, when the inventions on show included a "smart home" tailored in every conceivable respect to the owner's tastes.

Britain as a whole has shed the formalities of the 1950s for an individualism that

The realms of Queen Elizabeth II



Sources: Encyclopedia Britannica; *The Economist* is exemplified by the royal family itself. When the queen took the throne, she had recently claimed in a speech that "divorce and separation are responsible for some of the darkest evils in our society today". In 1955 her sister, under pressure from politicians and courtiers, reluctantly turned down a marriage proposal from a divorced man. Plays were censored and a man invited to a royal garden party could bring a companion only if he was married to her.

The change, which began in the 1960s, was illustrated by Roy Jenkins as home secretary (a post that required him to join the queen on her boat in the Scottish lochs, should London succumb to a nuclear attack). In his 23 months in the job, Jenkins enacted reforms that both responded to and anticipated the defining social trends of the age: legalising homosexuality and abortion, legislating for "no fault" divorce, banning racial discrimination and abolishing censorship in the theatre, all in the name of the "civilised society".

Governments have since extended his changes. Britons, meanwhile, have ditched the grand old cultural and moral monoliths to which they deferred willingly in the 1950s, drifting away from religion, political parties and organised labour, for example. At the rate of the past three decades the National Trust, an outfit that looks after old buildings and land, will have more members than the entire British union movement by the mid-2020s. Marriage, too, is not the totem it was: 5.6% of children were born out of wedlock in 1950; next year the rate is expected to exceed 50%.

One sign of Britons' new informality was the clamour for the royal family to emote in response to the death in 1997 of Princess Diana. Unlike the queen, Tony Blair, then the prime minister, captured the mood; a settlement with a less stuffy electorate lay at the heart of the New Labour formula that had recently propelled him to power. In other ways, the royal family has caught up with the country's changes. Guests at royal garden parties can now bring any partner they like. The queen has four children and three of them have committed the very act—divorce—that she disparaged before her coronation.

And form one family

The geography of British politics and society has changed along with its tone. When the queen visited Edinburgh in 1953 it was, in many ways, just another British city. It had a regional accent, local habits and identities, but like the rest of the country had voted for a mix of Conservative and Labour MPs at the 1951 election, had a manufacturing-heavy economy and was proudly unionist. The policies of the postwar Labour government—nationalisation, house-building, the National Health Service—had been implemented there just as they had in England. As she processed up Princes Street, crowds five deep cheered, waving handkerchiefs and union flags.

If the politics of Scotland and the rest of the United Kingdom have diverged in the intervening time, this is partly thanks to different economic experiences. The growth of the North Sea oil industry in the 1970s, the deindustrialisation of places like Glasgow that accelerated under Thatcher and the decision to test a regressive "poll tax" in Scotland all powered the rise of the pro-devolution (now pro-independence) Scottish National Party (SNP). To this day posters claiming "It's Scotland's oil" and depicting Thatcher as a vampire, the black stuff dripping from her fangs, line the shelves of its Edinburgh headquarters. In 1999 the Labour government in Westminster devolved swathes of domestic policy to a new Scottish Parliament at Holyrood in recognition of the growing sense of separateness north of the border.

Far from curbing secessionism, this new body created a platform for the SNP, which in 2011 won the majority needed to hold last year's independence referendum. Scots voted against separation, but the pro-independence movement has since stormed ahead. Some polls suggest it would now win a plebiscite. Today at public events the Saltire is waved along with the Union flag, the flying of which is now a political act, rather than the uncomplicatedly patriotic one it was when the new queen visited Edinburgh in 1953. On several occasions in the run-up to the referendum, pro-independence campaigners burned it; in February this year a man in Falkirk was asked to leave a bar on the grounds that the Union Jack on his shirt was "offensive" to other drinkers.

Thus Edinburgh, where the queen spent September 9th, the day on which her reign overtook that of Queen Victoria, feels separate in a way hard to imagine 63 years ago. It is dominated by a party that not only declines to contest elections in the rest of her kingdom, but which wants to leave that kingdom altogether. With its own parliament, government buildings, school curriculum, health system and—increasingly—international voice, it feels more like the capital of a small European country than a provincial British city.

Although Britain remains one of the rich world's most centralised polities, Wales is likewise more self-governing than in the 1950s. And after three violent decades and many false dawns, Northern Ireland has a (fractious) power-sharing executive. London, too, was granted a mayor and legislature by the last Labour government. Other large cities, led by Manchester, which will soon run its own health service, are gravitating towards that model.

Confound their politics

As an economy and a world power, Britain has declined in relative terms during the queen's reign. Yet the term "decline" does not describe the fact that it has a mature relationship with its former colonies, that on her travels around the country the monarch is greeted by crowds of more than one ethnicity, that her subjects can marry whom they want and that the nations and regions have more freedom. Britain in 2015 is, to nod to Jenkins's formulation, a more civilised country than in 1953.

But a side-effect of these welcome trends is that the country is fragmenting. The union's decentralisation could yet be its unravelling. The experiences of those in the diverse, successful cities and those in post-industrial backwaters are diverging. An ever-wider gulf, evident in the rise of the right-populist UK Independence Party, divides Britain's cosmopolitans from its nativists—inflaming the politics of immigration, its open economy and its liberal society. Britain is, in short, a much looser gathering of peoples than on the rainy day in 1953 when the queen took her crown.

The attendant risk of disunity requires firm and confident leadership. But that too is in question. Labour is tearing itself apart (as, to be fair, it was in 1953). The governing Conservatives are entering a period of acrimony, perhaps even an identity crisis, over Europe. Scottish elections next year could see the SNP win a mandate for another independence referendum.

Even the monarchy, whose supporters claim it has provided stability and continuity amid the change of the past six decades, could yet wobble. The queen's popularity is stratospheric, but Prince Charles—her heir and increasingly her regent—has a risky tendency to intervene in public policy debates. The defining trends of Elizabeth II's reign will outlive her by a long way. Her kingdom's ability to remain united in spite of them is less sure. ■

Syrian refugees

A hasty change of heart

A meagre plan to take more refugees is cobbled together

EUROPE is facing its gravest refugee crisis since the second world war. While Germany has shouldered the heaviest burden, Britain's government, mindful of anti-immigrant feeling at home, has looked on. Yet public opinion seems to have shifted: since the publication of harrowing photographs of a Syrian boy found drowned on a beach in Turkey, even right-wing tabloids such as the *Sun* have called for more help for refugees. Meanwhile, nudges from the rest of Europe have grown less subtle: Germany's best-selling newspaper, *Bild*, has dubbed Britons "the slackers of Europe". So on September 7th David Cameron, the prime minister, announced a new plan. Britain would take more Syrian refugees: 20,000 by the end of the parliament, in 2020.

The belated promise looks to many like a feeble concession: Britain's commitment to accept the equivalent of 4,000 Syrians a year is 0.8% of the annual number that Germany's vice-chancellor has said his country could accommodate. About as many refugees were welcomed by Germany on a single recent weekend than Britain has agreed to take in the next five years. And the plan to take refugees directly from camps in Syria, instead of helping to lighten Europe's load, will lose Mr Cameron goodwill as he seeks to renegotiate the terms of Britain's EU membership ahead of an in/out referendum next year.

The government proposes to cover the cost of housing and looking after refugees with money from the foreign-aid budget, which is Europe's largest. Although this has stirred controversy, the idea is not new: most countries use some foreign aid to provide for their refugees, and Britain spent £100m ($154m) in this way in 2014. But diverting aid to the home front undermines Mr Cameron's argument that the refugee crisis should be tackled at its source, rather than in Britain (see page 50).

And the money may not be available for long. If it is to count towards the 0.7% of GDP Britain has pledged in foreign aid, the money can be used to help refugees only during their first year in the country. Local authorities usually pick up the slack where refugees are concerned. But with their spending power reduced by one-quarter since 2010, and further cuts ahead, councils have little cash to spare. Because the prime minister plans to prioritise children, especially orphans, the cost will be particularly high and unlikely to fall after just one year.

The Home Office intends to accommodate the new refugees around the country, rather than sending them to the west London boroughs and large northern cities where asylum-seekers are usually placed. Tony Travers of the London School of Economics points out that big cities have both the infrastructure and the political climate to absorb incomers, in a way that other parts of the country may not. It all smacks, he says, of "policy made on the hoof".

Only this year the government cut support for asylum-seekers with children, and in August Theresa May, the home secretary, promised a tough new approach to immigration. The U-turn on the Syrian crisis has been rapid, and the new proposals are inconsequential compared with the bold measures taken in Germany. Mr Cameron may calculate that it will not be long before British opinion shifts again, and that he will need to shift with it. That is a sad reflection on him, and on Britain. ■

The BBC World Service

London calling

The national broadcaster announces plans to invade North Korean airwaves

IN JULY George Osborne, the chancellor of the exchequer, accused the BBC of becoming "imperial in its ambitions", before effectively lopping about £650m ($1 billion) off its budget by making the corporation take on the cost of the free television licences that are given to the elderly. The message was clear: in these austere times, do less with less money.

The BBC's director-general, Tony Hall, seems to have decided that attack is the best form of defence. In the first of four speeches he is due to make setting out the BBC's case for the renewal next year of its royal charter, on September 7th Mr Hall promised new services and, in an accompanying policy document, proposed 100 more local journalists to be shared with newspapers. Cuts will apparently be announced in due course. But for now, Mr Hall offered a sunny vision of the 93-year-old institution recommitting to its public-service values.

Most eye-catching were the announcements on the World Service, the BBC's international operation. Arguing that it had a mission to uphold the values of "democracy and liberty", the corporation said it would set up new shortwave services to broadcast into those countries with a deficit of both, namely North Korea, Eritrea and Ethiopia. It will boost its digital presence in Russia, where it may set up a satellite-television channel, and beef up its Arabic service. Furthermore, Mr Hall asked the chancellor to help pay for all this—cheekily, as the cost of the World Service, about £240m a year, was transferred from the Foreign Office to the BBC only last year.

The microphone: mightier than the sword

Perhaps Mr Hall was intent on appealing to MPs over the heads of a more sceptical cabinet. The World Service is still cherished by many as perhaps Britain's best weapon of "soft power". There has long been a campaign, supported by some Tory MPs, to get the service into North Korea (where, unlike most Western countries, Britain maintains an embassy, as well as an outpost of the British Council, its cultural organisation). Experts agree that although the North Korean government manages to block most of the stuff that foreigners try to broadcast into the country, shortwave radio can slip in. North Korean defectors often say that they do everything they can to listen to foreign broadcasts.

However, commentators such as Ed Williams, a former head of communications at the BBC now at Edelman, a PR agency, argue that by concentrating on North Korea and Eritrea, a country which some licence-fee payers may never have heard of, Mr Hall missed a trick. In this prelude to what will be fraught negotiations over the BBC's future, with some MPs willing to jettison the licence fee altogether, Mr Hall "needs to galvanise public support rather than leap into the weeds of news services", Mr Williams says. Polls show that the BBC remains popular. But that probably has more to do with "Strictly Come Dancing" than its reach in Asmara.

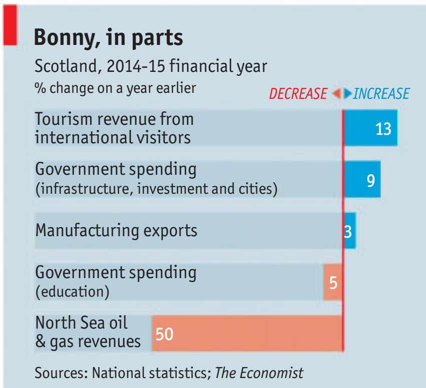
The Scottish economy

Of whisky, oil and banks

ABERDEEN AND EDINBURGH

A year after the independence referendum, Scotland's unexpectedly strong economic performance underlines the benefits of union

SCOTS have had plenty to worry about since their referendum on independence last September 18th. Oil prices have halved—bad news for a country where the oil and gas industry provides jobs for 200,000 people, or about 10% of total employment. Meanwhile, the pound has strengthened and world trade has stumbled, both awkward for a country that depends on exports. Yet despite all this, Scotland's economy seems to be coping. GDP growth is holding up; the employment rate has risen to 74.1% and is now higher than Britain's average of 73.4%; and by some measures wages are rising faster than they are south of the border. Why?



Exports are doing better than many predicted. The Index of Manufactured Exports for Scotland shows that in the past year manufacturing export volumes have risen by 2.7% in real terms. Some industries, like tourism, are doing particularly well, says Ronald MacDonald of Glasgow University. The publicity surrounding the referendum lured foreigners to hike in Scotland's windswept mountains and taste its smoked salmon and whisky. During the first quarter of 2015 spending by overseas visitors rose by 13% year-on-year. Mr MacDonald, who also runs a landscape-photography shop on the island of Skye, says his business has had its "best year ever". Tourism revenues have helped to offset the impact of rising imports, as Scots take advantage of the strong pound.

The Scottish government has boosted growth with various big spending schemes. A report from Gary Gillespie, its chief economist, highlights a series of infrastructure projects, including a railway from the Borders to Edinburgh which the queen officially opened on September 9th. Last year public spending on housing rose by 45%. The Scottish government, which is allowed to take on only a tiny amount of debt, has found the cash by diverting funds from local government and projects on climate change, among other things.

Aberdeen, Europe's oil-and-gas capital, is in a rut but not a slump. In the past year house prices there have risen by 9%. Its harbour is still clogged with ships that supply oil rigs with equipment and food. Although things could get worse if oil firms start to drive harder bargains with contractors, a few things have helped to soften the blow of lower oil prices. A number of fields recently came back on stream following maintenance work. Oil and Gas UK, an industry body, reckons production in the first half of this year was 2.5% higher than the same period last year. In coming decades about £50 billion ($77 billion) will be directed towards "decommissioning" old rigs in the North Sea, creating more jobs.

Outside the Granite City, things look better still. For each of the past three months Aberdeen and Aberdeenshire were the only two of Scotland's 32 local authorities to see an increase in unemployment compared with the previous year. For the rest of the country, lower oil prices have acted like a tax cut for firms and consumers, boosting growth, argues John Swinney, Scotland's finance minister and deputy first minister. Scots probably benefit more than other Brits from cheap oil, since they use more energy per person.

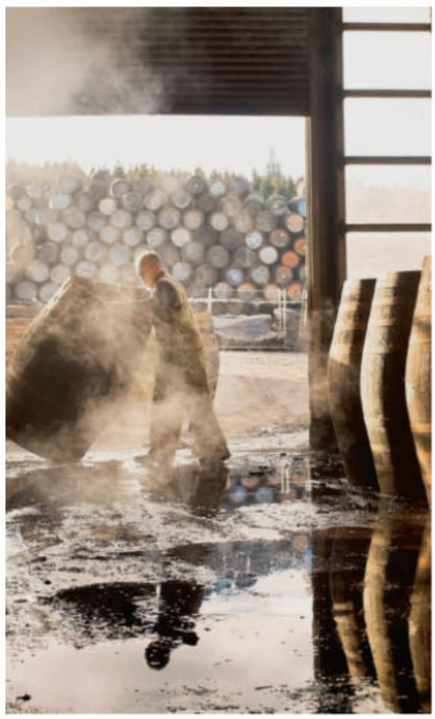
All this, the SNP asserts, bolsters the case for independence: contrary to dire warnings from England, Scotland has stayed afloat despite low oil prices. This ignores the fact that the union has shielded Scotland from the worst effects of the price slump. Britain's fiscal union means public spending is funded by taxes that are pooled from across the country. Nearly 90% of Scotland's funding comes from a Britain-wide pot, rather than money it raises itself. This is fortunate, since oil revenues (which are shared nationwide, to the Scottish government's annoyance) have fallen by half in the past year and are unlikely to recover soon. If Scotland were independent or fiscally autonomous, it would face a budget deficit this year of around 10% of GDP, calculates Mr MacDonald—around twice Britain's deficit.

Still, Scotland receives more foreign direct investment (FDI) than any British region bar London. Small wonder: it has the highest productivity rate outside London and the south-east. Much of that FDI goes to knowledge-intensive industries like financial services, which contribute roughly one-tenth of Scottish GDP. Edinburgh is Europe's fourth-largest financial centre.

But Scotland's appeal to investors is bound up with the fact that its firms have easy access to the rest of Britain. Owen Kelly of Scottish Financial Enterprise, an industry group, points out that the majority of Scottish financial firms' work is done outside Scotland. Independence would complicate this happy arrangement; even the lesser step of fiscal autonomy would mean Scottish firms operating on both sides of the border could face two regulatory and tax regimes. "Try to trade across borders and your paperwork doubles," sighs a seasoned Scottish businessman.

The value of economic union to businesspeople is revealed in how they have responded to the prospect of losing it. Private-sector spending on infrastructure has stagnated. According to figures from UK Trade and Investment, a government body, in 2014/15 Scotland saw a small fall in the number of inward-investment projects, while England and Wales saw rises. The number of Scottish startups has slipped this year compared with last, according to BankSearch, a consultancy. Business-registration lawyers in Berwick-upon-Tweed, an English town just south of the border, say that they have had a busy year.

All this bodes ill for Scotland's future growth: lower investment means smaller productivity gains, and with them slower improvements in living standards. If Scotland slipped further away from the union, these problems would only worsen. ■



Roll out the barrel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Turkey and the Kurds

The hatred never went away

SILVAN

Civilians join the fight between soldiers and guerrillas, burying years of calm

EASTERN Turkey has been paralysed for weeks by clashes between government forces and Kurdish extremists. Now violence is spreading to the rest of the country. Roadside bombs laid by Kurdish fighters killed 30 soldiers and policemen on September 6th and 8th. Bent on revenge, nationalist crowds waving Turkish flags attacked offices of the pro-Kurdish People's Democratic Party (HDP). In the Mediterranean resort of Alanya, protesters burned a building that housed its provincial headquarters. In Ankara, the capital, a group of fanatics broke into the national party office and tried to set it on fire.

In many places small businesses owned by Kurds have been torched. In the west and centre of the country, angry crowds stopped coaches travelling to the largely Kurdish regions in the south-east, threatening passengers and breaking windows. Offices of the *Hürriyet* newspaper, which has been accused of distorting statements by President Recep Tayyip Erdogan, were surrounded on two occasions by demonstrators wielding stones and clubs.

Two years of talks between the central government and independence-minded Kurds seem definitively over. Strife reignited in July and military operations are gathering pace in several cities. The town of Cizre where ten people died, including children, is under curfew as soldiers conduct door-to-door searches and try to regain control of areas held by militants.

The frenzy of aggression and hatred is not entirely surprising. While they talked last year, both sides quietly prepared for war. The government built new fortified military posts in rural areas where most attacks by rebels from the Kurdistan Workers' Party (PKK) took place during the last major fight two decades ago.

Meanwhile, the rebels shifted tactics and boosted their presence in urban areas. "In the 1990s the PKK had a civilian militia whose job was to act as an intermediary between the people and the organisation," says Aliza Marcus, an analyst and author. "Now it is an armed organisation in itself."

In recent weeks armed Kurdish gangs known as the Patriotic Revolutionary Youth Movement (YDG-H) have targeted security personnel in towns and cities, killing an unknown number of policemen. Fighting in urban centres is relatively new and makes today's confrontation particularly volatile.

Generational change

The YDG-H is largely untrained but highly motivated. Most members were born during the traumatic 1990s. "Young Kurds are angry and act as if they have nothing to lose," says Mahmut Kaya at the DITAM think-tank in Diyarbakir, a Kurdish city. Unless progress is achieved soon, he warns, the window of opportunity for a peace settlement will close since the younger generation is less inclined toward dialogue.

In Silvan, a town of 46,000 people 80km (50 miles) from Diyarbakir, masked youths last month dug trenches and erected barricades. They controlled access to several districts for a nearly a week. "As a Kurd you are insulted, your culture is ignored and you are not seen as human being," says a 27-year-old female sympathiser, praising the fighters. "For seven days, there was great resistance. Young people stood up and staked their ground." On August 15th the town's co-mayors, following the lead of other municipalities in the region, declared self-rule. Three days later armoured military vehicles launched an assault on Silvan. Electricity and communication networks were shut down and a curfew declared as troops battled young militants in narrow streets.

Pockmarked houses, broken windows and the burnt shell of a shop testify to the violence that ensued. "He died in this corner," says a resident in his 60s, pointing to a spot on a roof terrace where a 25-year-old man was shot during a stand-off, apparently by an army sniper. A water tank riddled with bullet holes stands empty nearby.

With its most recent attacks, the PKK, which is deemed a terrorist group in the EU and America, has upped the ante. Observers say until now it has committed only limited resources to the recent fighting in Turkey. Most of its trained troops are busy in Syria, opposing Islamic State (IS) through a Kurdish affiliate, the People's Defence Units. The Turkish military is supposedly also committed to fighting IS. Still Ahmet Davutoglu, the prime minister, has vowed to "wipe out" the Kurdish fighters, and warplanes have launched attacks on their camps in northern Iraq.

In Silvan municipal workers are slowly filling in trenches and young militants have faded back into the population, at least for the time being. ■

Greek voters

Life under capital controls

ATHENS

A modern society can function without known comforts and conveniences

ON SEPTEMBER 20th, Greeks will once again vote in an election, having last chosen a new government in January and also voted in a referendum in July. The year has been marked by economic turmoil even worse than in previous ones, culminating in the imposition of limits on cash withdrawals from banks. Circumstances are unlikely to improve, whatever the outcome of the poll. But somehow Greeks carry on, cashless but ingenious.

Many households have hidden large sums in beds. The practice hails from the time of tight foreign exchange controls in the 1970s. "Mattress money makes me feel safer," says Dina Efthymiou, a pensioner. The number of burglaries has gone up as a result but the police refuse to give out figures. Estimates put the increase at about 15%. That the number is not higher suggests Greeks are getting better at concealing their cash. Some seal it in with cement.

The continuing cash shortage has also prompted more than a million people, including Mrs Efthymiou, to buy on credit. "I never got any bank cards because I worried about falling into debt," she says. "Now I can pay at the supermarket with a card and save my cash."

For owners of small businesses, many of which have already been hit hard by several years of declining sales, the capital controls could prove the final blow. Manufacturers struggle with approvals for raw material imports, and suppliers outside Greece now insist on being paid in advance. Bank loans are only available to big companies, says Adamantios Pappas, owner of a plastics plant that has extended its four-week summer shutdown by another six weeks. "I'm thinking of shutting up shop altogether," he says.

Lack of work is a pervasive problem. The unemployment rate is 25%; about three-quarters have been jobless for more than a year. Soula Romanou has worked as a part-time cleaner since losing her job in a shoe shop three years ago. The single mother is buying clothes for her seven-year-old daughter, Maria, at an open-air market in Panormou, a middle-class district of Athens that is becoming grimier with every year of the crisis. She picks out a cheap pair of jeans and then scours stalls piled high with smuggled Chinese goods. "I have only €30 to spend on everything Maria needs to start school," she says. "If I can't manage, I'll have to try the church secondhand bazaar on Sunday."

Close family ties and high levels of home ownership have made it easier for Greeks to cope with economic hardship. Still people once comfortably off now describe themselves as "the new poor" following deep cuts in wages and pensions. In terms of economic output Greece has gone back to where it was 15 years ago. Manolis Panagiotakis, a civil servant in Athens who retired early on in the crisis, says, "We were prepared in 2009 for a period of belt-tightening after the boom years. But the recession just went on and on." His pension has been cut by more than 40%.

Mr Panagiotakis and his wife recently decided to shutter their Athens apartment and move to a village house in Crete, their native island. Mr Panagiotakis will take over cultivating a sizeable family-owned olive grove. He says the move is prompted by worries about higher property taxes and the prospect of further pension cuts. "This way we will continue to have an income even if the politics goes badly wrong," he says. "Olive oil is a cash crop that is always going to be in demand."

Clinging to hope

His wife, Anthoula, admits it will be a wrench to leave their grandchildren and friends in the capital. "When the economy turns around, we'll come back," she says, sounding hopeful rather than certain.

With unemployment at levels not seen in half a century, many younger Greeks are accepting low-paid jobs abroad. More than 100,000 educated youngsters have left over the past four years, mainly for Britain and Germany.

Compared with the experience of Greeks who went to work in German factories as guest workers in the 1950s and 1960s, the new wave of labour migration is less of an upheaval, thanks to EU rules that guarantee the right to live and work. Yet it follows a familiar pattern, with early movers in cities like Hamburg and London setting up networks for their compatriots that then benefit all later arrivals.

Engineers and IT specialists often opt for multi-year contracts in Gulf states. Dimitris Agouridis, a 33-year-old software specialist, took a job in Dubai two years ago but still feels unsettled. "My girlfriend moved with me and found an OK job in marketing but didn't like the lifestyle. She's back in Athens, unemployed," he says. "I want to stay a bit longer and save to start my own company when Greece starts to recover—it will happen, eventually."

For stay-at-home Greeks life is hard even when they have work. A 31-year-old maths teacher who took a second job as a security guard (after the school where he worked cut his pay by one-third) has moved in with his parents. "It's pretty odd being back in my childhood room but I don't think I can take off and leave my elderly parents on their own," he says.

Greece's latest international bail-out, agreed in July, will further test national resilience. An unpopular property tax is to be reintroduced in October, followed by another round of pension cuts. More spending reductions are due as well. Many doctors fear shortages of medicines.

Yet the popular mood is not one of unremitting gloom. A good tourist season has helped. Money earned on the islands is making its way back to mainland cities to see families through the winter. European Union funds for start-ups keep scores of young entrepreneurs, especially computer-science graduates, occupied, even if only a handful of projects are likely to become profitable. A hardworking volunteer community staffs hundreds of soup kitchens in Athens and other cities. Charities provide packed meals for thousands of schoolchildren who would otherwise go hungry. Tough survivors of past periods of deprivation such as Mrs Efthymiou say they take an almost perverse pleasure in weathering a milder version in modern times. "It's not going to last forever," she says. "Greeks were always resourceful." ■

We even take American Express now

Russia's opposition

Lonely but not lost

MOSCOW

A Russia after Putin is hard to imagine right now but one man is trying

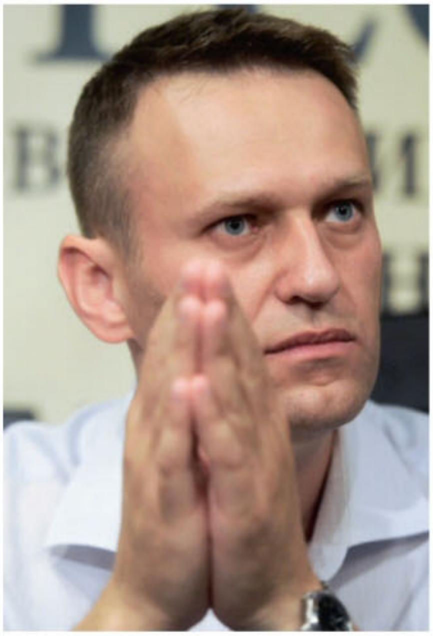
ALEXEI NAVALNY, Russia's most conspicuous opposition politician, would not look out of place on the presidential campaign trail in America, with his strident speeches and polished manner. But in a country where politics is mostly bland bureaucracy, Mr Navalny, a 39-year-old with broad shoulders and bright blue eyes, cuts a striking figure—when he is allowed to speak. At a rare public appearance in the Kostroma region, 300 kilometres (188 miles) north of Moscow, he banters with old ladies, takes selfies with teenagers and spars with hecklers. In his stump speech he attacks local officials ("the mafia") and Vladimir Putin's ruling party ("crooks and thieves"). He implores voters in local elections on September 13th "not to be silent" and to cast their ballots for a largely unknown party, RPR-Parnas.

The Kremlin has tried to bar Mr Navalny from politics. He is not allowed to hold office because the Kremlin gave him a criminal conviction on trumped-up charges. His own party, called Progress, was disqualified. Yet in the real world of Russian politics, rather than the Kremlin simulacrum, Mr Navalny is a professional politician who has had a greater impact on the country's future than any member of parliament or leader of a "licensed" political party outside government in recent times.

He first gained recognition as the main leader of a series of street protests in 2011 when he rallied parts of the urban middle class against the Kremlin. His stated aim of building a modern state with European characteristics appealed to many who had once voted for Mr Putin. In 2013 he received 27% of the vote in the Moscow mayoral election despite being in and out of jail, and having almost no access to state television. This rattled the Kremlin. Yet it realised that putting Mr Navalny in jail would only have boosted his popularity.

Instead, Mr Navalny was discredited as a crook and agent of foreign influence. "In the popular imagination I am that guy who wants America to enslave Russia," he says. The Kremlin contrasted his alleged pro-Westernism with its own narrative of imperial nationalism that culminated in the annexation of Crimea.

Paradoxically, says Mr Navalny, Russia's drift towards war and isolation has made his position less hopeless. A few years ago talk of a genuine opposition taking part in elections was fanciful. Putin supporters as well as liberals were able to argue that any possible replacement would probably empower darker forces, unleash a war or lead to attempts to resurrect the Soviet Union. "Now Putin has done it all himself," says Mr Navalny.



Navalny has a dream

And just as Mr Putin has shifted, so has he. Once a blogger and street protester, Mr Navalny has become the leader of a democratic movement. He helped to consolidate parts of a fractious opposition and form a coalition with Mikhail Kasyanov, who served as prime minister during Mr Putin's first term as president.

Middle-class warrior

His perseverance seems almost irrational given Mr Putin's approval rating of over 80%. But Mr Navalny argues that the constituency that came on the streets in 2011 and voted for him in Moscow in 2013 has not disappeared, even if it is demoralised. "Russia is a country of large cities where at least 30% of the population supports our views," he says. It is the same constituency that formed Mr Putin's original support base when he entered politics: the urban middle class. "I actually represent the interests of a large number of the Russian population," he says.

The Kremlin seems to think that contention is at least plausible. It barred Mr Navalny and his allies from running in local elections in two cities with large proportions of educated voters, Novosibirsk and Kaluga. Some activists went on hunger strike, putting public pressure on the Kremlin, which in the end agreed as a sop to let RPR-Parnas run in the Kostroma region, encompassing some of the country's most rural and depressed areas. Mr Navalny seized the opportunity. Dozens of volunteers have manned street stands handing out flyers, while candidates travel to small towns to meet voters.

They have made corruption a central issue in the campaign. Many see it as the organising principle of Mr Putin's government, as well as its biggest vulnerability. "There may be convinced Stalinists in Russia, but there is nobody in Russia who supports the idea of a state official owning a palace," Mr Navalny insists. Mostly excluded from the airwaves, in just three weeks the RPR-Parnas team has nonetheless lifted its voter recognition from 25% to 50% in the city of Kostroma, and from 15% to 40% in the surrounding region.

For Mr Navalny the main goal of participating in regional elections is to show that an opposition party can clear the 5% legal threshold necessary to win representation. He hopes such a feat will revive popular interest in politics and revitalise the democratic electorate, not least ahead of the parliamentary elections in 2016. To this end he is conjuring up somewhat far-fetched next steps. "First we get into parliament, then we form an important faction and afterwards form a government through a coalition agreement," he says.

Next for Mr Navalny is a further evolution of his public image. He aims to assume the mantle of the eastern European protest leaders who won power in Soviet satellite states in 1989, eventually leading their people into the European Union. He recently spent three days conversing with Adam Michnik, a Polish historian and former dissident, comparing the experiences of Poland and Russia for a book to be published in Russian in October, followed by an English translation.

The tone of the conversation is very different from the self-deprecating ease of 1990s liberalism and centres around a people's craving for status. "My task is to create a new type of patriotism without Russian tanks going into Czechoslovakia, Poland or Ukraine. If Russia needs an expansion, it has to be a cultural and scientific one," he tells Mr Michnik. "My main motivation is to prove that Russians are no less suited to democracy than any other people."

Where Mr Navalny differs most obviously from post-Soviet liberals is in his hard-man attitude to politics. He doubts that economic reform ideals will ever be sufficient to turn Russia into a modern European country. The entire political system needs overhauling. "I am a politician, not a philosopher, and I am fighting for power," he says. ■

Charlemagne | Leading from the front

Through yet another crisis, the EU is groping towards an expansion of its powers

IT IS fair to say that Europe has not been living its finest hour. Over the last few months, as crises have erupted across the face of the continent like acne on an adolescent's brow, officials have struggled to cope with a flow of migrants unmatched in recent history. From Hungary to Greece, and from Denmark to Britain, governments have turned on each other, introducing border controls, erecting fences and suspending public transport. And with the numbers of refugees entering Greece now at 5,500 a day, there seems little immediate hope of respite.

As a classic collective-action problem, the migrant crisis looks tailor-made for the European Union. But the scene is set for even greater rows, because Jean-Claude Juncker, president of the European Commission (the EU's civil service), has abandoned the time-honoured method of slow consensus-seeking and alighted on a new tactic: brute force. Under a plan unveiled by the commission on September 9th, 160,000 asylum-seekers arriving in Greece, Hungary and Italy, the three main EU points of entry, would be relocated with little choice to most other EU countries over two years. Each would have to accept a quota of asylum-seekers, determined by a formula that incorporates population, GDP, unemployment and previous asylum efforts: Germany, for example, would take 31,000; France 24,000. (Britain and Denmark are allowed to opt out of such matters, and under the plan other countries will be able to skip their obligations in "exceptional" circumstances by paying a fee.)

The scheme will do only so much to relieve the burden on front-line states: more than 400,000 illicit migrants are expected to enter Italy and Greece this year alone. But by EU standards the change is ferociously ambitious—few national governments appreciate Eurocrats telling them whom they must accommodate inside their borders. Mr Juncker's plan is strongly opposed by several countries in central and eastern Europe, including the Czech Republic, Hungary and Slovakia. None of them has much recent history of immigration, none is keen on more of it and none has been overburdened with asylum claims (although Hungary is traversed by thousands making their way to Germany from Greece and the Balkans). Viktor Orban, Hungary's prime minister, says the migrants are Germany's problem, not Europe's, because it is to Germany that they are largely headed.

In June, by uniting with other sceptics such as Spain, the easterners saw off an attempt by the commission to impose (far smaller) quotas, triggering in the process a screaming match between the Italian prime minister and the Lithuanian president. But in recent months, as the winds of European opinion have shifted and Germany, a strong backer of Mr Juncker's plan, has found its voice, the sceptics have begun to look isolated. Although governments must vote on the relocation proposal, the naysayers will struggle to muster the votes needed to block it, and EU officials say this time they are minded to ignore them. In other words, Brussels will order governments to accept asylum-seekers that they do not want. Most will be Muslims.

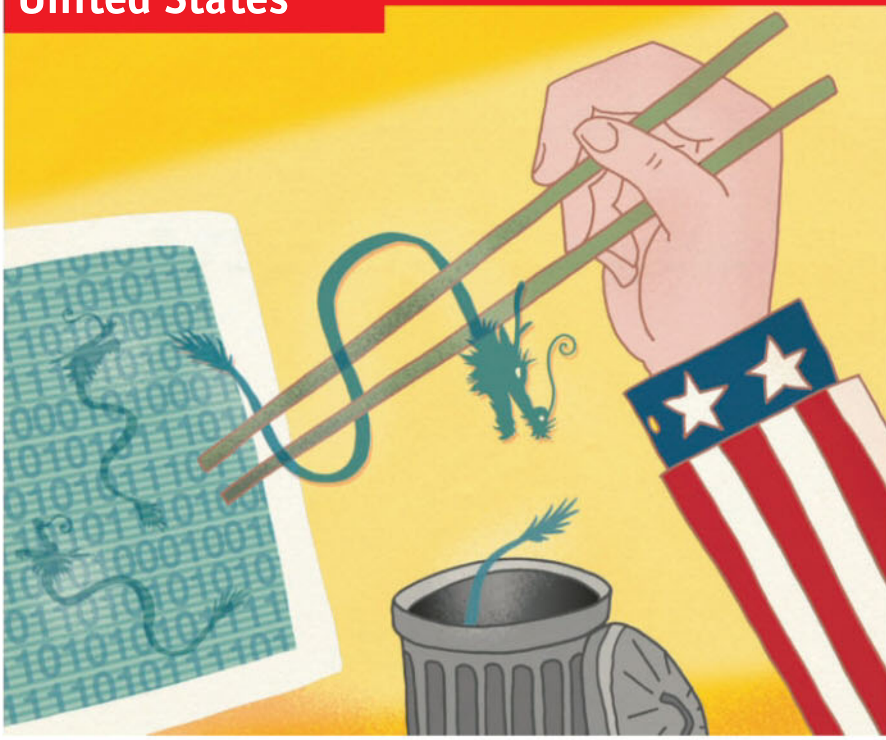
That would be a "political disaster", says Radko Hokovský of European Values, a Czech think-tank. Populists will grow emboldened and citizens disillusioned. There will be emergency summits and bitter arguments; some fear splits as wide as those over the Iraq war. The row could spill over into other touchy subjects the EU must manage this autumn, notably the renewal of sanctions on Russia for its invasion of Ukraine, which expire in January. In the meantime the refugees flowing up through Greece, the Balkans and Hungary will keep up the pressure. Moreover, EU officials are discovering that their relocation plan is a lot harder to implement than they had imagined (a voluntary element is due to begin next month in Italy). No one has a convincing answer to the easterners' strongest retort: many migrants will simply leave countries they do not want to be in.

The integration tango

Such are the troubles of a policy forged in crisis. Veterans of the euro-zone's upheavals may detect a pattern: ill-thought integration can lead to big problems. Euro-zone members did not foresee that, to save the single currency, they would one day have to submit budgets to Brussels and sign up for whopping bail-outs. Similarly, the ex-communist countries that joined the EU in 2004, salivating at the prospect of subsidies and open labour markets, could not have guessed that barely a decade later they would be obliged to accept thousands of asylum-seekers. The free-travel Schengen area, which is tested whenever Europe faces a migrant surge, was initially an awkward bolt-on to European law; one Eurocrat called it "Europe's illegitimate child".

Such offspring, he added, are also "the fruit of love". That would not describe the rancorous atmosphere today. Yet officials quietly note that Europe's migration debate has advanced further in the last six months than it has for years. One says he has never seen such an appetite among governments for reform. Policymakers are fizzing with ideas, from the use of development aid to bring recalcitrant transit countries into line to the strengthening of a Europe-wide border guard. Once the principle of shared responsibility for migrants is established, says another official, the numbers of relocated migrants can be scaled up, and new programmes established, without too much wrangling. Even Britain, an evergreen sceptic of collective European action, has belatedly said it will resettle 20,000 Syrian refugees (from the Middle East, not Europe) over the next five years.

Still, one step at a time. Even if the new scheme works, national governments must soon face tough issues, including the integration of multitudes of newcomers and the co-ordination of asylum laws. Future rows will not make those discussions easier. But nor will they postpone the inevitable. The EU may yet improvise its way towards an immigration policy worthy of the name. ■



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Cyber-security

Trouble shooting

America's computers and networks are under attack. Retaliation against Chinese hackers looms

IF CHINESE spies broke into an American government building and stole important documents, or were seen planting explosives in the electric grid, uproar or worse would ensue. Yet state-supported Chinese hackers have, officials say, been getting away with the digital equivalent for years, with notably little response.

Now President Barack Obama's administration has drafted economic sanctions against Chinese companies that it believes have profited from trade secrets stolen from American firms. Amid wrangles inside the administration, there are hints that they could come into force soon, though probably not before Xi Jinping, China's president, visits Washington this month.

The new sanctions would be along the lines of those imposed on Iran: the named Chinese firms would be barred from doing business in America, doing them, and their bosses, real damage. They would be much tougher than the warning shots fired in May 2014 when, after years of careful case-building, the administration issued indictments against five Chinese military-intelligence officers. This was dramatic, but largely symbolic: China, which denounced the charges, does not extradite any of its citizens to America, let alone spooks.

Attempts to settle this diplomatically have failed. Two years ago an American security firm, Mandiant, published a report on an elite group of the People's Liberation Army, code-named Unit 61398, which it said engaged in huge and systematic theft of American intellectual property. The administration, after years of privately urging the Chinese to back off, gave a strong hint that the report was true. China had agreed to hold regular high-level talks on cyber-security—which were strained by revelations from Edward Snowden, a fugitive National Security Agency contractor, which suggested that the agency had itself been spying on Chinese companies. The talks were cancelled last year after the five Chinese officers were indicted.

Point and click

The administration is trying to distinguish between cyber-espionage, which America and all militarily advanced countries engage in, and state-sponsored theft carried out over the internet. The NSA's defenders argued that though it may have spied on Chinese targets such as Huawei, a big maker of telecoms kit, it does so because these firms are handmaidens of the Chinese state. It does not steal their commercial secrets to benefit corporate America. During the post-Snowden backlash, few were willing to hear the American argument. Huawei insists it is independent; China says it is a victim of hacking, not a perpetrator. But now the administration is making its case once more.

Commercial hacking, at which China excels, is only one of three main threats to America's computers and networks, which come from many adversaries. A second, newer, sort is to America's intelligence agencies—as illustrated, in July, by news that Chinese hackers had stolen records of around 22m federal government employees from the sleepy and ill-run Office of Personnel Management (OPM).

The records of American spy-agency employees were not among those pilfered. Yet a simple process of elimination can identify those posted under diplomatic cover abroad: if regular diplomats are in the OPM database, any embassy employee who is not there is a likely spook. Other breaches make matters worse. Spies, however well-disguised, have health records, tax returns, utility bills and credit ratings. Hackers have successfully breached networks on which all such things are stored. This gives further clues to identities—and activities. As an open, advanced society, America now faces unprecedented—perhaps fatal—difficulties in maintaining a clandestine espionage service.

The third, and to some most troubling, worry is digital weapons, which disrupt the hardware and software that keep a country going. They may range from simple swamping attacks, of the kind used by Russia against Estonia in 2007, to elaborate efforts such as Stuxnet, a piece of malicious software that America and Israel used to destroy Iran's nuclear centrifuges. ▸▸

Digital weapons have their drawbacks. Iran's nuclear programme was delayed, not derailed. But they present problems for America's military planners. They involve discovering and exploiting weaknesses which potentially affect everyone, not just America's enemies. The NSA, post-Snowden, is under fire for having deliberately weakened commercial cryptography to ease its espionage efforts. A digital weapon that sabotages power stations could also be discovered and used by America's foes.

Attributing digital attacks is said to be getting easier. But it is necessarily harder than in the real, "kinetic" world. So is deciding on the scale and direction of any retaliation. Arms control is all but impossible: digital weapons have to be secret to be effective. Though officials are cagey about the details, they believe they have detected Chinese and other hackers snooping on (and perhaps interfering in other ways with) computers and networks which run important infrastructure. Efforts to strengthen the systems involved are under way; the creaky power grid is a particular worry. Working out who is ahead is hard. America is doubtless making similar efforts on infrastructure networks in Russia and China—which may be in some ways more vulnerable to attack.

Stux on the Hill

A sense of urgency is growing. An intrusion-detection system, misnamed "Einstein", failed to protect the OPM. Hackers (Chinese, Russian and others) have breached unclassified networks in the White House, State Department and Pentagon. Experts fear many other, perhaps more serious and sophisticated, attacks may be going unnoticed on both government and private networks.

In response, America's military, counter-intelligence and criminal-justice authorities are working together more closely. An alleged Chinese hacker in Canada, Su Bin, will be extradited shortly. An executive order signed by Mr Obama in April gives the administration wide-ranging powers to respond to foreign cyber-attacks.

But the outlook is still bleak. Even a bipartisan and widely supported measure to exempt information-sharing about cyber-attacks from privacy and antitrust lawsuits has been stuck in Congress for three years. It fell foul of legislative deadlock in June and is now on the Senate's overcrowded agenda for this month.

The deeper problem is that America's woes stem from decades of bad decisions and bad habits. Until people in charge of sensitive data and computers see the threats more clearly, attackers will have a field day. Hillary Clinton's casual attitude to her official e-mails while secretary of state (she kept them on her own private, insecure server) is just the tip of a big and dangerous problem. ■

Culture wars, cont'd

One man's freedom

COLUMBUS, GEORGIA

Religious liberty and irreconcilable divisions among Republicans

JOSH McKOON feels misunderstood. A state senator for a prosperous, very Republican part of western Georgia, he has twice sponsored a state bill to protect religious folk from coercion by the government. Explaining its purpose, he cites a pair of recent controversies combining two Southern institutions, faith and American football: rows over an on-field baptism of a high-school coach and players, and about a school band playing "Amazing Grace" at half-time. The bill, Mr McKoon says in Columbus, a pretty riverside city in his district, is modelled on a federal law of 1993. It is not, repeat not, meant to enable discrimination against gay people, or as a form of resistance to same-sex marriage.

Mr McKoon has an unlikely alibi: Kim Davis, the clerk of Rowan County, Kentucky, who repeatedly refused to issue same-sex marriage licences and was briefly jailed for contempt of court; she was released on September 8th. Kentucky is one of 21 states that already have religious-freedom laws like the one Mr McKoon proposes. It didn't help her. Yet some in Georgia detect a whiff of bigotry in the rhetoric accompanying the bill, if not in its boilerplate wording (which requires the authorities to demonstrate a "compelling government interest" if they are to "substantially burden" the exercise of religion).

Partly the trouble is timing: at the moment, any promotion of religious rights is liable to be seen as a retort to the Supreme Court's advancement of gay ones. That is how Mr McKoon's critics view his initiative. Bryan Long of Better Georgia, a lobby group, believes it would be "a sword not a shield". Since Georgia is one of 28 states that lack laws against homophobic discrimination, its devout bridal florists and bakers (the largely apocryphal focus of much conservative angst) do not need a new law to turn away gay customers: they already can. But Eunice Rho, of the American Civil Liberties Union, says religious-freedom statutes could be used to challenge city-level anti-discrimination rules. Such efforts would fail, replies Mr McKoon.

Kim Davis, misleading martyr

This stand-off, involving mutual outrage and spectral fears, exemplifies two important divides. The most obvious is between liberals and religious conservatives. Mr McKoon's bill is one of many opportunities for conflict between them in an incipient arms race of mostly pointless legislation. A stew of new laws tabled in Georgia and elsewhere would protect pastors from forcible involvement in gay weddings (they are already exempt), or excuse civil officials like Ms Davis from facilitating them. In Washington some congressmen think (with some reason) that the tax-exempt status of religious organisations will be jeopardised by the gay-marriage ruling.

But the really problematic rupture that the dispute highlights—at least so far as Mr McKoon is concerned—is not between the gay lobby and religious conservatives, but between religious conservatives and big business. In response to his bill, many of Georgia's largest companies, including Delta Air Lines and Coca-Cola, along with the state's Chamber of Commerce, have pointedly spoken up for diversity and decried discrimination. "To the extent their concern is genuine," Mr McKoon says, "I think it is misplaced." But mainly he reckons their interventions are PR stunts. At a recent political meeting he denounced the "far-left cultural norms" that executives were trying to impose. Next, he warns, they will come after Georgians' guns.

This is a grudge match, too. Threats of boycotts recently led to a fiasco in Indiana over its own religious-freedom law. In the South such disputes array grassroots conservatives against urban business types who worry about revenue from tourism and conventions and about retaining new, footloose financial industries. Merle Black of Emory University says strife over immigration, which also pits sceptical small-town voters against welcoming big-city businesses, is part of the same pattern; a failed referendum in Nashville in 2009, which would have made English the sole language of official city activities, marshalled similar adversaries.

The awkwardness for Republican leaders, Mr Black summarises, is that "the reli- ▸▸

gious conservatives have the votes, but the business conservatives have the money." Given the South's early importance in next year's Republican presidential primaries, the split in local priorities is liable to colour, and help to prolong, the national contest. It was reflected this week in the candidates' responses to the drama in Kentucky: Ted Cruz and Mike Huckabee raced to embrace Ms Davis, Christian activists' new mascot; others remained aloof.

Mr McKoon, meanwhile, hopes his bill will finally pass in 2016; it stalled this year after other Republicans added anti-discrimination clauses that he claims were needless and confusing. Religious conservatives, he argues, must achieve some of their aims if the Republican coalition is to hold. With elections in prospect, he may prevail. In any case, an even bigger bust-up between the corporate and religious lobbies looms—over whether to change Georgia's constitution to let in casinos. ■

United Airlines

The chairman's flight

NEW YORK

How a New Jersey traffic jam helped topple the head of an airline

SOMETIMES the skies can be a tad too friendly, as the head of United Airlines recently discovered. Jeff Smisek, the airline's chairman and chief executive, and two other top executives resigned on September 8th amid a federal corruption investigation. The inquiry focuses on whether the airline traded favours for preferable treatment by the Port Authority, a bi-state agency, which operates airports, bridges and some commuter lines in New York and New Jersey. In particular, the investigators are looking at a twice-weekly flight service between New Jersey's Newark Liberty Airport, where United is the largest carrier, and Columbia, South Carolina. Columbia just happens to be near the holiday home of the once powerful David Samson, the former head of the Port Authority.

The so-called "chairman's flight" began shortly after Mr Samson became chairman of the Port Authority and ended within days of his resignation in 2014. New Jersey's federal attorney is looking into whether the service, which was reportedly money-losing, was set up in exchange for upgrades at Newark, where United keeps a sizeable fleet. United was also said to be pushing for an extension of commuter rail services to Lower Manhattan and a reduction in its airport rent. Subpoenas issued by a federal grand jury earlier this year demanded that the Port Authority hand over Mr Samson's personal travel records, his family's travel records and any communications he had with United. The federal authorities also wanted any information about United's new hangar and terminal at Newark. Investigators were also looking into United's flights to Atlantic City.

The resignations over the suspected shakedown complicate Chris Christie's already lolloping presidential run. The investigation is an extension of the federal inquiry into an embarrassing 2013 traffic jam, known as "Bridgegate". That scandal has already yielded a guilty plea and two indictments of close Christie aides who allegedly orchestrated the gridlock to punish a local democratic mayor for not endorsing Mr Christie in his gubernatorial re-election bid. Although most believe Mr Christie's claim that he "had no knowledge of involvement in the planning or execution of this act", Bridgegate has been hard for the governor to shake. His approval ratings re-

Hawaii

Under the volcano

HONOLULU

A telescope designed to be pointed into space is turned in the opposite direction

THE summit of Mauna a Wakea, the third of six volcanoes that created Hawaii's Big Island, is where some believe that the native Hawaiian creation story begins. Its snow-capped crater is thought to be "*piko*", the umbilical cord that ties the world to Wakea, the sky father. Ancient shrines and burial zones dot the uppermost slopes.

Mauna Kea, as it is also known, is also one of the best places on earth to look into space. The volcano's shieldlike shape ensures that the air at the summit is not just cool and clear, but also flows smoothly and steadily. Most of the big astronomical discoveries made in the past 50 years have had help from the 13 telescopes that cluster below the summit.

A 14th is in the works. The size and sensitivity of the proposed Thirty Metre Telescope (TMT) would allow scientists to gaze deeper into the universe than has previously been possible from this planet, at stars 13 billion light-years away. The $1.4 billion project is backed by an international consortium of astronomers. Building began earlier this year, but the earthmovers currently lie idle while Hawaii's Supreme Court hears arguments from groups opposed to it.

Protests have preceded the building of every telescope on the volcano since 1964, but the present furore hints at a deeper current of change taking place in America's 50th state. The telescope project has found its way into arguments about development, history, land claims, the incarceration of native Hawaiians and even the price of bread (by one measure Hawaii is the most expensive place in the world to buy a loaf).

Supporters of the big telescope worry that Hawaii will send the wrong signals to investors if construction on Mauna Kea is permanently halted. "We have turned into a total entitlement society and one that is not governed by people with business experience," says Sam Slom, the only Republican member of the state senate. If young Hawaiians really want to succeed, he says, "they have to go somewhere else".

The telescope has also stirred up Hawaiian nationalists, a small but vociferous group which laments the island's annexation by America at the end of the 19th century, when marines removed Queen Liliuokalani from the Iolani palace. Some opponents of the TMT have links to Hawaii's sovereignty movement, which the current debate has made more visible than before. At a recent event young people were selling T-shirts that read "Born Hawaiian, forced to be an American". All of which adds up to an argument that looks much like Mauna Kea itself. If measured from its base, the volcano is well over six miles tall, making it easily the world's highest mountain. Yet the majority of Mauna Kea lies submerged below the warm waters of the Pacific.

main low in New Jersey. His former aides' trial is expected to begin in November. It will not help him that federal investigators are looking into Mr Samson's tenure at the Port Authority.

Mr Samson, a Christie appointee, has been his close pal for years. When Mr Christie was a federal prosecutor for New Jersey, Mr Samson was the state's attorney-general. In 2003, they were both sent death threats by the Latin Kings, a dangerous gang. Mr Samson resigned from the Port Authority in March 2014 amid rumours he was linked to Bridgegate.

United, meanwhile, was suffering from turbulence well before Mr Smisek stepped down. Since its 2010 merger with Continental, which he engineered, it has had numerous operational problems. It has been plagued by computer glitches which grounded thousands of flights. Labour relations have been tense–it has had trouble negotiating contracts with its mechanics and flight attendants. On the upside, in July United reported record quarterly profits. But its shares, down 14% this year, have trailed behind some of its rivals.

The resignations do not mean criminal charges are looming—United said they were connected to an internal inquiry—but it does mean a possibility for a fresh start for United, something analysts welcome. Oscar Munoz, a former railroad executive, who helped overhaul CSX into an admired rail company, will become United's new chief executive. Mr Christie's presidential hopes remain in a holding pattern. ■

Museums of black history

A fresh start

CHICAGO

Like similar museums around the country, Chicago's DuSable is struggling

Greensboro, Illinois

THE DuSable Museum of African-American History is in the right place at the right time. The grey, one-storey building is located on verdant land in the historic Washington Park in one of the prettiest parts of Chicago's South Side. It will soon have as its neighbour, either at Washington Park or at nearby Jackson Park, the mighty library built in honour of America's first black president. And it is considered one of the foremost black-history museums in the country at a time when Americans are yet again contemplating the unresolved business of its complex race relations.

In spite of its advantageous vantage point, the DuSable has not fulfilled its potential in recent years. It has not had a permanent director since the end of last year though it finally nominated a new director, Perri Irmer, on September 2nd. Like other black-history museums, such as the African-American Museum in Philadelphia, which had to let most of its staff go to stay open, and the Charles H. Wright Museum in Detroit, which feared for its existence when its hometown went bust, it has struggled financially as funding from state and city governments dwindled. Private black donors largely failed to step up to the plate, in part because they have, on average, less money than whites do and partly thanks to a lack of tradition and habit.

Earlier this year a bitter controversy erupted when Theaster Gates, a prominent artist, who is on the museum's board of trustees, suggested a partnership of the museum with the University of Chicago where he teaches. Some campaigners and community members understood Mr Gates's proposal as an attempt by the mighty, rich and mostly white University of Chicago to take over control of their museum. This, they claimed, would be contrary to the mission of the museum imagined by Margaret Burroughs, the educator and artist who founded the DuSable in 1961. "It was an overreaction of the local community… there are hard feelings about gentrification," says Bob Blackwell, who served as interim director of the museum until July this year.

Mr Gates and the university backtracked and Mr Gates loyally maintains that he remains "thoroughly committed to the organisation". Yet a tour of the DuSable reveals that change and outside help are needed if the museum wants to be relevant. One a recent weekday the museum's visitors consisted of two elderly ladies, animatedly chatting in German, and a couple of African-American women. Friendly members of staff said that they do not have a floor plan or any other type of printed material about the museum. The displays are a hodgepodge of themes of black history, all of them fascinating, but thrown together without much context. (Insiders say the DuSable does not have a proper archive of its collection.) One section focuses on Africa with an exhibition of artefacts from several African countries; another tells the story of the first black mayor of Chicago; yet another one looks at the history of blacks in the armed forces. The biggest segment is an ambitious overview of black history in America from the suffering on slave ships to the Obama presidency.

Ms Irmer takes an upbeat view of the state of the museum she is taking over on September 14th. "We are poised for a great renaissance," she says. She wants the Obama library to become a sister institution of the DuSable and even share membership. She would like to collaborate with other museums on the South Side, as well as the city's flagship cultural institutions such as the Lyric Opera. She imagines, for instance, a performance of "Othello" at the Lyric coupled with a panel discussion on race relations at the DuSable. She is planning to reach out to Chicago's 87 consulates to broaden the museum's international reach. And she even wants to work with the University of Chicago to build a "limited partnership" that would allow the museum to keep its independence.

In the slightly more distant future the DuSable has plans to expand. It is in the process of renovating the Roundhouse, a limestone building built in 1880. That will add 61,000 square feet in exhibition space and make it the second-largest African-American museum after the one that the Smithsonian in Washington will open this year. Ideas abound on what to do with the additional space. One is to establish a "Hall of Fame" for black athletes from Arthur Ashe, the tennis champion, to Michael Jordan, the basketball star. It is a project that is likely to be popular. Yet the DuSable has lots of work to do on what it has already before it thinks about growing. ■

Wildfires

America in flames

WASHINGTON, DC

The future of the country's north-west is hot and smoky

SO BAD are the seasonal wildfires sweeping America's tinder-dry north-west that Alex Thomason, a public-spirited lawyer in Washington state, bought himself a second-hand fire engine to fight them. "We can operate hoses, we can understand water," he told reporters. "We're going to at least save one or two houses." But this is not a problem American can-do-ishness can fix. In fact, overzealous firefighting is partly to blame for the fires that have so far consumed over 8.5m acres of forest in Washington, California, Idaho, Oregon, Montana and Alaska and which, with the desiccated Santa Ana winds yet to reach southern California, could exceed the record devastation of 2006, when nearly 10m burned.

Forest fires, started by lightning strikes, are part of the natural cycle in temperate woods. They thin trees and remove debris, clearing space for a diversity of new seedlings, often of species adapted to survive a scorching. The thick bark of the ponderosa pine makes it almost fireproof. The jack pine depends on fire to melt the hard resin that encases its seeds. Yet climate change and decades of fire suppression have disrupted this pattern, turning what might once have been small, low-intensity and potentially regenerative fires into tearing infernos.

A recent run of hot, dry summers, including a four-year drought in California, is a likely indicator of global warming; July was America's hottest month since 1880. So, in a related blight, is a surge in pests, such as bark beetles, which are surviving the mild winters in record numbers, and have turned thousands of acres of sappy conifer forest into dead wood, ready to burn. The average wildfire season is now 78 days longer than it was 40 years ago, according to a recent report by the US Forest Service (USFS). No surprise, then, that the six worst fire seasons since 1960 all occurred this century.

But assiduous firefighting is also to blame. Between 1998 and 2007 about 80,000 wildfires a year were suppressed and only around 300 a year left to burn. This has led to a vast build-up of dry brush which, once ignited, can act as a "fire ladder", lifting the flames into the forest boughs where, in the current arid conditions, they may become uncontrollable "mega-fires". These ravage more than 100,000 acres apiece, burning at an intensity that leaves little life behind.

Such infernos are now common. Over the past decade America has seen on average ten mega-fires a year. Since June this year, five mega-fires have razed more than 5m acres of central Alaska, while five large fires in Washington state, where Barack Obama declared a state of emergency last month, burned over a thousand-mile front, and laid waste to almost a quarter of a million acres.

The costs of the conflagration are enormous. In the last week of August alone the USFS spent $243m on a firefighting effort involving around 30,000 American firefighters, with reinforcements from Canada, Australia, New Zealand and the national guard. The longer-term costs, in terms of ecosystem damage and respiratory problems caused by the thick blacks clouds currently blotting out the western horizon, will be greater.

The outlook is grim. The National Research Council estimates that the amount of land burned in western North America could quadruple with every degree of warming—of which there are expected to be at least a couple by the end of this century. The feared effect of this and other warming-related changes is that America's forests could, as early as 2030, start to emit more carbon into the atmosphere, including in smoke from wildfires and methane from disturbed ground, than they absorb through photosynthesis.

More judicious firefighting might slow the damage a bit. But that would mean leaving houses to burn, which is a long-standing political problem urban sprawl is making even tougher; between 1940 and 2000 the number of houses within half a mile of a national forest more than tripled, to 1.8m. Smart wildfire management can also be expensive. And because wildfires are not eligible for the dollops of federal money earmarked for other sorts of natural disaster, the USFS's budget is another thing going up in smoke.

In 1995, the forest service spent 16% of its budget on fire suppression, and the rest on other important activities, including clearing brush and managing watersheds. This year the agency will spend a little over half its budget on firefighting, and by 2025, it predicts, that could rise to around 67%. This, says the agriculture secretary, Tom Vilsack, who oversees the USFS, will leave "much fewer resources for the very restoration projects that have been proven to reduce the risk of wildfire." ■

Burning man

Lexington | The cross blue line

Some police bosses blame Barack Obama for the deaths of their officers. This makes no sense

A CURIOUS rage has America's cops in its grip—or rather, grips those who claim to speak on their behalf. Tragically, the end of summer has seen a spike in fatal shootings of police officers. Bizarrely, President Barack Obama is getting much of the blame.

The settled facts are these. From the beginning of August until the time of writing, seven policemen have been shot and killed. At least one of the dead, Darren Goforth, a sheriff's deputy killed near Houston while putting fuel in his patrol car on August 28th, may have been targeted because of his uniform. The deaths follow months of heated debate about the use of lethal force by police officers from Ferguson, Missouri, to Baltimore, Maryland. Mr Obama has joined in those debates. Often he has spoken of the need to build trust between non-white communities and the police, and linked today's mistrust to historic racial discrimination.

Those facts inspire rage in some police chiefs and trade unions, joined by a number of Republican presidential candidates, who in recent days have accused Mr Obama of directly or indirectly causing police deaths. At a minimum, they charge him with remaining silent after officers are gunned down, though—in their telling—he is only too eager to speak out when black men are shot by white officers. Some go further, accusing Mr Obama of fomenting a mood of anti-police hatred.

Police anger overshadowed what should have been a simple exercise in presidential glad-handing—a speech to trade unionists in Boston on Labour Day. Mr Obama was mostly among friends, addressing a pillared hotel ballroom packed with union bosses and backslapping, elbow-squeezing Democratic politicians. Police representatives proved an exception. One of the few who deigned to attend the speech, Hugh Cameron, president of the Massachusetts Coalition of Police, told Lexington that Mr Obama has been "silent" during a wave of anti-police "assassinations".

Jerry Flynn, executive director of the New England Police Benevolent Association, whose union boycotted the speech, goes still further. He says that Mr Obama had "blood on his hands" after whipping up racial tensions. If abuses by rogue officers led to prosecutions, says Mr Flynn, where are the hate-crimes charges "when white officers are killed by black men?" Ron Hickman, the Houston-area sheriff whose deputy was murdered on August 28th, blamed a "dangerous national rhetoric" for the killing, singling out Black Lives Matter, a protest movement that demands changes to policing in black neighbourhoods. David Clarke, the sheriff of Milwaukee County, which includes Wisconsin's largest city, has accused Mr Obama of starting a "war on police".

Republicans with White House ambitions are joining in. Earlier this month Senator Ted Cruz of Texas said that recent attacks on police are a "direct manifestation" of the "vilification of law enforcement" by Mr Obama and his government. A day later Governor Scott Walker of Wisconsin declared that targeted police-killing is a "serious problem", adding: "In the last six years under President Obama, we've seen a rise in anti-police rhetoric"—a deftly worded explanation that stops short of citing anything irresponsible that Mr Obama has said. Donald Trump, the Republican front-runner, calls the president a "divider".

Police be nice

These allegations—of culpable silence or a "war on police"—would be grave if they were not demonstrably false. The president has not been silent about police killings. In a statement issued after he telephoned Mr Goforth's widow to offer his condolences, Mr Obama called the targeted killing of police "completely unacceptable" and "an affront to civilised society". While the Department of Justice did issue a damning report on racial bias within the Ferguson police department, it also probed the police shooting in August 2014 that sparked protests in that Missouri town. To the dismay of some locals, its 86-page report found no grounds to prosecute the officer who fired the fatal shots. Nor are killings of officers soaring, though murder rates have jumped in some cities this summer (arguably because police are being more cautious). To date this year 26 have been shot dead—a grim tally but fewer than over the same period in 2014. Overall, police deaths have declined steadily since the 1970s.

What, then, explains the fury of Mr Obama's critics? Prejudice is too sweeping an answer, and lazy besides: though a subset of Americans do find an odd satisfaction in calling the president an anti-white racist. Reverend Jeffrey Brown of the Twelfth Baptist Church, one of Boston's oldest black congregations, has worked with police to reduce gang violence for decades, and gave evidence to a White House task force on policing set up after the Ferguson riots. Asked why he thinks the president upsets some in the police, Mr Brown notes that Mr Obama is asking officers to change how they interact with mistrustful communities. And "change is always difficult for institutions," he says simply.

That is persuasive. One of Mr Obama's great strengths when talking about race in America is his focus on national self-improvement. Defying those who want him to take sides, either declaring America damnably racist or ready to embrace colour-blind comity, he calls the country an imperfect work in progress. Yes, it takes special courage to serve in the police, the president said in May, at a ceremony to honour fallen officers. But America can "work harder" to heal rifts between police and the public they risk their lives to protect.

Mr Obama frustrates both those who favour instinctive deference to the police, and radicals in such movements as Black Lives Matter who see policing as repression, and so want less of it. Nobody needs good policing more than poor, high-crime neighbourhoods, Mr Obama said last year. Yes, he is asking a lot of the police, who do a dangerous job under ever-increasing scrutiny. But the president's demands are also reasonable. His police critics need to calm down. ■

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Canada's role in the world

Strong, proud and free-riding

OTTAWA

Canadians like to see themselves as global benefactors, but in fact they have been pinching pennies on aid and defence

WHEN heart-rending images flashed across the world of Alan Kurdi, a three-year-old from Syria who drowned off the Turkish coast, people everywhere were appalled. But the pang of conscience was especially acute in Canada.

That was because Alan, his five-year-old brother, Galib, and their mother, Rehan, all of whom perished, might possibly be alive now had it not been for a tightening in Canadian immigration policy. The boys' aunt, who has lived in Vancouver for 20 years, had been trying to secure entry for her two brothers and their families. That was a very painful thought for a country which rightly or wrongly loves to think of itself as being a "helpful fixer" of the world's problems.

As an immediate result, refugees became a bone of contention in campaigning for Canada's general election in October. The drowned family meant that "Canada has failed", Tom Mulcair, leader of the centre-left New Democratic Party (NDP), declared. He is challenging the Conservative government led by Stephen Harper.

As well as arguing over who bears responsibility for the Kurdis' fate, the prime minister and his challengers have been bickering over what to do now. In mid-August Mr Harper said that if re-elected his government would take another 10,000 refugees from Syria and Iraq by 2019, on top of an earlier pledge to accept 11,300 Syrians and 23,000 Iraqis. This week he declined to change that policy although many mayors and four provincial premiers would take more Syrians. Mr Mulcair wants 10,000 refugees to be accepted immediately and another 9,000 per year between now and 2019. Justin Trudeau, leader of the Liberal Party, advocates taking an extra 25,000 from Syria this year.

Numbers aside, Mr Harper's critics have been urging him to recover the generous spirit which the nation showed during one of the nobler moments in Canadian history: the welcome extended in 1979-80 to 60,000 boat people from Vietnam.

But that was a very different era. As a new study for the Canadian International Council, a think-tank, shows, Canada's self-image as a contributor to solving the world's problems is out of date—by a couple of decades. Before 1995 governments of all hues pursued a generous foreign policy, even when Canada's own finances were so rocky that this was hard to afford. Since then the country's economy has improved but its external policy, reflected in defence and aid spending, has grown far meaner. "Over the past 20 years, Canada has never contributed its fair share to international engagement, whether compared with what Canada committed in the past or with what other countries are committing today," conclude the study's authors, Megan McQuillan and Robert Greenhill, a former head of the country's aid agency.

The report was uncomfortable for politicians of all stripes. Mr Harper's Conservatives vow to keep the country's armed forces in good shape, whether for global action or to guard the country's strategic north. The slogan they have coined in the run-up to the nation's 150th birthday celebrations in 2017 is "strong, proud, free".

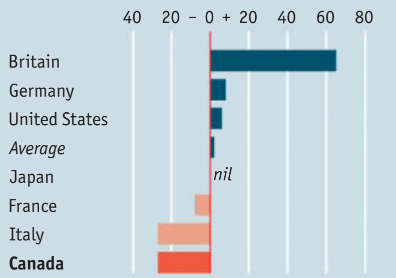
A different internationalism is propagated by the NDP, which has never won national power but might do so next month, and the Liberals, who have formed many governments and are closer to the political centre. They see Canada as a country whose vocation is to dole out aid and uphold peace agreements.

But the hard facts suggest that neither vision is very realistic. Both in defence and development spending, Canada has done poorly compared with its G7 partners, and even with other middle-ranking countries with open economies, the study finds. Indeed, far from being a selfless spreader of peace and security, Canada tends to piggybacks on the foreign-policy efforts of others, the authors reckon.

Getting meaner 1

G7 foreign-aid spending, 2008-14

Change in % of GNI

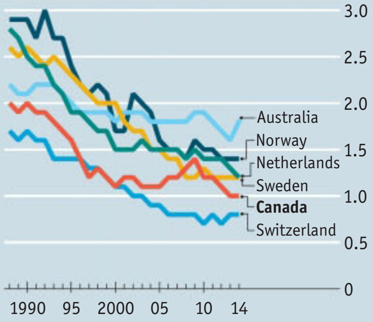


Source: Canadian International Council

▸▸

A scramble for savings 2

Military spending as % of GDP



Source: SIPRI

Some reasons for their gloomy conclusions are obvious. Mr Harper's government has cut official development aid as a percentage of gross national income by 27% since 2008, (see chart 1) and it has never come close to NATO's defence-spending target of 2% of GDP. Last year's defence spending, at just below 1% of GDP, was the lowest in the G7, and the lowest among its middle-sized peers apart from neutral Switzerland (see chart 2).

But this is not a partisan issue. Between 1995 and 2006 the Liberals slashed aid and defence outlays. As a proportion of GDP, their spending on development during that decade was slightly less than that of the Conservatives who have held power since then. Canada did once behave as a kindly fixer—between 1975 and 1995 when Liberal and Conservative governments alike were active in supporting the UN, fighting apartheid and lobbying for environmental causes. "The difference in commitment to global engagement between these two eras is ten times greater than the difference between parties within each era," the authors say.

It is true that the global profile of the country's forces rose during a painful engagement in Afghanistan between 2002 and 2014, in which 162 uniformed and civilian Canadians were killed and up to 2,000 were wounded. On the other hand, defence procurement has been dogged by quarrels over money and specifications, with naval vessels and Arctic patrol ships far behind schedule. The study's authors call the Afghan mission a "temporary surge" within a broad strategic decline.

Now, as the parties put the finishing touches to their manifestos, the country's policy towards Syria and Iraq promises to be a more contentious item in electoral debates than the Afghan mission ever was. For Canadians, the Middle East is both a domestic issue, affecting immigration, and a strategic one for the armed forces.

Canada plays a small role in the American-led campaign against Islamic State (IS) in Iraq and Syria, having sent six fighter-bombers, two surveillance aircraft and 600 support personnel plus 69 members of the special forces who help the Kurds. This effort is expensive—it will have cost C$500m ($380m) by next March—and its effectiveness, especially over Syria, has been limited. The NDP and Liberals say Canada should stay out of the region's fight. Mr Harper retorts that stemming the outflow from Syria must involve military action as well as aid.

The one thing no party can realistically propose, says the study, is rapid action to make Canada the extrovert power that it dreams of being. Last year, the authors say, Canada's spending on global engagement, defined as aid and defence, amounted to 1.2% of GDP. To reach the average level of its G7 partners, or of its economic peers, the figure would have to rise by half, and for Canada to be a leader in world affairs it would have to double at least.

In a country where voters care about balanced budgets as well as refugees, that will not happen. Any rise in Canada's profile will have to be made in selected areas. Despite cutting aid to some poor places, the country has led UN efforts to improve the health of mothers and infants; that may be a good start. And whatever they choose, Canadians should remember a warning back in 2001 by a former foreign minister, John Manley: they will lose their place in elite global clubs if "when the bill comes [they] go to the washroom." ■

Guatemala's actor-politician

Change you can laugh at

A comic moves to centre stage

AS JIMMY MORALES kept telling Guatemalan voters, he is quite different from the country's other politicians. A well-known television comedian, he once played a cowboy who accidentally became president. Now, in a country where the looming prosecution of a former head of state has made unlikely things seem possible, life may be about to imitate art.

The power of Mr Morales's rumbustious message seemed to grow by the day last week as Oscar Pérez Molina quit the presidential palace and was arrested. In a first-round presidential vote on September 6th, the dark horse in the race topped the poll with 24% of the vote.

"He's a classic outsider," says Manfredo Marroquín of Acción Ciudadana, an NGO, about the ambitious comic. "He's not contaminated." An evangelical Christian with degrees in business and theology, he is hard to categorise, but voters warmed to his slogan, "neither corrupt, nor a thief".

A side-splitting choice

Over the past year they have seen a vice-president and then a president forced out by allegations of a giant scam which allowed firms to dodge custom duties. In that climate a political ingénu has appeal.

Mr Morales was still far short of the 50% needed to avoid a run-off, so the country will return to the polls on October 25th. It is unclear which rival he will face. According to the official tally, it will be Sandra Torres, a left-winger; she was credited with a few thousand votes more than Manuel Baldizón, a populist figure from the Lider party which helped oust the president. But Mr Baldizón could challenge the results.

The striking thing is that despite their radical talk, Ms Torres and Mr Baldizón both struggled to present themselves as candidates of change. Ms Torres is a previous first lady who in 2011 divorced the then-president, Álvaro Colom, to try to circumvent the constitutional ban on members of the president's family running for office. (The Supreme Court threw out her candidacy for the 2011 election.) And Mr Baldizón has already run for president, coming second behind Mr Pérez last time around. His 2015 campaign was criticised after it broke campaign-finance rules but he continued holding rallies anyway.

With over 9% of ballot papers either left blank or defaced, it appears that the 14 available candidates left many voters unconvinced that happier times await. In this atmosphere of scepticism, Mr Morales can expect some close scrutiny of his own backers. In particular, he may face hard questions about the people behind his party, the right-wing National Convergence Front. It was formed by army veterans in 2008, though Mr Morales denies that military figures have any influence now. For people with bitter memories of authoritarian regimes, such associations would be no laughing matter. ■

Colombia and Venezuela

Seeking scapegoats

BOGOTÁ AND CARACAS

A beleaguered strongman picks a fight

RELATIONS between Venezuela, in radical socialist hands since the turn of the century, and its broadly pro-American neighbour, Colombia, have often been erratic and at times, literally explosive. In 2007 the first stretch of a gas pipeline linking the two countries was inaugurated, amid warm rhetoric about renewed amity. But in July it blew up, apparently because of lack of maintenance, and bilateral tensions of another kind soon flared.

Previous crises have involved the dispatch of Venezuelan tanks to the border, and complaints from the Colombian government that leftist rebel fighters were being harboured in the neighbouring country. But the current quarrel is having a particularly dire effect on ordinary people, and it makes a mockery of the efforts of Juan Manuel Santos, Colombia's president, to mend fences with his Venezuelan counterpart, Nicolás Maduro.

On August 19th, Mr Maduro closed the border crossings connecting Venezuela's Táchira state with an adjoining department of Colombia, Norte de Santander. He said the aim was to stop the Colombian smugglers whom he blames for food shortages in his country. (It would be nearer the truth to say those smugglers thrive in cahoots with Venezuela's National Guard.)

Beset by economic woes, including a plunge in oil revenues, and apparently in search of handy scapegoats, the Venezuelan leader declared a state of emergency in five municipalities that abut Colombia. (Another eight were then added.) He also told his police and National Guard to begin deporting Colombians living "illegally" in Venezuela. The mood darkened this week when Venezuela closed yet another border post, this one between Zulia state and Colombia's La Guajira department.

According to the United Nations, nearly 1,500 Colombians were deported in the space of two weeks and more than 18,600 others have fled back to their homeland on their own. Even when the official deportations died down, the panic among Colombians living on the Venezuelan side of the border remained. Many waded through the Táchira river with belongings strapped to their backs. More than 3,400 people are crowded into 21 shelters in the Colombian city of Cúcuta.

Colombia is enraged, saying Venezuela has created a humanitarian crisis. At the UN and the Organisation of American States, it has denounced its neighbour for persecuting its nationals and trying to blame its economic incompetence on others. That last allegation may be well-founded; Mr Maduro has every reason to distract opinion ahead of elections in December that his Socialists may lose.

But picking a fight with Colombia may backfire on Mr Maduro, according to Maria Teresa Belandria, a professor of international law at the Central University of Venezuela. Some 5m of Venezuela's 30m people are of Colombian descent and many are registered to vote. That is partly thanks to a political stunt by Mr Maduro's fiery predecessor, Hugo Chávez, called "Mission Identity" in 2003; it involved giving thousands of temporary Venezuelan identity papers to immigrants in the hope of creating a grateful new constituency.

Even before Mr Maduro turned his ire on them, many Colombians in Venezuela were feeling disillusioned by their host country's travails and keen to head home. At the Colombian consulate in Caracas, there has been a long queue of Colombians getting the papers they need to go back. They are not immediately affected by expulsions in the border area, but preparing to go home looks prudent.

Some have spent most of their lives in Venezuela, which attracted migrants when its economy was healthy. Omaira, a 67-year-old domestic worker in Caracas, said she moved to Venezuela more than 50 years ago in order to earn wages in a strong currency. The present crisis has put an end to that benefit; over the last 12 months, the Venezuelan bolívar's value has plummeted more than 90% against the Colombian peso on the black market.

Colombia knows Omaira is not alone in her homesickness. Mr Santos's government reckons that if, as expected, the current showdown continues to the end of the year, as many as 500,000 Colombians could return from Venezuela.

Mr Santos and Mr Maduro initially said they were ready to discuss ways of easing tension; but that was before the fresh border closure on September 7th. "When we open the door to dialogue, Venezuela responds by closing the border even more," fumed the Colombian leader. ■

Mexico's massacre probe

Look harder

MEXICO CITY

A deeper mystery over a dreadful disappearance

NOTHING has cast such a long shadow over the presidency of Enrique Peña Nieto as last year's disappearance of 43 students in the south-western state of Guerrero. The shadow grew longer on September 6th when the government's account of events was severely questioned by an international inquiry.

Investigators from the Inter-American Commission on Human Rights spent six months picking over all the forensic and documentary evidence. Their conclusions compounded the uncertainty over what happened to the trainee teachers from the town of Ayotzinapa, who vanished last September in the town of Iguala, after commandeering buses to drive to Mexico City for a rally.

In January the attorney-general's office presented what it called the "historic truth". It held that the students had been handed over by local police to the Guerreros Unidos drug gang, which killed them, burned their bodies on a dump and threw the remains in a river. The killers apparently believed that some students were members of a rival gang.

The new report adds weight to the notion that the government was too quick to close the case. For example, it rejects the government's claim that all the bodies were burned at the dump.

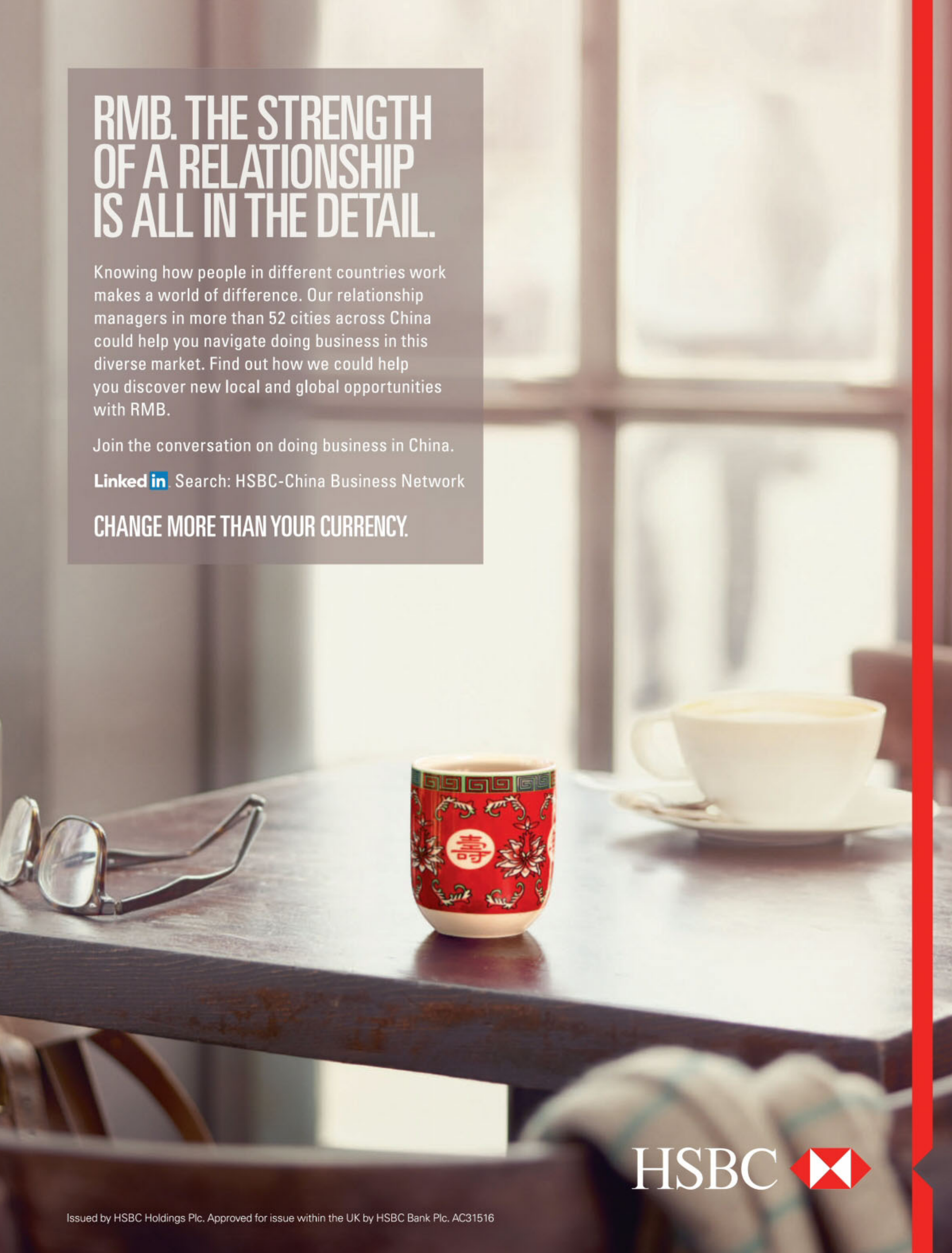
The report identifies many other problems with the official findings, including discrepant testimonies and destroyed video recordings. It notes that government accounts played down an important element: the reported existence of a fifth bus seized by the students, which might have carried drugs.

Arely Gómez González, who has been attorney-general since February, has ordered a new forensic investigation. But the panel's work is hurting the government. "With the world watching and with substantial resources at hand, the authorities proved unable or unwilling to conduct a serious investigation," says José Miguel Vivanco, Americas director at Human Rights Watch, a lobby group.

The Economist

SPECIAL REPORT
BUSINESS IN CHINA
September 12th 2015

Back to business



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Back to business

Despite China's recent troubles, the prospects for its entrepreneurial private sector remain bright, says Vijay Vaitheeswaran

SHANGHAI'S WUKANG ROAD has a long history. In 1897 John Calvin Ferguson, the American head of what is now Jiao Tong University, had it built in the city's French concession so students could get to class. The road boasts several dozen listed buildings, among them a graceful mansion that is the old family home of Marjorie Yang, China's cotton queen. Its interior garden is sheltered by tall trees that have survived Japanese occupation, civil war and the Cultural Revolution.

Ms Yang's family has proved just as resilient. Tsai Shengbai, her grandfather, began his studies at America's Lehigh University in 1915, the same year that the British and American Chambers of Commerce opened in Shanghai. Inspired by Frederic Taylor's theories on scientific management, he took over Mayar Silk Mills, founded by his father-in-law (Ms Yang's great-grandfather), and turned it into one of China's largest silk firms by introducing modern machinery and professional management.

A century ago Shanghai was a cosmopolitan city bursting with entrepreneurial energy. Then came the years of upheaval. The family moved to Hong Kong and started again. It gave up its mansion and its factories but kept its knack for business. In time, a younger generation set up Esquel, a new textile firm, and as soon as China opened the door to private investment in 1978 the family went back to the mainland. Esquel has since grown into one of the world's best thread-to-shirt textile firms, with some 56,000 employees and operations the world over. Among its clients are such famous brands as Ralph Lauren, Hugo Boss and Nike. Privately held, it has annual revenues of more than $1 billion. Ms Yang has even managed to get back the mansion in Shanghai.

Esquel has invested around $200m to transform its manufacturing complex in Gaoming, in southern China, and spent a further $30m on waste-water treatment. In one giant room warping machines made in Europe are creating enormous spider's webs of yarn. Each of the $500,000 Staubli drawing-in machines in another room saves 12 workers. Mechanisation improves efficiency and quality and cleans up the dirty processes of dyeing, weaving and finishing. The enormous sewing rooms are air-conditioned. The seamstresses think their work is better and safer than most factory jobs. Ms Yang insists that "industry is not just about labour input…knowledge has value." She teaches her workers a simple software-coding game developed by the Massachusetts Institute of Technology to encourage logical thinking.

Esquel's story challenges three widely held beliefs about China Inc: that the outlook for business in China is gloomy because the economy is set for a long period of stagnation or worse; that China's economic miracle was the result of large-scale planning by the state, not private-sector enterprise; and that Chinese firms are mere copycats that cannot innovate. This special ▸▸

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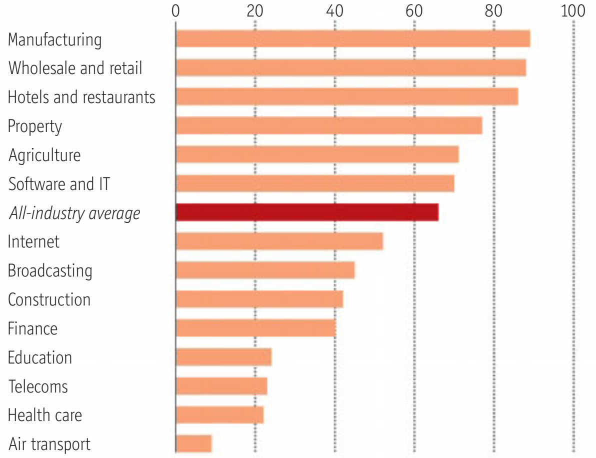
A list of sources is at **Economist.com/specialreports**

An audio interview with the author is at **Economist.com/audiovideo/specialreports**

Where the private sector scores

Private-sector share of fixed-asset investment by industry, 2013, %



Source: Gavekal Dragonomics

report will argue that all these contentions are wrong.

"The Chinese economy is faced with the onset of a permanent slowdown. To mitigate its adverse effects, the Chinese government needs to change its old ways," according to an annual assessment of the economy by the European Union Chamber of Commerce in China, released in the wake of recent turmoil in the stock- and currency markets. The country's growth rate has dropped from double digits to around 7% (according to official data) and the debt-to-GDP level has soared. China's clumsy devaluation in August, coming at a time of tumbling oil and commodity prices, unnerved many investors. The subsequent plunge in the Shanghai stockmarket, and the government's ham-fisted policy response, set off a global rout in shares. Doomsters are already predicting a long period of stagnation, reminiscent of Japan's "lost decade", or even an economic collapse.

The power of numbers

There is cause to worry about China's economy, but this special report will show that there are plenty of reasons to be hopeful as well. Growth may be sagging, but even if, as many believe, it is only 5% today, that represents more economic output than the 14% seen in 2007 because the economy is so much bigger. And as Louis Kuijs of the Royal Bank of Scotland points out, China's income per person at market exchange rates in 2013 was only 13% of America's, so there is plenty of scope for catch-up growth, particularly if the government adopts reforms that free up the private sector.

And many of China's people are getting richer all the time. McKinsey, a consultancy, estimates that by 2020 the proportion of urban households with annual incomes of $15,000-33,000 (a rough definition of the country's middle class) will be 59%, against only 8% in 2010. Manufacturing, far from being on its way out, is benefiting from investment in labour productivity, automation and regional supply networks. And the underdeveloped services sector represents a huge opportunity.

Even Jörg Wuttke, the boss of the EU Chamber of Commerce in China that has just delivered such a critical assessment, remains guardedly optimistic: "China's economy is headed for a rough year or two, but the longer-term outlook for business remains positive. Our members are staying here and investing in China's future growth."

John Rice, the vice-chairman of GE, accepts that the easy gains in China have been made, but reckons that "many firms haven't tried hard enough." With a population of 1.4 billion, China packs such a punch that even niche markets like online dining and nail salons can amount to more than the entire car industry in a smaller country.

Up to now, China's leaders have relied on state planning and heavy investments in infrastructure and property. To its credit, President Xi Jinping's government has acknowledged that this model has run out of steam, and has introduced reforms to encourage a shift to growth driven by consumption and services. But there is much more to do. China's control-obsessed planners were never going to find it easy to give free rein to market forces, and many of the recent policy stumbles and resulting financial panics reflect their ambivalence about market reform.

At first blush, the argument for state capitalism seems plausible. China's investment-driven model has produced lots of infrastructure that ties this vast country together. State-owned enterprises (SOEs) control a large share of assets in important industries. Gavekal Dragonomics, a consultancy, estimates that SOEs account for perhaps a third of China's capital spending, against 5% or less in most developed countries.

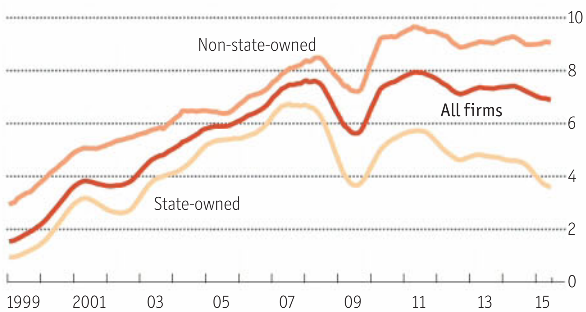
Yet on closer inspection the SOEs' achievements look less impressive. The private sector, it turns out, is responsible for perhaps two-thirds of all economic output today and almost all of the 250m-plus jobs created in cities since 1978. It also accounts for nine-tenths of exports. Its investment is growing far faster than that of the SOEs. China's best chance of weathering the current storm lies in the resilience and dynamism of the private sector.

The late Ronald Coase, a Nobel prize-winning economist, noted in a paper entitled "How China Became Capitalist", co-written with Wang Ning, that "the fact that the Chinese Communist Party has survived market reform, still monopolises political power and remains active in the economy has helped to sell the statist account of reform." But, he continued, what really fuelled the economy were the "marginal revolutions" that enabled entrepreneurship and markets. Private farmers, rural enterprises and small urban entrepreneurs did more from the fringes to advance the economy than did central planners in Beijing.

The distinction between China's state-owned and private firms is not always as clear-cut as it might seem. A company's formal status can be misleading (see box, next page). And the Communist Party is everywhere: article 19 of China's company law states that a party cell must be set up in every firm above a certain size, public or private. Still, on the whole SOEs and private firms behave very differently, and the entrepreneurial energy now in evidence in China is largely confined to the private sector.

Spot the difference

Return on assets of Chinese industrial enterprises*, by ownership type, %



Sources: CEIC; Gavekal Dragonomics

*7-month centred moving average

Edward Tse, a former boss of the Chinese operations of both the Boston Consulting Group (BCG) and Booz & Company (now part of PWC), identifies four entrepreneurial waves that have defined the modern Chinese economy. The first arrived in the 1980s, when the end of Maoism enabled private-sector firms to take off. Zhang Ruimin took control of Haier, Liu Chuanzhi launched Legend and Ren Zhengfei set up Huawei. Most new entrepreneurs at that time had little business experience.

The second wave began in 1992, when Deng Xiaoping's "southern tour" rekindled reforms. A number of entrepreneurs from this period—which produced Liu Jiren at Neusoft and Guo Guangchang at Fosun, among others—were well-educated. Many had left academic or government sinecures to start their own businesses.

The third wave started to roll when China joined the World Trade Organisation in 2001, which opened it up to global business. Many internet pioneers, such as Pony Ma at Tencent, Jack Ma at Alibaba and Robin Li at Baidu—date from that period.

Now the fourth—and highly disruptive—wave has arrived, bearing entrepreneurs like Lei Jun of Xiaomi, a smartphone-maker. Many are using the mobile internet to challenge inefficient domestic incumbents. They are more global in outlook, more willing to accept outside investors and more innovative.

"I challenge you, name me one innovative project, one innovative change, one innovative product that has come out of China," harrumphed Joseph Biden, America's vice-president, last year. And in the past Chinese firms have indeed often copied from the West. But this is changing fast as local entrepreneurs come up with innovative products, services and technologies.

Innovation nation

China has a long history of invention. All diligent schoolboys know about gunpowder, papermaking, printing, the compass and the waterwheel. The harder-working ones may also be aware of cast iron, the ploughshare, the stirrup and the clockwork mechanism. But historic Chinese innovation did little to improve the lives of ordinary people. The emperor and his officials sometimes confiscated inventions and prevented their spread. David Ahlstrom of the Chinese University of Hong Kong points out that inventive entrepreneurs not only lacked protection for their intellectual property but also had little social status in a society that put bureaucrats on a pedestal.

Now Chinese leaders have started to praise innovation. Reluctantly, they are beginning to accept that their top-down ap-

How red is your capitalism?

Telling a state-controlled from a private firm can be tricky

"THERE ARE NO genuinely private companies in China," declares a veteran adviser to multinational companies. In one sense he is right. The state and the party are omnipresent and their role is enshrined in the law. Moreover, as Kent Kedl of Control Risks, an investigative firm, explains, "you don't become successful in China as a purely private entity, you need a powerful connection. But this can prove an asset or a liability." Cronies of Bo Xilai, a once-powerful Communist Party boss who is now in jail, know this only too well.

To find out whether a given local firm is likely to behave like a state champion or a market-minded entity, you need to ask three questions. First, how strategic is its industry? Peter Williamson of Cambridge University's Judge Business School argues that the government will always meddle with firms in industries it sees as strategic, even if they are multinationals. But the opposite is true, too. State firms that operate in sectors of little concern to the government can behave like private ones. Gree Electric, which makes appliances, is state-owned, but Dong Mingzhu, its fiercely independent boss, has transformed it into a highly competitive firm.

Second, who decides on pay, promotion and hiring? For big state-owned enterprises like Sinopec, an oil giant, the party's organisation department deals with senior executives. Jack Ma, Alibaba's boss, thinks that if the board and top executives are selected by shareholders, the firm is private.

Ma shows how

Looks can deceive. The Chinese Academy of Sciences still controls about a third of Legend Holdings, a giant conglomerate founded by Liu Chuanzhi, which seems to make it a SOE. But thanks to shareholding reforms introduced by Mr Liu, its management is independent. Yang Yuanqing, the boss of its offspring, Lenovo, points out that many of his company's top managers have been foreigners: "If the government controlled our firm, this would never happen."

The trickiest question concerns the firm's relationship with the party. Some business leaders proudly don the red hat. Wang Jianlin, the billionaire boss of Dalian Wanda, a vast private-sector conglomerate, was born an elite "princeling" and cunningly cultivates connections. Many of his group's divisions, ranging from films to theme parks, fit with the leadership's desire to promote soft power. This "is very beneficial", he beams, as his firm gets "more financial support and especially policy support".

But just because an entrepreneur has good *guanxi* (connections) does not mean the party controls his firm. SOEs enjoy huge advantages, which forces private firms to get close to the party if they want to succeed, argues Scott Kennedy in a report by Gavekal Dragonomics. "China's entrepreneurs are more pink than red," he says.

If employees are party members, where do their loyalties lie? Mr Kedl found that the party units within companies are usually pretty benign. Mr Ma of Alibaba, who is not a Communist, notes that party members are among his top employees. Mr Liu says the same about Legend. Then the man who has done most to modernise business in China drops a bombshell: he reveals that he is the head of his firm's party cell.

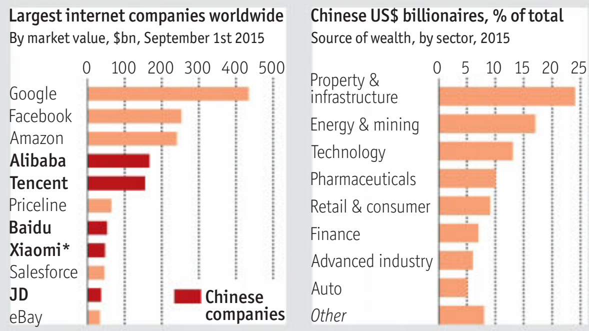
proach may not be up to the challenges ahead. One of the biggest of those is that, largely thanks to the one-child policy first adopted in 1980, China has begun to age before becoming comfortably rich. The country's labour force is expected to peak this year and shrink by 16% by 2050, and the ranks of pensioners are swelling. So China will have to squeeze more output from fewer people.

McKinsey calculates that if the country is to maintain GDP growth of 5.5-6.5% a year to 2025, a third to half of that growth must come from improvements in total factor productivity. SOEs have grown inefficient and indebted, so most of that productivity growth will come from the private sector. Inventors are now encouraged to commercialise new technologies, and protection for intellectual-property rights is being strengthened.

China's leaders need to stop coddling bloated state enterprises and let them be managed by professionals in competitive markets. They must also ease their grip on academia and the internet so that China's bright sparks can benefit from the free flow of ideas needed to sustain world-class innovation. In their book, "Can China Lead?", William Kirby of Harvard University and his co-authors observe that Chinese entrepreneurs enjoyed freer markets for most goods than any nation in Europe as late as the early 19th century; and the private-sector boom in the early 20th century in Shanghai, as well as in other parts of China, set the foundations of modern capitalism. It lay dormant in the years of war and upheaval that followed but is now reviving. The spectacular rise of China's private sector can be seen as a renaissance.

This report will argue that private firms have been responsible for the vast bulk of modern China's economic advance. They are agents of change, risk-takers and, these days, true innovators that take full advantage of the potential of new technology. They are delivering not only ever better manufactured goods but also increasingly sophisticated high-tech-based services. More and more of them are venturing abroad to increase their reach and improve their offerings. As long as the government does not interfere too much, there is every reason to think that they can help deliver the required growth and turn the Middle Kingdom into the world's largest and most dynamic economy. ■

Success stories



Sources: McKinsey & Company; Bloomberg; Dow Jones VentureSource; *The Economist*

*Private but valued at $46bn as of August 2015

Private firms

Paper tiger, roaring dragon

It is the private sector, not state capitalism, that is responsible for modern China's economic rise

IN 1984, ELEVEN researchers from the Chinese Academy of Sciences (CAS) gathered in a cramped guardhouse in the elite institution's grounds. Liu Chuanzhi, their leader, had managed to find about $25,000 to start a technology company. They had little knowledge of business, but Mr Liu was determined to revive entrepreneurship in his country.

The company he founded, Legend, is now a leading force in Chinese capitalism. In June its initial public offering valued it at $13 billion. Its most successful offshoot is Lenovo, the world's biggest computer-maker, in which it holds a one-third stake.

Inspired by his father, a leading patent lawyer, Mr Liu has devoted his professional life to bringing modern business practices (including respect for intellectual property) to his country. He pushed Legend, and later Lenovo, to become more market-oriented, and insisted on professional managers, long-term strategy and teamwork.

China has millions of successful private-sector businesses. Its internet companies are among the world's biggest. The fortunes of its 200-plus billionaires were earned in a range of industries (see charts). And yet the private sector is often given insufficient credit for China's economic rise.

That may be because central planning has created an outsized state sector. Assets of SOEs are nearly twice the size of GDP, high by international standards. Most of the 100 or so Chinese firms on the *Fortune* 500 list of biggest companies are SOEs. But these lumbering giants are not the drivers of China's economy; they are millstones around its neck.

The real engine of China's growth has been the private sector. In his book "Markets Over Mao", Nicholas Lardy of the Peterson Institute for International Economics makes the bold claim that China has transformed itself from a "state-dominated economy into a predominantly market economy", and points to the private sector as the main engine of this transformation.

As noted earlier in this report, it can be hard to determine whether a company is private or not, given the strong role of the state and the Communist Party. Mr Lardy, who has written extensively on the subject, defines the private sector to include all self-employment, all registered private firms and all companies in which the sole or dominant shareholder is private. On this reasonable definition, private firms now contribute about two-thirds of GDP.

Average growth in output for industrial private firms since 2008 has been 18%, twice as much as for industrial SOEs. After several decades when state-controlled banks showered favoured SOEs with subsidised loans, official credit is now flowing to private entrepreneurs too. In 2009 the private sector received only about a quarter of all new loans, but between 2010 and 2013 it got over half.

The return on assets for private-sector industrial firms is well above that for industrial SOEs, and the gap is widening. The average state firm makes insufficient returns to cover the cost of its capital, despite some highly profitable outliers such as the tobacco monopoly and the energy and telecoms oligopolies. In effect, many state firms are deathless zombies.

By contrast, the private sector is full of young dragons exposed to the Schumpeterian forces of creative destruction. More than half of all private firms that were on the register in 2012 had been set up in the previous five years. Some 96% of the 60m-odd companies registered in China are private.

The private sector's success caught the Communist Party by surprise. In their book "Capitalism From Below", Victor Nee and

Sonja Opper point out that party bosses had not expected so many startups to grow so quickly, so the legal structures did not keep up. Many private firms registered as collective enterprises to make life easier for themselves. Limited liability for big private companies was not brought in until 1994, and extended to small firms only in 2006. Private firms have endured unfair competition from subsidised state rivals, extortion by local party bosses and in some cases outright seizure of their assets.

Local entrepreneurs are hassled even more than are foreign firms. The World Bank's "Doing Business" report for 2015 ranks China an unimpressive 90th out of 189 economies assessed. Starting a firm in Beijing takes an average of 11 procedures and 33 days, compared with an OECD average of only five procedures and nine days, though an effort to cut red tape in China seems to have improved matters of late. Du Jun of Birmingham's Aston University and Liu Xiaoxuan of the Chinese Academy of Social Sciences noted in a recent paper that foreign investors are allowed to invest in 62 out of 80-odd officially designated sectors, but that private Chinese firms may do so in only 42.

The real heroes

The official histories sing the praises of visionary reformers for embracing capitalism with Chinese characteristics. In fact, most officials did little to help private firms. As Harvard's William Kirby and his colleagues say, "the real story of the China miracle is about how the Chinese people opened their own doors and found other means to economic prosperity by working around the barriers posed by the party."

To be fair, the Chinese state has supported economic development by building lots of good roads, bridges and railways. It also deserves credit for forging a national market, needed for regional competition to take off. Deng's initial reforms in the late 1970s encouraged lots of private enterprise in the countryside. Research by Yasheng Huang at MIT shows that this also created a lot of new jobs, wealth and demand for goods and services that attracted millions of rural entrepreneurs. And in the late 1990s Zhu Rongji, a former prime minister, cut back the number of SOEs and persuaded the old guard to accept China's accession to the World Trade Organisation in 2001.

The bureaucrats' most important achievement in recent times has been to stop doing things that killed free enterprise. That vital task is not finished, however. The vast majority of prices are set by supply and demand, but the government still meddles in many things, from the cost of capital to the price of electricity and water. As Arthur Kroeber of Gavekal Dragonomics puts it, "just walk onto the street and it's clearly a market economy. Yet in the background state interference is pervasive." ■

The bureaucrats' most important achievement in recent times has been to stop killing free enterprise

Entrepreneurship and technology

It's all go

Technology is offering Chinese business a cornucopia of new opportunities

ZHEJIANG IS THE most entrepreneurial place in China. Fan Li, celebrated as the ancestor of all Chinese merchants, worked there some 2,500 years ago. Li Linde, commemorated as China's first international businessman for trading with Japan in the 9th century, also hailed from this province. In modern times, too, it has produced private-sector titans. Li Shufu, the boss of Geely, a carmaker, acquired Sweden's Volvo. Lu Guanqiu, Wanxiang's chairman, controls the world's top independent car-parts firm. Zong Qinghou, founder of Wahaha, went from street hawker to drinks magnate. Guo Guangchang of Fosun, a Shanghai-based conglomerate, was born in Zhejiang, and the family of Ren Zhengfei, the founder of Huawei, came from there.

Since the province lacks natural resources and good farmland, locals have always had to use their ingenuity to scratch a living. Its rugged mountains make it hard to control. Its proximity to Taiwan worried the party, ruling it out as a location for many state-run industries. That turned out to be a blessing: in the absence of state capitalism, entrepreneurship flourished.

The Zhejiang Merchants Museum displays portraits of dozens of local business heroes on its walls. In the centre hangs a large picture of Jack Ma, who was born and brought up in the province and still lives there. His company, Alibaba, an online-commerce giant, is based in Hangzhou, Zhejiang's capital. "The others have complicated feelings toward him," says Yang Yiqing, the museum's curator. They admire him, but "he has upset their businesses in retail, financial services and other areas."

The 102-year war

Mr Ma is just getting started. He is not satisfied with building an e-commerce company whose platforms sell more than do eBay and Amazon combined, and pulling off one of the biggest-ever public flotations, in New York last year. When its share price plunged during the recent financial turmoil, Daniel Zhang, Alibaba's chief executive, reminded employees of Mr Ma's vision: "We are in it for 102 years to win the war."

Alibaba wants to transform large parts of China's economy through internet finance and cloud computing. Ant Financial, a firm controlled by Mr Ma, contains Alibaba's huge microlending portfolio as well as Alipay, a pioneering payment system. And Alibaba has been investing heavily in cloud computing for years, building all its systems in-house. Aliyun is China's biggest cloud provider and will spend a billion dollars to go global.

Entrepreneurs were once seen as oddballs, and failure was considered shameful. Neil Shen of Sequoia Capital, an American venture-capital fund, thinks China has reached a cultural inflection point. Li Keqiang, the prime minister, has been trying to encourage people to take risks and start companies.

Locals used to worship American firms and tried to copy them. Sceptics derided their efforts as "copy to China" (C2C) and Just Good Enough (JGE). Kai-fu Lee of Innovation Works, a technology incubator in Zhongguancun, Beijing's answer to Silicon Valley, retorts that Western firms copy too. He insists that local Chinese firms are as good as Apple at integrating technologies and finding market opportunities.

Xiang Bing, dean of the Cheung Kong Graduate School of Business, goes further. During the time when China's backward economy was rushing to catch up with the West, it made sense to copy, he points out: "Many firms tried to innovate and failed, whereas those who copied became billionaires." But now, he says, local firms need to innovate in sophisticated industries like cars to compete in global markets.

Chinese consumers' rising expectations and intensifying competition in consumer-facing industries are already pushing firms towards more innovation. One example is WeChat, a popular social-media and payments platform run by Tencent. "Chinese consumers are now so demanding and globally minded that you can't get away with JGE...you need to be world-class to serve China," says Gary Rieschel of Qiming Ventures, a venture-capital firm.

Money is flooding into startups, and there is talk of a tech bubble. Venture-capital investment in China reached a record $15.5 billion in 2014, more than triple the previous year's level. China has more than a dozen "unicorns" with a valuation of over a billion dollars. Apus, which makes an app organiser for Android smartphones, is worth $1 billion. Didi Kuaidi, a rival to Uber, a taxi app, is valued at $15 billion. Valuations have been bid up by competition among Baidu, Alibaba and Tencent (known collectively as BAT). These internet giants have spent billions on swallowing startups in areas from video streaming to online travel to big data.

Mr Lee predicts that eventually there will be more billion-dollar startups in China than in America, though Silicon Valley will have more firms of higher value. It is easier in China than elsewhere to achieve scale quickly because the local market is both enormous and fairly homogeneous—and Western rivals are deterred by both the unfamiliarity of Chinese culture and by censorship. Chinese consumers can use Google, Facebook and Twitter only with cumbersome (and illegal) software to get round the Great Firewall.

The biggest opportunities are provided by the Chinese economy's egregious inefficiency, a legacy of decades of state capitalism. "China has more old-economy, non-transparent and unreasonably profitable firms than does America...the streets are just paved with gold for disrupters," says Mr Lee.

Do you want Mi?

Lei Jun puts it more colourfully: "Even a pig can fly if it is in the middle of a whirlwind." Mr Lei's first notable achievement was to lead Kingsoft, a software developer, into a public flotation. He also co-founded YY, a hybrid of a social network and online video platform, and Joyo, an e-commerce firm that he sold to Amazon. His latest brainchild is Xiaomi, a smartphone company that has shot to global prominence in five years. It has become one of the top-selling brands in China and is now pushing into Indonesia, India and Brazil. Last year it sold over 60m handsets worldwide, behind only Samsung and Apple, and earned revenues of $12 billion. At $46 billion, it is valued more highly than Airbnb or Snapchat.

Xiaomi is hardly a flying pig. It borrows ideas, but then improves them in many ways. The company sells lots of phones, but hardware is not its main business. "We are first and foremost an internet company," explains Hugo Barra, a top Google executive whom Xiaomi poached to run its international operations.

The firm sells its high-quality handsets at just above cost and makes money from selling additional services. Its marketing is done almost entirely through social media, which keeps its advertising costs low. It releases only a few new models every year, so each remains profitable for longer. It has nurtured dozens of startups to make smart appliances, ranging from air and water purifiers to home-security cameras that connect with its phones. In July, together with Li Ning, a local sportswear firm, it launched intelligent trainers that log the user's movements with a motion sensor, selling for a mere $32.

Xiaomi launched intelligent trainers that log the user's movements with a motion sensor

The firm's use of open innovation is also distinctive. Unlike Apple's dictatorial operating system, Xiaomi's user interface, MIUI, is highly interactive. The firm taps into the experience of its millions of registered fans, many of whom regularly submit ideas for improvement, and updates the operating system weekly, which makes it more robust and keeps its fans loyal.

India's consumers have already embraced MIUI to solve local problems. If you ring an office or a bank there, you are likely to encounter annoying "interactive voice recognition" (IVR) systems. Xiaomi's unpaid fans are painstakingly mapping all the options ("for billing, press 3") on those IVRs and uploading the results onto the fan site. Xiaomi then adds the results to its next update, so if you dial one of those IVR systems from a Xiaomi phone, you can use MIUI's visual cues to navigate it in seconds rather than waste many minutes.

Like Xiaomi, many other startups are looking beyond China. An example is OnePlus, a private smartphone-maker based in Shenzhen, a remarkably open city near Hong Kong that is the world's best place to start a hardware firm. The company's headquarters feature psychedelic murals, table football, musical instruments and a dog named Una. Employees walk around in shorts and beach sandals. The firm makes high-quality smartphones that Western reviewers rave about, selling at prices below Apple's and Samsung's. It has over 100 patents pending.

The headquarters of Da-Jiang Innovations (DJI), a short ride from the OnePlus office, is more minimalist. The lines are sleek, the gadgets are high-tech and everything is ethereally white. An enormous screen displays futuristic videos filmed by drones in exotic locations. Commercial drones are the firm's business. Its founder, Frank Wang, says the flight-control, stabilisation and wireless-video technologies needed to make inexpensive drones did not exist, "so we spent three years building our own." His company has filed for many patents to protect its spectacular flying robots, which sell for about $1,000 each. DJI now commands over half of the global market and is valued at $10 billion.

Mr Wang is already planning future conquests. "We invented a whole new category of product...we are not limited to drones," he says. He expects many firms like his to emerge soon, as "now more and more Chinese have room to dream bigger." ■

Innovation

Fast and furious

Chinese private firms are embracing innovation

"CHINA MUST RELY on innovation to achieve continuous and healthy economic development." To anyone outside China, that seems to be stating the obvious. What makes it striking is who said it: none other than President Xi Jinping, speaking last December.

China has long pursued an industrial policy of "indigenous innovation", obliging multinational companies to transfer technology and propping up SOEs in strategic sectors. That has not worked, so now the country is pouring money into a renewed push from the top down. It is spending more than $200 billion a year on R&D, up fourfold in a decade. As a proportion of GDP the figure, at 2%, now slightly exceeds that for the EU.

Thomson Reuters, a research firm, claims that China is an "undisputed patent leader". Central planners now want to triple the number of patents by 2020, to 14 per 10,000 people. They aim to increase R&D spending further and eventually match America's current level of 2.8% of GDP, in the hope that all this will make China an innovation superpower. Already a fifth of the world's technical graduates are Chinese.

The government could help boost innovation, for example by ensuring a sound legal framework and functioning financial markets, but so far it has failed to do so. Instead, it is overreacting in unhelpful ways. That is partly because it is confusing innovation with invention, which involves lots of research spending, patents and engineers. Innovation may or may not involve those things, but is essential to an economy's wellbeing. Simply put, it is fresh thinking that creates value in the market. It may not require new technologies but simply the adaptation of products and business models from one industry or market to another.

Research spending, subsidies for high tech and PhDs are inputs. Spending more is no guarantee of better outputs, whether in the form of high-quality patents or rising sales. China's official R&D funds often go to the well-connected rather than the deserving. The number of patents filed has soared thanks to government incentives, but many are worthless. After adjusting for quality, using a range of criteria, China still lags (see charts).

Gordon Orr, a former head of McKinsey's Asia operations, thinks that SOE bosses find it easier to woo regulators to support existing products than to come up with new ones. New businesses are typically required to make money in the first year, which inhibits risk-taking. Guan Jiancheng of the University of Chinese Academy of Sciences and Richard Yam of the City University of Hong Kong quizzed over 2,000 manufacturing and technology firms in Beijing to see whether state aid in the 1990s led to more patents or higher sales and profits. They found that state money funnelled to SOEs was not only ineffective but "even occasionally had a negative impact on innovation".

The World Bank reviewed various studies and concluded that the innovation effort at SOEs "tends to be unproductive and poorly integrated with the rest of their operations". One reason is that big state firms are less efficient than smaller private firms at converting resources into innovations and patents. Total factor productivity has been growing three times as fast at private firms as at SOEs.

If China is becoming a lot more innovative, the private sector can take much of the credit. A recent report by the McKinsey Global Institute, the consultancy's research arm, shows that Chinese firms are good at innovating in a number of industries. The authors avoid the trap of just counting patents and PhDs, relying instead on "the ability of companies to expand revenue and raise profits" as the proof of successful innovation. Having examined financial data for 20,000 publicly held firms in China and abroad, they conclude that Chinese firms sparkle in consumer-facing industries, such as e-commerce, and in efficiency-driven ones, such as manufacturing, but that they lag in industries that rely on the latest science and technology.

There are notable exceptions. Huawei, for instance, has emerged as a world-class telecoms-equipment firm. It spends some $5 billion a year on R&D and has research centres close to technology hotspots. It is one of the world's biggest generators of high-quality patents. Along with Sweden's Ericsson, it is now at the forefront of research on 5G technology for the next generation of mobile phones.

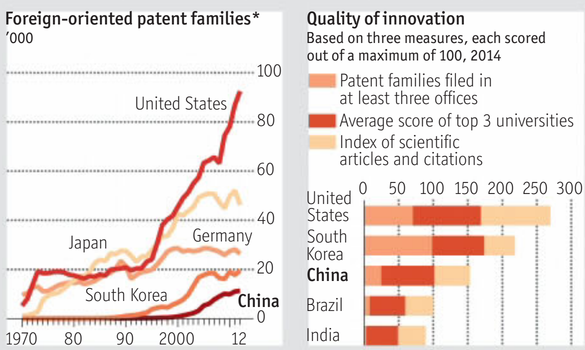
BGI, a privately run research outfit, is one of the world's most highly regarded genomics institutes. It started life in 1999 when a handful of researchers left the Chinese Academy of Sciences to found a new genomics institute. They ended up in Shenzhen, where local officials, unusually for China, support businesses without trying to control them. BGI has hundreds of PhDs on its staff and owns half the world's genome-sequencing capacity. It has won accolades for sequencing the SARS virus and decoding the genomes of birds and of the friendly microbes that live in the human gut. It advises most of the world's large pharmaceutical companies on drug discovery and development.

Just think what else they could do

Chinese organic chemists are among the world's best, and China's Tianhe-2 supercomputer is the world's fastest. China's National Institute of Biological Sciences found the elusive hepatitis B virus receptor. Venus Medtech, which makes aortic heart valves, and Nurotron, which makes cochlear implants, are cutting-edge startups. Chipscreen Biosciences won Chinese approval for a breakthrough cancer therapy this year. Lu Xianping, its co-founder, thinks it will be the first drug developed entirely in China to go global.

Peter Williamson of the Judge Business School in Cambridge argues that Chinese firms are good at adapting new ideas and technologies to the mass market quickly. For example, WuXi AppTec is applying mass-production techniques to drug research by breaking it down into many steps and throwing lots of re-

A patent problem



Source: WIPO *Those with at least one filing office outside the applicant's country of origin

How long to wait for a Chinese Apple?

searchers at each of them. BeiGene has a drug-testing model based on a vast bank of human cancer samples rather than human subjects; the resulting speed and accuracy helped it get four cancer drugs to clinical trials within two years.

"I look for hot-blooded passion in my engineers," says Saad Metz, a suave former motocross rider who is the head of R&D at Audi China. The company has built a smart new research centre in 798, a funky arts district in Beijing. From inside the loft-like space you see an elevated track evocative of Manhattan's High Line park. "We want our thinkers to be more innovative, and being in this neighbourhood inspires them," says Mr Metz.

The big investments that multinational companies such as Audi are making in research on the mainland are perhaps the most compelling evidence that China is becoming a global hotspot for innovation. In the past, foreign firms have been wary of bringing their crown jewels into the country because of the relaxed attitude towards intellectual-property (IP) protection. Many firms built fancy-looking R&D centres in Beijing or Shanghai but did little real research there. That is changing. IP protection is getting stronger, and as Mr Metz argues, the combination of local scientific talent and market size now justifies a weighty R&D presence in China.

Ideas factory

George Yip of the China Europe International Business School (CEIBS) points to GE's development of ultrasound technology in China, which has gone global. Chen Xiangli, head of GE's China Technology Centre in Shanghai, lists many examples of world-leading research done there. One team has developed membrane systems that help dirty industries such as coal meet requirements for zero liquid discharge. Another team is pioneering the development of superconducting magnets with a significant reduction in the use of liquid helium.

Mr Yip and colleagues have recently published a study of research done by foreign firms in China in *strategy+business*, a magazine published by PWC Strategy&, a consulting firm. They found that 28% of these firms now work on cutting-edge R&D. In addition to GE, firms ranging from Microsoft to ABB have top researchers in China pursuing advanced projects for the global market. Novartis has committed $1 billion to its R&D centre in China, which has already come up with a novel treatment that promises to tackle liver cirrhosis.

If China is so innovative, sceptics often ask, why has it not produced a world-class car yet? A successful car industry requires decades of engineering experience and complex global supplier networks. Foreign car firms that set up in China were forced into joint ventures with SOEs, so the local firms involved have had access to global technology for 20 years. But when they try to make cars under their own brands, they still produce clunkers. China needs time to catch up, just as Japan and South Korea did, argues Neil Shen of Sequoia Capital.

Perhaps, but there may be another explanation. One of the most senior foreign businessmen in China exclaims that SOEs "have the smartest people in science and technology but cannot get a branded product out the door that people outside China want to buy". There is too much control from the top, he says, and not enough faith in markets and competition.

In Japan and South Korea, it was private firms such as Honda and Hyundai that developed cars. By competing in the global market, they learned to innovate. In China, the state has decreed and protected national champions. Shanghai Automotive has joint ventures with both Volkswagen and General Motors. The resulting easy money and access to global designs has given it little incentive to innovate, says a manager at the firm.

But some privately run car companies are getting better. A few years ago, when your correspondent went to Shenzhen to visit BYD, a maker of electric cars, its engineers boasted that apart from the glass and the tyres, they made every single part themselves. It showed: the vehicles were awful. But recently, with advice from Mercedes-Benz and parts from outside suppliers, its quality, safety and styling have improved dramatically.

Chinese firms might even leapfrog current technology and make the internet-connected electric vehicles of the future. Not only car firms, but China's internet giants and manufacturers like Foxconn are investing huge sums in this idea. Day Chia-Peng, a technology expert at Foxconn, thinks there are four reasons why Chinese firms could lead the world. First, thanks to its expertise in making electric motors and electronics, the country has top-notch suppliers. Second, electric vehicles lend themselves to being made by a number of smaller firms, so today's car giants may lose their grip. Third, e-commerce, another area in which China excels, is changing the way people buy cars. And fourth, the involvement of China's "BAT" (Baidu, Alibaba and Tencent) internet trio and Xiaomi may give it an edge in developing such cars.

On the minus side, the absence of academic freedom is an important brake on Chinese innovation. China's universities, just like its SOEs, are run by party committees. This politicisation limits the flow of ideas. So, too, does the Great Firewall, which chokes access to global websites and popular collaborative tools like Google Docs.

Chinese firms have come a long way. What holds back the country's innovators today is not lack of resources. It is certainly not lack of resourcefulness. The greatest obstacle is the oppressive hand of the state. ■

Consumers

The wild, wild east

A booming middle class is creating the world's most dynamic consumer market

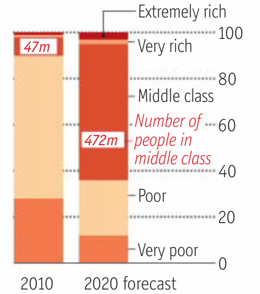
MORE THAN FIVE centuries ago Christopher Columbus scrawled in his copy of Marco Polo's "Travels" that the Middle Kingdom would bring *mercacciones innumeras* (an immeasurable amount of commerce). Columbus never reached that promised land. China has continued to disappoint foreign businessmen ever since, not least because many ordinary Chinese people have been too poor to buy anything.

That is changing as the country's middle class is growing explosively (see chart). In 2010 mainstream consumers—those with enough money to buy cars, fridges and phones but not Rolls-Royces—made up less than a tenth of urban households. In a new forecast, McKinsey predicts that by 2020 they will make up well over half. BCG reckons that urban private consumption will rise from $3.2 trillion today to $5.6 trillion in 2020.

Apple expects China soon to become a bigger market for its products than America. In the quarter ending in June, its sales in greater China were 112% up on the same period a year earlier. Six of its ten busiest stores across the globe are in China. At the height of the recent turmoil in the Chinese stockmarkets Apple's boss, Tim Cook, reassured investors that "I continue to believe China represents an unprecedented opportunity over the long term." Apple's shares bounced back.

Where should intrepid marketers go to capitalise on these riches? The wealthy east coast is now widely believed to be saturated, which suggests that firms should head inland. The Economist Intelligence Unit (EIU), a sister firm of this newspaper, recently pinpointed the top emerging cities, based on forecasts for things like long-term growth in population and disposable income (see map). It found that a few inland cities like Chongqing and Chengdu are indeed attractive, but many excellent prospects remain in the east. Obscure but booming cities within reasonable distance of the coast, like Suqian and Xuzhou, are likely to do well, and lucrative niches remain even in well-established magnets such as Beijing, Shanghai, Guangzhou and Shenzhen.

Prosperity ahead
China's middle class
% of households



Sources: McKinsey & Company; *The Economist*

As the middle class expands, so it evolves. Some may grow tired of blingy offerings, but millions of others will try their first Western brand this year. "Every three years a new generation is created here," explains Charles Hayes of Ideo, a consultancy. Even within cities, consumer groups are highly segmented. Donald Blair of Nike, an American sportswear giant, says his firm maps consumer behaviour here "by shopping district and even by street", so it can customise offerings and outlets.

A big winner has been China's e-commerce, a market that is now larger than America's. Forrester, another consulting firm, expects gross merchandise value in this sector to exceed $1 trillion by 2019. Outside the big cities bricks-and-mortar stores are thinner on the ground, so online shopping is becoming increasingly important. Even where shops are readily accessible, consumers often go "showrooming", looking at goods in physical outlets but buying them more cheaply online. This is happening the world over, but in China the trend has been accentuated by the ubiquity of smartphones, the reliability of online-payment systems and the spread of same-day delivery services.

How would you like your shirt?

This poses a grave threat to old-fashioned retailers. Li & Fung, a supply-chain firm based in Hong Kong, pioneered global outsourcing two decades ago. It has over 3,000 outlets, a third of them in China. Victor Fung, its honorary chairman, sees the era of mass production giving way to one of mass customisation. Markets are fragmenting and smartphones are empowering consumers to get "directly involved in what they buy, where it is made and how they buy it". Zhao Xiande of CEIBS in Shanghai points to Red Collar, a firm that used simply to make and export garments. Now it lets customers the world over design their own shirts online and makes them to order. Another outfit, Home Koo, offers custom-built furniture online.

All this e-commerce is producing some remarkable business-model innovations. Thanks to the convergence of mobile commerce and social media, observes Miles Young, chairman of Ogilvy & Mather, an advertising firm, China is the world's epicentre of "social commerce". Studies by BCG show that Chinese consumers are much more likely than American or European ones to interact with brands through social media.

To try to keep up with all these changes, Mr Fung has kitted out a shopping mall in Shanghai with technologies from IBM that allow detailed tracking of shoppers on site and online. Known as the "Explorium", it allows retailers to experiment with various multi-channel business models and promotions. Digital disruption challenges retailers everywhere, he says, but in his view China is the most promising place to look for answers.

Chinese consumers are fast becoming the world's most discriminating and knowledgeable. They are also quite brand licentious. The choice of top global brands there is much wider than ▸▸

Source: Economist Intelligence Unit

in America, Europe or Japan. This has resulted in fierce competition, pushing firms to come up with ever more inventive offerings. Audi developed longer saloon cars to cater to wealthy Chinese with chauffeurs, which are now sold globally. Chinese consumers prefer pulpy juices, so Coca-Cola modified its juice formulations; Minute Maid Pulpy is now a billion-dollar global brand. Even Apple's Mr Cook says his company takes Chinese tastes into account when it designs new products for the world.

Mr Young believes that China is leading the world in bringing together the "internet of things" (which connects machines to each other) with the internet used by people. Firms such as Suning, an electronics retailer, Haier and Xiaomi are all connecting smart gadgets with consumers through WeChat and other social media. This seems to be happening more quickly in China than in the West.

Are you being served?

Much of this new economy is moving on from supplying goods to providing services. In most rich countries services make up at least three-quarters of GDP, but in China they account for only half. The rising middle class is demanding better services in everything from health care to finance to entertainment. Both foreign and local investors are rushing in to fill the gap.

Two decades ago films made by Walt Disney, an American entertainment giant, were banned on the Chinese mainland, but now China is Disney's most promising market. The company's latest "Avengers" film earned over $200m in local theatres in its first two weeks. In May Disney opened its largest-ever retail store in Shanghai. And next year Shanghai Disney, a $5.5 billion theme park, will be ready to receive the crowds. Dalian Wanda, which made its fortune in property, is building a massive $8 billion film studio in Qingdao and will be spending over $30 billion on theme parks across China, confronting Disney head on.

Kai-fu Lee of Innovation Works believes that service start-ups are capable of creating billion-dollar industries. He points to Helijia, a firm valued at $300m that provides pedicures in people's homes. "They can train workers affordably; Chinese love getting pampered; and our urban density allows this…you can't do this in Kansas." His firm is funding firms delivering services ranging from haircuts to car maintenance.

Jean Liu, president of Didi Kuaidi, thinks the sharing economy will allow scarce resources to be used more efficiently. Her ride-sharing firm counts both Tencent and Alibaba as investors. It offers everything from fancy cars and taxis to shuttle buses and car pools—or even someone on a bicycle to drive you home in your own car. It clocks up 6m rides a day, far outpacing Uber.

Neusoft, based in Shenyang, a city in China's gritty industrial north-east, was started in 1991 with just $3,000 by Liu Jiren, an erstwhile academic. It is now one of China's biggest IT-services providers. Having created a computer operating system that quickly got ripped off, his firm nearly went under. That taught him the value of protecting intellectual property. When he was a visiting scholar at an American government laboratory, he noticed that academics worked closely with corporate researchers. That inspired him to invest heavily in R&D. Among many other things, Neusoft makes systems that allow medical records to be viewed on mobiles. It is also developing a shared-services business model for medical equipment that will allow users to pay by transaction.

What helped Neusoft take off, says Mr Liu, was that there were no SOEs to block new software firms. "The Chinese state today is technologically sophisticated…but that was not the case at the start of the IT boom," says Mr Liu. "We got lucky because the IT sector was so new, so driven by talent, that the government didn't understand how it worked." ■

Manufacturing

Still made in China

Chinese manufacturing remains second to none

AMID ALL THE excitement about high tech and the push into services, it is easy to forget that China's modern economy was built on the strength of a solid and often low-tech manufacturing sector. Now manufacturing is widely thought to be in trouble. Factories are squeezed, labour costs are rising and jobs are being reshored to America. Competitors such as Germany are said to be leaving China behind by using robotics.

Chinese officials have responded in the only way they know. In May the State Council, China's ruling body, approved "Made in China 2025", a costly scheme that will use mandates, subsidies and other methods to persuade manufacturers to upgrade their factories. The plan is for China to become a green and innovative "world manufacturing power" by 2025.

China is already the world's largest manufacturer, accounting for nearly a quarter of global value added in this sector. Research by Morris Cohen of the Wharton Business School finds that the country leads in many industries and that "reshoring to the developed economies is not happening on a large scale." Even though some production is moving to countries nearer its consumers, China remains at the heart of a network known as Factory Asia. It has an excellent infrastructure and an enormous, hard-working and skilled workforce. Though wages are rising, its labour productivity is far higher than that of India, Vietnam and other rivals, and is forecast to keep growing at 6-7% a year to 2025.

Manufacturing is almost entirely controlled by private firms, both Chinese and foreign, which unlike SOEs will not be pushed by bureaucrats into making unprofitable investments. Marjorie Yang, Esquel's boss, says that subsidies may feel good but distort investment decisions: "The government loves to fund flashy hardware and robotics, but there's no money for the software and data analytics needed to make proper use of it." And in any case most of these private firms are already innovating at a cracking pace without prompting from government.

Michael McNamara, the boss of Flex, a big American contract manufacturer, says product cycles have become much faster. Factories in China used to serve export markets, but are now reorganising to concentrate on the booming local market. They are sensibly investing in automation, worker training and new methods. In the process, he says, China is "moving from work engine of the world to genuine innovator".

Liam Casey, an Irish entrepreneur who has worked in Chinese manufacturing for two decades, believes that "a huge amount of innovation" is happening around manufacturing supply chains. PCH, his firm in Shenzhen, is a supply-chain manager that now helps foreign manufacturers with design and mass customisation. A private firm with revenues of over $1 billion last year, it moves up to 10m components a day and ships merchandise worth $10 billion a year.

Kirk Yang of Barclays, a bank, believes the manufacturing sector is moving from "Made in China" to "Made by China". In the 1980s and 1990s most factories were owned by firms from Taiwan (like Foxconn) or the West (like Flex). Increasingly, he predicts, the sector will be run by Chinese firms. Taiwan used to dominate the market for upmarket electronics components, but he thinks many Chinese parts-suppliers—LIKE BYDE, an arm of the electric-car firm BYD—are now excellent.

China is the world's largest market for industrial automation and robots. Ulrich Spiesshofer, chief executive of ABB, a Swiss engineering giant, reckons that the latest robots "elevate the nature of work" because they improve safety and eliminate the need for heavy lifting. ABB's local engineers developed China Dragon, a robot made specifically for the computer industry, which sells well globally. In many industries China is still learning from the world, say the engineers, but its electronics manufacturing is so advanced that "the world is learning from China."

Mr Spiesshofer sees China pushing ahead with robots like YuMi, which was partly developed there. This affordable two-armed creation (pictured on the previous page) can be deployed safely next to humans on assembly lines and is able to do fine work like inspecting phones for scratches. At its factory in Shanghai, ABB is scaling up YuMi to mass production this month.

Terry Gou, Foxconn's boss, claims that within five years the 30% of his labour force doing the most tedious work will be replaced by robots, releasing them to do something more valuable. The highly inventive firm, which holds many American patents, is building all its automation in-house.

Staying ahead of the game allows manufacturers to keep their best clients. Nike, a global sportswear firm, has seen a lot of its suppliers decamp to cheaper Vietnam, but still gets 30% of its components from the mainland. Eric Sprunk, its chief operating officer, looks for suppliers capable of developing novel techniques that can inspire new products.

We have a plan

What about the government's "Made in China 2025" plan? It might succeed on its more modest goals, says Stephen Dyer of Bain, a consulting firm. Its immediate aims are to improve quality, productivity and digitisation, and to expand the use of numerically controlled machines. All these things, he notes, are already in common use by world-class manufacturers in other countries. A push to invest might well help Chinese laggards catch up.

China's state planners also want to help companies leapfrog to the forefront of technology. Their plan involves policies to encourage the adoption of robotics, 3D printing and other advanced techniques. But factories will invest in advanced kit only if it makes commercial sense. "You can't push this onto firms," says Mr Dyer. "They just won't do it if it's irrational."

A visit to a middling factory in a middling city illustrates the point. The Guangneng Rongneng Automotive Trim Company in Chongqing is not a fancy place. Stock is piled hither and yon. Owned by a privately held firm, the factory makes injection-moulded and welded automotive parts, mostly for Ford. Chen Gang, its director of operations, says wages have gone up so much that he has to pay itinerant workers the same as they can earn in Shenzhen.

He points to a fancy ABB robot on one side of an aisle that makes complex parts to go on instrument panels. Across the aisle sits a Chinese robot made by Kejie, which lacks the range and precision of the foreign model but is one-third the price. And plenty of the work at his firm is, and will remain, done by hand. "China is headed in this direction," he says, pointing to the robots, but the pace of adoption will vary from factory to factory.

Thanks to Deng's liberalisation and China's subsequent accession to the World Trade Organisation, the country's manufacturers rose to become export powerhouses. Because exporters must compete in the global market, the weak and inefficient—which includes most SOEs—have been driven out. ■

Foreign investment

The new Silk Road

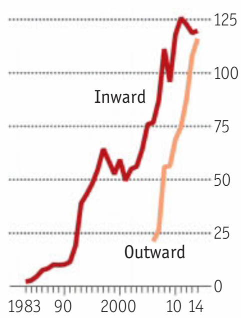
China's latest wave of globalisers will enrich their country—and the world

AN ENORMOUS MAP of the historic Silk Road hangs on a wall at Wensli, a leading Chinese silk producer. Nearby exhibits put China's silkmaking tradition into context. The Chinese first encountered silkworms about 6,000 years ago. Two millennia later they built the first silk machine. When France emerged as Europe's silk centre in the 16th century, it learned techniques from China, then the world's most advanced economy.

The Chinese love invoking their country's rich and glorious past, so they lapped up President Xi Jinping's "One Belt, One Road" plan, announced in late 2013, which aims to restore the country's old maritime and overland trade routes. Mr Xi hopes to lift the value of trade with more than 40 countries to $2.5 trillion within a decade, spending nearly $1 trillion of government money. SOEs and state financial institutions are being pushed to invest overseas in such areas as infrastructure and construction. According to the EIU, planners see this as an outlet for the vast overcapacity in industries such as steel and heavy equipment. It seems likely to lead to a massive spending binge, but companies should remain wary. Government support will not necessarily ensure success.

Li Jianhua, Wensli's chief executive, is quick to praise the president's initiative. He tweets a silk-themed message on WeChat every day in support of One Belt, One Road. Wensli, a private conglomerate with revenues approaching $1 billion, has long been close to the Communist Party. Shen Aiqin, Wensli's founder (and Mr Li's mother-in-law), served as a deputy

Go forth
China's foreign direct investment, $bn



Sources: MOFCOM; Rhodium Group

to the National People's Congress. But Mr Li is not a party member and insists that "nothing in our operations has to do with the government." A good relationship with officials helps, he explains, if only so he can refuse when they press him to invest in "strategic" industries: "This happens a lot…but I say no, we are a silk firm."

Wensli is reviving the Sino-French silk connection, but on its own initiative. Two years ago the company acquired Marc Rozier, an old-established French silk firm. Mr Li says he bought it to find out how the French make the world's best luxury goods. Wensli's supply-chain expertise and cash are helping Marc Rozier expand. In turn, the French firm is helping its Chinese owner improve quality and develop a global brand.

Connected by silken threads

Robots and teapots

Many more Chinese firms like Wensli are venturing abroad. Ninebot, a transport-robotics startup backed by Xiaomi and Sequoia Capital, bought Segway of the United States (and its IP) in April. Segway's products are too pricey and heavy for the mass market; Ninebot has the supply-chain and engineering expertise to change that. Sequoia's Neil Shen says that "today it's not just copycats…China will expand, through its own innovations and through acquisitions."

Chinese firms are also trying to revive old traditions of craftsmanship, which may help them develop authentic brands. Jiang Qiong Er says she founded Shang Xia, with help from Hermès, a French luxury-goods maker, out of a burning desire to prove that it is possible to create a "Chinese brand of excellence". The firm's flagship store is on Huai Hai Road, Shanghai's most elegant shopping promenade. Her luxury boutiques design, make and sell hand-crafted tea sets, jewellery, clothes and furniture from local materials such as bamboo and silk. She has opened a shop in Paris and hopes in time to become a global brand.

Last year Chinese investment overseas almost caught up with foreign direct investment in China (see chart, previous page). According to the China Global Investment Tracker, a research service, Chinese investment abroad in the first half of this year amounted to $56 billion, a rise of 14% on a year earlier. Rhodium Group and the Mercator Institute, two other research firms, reckon that the total stock of Chinese direct investment abroad could rise to $2 trillion by 2020, from less than $800 billion at the end of 2014.

Not everyone will be pleased by that prospect, remembering an earlier wave of Chinese globalisation led by SOEs. They made clumsy forays, and enemies, in such places as Africa and Latin America on a quest for oil, agricultural land and other resources. Many deals were politicised and some were corrupt. The resulting backlash was understandable but overdone. In particular, the decision in 2012 by a committee of America's Congress to blacklist Huawei and ZTE, another big Chinese telecoms firm, on national-security grounds was shameless techno-nationalism. It has given Chinese officials cover for their own misguided attempts to favour firms like Lenovo and Huawei at the expense of IBM, Cisco and other American technology firms.

Fortunately, future Chinese would-be investors abroad are more likely to be market-minded entrepreneurs than national champions. Chinese firms are getting fed up with paying licensing fees and royalties to foreigners. So instead of renting or stealing intellectual property, says Harvard's William Kirby, they are looking abroad to acquire top talent and technologies. And despite Huawei's troubles, their favourite target is America.

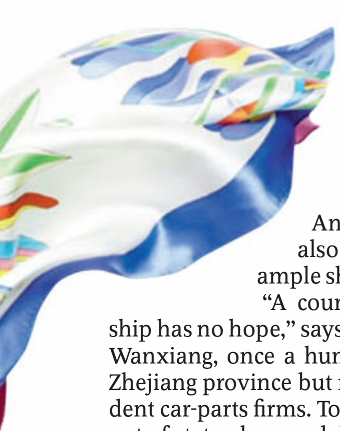
Earlier Chinese attempts to capture foreign markets and technologies did not go well. In 2004 Shanghai Automotive acquired 49% of SsangYong, a South Korean carmaker, for $500m, hoping that the acquisition would help it enter the American market, but cultural clashes, union troubles and rising oil prices got in the way. In 2009 SsangYong went bust and Shanghai Automotive had to write it off. TCL, a big electronics firm in Guangdong province, bought majority control of the television arm of France's Thomson in 2004, giving it the Thomson and RCA brands. But TCL's inexperience and the technological disruption caused by flat-screen technology scuppered the effort, and the venture was shut down.

These examples highlight some of the problems Chinese firms face when going overseas, and explain why many have failed. Chinese firms have few managers with international experience. Their brands and management processes tend to be poorly developed. They are also reluctant to pay outside experts for advice even when they desperately need it.

But Chinese firms are getting better. A study by Claudio Cozza and colleagues published last year by the Bank of Finland looked at Chinese investments in the EU, which went from almost nothing in 2004 to €14 billion ($18 billion) in 2014. They chose Europe because Chinese firms tend to look for new markets and to acquire brands, technologies and knowledge there. Such outbound Chinese investments in the EU, they found, had "a positive effect on [Chinese] firms' efficiency and performance" and pushed up their overall sales.

Some Chinese firms are already veterans of globalisation. Huawei's intrepid staff have long been selling telecoms equipment in remote parts of Africa and Latin America. One executive recalls that in the period following America's invasion of Iraq the only foreigners granted safe passage by all sides were Huawei's Chinese engineers, who were repairing vital communications infrastructure. Another example is Lenovo, which unusually for a Chinese firm has many nationalities on its senior management. In 2005 it bought IBM's personal-computer business, and last year it took over Motorola's handset business (from Google) and IBM's low-end server division. Haier has acquired part of Sanyo Electric's home appliances division and Fisher & Paykal of New Zealand in recent years and is now the world's biggest white-goods maker.

That is only the beginning. In "China's Disruptors", Edward Tse argues that "China's entrepreneurial companies will become far more active internationally, entering new markets, acquiring companies and hiring executives." He believes they will pose an enormous threat to established businesses in many industries.



And yet global Chinese entrepreneurs could also be good for the world, as Wanxiang's example shows.

"A country that cannot support entrepreneurship has no hope," says Lu Guanqiu, the septuagenarian boss of Wanxiang, once a humble township-and-village enterprise in Zhejiang province but now one of the world's biggest independent car-parts firms. Township-and-village enterprises were left out of state plans and denied access to raw materials and to the official distribution system. In the early hardscrabble days, Mr Lu collected spent artillery shells and made them into ploughs to sell to farmers. These days Wanxiang's sales top $20 billion a year, of which over $3 billion are made in America, where the firm sells components to the big three carmakers in Detroit. It has also bought two dozen companies in America.

Take a deep breath

A sexy electric roadster is parked outside A123 Systems, a battery firm in Michigan. It is made by Fisker Automotive, a failed American firm acquired by Wanxiang, and it is meant to inspire. Jason Forcier, A123's boss, says his firm would not be there except for Mr Lu's dream about solving China's pollution problem. Wanxiang bought the company at a bankruptcy auction in 2012 for about $250m and imposed strategic focus and cost discipline on the free-spending startup. Mr Forcier expects a profit this year.

Wanxiang has come to America to learn how to make China, and maybe the world, a cleaner place to live in. It has built a solar plant outside Chicago and invested in coal-to-natural-gas technology in Massachusetts. Back in China, it is accumulating the in-house expertise and alliances needed to make affordable electric vehicles for the mass market.

Mr Lu's quest is not as Quixotic as it seems. China is the world's best place to scale up clean technologies, wherever they are invented. His effort is just a tiny fraction of the $2.5 trillion that the UN expects to be invested in clean energy in China by 2030. In future, says the green billionaire, Chinese firms "will contribute more merit and value to the world".

China's best firms are standing ready to go global. As Thomas Hout and David Michael write in a recent issue of the *Harvard Business Review*: "If there's a business equivalent to the Cambrian period of explosion and extinction of species, China from 1991 to the present is it." Many have failed, but the survivors are straining at the leash. ■

Reform

The good, the bad and the ugly

The bloated state-owned sector must be reformed so that private firms can compete on equal terms

"THE PURPOSE OF SOE reform is not to get rid of them from the market; on the contrary, we want to make them bigger…we need to maintain the status of state ownership as the dominant power in the Chinese economy." Fu Chengyu, then the boss of Sinopec, a state-owned oil giant, was speaking exactly a year ago, at the Summer Davos conference, an annual gathering in China of global business executives and Chinese leaders organised by the World Economic Forum (this year's meeting is taking place this week). His remarks prompted a sharp response from Dong Mingzhu, the chairman of Gree Electric, a state-owned firm and the world's largest manufacturer of domestic air conditioners. She noted that Sinopec operated in a "monopolistic industry" whereas Gree had to fight for customers as a "private, market-oriented company". She went on: "What we really need is an environment of free competition instead of support from the government."

The two bosses' exchange illustrates official China's competing visions for SOE reform. The leadership is painfully aware of flagging economic growth and soaring debt and knows it must boost productivity and innovation. That is why it has formally committed itself to giving market forces a "decisive role". But as Mr Fu's statement made clear, not all SOE bosses agree on what that means.

Both the number and the output of China's SOEs is shrinking, but they remain politically powerful. By gobbling up a disproportionate share of resources, especially credit, they crowd out the private sector. They are also responsible for many of China's economic excesses, ranging from poor investment decisions to too much leverage. The IMF calculates that the SOEs' average debt-to-equity ratio rose to roughly 1.6 in 2014, from about 1.3 in 2005; the ratio for private firms in 2005 was also around 1.3, but by last year it had fallen below 0.8.

If Chinese leaders want to put the economy on a sounder footing and develop the private sector's full potential, they must embrace Ms Dong's version of SOE reform. That will require an effort on three fronts: first, speeding up financial liberalisation so that credit goes to the most dynamic firms, not the best-connected; second, enforcing the rule of law so that all firms, domestic or foreign, are treated equally; and third, encouraging competition across the economy, including in "strategic" sectors.

China's progress on these three fronts can be summed up as good, bad and ugly. The good news is that China's reformers have, in fits and starts, begun to ease the state's iron grip on finance. In the past, ordinary Chinese often got negative returns on their savings so that SOEs could enjoy subsidised capital from state banks. Private companies were largely left out. A World Bank report published in June said that in China "the state has interfered extensively and directly in allocating resources through administrative and price controls, guarantees, credit guidelines, pervasive ownership of financial institutions and regulatory policies. These interventions have no parallel in modern market economies." The report quickly disappeared from the bank's website, to be replaced later by a more anodyne version.

Still, things are getting better. The authorities are liberalising interest rates and have introduced a useful deposit-insurance scheme. They have encouraged private firms to experiment with online finance. And in August they heeded the IMF's advice by moving (bumblingly) towards what looks like a more flexible exchange-rate regime. Much more needs to be done, but the outline of a market-based financial sector is emerging.

Progress on the rule of law has been much more halting. Business in China would clearly benefit from a move to a fair and transparent legal system. Michael Spence, a Nobel prize-winning economist at New York University, points out that such a reform would improve the enforcement of contracts, encourage new entrants and help reduce financial fraud. Last October China's leadership agreed on the importance of "comprehensively advancing the rule of law", but many observers are sceptical. The law still bars private Chinese firms from operating in many sectors, and foreign firms have suffered from an uneven and unfair application of the anti-monopolies law, among others.

Competition remains the ugliest aspect of market reform. Extreme competition and none at all exist side by side. Peter Fuhrman of China First Capital, an investment bank, describes ▸▸

competition among private firms as so ruthless that "parts of China may be the most capitalist place on Earth." At the same time large swathes of the economy controlled by the zombies of the state sector are not subject to any competition at all.

Over 100 big state firms are controlled centrally, and many thousands more are in the hands of provincial and local government. Having observed the looting of Russia's assets by oligarchs, China's leaders strongly oppose outright privatisation, and indeed a "big bang" sale of SOEs would probably line the pockets of princelings. Officials have dabbled in partial privatisation, but that has done nothing to boost competition.

Yet SOEs are a drag on growth and innovation that China cannot afford, so if privatisation is not workable, other ways must be found to make them more effective. The most promising approach is to end state protection for all SOEs. As Andrew Batson of Gavekal points out, any such reform must allow state firms to go bust. SOEs should also be allowed to recruit professional managers and pay market wages. Together, such changes would expose state firms to competition from new entrants, forcing them to improve or die.

Unfortunately, however, the government seems set to reduce competition still further. It has recently merged the big SOEs in nuclear-power construction and in train manufacturing. There are strong rumours that it wants to consolidate the 100-odd central SOEs into 40 or 50 mega-zombies. It is keeping party hacks in the most senior jobs at these firms—and cutting their salaries, a sure way to discourage top talent from the private sector.

Demands for genuine market reform are growing louder. In a report on China's economy published in August, the IMF noted that the country is making progress on structural reforms, but warned that a huge amount of work remains to be done. Mark Schwartz, the head of Goldman Sachs in Asia, is hopeful about China's future but thinks progress will take time: "I see this as the beginning of a 30-year historic period of reform."

The future is private

The biggest reform needed is a change in mindset. *Caixin*, an influential Chinese financial magazine, recently ran a striking editorial arguing that, despite official promises, the private sector still suffers legal discrimination in market access, finance and investment. China needs "a transformation" to become more innovative and efficient, it said, which "requires a break from the old practices of a planned economy".

Shaking the world

China shakes the world, its admirers liked to say of the country's meteoric economic rise in recent years. Alas, the stomach-churning volatility of Chinese markets this summer, and the global shockwaves this has caused, have given the phrase a new meaning.

Western experts once praised China's state planners for their technocratic brilliance, but their faith has been shattered by the government's ham-fisted attempts to boost the stockmarket and its inept moves to liberalise its currency. All this has prompted former boosters to conclude that China's economy is destined for disaster and the good times for business are over.

This special report has made a different argument. China's economy is indeed in a tight spot, and its handlers are hardly inspiring confidence. But beyond the storm clouds, there are still good reasons to think that business has a bright future in China.

Double-digit economic growth was never going to be sustainable indefinitely. For an economy that in purchasing-power-parity terms is already the world's largest, continued growth of even a more modest 5-6% would still mean rapid progress. Thanks to that, and to increasing urbanisation, the middle class, until recently just a small sliver of the population, is expanding fast and will soon make up the majority. Investment-led growth is giving way to growth driven by domestic consumption. And the opening of the long-repressed services sector could represent, on one estimate, a $12 trillion prize in the longer term.

But the biggest reason for optimism is the emergence of China Inc as a powerhouse of innovation. If the country is to sustain strong growth in the future, it must rely on fresh waves of entrepreneurialism and innovation of the kind that have recently propelled it forward. As this report has shown, such dynamism has not, and will not, come from stodgy state firms. It can be delivered only by the private sector.

For this to happen, though, the government must push ahead with difficult reforms to curb the power of the state and improve the rule of law. It must expose state firms to the discipline of genuine market competition and the scrutiny of independent antitrust regulators.

Entrepreneurial private firms in China, both local and foreign, have demonstrated their vibrancy and resilience. If the government embraces bold reforms that let them compete on equal terms, they will remain the engine of China's success. ■

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Syria

Positions harden

CAIRO

Hopes for diplomatic progress aimed at ending the war go into reverse

A FREAK sandstorm that swirled out of the Syrian Desert blotted skies over much of the Middle East from September 7th to 9th. Choking dust added to the misery of war-ravaged Syria, yet brought a brief respite from both the Syrian regime's deadly barrel bombs and, in the parts of Syria and Iraq held by Islamic State (IS), from coalition air-raids targeting the self-declared caliphate.

The giant dust cloud also provided a metaphor for the muddle of a brutal four-and-a-half-year-long conflict that keeps sucking in more armed actors even as it spews out ever more refugees. Bitter polarisation, not only between local groups but between their international sponsors, repeatedly obliterates any chance for peace.

A flurry of diplomacy in August had, for instance, seemed the result of a growing convergence of interests between nearly all the main actors in Syria about the need to defeat IS. There were reasons to be hopeful. The deal over Iran's nuclear program, Russia's need to calm tense relations with the West, the growing exhaustion on the ground of President Bashar al-Assad's forces, the keenness of America and its allies to show some progress after a year of bombarding IS, plus Turkey's decision in July to commit more effort to the American coalition; all these factors suggested the possibility of movement.

Russia, which despite its backing for Mr Assad has kept ties open with his foes, sponsored a constellation of meetings in Moscow and elsewhere. They brought together Vladimir Putin and several Arab heads of state, as well as Syrian government and opposition figures, Iranian officials and others. Yet it is now clear that no one has in fact budged. Russia and Iran, the main diplomatic and military sponsors of Mr Assad's regime, announced renewed commitments to his survival. America and its allies retorted, with varying degrees of firmness, that the Syrian leader bears too much responsibility for the rise of IS, and has too much blood on his own hands, to be part of any transition. Turkey and Saudi Arabia, in particular, remain adamant that Mr Assad must go.

Back to battle

Positions on both sides seem now, if anything, to have hardened. Iran's soft-spoken foreign minister, Javad Zarif, deflated what some Western diplomats had taken as hints that the Islamic Republic might be flexible about a regime it has supported with billions of dollars worth of arms and fuel as well as thousands of proxy fighters. "Those who set conditions about the Syrian president should be blamed for the continued war," he said on September 7th.

Russia, for its part, appeared piqued that neither America nor its allies in the Middle East is prepared to drop its rejection of Mr Assad in the interest of joining forces against IS. "The demand for Assad's resignation as a precondition for the struggle against terrorism is completely unrealistic and counterproductive," said Sergei Lavrov, the Russian foreign minister, on September 1st. His words reflected Russia's long insistence that the Syrian regime represents a bulwark in the global struggle against Islamist extremism—and a belief that its Western critics are naive to assert that Mr Assad's own brutality and his efforts to stir sectarian hatred have been not only the prime recruiting tools for IS, but also the prime creator of refugees.

Quietly, Russia also backed up these words with action. Since the start of Syria's war in 2011 it has supplied Mr Assad with a constant flow of arms, spare parts, intelligence and technical aid. That flow has now increased markedly. The number of ships docking at Russia's naval depot in the Syrian port of Tartus—its sole military facility outside the former Soviet Union—has grown. Instead of small numbers of regular conscripts, Russia has begun rotating in groups of highly trained infantry. American officials say they have detected the unloading of prefabricated units to house up to 1,000 Russian troops. Russia has also escalated propaganda to bolster Mr Assad; among other moves it dispatched a teen weightlifting star, Maryana Naumova, "the world's strongest girl", to the Syrian capital at the invitation of Asma al-Assad, the president's wife.

While there is no sign that America or its allies have any intention of matching Russia's bravado by putting troops on the ground in Syria, the coalition air effort is also expanding. Britain announced this week that it has undertaken its first drone strike in Syria (see next article). France has launched aerial reconnaissance operations in advance of its own possible air strikes, and Australia has announced that it, too, is joining the aerial campaign. On ▸▸

September 9th, meanwhile, Syrian sources claimed that a coalition air raid west of the IS capital, Raqqa, had killed as many as 20 civilians who had been drafted to dig trenches for the jihadists.

Since its losses to coalition-backed Kurdish forces in northern Syria earlier in the summer, IS has largely held its ground despite the bombing campaign. Mr Assad's forces have not fared so well. On September 9th they admitted the loss to a rebel force of an important airbase south of Aleppo, Syria's second city (its largest in population terms, at least before the war). The defeat follows a sequence of smaller setbacks for the regime, and endangers the long and narrow salient that is the Assad government's sole supply route to the city, where its forces have been locked in a ruinous two-year war of attrition against multiple rebel groups.

Embarrassingly for America and its allies, the rebel force that captured the air base was led by Jabhat al Nusra, the Syrian affiliate of al-Qaeda and itself a target of American air raids. The fall of Aleppo would be a disastrous blow to Mr Assad, but it would also generate yet another flood of refugees, adding to the 7.6m already displaced in Syria and 4m who have fled abroad. This time, for a change, the new wave of arrivals in Europe would largely be Mr Assad's supporters. ■

Targeting terrorists

Britain's jihadi kill list

The killing by drone strike of a British jihadist in Syria will not be the last

IT WAS, the prime minister conceded in a statement to the House of Commons on September 7th, "a new departure" for Britain. David Cameron said the decision to target and kill Reyaad Khan in Syria, an Islamic State (IS) fighter from Cardiff, had been taken at a meeting of the National Security Council some months earlier. The strike, which also killed two others travelling in the same vehicle as Mr Khan, including another Briton, Ruhul Amin, was carried out by a Reaper drone of the Royal Air Force on August 21st.

Previously, RAF drones have been used for lethal strikes in Afghanistan, but only when British or allied forces were threatened by fighting on the ground. Mr Cameron has parliamentary approval for carrying out air strikes in Iraq as part of the anti-IS coalition, but he has yet to secure backing for bombing in Syria.

Mr Cameron said that intelligence had identified Mr Khan as actively engaged in planning "barbaric" attacks on the West and recruiting people to carry them out. Military commemorations in Britain, said Mr Cameron, were high on the list of his targets. A key part of his justification for the strike was "the UK's inherent right to self-defence". The attorney-general, the government's chief law officer, had concluded that "there would be a clear legal basis for action under international law."

Demands are being made for Mr Cameron to publish the legal advice in full—an echo of the controversy over Britain's involvement in the Iraq war. The government thinks it has its legal bases well covered: it says the threat represented by Mr Khan (and a British accomplice, Junaid Hussain, killed a few days later by an American drone) was imminent; there was no other way to stop him; and the action taken was proportionate. Those claims are being challenged.

Mr Khan is unlikely to be the last British IS recruit on the receiving end of an RAF Hellfire missile. There is reportedly a "kill list" with at least five names on it, including that of Mohammed Emwazi (aka the IS executioner "Jihadi John").

After the murder of 30 Britons on a Tunisian beach in June by an IS gunman, the government decided it should be seen to be doing more than wring its hands. Mr Fallon chafes over the "absurdity" of the current ban on action across a border unrecognised by IS itself.

However, the prime minister's plans for a Commons vote to extend the air campaign to Syria are being complicated by the probable election of the hard-left, veteran anti-war campaigner, Jeremy Corbyn, as leader of the opposition Labour Party. Mr Corbyn says he "can't think of any" circumstances in which he would support sending British forces into action. Mr Cameron will only seek MPs' backing if he is sure there will be no repeat of the fiasco two years ago when he lost a vote to punish the Assad regime for its use of chemical weapons. Whether greater British involvement in Syria would make any difference on the ground is quite another matter.

The first of several?

Political rights in the Gulf

Creeping consultation

ABU DHABI

Gulf citizens are getting more chances to vote

DECEMBER will witness a small step forward for both women and for democracy in Saudi Arabia. For the first time in the kingdom's history, women will be able to vote and stand as candidates in local elections. Voter registration opened last month, and closes on September 14th.

Dalal Kaaki was one of the first to register; she snapped a photo of the event and sent it to a colleague in Riyadh. "It is so empowering," says Hatoon al-Fassi, the recipient. Both women have campaigned for years to win the vote. Ms Fassi heads Baladi Initiative, which trains female candidates and campaign managers; Ms Kaaki is her coordinator in Mecca. "It gives women the feeling that they are complete citizens," says Ms Fassi.

Saudi Arabia is not alone. Next month, when the United Arab Emirates (UAE) holds elections for its advisory parliament, some 10% of the population (half of them women) will be able to vote, expanding the franchise from local leaders and tribesmen to a larger group. Oman will hold polls for its parliament in October, too. Qatar held municipal ones in May.

The institutions in question, it is true, are largely toothless, with consultative rather than decision-making powers; but elected rather than appointed representatives are a growing phenomenon in countries that have long dubbed themselves "*majlis* democracies". (The term refers to the traditional discussions rulers undertook with key tribes and families). The Gulf monarchs drew the lesson from the unrest of 2011 that they needed to do, or at least be seen to do, more for their citizens.

And the bodies do have an influence of sorts. In 2014 Oman's ruler Sultan Qaboos reversed a decision to lift price controls on some consumer items after protests by the Shura Council, whose sessions are now open to the public. When called for questions, ministers sometimes "prepare six ▸▸

Seize the chance while you can

months in advance, because they know it is a demonstration of their competence," says Ahmad al-Mukhaini, a former assistant secretary general of the Shura Council.

The UAE's Federal National Council is also being beefed up. The half-elected, 40-member body has now gained the power to advise and propose amendments to draft laws as well as submit questions to the cabinet. Bahrain's parliamentary election in 2014 was written off by many observers as a pro-government exercise (the Shia-led opposition boycotted it). But voters shunned old-timers and Islamists in favour of young, technocratic new MPs.

Meanwhile, Kuwait's parliament, by far the most powerful in the Gulf, is coming into its own after years of wrangling between it and the cabinet, which is appointed by the emir. It has approved dozens of stalled laws, including investment packages and legal reforms.

Still, those hankering after more of a say have a long battle ahead. Qatar has repeatedly postponed its promise to allow some seats in its own advisory Shura Council to be elected. Gulf officials too often see democracy as noisy and inefficient, or as a threat to stability. "Taking a look at some of the other Arab democracies in the region who jumped into a complete electoral process, you would see that it was unfortunately used as a divisive tool based on regional, tribal and sectarian factors," Anwar Gargash, an Emirati minister, recently said.

In Saudi Arabia the challenges are greater than anywhere else. The government put a stop to Ms Fassi's attempts to teach women how to register, campaign, and manage a budget, telling her they gave female candidates an unfair advantage. And female candidates can only address male voters by video, because of the ban on unrelated men and women mixing.

Sadly, one of the main obstacles consultative bodies face is attracting public interest. Turnout for the UAE's election in 2011 was a measly 28%. In Oman, some Shura Council members are employing staff to publicise the council's work on Twitter and YouTube. Very few Saudi women have registered to vote in December. But the window of opportunity has cracked open, says Ms Fassi. "With all its problems, with all its incompleteness, we are finally in the system," she says. ■

Yemen's war

A downward spiral

BEIRUT

The Saudi-led coalition escalates its campaign

THE start of this month may well come to be seen as the moment that Yemen descended into a prolonged and uncontrollable war. The conflict in the desperately poor nation was already going horribly badly. But the Saudi-led coalition fighting the country's Houthi rebels has now intensified its campaign, after 60 of its soldiers were killed in a single attack in Maarib on September 4th.

More troops have poured in since the attack. Saudi Arabia dispatched more elite forces to join the 3,000-strong coalition force already on the ground, while Qatar, hitherto only participating in air operations, has sent 1,000 soldiers. Egypt, which has long warned of the folly of putting boots on the ground given its disastrous intervention in the 1960s, this week sent in 800 men. Sudanese troops are reportedly waiting to be shipped out of Khartoum. Bahrain's King Hamad bin Isa al-Khalifa said his two sons will join the battle.

The coalition has since unleashed an unprecedented flurry of air strikes in both the northern governorate of Saada, the stronghold of the Houthi rebels, and the country's capital, Sana'a. Residents say as many civilian as military targets are being hit, including houses, restaurants and main streets. "The coalition has gone wacko since the attack," says Hassan Boucenine, who heads the Yemen office of Médicins sans Frontières, a charity.

The action certainly has the whiff of revenge. Onlookers have already been questioning what the coalition's campaign, now in its sixth month, hopes to achieve. It is unclear how much support Iran has given to the Houthis, which is one of the main justifications for the coalition's action. Quashing the Shia Houthis is nigh on impossible. Gulf officials and media talk bombastically of preparations to take back Sana'a from them and reinstall Abd Rabbo Mansour Hadi as president (the Houthis drove him out of the country in March). But Yemen has long been treacherous territory for foreign invaders, and Gulf armies are relatively inexperienced.

Since committing ground troops in August, the coalition has taken control of Aden, the southern port city, and is advancing on Taiz. But it is struggling in Maarib, the gateway to Sana'a, where the extra troops, backed by armoured vehicles and missile launchers, are said to be massing. The fighting will only get harder since the Houthis' remaining strongholds are in mountainous redoubts.

The high toll exacted on civilians may be losing the coalition the support of allied fighters on the ground, a mixture of tribesmen, units of the fractured army and Islamist types including al-Qaeda fighters. "Everyone has now lost someone," says Mr Boucenine. He says civilians make up an increasing proportion of the dead, now approaching 5,000.

Unfortunately for war-weary Yemenis, attempts to broker a peace deal in Oman earlier this month were floundering even before the attack in Maarib. One problem is that, as with other conflicts in the region,


On the road to Sana'a

international pressure is lacking. America is deeply unhappy with the way its Gulf allies are waging the war, but is keen to repair relations in the wake of the Iran deal, which the Gulf monarchies opposed. And a rising generation of young, ambitious Gulf royals appears unwilling to pare back their newfound military adventurism.

Aid workers fret that their warnings of impending tragedy are falling on deaf ears. Owing to the coalition's embargo, designed to stop Iran sending supplies to the Houthis, only 20% of the usual number of ships are arriving in Aden, for a nation that even before the war relied almost entirely on imported food and fuel. Some medical supplies have run out completely. Yemen could still be brought back from the brink. But increasingly it looks as if the opportunity to do so will be lost. ■

Public transport in Africa

In praise of matatus

NAIROBI

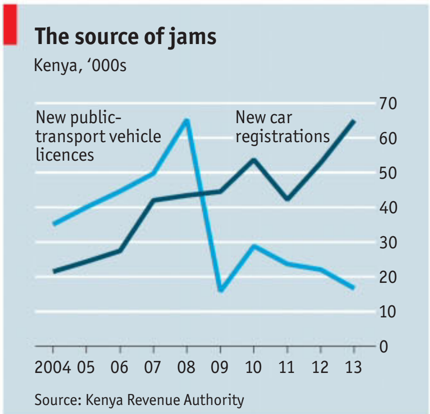
Increasing affluence risks strangling a market-driven system that works

ON THE edge of Kangemi, a slum to the west of Nairobi's city centre, next to stalls selling T-shirts, sandals and second-hand mobile phones, is a busy minibus terminal. A dozen *matatu* minibuses jostle for space in spectacular paint jobs promoting Premier League football teams, film stars and Jesus Christ. As new vehicles arrive their conductors lean out of the doors shouting out destinations and fares. To an outsider it seems chaotic, and yet locals know exactly how it works. When a bus is full, it departs, and the next moves up.

Matatus are the primary means of getting around Nairobi. According to one estimate, seven out of ten people use them to get to work in Kenya's hectic capital. Similar minibuses operate across Africa. In Lagos, they are called *danfos* and painted bright yellow; in Addis Ababa, "blue donkeys". They are not comfortable: passengers are packed in like sardines. Nor are they always safe. Pickpockets, crashes and highway robberies are all too common. But they provide a remarkably effective and cheap public transport system at no cost to the government. This is now under threat from a by-product of growing affluence that is affecting cities across Africa—the rise of the private car.

Unlike bus systems in the West, *matatus* are neither run by a government monopoly nor by a number of large firms. Instead they tend to be owned by entrepreneurs, who pick routes and lease the vehicles out to pairs of drivers and conductors. These teams, in red and blue uniforms, work long hours to get the most out of their vehicles—typically starting at 4am.

Competition is fierce (hence the colourful paintwork). And pricing is, as one Kenyan blogger puts it, "more emotional than the stockmarket". When passengers are few, fares are cheap: perhaps 10 Kenyan shillings (about $0.10) for a ride. However, at rush hour, or when it is raining, they multiply three or four times. Such surge



pricing is as unpopular among *matatu* riders as it is among users in Western cities of Uber, a fast-growing taxi service.

This decentralised system produces a well-organised result. Jacqueline Klopp of Columbia University enlisted a team of Kenyan students to map Nairobi's *matatu* routes. She discovered that the network in many ways resembles a public-transport system in the West, albeit one without subsidised routes. Buses mostly go from suburbs to the city centre; connections are made in an enormous scrum there, as crosstown routes are rarer than in the West.

For now *matatus* can still make sense even for people who can afford a car. In the back of one, Anisia Wanja, a marketing director, explains that she owns a car but does not always use it, because parking is too expensive. Nairobi's traffic gets notably worse at the end of the month, as many drivers can only afford petrol just after payday. But as Kenya gets wealthier and the roads get slower, the danger and crush of a ride in a *matatu* appeals less.

Car ownership is soaring. According to figures from the Kenya Revenue Authority, between 2004 and 2013 the number of new cars registered in the country each year has more than tripled. The number of new licences issued to public-transport vehicles correspondingly fell (see chart). Cars may be safer and a lot more comfortable, but they use vastly more road space than a single *matatu* passenger. Spending on roads in Kenya has risen, but nobody thinks traffic has got better. "These days, there is no way to avoid traffic", says John Kariuki, a taxi driver, as workers nearby scrub his Toyota. "No matter how big they make the roads, they just fill up again".

Without change, Nairobi and other African cities risk becoming like Mexico City or São Paulo (where traffic is so bad the rich get around by helicopter). The trouble is that politicians like to spend money on glamorous elevated highways, which encourage car ownership, while the *matatus* that use lesser roads to pick up and drop off are neglected. Big projects come with greater opportunities for extracting kickbacks; they also appeal to a class of politicians that expects a plush Mercedes and a personal parking space. But they do little to solve the problems faced by *matatus*. Besides congestion, the biggest concern is security: police often harass drivers, extracting fines for minor infractions, but they do little to stop the criminals who hijack buses and rob their passengers. African leaders need to spend more time on the buses. ■

Who needs a Merc?

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Coup politics in Thailand

Curiouser and curiouser

Thailand spins in circles as the generals' friends vote down their draft constitution

ONLY the wildest optimists still believe that Thailand's military junta, which seized power in a coup last year, intends to step down soon. A farce that played out in the Parliament House in Bangkok on September 6th has made that even plainer. In a televised vote following a cheesy group photo, a junta-backed National Reform Council voted to abandon a proposed new constitution which a junta-backed set of drafters had spent ten months drawing up. The decision starts a new drafting process, which will take another seven months at least. There is little chance of fresh elections until at least 2017, and possibly long after that.

When the generals launched their bloodless coup during political unrest in May 2014 they promised to "bring happiness back to Thailand". The draft constitutional framework was supposed to usher that in. Its authors, doing the junta's bidding, came up with a set of rules which allowed for elections but neutered the victors. The draft seemed designed to produce weak governing coalitions able to be bossed about by higher powers. It would have introduced a largely appointed senate. And it removed a requirement that the prime minister be elected.

A last-minute addition to the draft was the naming of an extraordinary committee tasked with ensuring that future elected governments stick to the social and economic reforms which the junta says it is putting in place. The two-dozen bigwigs to serve on this committee would have included heads of the armed forces and police, as well as former trusted prime ministers and other assorted bureaucrats. The committee would have been entitled to snatch power from elected politicians whenever two-thirds of its number agreed that it had cause.

The members of the National Reform Council were appointed from across Bangkok's monied classes. Some may have blanched at backing such a lopsided set-up. Despite warnings from the junta not to comment, the draft had been roundly blasted not only by the populist Pheu Thai party—which held power before the army's coup—but also by the Democrats, the party which Thailand's elites traditionally favour.

Many others on the council, however, may have voted against the unpopular draft because they recognised it had no chance of winning the public referendum which the junta had stipulated. The requirement that the draft had to be approved by half of all eligible voters, not a majority of votes cast, seemed an impossibly tall order. It may have been laid down in haste and error. Yet the politicking that would have preceded a vote would have merely underscored the social rifts that the junta claimed to set out to heal when it took power. And a referendum defeat would greatly dent the junta's standing.

Yet the final blow to the constitution, and the most curious, appears to be that the army itself lost interest in it. Thirty of the 33 members of the security establishment who sit on the council voted against the proposed charter, reportedly under instruction from their superiors. One interpretation is that the junta's hardliners, having tested the appetite for the kind of "managed" democracy they appeared to believe in, decided that the easier path was to maintain their direct rule.

Perhaps the process was intended to be a time-waster from the start. The failure to produce a new constitution that is even vaguely palatable to Thais is another sign that the generals may be digging in for the long run—shades of the military rule that Thailand endured in the 1950s and 1960s. They are searching for a magic touch as the economy slows—it grew by just 1.6% at an annualised rate in the second quarter. In August the junta pushed aside its chief economic adviser. Strangely, his replacement is Somkid Jatusripitak, a former deputy prime minister in the government of Thaksin Shinawatra, which was toppled in a previous coup in 2006. Mr Somkid is the architect of many of the populist policies that first incited Mr Thaksin's opponents in the establishment to oust him.

Meanwhile the junta's response to last month's deadly bombing outside a popular shrine in central Bangkok—a direct challenge to the generals' assurance that they can best keep Thailand safe—has also underwhelmed. Days after the attack bystanders were still finding shrapnel and even human remains at the site. And it looked odd that a police commander celebrated the first arrest of a suspect by giving the investigating officers a cash reward. ▸▸

Two men, said to be Turkish and Chinese citizens, have been detained in connection with the attack, which some think may have been carried out in revenge for Thailand's decision to deport ethnic Uighurs to China, where they face persecution. Authorities have pooh-poohed talk of international terrorism, claiming that the culprits may be people-smugglers retaliating against a crackdown.

The next step with the constitution is for the generals to appoint a new batch of lawyers. They will have six months to produce a fresh draft. Yet nothing guarantees that they will come up with anything more appealing. And the process will certainly be interrupted, or indeed completely abandoned, in the event of the death of Thailand's ailing King Bhumibol Adulyadej, who at 87 is the world's longest-reigning monarch. The junta is presumed to be extremely keen to control a potentially turbulent succession. On September 7th palace officials said that the sovereign was recovering from a chest infection that had been diagnosed a few days earlier. For now the mood in the country inclines toward jitteriness. That same morning some Thais thought that a meteor, which exploded dramatically in the sky, had to be a worrying omen. ■

A new flag for New Zealand

Hang up the fern!

WELLINGTON

Changing national symbols proves irksome

"FARCE" barely describes the process by which New Zealand is deciding whether or not it needs a new flag. John Key, the prime minister, caught everyone by surprise during last year's general-election campaign when he floated the idea of changing it. He wanted to get rid of the present one, which incorporates Britain's Union Jack as well as the stars of the Southern Cross, to one that, as he put it to *The Economist*, "screams New Zealandness". The immediate reaction was that this was at best an irrelevance, at worst a cynical diversion from the difficult stuff of politics.

Mr Key himself once favoured a silver fern on a black background—until the uncanny likeness to the flag used by the jihadists of Islamic State was pointed out to him. The project is now in the hands of his deputy, Bill English. A group of 12 prominent people, none of them a designer, was appointed to a "Flag Consideration Panel", chaired by a former law professor; the public was invited to submit designs. New Zealanders put forward 10,000 offerings. The panel narrowed the choice to four, which the cabinet approved.

The plan was that a postal referendum this year would pick one of the four. A second referendum, next March, would choose between that and the present flag. This process was cemented into legislation. Three of the four winning designs have versions of fern leaves. The fourth has a *koru*, a spiral based on an unfolding fern that figures widely in Maori carving. The fern features on the graves of New Zealanders who died in European wars, on many New Zealand products and is a symbol for the All Blacks, the country's famed rugby team. Air New Zealand, the national flag-carrier, already sports ferns on some of its planes.

Things have not gone to plan. None of the four designs has gripped the public. A fifth design, known as the Red Peak option, composed of triangles and supposed to evoke Maori mythology, has acquired a following on social media. So far the government is having none of it. Mr Key says that he is not going back to Parliament to accommodate the fifth design, though an electoral-law expert has helpfully suggested that all the government need do is substitute it for one of the chosen four.

Not much frondness for the official four...

New Zealand's vexillologists, viewed not long ago as adepts of an obscure art, are enjoying their moment. Versed in such details as whether a flag is still recognisable if it is not flapping in the wind and whether its design can easily be drawn, they have found the four selections wanting. They are joined in their criticism by rugby's ruling body (jealous of its silver-fern symbol), by an army veterans' group and by many voters who find it distasteful that their country is being rebranded like a sagging brand of detergent. If you want to bet on the outcome, bookies are offering short odds on New Zealand's flag remaining fernless.

...while this option has Facebook friends

Japan's yakuza

Doing the splits

TOKYO

A rare break-up in the world of Japan's criminal gangs

IN THE demi-monde of Kabukicho, a warren of striptease bars, cabaret clubs and brothel fronts that makes up Tokyo's main red-light district, the night manager of the Parisienne Café frets about the *yakuza*. Japan's biggest organised-crime group, the Yamaguchi-gumi, with 23,400 members, split last month. On September 5th more than a dozen of its factions gelled into a new, rival outfit. A *yakuza* shoot-out with Chinese mobsters in the Parisienne once killed one gang member and injured more. The café's manager now fears the risk of renewed warfare.

The police are bracing themselves for violence up and down Japan. They are out in force in Kabukicho and Ginza, the capital's best-known shopping district, as well as in the cities of Kobe, Osaka and Nagoya, all big *yakuza* strongholds. At the time of the last *yakuza* split, in 1984, two dozen gang members died in territorial battles—an orgy of bloodshed by the country's ultra-safe standards. In the past few years fire-bombings, death threats and murders by gangs in Kyushu, the southernmost of Japan's four main islands, have eroded the public's tolerance of the gangs.

For all that, the *yakuza* remain largely legal. Membership is no crime. Mobsters commute to official headquarters, proffer business cards and enjoy pension plans. The Yamaguchi-gumi recently launched an in-house newspaper with articles on board games and fishing. Its boss, Shinobu Tsukasa, portrays the group as a refuge for the weak and marginalised; it helps keep order at the bottom rungs of society.

The split has partly to do with the economy. Two decades of Japan's flirting with deflation has made it harder to extort money from businesses, yet the Yamaguchi-gumi kept its membership dues high (the new gang has promised to lower them). Criticism over Mr Tsukasa's leadership was a factor too. Other factions have long resented the dominant position of his Kodo-kai, the most go-ahead *yakuza* group that has tried to expand beyond its base in Nagoya into gleamingly prosperous Tokyo ▸▸

and the rest of the Kanto region of eastern Japan. Mobsters in the port cities of Kobe and Osaka were left with slimmer pickings as industry declined.

Kodo-kai also fell out with the police. Rather than co-operating with the cops, as other factions do, it started intimidating them. The gang has many ethnic Koreans as members. That makes it harder for it to rub along with a xenophobic police, says Jake Adelstein, an American expert on the *yakuza*. The police appear even to be helping the breakaway group, which will call itself the Kobe Yamaguchi-gumi.

Many Japanese dare to hope that the split is a sign that the *yakuza* are diminishing in power and influence. They are a source of a certain embarrassment, and America, in particular, has been critical of their semi-tolerated status. A national anti-mob law passed in 1992 achieved little until it was tightened recently. And since 2009 local governments have enacted organised-crime exclusion ordinances, making it illegal for businesses to pay extortion money to the *yakuza* or do business with them. These ordinances are having an effect.

Still, signs of strong *yakuza* presence throughout the economy surface regularly. Tokyo's Olympic games in 2020—with construction projects and pleasure-seeking visitors—is a tempting honeypot. In the Diet there have been questions about a possible link between Mr Tsukasa and the vice-president of Japan's Olympic Committee. In October 2013 the financial watchdog caught a part of Mizuho, a huge banking group, lending generously to *yakuza*. Mobsters have long been involved in finding lowly workers for nuclear-power plants, including for the clean-up at the Fukushima Dai-ichi plant, the site of the 2011 nuclear disaster.

Curiously, *yakuza* see themselves as victims. They complain of growing social discrimination against their members and bemoan the bullying of their children at school. Perhaps to garner popularity, they are even trying to take advantage of growing sentiment against the prime minister, Shinzo Abe. The Yamaguchi-gumi's website warns that under Mr Abe, a right-winger with revisionist views of Japan's militarist aggression, the country risks heading back to pre-second world war thinking. It is a new line from a force that used to help Mr Abe's Liberal Democratic Party (LDP) quash unions and left-wing demonstrators in the 1950s and 1960s.

Back then the LDP used openly to get money from *yakuza* bosses. The ties are no longer overt, says Kenji Ino, an author on the gangs, but there are behind-the-scenes connections. Many a politician, he says, still attends monthly dinners in honour of the local *yakuza* boss in some discreet, high-class *ryotei* restaurant. It is not clear whether such time-honoured rituals will now suffer a brief period of disruption. ■

The Pacific Islands Forum

Australasia feels the heat

WELLINGTON

Low-lying islands take the moral high ground

AUSTRALIA and New Zealand have never found it easy to corral Pacific-island leaders into supporting their initiatives. It is getting harder. Pacific politicians are no longer so dependent on aid from their rich neighbours, and they have greater capacity to embarrass them on issues such as climate change, fisheries policy and support for secessionists in West Papua, in eastern Indonesia. These all loomed large at the summit of the Pacific Islands Forum (PIF) held in Port Moresby, capital of Papua New Guinea (PNG), from September 7th to 11th.

It was attended by both Australia's prime minister, Tony Abbott, and New Zealand's, John Key. They were probably relieved not to be joined by Frank Bainimarama, the former military commander who led a coup in Fiji in 2006. Fiji was suspended from the forum in 2009, but readmitted after Mr Bainimarama won a general election last year. Some of his officials attended, but he himself is boycotting PIF meetings until the forum is reformed—and Australia and New Zealand are expelled. Other Pacific nations are less strident. But they too want to reshape the PIF's agenda, particularly on climate change.

Mr Bainimarama has launched a rival group, the Pacific Island Development Forum, which held its third annual meeting in Fiji from September 2nd to 4th. The resultant communiqué endorsed the goal of keeping global average temperatures no more than 1.5°Celsius above pre-industrial levels (the existing goal agreed among developed countries is 2°). It is part of a strategy of "deep decarbonisation" that Mr Bainimarama hopes to take to the UN's climate-change conference to be held in Paris in December. Tony De Brum, the Marshall Islands' foreign minister, says Australia's proposed 26-28% cut in emissions from 2005 levels is far too low to stop the atoll states from disappearing beneath the waves. He wants much bolder targets. Anote Tong, president of Kiribati, said that island leaders might ask Australia to leave the PIF; or they might stage a walkout if it refuses to sign up to the 1.5° target.

Australia: our world—until yesterday

Australia's moral authority in the region has been dented. It has cut its foreign-aid budget and disbanded its specialised aid agency, AusAID, with greater aid emphasis now on Australia's commercial interests. And the shunting of Australia's unwanted refugees to "Offshore Processing Centres" on Nauru and in PNG has looked mean-minded, despite sweeteners such as refurbished hospitals, roads and local jobs for the host countries.

On tiny Nauru, with a population of only 10,000, the refugee centres have supplanted phosphates as the biggest source of earnings. Electoral self-interest means no politician dares oppose the centres. Nauru's politics are troubled. An authoritarian government, led by Baron Waqa, has removed most opposition MPs from parliament. One MP, Roland Kun, has had his passport seized and been prevented from rejoining his family in New Zealand. The Australian government has refrained from criticising its island ally. But, in a rare Pacific-policy split with Australia, New Zealand suspended its aid to Nauru's judicial sector in early September.

Unlike Nauru, Papua New Guinea, which, with 7.2m people is the largest Pacific Island state, has other sources of foreign exchange, including a $19 billion ExxonMobil liquefied-natural-gas project. But PNG's politicians are more likely to turn on the unpopular detention centre on Manus island. Relations with Australia are often frosty. In July the prime minister, Peter O'Neill, announced a ban on foreign (mostly Australian) consultants. Then PNG stopped Australian vegetable imports.

New donors, such as Indonesia and, most noticeably, China, are offering money to the island states. So island leaders have greater leeway to pursue independent foreign policies. But that too generates its own challenges. It is harder, for example, for regional groups such as the PIF to adopt a coherent policy towards pro-independence activists in Indonesian-ruled West Papua. Many Melanesians have instinctive sympathy for the freedom-fighters. But they are much less willing to antagonise Indonesia than to tell Australia and New Zealand to mind their own business. ■

Banyan | Hazing rituals

After all the meetings and promises, the smog in South-East Asia still proves ineradicable

OF COURSE there is an app for it. Air4ASEAN, produced by the Thai government, sends smartphones a pretty if depressing map of the parts of South-East Asia afflicted with "the haze", the foul smog that has been almost an annual curse for two decades now. It also offers data for each of the ten member countries of the Association of South-East Asian Nations (ASEAN). Tap "Indonesia", however, and the page that loads is one of several with nothing but the word "soon". That is apt. The haze emerged as a man-made catastrophe in 1997, when forest fires in Indonesia and Malaysia shrouded much of the region, causing severe disruption and untold damage to human health. Ever since, ASEAN, and in particular Indonesia, the biggest source of the haze, have been promising to tackle it. However, ASEAN's efforts have tested the organisation's aspiration to become more than a talking-shop among governments and to forge a co-operative "community".

ASEAN was designed precisely to foster the kind of regional co-operation that cross-border pollution seems to demand. And the scourge affects all its members. Smog caused by burning forests in Myanmar is now an annual event in northern Thailand. Last month Cambodia, Laos, Myanmar, Thailand and Vietnam, the ASEAN countries that share the Mekong river, met for the fifth time to discuss haze-prevention. It is, however, in the southern ASEAN countries—Indonesia, Malaysia and Singapore—that the smog has become perennial and seemingly insoluble.

This haze season is the first since Indonesia ratified the "ASEAN Agreement on Transboundary Haze Pollution", 12 years after it was signed, and launched its "one map" initiative, a cartographic exercise which was supposed to make it clearer who owns the land where fires are burning. This would give teeth to a "Haze Monitoring System" which ASEAN introduced in 2013. But if it knows whose land the fires are on, Indonesia is not telling its neighbours. Simon Tay and Lau Xin Yi of the Singapore Institute for International Affairs, a think-tank, lamented in an article this month that "the progress and co-operation" of past years may now be receding. It did not help that earlier this year Indonesia's vice-president, Jusuf Kalla, castigated Singaporeans for complaining about the haze instead of thanking Indonesia for the 11 months a year when they enjoy "nice air from Indonesia".

In little Singapore such comments evoke a deep-seated fear of being at the mercy of its huge neighbour. And now the smog is back. The island's Pollution Standards Index (PSI), which measures air quality, has been creeping into the "unhealthy" level of over 100, reaching a three-hour average of 137 on September 10th. So far this year's haze has been mild compared with 2013, when the PSI briefly passed 400 (above 300 is considered "hazardous"). Yet the level is still alarming for a regional hub that relies on providing a pleasant and healthy place to live, in comparison with, for example, more polluted Hong Kong. Last year Singapore passed a law enabling legal action to be brought in its own courts against those accused of poisoning its air.

Singapore's murky air is still pristine compared with the pea-souper choking parts of Sumatra, the big Indonesian island nearby. In Riau province, in the north of Sumatra, the PSI reached 436 on September 3rd. Poor visibility closed the airport, and children were kept home from school. In all, six provinces in Sumatra were put on "emergency alert" as hundreds of "hotspots" of burning trees and vegetation flared and smouldered. They were being fought with water-bombing from helicopters and cloud-seeding aeroplanes. On September 10th more than 1,000 soldiers were deployed to fight fires. Four days earlier Indonesia's president, Joko Widodo, visited South Sumatra, one of the worst-affected provinces. Mr Joko said he had ordered the police to get tough on companies found to have started the fires, with a new task-force formed to co-ordinate the battle of the fires. But he sounded exasperated: "Everyone knows what needs to be done."

He had a point. Everybody knows the fires are lit as the cheapest way of clearing land for farming or a plantation—especially for oil palm. Some burn out of control and some, on peatland, can smoulder underground for years, flaring up during a prolonged dry spell (linked, this year, to the Pacific-wide El Niño phenomenon). Everybody also knows that the solution is not to find more effective ways to fight the fires, but to stop them being lit in the first place. That means making sure everybody knows how much harm they do, as well as changing the firelighter's calculation of risk and reward. Peter Holmgren of the Centre for International Forestry Research, with its headquarters in Indonesia, sums up the solution in two words: propaganda and prosecution.

Keeping the home fires burning

The propaganda seems to have worked at least among the big palm-oil producers, most of which now flaunt their green credentials, seeking to have their produce certified as "sustainable". Since 2011 Indonesia's government itself has imposed a moratorium on clearing primary forest and peatland for plantations. And the police in Sumatra have this year caught 39 people suspected of illegal land-burning. Yet the remnants of what just a generation ago were vast swathes of virgin rainforest still smoulder and flame. Oil palm remains a lucrative crop. Powerful interests perhaps still profit too much from the fires, and local governments fail to implement orders issued from Jakarta, the capital. The central government may be failing to share information simply because it does not have it.

Even if it is wilfully secretive, ASEAN cannot realistically enforce disclosure. Its guiding principle is not to meddle in its members' internal affairs. All it can do is embarrass them, and invoke "the ASEAN way" of consensus and co-operation. But Indonesians are suffering the worst of the haze. If their government cannot solve the problem for them, it is unlikely to be shamed into doing so for the sake of gasping Singaporeans and Malaysians. ■

Also in this section

58 Buddhists releasing animals

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Local-government debt

Looking for ways to spend

CHANGZHOU

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.

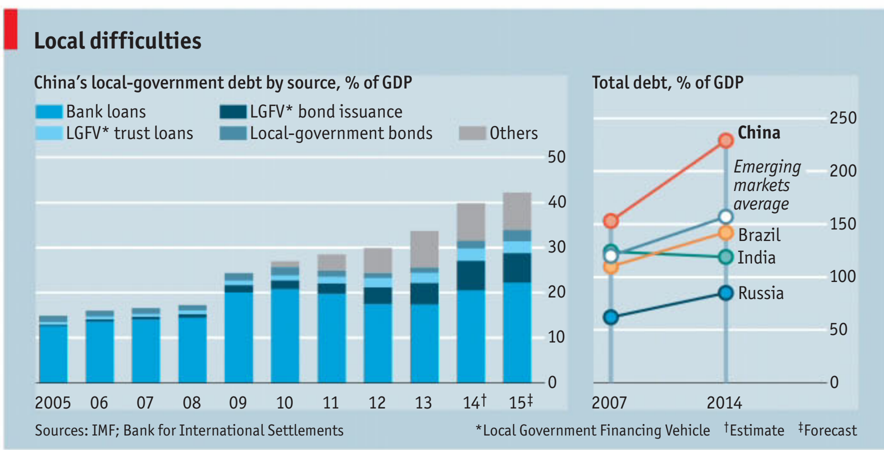
Few homes for Chinese senior citizens have the pedigree of Ensen Care, a subsidiary of Legend Holdings, owner of Lenovo, one of the world's biggest computer manufacturers. The old-age home in Changzhou, a city of 4.7m west of Shanghai, is a pilot project designed to demonstrate what can be achieved when 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 ▸▸



Sources: IMF; Bank for International Settlements
*Local Government Financing Vehicle †Estimate ‡Forecast

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 on previous page). 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. ■

A religious revival

Animal spirits

SHANGHAI

Releasing animals into the wild is in vogue—with unwelcome consequences

EVERY Saturday morning hundreds of devotees gather by Shanghai's Huangpu river to liberate fish. Over three hours some 2,000 loach are tipped into the murky waters to the sound of chants.

This is *fang sheng*, or "animal release", an East Asian Buddhist ritual in which captive creatures are freed. The point is to demonstrate compassion and earn merit. The practice is ancient, though along with everything else, it was condemned as so much superstition under Mao Zedong. Today *fang sheng* is making a comeback, especially among the young and well-off. Officials estimate around 200m fish, snakes, turtles, birds and even ants are released each year—though no one really has a clue.

Fang sheng associations can rake in around 1m yuan ($157,000) in annual donations. For some monks it has become a racket. The greatest price, however, is paid by the animals themselves and the ecosystems from which they come and into which they go.

A vast and mainly illegal wildlife trade caters to the demand for animals. Figures are hard to come by, but one paper estimated that in Hong Kong two markets sold over 630,000 birds a year, most destined for *fang sheng*. Many animals—perhaps half of all the birds—die during capture or transit from stress, disease or mishandling.

Nor does using reared or exotic species help. They create havoc in local ecosystems. Zhou Zhuocheng, chairman of China's main body on aquatic ecology, cites the case of the mosquito fish from North America, a popular fish for *fang sheng*. It feeds on the eggs of the native Japanese rice fish, causing the latter to disappear completely in some areas. To add to the grimness, many animals, once released, are hoovered up and sold again to fresh devotees. Animals that do not survive the trauma are often sold as food.

Wang Tianbao, a 26-year-old programmer and evangelical Buddhist, admits that paying for animals that have only recently been released is "a waste of money". Yet still he is prepared to spend oodles on *fang sheng*, through whose associations he can disseminate Buddhist information and reach new followers. He says he first practised *fang sheng* as a student, releasing two turtles that cost him 98 yuan, his food budget for three weeks. Today he spends 5,000-7,000 yuan, or about 5% of his annual salary. There may just be better ways to earn merit.

The Huangpu: hardly loach heaven

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CALI

The wild ancestors of the world's most important crops could help avert devastating problems. But time is running out to collect them

IN THE early 1970s Asia's rice farmers faced ruin. The brown planthopper, an insect up till then found mostly in Japan, began to appear across the region. It fed on young plants and transmitted grassy stunt virus, causing crops to shrivel and brown. As it swept through Asia's paddy fields, yields crashed. By the end of the decade it had caused damage costing over $300m—more than $1 billion in today's money.

Scientists raced to find a solution. They screened over 6,000 samples of rice and its wild relatives until they found a unique sample from central India of a wild species called *Oryza nivara* that was resistant to the virus. By crossing it with domesticated rice strains, plant-breeders transferred the resistant genes into a new variety. Today, millions of farmers across Asia grow rice derived from such crosses.

"Crop wild relatives"—the wild ancestors of cultivated plants—are a valuable weapon in the fight against hunger. Together with varieties used by traditional farmers, they contain a wealth of genetic diversity. Yet they are under-researched and under-collected. With their survival threatened by population growth and environmental damage, the race is on to find them before it is too late.

Climate change is expected to cause higher temperatures and more frequent droughts, changing the distribution of pests and diseases. Population growth will add to the pressure on productive land: the UN expects the number of people in the world to rise from 7.3 billion today to 9.7 billion by 2050. This, together with a switch to more meat-eating, will mean a big increase in the demand for food. The UN Food and Agriculture Organisation (FAO) says humanity will need 70% more food by then.

Dependence on a few staples worsens the consequences of any crop failure. Just 30 crops provide humans with 95% of the energy they get from food, and just five—rice, wheat, maize, millet and sorghum—provide 60%. A single variety of banana—Cavendish—accounts for 95% of exports. A fast-spreading pest or disease could see some widely eaten foodstuffs wiped out.

That makes it even more important to preserve the genetic diversity found in crop wild relatives and traditional varieties as an insurance policy. Alas, much of it has already disappeared. The FAO estimates that 75% of the world's crop diversity was lost between 1900 and 2000. As farming intensified, commercial growers favoured a few varieties of each species—those that were most productive and easiest to store and ship.

According to Cary Fowler of the Global Crop Diversity Trust, an international organisation based in Germany, in the 1800s American farmers and gardeners grew 7,100 named varieties of apple. Today, at least 6,800 of them are no longer available, and a study in 2009 found that 11 accounted for more than 90% of those sold in America. Just one, "Red Delicious", a variety with a thick skin that hides bruises, accounts for 37%.

Meanwhile urbanisation, pollution, changing land use and invasive species are threatening the crop wild relatives that survive. A study in 2008 concluded that 16-22% of those related to peanuts, potatoes and cowpeas (a legume grown in semi-arid tropics) will have vanished by 2055 as a result of climate change.

Seed banks are the best hope of preserving those that remain. Dehydrating and freezing seeds means that they can be kept for hundreds, perhaps even thousands, of years, and still sprout when given light and water (as botanists need to do on occasion). Some 7.4m samples are already in seed banks around the world, but huge gaps exist.

Unbalanced diet

As part of a study to be published later this year, Colin Khoury and Nora Castañeda-Álvarez of the International Centre for Tropical Agriculture (CIAT), a research facility in Colombia, studied the state of conservation of more than a thousand crop wild relatives in seed banks. They found that for over 70% there were either too few samples for safety or none at all.

The Millennium Seed Bank (MSB) in Sussex, part of Britain's Royal Botanic Gardens, is the world's largest wild-plant seed bank, housing 76,000 samples from more than 36,000 species. It co-ordinates "Adapting Agriculture to Climate Change", a $50m, ten-year international programme funded by Norway to collect and store wild relatives of 29 important crops, cross them with their domesticated kin and share the results with breeders and farmers. Its freezers are solar-powered and its vault is built to withstand a direct hit by a plane (Gatwick airport is close by). Other seed banks are more vulnerable. Staff at the International Centre for Agricultural Research in the Dry Areas, an institute once based in Syria, now found in Lebanon, shipped 150,000 samples to save them from being damaged in the former country's civil war; seed banks in Afghanistan and Iraq have been destroyed. The Philippines lost one to fire.

Located in Cali, Colombia's third-largest city, CIAT is home to more than 300 scientists. It has a mandate from the UN to protect, research and distribute beans and cassava, staple foodstuffs for 900m people around the world. Its seed bank, housed in a former abattoir, contains over 36,000 samples of beans, more than any other seed bank, and varieties developed there feed 30m people in Africa.

For many years CIAT's researchers concentrated on creating varieties that could cope with poor soils and drought. But they have now turned their attention to heat resistance. Earlier this year they announced that they had found heat resistance in the tepary bean, a hardy cousin of the common bean cultivated since pre-Columbian times in northern Mexico and America's south-west. Crosses with commonly cultivated beans such as pinto, black and kidney beans show potential to withstand temperatures up to 5°C higher than those common varieties can cope with. Even a lesser increase in heat resistance, of 3°C, would mean beans could continue to be cultivated in almost all parts of central and eastern Africa, says Steve Beebe of CIAT's bean-breeding programme.

Big agricultural firms are also creating improved crops with the aid of genetic modification. MON863, for example, a maize variety engineered by Monsanto, contains an artificially inserted protein which targets the larvae of the rootworm, a pest which causes around $1 billion of damage each year in America alone. But developing such varieties has been expensive and slow in the past—and the fear of "Frankenstein food" can put consumers off. New varieties produced by crossing crop wild relatives are cheaper and less controversial.

In recent years politicians have stepped up efforts to conserve crop genetic diversity. The International Treaty on Plant Genetic Resources for Food and Agriculture, which came into effect in 2004 and has been signed by 135 countries and the European Union, identifies 35 food crops that are considered so important to global food security and sustainable agriculture that their genetic diversity should be widely shared. But it has worked less well than hoped. In 2013 a group of Norwegian researchers sent letters to 121 countries requesting seeds. Only 44 complied. Communication broke down with 23 and 54 did not even reply.

If a big crop were to fail, a single useful gene lurking in one wild relative could prevent calamity. PWC, an accountancy firm, values the genes derived from the wild relatives of the 29 crops regarded as most important by the MSB at $120 billion. Preserving the genetic diversity that remains would be an excellent investment. ■

Botany and bureaucracy

A dying breed

Specimen-hunting has become less dangerous, but takes persistence

PLANT-COLLECTING has long attracted mavericks with a thirst for adventure. In Borneo in the 1960s John Wood, now at Oxford University, had to shave leeches off his legs with a machete. In the 1970s, at the outbreak of Lebanon's civil war, Geoff Hawtin, now a trustee of the Royal Botanic Gardens in Kew, drove a collection of legumes down a mined road to the Syrian border (and back again when he found it was closed). In the 1980s Daniel Debouck, a Belgian bean-collector based in Colombia, narrowly escaped capture by *narcos* in Mexico and guerrillas in Peru.

Botanists think there are up to 80,000 wild species of flowering plant left to discover. But a scarcity of funds hampers efforts to collect them. The UN Convention on Biological Diversity of 1992, ratified by 195 states and the European Union, made things more complicated. It recognised plants as part of countries' national heritage and outlawed "biopiracy"—profiting from plants without compensating the countries in which they were found.

Not for pansies

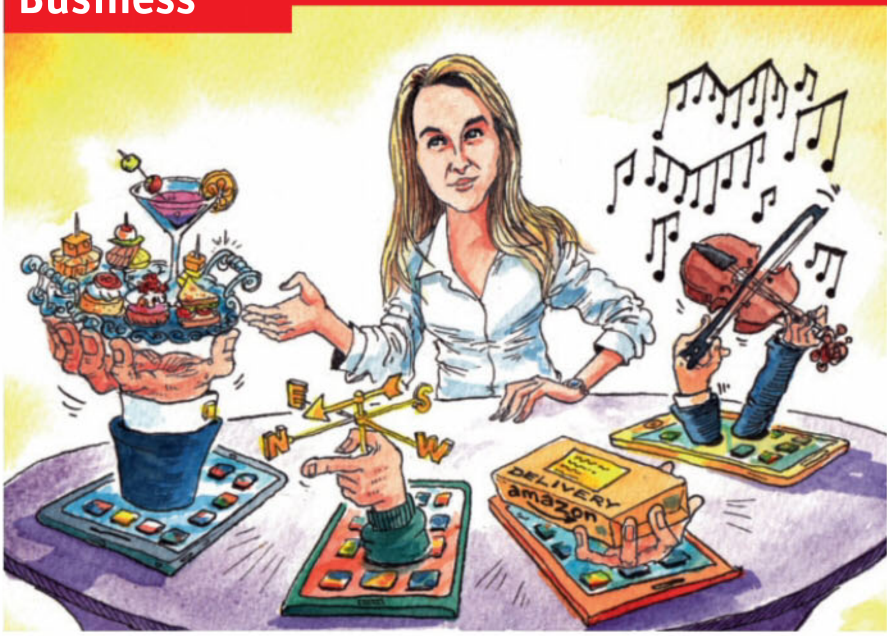
That made exploiting plants fairer but collecting them harder. Some officials saw a chance to get rich. "Suddenly everyone thought these plants were incredibly valuable," says Mr Hawtin. Getting permission to go on a collecting trip became nearly impossible. "Anybody could say no to a collecting expedition and very few people could say yes."

Permits became *sine qua non*, but in poorer countries the environment ministries that were expected to issue them did not always exist. Collectors might see their applications bounced from one department to another, each unwilling to wield its rubber stamp. "No one wanted to be accused in their local paper of helping the biopirates," says Mr Hawtin.

Persistent botanists have since earned some governments' trust. It is now much easier to get approval for expeditions than it was in the 1990s, though often with restrictions on what may be collected. "Things are much better now than they were ten years ago," says Sandy Knapp, head of the plants division at the Natural History Museum in London. A three-year permit from the Peruvian government allows her to collect specimens of Solanaceae, the family that includes tomatoes, potatoes and aubergines.

Cutting through red tape can be easier with the help of locals. "When you're talking to landowners trying to get permission to collect, it helps to have someone who can speak the language," says Ruth Eastwood, who oversees the Crop Wild Relative Project at Britain's Millennium Seed Bank. That is one reason institutions that once sent collectors to the tropics have started to train people who already live there. Another is that familiarity with the landscape means that they can often spot subtle differences between plants that outsiders miss.

The Millennium Seed Bank now holds workshops in many countries on collection and conservation techniques. It collaborates on expeditions and produces guidebooks to help locals locate and collect seeds for themselves. Yet some countries persist in imposing self-defeating restrictions. India's biodiversity law, passed in 2002, makes exporting seeds very difficult and sits poorly with its international obligations. If governments fail to understand the urgency of preserving—and sharing—their biodiversity, there may soon be precious little left to collect. ■



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Virtual personal assistants

The software secretaries

SAN FRANCISCO

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, next page). 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. ■

The big four

Virtual personal assistants

Siri *(Apple, 2011)*
Like others, can search for information, send text messages by voice, play music, book restaurant tables and more. Has a sense of humour, but struggles with speech recognition and more complicated requests. Free on Apple devices, not available on Android.

Google Now *(Google, 2012)*
Probably the best virtual assistant for the largest number of people, given the popularity of Gmail and Google Calendar, with which it integrates. Can find information and fulfil requests, and uses "cards", which push reminders and useful information to users. Integrates with some third-party apps. Available on Android and Apple devices.

Cortana *(Microsoft, 2014)*
Good at voice recognition. Can read calendar and screen phone calls, and is proactive with reminders. Integrated across Windows devices, desktop and mobile. But limited availability beyond Microsoft products.

Echo *(Amazon, 2014)*
Strong understanding of voice commands from a distance. Unlike rivals wants to be a hub for the "smart home". Makes it easy to order items from Amazon through voice commands. Open to third-party developers. Costs around $180, whereas competitors are free.

Android in China

The lure of the mobile kingdom

Re-entering China will be hard for Google, but it may still try

"IT'S all speculation." Google's reaction to reports that it is in talks with officials and handset-makers to launch an app store in China is no surprise. Such a move would be a high-profile reversal: in 2010 the firm shut down most of its Chinese operations or shifted them to Hong Kong in reaction to government demands to censor online-search results. Even so, on September 8th the firm did take a tentative step back into the country: Motorola, its former handset unit (now owned by Lenovo, a Chinese firm), launched the first smartwatch supported by Google and powered by its operating system, Android, that understands Chinese voice commands.

It would be remarkable if a company like Google (whose parent firm's chairman, Eric Schmidt, is a director of the Economist Group) were not carefully considering the pros and cons of going back into China in a bigger way. Although its growth has slowed, the country is now the world's biggest mobile-device market, with more than 400m smartphones expected to be sold there this year. Having no presence in China is a serious handicap in the battle with other tech giants, notably Apple.

Google's absence from China is threatening its control of Android. Elsewhere, the operating system usually comes bundled with the firm's mobile services, such as the app store and digital maps. Handset-makers which want Google's stamp of approval have to install these services on their devices and present them prominently. In China, since those Google services are unavailable, manufacturers use open-source versions of Android, which they can adapt as they see fit. As a result, the country's mobile market is much more fragmented, but also more competitive and innovative. It boasts hundreds of app stores. Handset-makers, in particular Xiaomi, differentiate their products by, among other things, integrating them with local mobile services. Messaging apps such as WeChat have evolved into rival platforms which host many services similar to Google's.

Not only are all new Android phones sold in China powered by a version of the software which is not certified by Google; the Chinese model is also now spreading to other developing countries, in particular India. Xiaomi, for instance, has big plans there. Teaming up with a big Chinese handset-maker, such as Huawei or ZTE, could help Google to stem the non-Google Android tide—not just in China, but everywhere else.

Yet becoming a force in China's mobile market would be a struggle—for the same reason Microsoft has failed to make it big in smartphones, despite spending billions. It is very hard to establish a mobile ecosystem of developers and handset-makers in a market where other firms—not just Xiaomi, but Baidu, Tencent (which operates WeChat) and others—are entrenched.

There is still the small matter of reaching an accord with the Chinese government. According to *The Information*, the website that first reported Google's putative app-store plans, the firm would block apps deemed objectionable and limit certain features, such as location information. Even then, the government might prefer to keep Google out of China—after all, its absence has been a boon for local champions. "We are open to newer approaches. We'll have to wait and see," Sundar Pichai, Google's new chief executive, said when asked about China recently. The firm whose motto is "Don't be evil" may be unable to resist returning to a country that is no more virtuous than when it left. ■


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Glencore and commodity traders

Nowhere to hide

Not such a copper-bottomed investment

Glencore's woes put the spotlight on an industry unused to scrutiny

SWITZERLAND is famous for the inscrutability of its banks. Its commodity-trading houses, middlemen for more than a third of the world's oil and half of its coffee, are also about as murky as a mug of Nescafé. So when Glencore, once the epitome of a secretive trading firm, launched the biggest share offering in the history of the London Stock Exchange, in 2011, the crucial question was how it would handle the pressures of being a public company. On September 7th it gave an answer, of sorts. After a dismal share-price performance this year, it caught shareholders by surprise, by announcing a $2.5 billion share issue and suspending the dividend. Although such moves normally send a company's shares crashing, Glencore's rose in reaction, out of relief that it was taking action to restore its battered finances.

The main cause of the firm's woes is its ill-timed reacquisition in 2013 of Xstrata, an Anglo-Swiss mining firm it had once spun off. That catapulted it into the mining big leagues just as slowing Chinese demand for raw materials was signalling the end of the commodities boom. By merging its trading division with a mineral powerhouse, it hoped that it could guarantee a steady supply of copper, coal and other raw materials to its clients around the world. Instead it made what amounted to a bet on metals prices, something that purer traders, who strive to make money by hedging deftly even in falling markets, have traditionally shunned. When China's growth engine sputtered, prices—and profits—tumbled.

Since then Glencore's cash-flow forecasts have gone so awry that it is now promising "drastic" steps. It said it would shut copper mines in the Democratic Republic of Congo and Zambia, removing 400,000 tonnes from global supply over an 18-month period, to try to push prices higher. Its share sale and dividend suspension were part of a pledge to cut its $30 billion in debt by a third to avert a ratings downgrade that could threaten the cheap borrowing its trading division depends on. Ivan Glasenberg, Glencore's boss, remains defiant about the wisdom of the Xstrata takeover. Yet not even the trading division performed as well as he had promised in the first half of its financial year.

Mr Glasenberg's oil-and-metals competitors are having a quiet chuckle at his expense. Unlike Glencore, big oil traders like Trafigura and Mercuria, also Swiss-based, have reported solid profits as price volatility has increased over the past year. "A lot of them are looking at Glencore and saying, 'There but for the grace of God go I'," says Craig Pirrong of the University of Houston, who last year wrote a study of the commodity-trading firms sponsored by Trafigura. According to Mr Pirrong's data, Glencore was the most asset-heavy trading firm even before the Xstrata takeover, and has more "upstream" assets, such as mines, than most of its peers.

Yet even those for whom trading remains their bread and butter are being pushed into the more capital-intensive businesses of extracting, transporting and refining raw materials—which, besides making it harder for them to raise profits at times when commodity prices are falling, is likely to increase the public attention they get. Alexander Franke of Oliver Wyman, a consulting firm, says that as markets in far-flung places become more liquid, and data more abundant, trading margins shrink. That encourages firms to seek ways to handle bigger volumes more cheaply, by buying storage tanks, export and import terminals, and other bits of the supply chain. Some have bet heavily on "downstream" facilities, such as fuel distribution. Trafigura's Puma division, for example, has bought such businesses from BP in Africa and ExxonMobil in Latin America. Like Glencore, such capital-hungry businesses may have to tap public markets. Trafigura, for one, is considering listing Puma shares.

More discomfiting scrutiny is on the way. After American regulators, and stricter capital requirements, pushed many Wall Street banks out of the commodities business, European regulators are this month expected to announce rules that treat commodity traders like banks, imposing more transparency on, and requiring more capital against, their derivatives positions. Noble Group, a big Hong Kong-based commodities house, has come under attack from short-sellers after questions were raised about its accounting practices. Regulators are also cracking down on commodity firms' undisclosed payments to foreign governments. For now, Glencore's peers may relish its public agony. But the spotlight is turning on them too. ■

Spanish family firms

Opening up

MADRID

A debt hangover is forcing some family firms to seek outside help

OUTSIDE scrutiny is not something that El Corte Inglés is used to. Europe's largest department-store chain, with annual sales of more than €14.5 billion ($18.5 billion), has until now been entirely in the hands of relatives of its founder, Ramon Areces, and of employees. However, a row has burst into the open over its board's recent decision to sell a 10% stake to a Qatari investor for €1 billion.

El Corte Inglés joins a steady stream of debt-burdened Spanish companies that have brought in new investors to repair their balance-sheets. The retailer will remain in the grip of the family: its boss, 39-year-old Dimas Gimeno, took over last year from his long-serving uncle. But its new shareholder, Sheikh Hamad Bin Jassim Al Thani, a former prime minister of Qatar, will get a seat on the board.

Not everyone was happy. Corporación Ceslar, a vehicle for some Areces family members which has a 10% stake, publicly accused the board of selling on the cheap. ▸▸

Other conditions attached to the deal may allow Sheikh Hamad to increase his stake to as much as 15.25%. But other family members backed the proposal, and Ceslar's representative was ejected from the board in a Sunday-afternoon meeting in August, as punishment for its indiscretion.

The Areces family is not the only Spanish business dynasty to have sought succour from others with deeper pockets. In December Carlos Slim, Mexico's richest magnate, became the biggest shareholder in FCC, with 25.6%, after the construction group repaired a hole in its finances with a €1 billion rights issue. The deal diluted the stake of Esther Koplowitz, the daughter of the firm's founder, and hitherto the biggest investor. Mr Slim has now installed his man as CEO. The Polanco family's stake in Prisa, publisher of *El País*, a daily, has been cut severely to just under 11%. The founding family of Codere, a gambling firm, has agreed to hand control to bondholders.

More such deals are in the works. Shares in Abengoa, an engineering company, have plummeted since July, over fears about the sustainability of its debt. Abengoa plans to ask shareholders for €650 million (nearly two-thirds of its market value) in fresh capital. There are worries that this may not be enough. The vehicle of the founding Benjumea family has 56% of the votes through super-voting shares and will contribute, though how much is unclear. The Villar Mir family is aiming to retain at least 50% of OHL, a builder, after it raises €1 billion in the next few weeks, to repay debt.

Why now? The capital raisings come at a time when Spain's economy is picking up—it may grow by 3.3% this year. In the year to February, El Corte Inglés enjoyed a rise in sales for the first time since 2010. However, Spain's banks are tightening the screws on overindebted borrowers, forcing firms to seek other means of refinancing themselves. Spanish corporate debts are down from a peak of 133.7% of GDP, but they are still high, at just over 110%. At the height of the crisis, banks preferred to refinance weak borrowers rather than own up to losses. Now that lenders have more robust capital levels and fatter profits, they are less willing to "extend and pretend".

The hope was that the end of recession would bring relief. But some industries, like construction and renewable energy, seem unlikely to return to boom-time levels of activity. So some firms and their creditors are taking advantage of changes in Spain's corporate-insolvency regime which make it easier to reach agreements on write-offs and debt-for-equity swaps.

Not all Spanish business clans have had to sell some family silver. Mercadona, a supermarket chain run by Juan Roig, the son of its founders, is thriving, for example. But for those that do have to accept outside investors, it may be a blessing in disguise.

Special offer: €1 billion for a 10% stake

New shareholders can encourage inward-looking family firms to think and act globally, says Manuel Bermejo of IE, a business school. Having an investor such as Sheikh Hamad—who oversaw the Qatari sovereign-wealth fund's purchase of Harrods, a British department store—could help El Corte Inglés evolve in the era of online retailing, and perhaps prepare the ground for a future stockmarket flotation. The retailer will need more capital to achieve its long-held ambition to expand abroad. The family's grip may loosen further. ■

E-commerce in India

Stack and deliver

BANGALORE

Urban Ladder's rise shows the potential for online selling in India

ASHISH GOEL, a founder of Urban Ladder, an online furniture retailer, is fond of the story of Rose Blumkin, who in 1983 sold a big stake in her furniture store to Warren Buffett, a fellow resident of Omaha, Nebraska. Mr Buffett's deal with "Mrs B" was set out on a single piece of paper, notes Mr Goel with admiration. The term-sheets of the four rounds of capital-raising Urban Ladder has been through in its short life were probably not so simple. Mr Goel is struck by another contrast. The Omaha Furniture Mart that Mrs B started has more floorspace than all of India's registered furniture retailers combined.

Retailing of the bricks-and-mortar sort is a highly fragmented business in India. Only around 2% of the grocery trade, for instance, is carried out in supermarkets with wide aisles and tiled floors. Grocery shopping is mostly done at small family-owned kiosks, known as kiranas, or at kerbside stalls. Small sellers similarly prevail in furniture retailing. Mr Goel reckons the largest supplier accounts for just 0.3-0.4% of the $25 billion-a-year home-decor market, a category that includes furniture, curtains, rugs and the like. Plots of land for big showrooms are hard to come by in congested India. Furnishing a home is thus an ordeal requiring multiple trips on gridlocked roads to various small retailers.

When Mr Goel bought a home in Bangalore (Bengaluru) he struggled to furnish it. So with Ravi Srivatsa, he founded Urban Ladder for "people like us" who will pay 40,000 rupees ($600) for a good-quality three-seater sofa or 13,000 rupees for a teak-finish television unit, but who cannot find such products.

Urban Ladder began in July 2012 with 35 products. Initially it pledged to supply all over India, by using third-party logistics firms to deliver beyond Bangalore. But after just 40 days it had to backtrack. It had created a good buzz around its local market, where it made its own deliveries, but received complaints elsewhere. The founders realised that they needed to control the quality of the delivery service if their firm was to become a trusted brand. They withdrew delivery from everywhere but Bangalore and, two weeks later, opened satellite depots in Mumbai and Delhi.

These days, Urban Ladder offers 3,500 products, mostly own-brand goods made by others. It delivers to 18 cities, a figure that will soon rise to 30. Ensuring there are enough goods in stock is a headache. Furniture is bulky and comes in odd shapes, so it needs a lot more storage space than the smartphones and T-shirts that are the stock-in-trade of many other e-tailers. Sales are growing so quickly that it is hard to forecast how much space is needed, says Kaustabh Chakraborty, head of operations. Last September the firm took out a year-long lease on a bigger warehouse on the outskirts of Bangalore. At first it required only 60% of the floorspace but soon filled all of it. In February it annexed a nearby warehouse.

In the centre of the main building, a 30-strong team checks outgoing goods, touching up paintwork or filling gaps in the woodwork. The firm has a second main depot close to Jodhpur, a furniture-making hub in India's north. Mr Chakraborty aims to hold an average of three months' sales in stock and trucks goods between depots to balance the inventory. He is scoping out new premises. "It takes two months to find space and four months to fill it," he says.

India's furniture market itself is becoming more crowded. IKEA of Sweden recently acquired land in Hyderabad for a bricks-and-mortar store, its first in the country. Urban Ladder's close online rival is Pepperfry, founded in 2012 by two former eBay executives, which recently raised $100m of fresh capital. There are some smaller online specialists, such as Iqrup + Ritz, an outfit near Delhi that sells high-end furniture with an average price of 100,000 rupees. It has a "studio" showroom, with a limited range on display, to give customers a feel for the quality of its wares. Urban Ladder also lets customers see before they buy: more than half of its shipments are paid for on delivery; customers can inspect them first, and turn them away if dissatisfied.

Old-timers sniff at the hype around e-commerce in India. There are pots of venture-capital cash chasing deals. The rivalry between Flipkart and Snapdeal, the two best-known general e-tailers, is daily fodder for the business press. Yet the hoopla is in part justified. Half of India is aged 27 or less. Such consumers should take to shopping by smartphone more readily than in most places. And India's bitty retail industry starves shoppers of recognised names they can trust. Selling online is a way to build a retail brand quickly in a place where there are still far too few of them. That goes for furniture as much as anything else. ■

AirAsia

A turbulent patch

KUALA LUMPUR

Storms batter a South-East Asian success story

POSING for photographs in Jakarta last month Tony Fernandes, the well-built boss of AirAsia, hoisted one of his passengers aloft. The uplifted Indonesian, a thirty-something art director returning from a trip to Kuala Lumpur, was the 300-millionth traveller to be carried by Mr Fernandes's gutsy Malaysian airline since its founding in late 2001. In its short life AirAsia has propelled a breakneck expansion of low-cost air travel in South-East Asia, home to some of the world's fastest-growing economies. But after a decade of success it is now flying in thinner air.

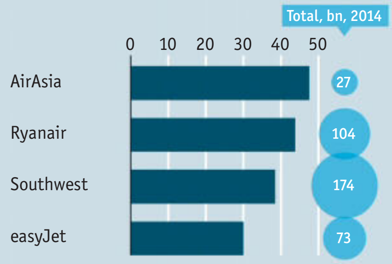
AirAsia grew out of a failing state-owned firm which Mr Fernandes, a British-Malaysian entrepreneur with a background in the music business, bought from the Malaysian government for one ringgit (then about $0.26). He and his business partners inherited only two planes and debts of around $11m; today its roughly 200 red-liveried aircraft reach 100 Asian and Australian cities, flying from bases in Malaysia, Thailand, Indonesia, the Philippines and India. In the past five years annual passenger numbers have more than doubled, to around 50m.

That makes AirAsia the busiest Asian airline outside China, and the biggest low-cost carrier in the world after Southwest of the United States, Ryanair (Ireland) and easyJet (Britain). But it has grown faster than those three, and in a poorer and more complex market, notes CAPA, an aviation-research firm. Protectionist policies in many South-East Asian countries mean that AirAsia's operations outside Malaysia have to be run by joint ventures with local investors. Having to wrangle all those deals has made Mr Fernandes an influential champion of regional integration, which may one day help other border-hopping firms to thrive.

Steep ascent

Revenue passenger kilometres

2010-14, % increase



Source: Company reports

Lately, however, AirAsia has faced strong headwinds. After years of double-digit expansion, its passenger numbers grew by only 6% in the first half of 2015; at the end of 2014 the airline posted its first net quarterly loss since 2008. The turbulence comes partly from years of over-optimism among many South-East Asian airlines, which has led to a glut of seats. A coup in Thailand has depressed tourism there, and political drama in Malaysia is exacerbating a rout on the ringgit (down by about 26% in a year), which is making the firm's dollar-denominated costs, such as fuel and planes, much more expensive. AirAsia is also battling the Malaysian airport authority, arguing that poor construction of its new hub in Kuala Lumpur has put up the cost of flight operations.

The current problems in Malaysia and Thailand, where the company usually makes good profits, have only heightened worries about its operations elsewhere, which all run at a loss. It entered the Philippines fairly late, by which time competition from other low-cost outfits was fierce. Indian lawmakers have retained costly restrictions on foreign airlines, despite hopes that these would be ditched.

AirAsia's slick website, an advantage in many places, is less help in Indonesia, where ticket offices and travel agents remain well-used—and where airports' short operating hours limit landing slots. The crash in December of a flight leaving Surabaya, the country's second city, hurt the carrier's reputation for being safer than alternatives. And Indonesian regulators can be fickle: they have recently threatened to ground AirAsiaX—a fragile-looking long-haul carrier listed independently of its sister firm—for failing to meet a local requirement to have at least ten planes in its fleet.

All these concerns came to a head over the summer, when GMT, a research firm, criticised AirAsia's accounting practices—arguing that deals with its associates, such as aircraft leases, were flattering the head firm's profits. AirAsia said it has always been transparent; the report revealed "nothing new" to industry analysts, reckons Brendan Sobie of CAPA. But investors still dumped its shares, which have lost about half of their value since June 1st.

A few trends could help AirAsia avoid more turbulence. The full benefits of cheaper oil, which were limited by AirAsia's hedging this year, may be felt in 2016. Meanwhile the shrinking of Malaysia Airlines, which is regrouping after two big air disasters, could allow prices on some routes to rise. Having appeared distracted by other ventures, such as a London football club and a Formula One motor-racing team, Mr Fernandes promises that AirAsia has his attention. Its Philippine and Indonesian associates are said to be planning to recapitalise by raising at least $200m in bonds.

AirAsia's outlook now hinges on a restructuring in Indonesia, reckons Tan Kee Hoong of AllianceDBS, an investment bank. Its losses there, 11 years after it began operations, highlight the challenge of imposing a common business model across South-East Asia's many tempting but fragmented markets. This year AirAsia will probably shrink its short-haul Indonesian fleet and withdraw from some domestic routes, on which it has struggled against LionAir, a home-grown rival.

Even if it sorts itself out, AirAsia may never manage to grab more than a smallish slice of the Indonesian market, by far the region's largest, reckons Shukor Yusof of Endau Analytics, a consulting firm. That would be a bitter blow to its ambitions. It might also mean that LionAir—which has plans to increase its fleet by two-thirds before 2018—overtakes it as the region's biggest carrier. AirAsia's "rocket-ship trajectory" is over, confirms CAPA's Mr Sobie. But a steadier airline may result. ■

Mitsubishi in Mexico

A covenant of salt

GUERRERO NEGRO

An unusual Japanese-Mexican venture runs into trouble with auditors

HALFWAY down Mexico's Baja California peninsula is a dazzling sight; the world's largest sea-salt plant, owned jointly by the Mexican government and Mitsubishi Corporation, Japan's largest trading house. Salt flats covering an area a third the size of Tokyo stretch as far as the eye can see, producing about half of Japan's salt imports. Its advocates say the raw material has a rare quality. The white crystals, dried by the sun, are drawn from seawater in an inlet of the Pacific coast so pristine that grey whales travel from the Arctic to breed there. Yet for all its allure, the place is immersed in a bitter dispute over how to value the world's only edible rock.

For millennia, salt has been among the world's most sought-after commodities. Roman soldiers, it is said, were sometimes paid in it. Animals trampled the outlines of today's roads looking for saltlicks. Though salt has as many as 14,000 industrial uses, from making detergents to de-icing roads, it is so cheap to make that the cost of getting it to market may be more than the cost of producing it. Yet, Mitsubishi, which for almost 40 years has had exclusive rights to buy the Mexican salt and sell it around the world, has at times acquired it at below even its paltry production cost.

This year, Mexico's federal audit body, the ASF, highlighted what it said were inequalities in the relationship between Exportadora de Sal (ESSA), 51%-owned by the government, and Mitsubishi, with 49%. These, it said, had in recent years cut ESSA's profits to Mitsubishi's advantage, even as production volumes rose. It said that during 2013, half of 26 export contracts between ESSA and Mitsubishi were priced at between $10 and $15.03 a tonne, which was below that year's $15.25-per-tonne cost of production, in breach of Mexican law.

It noted that two Mitsubishi employees sat on ESSA's board, which has responsibility for approving prices, even though they also represented ESSA's main customer. It called this a presumed conflict of interest. (Since then, the roles of board member and company official have been split). Japanese employees provide all of ESSA's market research, liaise with the ultimate buyers of its product in Japan and oversee the quality of the salt. The auditor noted that they were also responsible for charging ESSA more than $10m for price adjustments, quality shortcomings and shipping delays in favour of Mitsubishi, though the Mexican firm could provide no justification for the penalties. In total, unexplained costs were the equivalent of almost nine-tenths of ESSA's 166m peso ($13m) net profit in 2013, the ASF said.

Given Mitsubishi's presence as a shareholder with board representation, the auditor says that ESSA ought to have had some mechanism for assessing its prices relative to international norms for salt exports, but it was found to lack one. The auditor said the average price of $17.50 a tonne paid by Mitsubishi in 2013 compared with data showing the price of similar salt in America and China ranging from $50 to $100 a tonne.

Mario Cantú, a government official who is ESSA's chairman, says such calculations are nonsense, because there is no internationally recognised price of salt; and the comparisons fail to reflect the huge disparity in transport costs between different regions. But when ESSA's former director-general, Jorge López Portillo, tried to bypass Mitsubishi last year and negotiated higher prices with other clients, he says he was fired by the government, along with several of his colleagues. Both he and the government have threatened to sue each other. (Mitsubishi has kept out of the spotlight, and did not respond to several e-mails from us requesting comment.)

ESSA is a rare beast: a state-controlled company whose minority shareholder is also its main client, in countries with very different business cultures, where diplomatic as well as commercial relations are at stake. What is more, the company that ships ESSA's salt to Japan and elsewhere is a 50-50 joint venture between Mitsubishi and the Mexican government. Mr López Portillo says the Japanese firm decides on the shipping costs, with its Mexican counterpart having little say in the matter.

In the industry at large, pricing is confusing, with values ranging widely from salt in solution costing as low as $8 a tonne to vacuum-processed salt, as used in the pharmaceuticals industry, costing $200—not to mention some gourmet French varieties that are priced like precious spices. According to Roskill, a market-research firm in London, Japanese customers who buy imported Mexican salt typically pay almost three times as much as the export price that Mexico earns from them, simply because of the shipping costs.

That said, the price of imported Chilean salt in the United States is only a fraction higher than the price at which it leaves Chile, even though it also has a great distance to travel. Yet, according to Mitsubishi documents, transport charges for Mexican salt from Baja California to the American west coast come to $16 a tonne—almost the same price as the salt itself.

Mr Cantú, who is also chairman of the shipping company, Baja Bulk Carriers, denies that its costs are too high. However, he acknowledges that Mitsubishi "plays with two hats" as both board member and client. "It's a very fine dividing line." He says a formula has been created to ensure ESSA no longer sells below cost price, and there are also discussions about changing the terms of the contract with Mitsubishi, or selling the government's stake altogether given that salt is hardly a strategic industry. If the government sells, Mitsubishi would be the most likely buyer—especially if it could acquire the remaining shares in ESSA as cheaply as it buys its salt. ■

A salty tale

Corrections: In our story about ENI last week, "Euregas!", we should have said that the firm's big find in Mozambique has 85 trillion cubic feet of gas, not 75 trillion. And in the Schumpeter column, "The Trump in every leader", we should have said that people "primed" for power are more likely, not less, to have sex without a condom. Sorry about the cock-ups.

Schumpeter | Digital Taylorism

A modern version of "scientific management" threatens to dehumanise the workplace

FREDERICK TAYLOR was the most influential management guru of the early 20th century. His "Principles of Scientific Management" was the first management blockbuster. His fans included Henry Ford, who applied many of his ideas in his giant River Rouge car plant, and Vladimir Lenin, who regarded scientific management as one of the building blocks of socialism. Taylor's appeal lay in his promise that management could be made into a science, and workers into cogs in an industrial machine. The best way to boost productivity, he argued, was to embrace three rules: break complex jobs down into simple ones; measure everything that workers do; and link pay to performance, giving bonuses to high-achievers and sacking sluggards.

Scientific management provoked a backlash. Aldous Huxley satirised it in "Brave New World" (1932), as did Charlie Chaplin in "Modern Times" (1936). A rival school of managers argued that workers are more productive if you treat them as human beings. But a recent article about Amazon in the *New York Times* suggests that Taylorism is thriving. The article claimed that the internet retailer uses classic Taylorist techniques to achieve efficiency: workers are constantly measured and those who fail to hit the numbers are ruthlessly eliminated, personal tragedies notwithstanding. Amazon's boss, Jeff Bezos, insisted that he did not recognise the company portrayed in the piece. Nevertheless, it provoked quite a reaction: the article attracted more than 5,800 online comments, a record for a *Times* article, and a remarkable number of commenters claimed that their employers had adopted similar policies. Far from being an outlier, it would seem that Amazon is the embodiment of a new trend, digital Taylorism.

This new version of Taylor's theory starts with his three basic principles of good management but supercharges them with digital technology and applies them to a much wider range of employees—not just Taylor's industrial workers but also service workers, knowledge workers and managers themselves. In Taylor's world, managers were the lords of creation. In the digital world they are mere widgets in the giant corporate computer.

Technology allows the division of labour to be applied to a much wider range of jobs: companies such as Upwork (formerly oDesk) are making a business out of slicing clerical work into routine tasks and then outsourcing them to freelances. Technology also allows time-and-motion studies to be carried to new levels. Several firms, including Workday and Salesforce, produce peer-review software that turns performance assessments from an annual ritual into a never-ending trial. Alex Pentland of the Massachusetts Institute of Technology has invented a "sociometric" badge, worn around the neck, that measures such things as your tone of voice, gestures and propensity to talk or listen. Turner Construction is using drones to monitor progress on a sports stadium it is building in California. Motorola makes terminals that strap to warehouse workers' arms to help them do their jobs more efficiently—but could also be used to keep tabs on them.

As stopwatch management continues to conquer new territory, so too does pay for performance. The more firms depend on the brainpower of their employees, the more they are seeking to reward their finest minds with high salaries and stock options. "A great lathe operator commands several times the wage of an average lathe operator," Bill Gates points out, "but a great writer of software code is worth 10,000 times the price of an average software writer." Many firms, including Amazon, apply the same Darwinian logic to their worst performers as well, in a process known as "rank and yank": workers are regularly ranked by productivity and the weakest are culled.

The reaction to the *Times* piece shows that digital Taylorism is just as unpopular as its stopwatch-based predecessor. Critics make some powerful points. "Gobbetising" knowledge jobs limits a worker's ability to use his expertise creatively, they argue. Measuring everything robs jobs of their pleasure. Pushing people to their limits institutionalises "burn and churn". Constant peer-reviews encourage back-stabbing. Indeed, some firms that graded their staff, including Microsoft, General Electric and Accenture, concluded that it is counter-productive, and dropped it.

The meatware fights back

The march of technology can cut both ways. The rise of smart machines may make Taylorism irrelevant in the long term: why turn workers into machines when machines can do ever more? The proliferation of websites such as Glassdoor, which let employees review their workplaces, may mean that firms which treat their workers as mere "meatware" lose the war for the sort of talent that cannot be mechanised. And Mr Pentland's sociometric badges have produced some counter-intuitive results: for example, in a study of 80 employees in a Bank of America call centre, he found that the most successful teams were the ones that spent more time doing what their managers presumably didn't want them to do: chatting with each other.

Even so, digital Taylorism looks set to be a more powerful force than its analogue predecessor. The prominent technology firms that set the tone for much of the business world are embracing it. Google, which hires a few thousand people a year from up to 3m applicants, constantly ranks its employees on a five-point scale. Investors seem to like Taylorism: Amazon's share price ticked upwards after the *Times*'s exposé. The onward march of technology is producing ever more sophisticated ways of measuring and monitoring human resources. And Taylorist managers are mixing the sweet with the bitter: Amazon's "Amabots", as they call themselves, seem happy to put up with micromanagement if they get a nice bonus at the end of the year. The most basic axiom of management is "what gets measured gets managed". So the more the technology of measurement advances, the more we hand power to Frederick Taylor's successors. ■

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The Federal Reserve

More red lights than green

The case for raising interest rates is worryingly hazy

PITY the central banker. When models of the economy go haywire, academics can retreat to their offices to fix them. But even when signals flash red, amber and green at once (see chart), central banks must continue to steer the economy. When the Federal Reserve's interest-rate-setters meet on September 16th-17th, there is a decent chance they will raise rates for the first time since 2006. The consequences of such a decision are shrouded in uncertainty, due to the strange behaviour of the American economy since the financial crisis.

*Gap between inflation-protected and regular five-year Treasury yields †Average hourly private-sector earnings ‡Workers who are unemployed, would like longer hours or have stopped looking for work

Source: Thomson Reuters

Before the crash, economic models said central bankers had a straightforward task. So long as inflation expectations stayed on target, the Fed could more or less focus on the labour market. High unemployment would allow firms to hire workers on the cheap, keeping their costs and prices subdued. A fizzier labour market would cause wages—and hence prices—to froth. The job of the central bank was to tweak rates to keep things in balance.

Yet in the six years since America's economy hit rock-bottom, it has defied this textbook model. In late 2009 unemployment reached a high of 10%. Such abundant slack should have caused inflation to disappear, but prices rose stubbornly. Today the opposite is true. The latest jobs figures, released on September 4th, showed unemployment falling to 5.1%—right in the middle of the Fed's estimate of the labour market's sweet spot. Yet inflation has vanished: the Fed's preferred measure stands at just 0.3%, well below its 2% target. At their recent annual conference in Jackson Hole, Wyoming, monetary-policy wonks pondered this puzzle. In the meantime, however, ratesetters have to act.

The central bank is not just navigating through a fog; it is steering with a delay. The Fed reckons it takes 18 months for changes in rates to have their full impact. As a result Janet Yellen, the Fed's chairman, has long emphasised that rates may rise before inflation is in sight. By early 2017, the Fed reckons, many of the causes of today's low inflation could have dissipated. The recent fall in oil prices, for instance, should depress prices only temporarily. The dollar's rise, too, should have a one-off impact: it is 16% stronger than a year ago, on a trade-weighted basis, which has made imports cheaper. If oil prices and currency markets now hold steady, inflation should rise.

That might coincide with a resurgence in wage-driven inflation, argue the Fed's hawks. There are no signs of this yet, however. Hourly pay is growing by just 2.2% a year, down from around 4% before the financial crisis. Even accounting for America's feeble productivity gains—growth in output per hour worked is running at just 0.6%—such paltry rises in wages are unlikely to be inflationary.

Weak wage growth suggests that there is still lots of slack in the labour market. Underemployment, which includes workers who are part-time but want a full-time job, and discouraged workers who might be tempted back into the labour force, stands at just over 10%, higher than before the crisis. This measure probably has further to fall before wage growth picks up.

The Fed may also be underestimating how far unemployment can fall without stoking inflation. In a recent note, Andrew Figura and David Ratner, two Fed researchers, point out that the labour share of income—the slice of GDP that flows to workers' pockets—has dropped from an average of 70% in 1947-2001 to 63% in 2010-14. If that reflects a weakening of workers' bargaining power—a result of globalisation and falling union membership—the so-called "natural" rate of unemployment may have fallen, too.

Making up for lost paycuts

Another possible reason for slow wage growth is that pay grew too much during the recession. Average hourly pay never shrank in cash terms, despite the surge in unemployment. This could have left "pent-up" wage deflation, according to researchers at the San Francisco Fed. Eventually, however, this should run its course, allowing the link between inflation and unemployment to re-emerge.

If the hawks win out, their intention would not be to put the labour market into reverse, says Jon Faust, an academic and former adviser to the Fed. With interest rates still low, unemployment should continue to fall after a small rate rise, just at a slower pace. The economy is a big ship with a huge turning-circle; the Fed does not want to have to reverse course abruptly.

Inflation expectations seem sticky enough. In a recent speech Stanley Fischer, ▸▸

Ms Yellen's deputy, emphasised that the results of surveys that ask people how high they expect inflation to climb in the long run have not moved much for years. But market-based measures of inflation expectations over the next five years—calculated by comparing the yields on inflation-protected bonds and regular ones—have recently fallen as low as 1.2%. Even the Fed's own forecasts show inflation returning to 1.9-2% only in 2017.

The state of financial markets complicates matters further. Hawks have long worried that low interest rates stoke dangerous asset-price bubbles, by prompting investors to look to riskier assets for higher returns. The Fed is probably more alert to this risk now that unemployment has fallen so low.

Yet the markets also provide reasons for continued caution. The S&P500 is 8% lower than a month ago. Stockmarket falls alone should not much hurt the economy: direct investment in the stockmarket makes up only 14% of household assets and is concentrated among richer folk, who are less likely to rein in spending. But the turmoil has pushed up market interest rates and made it harder for firms to finance investment. An index of financial conditions compiled by Goldman Sachs, a bank, has been creeping up since mid-2014, and spiked in August. The combined effect is the biggest squeeze since 2008, all without the Fed taking any action.

A rate rise would cause a big market reaction, because it is not fully expected. Markets place roughly a one-third probability on it happening. Were Ms Yellen to hold off, she would have time to lay the groundwork for a more predictable rise in December. In recent years, nobody has lost money betting on such a delay. The past, though, is no guide to the future. Just ask a central banker. ■

Buttonwood | Many unhappy returns

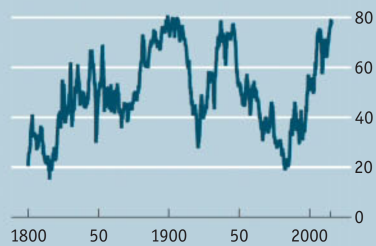
High valuations should give investors pause

IF YOU think that financial assets are expensive at the moment, you are not alone. Deutsche Bank has looked at the prices of equities, bonds and residential property in 15 countries as far back as 1800. The average valuation of the three asset classes is above the level of 2007 and close to an all-time high (see chart).

Climb every mountain

Aggregated average valuation of bonds, equity and property*, percentile

15 rich countries



Source: Deutsche Bank *Since 1970

Of the three assets, bonds are the priciest. A combination of very low inflation and big purchases of government bonds by central banks means that nominal yields are close to record lows; real yields (ie, accounting for inflation, using a five-year average) have been lower only 17% of the time. For equities, because of the lack of long-term profit numbers, Deutsche compared share prices with nominal GDP. On this basis, equity-market values have been higher only 23% of the time (though shares looked dearer before August's sell-off). For houses, Deutsche was only able to find data from 1970. It calculates that real house prices peaked in 2007 and are now at average levels.

The three asset classes have not always moved in tandem (which is why the average plotted in the chart does not reach one or 100): during the dotcom bubble in equities, for example, both housing and bonds looked quite cheap. The current high valuations owe much to the near-zero yield on safe, short-term investments in most developed countries: investors have been tempted by the higher returns available on less liquid (and riskier) assets, bidding up their prices.

The implication of high valuations is that future returns are likely to be subdued. This is most obvious in the case of bonds: a yield of 2% means the nominal return if you hold the bond to maturity will be 2%. The real return may even be negative if inflation rises.

When it comes to equities, returns can continue to grow only if profits rise rapidly, or if valuations get even higher. Since profits at American firms are already close to a record high relative to GDP, rapid growth is unlikely. And hoping for higher valuations is betting against the odds.

Worse still, there is always the chance that profits or valuations will return to their historical norms. If that happens, Deutsche reckons the average real return from equities over the next ten years will be negative. The same is true for Treasury bonds, European corporate bonds and American residential property.

This is sobering news for investors, who face a different kind of "money illusion" when valuations have been rising. The period of moving from a low valuation to a high one is pleasant; it is just not so nice when you get there. If equities move from trading on a dividend yield of 4% to a yield of 2%, then share prices will double (assuming dividends do not change). But to repeat the trick, the yield will have to fall to 1%. At some point, the lucrative revaluation must stop.

This makes for an especially grim outlook for those who have been counting on high returns, such as American pension funds, which tend to assume nominal gains of 7.5-8% a year when calculating how much money to put aside to meet their liabilities. They usually justify these assumptions on the basis that they have earned such returns in the past. But those past returns reflect two things: much lower initial valuations (or to put it another way, much higher initial yields) and the capital gains made as the valuations improved. For much of the mid-1980s, ten-year Treasury bonds yielded 8-10%. That was a very nice risk-free return to tuck away every year.

With such bonds now yielding only 2.2%, future nominal returns are likely to be much lower. Even if equities deliver a normal "risk premium" over bonds of four percentage points or so, that would still equate to returns of only 6-7%. The aggregate return on the portfolio would fall well short of the target. And that is without incorporating Deutsche's pessimism about the likely level of real future returns into the forecast.

Public-sector pension funds seem especially unwilling to accept this inconvenient truth. If future returns are low, they will have two choices. Employers can contribute a lot more (in practice, this means asking taxpayers to cough up), or the funds can cut benefits, which will involve disputes with trade unions and, in some states, may not be legal.

What is true of American pension funds is true of anyone planning for their retirement: they will need to save more. But the average payment into a defined-contribution pension scheme (from employer and employee combined) is just 10% of salary. That is not going to pay for any world cruises.

Economist.com/blogs/buttonwood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A brief history of rate rises

Tightening pains

The Fed faces some disturbing precedents

ECONOMISTS and investors are not only worried about when the Federal Reserve will start to push up interest rates. Just as important is the scale and length of the tightening cycle—how much the Fed will need to tighten policy, and how long it will take to do so. There have been 12 American tightening cycles since 1955, and they have lasted just under two years on average. In five of the past seven instances, however, the Fed has relented in a year or less, largely because inflation has been relatively subdued in recent decades.

The inflationary periods of the 1970s and early 1980s saw the biggest increases in interest rates; that helped push the mean increase over the 12 cycles to five percentage points. But the median change may be a better guide to the coming cycle; it stands at just over three percentage points.

Central banks tend to push up rates when the economy is growing rapidly and inflationary pressures are emerging. If they overdo it, the economy may tip into recession. On average, a recession has followed about three years after the Fed's first hike. Yet that is partly because recessions are a regular occurrence. And tightening does not lead inevitably to a downturn: in 1983 and again in 1994 there was a gap of seven years between when the Fed started raising and the onset of the next recession.

Nor are higher rates necessarily bad news for equities. In nine of the 12 most recent cycles, the stockmarket has risen in the year following the first rate increase. Since the Fed tends to tighten when the economy is booming, profits are usually rising. In contrast, Treasury-bond yields rose in the first year of the cycle on all but one occasion.

A pertinent example might be the cycle that began in 1994. The Fed had kept rates low for a long time in order to help the financial sector, which was still recovering from the savings-and-loan crisis of the late 1980s. When it finally did begin to raise rates, the pace of tightening seemed to catch many investors by surprise, particularly those investing in mortgage-backed bonds. Askin Capital, a hedge-fund manager, went bust as a result.

Those who worry that the Fed might be moving too quickly point to policy mistakes elsewhere. As the Fed's chairman herself, Janet Yellen, remarked in March, "The experience of Japan over the past 20 years, and Sweden more recently, demonstrates that a tightening of policy when the equilibrium real rate remains low can result in appreciable economic costs, delaying the attainment of a central bank's price-stability objective."

It can get uncomfortable

Japan was the first country to reduce rates to zero (hitting the "zero lower bound" in the jargon) and the first to struggle with deflationary pressures and an ageing population. In August 2000 the Bank of Japan raised rates from zero even though prices were still falling; a recession started two months later. A second attempt at raising rates, in 2006, also had to be reversed two years later.

Similar problems have bedevilled central banks that have attempted to raise rates in the wake of the financial crisis of 2007-08. The European Central Bank pushed up interest rates in 2008 and again, twice, in 2011, as the euro-zone debt crisis was unfolding. Sweden's Riksbank went even further, pushing rates from 0.25% to 2% in 2010-11 in response to a surge in inflation; by late 2011 the bank had to change course and Sweden now has negative interest rates.

The sluggish nature of the recovery in the rich world since the crisis, and the high levels of debt that remain, explain why it has been so difficult for central banks to return to a "normal" level of interest rates. In the past, many central banks were usually raising rates at the same time. But any country that tightens policy at the moment will stand out from the crowd. Foreign capital may drive its currency higher, as investors take advantage of more attractive yields. That will act as a further tightening of policy, since a higher exchange rate reduces the price of imports, and so adds to deflationary pressures. That suggests this cycle, whenever it begins, will be shorter and less steep than in the past. ■

Cash for residency

Indecorous leave to remain

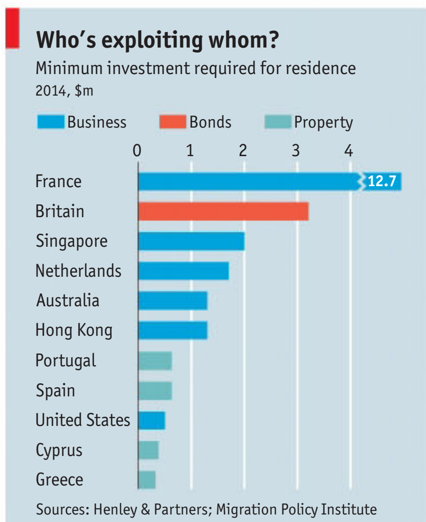
Schemes that offer residence permits to big investors usually disappoint

"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. ■

Bank heists

Crime and leniency

After armed robberies, banks give out loans on better terms

"YOU can't rob a bank on charm and personality," noted Willy Sutton, the prolific American criminal whose tool of choice was a Tommy gun. No matter how likeable the larcenist, a stick-up is invariably an unpleasant experience for employees. According to a new paper* by Paola Acevedo of Tilburg University and Steven Ongena of the University of Zurich, the trauma affects how bankers subsequently do business.

The authors look at bank lending after heists in Colombia, a country where 835 bank robberies took place between 2003 and 2011. They find that loan officers treat would-be borrowers differently in the aftermath of an armed robbery. Loan volumes did not change, but the duration of loans issued in the first 90 days after a stickup is 70% longer. The average Colombian loan matures in 5.4 months, but a newly burgled branch typically lends for 8.7 months. The traumatised loan officers also demand collateral more of the time, and more of it, but offer slightly lower interest rates than normal.

All of these changes reduce the need to deal with new customers in person. Lending for longer periods pushes repayment meetings further into the future. Taking more collateral reduces the need to vet customers thoroughly. And the lower interest rates suggest that loan officers spend less time haggling. This "avoidance behaviour" is a classic symptom of post-traumatic stress disorder.

Fortunately for the banks involved (though perhaps not for borrowers), these effects start to wear off after two weeks. And interestingly, these shifts in loan terms only occur when the robbers use a firearm; non-violent thefts appear to be less traumatic. That may be down to how often heists occur in Colombia: one in 60 branches was robbed in 2011. ■

* "Fear, anger and credit: On bank robberies and loan conditions", August 2015

Animating Europe's capital markets

Vision and reality

Creating American-style capital markets in Europe will be hard

SHOWPAD is a fast-growing business, which demonstrates that European capital markets can work well. The firm, founded in the Belgian city of Ghent in 2011, provides an innovative software platform that allows companies to keep in touch with their salesforces through a variety of mobile devices, enabling them to see what pitches work and thus improving their marketing. In 2013 it got $2m of funding from Hummingbird Ventures, a venture-capital fund also operating out of Ghent; last year it attracted a further $8.5m from Hummingbird and Dawn Capital, a London-based fund. That support has allowed Showpad to set up offices in San Francisco and London, scaling up its operations to employ around 100 staff. Some 750 firms are now using the service; the firm expects its recurring revenues to reach $10m this year.

This happy pairing of European investors and European entrepreneurs is far from unique. As startup industries have bloomed in several cities in the European Union, including Berlin, London and Stockholm, the amount of money raised by European venture-capital funds has surged. Even so, they have a long way to go to catch up with their American counterparts, which raised $30.7 billion in 2014, over five times as much as the €4.1 billion ▸▸

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($5.4 billion) collected in the EU.

Although European startups can generally raise early-stage funding, often bolstered by public money, they commonly have to turn to American funds when they subsequently expand their activities and so need bigger dollops of investment. One reason is that there are too few big funds in Europe, with only a fifth reaching over €100m in size, says Dörte Höppner of the European Private Equity and Venture Capital Association.

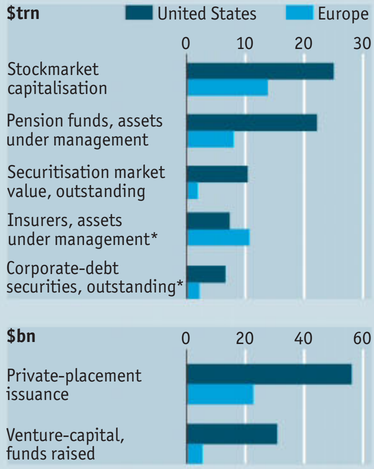
The relative puniness of venture-capital provision forms part of a larger failing in European capital markets (see chart). Although the economies of America and the EU are similar in size, Europe's corporate-bond market is about a third of the size of America's. Private placements, where firms borrow directly from institutional investors such as insurers, are also much smaller. Equity finance is far more limited, too. The EU's stockmarkets were worth 64.5% of GDP in 2013—half America's 138%. Among Europe's big economies, market capitalisations that year varied from over 120% of GDP in Britain to just 35% in Italy.

As a result European companies as well as households rely heavily upon banks. European banks, in turn, make much less use than American ones of securitisation—the repackaging of bank loans into securities that can be sold to investors. The market for securitised assets in Europe is a mere fifth the size of America's.

The overreliance on banks has been an Achilles' heel for European economies, especially on the periphery of the euro area. Since the financial crisis, as banks have attempted to repair their balance-sheets by curbing lending, businesses have been starved of credit. Although lending is beginning to grow again, Europe's capital markets will have to become more like those of America if it is to make a sustained recovery. Firms need to find alternatives to banks, and banks themselves need to attract more funding via securitisation.

The disparity between European and American capital markets reflects long-standing institutional and cultural differences. Pools of private pension money are less plentiful in Europe than in America. Instead, state-financed pay-as-you-go pensions are the norm (Britain and the Netherlands are big exceptions). This is changing as countries like Germany encourage a bigger private component, but it will take a long time for the shift to generate a big boost to retirement savings available for capital markets. With some exceptions, such as Oxford and Cambridge, Europe also lacks the huge university endowments that contribute to the money going into America's venture-capital funds.

Savers in Europe have also tended to be less adventurous than in America, preferring to leave their money safely (as they have regarded it) in banks, even when interest rates are derisory. Europeans are reluctant to venture abroad when they invest too: 94% say they have never bought a financial product outside their country and 80% say they would not consider doing so. Furthermore, even when investors make funds available, businesses are sometimes reluctant to turn to capital markets rather than banks. Particularly in southern Europe but also in Germany, family-based firms are loth to cede control.



European exceptionalism

Capital markets, 2014

Sources: EVCA; NVCA; S&P; NAIC; Bloomberg; Towers Watson; AFME; New Financial

*2013

Many of the shortcomings of European capital markets could be alleviated if capital flowed more readily across borders within the EU, creating a capital-markets union—an aim of the European Commission under Jean-Claude Juncker. However, proclaiming that goal is easier than accomplishing it because of deeply entrenched barriers. One that particularly bothers investors is the variation in Europe's insolvency rules. The legal status of creditors varies from country to country, making it hard for investors to assess the risks they are taking on. Yet harmonising the rules would be an uphill struggle for the commission, because it involves an area of policy-making in which national governments have not ceded power to Brussels.

Jonathan Hill, the commissioner in charge of the drive for capital-markets union, cautions that progress will be gradual. He will focus on two initiatives when he presents an "action plan" at the end of this month. One aims to revive securitisations in Europe by creating a standard template for them, making them simpler and more transparent than those that prevailed before the financial crisis. The other will be a slimmed-down prospectus that smaller firms can use when raising equity, making the process less laborious and costly.

Among a wide range of further measures that the commission has been contemplating, the most useful thing it can do is to ease the effects of new capital requirements for insurers, called Solvency II. These are a particular concern because although the pool of capital available from private pensions is smaller in Europe than in America, that from the insurance industry is larger. Insurers are a natural source of long-term funds, but by increasing capital charges, Solvency II discourages them from investing in certain assets, including infrastructure, venture-capital funds and securitised products.

The commission will seek to address some of these concerns. But the underlying moral—that unnecessary regulation is impairing European capital markets—seems lost on many governments. Eleven EU members still plan to introduce a financial-transactions tax, for example—not the sort of measure that helps money flow. Europe's capital markets can only hope to vie with America's if they are left as unfettered as possible. ■

No way out

Investors in Puerto Rican bonds have been waiting nervously ever since Alejandro García Padilla, the American territory's governor, announced in late June that its debts were unpayable. On September 9th he released a recovery plan that puts the island's cash shortfall at $28 billion in 2016-20, or 40% of its current, shrinking annual output. The plan also proposes a series of budget cuts, tax increases and other reforms to cut the shortfall in half. As for the rest, it merely says the government is "working on a voluntary exchange offer", without giving any details. But the island's many creditors, who hold debt from 17 public entities, each offering varying degrees of protection, are about as likely to volunteer *en masse* for haircuts as the government is to pay them on time and in full.

Free exchange | Prudence and profligacy

Austerity is hard to measure but, by any reckoning, Europe's periphery has purged

THE word "austerity" entered the public discourse after the global recession punched a hole in public finances across the rich world. Governments scrambled to paint themselves as the most prudent, either to win votes (Britain), or to persuade their creditors that they could cut no more (Greece). But matching the rhetoric to the reality by measuring exactly how austere governments have been is not straightforward.

A simplistic approach would be to look at how much governments have managed to reduce borrowing (the difference between taxes and spending). But borrowing may change for reasons other than self-denial. In the middle of a debt crisis, ballooning spending on interest payments will mask efforts to squeeze public services or state pensions. By the same token, an economic recovery that nudges people off unemployment benefits and into jobs pulls down spending and boosts tax receipts, with the appearance, but not the pain, of austerity.

A better method is to look at changes in the cyclically adjusted primary budget balance—ie, the surplus or deficit after stripping out interest payments and temporary effects of the economic cycle. Isolating temporary effects is not an exact science, but the OECD, a club of mostly rich countries, has had a go. The change in this measure, from the point when public spending was at its most profligate to the moment when it was most restrained (or the projected balance for this year if belt-tightening continues), provides a fairer measure of austerity (see chart).

Portugal, Ireland, Italy, Greece and Spain—the PIIGS, as investment bankers' shorthand has it—were in the direst fiscal straits in the crisis and, naturally, have been the most austere since. Italy has reduced its underlying primary deficit by 4.7% of GDP; the others, by more than 8% of GDP. These figures are huge: 8% of GDP is equivalent to average government spending on pensions in the OECD. No one should accuse the Greek government, in particular, of not cutting back enough: the figures reveal tightening of a whopping 17.2% of underlying GDP between 2009 and 2015. At the other end of the scale, Germany has barely had to cut back at all, and in fact the OECD expects it to loosen its purse-strings slightly this year. No wonder the PIIGS have squealed.

Even this measure of austerity is not perfect, however. By measuring from the high point of profligacy, it includes one-off borrowing intended to inject life into slumping economies. For example, the apparent 6.4% improvement in America's underlying primary balance rests in part on the expiry of a fiscal stimulus estimated by the IMF to be worth around 2% of GDP in 2009. Although withdrawing stimulus is painful, most would agree that this fiscal splurge in the base year makes governments appear to be donning a hairier shirt than they really are.

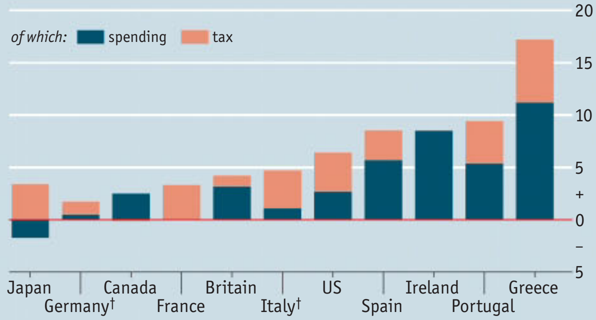
Cutting to stand still

The other caveat is that the measure obscures the distinction between countries that saw GDP growth and those that saw massive declines. When an economy is shrinking fast, even keeping spending flat as a share of GDP involves deep cuts in cash terms. Thus Greece has had to slash actual spending by more than a quarter to achieve an 11.2 percentage-point cut in spending as a share of GDP. The British government, in contrast, will have managed to reduce underlying spending, excluding debt interest, as a share of GDP by 3.2 percentage points, but economic growth has allowed it to achieve this by holding this measure of spending roughly constant in real terms (ie, after accounting for inflation).

Aggregate numbers mask other differences, too. Public-sector

When PIIGS soar

Improvement in budget balance, excluding interest payments*
From crisis low to 2015 or high point, as % of GDP



Source: OECD *Cyclically adjusted and excluding one-off items †High point 2014

workers take little comfort from the knowledge that overall spending is buoyant if their salaries have been frozen while spending on social welfare has grown. The OECD's estimates suggest that this is indeed what has happened: in America, Britain and the PIIGS, spending on public services has been cut relative to spending on benefits and pensions. In Portugal general government consumption (a broad measure of spending on public services) has been slashed by almost a fifth in real terms since 2009, whereas social-security spending has crept up by 4%. And even rising spending on social welfare may feel austere if ageing populations are putting pressure on pension systems.

From any perspective, however, the recent bout of belt-tightening looks severe. A paper* published last year by Julio Escolano, Laura Jaramillo, Carlos Mulas-Granados and Gilbert Terrier of the IMF puts the cuts in historical context. The authors compiled a database of 48 austerity drives in rich countries between 1945 and 2012, all aimed at steadying public debt as a share of GDP. They find that around half of these consolidations amounted to 5% or more of GDP, and a quarter to 7.5% or more. Italy's recent experience is about average, therefore, and Britain's (so far) below par. But Greece, Ireland, Portugal and Spain have been far more austere than the norm.

Greece's recent privations are the most severe of all those that the authors evaluated. Second place is also taken by Greece, which underwent a previous bout of austerity in 1990 to secure (you guessed it) membership of the euro. Germany's fiscal retrenchment in 1996 earns fifth place. But that dose of Swabian spending restraint, which induced huge strikes, ultimately amounted to just 10% or so of GDP, a little over half of what Greece has endured since 2009.

Austerity has not been adopted at random. Those governments that have cut back the most were also those that spent most recklessly before. Greece may have tightened by 17% of GDP, but at its peak its underlying primary deficit was a clearly unsustainable 12%. Citizens of less spendthrift countries such as Germany are entitled to condemn the PIIGS' past excesses. They may legitimately rail about the pace of structural reform. But they cannot denounce them for doing too little on the public finances. ■

* Studies cited in this article can be found at www.economist.com/austerity15

Economist.com/blogs/freeexchange

What is consciousness?

The hard problem

The final brief in our series looks at the most profound scientific mystery of all: the one that defines what it means to be human

"I THINK, therefore I am." René Descartes' aphorism has become a cliché. But it cuts to the core of perhaps the greatest question posed to science: what is consciousness? The other phenomena described in this series of briefs—time and space, matter and energy, even life itself—look tractable. They can be measured and objectified, and thus theorised about. Consciousness, by contrast, is subjective. As Descartes' observation suggests, a conscious being knows he is conscious. But he cannot know that any other being is. Other apparently conscious individuals might be zombies programmed to behave as if they were conscious, without actually being so.

In reality, it is unlikely that even those who advance this proposition truly believe it, as far as their fellow humans are concerned. Cross the species barrier, however, and matters become muddier. Are chimpanzees conscious? Dogs? Codfish? Bees? It is hard to know how to ask them the question in a meaningful way.

Moreover, consciousness is not merely a property of having a complex, active brain, for it can vanish temporarily, even while the brain is healthy and functional. Most people spend a third of their lives in the state described as "sleep". Unless awoken while dreaming, they have no sense of being conscious during these periods. Recordings of the brain's electrical activity show, though, that a sleeping brain is often as busy as one that is awake. Subjective though it is, consciousness therefore looks like a specific phenomenon, not a mere side-effect. That suggests it has evolved, and has a biological purpose. These things—specificity and purpose—give researchers something to hang on to.

A lot of brain science relies on looking at brains that are broken. Studying consciousness is no exception. One of the most intriguing examples has emerged from work, started in the early 1970s by Lawrence Weiskrantz of Oxford University, on a phenomenon called blindsight.

Blindsight is occasionally found in those whose blindness is caused by damage to the visual cortex of the brain, perhaps by a stroke or tumour, rather than by damage to the eyes or optic nerves. Those who have blindsight have no conscious awareness of being able to see. They are nevertheless able to point to, and even grasp, objects in their visual fields.

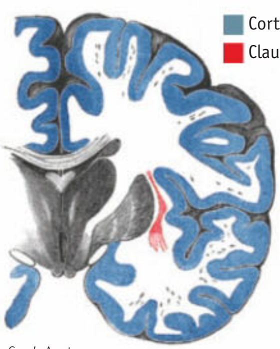
A dip in the stream of consciousness

Blindsight is an example of how brain damage can abolish the conscious experience of a phenomenon (in this case vision) without abolishing the phenomenon itself. Conversely, apparently full consciousness can be retained in the absence of quite important parts of the brain. One example of this is the case of a Chinese woman born without a cerebellum. This is a structure at the back of the brain which co-ordinates movement. The woman in question thus finds it awkward to move around. But she is completely conscious and is able to describe her experiences. Unlike the visual cortex, then, the cerebellum has no apparent role in generating consciousness.

Observations like this have led to a search for the neural correlates of consciousness—the bits of the brain responsible for generating conscious experience. One of particular interest is the claustrum. This is a candidate because of its extensive connections with other parts of the brain. A crucial property of consciousness is that it integrates many sorts of experience, both sensory and internally generated. Discovering how this integration happens is known as the binding problem. In 2005 a paper published by Francis Crick (posthumously, for he had died the previous year) and Christof Koch (who now works at the Allen Institute for Brain Science, in Seattle) looked at the binding problem. The two researchers lit upon the claustrum as something that might help illuminate it.

The brain's left hemisphere

Cross-section, frontal view



Source: Gray's Anatomy

The claustra (there are two, one in each cerebral hemisphere—see diagram) are thin sheets of nerve cells tucked below the cerebral cortex that have connections both to and from almost every area of the cortex. They are the only structures that link the various parts of the cortex in this way. Crick and Dr Koch suggested they act like orchestral conductors, co-ordinating the activities of the cortical components and thus solving the binding problem.

Doing experiments to test this idea is hard, for the procedures needed (such as the implantation of electrodes) would be intrusive, risky and thus unethical for the mere satisfaction of curiosity. But one such experiment has happened by accident.

In 2014 Mohamad Koubeissi, an American neurologist, was trying to hunt down the origin of the epilepsy suffered by one of his patients. To do so he implanted electrodes into her brain—permissible in view of her condition's seriousness. When he placed one near one of her claustra and switched the current on, she lost consciousness. When he switched the current off, she regained it. When he repeated the procedure several times, he got the same result on each occasion.

Another phenomenon correlated with consciousness, which some think may help solve the binding problem, is a pattern of electrical impulses, known as gamma waves, which beat at an average frequency of 40Hz, in synchrony in different parts of a person's brain. They are strongest during conscious concentration on tasks, are always present when someone is conscious, and largely disappear when he is asleep, unless he is dreaming. Many neuroscientists suspect gamma waves' synchro-

ny means they are acting like the clock in a computer processor, co-ordinating the activities of disparate parts of the brain—in other words, binding them together.

Yet another neural correlate of consciousness is the temporoparietal junction. Damage to this part of the brain, or use of a technique called transcranial magnetic stimulation (TMS) to deactivate it temporarily, creates intriguing effects. In particular, it can cause out-of-body experiences in which a person's conscious perception of himself appears (from his point of view) to detach itself from his body.

TMS of the temporoparietal junction also reduces someone's ability to empathise with the mental states of others. That suggests this part of the brain helps generate "theory of mind"—the ability to recognise that other creatures, too, have minds. Some see this link as more than coincidence. Seeking an evolutionary explanation for consciousness, they suggest that an animal which can model another's behaviour can gain an advantage by anticipating it. They further suggest that, since the only model available to a mind that wishes to understand another's is itself, a theory of mind necessarily requires self-awareness. In other words, consciousness.

This bears on the question of how it might be possible to find out if non-human animals are conscious. If being conscious requires the self-awareness that having a theory of mind implies, then those with it might be expected to be able to recognise themselves in a mirror.

Human babies are able to do so from the age of 18 months. That was well-known in 1970, when Gordon Gallup of the State University of New York, Albany, tried the experiment on three other primate species. Previous research had suggested that most animals, when they see themselves in a mirror, respond as to a stranger—often aggressively—and seem unable to learn, no matter how long the mirror is there, to do otherwise. Dr Gallup found that this was indeed true for two species of macaque monkey. But chimpanzees soon learned that the image in the mirror was a reflection of themselves, and even used it as a person might, to assist grooming.

Subsequent mirror studies have looked at bonobos, gorillas, orang-utans, gibbons, many other monkeys, elephants, dogs, dolphins and various birds. Bonobos, orang-utans, elephants, dolphins and magpies react in ways that might be interpreted as self-recognition. Gorillas, gibbons, monkeys, dogs and pigeons do not.

Although some psychologists question the value of the mirror test (dogs, for example, rely heavily on smell rather than vision for individual identification, so may simply be uninterested in images of themselves), it does suggest the capacity for self-recognition has emerged independently in animals with differently organised brains. If the phenomenon's neural correlates could be identified in those brains—admittedly a hard task—then comparative studies might be possible. That would be valuable, as it is difficult to do good science when only one example is available.

What sits behind the looking glass?

And yet. Finding the neural correlates of consciousness, or even understanding what it is for and how it evolved, does not truly address the question of what it actually is—of what it is people are experiencing while they are conscious. This question has come to be known as the "hard problem" of consciousness.

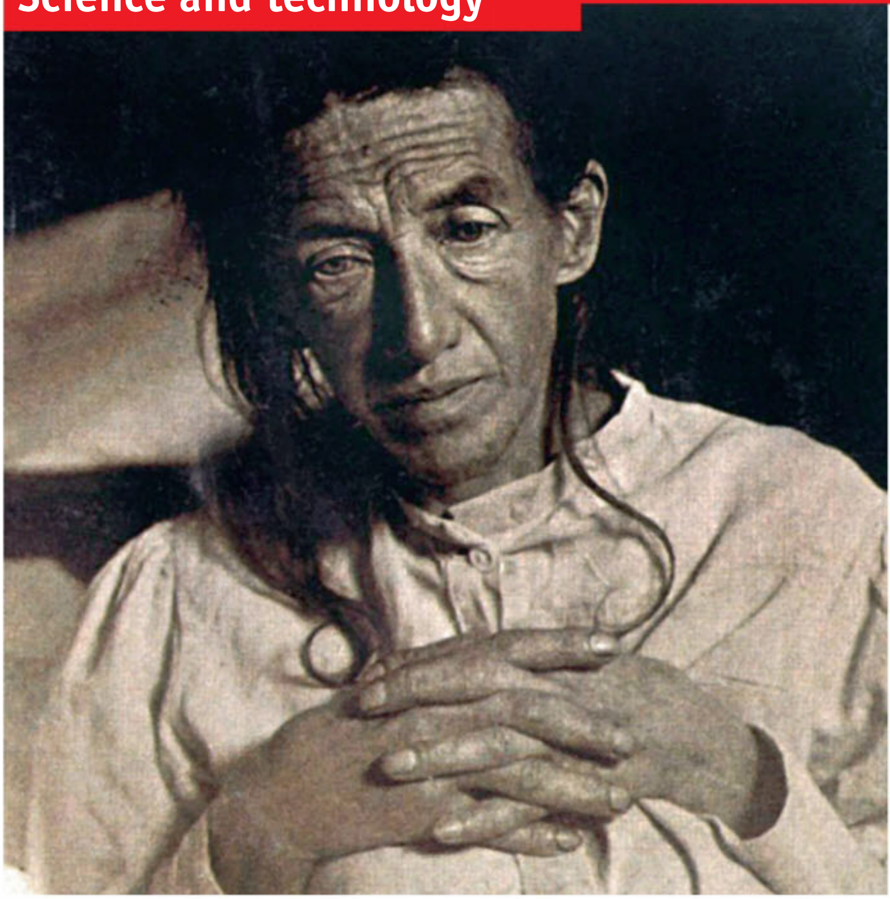
It was so dubbed in 1995, by David Chalmers, an Australian philosopher, and the name encapsulates both the fact that it is hard to resolve and that its resolution is the heart of the matter. Merely calling it hard does not really help the investigator to think about it, but the work of another philosopher, Thomas Nagel, perhaps does. In 1974 Dr Nagel, an American, posed the problem in a novel way, in a paper called, "What is it like to be a bat?"

For the sake of this thought experiment Dr Nagel assumed bats have conscious experience of the world. If they do, though, he suggested that it will be built largely on the basis of a sense—echolocation—which human beings do not possess. A human might, Dr Nagel posits, plausibly imagine some parts of a bat's experience, such as hanging upside down for long periods, or even flying. But seeing the world through sonar is ineffable to humanity.

The nub of the hard problem, then, is to make this ineffability effable. Other fields of scientific endeavour circumvent ineffability with mathematics. No one can truly conceive of a light-year or a nanosecond, let alone extra dimensions or wave-particle duality, but maths makes these ideas tractable. No such short-cut invented so far can take a human inside the mind of a bat. Indeed, for all the sophistication of theory-of-mind it is difficult, as everyday experience shows, to take a human being inside the mind of another human being. The hard problem may thus turn out to be the impossible problem, the one that science can never solve. The Oracle at Delphi said, "know thyself." Difficult. But a piece of cake compared with knowing others. ■

A video to accompany this brief is available at economist.com/sb2015

To hold, as 'twere, the mirror up to nature



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Medicine

Chain reaction

Evidence emerges that Alzheimer's disease, and other neurodegenerative disorders such as Parkinson's, may be transmissible

WHEN Auguste Deter (pictured above) was admitted to hospital in 1901, her medical records described her helpless expression and problems remembering her husband's name. It was only after her death, in 1906, that an autopsy revealed a number of brain abnormalities. The doctor who discovered them was Aloysius Alzheimer and the two proteins he found in her brain are today thought to be an integral part of the disease named after him. These days Alzheimer's is recognised as a progressive neurological condition that mostly arises in the old. Now scientists have uncovered evidence that it may be possible to transmit Alzheimer's through certain medical procedures.

The story, reported in *Nature* this week, starts with the fact that medical and surgical procedures can transmit prion diseases, which are progressive neurodegenerative disorders first seen in animals. From the late 1950s to 1985, about 30,000 people worldwide, mostly children, received injections of human growth hormone to treat their short stature. This hormone had been extracted from thousands of human pituitary glands taken from cadavers. Unfortunately some extracts contained prions, abnormal infectious proteins. A small percentage of these patients—up to 6.3%, in one national sample—eventually went on to develop Creutzfeldt-Jakob disease (CJD), a neurological disorder.

At the Medical Research Council's Prion Unit, which opened in London in 1998, Sebastian Brandner conducts post-mortem examinations of people who have died from prion diseases. During an autopsy of several patients who died from CJD acquired through injections of human growth hormone, he noticed something so surprising that he called his colleague, John Collinge, a professor of neurology at University College London, to take a look. What he found were substantial deposits of the amyloid beta protein, one of the two key proteins that Alzheimer discovered in Mrs Deter that are tied to the development of this disease. After conducting eight autopsies, only one patient was found to be entirely free of the protein.

What makes this discovery particularly unusual is that Alzheimer's is rare in people below the age of 60 and all the patients examined were between 36 and 51 years old. Moreover, the sort of brain pathology the researchers observed is not found in patients who have died from CJD that was inherited or acquired spontaneously. Dr Brandner and Dr Collinge are therefore proposing that when these patients were injected with human growth hormone, it was contaminated not only with prions but also small fragments, or seeds, of the amyloid beta protein—which then spread, rather like CJD, through their brains.

Folding wrongly

An observational study such as this cannot prove that deposits of amyloid beta were caused by seeds of the protein in contaminated hormone injections. Nonetheless, it is by no means an outlandish theory. In recent years it has become apparent that degenerative brain disorders such as Alzheimer's, Parkinson's and motor neurone disease, like prion disease, result from the spread of misfolded proteins.

Proteins are made up of chains of molecules, and to do their job as part of the body's metabolism they must fold into a precise shape. But sometimes a protein misfolds. Usually misfolded proteins will simply fail to work; occasionally they will work, but wrongly. In CJD, prions misfold and are able to transmit their conformation to other properly folded proteins. In Alzheimer's it is becoming clear that amyloid beta deposition can also be induced through a prion-like means: misfolded proteins beget more misfolded proteins.

For the thousands of people who received injections of human growth hormone prior to its replacement with a synthetic alternative in 1985, this raises the possibility that as they age they may develop Alzheimer's. At present this is no more than a theoretical possibility, as the autopsied patients with amyloid beta deposits might not have gone on to develop Alzheimer's. Another possibility that the study cannot rule out, but that the authors think unlikely, is that one type of rogue protein could predispose or even seed the accumulation of another. Thus the injected prion protein might have been the precursor to the amyloid beta.

Doug Brown, director of the Alzheimer's Society, says there are too many unknowns in this small study to draw any conclusions about whether the disease could be transmitted. Yet it would be unwise to dismiss the troubling possibility that Alzheimer's seed proteins, whatever their clinical significance, can be transmitted via certain medical procedures. The authors of the *Nature* paper say their findings should prompt an investigation into whether other known medical routes of prion transmission—such as contaminated surgical instruments, tissue transplantation and blood transfusion—are relevant to the transmission of Alzheimer's and other neurodegenerative diseases.

Although it is known that amyloid brain deposits can be transmitted between mice via injection of seeds into their abdomens, Dr Collinge points out that epidemiological studies have found no connection between blood transfusions and Alzheimer's. Animal experiments, however, point to the possibility that seeds of amyloid beta may be transmissible through surgical instruments as, like prions, they stick to metal and are difficult to remove with standard techniques for sterilising instruments. Dr Collinge says that a combination of enzymes and detergents can remove prions from surgical instruments, so it may be possible to do the same with other sticky proteins such as amyloid beta.

Doubtless there will be much further study into whether some medical procedures could contribute to the prevalence of neurodegenerative diseases. In the meantime experts are urging a cautious interpretation of the paper. David Allsop, a professor of neuroscience at the University of Lancaster, says there is no evidence that Alzheimer's disease can be transmitted from one person to another, or through use of contaminated surgical instruments. Even if amyloid beta seeds are transferable during certain procedures, it is only one of two changes to proteins that are seen in the brains of patients with Alzheimer's.

Alzheimer's, as the most common neurodegenerative disorder, demands not only greater understanding of the ways in which seeds of amyloid beta proteins can be transmitted, but also what this actually means when it happens. The abnormalities in Mrs Deter's brain have been known about for more than 100 years. Yet science is still struggling to understand how the disease actually develops, let alone how it might be stopped. ■

Stonehenge

Where the demons dwell

A super-henge is found next door to Stonehenge

THOUSANDS gather on Salisbury Plain to celebrate the solstice at Stonehenge every summer, when the prehistoric standing stones align with the rising sun as they have done for over 4,500 years. Yet for ancient British revellers this most famous "henge"—a circular basin surrounded by a ditch and bank on its circumference—may well have played second fiddle to a super-sized cousin next door.

Just 3km to the north-east lies Durrington Walls, a 500-metre-wide earthwork that today is merely a vague ridge surrounding a flat interior. Now a team led by Vincent Gaffney of the University of Bradford and Wolfgang Neubauer of the Ludwig Boltzmann Institute in Austria, working with colleagues from the University of Birmingham, have found that up to 200 giant stones once stood over this site, dwarfing its more famous neighbour.

The researchers are mapping the entire area around Stonehenge by driving their small tractors across the land towing two types of detectors. The first type measures local disturbances in the magnetic field, which would show up any anomalies from pits, ditches or monuments beneath the surface. The technique, which is called magnetometry, has a good record in archaeology, particularly as any fires once lit in pits alter the magnetic properties of the soil. Yet previous surveys never found anything of interest beneath the Durrington Walls perimeter.

It was the second method that turned up trumps. For this, the team used multichannel ground-penetrating radar, which transmits radio waves beneath the surface and picks up any reflections from underground artefacts. This detected stones, some of them 4.5 metres across, buried one metre beneath the outer bank of the super-henge. At this depth magnetometry would have missed them.

Though both types of detector are well-established, the new fieldwork was largely made possible by the miniaturisation of the technology. Bulky radar systems of old had to be set up meticulously by an archaeologist and could cover only a limited amount of ground before having to be fiddled with again. The system used in this work packed six radar antennae into an array small enough to be transported by a small tractor. It included a satellite-navigation system that automatically plotted the data points onto a map. It was slick enough for the team to scan 15 hectares around Durrington Walls at high resolution in just three days.

The giant stones revealed would have been placed around the same time as, or possibly even earlier than, those at Stonehenge, and once stood in a row (as illustrated below). They were knocked over by later generations and buried to make way for a renewed site. This helped to preserve about a third of them in their entirety.

The purpose of the structures around Stonehenge is still a mystery, and in the absence of written records may remain so. Durrington Walls may have begun as a spiritual or ritualistic place, later growing to include a permanent settlement. Floor remains suggest the super-henge came to host a dense village, perhaps, for a time, one of the largest in northern Europe. ■

And we thought the Rolling Stones were old

Palaeoanthropology

Ecce Homo naledi

A staggering trove of bones will shake up notions of how humans came to be

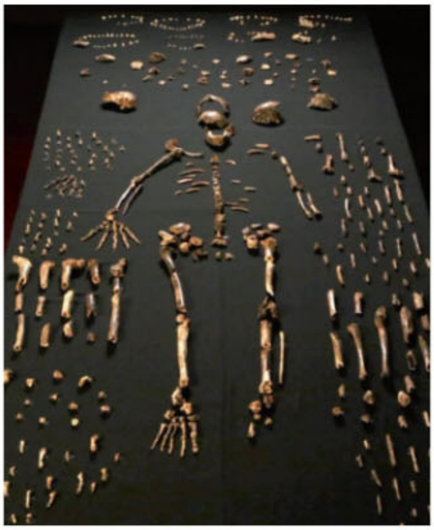
THE Rising Star cave system in South Africa has yielded what is likely to be confirmed as the largest single find of hominin bones ever. A troupe of scientists slim enough to crawl into the system's Dinaledi Chamber unearthed more than 1,500 bones in 2013 and 2014. This week, they were revealed as belonging to an entirely new species: *Homo naledi.*

The find is an incredible boon for palaeoanthropologists, who often must identify species from a few scattered bone fragments. The *H. naledi* remains (pictured) belong to at least 15 individuals of varying ages, permitting invaluable insights on growth and development. And the collection, described in a pair of papers in *eLife* and in *National Geographic*, represents just what was easily obtained from the chamber's floor; there are many more bones embedded in its walls.

Yet *H. naledi* presents far more questions than answers. It is a bewildering blend of features: a skull and tiny brain like that of *Homo erectus*, an upper body suited to climbing, like that of *Australopithecus afarensis*, and small teeth like those of far more modern hominins. There is evidence of a powerful thumb and a complex wrist that are distinctly human-like—clear signs of regular tool use. But the fingers are strongly curved, suggesting hands that were also regularly used for climbing. The specimens' femurs have ridges never seen in a hominin. The list goes on.

Given the current taxonomy, then, it is impossible to know where *H. naledi* fits in. Knowing the age of the specimens would help, but their isolation in the chamber has so far frustrated the typical methods of using sediments or nearby animals to date them. (One tantalising possibility is that they survived until relatively recently, segregated from other hominins.)

In any case, the grab-bag of characteristics presented by *H. naledi*—and also by *Australopithecus sediba*, a species unearthed in South Africa in 2008 which presented a similarly confounding mix-and-match morphology—underscores a shift in palaeoanthropological wisdom. Evolution's little experiments yield a many-branched tree and not just a timeline; physical features arise and disappear or persist in a way that frustrates efforts to define ancestry just on the basis of what old bones look like. As a result, the idea that there is one clear lineage from the australopithecines to humans via some small number



The knee bone's connected to the...

of progressively more human-like ancestors must now be thrown out. And the more excavations are carried out far from eastern Africa, where most of the fossils underpinning our current understanding of the human family tree were dug up, the more diverse and interesting the human story will become. ■

Herpetology

Veggies in the making

Scientists find island lizards evolving into herbivores

MANY plant-eating species descend from meat-eating lineages. Indeed, adorable bamboo-munching giant pandas belong to the order Carnivora. However, it is rare to catch this evolutionary transition to vegetarianism in action. Now a team of biologists has done so with a lizard.

Balkan green lizards (pictured below) inhabit the Greek archipelago as well as the mainland. Formally, they are an insectivore that occasionally nibbles on plants. But Kostas Sagonas of the University of Athens suspected that food scarcity on the Greek islands may be driving lizards which live there to feed on plants more often than mainland kin.

To find out, Dr Sagonas measured the bite force of the lizards. He knew from previous studies that herbivorous species tended to have stronger jaws to chop through tough plant material than carnivorous ones. His suspicions were fuelled when he found that the island lizards had an average bite force 18% stronger than mainland lizards. An analysis of what the lizards ate, by studying their stomach contents and faecal material, showed the island dwellers were consuming 30% more plant material than mainland ones.

These discoveries, reported in *Science of Nature*, led Dr Sagonas to wonder if increased herbivory might be driving other changes in the island lizards. He and his colleagues collected 74 of them, half from the islands of Andros and Skyros, and half from two mainland locations, the Stymphalia Lake area and the Karditsa Plateau. The lizards were given a couple of weeks to acclimatise in a laboratory on a diet of meal worms before food was withheld for four to five days. Each lizard was then fed a single worm with a small plastic marker embedded inside it. The team timed how long it took for the marker to travel through the lizards' digestive systems: 23% longer on average for the island lizards. This suggested that the guts of the island lizards might actually be longer. So, the researchers took a look inside them.

Seven lizards from each of the four locations were dissected and, despite all being the same size, their organs differed markedly, with the island dwellers having hindguts and intestines around a quarter longer than those of mainland lizards. However, what really surprised Dr Sagonas was the discovery of specialised chambers called caecal valves.

Somewhat like a human appendix, caecal valves function as a place where symbiotic bacteria can help break down plant material so that it can be more fully digested. Such valves have been found in some other herbivorous reptiles, like the green iguana, but have never been seen before in the Balkan green lizard. Although the valves turned up in both island- and mainland-dwelling lizards, they were common in the islanders, appearing 62% of the time, but in the mainlanders just 19% of the time.

All of these findings lead Dr Sagonas to argue that insect scarcity in the Greek archipelago is causing lizards there to rely more heavily on eating plants and that this, in turn, is causing natural selection to favour anatomical traits that support herbivory. The lizards still interbreed and are thus one species. It seems unlikely that will remain the case for very long. ■

Salad, again, for lunch

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Germany in the 18th century

Prussian and powerful

What made Frederick great?

> **Frederick the Great: King of Prussia.** By Tim Blanning. *Allen Lane; 672 pages; £30. To be published in America by Random House in March; $35*

FREDERICK II of Prussia was one of the most singular men ever to sit on a throne—he played music with Carl Philipp Emanuel Bach, debated with Voltaire and produced a stream of learned treatises of his own. He won a succession of wars, transforming Prussia from a mere "sandbox of the Holy Roman Empire" into a great power. He also prided himself on his enlightened rule at home. At a time when monarchs were regarded as semidivine beings who could cure diseases with the royal touch, he despised religion as a farrago of nonsense, avoided court life, doffed his hat to ordinary Prussians and encouraged inoculation against smallpox.

Yet Frederick's judgment was frequently wayward. He had a low opinion of both Shakespeare and Goethe. He underpaid C.P.E. Bach and quarrelled with Voltaire, whom he brought to Prussia to be his court philosopher. His own writing was frequently "confused in structure, feeble in execution, commonplace in poetic style", to quote one contemporary critic. He was also a bundle of contradictions. He wrote a vigorous treatise, "Against Machiavelli", enjoining kings to be peacemakers. Less than three months after it was published he invaded a neighbouring state, Silesia. He was one of the grandfathers of German nationalism. But he almost always used French, sharing Voltaire's view that German was a language fit to be spoken only by peasants and to horses. Frederick preached toleration. But he tried to control the press and disliked Jews, Poles, Russians and, when the mood took him, any other group of people. The only creatures he really liked were dogs, in particular his Italian greyhounds: he invented the phrase "a dog is a man's best friend" and left orders that he should be buried in a tomb next to his dogs, instructions that were finally fulfilled, after a long odyssey, in 1991.

So why does he deserve to be called Frederick the Great? Both Carl von Clausewitz, a Prussian military thinker, and Napoleon regarded him as among the most talented commanders ever. He took a patchwork of territories and knitted them into a great power. He turned the Prussian army into the most disciplined fighting machine in the world, developed new military techniques such as attacking divisions from the side, and cleverly turned foe against foe to Prussia's advantage.

He was also a dynamo of activity. He got up long before dawn and set immediately to work. In wartime he rode at the head of his army, taking a library of books with him so he could continue his scholarly work. In peacetime, he circumnavigated his kingdom, calling on local bigwigs to make sure they were doing their jobs properly. He believed firmly in the landed aristocracy, insisting it had to forgo the luxuries that emasculated the French nobility and devote itself instead to serving the state, particularly the army.

Here lay his biggest contradiction: this paragon of Spartan virtue was also a devotee of Athenian luxury. Frederick built a baroque pleasure palace in Potsdam called Sanssouci, and surrounded himself exclusively with men, most of them young, handsome and dressed in tight trousers. There is some debate about how active Frederick was sexually—several contemporaries speculated that he was more of a voyeur, having lost the use of his penis to a sexually transmitted disease and a botched operation. But he made little attempt to conceal his preferences. He built a palace for his boyfriend and visited his wife less than once a year.

How to explain this bundle of energy and contradictions? One answer was his father. Frederick William I was a monster: a pigheaded bigot who forced his son to spend his childhood on the parade ground and regarded his interest in books and music as a sign of effeminacy. He bullied him so badly that the boy tried to flee the country with his best friend. Frederick the elder punished him by having his friend beheaded in front of his eyes. He later forced him to marry Elisabeth Christine of Brunswick Wolfenbüttel-Bevern, who, according to young Frederick's sister Charlotte, smelt so rank that "she must have a dozen or so anal fistulas". Everything Frederick did was designed both to defy his father and to get the better of him. Even as he flaunted his love of learning, he expanded Prussia's power far beyond anything the old man could have imagined. This anti-father fixation put the great into Frederick. But it also turned him into a brute who bul- ▸▸

lied his siblings just as he had been bullied himself and turned his most talented brother, Henry, into an implacable enemy.

Frederick's life has been chronicled many times: Thomas Carlyle wrote a six-volume study of the great man designed to illustrate his thesis that history is the work of heroes rather than impersonal forces. Tim Blanning, an emeritus professor of history at Cambridge University, has provided a valuable service by distilling the latest scholarship for the general reader—he does an excellent job of making sense of the intricacies of 18th-century diplomacy and subjecting the ideological zeal of earlier historians to the cool eye of modern scholarship. Sadly the distilling has not gone far enough. Mr Blanning switches from the home front to foreign policy and back in a way that is both confusing and repetitious. He says almost nothing about Frederick's posthumous reputation, proclaiming loftily that "his eventful afterlife has been recounted many times and does not need to be repeated here", directing readers, in a footnote, to a couple of books in German.

He does not even bother to mention the fact that Hitler frequently compared himself to Frederick; Goebbels commissioned portraits of the three architects of the Reich: Hitler, Frederick and Bismarck. Professional historians like to quote Herbert Butterfield's injunction against writing history with "one eye, so to speak, upon the present". But writing a biography without considering the question of whether he prepared the ground for Germany's worst 20th-century demagogue is taking professional self-denial a little too far. ■

Drug-dealing in Brazil

Single-handed

Nemesis: One Man and the Battle for Rio. By Misha Glenny. *Bodley Head; 338 pages; £18.99. To be published in America by Knopf in February; $27.95*

What a nerve

RIO DE JANEIRO'S geography is jaw-dropping. But it has an ugly side, as when natural bottlenecks create some of the world's worst traffic. It also lays bare the city's—and Brazil's—stark inequalities. Paved flatland, or *asfalto* (asphalt) in the vernacular, is occupied by the wealthy. Sometimes little more than a single street separates rich districts from *morro* (hill), the name for Rio's 1,000-odd shanty towns that cling to the slopes above. Some *morros* are cities unto themselves; the biggest, Rocinha, houses 200,000, according to its residents' association.

The first *morros* were built in the early 20th century, as migrants thronged to the then capital in search of jobs. (Government decamped to newly built Brasília in 1960.) Unable to afford *asfalto*, where they worked as labourers and servants, they settled close by. Disenfranchised, first by the elites' disregard for the poor, then by the 1964-85 military junta's disregard for democracy, the shanty-dwellers' pleas for public services went unanswered.

As Misha Glenny, a veteran reporter on organised crime, writes in his new book, "Nemesis", the void left by the state was filled by criminal gangs. First, robbers and kidnappers used the unpoliced warrens to regroup. When cocaine proved a lucrative line of business in the 1980s, convenient *morros* like Rocinha fed the drug habit of well-heeled residents living nearby.

As profits rose, so did the violence (and the ability to pay police to turn a blind eye). Brutality between rival gangs reached such levels that at times Mr Glenny's book reads like a medieval history, replete with beheadings and elaborate torture (the "microwave", where the victim is encased in car tyres, doused with petrol and lit, was a particular favourite). The kingpins, too, resemble feudal overlords. Some were murderous rapists, but others guaranteed a semblance of security and instituted basic welfare, such as handouts for the neediest. Mr Glenny's main protagonist belongs to the last group.

Antônio Francisco Bonfim Lopes, better known as Nem of Rocinha, is serving time at a maximum-security federal prison for drug-trafficking. Mr Glenny was granted hours with his subject over the course of several months. He also interviewed dozens of other gangsters, policemen, politicians—and *morro* dwellers. The result is an engrossing criminal history of a city that has become as synonymous with lawlessness as it is with samba.

Before he became Nem, Mr Lopes was a respectable worker at a magazine-delivery company. He had been raised in a shanty but stayed out of trouble. In 2000, when his baby daughter was diagnosed with a rare disease, he sought a loan from the gang leader of the day—a debt that could only be repaid by joining the organisation.

Thanks to his quick wits and a knack for accounting, within a few years Nem had dislodged his (slain) benefactor's ineffectual heir. In the late 2000s he came to preside over Rocinha's "golden age". His dislike of firearms helped bring its murder rate down to less than two-thirds that of Rio's. Its clubs became so hip that they drew American rappers as well as *asfalto* youth. The cocaine business boomed.

Mr Glenny cannot hide his admiration for his subject. But he resists the temptation to romanticise gang life. All kingpins, he writes, are unaccountable despots whose power stems from an army of volatile young men with big guns. Nem's downfall was precipitated by the state government's decision in 2008, as Rio was vying for the right (secured a year later) to host the 2016 summer Olympics, to wrest back control of the *morros* once and for all. Having criminals run swathes of the city did not square with the image of modern Brazil that the authorities were keen to project. Alas, nor does the conduct of some of the police in Rio. Several officers, including the commander of the unit installed in Rocinha after Nem's arrest in November 2011, have been charged with the torture and disappearance two years ago of a labourer taken in for questioning. They too now face a long spell of imprisonment. ■

The internet in Russia

Knowledge is power

The Red Web: The Struggle Between Russia's Digital Dictators and the New Online Revolutionaries. By Andrei Soldatov and Irina Borogan. *PublicAffairs; 384 pages; $27.99*

THE Soviet Union was "the prison of information" and Vladimir Putin's Russia risks becoming one too. That is the grim message of "The Red Web", a well researched and disturbing book by two brave Russian authors. Andrei Soldatov and Irina Borogan caught global attention with "The New Nobility", an earlier book on the caste of spooks and strongmen who run Russia. They have now turned their attention to the Kremlin's control of electronic information. Even before Mr Putin rose to power, internet-service providers had to install (at their own expense) snooping devices, in what the authors prove was a direct continuation of the Soviet KGB's mammoth phone-tapping efforts. Whereas in the West, communications companies typically co-operate with the authorities when a judicial warrant identifies a target, in the Russian system the surveillance was like a dragnet.

When in the Kremlin, Mr Putin, an ex-KGB man who once termed the fall of the Soviet Union a catastrophe, wrested control of television from the oligarchs, turning their corrupt but lively channels into docile sounding-boards. But for more than a decade Russia's internet remained broadly free. Only when social media became central to organising opposition activity did the authorities begin to intervene.

Early efforts were futile. An attempt during elections in 2011 to swamp Livejournal (the Russian equivalent of Facebook) knocked pages run by election monitors off the internet, though they were quickly replicated elsewhere. Clumsy spam e-mails bearing toxic attachments to infect computers with snooping software appeared in opposition activists' inboxes. Few were opened. Much more successful was a national blacklist of banned sites; Russia's internet companies glumly co-operated in the intrusive inspection of suspect traffic.

More alarming still was the growing (and mostly secret) use of face-recognition technology. Anyone caught on a camera—for example at a football match—is logged, with their face turned into a mathematical matrix and stored on a database. Soviet-era voice-recognition technology, first chronicled by Alexander Solzhenitsyn in his novel "The First Circle", reached new levels, selecting phone calls on the basis of key words. As in the Soviet period, the authors observe, engineers enthuse over the technical challenges, seemingly unaware of the purposes their work serves.

The book's narrative quickens with the arrival in Moscow of Edward Snowden, the fugitive contractor from the National Security Agency who took a trove of spy secrets from America and its allies. The authors, hyper-vigilant about privacy and internet freedom, are his natural allies, yet he refuses to talk to them. They hint that Mr Snowden is a hypocrite, the pawn of a regime which practises the abuses which he and his supporters say are looming in America. The Kremlin's security agencies, the authors note drily, have received new powers over the internet on the pretext of protecting Russians from the American menace. (Mr Snowden this month broke his silence and criticised Russia's human-rights record.)

The outlook is mostly bleak. Mr Putin dismisses the internet as a CIA operation, and warns Russian internet companies that they cannot hide. Given Russia's anti-Western mood, that signals an open season on, say, firms with foreigners on their boards. Western internet companies have proved spineless—Twitter, for example, blocked a Ukrainian political party's account to appease the Kremlin.

This is not quite the Soviet Union, though. The Putin system, the authors write, relies mainly on intimidation, not outright coercion. It is built to "zero in on a few troublemakers", but "in times of instability it is average users who spread the information, and the Putin system then breaks down." Perhaps. But not yet. ■

Writing about cricket...

...is writing about life

Cricket: The Game of Life. By Scyld Berry. *Hodder & Stoughton; 432 pages; £25*

PERHAPS more than any other sport, cricket has inspired outstanding writing. As Scyld Berry reveals in his new book, "Cricket: The Game of Life", around 20,000 books or pamphlets have been produced in English on cricket over the years, a record. Now Mr Berry, a former editor of *Wisden Cricketers' Almanack* and the cricket correspondent of the *Sunday Telegraph*, has written a worthy addition to this rich lineage.

The book may be eclectic, but it is also rewarding. It takes in everything from the "revelation of human character" that lends five-day Test cricket its rich appeal; the familial character of the game (a quarter of England's Test cricketers have a relative who also played Test cricket); the potency and wider significance of the great West Indies sides of the 1980s; and even cricket poetry and photography.

Conservatism is a common trait of cricket fans. Mr Berry convincingly argues that this is in part a reflection of how little the essence of the sport has changed: the length of a pitch, the weight and size of the ball and the width of a bat have all remained identical since the 18th century. Yet if cricket's embrace of the modern world was delayed compared with that of other sports, it has been emphatic. Today "cricket is not only an escape from reality, but an integral part of the commercial world."

The author is not shy to draw attention to the sport's hypocrisies and controversies. A chapter sarcastically entitled "The Spirit of Cricket" recounts incidents of ball tampering, dangerous fast bowling, biased umpires and corruption. This is nothing new—as early as 1817 the venerable Marylebone Cricket Club (MCC) banned a leading player for match-fixing. Mr Berry's assessment is bleak. Despite prominent players occasionally being found guilty, "The fixers have lived to fight, and deceive, another day, often in the guise of coach or commentator."

Mr Berry's portrait is nuanced; overall, it is a positive and uplifting work, befitting a game the author says has given him as much joy as anything else in his life. The book also serves another function: as a rallying cry against greedy and self-serving administrations. Without proper, independent governance, Mr Berry warns, "professional cricket will be ever more infected." Was it ever thus?

John Lahr on the theatre

Bright lights

Joy Ride: Show People and Their Shows. By John Lahr. *Norton; 592 pages; $29.95. Bloomsbury; £30*

"THEATRE," observes John Lahr, a longtime critic for the *New Yorker* and the author of "Joy Ride", is "an artisanal industry in a technological age." Every performance is different, each one a new alchemical product of the players, their lines and the audience. The effect is like a dance, writes Mr Lahr: the tune stays the same but the moves are subject to whim and mood, and the spectators, like all good partners, are alert and on their toes. The dance ends when the music stops, preserved as memory, if at all.

It is the job of the theatre critic to try to capture this ephemera in words. This has been Mr Lahr's life's work. Raised in dusty dressing-rooms, playing among the "costumes and props" while his father performed as an actor and comedian, he was perhaps fated to be bewitched by the stage. Mr Lahr went on to manage theatres and write for them, too (he won a Tony for his work on "Elaine Stritch at Liberty"), which has given his criticism a rare humility. He appreciates the sweat behind the thrills, the way actors "turn themselves inside out" to deliver the "carnal wallop" of a live performance. In this world of fleeting gifts, Mr Lahr's work for the *New Yorker*, where he has been contributing since 1992, offers something of lasting value.

The strongest pieces in "Joy Ride" are the profiles. Mr Lahr patiently mines the essence of his subjects—playwrights, directors—with the affection of a fan, the insight of a confidant and the authorial flair of an experienced critic. The effect is often delicious. He discovers, for example, that David Mamet's ear for rhythmic, cruel dialogue evolved out of a childhood spent defending himself against the vicious verbal lacerations of his parents. In response to the letters he received complaining about the "language" in his plays, Mr Mamet sent a form letter in the 1980s that read: "Too bad, you big crybaby."

Tony Kushner comes across as an endearing mess of machinegun wit, thin skin, "wackadoo hair" (in the words of one director) and anxious energy. Wallace Shawn roams New York in a similar disguise as "a fumbling, somewhat timid schlub". Yet the man who remains best known for his brief, stellar scenes in "The Princess Bride" is actually "one of American theatre's finest prose stylists and most subversive playwrights", writes Mr Lahr. Arthur Miller wrote the first act of "Death of a Salesman" in one day, at the age of 33 ("I was the stenographer," he later wrote.) On the eve of the play's 50th-anniversary revival on Broadway, he told Mr Lahr, "I think now that [Elia] Kazan [the play's original director] had it right from the beginning. He said, 'It's a love story.'"

Plenty of others are anointed by Mr Lahr's pen, including Sir Nicholas Hytner, former artistic director of the National Theatre in London; Susan Stroman, a rare director "capable of mounting a professional musical," and August Wilson, whose success as a playwright "almost single-handedly broke down the wall for other black artists". Al Pacino tries to explain to him why Mike Nichols was the "greatest" director he has ever worked with: "He doesn't say anything, and yet he does."

Mr Lahr saves some of his warmest thoughts for Harold Pinter, whose "The Homecoming" taught him about life, language and dramatic storytelling. "Before the play," he writes, "I thought theatre was about the spoken; after, I understood the eloquence of the unspoken." This revelation spurred a lifetime of listening closely for what is left unsaid. His discoveries are a delight to read. ■

Modern art from the 1960s and 1970s

Colour me beautiful

Pop Art at 50

BERNARD RANCILLAC'S "At Last, a Silhouette Slimmed to the Waist" (pictured) contains a clear visual pun. Painted in 1966 and set against bright green jungle, it shows a soldier plunging a Vietcong prisoner headfirst into a large water vessel. Pushing his boot down on his captive's back, gripping his twisted leg, the soldier submerges the man to the waist. At the top of the canvas, floating above this scene, five women stretch and pose in body-shaping lingerie. Labels point out their slimming corsets.

The work is at the heart of "The World Goes Pop", a new exhibition about the global dimensions of Pop Art that opens at Tate Modern in London on September 17th. The painting imitates magazines' juxtaposition of fashion and news reporting, and pulls them together tightly with the title. The work can be hung either way up, the reversible composition presenting each exhibitor with a difficult decision: highlight the horrors of the Vietnam war or go for the latest fashion fad?

The choice encapsulates the paradox that is Pop Art, a movement that adopted the aesthetic of commercial design and popular culture—with its clear figuration, distinct colour, neat outlines, bold text and humour—for its own ends. Every work can read as eye-candy or erudite criticism; it can show froth or fury or both.

"The World Goes Pop" addresses this dialectic. Bringing together 160 works from the 1960s and 1970s and from across the world, it contests the idea that Pop was merely an adoring reflection of consumer culture and places the political, purposeful side of the movement under the spotlight. Its geographical range also forces a reassessment of the idea that Pop Art radiated solely from a small nucleus of artists based in New York and London.

There are works here from Japan, the Soviet Union, Latin America, the Middle East and Europe. Barely any of the names frequently associated with it—Andy Warhol, Roy Lichtenstein and Peter Blake—are included. Filling the colourful rooms instead is work that has never been shown in Britain, by artists whom most visitors will not have heard of (many of them, through ignorance or through active indifference, did not even see themselves as part of a Pop Art movement).

Despite the diversity, a striking, playful aesthetic unifies the show. There are works that echo Warhol in their use of primary colours, brand logos and press photography. There are also the hard-edged lines, Ben-Day dots and comic-strip figures that frequent Lichtenstein's work, and three-dimensional collages similar to Blake's.

But the messages that these artists seek to convey are various, a point made straight away by the work in the introductory room. Among them is Ushio Shinohara's "Doll Festival", a striking triptych, three metres wide, in which blank-faced figures in traditional Japanese dress surround a man in a black Stetson in a surreal, yet prescient, comment on the Americanisation of Japanese culture. There is Evelyne Axell's "Valentine", in which a zip runs down a sinuous, painted silhouette, in a provocative gesture of female sexuality unleashed. "Big Tears for Two, 1963", by Erró, an Icelandic artist, transmutes Picasso's "Weeping Woman" into a jaunty cartoon, looking to expose the myths behind image-making. Each represents a type of protest against the established norms. Passing through themed rooms with titles like Pop Politics, Pop at Home and Folk Pop, it becomes clear that, across the world, artists were using a particular visual vocabulary, learned from popular culture and commercial art, to give voice to political, personal and local concerns.

This is not a comprehensive exhibition; Pop was not always protest. A lot of it celebrated everyday culture. Tate deliberately underplays these frivolous dimensions—it chooses the Vietnam war, not the underwear models. But this is a timely reassessment, given that works of Pop Art have become astoundingly expensive commodities, representative—clichés even—of a powerful luxury market. By throwing light on the darker side of Pop, Tate reveals its hidden depths. ■

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GENERAL PROCUREMENT NOTICE

KINGDOM OF BAHRAIN
MUHARRAQ PEARLING HERITAGE CONSERVATION AND URBAN ECONOMIC REVIVAL
(Istisna'a No. BH-0061)

The Government of the Kingdom of Bahrain has received financing in the amount of US$ 48 million from the Islamic Development Bank (IDB) towards the costs of the Muharraq Pearling Heritage Conservation and Urban Economic Revival Project in the city of Muharraq and intends to apply the proceeds to payments for the eligible goods and works to be procured under this project.

The principal objective of this project is to foster the socio-economic and cultural development of Muharraq and to improve the living conditions of the residents by developing new commercial services and improving urban mobility. The proposed investment program, financed through an Istisna'a financing, will require the procurement of the following works:

The proposed project involves the rehabilitation and conservation of 12 historical buildings (included in UNESCO World Heritage List) linked to the Muharraq's pearling heritage and connects them through a 3.5 km long walking trail. In addition to these buildings, a number of properties of significant historic value would also be conserved and rehabilitated under this project along with façade upgrading for an estimated of 750 houses. The project also involves construction of 17 open public spaces, a visitor centre, pedestrian bridge and 4 parking buildings.

The project would be executed into the following contracts:

1. Conservation and Rehabilitation Works for the Southern Section of the City (monuments, historic buildings, and façade upgrading), International Competitive Bidding for Member Countries (ICB/MC).
2. Conservation and Rehabilitation Works for the Northern Section of the City (monuments, historic buildings, and façade upgrading), (ICB/MC).
3. Development of the Pearling Trail (17 open public spaces, indicators along the trail), (ICB/MC).
4. Visitors Center and Bu Maher Pedestrian Bridge, National Competitive Bidding.
5. Car Park Buildings (ICB/MC).

Bidding for the above contracts is envisaged to commence in the second half of 2016. Procurement of contracts financed by the Islamic Development Bank will be conducted through the procedures as specified in the Islamic Development Bank's Guidelines for Procurement of Goods and Works Under Islamic Development Bank Financing (current edition), and is open to all eligible bidders, as defined in the guidelines.

Specific procurement notices for contracts to be bid under the Islamic Development Bank's international competitive bidding limited to Member Countries (ICB-MCs) procedure will be announced, as they become available in IsDB website (www.isdb.org) and international newspapers. Prequalification of contractors will be required for contract number 5 (as above) following the IDB Procurement Guidelines.

Interested eligible bidders who wish to be included on the mailing list to receive invitations to prequalify/bid under ICB or ICB/MC procedures, or those requiring additional information, should contact the address below.

The Coordinator of the Project Management Unit
Pearling: Testimony of an Island Economy
Bahrain Authority for Culture and Antiquities
Building 455 Road 2209 Block 322
Manama, Bahrain

Attention: Ghassan Chemali
Email: ghassan.chemali@culture.gov.bh
ghassan.chemali@gmail.com
Phone: (+973) 17298768
Fax : (+973) 17296771

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Property

Economic data

% change on year ago

	Gross domestic product latest	qtr*	2015†	Industrial production latest	Consumer prices latest	2015†	Unemployment rate, %	Current-account balance latest 12 months, $bn	% of GDP 2015†	Budget balance % of GDP 2015†	Interest rates, % 10-year gov't bonds, latest	Currency units, per $ Sep 8th	year ago
United States	+2.7 Q2	+3.7	+2.4	+1.3 Jul	+0.2 Jul	+0.4	5.1 Aug	-406.4 Q1	-2.6	-2.6	2.13	-	-
China	+7.0 Q2	+7.0	+6.9	+6.0 Jul	+1.6 Jul	+1.5	4.0 Q2§	+291.4 Q2	+3.0	-2.7	3.20§§	6.36	6.14
Japan	+0.8 Q2	-1.2	+0.8	+0.2 Jul	+0.3 Jul	+0.7	3.3 Jul	+107.8 Jul	+2.7	-6.8	0.35	120	106
Britain	+2.6 Q2	+2.7	+2.5	+0.8 Jul	+0.1 Jul	+0.2	5.6 May††	-180.5 Q1	-4.8	-4.4	1.84	0.65	0.62
Canada	+1.0 Q2	-0.5	+1.4	-2.7 Jun	+1.3 Jul	+1.1	7.0 Aug	-48.5 Q2	-2.9	-1.8	1.47	1.32	1.10
Euro area	+1.5 Q2	+1.4	+1.4	+1.2 Jun	+0.2 Aug	+0.2	10.9 Jul	+317.6 Jun	+2.6	-2.1	0.68	0.89	0.78
Austria	+0.5 Q2	-2.6	+0.7	-0.1 Jun	+1.2 Jul	+1.0	5.8 Jul	+6.5 Q1	+1.4	-2.1	0.99	0.89	0.78
Belgium	+1.3 Q2	+1.7	+1.3	-4.5 Jun	+0.9 Aug	+0.4	8.5 Jul	+12.1 Mar	+1.7	-2.6	1.07	0.89	0.78
France	+1.0 Q2	nil	+1.1	+0.6 Jun	+0.2 Jul	+0.2	10.4 Jul	-4.2 Jun‡	-0.7	-4.1	1.13	0.89	0.78
Germany	+1.6 Q2	+1.8	+1.7	+0.4 Jul	+0.2 Aug	+0.4	6.4 Aug	+281.0 Jul	+7.6	+0.7	0.68	0.89	0.78
Greece	+1.7 Q2	+3.7	+0.5	-1.3 Jul	-1.5 Aug	-1.0	25.0 May	+2.1 Jun	+2.6	-3.8	8.95	0.89	0.78
Italy	+0.7 Q2	+1.3	+0.6	-0.3 Jun	+0.2 Aug	+0.2	12.0 Jul	+45.6 Jun	+2.0	-2.9	1.84	0.89	0.78
Netherlands	+1.6 Q2	+0.3	+1.8	+0.6 Jul	+1.0 Jul	+0.4	8.5 Jul	+91.4 Q1	+9.2	-1.8	0.87	0.89	0.78
Spain	+3.1 Q2	+4.1	+3.0	+7.4 Jun	-0.4 Aug	-0.3	22.2 Jul	+15.8 Jun	+0.8	-4.4	2.13	0.89	0.78
Czech Republic	+4.4 Q2	+4.0	+3.1	+4.6 Jul	+0.3 Aug	+0.3	6.2 Aug§	+0.8 Q1	-0.1	-1.8	0.80	24.2	21.4
Denmark	+2.0 Q2	+0.9	+1.8	+0.8 Jul	+0.7 Jul	+0.7	4.6 Jul	+21.1 Jul	+6.8	-2.9	0.93	6.66	5.77
Norway	+2.2 Q2	-0.4	+0.7	+4.0 Jul	+1.8 Jul	+1.6	4.5 Jun‡‡	+37.8 Q2	+9.3	+6.0	1.60	8.24	6.33
Poland	+3.6 Q2	+3.6	+3.4	+3.7 Jul	-0.7 Jul	+0.2	10.1 Jul§	-1.0 Jun	-1.4	-1.5	2.99	3.77	3.24
Russia	-4.6 Q2	na	-3.6	-4.6 Jul	+15.8 Aug	+14.8	5.3 Jul§	+68.7 Q2	+4.9	-2.8	11.55	68.2	37.0
Sweden	+2.9 Q2	+4.0	+2.7	-1.9 Jul	-0.1 Jul	+0.1	6.5 Jul§	+35.1 Q2	+6.5	-1.2	0.63	8.41	7.11
Switzerland	+1.2 Q2	+1.0	+0.7	-2.5 Q2	-1.4 Aug	-1.0	3.3 Aug	+53.6 Q1	+7.2	+0.2	-0.11	0.98	0.94
Turkey	+2.3 Q1	na	+2.8	+1.5 Jul	+7.1 Aug	+7.3	9.3 May§	-44.7 Jun	-4.7	-1.6	10.72	3.01	2.17
Australia	+2.0 Q2	+0.7	+2.4	+1.2 Q2	+1.5 Q2	+1.7	6.3 Jul	-47.4 Q2	-3.2	-2.4	2.67	1.43	1.08
Hong Kong	+2.8 Q2	+1.6	+2.3	-1.6 Q1	+2.5 Jul	+3.1	3.3 Jul‡‡	+5.9 Q1	+2.8	nil	1.78	7.75	7.75
India	+7.0 Q2	+7.0	+7.5	+3.8 Jun	+3.8 Jul	+5.3	4.9 2013	-27.5 Q1	-1.2	-4.1	7.77	66.3	60.5
Indonesia	+4.7 Q2	na	+4.8	+5.8 Jun	+7.2 Aug	+6.4	5.8 Q1§	-21.6 Q2	-2.4	-2.0	8.89	14,250	11,723
Malaysia	+4.9 Q2	na	+5.5	+4.4 Jun	+3.3 Jul	+2.6	3.1 Jun§	+8.8 Q2	+3.4	-4.1	4.26	4.31	3.17
Pakistan	+5.5 2015**	na	+5.7	+3.9 Jun	+1.7 Aug	+4.1	6.0 2014	-2.2 Q2	-0.6	-5.1	9.35†††	104	102
Philippines	+5.6 Q2	+7.4	+6.6	-3.6 Jun	+0.6 Aug	+2.6	6.5 Q3§	+14.5 Mar	+4.1	-1.9	3.65	46.8	43.5
Singapore	+1.8 Q2	-4.0	+3.1	-6.1 Jul	-0.4 Jul	+0.4	2.0 Q2	+69.5 Q2	+21.3	-0.7	2.84	1.42	1.26
South Korea	+2.2 Q2	+1.3	+2.6	-3.3 Jul	+0.7 Aug	+0.9	3.4 Aug§	+104.3 Jul	+7.8	+0.4	2.24	1,195	1,024
Taiwan	+0.5 Q2	-6.6	+3.4	-3.0 Jul	-0.4 Aug	+0.2	3.7 Jul	+72.8 Q2	+12.8	-1.1	1.17	32.5	30.0
Thailand	+2.2 Q4	+7.1	+3.5	-5.3 Jul	-1.2 Aug	+0.8	1.0 Jul§	+20.8 Q2	+2.4	-2.0	2.86	36.0	32.1
Argentina	+1.1 Q1	+0.8	nil	+0.6 Jul	— ***	—	6.6 Q2§	-6.0 Q1	-1.4	-3.3	na	9.33	8.41
Brazil	-2.6 Q2	-7.2	-1.9	-9.0 Jul	+9.6 Jul	+8.6	7.5 Jul§	-89.4 Jul	-4.1	-5.8	14.98	3.82	2.27
Chile	+1.9 Q2	nil	+2.9	-1.7 Jul	+5.0 Aug	+3.8	6.6 Jul§‡‡	-0.3 Q2	-1.3	-2.0	4.58	691	588
Colombia	+2.8 Q1	+3.3	+3.3	+1.5 Jun	+4.7 Aug	+4.2	8.8 Jul§	-20.7 Q1	-6.6	-2.1	8.09	3,115	1,947
Mexico	+2.2 Q2	+2.0	+2.5	+1.4 Jun	+2.6 Aug	+2.9	4.3 Jul	-25.3 Q2	-2.5	-3.4	6.11	16.8	13.1
Venezuela	-2.3 Q3	+10.0	-4.2	na	+68.5 Dec	+76.4	6.6 May§	+10.3 Q3	-1.8	-16.5	10.42	6.30	6.35
Egypt	+4.3 Q4	na	+4.2	-12.0 Jun	+8.3 Jul	+9.9	12.7 Q2§	-10.2 Q1	-1.4	-11.0	na	7.83	7.15
Israel	+1.9 Q2	+0.3	+3.4	+5.0 Jun	-0.3 Jul	-0.2	5.3 Jul	+11.7 Q1	+4.8	-2.9	2.32	3.90	3.61
Saudi Arabia	+3.5 2014	na	+2.7	na	+2.2 Jul	+2.7	5.7 2014	+39.7 Q1	-2.4	-12.1	na	3.75	3.75
South Africa	+1.2 Q2	-1.3	+1.8	-1.0 Jun	+5.0 Jul	+4.8	25.0 Q2§	-18.7 Q1	-5.1	-3.8	8.49	13.7	10.8

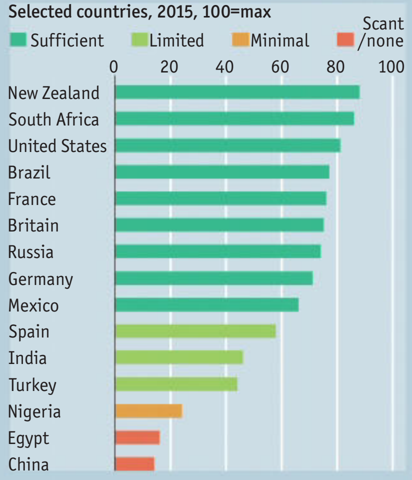
Source: Haver Analytics. *% change on previous quarter, annual rate. †*The Economist* poll or Economist Intelligence Unit estimate/forecast. §Not seasonally adjusted. ‡New series. **Year ending June. ††Latest 3 months. ‡‡3-month moving average. §§5-year yield. ***Official number not yet proven to be reliable; The State Street PriceStats Inflation Index, July 27.18%; year ago 37.89% †††Dollar-denominated bonds.

Markets

	Index Sep 9th	% change on one week	% change on Dec 31st 2014 in local currency	% change on Dec 31st 2014 in $ terms
United States (DJIA)	16,253.6	-0.6	-8.8	-8.8
China (SSEA)	3,397.6	+2.6	+0.2	-2.5
Japan (Nikkei 225)	18,770.5	+3.7	+7.6	+6.6
Britain (FTSE 100)	6,229.0	+2.4	-5.1	-6.5
Canada (S&P TSX)	13,531.9	-0.1	-7.5	-18.8
Euro area (FTSE Euro 100)	1,087.7	+2.3	+4.9	-3.2
Euro area (EURO STOXX 50)	3,270.0	+2.2	+3.9	-4.1
Austria (ATX)	2,298.3	+1.6	+6.4	-1.8
Belgium (Bel 20)	3,495.0	+2.5	+6.4	-1.8
France (CAC 40)	4,664.6	+2.4	+9.2	+0.8
Germany (DAX)*	10,303.1	+2.5	+5.1	-3.0
Greece (Athex Comp)	669.3	+6.8	-19.0	-25.2
Italy (FTSE/MIB)	22,126.6	+2.4	+16.4	+7.4
Netherlands (AEX)	444.3	+2.5	+4.7	-3.4
Spain (Madrid SE)	1,017.3	+1.0	-2.4	-9.9
Czech Republic (PX)	1,008.6	+0.7	+6.5	+0.7
Denmark (OMXCB)	859.1	+2.7	+27.2	+17.2
Hungary (BUX)	21,107.0	-0.3	+26.9	+17.6
Norway (OSEAX)	638.2	+2.4	+3.0	-6.1
Poland (WIG)	50,806.6	+1.3	-1.2	-7.0
Russia (RTS, $ terms)	796.7	+0.9	+14.4	+0.8
Sweden (OMXS30)	1,507.2	+2.4	+2.9	-4.2
Switzerland (SMI)	8,871.9	+2.8	-1.2	+0.4
Turkey (BIST)	72,003.3	-2.2	-16.0	-35.2
Australia (All Ord.)	5,236.9	+2.3	-2.8	-16.5
Hong Kong (Hang Seng)	22,131.3	+5.7	-6.2	-6.2
India (BSE)	25,719.6	+1.0	-6.5	-11.1
Indonesia (JSX)	4,347.3	-1.2	-16.8	-27.8
Malaysia (KLSE)	1,603.4	+0.8	-9.0	-26.5
Pakistan (KSE)	33,830.4	-1.4	+5.3	+1.4
Singapore (STI)	2,928.2	+1.7	-13.0	-18.5
South Korea (KOSPI)	1,934.2	+1.0	+1.0	-6.7
Taiwan (TWI)	8,286.9	+3.1	-11.0	-13.5
Thailand (SET)	1,396.3	+1.7	-6.8	-15.0
Argentina (MERV)	11,158.7	+3.3	+30.1	+17.8
Brazil (BVSP)	46,657.1	+0.4	-6.7	-34.5
Chile (IGPA)	18,265.6	-1.5	-3.2	-14.6
Colombia (IGBC)	9,464.1	+0.5	-18.7	-37.9
Mexico (IPC)	42,754.7	-0.5	-0.9	-12.9
Venezuela (IBC)	14,721.1	-0.7	+282	na
Egypt (Case 30)	7,050.0	-1.4	-21.0	-27.9
Israel (TA-100)	1,398.7	+0.5	+8.5	+8.5
Saudi Arabia (Tadawul)	7,748.9	+5.2	-7.0	-7.0
South Africa (JSE AS)	49,723.6	+1.0	-0.1	-15.7

Open budget index

Only 24 countries have acceptable levels of budget transparency, according to the latest "open budget index" from the International Budget Partnership, an advocacy group. The index, which is based on 109 questions, measures the amount, level of detail, and timeliness of budget information that is publicly available in 102 countries. The remaining 78 countries (which account for 68% of the world's population) provided "insufficient" information; 17 of these provided scant or no budget information. Although transparency has improved since the last survey in 2012, thanks largely to improvements made by countries at the bottom of the index, the average score is still only 45 out of a maximum of 100.



Source: International Budget Partnership

Other markets

	Index Sep 9th	% change on one week	% change on Dec 31st 2014 in local currency	% change on Dec 31st 2014 in $ terms
United States (S&P 500)	1,942.0	-0.3	-5.7	-5.7
United States (NAScomp)	4,756.5	+0.1	+0.4	+0.4
China (SSEB, $ terms)	307.4	+9.5	+8.7	+5.7
Japan (Topix)	1,507.4	+2.8	+7.1	+6.1
Europe (FTSEurofirst 300)	1,435.5	+2.9	+4.9	-3.2
World, dev'd (MSCI)	1,627.1	+0.7	-4.8	-4.8
Emerging markets (MSCI)	790.6	-0.8	-17.3	-17.3
World, all (MSCI)	391.4	+0.6	-6.2	-6.2
World bonds (Citigroup)	877.4	+0.3	-2.8	-2.8
EMBI+ (JPMorgan)	697.9	+0.4	+0.9	+0.9
Hedge funds (HFRX)	1,201.1§	-0.4	-1.4	-1.4
Volatility, US (VIX)	24.4	+26.1	+19.2	(levels)
CDSs, Eur (iTRAXX)†	69.3	-6.2	+17.4	+8.4
CDSs, N Am (CDX)†	80.3	-4.0	+26.5	+26.5
Carbon trading (EU ETS) €	8.2	+2.9	+12.9	+4.2

Sources: Markit; Thomson Reuters. *Total return index.
†Credit-default-swap spreads, basis points. §Sept 8th.

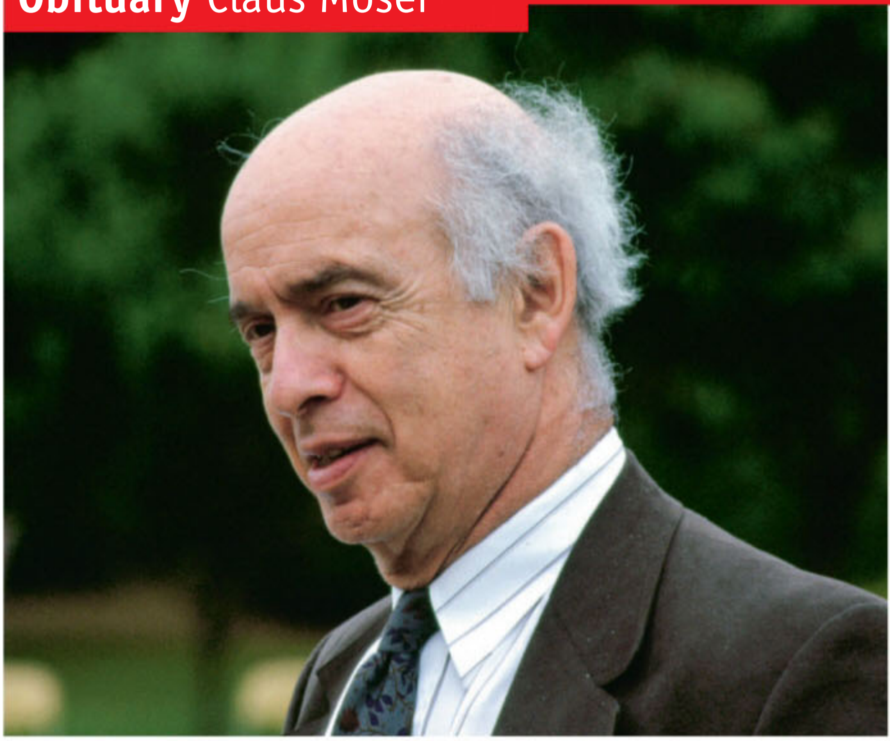
Indicators for more countries and additional series, go to: **Economist.com/indicators**

The Economist commodity-price index

2005=100

	Sep 1st	Sep 8th*	% change on one month	% change on one year
Dollar Index				
All Items	130.3	129.5	-4.7	-20.1
Food	150.0	147.5	-7.7	-17.3
Industrials				
All	109.9	110.9	-0.2	-23.8
Nfa†	110.1	108.5	-3.6	-18.3
Metals	109.8	111.9	+1.3	-25.8
Sterling Index				
All items	154.6	153.4	-3.4	-16.3
Euro Index				
All items	143.9	144.0	-5.8	-7.8
Gold				
$ per oz	1,140.0	1,122.8	+1.2	-10.6
West Texas Intermediate				
$ per barrel	45.1	45.7	+5.6	-50.7

Sources: Bloomberg; CME Group; Cotlook; Darmenn & Curl; FT; ICCO; ICO; ISO; Live Rice Index; LME; NZ Wool Services; Thompson Lloyd & Ewart; Thomson Reuters; Urner Barry; WSJ. *Provisional
†Non-food agriculturals.



Outside in

Claus Moser, statistician and culture-lover, died on September 4th, aged 92

A GOOD way to rile Claus Moser was to tell him that statistics were dry. In courteous English, still slightly inflected by his Berlin boyhood, he would explain to the snootily innumerate types who adorn the upper reaches of British life that on the contrary, numbers were like words; they cast light on people's lives, and what could be more interesting than that? If that failed, he would with gentle mischief let slip that he ran the Royal Opera House, and then feign boredom when beseeched for tickets.

His childhood was in a cultural paradise that was teetering on the brink of hell. Professional musicians played with the family at its soirées. His parents brought their little boy, who could have been a concert pianist in later life, to the best performances that the German capital had to offer. Cleverly, they always took him home at the interval, leaving him yearning for more. Only much later in life, he said, did he find out how "Aida" finished.

His father, a banker, realised in 1929 that Jews had no future in Germany, though the Mosers tarried, dangerously, until 1936 because his grandmother was too ill to move. They flourished in Britain, sending the talented Claus to an (unusually progressive) co-educational boarding school; he proudly remembered a record seven-hour heavy-petting session in the stable straw, under the curious eyes of the school horse.

But Britain bruised the Mosers' loyalty when they were interned, along with many other anti-Nazi refugees, in 1940. It rankled. The need to screen foreigners was clear, but why was it done so humiliatingly? Why the confiscation of valuables? All they wanted to do was to fight Hitler.

The 17-year-old's few months in the internment camp were not wasted. Put 5,000 Jews together and they always will find something to do, he mused. Some set up a Viennese café (mysteriously finding whipped cream and iced coffee); in his case, he was asked to help compile statistics, awakening a lifelong passion.

He liked numbers, but he was no mathematician. The scariest moment of his life was when the London School of Economics asked him to branch out, and teach the analysis of variance and covariance: "I left the meeting thinking I would have to resign," he recalled. What fascinated him was the correct collection and application of statistics: choosing samples, phrasing questions, gathering data and interpreting results. His LSE lectures inspired a generation of social scientists and, compiled, became a much-used textbook.

His love for Britain was deep, though he saw its faults as clearly as its virtues, not only through his beloved statistics, but in what he modestly styled his "funny mish-mash" of a career. It riled him that even after 25 years his internment barred him from a security clearance; it delighted him when the prime minister, Harold Wilson, in 1967 made him head of the same statistical office which had earlier rejected him. But his loyalty was to principles, not politicians: in 1970 his refusal—backed with the threat of resignation—to spread the impact of some costly aircraft purchases on the monthly trade figures helped lose Mr Wilson the election. Journalists and academics pored over his brainchild, an annual compendium called "Social Trends"; official statistics, he insisted, were not just for officialdom.

After serving two more prime ministers he left the civil service to run Rothschilds (though he felt he was "not a natural banker", having no great interest in money). He became a director of this newspaper, a peer, and sat on countless committees—taking a "boringly, Germanically systematic" approach, as he put it, to the country's problems. He also ran an Oxford college. It all suited him greatly, but his greatest delight—and amazement—was that Britain made him, an outsider, chairman of the Royal Opera House.

That gave him the chance to see 2,000 performances, and also a platform to attack a British failing even worse than snobbery: philistinism. How was it possible, he asked despairingly, that the boss of one of the country's biggest companies could boast over lunch that he did not understand compound interest? It would never happen in Germany or America.

Frightfully clever man

"Education costs money," he once declared in a much-quoted aphorism. "But then so does ignorance." No other tongue, he noted sadly, has an equivalent of the English put-down "too clever by half". Leaving LSE with the best degree of his year in 1943, he was irked to find that the war effort discounted his brains because of his German origins. Eventually he persuaded the RAF to take him as a lowly "grease monkey" (aircraft mechanic). But he looked back on his wartime service with relish, reckoning it cured him of cockiness and priggishness.

He unapologetically loved high culture—while insisting that it should be available to all who wanted it, not just the rich. He battled and bemoaned the arts-subsidy cuts imposed by Margaret Thatcher's governments in the 1980s. In the spare time which he could miraculously conjure out of a packed diary, he oversaw a scalding report in 1999 about the national disgrace of innumeracy and illiteracy. One in five Britons, it showed, could not use a phone directory. A successful adult education programme followed. More proof, were any needed, of the power of statistics. ■