The Economist

SEPTEMBER 24TH–30TH 2016

Trump v Clinton, ever closer

EU and whose army?

A cool solution for climate change

Smile, you're at work

Living in a low-rate world


JASON DAY


RICKIE FOWLER


JUSTIN THOMAS


A STAR ALLIANCE MEMBER
OUR HEART
SMILES FOR YOU
Fly with your heart fulfilled, and touched by our genuine, friendly and caring THAI hospitality. All is in our radiant smile and gentle service with unique grace and style. For over 50 years, our smile never cease to fulfill your journey with the new height of comfort and joy.
To New Heights of Flying
THAI
Smooth as silk
thaiairways.com

Contents

On the cover
Central banks have been doing their best to pep up demand. Now they need help: leader, page 9. Interest rates are persistently low, and a pensions crisis looms. Who or what is to blame? Pages 17-22

The Economist online

Daily analysis and opinion to supplement the print edition, plus audio and video, and a daily chart
Economist.com

E-mail: newsletters and mobile edition
Economist.com/email

Print edition: available online by 7pm London time each Thursday
Economist.com/print

Audio edition: available online to download each Friday
Economist.com/audioedition

The Economist

Volume 420 Number 9008

Published since September 1843
to take part in "a severe contest between intelligence, which presses forward, and an unworthy, timid ignorance obstructing our progress."

Editorial offices in London and also:
Atlanta, Beijing, Berlin, Brussels, Cairo, Chicago, Lima, Mexico City, Moscow, Mumbai, Nairobi, New Delhi, New York, Paris, San Francisco, São Paulo, Seoul, Shanghai, Singapore, Tokyo, Washington DC

Military matters Grand talk of a "defence union" risks exposing Europe's weakness: leader, page 10. The EU's proposals miss the point, page 47. India could do with a bigger stick, page 23. The limits of China's military muscle: Banyan, page 28. And the extent of the Pentagon's, page 79

America's election An unusually large number of undecided voters will pick the next president: leader, page 10. What was once unthinkable has now become only mildly improbable, page 33. Hillary Clinton's attempts to swoop on young voters are meeting with some resistance: Lexington, page 38

Malaysia The government is stirring up religious tensions to distract attention from its own shortcomings: leader, page 11. A culture of tolerance is under threat, page 26

▸▸ Contents continues overleaf

Climate change Extending an old treaty that saved the ozone layer could improve cooling technology—and slow global warming, page 56

Happiness Companies that try to turn happiness into a management tool are overstepping the mark: Schumpeter, page 64

Bad science Poor scientific methods may be hereditary, page 73. Paul Romer blasts bad economics: Free exchange, page 70

Rediscovered art How forgotten African-American artists are coming back into the mainstream, page 77. Managing the career of one of them, page 78

Subscription service

For our full range of subscription offers, including digital only or print and digital combined visit
Economist.com/offers
You can subscribe or renew your subscription by mail, telephone or fax at the details below:

Telephone:	+65 6534 5166
Facsimile:	+65 6534 5066
Web:	Economist.com/offers
E-mail:	Asia@subscriptions.economist.com
Post:	The Economist Subscription Centre, Tanjong Pagar Post Office PO Box 671 Singapore 910817

Subscription for 1 year (51 issues)	Print only
Australia	A$425
China	CNY 2,300
Hong Kong & Macau	HK$2,300
India	INR 7,500
Japan	Yen 41,000
Korea	KRW 344,000
Malaysia	RM 780
New Zealand	NZ$460
Singapore & Brunei	S$425
Taiwan	NT$8,625
Thailand	US$288
Other countries	Contact us as above

Principal commercial offices:
25 St James's Street, London SW1A 1HG
Tel: +44 20 7830 7000

Rue de l'Athénée 32
1206 Geneva, Switzerland
Tel: +41 22 566 2470

750 3rd Avenue, 5th Floor, New York, NY 10017
Tel: +1 212 541 0500

1301 Cityplaza Four,
12 Taikoo Wan Road, Taikoo Shing, Hong Kong
Tel: +852 2585 3888

Other commercial offices:
Chicago, Dubai, Frankfurt, Los Angeles, Paris, San Francisco and Singapore

PEFC/01-31-162

PEFC certified
This copy of *The Economist* is printed on paper sourced from sustainably managed forests, recycled and controlled sources certified by PEFC
www.pefc.org

recycle

M.C.I. (P) No.030/09/2016 PPS 677/11/2012(022861)

Politics

A UN convoy attempting to supply aid to rebel-held areas in **Syria** was bombed, apparently by Russian jets. Twenty people were killed. The UN and other humanitarian groups briefly suspended aid deliveries. John Kerry, America's secretary of state, called on Russia and Syria to stop flying warplanes over northern Syria, as he tried to salvage a ceasefire that began only recently.

Iraq's finance minister, Hoshyar Zebari, was sacked by parliament over allegations of corruption. Mr Zebari is a prominent Kurdish politician who had served as foreign minister and was well known to international creditors and donors.

Israel saw a surge in attacks on soldiers and policemen by Palestinians armed with knives, shattering several months of relative calm. Some of the attackers were killed.

At least 44 people were killed in the **Democratic Republic of Congo** during protests against unconstitutional manoeuvrings by President Joseph Kabila to stay in office beyond the end of his second term.

UN investigators found evidence that 564 people have been executed in **Burundi** since April 2015, when protests first broke out against plans by Pierre Nkurunziza to run for a third term as president. The investigators have named several suspects whom they say should be charged with crimes against humanity.

Rocketing ahead

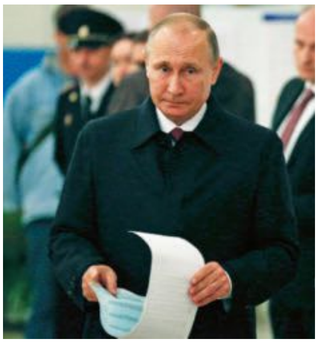
North Korea claimed to have tested a powerful new engine for a rocket, little over a week after its fifth test of a nuclear device. It said the engine would be used to launch satellites.

Militants attacked an Indian army base in **Kashmir**, killing 18 soldiers. The government blamed Pakistan.

Renho, a former model and minister, was elected leader of the Democratic Party, **Japan's** main opposition force. She is the first woman to lead her party.

A study by academics at Columbia and Harvard universities found that pollution from forest fires in **Indonesia** caused over 100,000 premature deaths in South-East Asia last year.

Why isn't he smiling?



In **Russia** the party of President Vladimir Putin won three-quarters of the 450 seats up for grabs in a parliamentary election. But turnout, at 48%, was an all-time low.

Alternative for Germany, a far-right party, won 14% of the vote in elections to Berlin's regional assembly, and will enter the local parliament for the first time. Angela Merkel, the **German** chancellor, has admitted her policy of welcoming refugees is unpopular and is open to changing aspects of it.

A trade deal between the **European Union** and **Canada** edged forward after the Social Democrats, Germany's junior coalition partner in government, voted in favour of it. But Sigmar Gabriel, the party's leader, who had staked his political future on the vote, is opposed to the EU's trade deal with America, known as TTIP.

A fire destroyed large parts of the biggest refugee camp in Lesbos, an island in **Greece**, where around 5,000 asylum-seekers were being held. Conditions in the camps across Greek islands and the mainland have long been dire.

The EU accepted **Bosnia's** application to join it. The Balkan country will now be assessed on whether it meets certain criteria on human rights and the rule of law.

The contest to lead **Britain's** Labour Party appeared to be conceded by the challenger, Owen Smith, soon after the voting closed, when he said he would not serve under Jeremy Corbyn. The contest was triggered after Mr Corbyn, the incumbent, lost the support of 75% of his MPs following the referendum to leave the EU. He has the support of most of the party's membership.

Tony Blair decided to close Tony Blair Associates. The firm was criticised during Mr Blair's time as Middle East peace envoy, when its clients included oil groups. The former prime minister will retain "a small number of personal consultancies", and still earn hundreds of thousands of pounds for giving a speech.

Gaming the vote

Venezuela's electoral commission said that a referendum to recall President Nicolás Maduro will not take place until the middle of the first quarter of 2017. That means it will not be held by January 10th, which would allow for a fresh election. If the referendum passes after that date the vice-president takes over and the ruling party stays in power.

Thousands of demonstrators marched to the Zócalo, the main square in Mexico City, on **Mexico's** independence day to demand the resignation of the president, Enrique Peña Nieto. They are angry with Mr Peña in part because he invited Donald Trump to the presidential residence. Undeterred by the hostility, Mr Peña gave the traditional *Grito de Dolores* ("Cry of Dolores"), which began Mexico's war of independence against the Spanish government in 1810.

Sérgio Moro, the **Brazilian** judge who is leading the investigation of a corruption scandal centred on Petrobras, a state-controlled oil company, said that the country's former president, Luiz Inácio Lula da Silva, will go on trial. He denies wrongdoing.

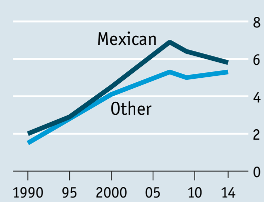
Terror in the Big Apple

A suspected **Islamist** was charged with setting off a bomb in Manhattan that injured 30 people and another in New Jersey, where no one was hurt. Other bombs were found nearby. Ahmad Khan Rahami is of Afghan descent and lived for a while in Pakistan.

The governor of **North Carolina** declared a state of emergency in Charlotte when rioting broke out in the city after a black man was fatally shot by a policeman, who was also black. The police said the man was armed and had posed a "deadly threat". The violence spread to the nearby freeway, where lorries were looted.

Hitting a wall

Unauthorised immigrants in the US, m



Source: Pew Research Centre

Illegal immigration to the United States is being driven less by Mexicans and more by people from Central America and India, according to a report from Pew, though Mexicans still account for half the total. Immigration is a big issue in the election campaign, with Donald Trump promising to build a wall along the border with Mexico.

Business

The **Bank of Japan** announced a further easing of monetary policy. It said it would cap the yield on ten-year government bonds at about 0% and also committed itself to buying assets until inflation exceeds its target of 2%. The BOJ has been one of the more interventionist central banks over the past few years, but its radical policies have done little to bring an end to Japan's low inflation.

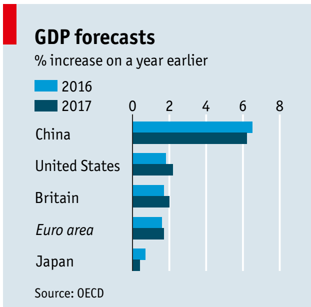
The **Federal Reserve** took few by surprise when it left interest rates unchanged at its latest policy meeting. In recent weeks some of the central bank's more hawkish officials have been pushing the case for lifting ultra-low rates, but their doveish colleagues were ultimately persuaded by a run of weaker economic data. The Fed did, however, drop a strong hint that it would raise rates by the end of the year.

Stumpfed for words

John Stumpf, the chief executive of **Wells Fargo**, was hauled in front of a Senate committee to explain the bank's conduct in a scandal where fake accounts were created for customers in order to meet branch targets. Mr Stumpf admitted that he knew about the practice in 2013 and that the board was informed in 2014. The senators were in an unforgiving mood, and wanted to know why no senior executives had been sacked.

Deutsche Bank's share price plunged after it confirmed that America's Department of Justice wants it to pay $14 billion to settle claims related to mortgage-backed securities that the German bank underwrote and sold between 2005 and 2007. Deutsche said it would not resolve the claims for "anywhere near" what the government is seeking. In a bad week for the bank, Deutsche's ratio of capital to assets, a measure of its ability to weather a financial storm, came last in a ranking compiled by Thomas Hoenig, the vice-chairman of America's Federal Deposit Insurance Corporation.

The Securities and Exchange Commission charged Leon Cooperman, one of America's most successful hedge-fund managers, and his firm, Omega Advisors, with **insider trading**. The indictments relate to knowledge that Mr Cooperman allegedly obtained about the sale of a natural-gas plant in Oklahoma. He denies any wrongdoing.



GDP forecasts
% increase on a year earlier
Source: OECD

Countries must reduce their reliance on **central banks** as "monetary policy has become overburdened", the OECD has warned. Its latest economic outlook, which slightly lowered world-growth forecasts for this year and next, also said that exceptionally low and negative interest rates "are distorting financial markets and raising risks".

Airbus and Boeing were given permission by the American government to sell **commercial aircraft to Iran**. It is the most significant business development yet since last year's agreement with Iran on its nuclear programme led to a reduction of sanctions.

Sailing into the sun

A.P. Moller-Maersk announced that it would split up its transport and energy businesses. Its major focus will be the shipping industry, which has been hit by a slowdown in global trade and a glut in capacity. Meanwhile **Hanjin**, a South Korean shipping line, was ordered by a bankruptcy court to return vessels it had chartered to their owners, indicating that the company might be wound down.

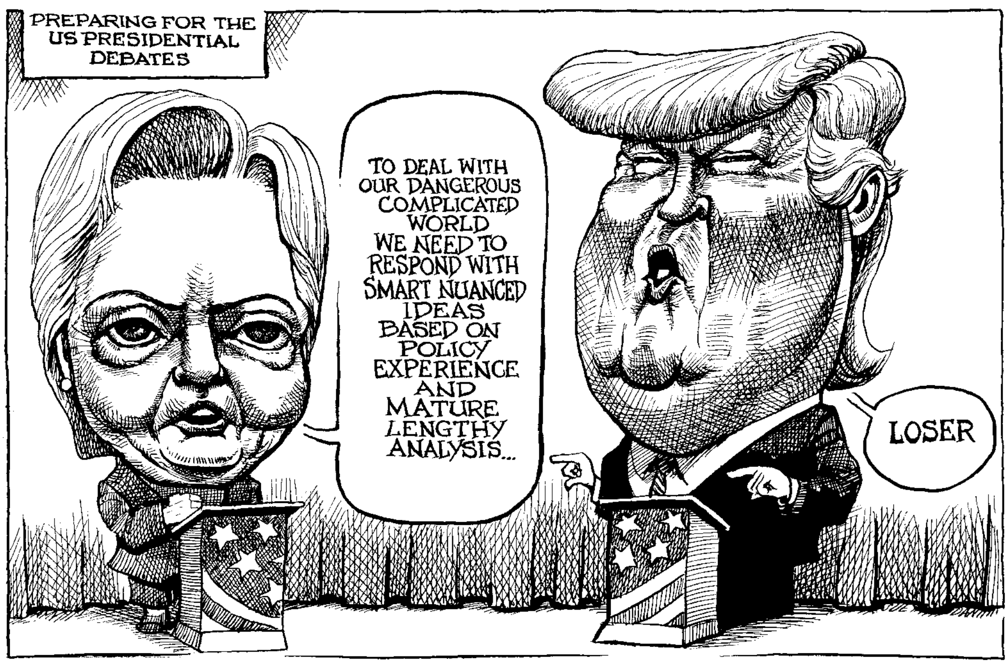
America released its first official guidelines for **autonomous cars**. The federal government usually regulates vehicles, leaving each state to set rules for drivers, but it is steering states towards adopting seamless laws for driverless cars. Carmakers may bristle at some of the proposed requirements, such as putting software updates through the same safety process that new vehicles must undergo and making data public.

In China, meanwhile, **Tesla Motors** defended its Autopilot system, as the father of a driver who was killed while allegedly using the feature took his lawsuit to court. Tesla has reiterated that its Autopilot is not intended as a fully automated system; drivers must keep their hands on the wheel while using it.

In only the fourth time in its history, the United Nations met specifically to discuss a health issue: the rise of superbugs that are resistant to **antibiotics**. Described by some medical professionals as the most acute problem facing mankind, the World Bank has estimated that by 2050 the issue could cost up to 3.8% of world GDP.

A study by John Coates, a neuroscientist and former trader at Goldman Sachs, suggested that traders who are more in tune with their bodies' "interoception" (inner sense) and follow their **gut feelings** can outperform algorithms in high-frequency trading. In order to cope with the pressures of modern finance a trader must be able to stomach the job.

Other economic data and news can be found on pages 82-83



The low-rate world

Central banks have been doing their best to pep up demand. Now they need help

THEY do not naturally crave the limelight. But for the past decade the attention on central bankers has been unblinking—and increasingly hostile. During the financial crisis the Federal Reserve and other central banks were hailed for their actions: by slashing rates and printing money to buy bonds, they stopped a shock from becoming a depression. Now their signature policy, of keeping interest rates low or even negative, is at the centre of the biggest macroeconomic debate in a generation.

The central bankers say that ultra-loose monetary policy remains essential to prop up still-weak economies and hit their inflation targets. The Bank of Japan (BOJ) this week promised to keep ten-year government bond yields around zero. On September 21st the Federal Reserve put off a rate rise yet again. In the wake of the Brexit vote, the Bank of England has cut its main policy rate to 0.25%, the lowest in its 300-year history.

Come Yellen and high water

But a growing chorus of critics frets about the effects of the low-rate world—a topsy-turvy place where savers are charged a fee, where the yields on a large fraction of rich-world government debt come with a minus sign, and where central banks matter more than markets in deciding how capital is allocated. Politicians have waded in. Donald Trump, the Republican presidential nominee, has accused Janet Yellen, the Fed's chairman, of keeping rates low for political reasons. Wolfgang Schäuble, Germany's finance minister, blames the European Central Bank for the rise of Alternative for Germany, a right-wing party.

This is a debate on which both sides get a lot wrong. It is too simple to say that central bankers are causing the low-rate world; they are also reacting to it. Real long-term interest rates have been declining for decades, driven by fundamental factors such as ageing populations and the integration of savings-rich China into the world economy (see pages 17-20). Nor have they been reckless. In most of the rich world inflation is below the official target. Indeed, in some ways central banks have not been bold enough. Only now, for example, has the BOJ explicitly pledged to overshoot its 2% inflation target. The Fed still seems anxious to push up rates as soon as it can.

Yet the evidence is mounting that the distortions caused by the low-rate world are growing even as the gains are diminishing. The pension-plan deficits of companies and local governments have ballooned because it costs more to honour future pension promises when interest rates fall. Banks, which normally make money from the difference between short-term and long-term rates, struggle when rates are flat or negative. That impairs their ability to make loans even to the creditworthy. Unendingly low rates have skewed financial markets, ensuring a big sell-off if rates were suddenly to rise. The longer this goes on, the greater the perils that accumulate.

To live safely in a low-rate world, it is time to move beyond a reliance on central banks. Structural reforms to increase underlying growth rates have a vital role. But their effects materialise only slowly and economies need succour now. The most urgent priority is to enlist fiscal policy. The main tool for fighting recessions has to shift from central banks to governments.

To anyone who remembers the 1960s and 1970s, that idea will seem both familiar and worrying. Back then governments took it for granted that it was their responsibility to pep up demand. The problem was that politicians were good at cutting taxes and increasing spending to boost the economy, but hopeless at reversing course when such a boost was no longer needed. Fiscal stimulus became synonymous with an ever-bigger state. The task today is to find a form of fiscal policy that can revive the economy in the bad times without entrenching government in the good.

That means going beyond the standard response to calls for more public spending: namely, infrastructure investment. To be clear, spending on productive infrastructure is a good thing. Much of the rich world could do with new toll roads, railways and airports, and it will never be cheaper to build them. To manage the risk of white-elephant projects, private-sector partners should be involved from the start. Pension and insurance funds are desperate for long-lasting assets that will generate the steady income they have promised to retirees. Specialist pension funds can advise on a project's merits, with one eye on eventually buying the assets in question.

But infrastructure spending is not the best way to prop up weak demand. Ambitious capital projects cannot be turned on and off to fine-tune the economy. They are a nightmare to plan, take ages to deliver and risk becoming bogged down in politics. To be effective as a countercyclical tool, fiscal policy must mimic the best features of modern-day monetary policy, whereby independent central banks can act immediately to loosen or tighten as circumstances require.

Small-government Keynesianism

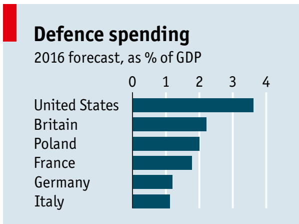
Politicians will not—and should not—hand over big budget decisions to technocrats. Yet there are ways to make fiscal policy less politicised and more responsive. Independent fiscal councils, like Britain's Office for Budget Responsibility, can help depoliticise public-spending decisions, but they do nothing to speed up fiscal action. For that, more automaticity is needed, binding some spending to changes in the economic cycle. The duration and generosity of unemployment benefits could be linked to the overall joblessness rate in the economy, for example. Sales taxes, income-tax deductions or tax-free allowances on saving could similarly vary in line with the state of the economy, using the unemployment rate as the lodestar.

All this may seem unlikely to happen. Central banks have had to take on so much responsibility since the financial crisis because politicians have so far failed to shoulder theirs. But each new twist on ultra-loose monetary policy has less power and more drawbacks. When the next downturn comes, this kind of fiscal ammunition will be desperately needed. Only a small share of public spending needs to be affected for fiscal policy to be an effective recession-fighting weapon. Rather than blaming central bankers for the low-rate world, it is time for governments to help them. ■

European defence

Potemkin Euro-armies

Grand talk of a "defence union" risks exposing Europe's weakness



THE idea of a European army is as old as the hope for European unity. After creating the European Coal and Steel Community, the embryo of today's European Union, the six founding members agreed in 1952 to form a supranational European force. But the plan was voted down by the French parliament; thereafter countries focused on gradual economic integration.

Now that the EU is in trouble and Britain has voted to leave, the idea of military integration is being revived (see page 47). Some countries talk of a "European Defence Union". Others, evoking the "Schengen" passport-free travel area, envisage a "Schengen for defence". Eurocrats want to show there is life in the EU after Brexit: with the British gone, they say, the biggest obstacle to defence integration will be gone, too. France, left as the unrivalled EU military power, delights in the chance to reclaim leadership from Germany. The danger is not that such big talk will threaten NATO, as some fear, but that it will come to nothing and expose Europe's weakness. That would aggravate two big threats to its security: bullying by an emboldened Russia and abandonment by an exasperated America.

EU and whose army?

Europeans have every reason to do more. Russia is a growing menace, and the transatlantic alliance is fraying. American isolationism, were Donald Trump to be elected president, could wreck NATO; Hillary Clinton would like Europeans to do more. Why should America, with a smaller population and economy than the EU, keep underwriting Europe's security? Only four of its 25 European allies—Britain, Estonia, Greece and Poland—meet the minimum standard of spending 2% of GDP on defence. And Europeans waste much of their money on mostly useless toy armies, navies and air forces. Any serious European policy must start from the fact that Europeans have to spend more on defence. And they should share critical equipment. Not even the biggest EU powers can do it all alone, as Britain and France discovered in Libya in 2011.

The EU can add value. Many modern-day threats—from terrorism to energy blackmail and cyber-security—are best dealt with by civilian bodies. The EU is better placed than NATO to muster these. In Afghanistan, Iraq and other places, the generals have learnt that soldiers alone cannot fix broken countries; they are the first to plead for the aid and state-building advice that the EU can offer. The EU can also provide a stepping-stone for neutral Nordic countries, Sweden and Finland, to be more involved in the defence of vulnerable Baltic states and ultimately join NATO. And the European Commission can put up money for defence research; as with its monitoring of deficits, it can scrutinise national defence budgets.

The risk is that, in their desire to show quick results, European leaders will seize only on the symbols of military integration and not the substance. One obsession is a separate headquarters for EU operations. This is a waste: NATO and EU states already have lots of headquarters. But it would be churlish for Britain, as it negotiates its new ties with the EU, to block the idea; and the EU should still aim for close defence co-operation with Britain. The EU's military ambitions need not displace NATO: they will remain puny compared with America's heft.

A Franco-German defence paper talks vainly of "strategic autonomy". But there is nothing less autonomous than armies that cannot move, fight or even see the enemy without American help. The Europeans need transport planes, air-refuelling tankers, helicopters, drones, satellites, field hospitals and much else. It does not matter whether these are acquired in the name of NATO or the EU. Military forces are national: the stronger they are, the stronger will be both the EU and NATO. ■

America's presidential election

Indecision time

An unusually large number of undecided voters will pick the next president

ON SEPTEMBER 26th two candidates will debate against each other on live television during what will probably be the most-watched political broadcast in American history. One of them is a former First Lady, senator and secretary of state. The other has never been elected to any office before and was, until last year, the host of "Celebrity Apprentice". Yet this is not the most remarkable thing about America's presidential election. What is truly extraordinary is that the polling currently suggests that these two candidates are, if not quite tied, then far closer than most people expected them to be at this stage of the race.

After the Democratic National Convention at the end of July, betting markets gave Donald Trump just a 20% chance of becoming the 45th president. His attacks on the parents of a soldier who was killed in Iraq seemed to have crossed a line. In the intervening weeks, his tone has not been moderated so much as become familiar. When he praises Vladimir Putin ("If he says great things about me, I'm going to say great things about him"), or suggests that Hillary Clinton's security detail be disarmed, many voters now just shrug. Mrs Clinton, meanwhile, had to absent herself briefly from the campaign trail after a bout of pneumonia. The bombs in New York and New ▸▸

Jersey probably helped the candidate calling for fortified borders and profiling of Muslims.

Although the national polls have been edging closer for a while, what is even more striking is how polls of voters in individual states have tightened, sending forecasters scurrying to recalibrate their predictions (see page 33). Mrs Clinton is still the favourite, and Mr Trump has yet to score much above 40% in a national poll. But this is not because of any real enthusiasm for the Democratic candidate, who admits she is not much of a campaigner and has faced a barrage of questions about her trustworthiness. A higher proportion of voters are turned off by both of the main candidates in November than in any election since 1992, when Ross Perot mounted a strong third-party run, winning 19% of the vote.

This time it is not a populist third party that is threatening to siphon off tens of millions of votes from the Republican and Democratic candidates, but powerful feelings of reluctance and repulsion. Many Americans would like to start over with two new candidates, which is not an option. After the most unpleasant election campaign for half a century, nearly 20% say they remain undecided or plan not to vote for the Democrat or the Republican. What these voters do in six weeks' time will determine the outcome of the election.

For those—including many lifelong Republicans—who are alarmed by Mr Trump's recent advances in the polls, the first debate looks like a good opportunity for Mrs Clinton to win the waverers over. That may be wishful thinking. Throughout the campaign the two candidates have been judged by different standards. As a seasoned politico, Mrs Clinton is expected to deliver a polished performance. Mr Trump can exceed expectations just by not insulting lots of people or losing his temper. Interviewing him is like trying to catch fish in a fast-moving river with your bare hands. Debating against him will not be any easier.

Besides, at a time when Americans are sick of politicians, Mrs Clinton is a near-perfect avatar for all the things they do not like about politics (see Lexington, page 38). Even though he has been running for president for over a year, has taken in $166m in political donations and has a pollster in charge of his campaign, Mr Trump still manages to avoid being thought of as a politician. There is just a chance, however, that the debate next week and the ones that follow it will at long last turn attention to something that has been largely ignored in all the fuss over the candidates' personalities: their actual policies.

Chalk and cheese

Perhaps out of weary cynicism, many of the undecided look at Mr Trump and Mrs Clinton and think there is nothing to choose between them. This is not the case. In fact it is hard to think of two major-party candidates who have ever been as far apart on what they say they intend to do when installed in 1600 Pennsylvania Avenue than this pair. For once it is not an exaggeration to say that this election is not just about who should be president, but about what sort of country America should be. And with all due respect to Gary Johnson, an affable libertarian, and Jill Stein, an environmentalist, there are only two candidates who can win. Americans who vote for a third party, or who abstain because they think politics is something that happens elsewhere, far removed from their daily lives, may be in for a surprise. ■

Religion and state in Malaysia

Adulterers beware

Malaysia's government is stirring up religious tensions to distract attention from its own shortcomings

FOR decades Malaysia's Islamist opposition party, PAS, has been agitating for the adoption of bloodthirsty Islamic punishments, such as amputations and stonings. It had seemed a forlorn quest. Malaysia is a multi-religious, multi-ethnic country, with Muslims (most of them ethnic Malays) accounting for only 60% or so of the population. The Indian and Chinese minorities and indigenous people from the Malaysian part of Borneo are largely Buddhist, Christian and Hindu. The governing coalition includes parties representing each group. Successive governments, with the backing of Malaysia's moderate Muslims, have shrugged off PAS's demands.

Malaysia's current government, alas, is unlike its predecessors. It lost the popular vote at the most recent election, remaining in power thanks only to assiduous gerrymandering. Since then news has emerged of the looting of hundreds of millions of dollars from a state development agency. Officials in America have indirectly accused Najib Razak (pictured), the prime minister, of pocketing some of the missing money, along with his stepson and others. Mr Najib acknowledges that $681m showed up in his personal bank accounts, but says the money was a legal donation, most of which was returned.

Malaysians are disgusted. The scandal has accelerated the decline of UMNO, Mr Najib's party, among urban voters, so Mr Najib is courting less sophisticated rural Malays. Malaysia already has Islamic courts, to handle disputes among Muslims in matters of family law, such as divorce and inheritance. The government has said it is willing to put to a vote a bill introduced by PAS to expand the Islamic punishments these outfits can prescribe. PAS wants adulterers, for example, to receive as many as 100 lashes with a rattan cane.

The ratchet of imposed piety

UMNO's sudden turn has created an uproar. Moderate Malaysians, Muslim and non-Muslim alike, are appalled. The idea that their relatively rich and cosmopolitan country might resort to flaying the promiscuous is bad enough; worse, perhaps, is any concession to a party that suggests such floggings are a step on the path to amputations. Mr Najib has pooh-poohed such talk as alarmist, but Malaysians know all too well that the ratchet of imposed piety turns only in one direction.

No attempt used to be made to enforce rules barring Muslims from consuming alcohol, for example, or having sex outside marriage. Now the religious authorities raid bars and hotels to check the patrons' religion. The law in effect bars

Muslims from converting to other religions, and the Islamic authorities can jail those who stray from the official interpretation of the faith, including Shias. Brides have been dragged out of weddings because a long-absent parent turns out to have registered them as Muslims. Transgender Muslims have been arrested in droves, their very existence seen as an affront to Islam. A pop star was recently detained over a video that appeared—horrors!—to show dancing in a mosque (see page 26).

In theory, non-Muslims are exempt from all this. But in practice they can be dragged into the Islamic courts, too. For instance, a Hindu man who was worried that he would lose custody of his children in an impending divorce converted to Islam. The Islamic courts, as is their wont, handed the kids to the Muslim parent, stoking outrage among minorities.

Mr Najib's implicit embrace of the idea that the government must enforce a dour version of Islam has two baleful consequences, beyond the distress of those persecuted by the religious authorities. First, it emboldens the country's most reactionary Muslims. In a recent survey, an alarming 11% of Malaysians said they had a "favourable view" of Islamic State. Police recently arrested three Malays planning to mark Malaysia's national day with attacks on nightclubs and a Hindu temple. Second, the increasing emphasis on Islam threatens the social compact that underpins Malaysian society. Indians and Chinese must already put up with an elaborate system of official handouts and preferences for Malays. By championing Islam, the government is heightening the sense that minorities are second-class citizens. The country was riven by race riots in the 1960s, before Mr Najib's father, Abdul Razak Hussein, put together the multi-ethnic coalition that has kept the peace ever since. It would be ironic, and tragic, if Mr Najib undid his father's legacy to preserve his own career. ■

Internet governance

The road to surfdom?

The internet is not American, whatever Ted Cruz thinks

WHOEVER controls the internet's address book has the power over life and death on the network. Delete a domain name (economist.com, for example), and a website can no longer be found and an e-mail no longer delivered.

Such authority currently falls under the auspices of America, but not for much longer. On October 1st the federal government is scheduled to let lapse a contract that gives it control over part of the Internet Corporation for Assigned Names and Numbers (ICANN), the body that oversees the internet's address system. Some—notably Ted Cruz, a Republican senator from Texas, who seems willing to risk a shutdown of the government to block the transfer—argue that this amounts to giving away the internet. He says that the handover would allow governments in autocratic countries such as China, Iran and Russia to have greater control over what is available online. In fact, the opposite is true.

It was the American government that helped bring ICANN to life in 1998, to avoid having the internet overseen by a UN-type intergovernmental organisation. Instead, it pushed for a "multi-stakeholder" model, which gives not just governments, but all involved—including engineers, network operators and even internet users—a say. Because there was no precedent for this kind of organisation and because of a fear that ICANN would lack legitimacy, America reserved to itself the right to veto changes to the internet's master list of addresses, but promised to pull back once the new entity had proved itself.

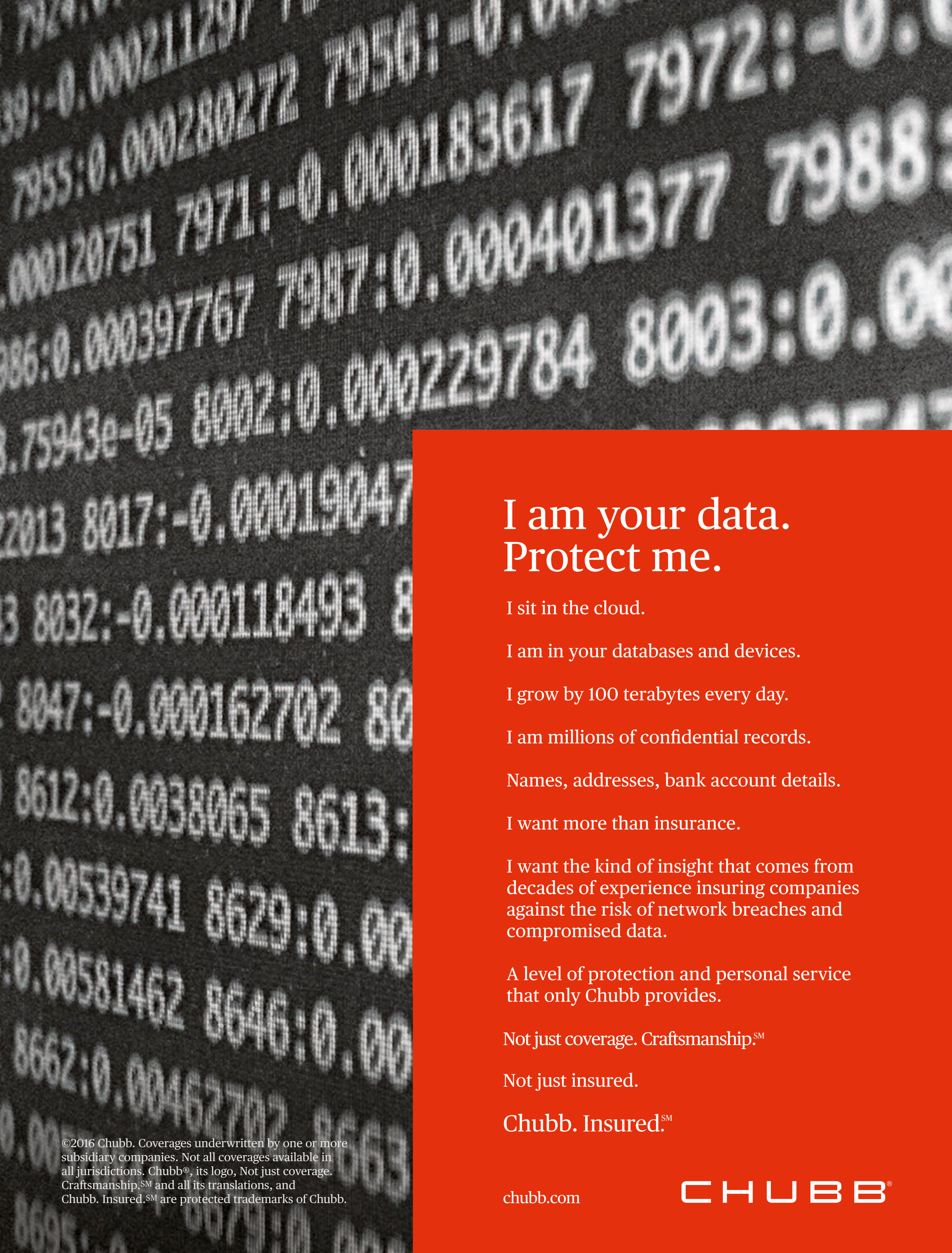
When ICANN was created this set-up made sense: the internet had a strongly American flavour and most of its users were American. But now most netizens live elsewhere—China and India are home to the greatest number of them—and most traffic no longer passes over American cables. Following revelations in 2013 that the National Security Agency had spied on internet users around the world, pressure grew for America to fulfil its pledge and relinquish control. In 2014 the government in Washington, DC, duly said that it would do so, provided that ICANN was truly independent and that it was able to resist power grabs by other governments and commercial interests. After ICANN agreed to implement a number of reforms earlier this year, the Obama administration decided to give the organisation full responsibility.

It is right to do so. The internet is meant to be global. But it is at risk of splintering, whether as a result of national firewalls or rules mandating that certain types of data need to be stored within a country. Russia's new data-localisation law, which came into effect on September 1st, for instance, requires that personal information from Russian citizens is kept in databases located in Russia. America's withdrawal from its oversight role at ICANN will not stop the likes of China and Russia from trying to impose their own rules on their patch of the internet. But it will remove an obvious excuse for them to demand an even greater say in how it is run.

In contrast, blocking ICANN's independence would weaken the consensus-driven model that has propelled the internet forward. The thorniest issues related to the internet, from cyber-security and hate speech to international data flows, are a complex mixture of the political and the technical. ICANN has its flaws, not least its hyper-bureaucratic processes, but it has shown that the multi-stakeholder model can solve tricky problems such as creating new suffixes for internet addresses. Almost 1.1 billion websites are currently online; global internet traffic will surpass 1 zettabyte for the first time this year, the equivalent of 152m years of high-definition video.

Yes ICANN

Mr Cruz may well fail to block the handover at the end of this month. But legal uncertainties would remain: Republicans could try to block the transition process in court, forcing the American government to take back control of ICANN (Congress has previously passed spending bills that prohibit the administration from spending any money on it). That would be the wrong fight to pick. Blocking ICANN's independence would not save the internet but hasten its Balkanisation. ■



I am your data.
Protect me.
I sit in the cloud.
I am in your databases and devices.
I grow by 100 terabytes every day.
I am millions of confidential records.
Names, addresses, bank account details.
I want more than insurance.
I want the kind of insight that comes from decades of experience insuring companies against the risk of network breaches and compromised data.
A level of protection and personal service that only Chubb provides.
Not just coverage. Craftsmanship.℠
Not just insured.
Chubb. Insured.℠
chubb.com
©2016 Chubb. Coverages underwritten by one or more subsidiary companies. Not all coverages available in all jurisdictions. Chubb®, its logo, Not just coverage. Craftsmanship.℠ and all its translations, and Chubb. Insured.℠ are protected trademarks of Chubb.

In cars

Uber is to be congratulated on its achievements ("Uberworld", September 3rd). Yet its service depends on fragile technology. The traditional black-cab industry in London relies on "The Knowledge" of its drivers: cognitive navigation. Uber relies on technical navigation in the form of GPS, Galileo, GLO-NASS and BeiDou and their various regional add-ons, all free at the point of use. But satellite-navigation systems rely on a weak signal, comparable to the power of a light bulb, out in space. Those signals are vulnerable to corruption and jamming, accidental or malign, by hackers, terrorists and Mother Nature, the latter in the form of solar winds.

What we loosely term "navigation" is more accurately PNT: position (where are we?), navigation (how do we get from A to B?) and timing, which is the key. Without constant, reliable, accurate timing-signals, global navigation satellite systems (GNSS) will not operate effectively. To protect this infrastructure we need a non-space-based alternative timing-mechanism to complement GNSS, providing a backup in the event of distortion or loss. Governments should push for this, as should Uber to protect its considerable investment, and its passengers.

JAMES TAYLOR
President
Royal Institute of Navigation
London

Some scepticism about autonomous cars is in order. The projects so far come nowhere close to revealing technology that could be counted on to traverse any road, weather situation or irregularity with no input at all from a driver.

JAKE HILDNER
Chicago

A lot of people may criticise describing Uber, a seven-year-old firm that has raised billions of dollars, as a "startup". But you are using the correct term. We techies use startup to describe any private, venture-funded firm that has not yet set out an exit for investors, regardless of how old it is. So, a brand-new barbershop is not a startup, but firms backed by venture capital that are not preparing an IPO, such as Airbnb, Dropbox and Uber, most certainly are.

ANDREW COHEN
Chief executive
Brainscape
New York

The power of meetings

Schumpeter is right in claiming that the worst of the world's challenges will not be solved by invitation-only chinwags (September 17th). Regardless of the quality of participants, meetings are only as good as the outcomes that their convening power is able to produce. At the most recent annual meeting of the World Economic Forum, leaders from businesses with a combined annual turnover of $2.1 trillion pledged to help meet UN goals to keep global temperature rises to under 2%. Others, meanwhile, hatched a plan to prepare the world for future epidemics and secured private-sector investment for the IFRC's One Billion Coalition for Resilience, a humanitarian-assistance programme.

Good meetings act as platforms, convening people with energy, ideas and resources to go away and make a difference in the world. Having a theme to focus attention can be a good thing; sometimes ours have even inspired *The Economist*'s own events.

OLIVER CANN
Spokesperson
World Economic Forum
Geneva

A certain truthiness

Your package on "post-truth politics" lamented the credence given to internet fabrications over mainstream media ("Art of the lie", September 10th). The mainstream media only have themselves to blame. Gone are the days when most of the media engaged in independent, investigative journalism and fact-checked even their own most reliable reporters. Now, the content is mostly low-cost opinion pieces, while the "facts" upon which those opinions are based are copied from outside sources. Quoting "facts" from other mainstream media, and assuming they have done their research, is the media equivalent of Donald Trump's post-truth line: "A lot of people are saying…"

I wrote a book about these issues in Germany, and its reception proved the point. On the day of publication an implicated politician wrote a self-interested condemnation in the mainstream press. Within hours, replicative book reviews appeared in media around the country, spawning full-page outraged editorials in many newspapers. None questioned the validity of the initial source.

The mainstream media must embrace the challenge of their new responsibilities in the internet age: to provide a bastion of independent, fact-based journalism as a serious alternative to popular web forums. After all, if the content of a traditional newspaper is no more informative or reliable than the result of a Google search, why buy the paper?

VIVIEN STEIN
London

I think more subtle, yet more accurate and frightening, is Roger Scruton's point of view as described in "Notes from Underground". This newspeak was perfected in the Soviet era, where "The goal…was not to tell explicit lies, but to destroy the distinction between the true and the false, so that lying becomes neither necessary nor possible." The purpose of this is to "remove emotion from reality and invest it in a world of fantasy, where nothing has a value, though everything has a price."

DAVID LEVY
New York

More than in the recent past, political campaigns are marred by the excessive use of puffery, misrepresentations, fibs and worse. I doubt, however, that it will redress this problem, even at the margin, if those of us opposed to or even appalled by the "post-truth" crowd identify ourselves as members of the "pro-truth" brigade. Euphemisms of this kind just draw guffaws from Mr Trump and his ilk.

JOSEPH LAPALOMBARA
Professor emeritus of political science and management
Yale University
New Haven, Connecticut

The ability of politicians to deceive us is historic. It is believed that the term "parliament" originates from the Anglo-Norman *parlement*, derived from *parler* (talking). Politicians have successfully diverted attention from the origin of the second part of the noun, which is *mentir* (lying).

NICO VAN BELZEN
Steenbergen, Netherlands

No, not "post-truth". Do not drag a venerable English word, or any of its relatives, into disreputable company. If there is need for a new word use "plausibull": a noun combining "plausible" and the popular word for nonsense. For extra emphasis, another well-known four-letter word can be appended to it. And it is easy to use as a verb.

BOB FRENKEL
Roseville, Australia

Give the last word to Homer Simpson: "Facts are meaningless. You could use facts to prove anything that's even remotely true."

DAVID LINDLEY
Crick, Northamptonshire ■

Letters are welcome and should be addressed to the Editor at
The Economist, 25 St James's Street, London SW1A 1HG
E-mail: letters@economist.com
More letters are available at:
Economist.com/letters

COMMONWEALTH
Enterprise and Investment Council

Chief Executive Officer
Commonwealth Enterprise and Investment Council

The Commonwealth Enterprise and Investment Council is seeking a well-connected and commercially successful CEO to lead the organisation through its next phase of growth and development.

CWEIC was established in July 2014 as a not-for-profit membership organisation. We facilitate trade and investment throughout the Commonwealth and support companies and Governments in developing economic activity.

A key component of our work is successfully convening the Commonwealth Business Forum (CBF), alongside the Commonwealth Heads of Government Meeting (CHOGM). The next CHOGM will be held in the United Kingdom in early 2018. This will require the CEO to establish effective partnerships with the governments, international institutions and the private sector, as well as taking responsibility for sponsorship and fundraising.

CWEIC also manages a number of programmes on behalf of the Commonwealth business community, including the Commonwealth Green Finance Facility, Commonwealth Maritime Initiative and Commonwealth Health Business Group. Our latest programme, CommonwealthFirst, seeks to help UK SME's exploit the opportunities across the Commonwealth. We are now aiming to expand this programme to other Commonwealth countries.

The CEO is an Executive Member of the Board of Directors of CWEIC, and is responsible for the management and operation of all aspects of the CWEIC's work. A remuneration package will be provided in line with Commonwealth guidelines.

For more information and a full job description please contact Weronika Patyk, *weronika@cweic.org*.

BANK FOR INTERNATIONAL SETTLEMENTS

Head of Financial Stability Policy

Basel, Switzerland

The Bank for International Settlements is a global forum for monetary and financial cooperation and a bank for central banks

To find out more about this opportunity and to submit your CV (in English), please visit www.bis.org/careers

Deadline for applications is **16 October 2016**

The BIS invites applications for this key appointment in its Monetary and Economic Department. Reporting directly to the department's joint heads, you will provide intellectual leadership in the work on financial stability to keep the BIS at the forefront of policy debates. You will lead, supervise and coordinate the support for BIS representation in international policy forums (such as the Financial Stability Board and G20). You will oversee the financial stability work being done by the secretariats of the various committees established within the BIS.

We would like to meet candidates with an outstanding track record in coordinating and conducting policy-oriented analysis and research in financial stability and who are familiar with the workings of the aforementioned committees. You are likely to be in a senior position within the monetary and financial stability function of a central bank, international financial organisation or leading research institution.

In return, we offer competitive conditions of employment as well as giving you the opportunity to be at the hub of central bank cooperation and to work in an international environment alongside colleagues from more than 60 countries.

Supporting global monetary and financial stability

WORLD TRADE ORGANIZATION
ORGANISATION MONDIALE DU COMMERCE
ORGANIZACIÓN MUNDIAL DEL COMERCIO

Director positions at the World Trade Organization

The World Trade Organization, based in Geneva, Switzerland, is seeking to fill the following three senior level positions:

- **Director, Agriculture and Commodities Division, to be filled by 1 April 2017;**
- **Director, Languages, Documentation and Information Management Division, to be filled by 1 January 2017; and**
- **Director, Trade in Services and Investment Division, to be filled by 1 October 2017.**

The Agriculture and Commodities Division handles all matters related to the WTO Agreements on Agriculture and on Sanitary and Phytosanitary measures. It services the relevant WTO committees as well as providing support to Members in the implementation of WTO rules and commitments in these areas and contributing to dispute settlement processes. It also manages the WTO's working relations with other international organizations and stakeholders in its areas of competence. The Division supports the ongoing WTO negotiations on agriculture and provides advice as appropriate. The Standards and Trade Development Facility (STDF) Secretariat is housed within the Agriculture and Commodities Division.

The Languages, Documentation and Information Management Division provides three types of complementary services:

- Linguistic services: Translation of some 40 million words and interpretation for some 3,000 sessions per year;
- Documentation services: Graphic design, text-processing, printing, and dissemination of materials;
- Information management services: WTO library, correspondence, registration of notifications, archiving and preservation of materials, and on-line document research.

The Trade in Services and Investment Division provides support and technical advice to WTO members on the implementation of the General Agreement on Trade in Services (GATS) and on further negotiations mandated by the Agreement. The work of the Division entails supporting the Council for Trade in Services (both in regular and special session) as well as other bodies established under the GATS such as the Committee on Financial Services, the Committee on Specific Commitments, the Working Party on Domestic Regulation, and the Working Party on GATS Rules.

Directors are the most senior positions in the Divisions and ensure that respective divisions deliver on the results expected and remain on the forefront as experts on the subject matter relevant to the division. They are also expected to manage staff members and their performance. Candidates must have the managerial experience, educational background and work experience required for the respective positions, as well as the skills to lead and motivate the divisional staff members to excel in their jobs. In addition, a solid understanding of the issues relevant to the subject matter(s) within the responsibility of the respective division is required.

For more details regarding these positions and to apply, please visit the WTO's e-recruitment website at https://erecruitment.wto.org

The application deadline for the positions is 31 October 2016.

Low pressure

Interest rates are persistently low. In our first article we ask who or what is to blame. In the second we look at one outcome: a looming pensions crisis

THE story of rich-world central banks and their protracted entanglement with near-zero interest rates was given another twist this week. One of their number gamely announced it still hoped for a more distant relationship, even if it couldn't bring itself to turn its back on them yet. Another renewed its vows to stick with them.

On September 21st the Federal Reserve kept its target for overnight interest rates at 0.25-0.5% but indicated that, after raising the target for the first time in a decade last year, it hoped to raise it for a second time soon—possibly in December, after America's presidential elections. Its rate-setting committee said the case for an increase had "strengthened" since its meeting in June, but it decided to wait for more convincing evidence. Earlier that day, the Bank of Japan (BOJ) said it was staying with its target of raising inflation to 2%. Indeed it went further. The bank said it would continue to buy bonds at a rate of around ¥80 trillion ($800 billion) a year, until inflation gets above 2% and stays there for a while. To help meet this "inflation-overshooting commitment", the bank said ten-year-bond yields would remain at around zero.

The BOJ also stuck with another unorthodox policy. Along with the European Central Bank (ECB) and a handful of smaller central banks, it charges commercial banks a small fee (a negative interest rate) to hold cash reserves. This through-the-looking-glass practice has spread to capital markets. Sanofi, a French drugmaker, and Henkel, a German manufacturer of detergent, both this month issued bonds denominated in euros with a negative yield. Investors will make a guaranteed cash loss if they hold the bonds to maturity. Earlier Germany became the first euro-zone government to issue a bond that promises to pay back to investors less than the sum it raised from them. A large proportion of all rich-country sovereign bonds now have negative yields.

You can't always get what you want

The debt-laden are delighted with the persistence of a low-rate world. It costs much less to service their obligations. But savers are increasingly grumpy. Economists are simply baffled. In the 1980s and 1990s, the high real cost of borrowing (ie, after adjusting for inflation) was the puzzle. Today's interest-rate mystery is more troubling and there is division over the reasons for it.

One side says it is simply the consequence of the policies pursued by the rich world's central banks. The Fed, ECB, BOJ and Bank of England have kept overnight interest rates close to zero for much of the past decade. In addition, they have purchased vast quantities of government bonds with the express aim of driving down long-term interest rates.

It is hardly a mystery, on this view: central banks have rigged the money markets. They have been aided in this task by new regulations, written in the wake of the global financial crisis, that require banks and insurance companies to keep more of their assets in safe and liquid instruments, such as government bonds. That is helpful, say sceptics, to rich-world governments with large debts which need to keep interest costs low. But it is punishing the thrifty and those who rely on bonds for their income.

On the other side of the divide are those who argue that central banks are merely responding to underlying forces. In this view the real interest rate is decided by the balance of supply and demand for the pool of global savings. The fall in interest rates since the 1980s reflects a shift in this balance: the supply of savings has increased as demand for it has crashed. Short-term nominal interest rates are stuck at zero, or a little below, because, in the absence of inflation, real interest rates cannot fall far enough to clear the world market for savings. Far from rigging things, central banks are struggling to find ways to help the market work so that the economy can function normally. Which side is right?

The present combination of low nominal and real interest rates is unprecedented. David Miles, a member of the Bank of England's monetary-policy committee, has worked out that the average short-term interest rate set by the bank since 1694, when it was founded, is around 4.8% (see chart 1 on next page). Indeed, for over a century after 1719, the bank kept its main inter- ▸▸

est rate at exactly 5%. But it is the real (ie, inflation-adjusted) rate that keeps the demand and supply of savings in balance.

If savers believe inflation will rise, they will demand a higher nominal interest rate to compensate for the expected loss of spending power. Borrowers, by contrast, will be keen to take on debt if they believe they can pay it back in devalued currency. Mr Miles calculates that inflation in Britain was around 2% in the three-and-a-bit centuries after 1694. That means the real interest rate was around 2.8%, assuming that inflation lived up (or down) to expectations.

That is a bold assumption. Thankfully, these days it is possible to work out long-term interest rates in real terms from the yields on inflation-protected bonds. Mervyn King, a former governor of the Bank of England, and David Low of New York University have estimated a real interest rate for G7 countries, excluding Italy, using such data going back to the mid-1980s. It shows a steady decline over the past 20 years. This era of falling real rates might usefully be split into two distinct periods: before and after the financial crisis of 2008-09. In the first period, real rates fell from above 4% to around 2%. Since the start of 2008, real long-term rates have fallen further, and faster, to around -0.5% (see chart 2).

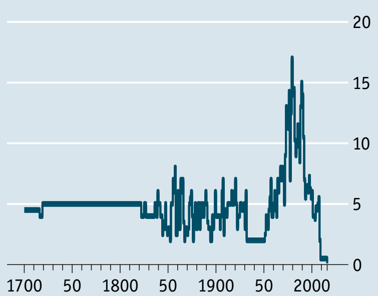
Down, down, deeper and down

By the 2000s it was already becoming clear that something was afoot. In 2004 the Fed began to increase short-term rates. That would normally be followed by a rise in long-term bond yields. Instead, bond yields fell, not only in America but across the world. That might make sense if bond investors expected durably lower inflation. In fact most of the fall was down to a decline in real interest rates; expectations of inflation had hardly changed. This was a "conundrum", said Alan Greenspan, then chairman of the central bank. Ben Bernanke, a Fed governor who later took over from Mr Greenspan in the top job, identified a worldwide "saving glut" as the culprit for the decline in real rates.

This ongoing glut in savings is due to two factors in particular, according to last year's *Geneva Report*, an annual study from the International Centre for Monetary and Banking Studies and the Centre for Economic Policy Research. The first is changing demography, mostly in the rich world but also in some emerging markets. Populations are ageing. At the same time, the average working life has not changed much. So more money has to be squirrelled away to pay for a longer retirement (see next article). A lot of that saving takes place during the best-paid years in middle age. The size of the world population (excluding China) of peak-earning age (40-64) was rising over the past two decades relative to those of retirement age. As a consequence of this, saving increased and real interest rates have steadily fallen.

Of historical interest 1

Bank of England base rate, %



Source: Bank of England

The real deal 2

"World" real interest rate

Average ten-year inflation-indexed bond yield, %

G7 countries, excluding Italy

Sources: "Measuring the 'world' real interest rate", by M. King and D. Low, NBER working paper, February 2014; *The Economist*

**The Economist* estimate

A second, related, factor is the integration of China into the world economy. "A billion people with a 40% savings rate; that brings a lot more supply to the table," says Randall Kroszner of the University of Chicago's Booth business school, one of the authors of the *Geneva Report* and a former Fed governor. Even though a massive slug of its GDP goes on investment, China still has savings left over to send abroad. That is why Mr Bernanke also blamed the saving glut for America's current-account deficit: if China saved a lot, every one else must save less. Explanations for its unusually high savings pile are also in part demographic. In the absence of a broad-based pension system, the family is the main social safety net. But family networks are a weak form of insurance because of China's one-child policy. So working people have had to save furiously.

Ageing is not the only long-run influence that has tilted the savings-investment scales. By skewing income to the high-saving rich, an increase in income inequality within countries has added to the saving glut. A fall in the relative price of capital goods means fewer savings are needed for a given level of investment. Both trends predate the fall in real interest rates, however, which suggests they did not play as significant a role as demography or China.

Others reckon the drop in real interest rates reflects a shift down in underlying trend growth, both before and since the crisis. For Larry Summers of Harvard University, this "secular stagnation" is a consequence of a chronic shortfall in demand. Robert Gordon of Northwestern University reckons the trouble lies with the economy's supply-side. The new digital and robot technologies cannot match the surge of productivity from past inventions such as electricity, the motor car, petrochemicals and indoor plumbing, he argues.

In fact, the historical relationship between real interest rates and economic growth is weak, according to a recent study by James Hamilton of the University of California at San Diego, and his co-authors. They find that the correlation between GDP growth and the real short-term interest rate across the seven most recent economic cycles in America was only mildly positive—and then only if the brief recovery before the second dip of the early 1980s "double-dip" recession is excluded. Include it and the correlation is negative (see chart 3 on next page).

In the period since the financial crisis, real rates have fallen even faster. The same secular forces have been at work, plus some new ones—notably "deleveraging". Though middle-aged households were saving hard in the run-up to the crisis, many younger ones were piling on debts to buy overpriced homes. When house prices and incomes started to fall, those mortgage debts loomed much larger and so they saved more.

A related reason for more saving is fear. The severity of the Great Recession belied the relative economic stability that preceded it. Mr Miles calculates that the probability of a decline in British output as sharp as that in 2009 was 0.0004% (or one in 240,000 years) based on the volatility of GDP growth between 1949 and 2006. As people become aware of the possibility of such rare events, their caution could cut the risk-free real interest rate by 1.5-2 percentage points on plausible assumptions.

Low rider

Ageing populations, debt hangovers, fear and secular stagnation: if low real rates are a crime, there is no shortage of suspects. Some look guiltier than others. But for many the principal villains are central banks. They have pushed short-term interest rates to zero and kept them there. They have also spent huge sums of electronic cash buying long-term bonds.

Their defenders say central banks are typically reacting to economic trends, not shaping them. A lodestar for central-bank policy is the idea of the "neutral" real interest rate, a close cousin of the real rate determined in the market for long-term savings. This is the short-term real interest rate that keeps inflation stable when the economy


What's a
workday
without
Adrenalin?

is running at full capacity, with no idle workers, factories or offices.

When inflation is low and the economy weak, as has been the case since 2008, central banks should aim to set nominal interest rates below the sum of the neutral real rate and the inflation target. The higher propensity to save means the neutral real rate is lower—probably much lower—than in the past. Since short-term nominal interest rates cannot be pushed much below zero, central banks have resorted to bond purchases to depress long-term borrowing rates and push investors into riskier assets, to give a fillip to the economy. And if interest rates and bond yields were really too low, it should lead to overheating and rising inflation. There are no signs of this.

Even so, something is amiss in bond markets when many rich-country government bonds have a negative yield and firms can sell debt by promising to pay back less than they borrow. This might be fitting if economies were in a deflationary spiral. But GDP growth is not collapsing. Inflation is low, but is in general moving sideways, not downwards. Big budget deficits in many rich countries mean the supply of new government debt is hardly drying up.

Free falling

The promise of continuous central-bank action has affected bond markets. Calling the top of the bull market in bonds has for years been a fool's errand. Still, it is becoming ever harder to make sense of today's bond prices. The idea that there is, or ought to be, a link between the amount of public borrowing and interest rates has become almost quaint. The yields on the bonds of high-debt, low-growth Italy are lower than the yields on the bonds of low-debt, high-growth Australia. It is difficult to explain Italy's yields without reference to the ECB's bond-buying programme.

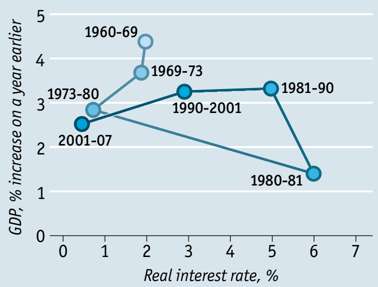
What is more, the impact of ever-lower rates may be starting to pall. In principle, cuts in interest rates boost the economy by nudging consumers and companies to spend now and save later. But there are forces working in the other direction, too. If savers have a target level of savings in mind to fund retirement, low or negative interest rates slow down the progress in reaching their goals. For such people, low rates mean less spending now, not more. Similarly, a low risk-free rate of interest drives up the present value of future pension obligations for employers who have promised their workers a defined benefit on their retirement.

Such firms may find that the profits they are obliged to set aside to fill the growing holes in their pension funds leave them little left over for investment. They could of course borrow but the magnitude of some pension deficits means that lenders might view such firms as a poor credit risk. It is likely that in the tug-of-war between the parts of the economy that are induced to spend now and save later by low rates, and those that are spurred to do the opposite, the former is stronger. But with risk-free interest rates at such low levels for such a long time, the fight is probably far less one-sided than in normal times.

Line of inquiry 3

US interest rates and economic growth

By business cycle, annual average



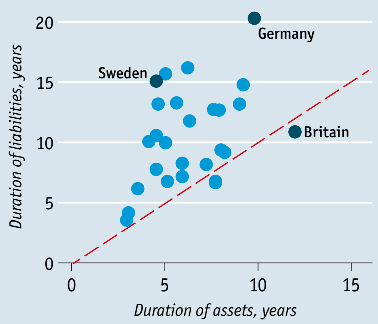
Source: "The Equilibrium Real Funds Rate: Past, Present, and Future", by J. Hamilton, E. Harris, J. Hatzius, and K. West, Brookings working paper, October 2015

Indeed attempts to guard against the impact of low rates may perversely become a cause of even lower rates. Accounting rules and solvency regulations are a spur to bond-buying even at super-low interest rates. To understand why, consider the business of life-assurance companies. They pledge to pay a stream of cash to policyholders, often for decades. This promise can be likened to issuing a bond. Insurance firms need to back up these promises. To do so they buy safe assets, such as government bonds.

The trouble is that the maturities on these bonds are shorter than the promises the insurers have made. In the jargon, there is a "duration mismatch". When bond yields fall, say because of central-bank purchases, the cost of the promises made by insurance companies goes up. The prices of their assets go up as well, but the liability side of the scales is generally weightier (see chart 4). And it gets heavier as interest rates fall. That creates a perverse effect. As bond prices rise (and yields fall), it increases the thirst for bonds. Low rates beget low rates.

Long and short of it 4

European insurance companies, by country, 2014



Source: Bank for International Settlements

This dynamic might materially affect bond yields if the weight of forced buyers were large enough. In 2014-15 yields on ten-year German bonds fell from around 2% to a low of close to zero, in response to expectations of quantitative easing by the ECB. A study by Dietrich Domanski, Hyun Song Shin and Vladyslav Sushko of the Bank of International Settlements finds that the fall in yields induced German insurers to buy more bonds. Insurers started 2014 with €60 billion-worth of government bonds but ended it holding €80 billion-worth.

Such a rapid rate of government-bond purchases was out of keeping with previous years. Long-maturity bonds were particularly sought after. This episode lends support to the idea that demand for bonds increases even as their price rises, where there is a mismatch of assets and liabilities. Those who worry that central-bank actions have led to distortions in capital markets seem to have a point.

If a growing bulge of middle-aged workers is behind the secular decline in real interest rates, then the downward pressure ought to attenuate as those workers move into retirement. Japan is further along this road than other rich countries. Yet its long-term real interest rates are firmly negative. That owes at least something to the open-ended quantitative easing by the Bank of Japan. A concern is that as more people retire, and save less, there will be fewer buyers for government bonds, of which less than 10% are held outside Japan. Another of the *Geneva Report*'s authors, Takatoshi Ito of Columbia University, reckons there will be a sharp rise in Japanese bond yields within the next decade. There may be political pressure on the Bank of Japan to keep buying bonds to prevent this.

Slip sliding away

A chorus of economists will vigorously dispute the idea that central banks have lost their power to pep up the economy. In principle, they could print money to buy any number of assets, including stocks (Japan's central bank is already a big buyer of equities). They could test the lower bounds of standard monetary policy by edging interest rates further into negative territory. And they could raise their inflation targets so that an interest rate of zero translates into a lower real interest rate.

But a lesson from the 1980s is that inflation expectations can take a long time to adjust fully to a new target. Each new round of central-bank action seems to bring less stimulus and more side-effects. The concept of using fiscal policy to fine-tune the economy went out of style around the time when economists were trying to work out why real interest rates were unusually high. Perhaps it is time to dust that idea down. ■

Pensions

Fade to grey

It costs a lot more to fund a modern retirement. Employers, workers and governments are not prepared

EMPEROR AUGUSTUS came to power with the help of a private army. So he was understandably keen to ensure the loyalty of his soldiers to the Roman state. His bright idea was to offer a pension for those in the army who had served for 16 years (later 20), equivalent in cash or land to 12 times their annual salary. As Mary Beard, a classical historian, explains in her history of Rome, "SPQR", the promise was enormously expensive. All told, military wages and pensions absorbed half of all Rome's tax revenues.

The emperor would not be the last to underestimate the burden of providing retirement benefits. Around the world a funding crisis for pension schemes is coming to the boil. Rahm Emanuel, Chicago's mayor, is struggling to rescue the city's pension plans; the municipal scheme is scheduled to run out of money within ten years. In Britain the pension problems of BHS scuppered attempts to save the high-street retailer; the same issue is complicating a rescue of Tata Steel's British operations.

The roots of the predicament lie in defined-benefit (DB) pensions, which guarantee a pension linked to workers' salaries. These may provide security for the retired but have been expensive for employers. In many cases, DB pensions were offered decades ago when they seemed like a cheap alternative to awarding pay rises. Private-sector employers now usually offer new workers defined contribution (DC) schemes, which hand them a pot of money on retirement with no promise of the income it will generate. In time, this will create its own huge problems as workers face an impecunious retirement.

The DB problem is most obvious in Britain and America where many employers operate funded systems, in which contributions are put aside and invested to pay pensions. Many European countries operate on a pay-as-you-go basis, in which retirement incomes are paid out of current profits or taxes. That does not mean the problems have disappeared; they are just harder to quantify. Citigroup reckons that, in 20 OECD countries, the unfunded government liability is around $78 trillion.

There are two reasons that funding pensions is becoming ever more troublesome. First, people are living longer. In 1960 the average American, British or Japanese 65-year-old man could expect to live for another 11-13 years. Women could look forward to 14-16 more birthdays. Now it is 18-19 years for men and 20-24 years for women.

Funding decent pensions is all the more difficult given that the proportion of retired workers is also growing. Around 600m people aged over 65 now make up around 8% of the world's population; by 2050 there will be 1.6 billion, more than 15% of the total. Some countries face a bigger problem than others. In Japan, a third of the population will probably be over 65 by 2050; in Europe, the proportion will be more than a quarter.

Second, the low level of interest rates and bond yields means the cost of paying pensions has gone up, even without the longevity factor. Investors who have to buy their own pensions know this only too well. In the late 1990s, £100,000 ($164,000) would have bought a 65-year-old British man a lifelong income of £11,170 a year; now it will earn £4,960, according to Moneyfacts, a data firm. In other words, paying out a given level of income now costs more than twice as much as it did.

Government-bond yields in rich countries are at historically low levels; in some countries, they are even negative. This has a direct impact on pension deficits, by increasing the value of future pension liabilities. Because the cash cost of a pension will not fall due for decades, pension schemes must discount this cost at some rate to calculate how much they need to put aside now. If the cost next year will be $100, and the discount rate is 5%, then the cost in today's terms is $95. The higher the discount rate, the lower the present cost.

For a long time, most company pension schemes used the assumed rate of return on their assets as the discount rate. The rationale was simple; a combination of contributions and investment returns will eventually pay the benefits. But this approach was prone to wishful thinking; if markets have performed well in the past, the temptation is to assume they will continue to do so. The higher the assumed future return, the less cash the company has to put aside today.

Actuaries and financial economists started to think more deeply about how to account for pension costs in the 1990s. Using investment returns is theoretically dubious. A company is required to pay pensions whether or not high investment returns are achieved. A pension promise is like a bond; a promise to pay a series of cashflows in future. That suggests the yield on long-term debt is the appropriate discount rate. In the early 2000s accounting regulations began to require companies to use a corporate-bond yield as the discount rate. Since the bond yield was much lower than the assumed investment return, the effect was to increase the stated level of pension liabilities.

You're a liability

Bond yields have fallen steadily and so liabilities have risen significantly. In Britain the fall in yields following the unexpected Brexit vote (and a renewal of quantitative easing by the Bank of England) has made matters considerably worse. PWC estimates that the total deficit of all British DB pension funds rose by £100 billion in August alone. The Bank of England, which matches its pension liability by buying inflation-linked government bonds (as the theory suggests), was forced to pay 55% of its payroll on pensions last year.

Finance directors must feel like Sisyphus, doomed to push a rock uphill for eternity. In America, the estimated deficit ▸▸

of large firms at the end of last year was $570 billion, according to Mercer, a consultancy. The average funding level was 77%. In Britain publicly quoted companies in the FTSE 350 paid £75 billion into their schemes between 2010 and 2015, according to Mercer, but their collective deficit still grew by £34 billion over the same period.

Stirring the pension pot

The struggles of the private sector create a public-policy problem. A 20-year-old worker may still be receiving a pension 70 years hence. Few companies can be relied on to last that long. If a company goes bust while its pension scheme is underfunded, the result could be an unhappy retirement. To safeguard pensions the American and British governments set up insurance schemes that stand behind corporate plans; the Pension Benefit Guaranty Corporation (PBGC) in the former and the Pension Protection Fund (PPF) in the latter. Both fund themselves through levies on the corporate-sector plans they insure; both cap the amount of pension protection that individual workers receive.

Creating the PBGC and PPF has recast the problem of more expensive pensions in a different form. Regulators try to protect schemes by ensuring they are well-funded and that companies do not take advantage of the potential "moral hazard"—underfunding their plans because of the insurance protection. But make funding of the schemes too strict and firms will complain; some may even be forced to the wall.

So the temptation is to allow a lot of flexibility and hope that funding levels recover. BHS went into administration (the British equivalent of Chapter 11 bankruptcy protection) with a pension deficit of £571m. The company has been struggling for years; it had a recovery plan for its pension scheme that was scheduled to take 23 years. Should the regulator have allowed the company such latitude? The regulator is negotiating with the business's previous owner, Sir Philip Green, about his making payments that will reduce the deficit. The saga has triggered a fierce debate about the moral and legal responsibility of business owners to ensure pension schemes are fully funded.

In America the PBGC depends on Congress to ensure it is properly resourced. As well as covering the pension plans sponsored by large firms, the PBGC backs schemes in industries with lots of small employers, such as mining and trucking. At the moment the PBGC estimates that it faces a potential liability of $52 billion on these multi-employer schemes over the next decade. The Central States pension fund, responsible for the benefits of 400,000 truck drivers and warehouse workers, recently said it would run out of money by 2025. But Congress has set a levy of just $27 for this type of employee per year; an annual sum of only $270m, ludicrously short of the amount needed.

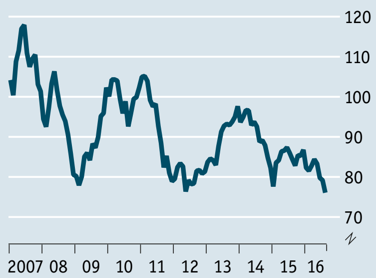
The PPF is better funded than the PBGC. It has reserves of more than £3.6 billion before the impact of intervening at BHS's fund (and possibly Tata Steel's). Nevertheless, the fund has assets of £23 billion and the companies it covers have an aggregate funding deficit of £459 billion. Moreover, both insurance schemes face the long-term problem that they were established to back DB schemes, often set up many decades ago by manufacturing firms. As those types of companies die off, new services and technology firms are not joining the fund, because they do not offer DB pensions. The levy's burden is falling on a dwindling number of companies.

Governments, which often offer their workers DB pensions, have been far slower than the corporate sector in attempting to

Falling short

British companies' pension schemes

Assets as % of liabilities



Source: Pension Protection Fund

reduce the cost. In large part this is because of the way they account for pensions. In America they are allowed to assume a return of 7.5-8% on their investments, making deficits look a lot smaller. But generous accounting assumptions do not make the problem go away. The Centre for Retirement Research (CRR) at Boston College has looked at around 4,000 American state and local-government pension plans. Even using the accounting standards permitted, the plans were on average 72% funded at the end of 2015. On a more conservative 4% discount rate, this drops to 45%. On the former basis, the collective deficit is $1.2 trillion; on the latter $4.1 trillion.

Difficulties are starting to emerge in America. Detroit's bankruptcy in 2013 was in part the result of a huge shortfall in its pension fund; some retired workers suffered cuts to their income and health-care benefits. But the city still has a long-term pension problem, with a $195m payment to the plan due in 2024. Cities in better health than Detroit are also grappling with the pensions burden. In Texas, Fort Worth's credit rating was reduced by Moody's, a rating agency, in May in response to a $1.5 billion pension-fund shortfall.

The hole keeps getting bigger. Required public-sector employer contributions have nearly trebled as a proportion of payroll since 2001. But in practice, they have not been paid: since 2006, contributions have been regularly less than 90% of what is due. Closing the deficit will require higher taxes, or benefit cuts. But states and local governments are constrained by laws which say that benefits, once promised, cannot be reduced. Unless markets deliver implausibly high returns, more and more cities and states will be forced to juggle the interests of workers and taxpayers, with angry voices on both sides.

What is the answer? The Dutch have a robust pension system which is still linked to salaries. The regulations demand that schemes are fully funded at all times; if funding falls below 105% of liabilities, then there is scope to reduce benefits.

Some American states and cities have likewise been able to reduce their pension costs by limiting the amount of inflation indexation that applies (of course, that will only work if there is some inflation). In Arizona, voters approved in May a proposition that limited inflation increases for policemen and firefighters to 2% a year. But aping the Dutch model in America and Britain would require huge amounts of money to eliminate current pension deficits—money that employers may not have available.

The private-sector funding problem will, at least, diminish in the long run as old DB schemes run down. But there will be no respite for governments. They have been slow to switch workers to DC schemes, because the power of public-sector trade unions to resist lower benefits is greater than in much of the private sector. A two-tier system may emerge, with retired private-sector workers finding themselves worse off than their public-sector counterparts, but still funding those luckier workers through their taxes.

Retired hurt

This is a slow-motion crisis in which the casualties—the weakest companies and cities—appear intermittently rather than all at once. Although the commitment to pay retired public-sector workers is in effect a debt, it does not show up in the official figures. Nine countries—Austria, Britain, Denmark, France, Germany, Italy, Poland, Portugal and Spain—have public-sector pension liabilities of more than 300% of GDP, according to Citigroup.

The essence of the problem is clear. Low rates mean that employers and workers need to put more money aside for retirement. Many are either not contributing enough or ignoring a problem that seems a distant threat. They would do well to remember that in Augustus's time the Roman Empire looked invincible. But the troubles that overwhelmed it were already taking firm root. ■

Also in this section

For daily analysis and debate on Asia, visit
Economist.com/asia

India's armed forces

Guns and ghee

DELHI

India is wise to speak softly, but it could do with a bigger stick

TO MANY Indians, their country's strategic position looks alarming. Its two biggest neighbours are China and Pakistan. It has fought wars with both, and border issues still fester. Both are nuclear-armed, and are allies with one another to boot. China, a rising superpower with five times India's GDP, is quietly encroaching on India's traditional sphere of influence, tying a "string of pearls" of alliances around the subcontinent. Relatively weak but safe behind its nuclear shield, Pakistan harbours Islamist guerrillas who have repeatedly struck Indian targets; regional security wonks have long feared that another such incident might spark a conflagration.

So when four heavily armed infiltrators attacked an Indian army base on September 18th, killing 18 soldiers before being shot dead themselves, jitters inevitably spread. The base nestles in mountains close to the "line of control", as the border between the Indian and Pakistani-administered parts of the disputed territory of Kashmir is known. Indian officials reflexively blamed Pakistan; politicians and pundits vied in demanding a punchy response. "Every Pakistan post through which infiltration takes place should be reduced to rubble by artillery fire," blustered a retired brigadier who now mans a think-tank in New Delhi, India's capital.

Yet despite electoral promises to be tough on Pakistan, the Hindu-nationalist government of Narendra Modi has trodden as softly as its predecessors. On September 21st it summoned Pakistan's envoy for a wrist-slap, citing evidence that the attackers had indeed slipped across the border, and noting that India has stopped 17 such incursions since the beginning of the year. Much to the chagrin of India's armchair warriors, such polite reprimands are likely to be the limit of India's response.

There are good reasons for this. India gains diplomatic stature by behaving more responsibly than Pakistan. It is keenly aware of the danger of nuclear escalation, and of the risks of brinkmanship to its economy. Indian intelligence agencies also understand that they face an unusual adversary in Pakistan: such is its political frailty that any Indian belligerence tends to strengthen exactly the elements in Pakistan's power structure that are most inimical to India's own interests.

But there is another, less obvious reason for reticence. India is not as strong militarily as the numbers might suggest. Puzzlingly, given how its international ambitions are growing along with its economy, and how alarming its strategic position looks, India has proved strangely unable to build serious military muscle.

India's armed forces look good on paper. It fields the world's second-biggest standing army, after China, with long fighting experience in a variety of terrains and situations (see chart). It has topped the list of global arms importers since 2010, sucking in a formidable array of top-of-the-line weaponry, including Russian warplanes, Israeli missiles, American transport aircraft and French submarines. State-owned Indian firms churn out some impressive gear, too, including fighter jets, cruise missiles and the 40,000-tonne aircraft-carrier under construction in a shipyard in Kochi, in the south of the country.

Yet there are serious chinks in India's armour. Much of its weaponry is, in fact, outdated or ill maintained. "Our air defence is in a shocking state," says Ajai Shukla, a commentator on military affairs. "What's

Imbalance of power

Military capabilities, 2015

	Armed forces, m: Active	Reserves	Paramilitary	Nuclear warheads	Defence budget: $bn	% of GDP
India	1.3	1.2	1.4	90-110	51.3	2.3
China	2.3	0.5	0.6	~260	214.8	1.9
Pakistan	0.6		0.3	100-120	9.5	3.4

Sources: IISS; SIPRI

in place is mostly 1970s vintage, and it may take ten years to install the fancy new gear." On paper, India's air force is the world's fourth largest, with around 2,000 aircraft in service. But an internal report seen in 2014 by *IHS Jane's*, a defence publication, revealed that only 60% were typically fit to fly. A report earlier this year by a government accounting agency estimated that the "serviceability" of the 45 MiG 29K jets that are the pride of the Indian navy's air arm ranged between 16% and 38%. They were intended to fly from the carrier currently under construction, which was ordered more than 15 years ago and was meant to have been launched in 2010. According to the government's auditors the ship, after some 1,150 modifications, now looks unlikely to sail before 2023.

Such delays are far from unusual. India's army, for instance, has been seeking a new standard assault rifle since 1982; torn between demands for local production and the temptation of fancy imports, and between doctrines calling for heavier firepower or more versatility, it has flip-flopped ever since. India's air force has spent 16 years perusing fighter aircraft to replace ageing Soviet-era models. By demanding over-ambitious specifications, bargain prices, hard-to-meet local-content quotas and so on, it has left foreign manufacturers "banging heads against the wall", in the words of one Indian military analyst. Four years ago France appeared to have clinched a deal to sell 126 of its Rafale fighters. The order has since been whittled to 36, but is at least about to be finalised.

India's military is also scandal-prone. Corruption has been a problem in the past, and observers rightly wonder how guerrillas manage to penetrate heavily guarded bases repeatedly. Lately the Indian public has been treated to legal battles between generals over promotions, loud disputes over pay and orders for officers to lose weight. In July a military transport plane vanished into the Bay of Bengal with 29 people aboard; no trace of it has been found. In August an Australian newspaper leaked extensive technical details of India's new French submarines.

The deeper problem with India's military is structural. The three services are each reasonably competent, say security experts; the trouble is that they function as separate fiefdoms. "No service talks to the others, and the civilians in the Ministry of Defence don't talk to them," says Mr Shukla. Bizarrely, there are no military men inside the ministry at all. Like India's other ministries, defence is run by rotating civil servants and political appointees more focused on ballot boxes than ballistics. "They seem to think a general practitioner can perform surgery," says Abhijit Iyer-Mitra, who has worked as a consultant for the ministry. Despite their growing brawn, India's armed forces still lack a brain. ■

Driving in Vietnam

Four wheels good, two wheels better

HANOI

A proliferation of cars threatens to clog Vietnam's big cities

CARS and motorbikes are banned from the old heart of Hoi An, a pretty tourist town in central Vietnam. When the country's newish prime minister paid a visit, he obligingly travelled on foot. But as Nguyen Xuan Phuc strode manfully around, his motorcade crept along behind him. Outraged netizens disseminated photos of the incident, forcing Mr Phuc to apologise—a rare step for a senior official in Vietnam's authoritarian regime.

Not many Vietnamese can afford a fleet of blacked-out saloons. But car-ownership in the communist country is soaring, bringing worries about pollution and congestion. Sales of cars, vans and lorries rose 55% by volume in 2015, albeit from a low base; so far this year they are up another third. Most went to Hanoi and Ho Chi Minh City, which between them house about half of Vietnam's urban population.

Compared with its choked neighbours, Vietnam's big cities are relatively uncongested. The country's 40m or so motorbikes terrify pedestrians, but can thunder 10-abreast along thoroughfares as well as worm down dark alleyways. Cars, by contrast, block up the pipes. Only 9% of land in the heart of Hanoi is given over to primary and secondary roads, compared with 32% in Manhattan. The World Bank in 2011 calculated that if car-use were to reach even the moderate level seen in nearby Malaysia, Vietnam's capital would grind to a complete halt.

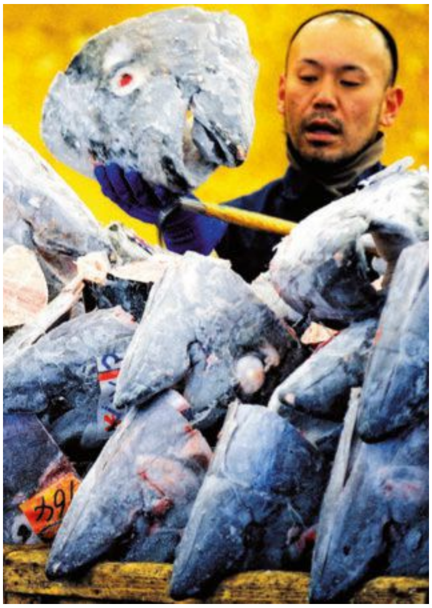
The government is conflicted, says Arve Hansen, an academic. It champions the local car-assembly industry but also slaps stiff taxes on buyers, in part for fear of jams. A suite of recent trade deals will eventually limit authorities' power to control car-use through tariffs. A pact with South-East Asian neighbours, which comes into full force in 2018, could see cheap cars pour in from Thailand.

The appeal of buying a car may grow even as Vietnam's roads clog up. The growing risk of collision with a car is making motorcycling more dangerous. Motorists who know they will end up in jams prefer to do it in air-conditioned vehicles than perched on sweaty bike seats. Longer travel times are also putting Vietnamese off buses, which were anyway hot and unreliable. Use of Hanoi's underfunded public buses has dropped 14% in a year.

New urban rail systems should help a little. The first of at least six metro lines is under construction in Ho Chi Minh City; two elevated railways are being built in Hanoi. But it will take years to complete these networks, and the fast-growing cities they will serve are transforming as they are built. Hanoi in particular is sprawling, helped along by policies that encourage local authorities to build outward, rather than up.

City officials are making do. Bigwigs in Ho Chi Minh City talk of narrowing pavements to widen roads; Hanoi insists more and better buses are revving up. In June cadres in the capital said they thought improvements in public transport would eventually allow them to ban Hanoi's 5m motorbikes from the heart of the city. It would be better to ban cars. ■

Jam today and probably jam tomorrow



The Japanese addiction to tuna

Breeding bluefin

TOKYO

Fish-farming is the latest, slim hope for Japan's favourite fish

THE Kindai University Fisheries Laboratory might not be the most enticing name for a fancy restaurant, but its customers are undeterred. On weekdays they line up in Ginza, a ritzy shopping district in Tokyo, to sample the fish. Diners appear satisfied with the quality of the *sashimi*, including the juicy slices of bluefin tuna, one of the most prized species of all. But the tuna in the restaurant differs from that available elsewhere in one crucial respect: it was not caught in the wild, but farmed.

Japanese call bluefin tuna "the king of fish". They eat about 40,000 tonnes of it a year—80% of the global catch. Demand is also growing rapidly elsewhere. Yet Pacific bluefin stocks are down by 97% from their peak in the early 1960s, according to a recent report from the International Scientific Committee, an intergovernmental panel of experts. (Japan disputes its findings.) In some places, fishing is three times the sustainable level, the committee says.

Japan did agree to halve its catch of juvenile bluefin (fish too young to reproduce) in the northern Pacific last year. But it has resisted more stringent measures, including the complete ban on bluefin fishing advocated by America, among other countries. The Japanese government says that would not be warranted unless stocks drop for three years in a row—a hurdle that most conservationists consider too high.

Aquaculture might seem to offer a way out of this impasse. But the bluefin is hard to breed in captivity. In the open sea, it can roam for thousands of miles and grow to over 400kg. It is highly sensitive to light, temperature and noise. Early attempts to farm it fizzled, but Kindai University persisted long after an initial research grant from the government ran out in the early 1970s. In 2002, funding itself from sales of other fish, it managed to rear adult tuna from eggs for the first time, rather than simply fattening up juveniles caught at sea. Now the chefs in Ginza can have a tuna zapped with an electric prod and yanked out of the university's tanks on demand.

However, just 1% of the bluefin the university rears survive to adulthood. "We expect this to improve but it will take time," predicts Shukei Masuma, the director of its Aquaculture Research Institute. Worse, the tuna gobble up lots of wild mackerel and squid. Scientists have experimented with soy-based meal and other alternatives. A company in south-western Japan said this month that it had managed to raise tuna using feed made of fishmeal, but it is costly and the fish are slow to thrive. Using wild fish for feed makes bluefin farming unsustainable, says Atsushi Ishii of Tohoku University. He sees aquaculture as a distraction from the thorny task of managing fisheries properly.

This debate is slowly seeping into the public consciousness. In 2014 the media made much of the decision of the International Union for Conservation of Nature, a conservation body, to put bluefin tuna on its "red list" of species threatened with extinction. Newspaper editorials have begun to criticise the government's stance. The popularity of Kindai's restaurant suggests that consumers are becoming aware of the problem too. But in the end, says Naotoshi Yamamoto of Nagasaki University, they may just have to eat fewer fish. ■

A trans-Pacific obsession

Bottling hipness

Japan ponders the true meaning of Portland

LANETTE FIDRYCH knew that people in Portland, Oregon, were obsessed with the tacky carpet at the city's airport. Enraptured hipsters snap up everything from mousepads to underpants emblazoned with its dated 1980s design. But she had no idea that the carpet was almost as well known in Japan. When she landed in Tokyo carrying a water bottle bearing the same pattern, she was stopped by a dozen strangers on the street who, recognising the carpet, asked if she was from Portland. On hearing that she was, they went on to list the restaurants in Portland they most wanted to visit or the beers from Oregon they most liked.

In America, Portland is shorthand for trendiness run amok. In Japan, it is simply trendy. Ms Fidrych is the founder of Cycle Dog, a company which sells dog collars, leads and other paraphernalia made from recycled bicycle parts (the collars all have bottle openers attached). She was visiting Tokyo to participate in the third annual "Portland Popup", at which Tokyoites can buy goods from Portland and learn about Portland's way of life. Speeches this year included "Creative Entrepreneurs of Portland" and "What Tokyo Can Learn from Portland". Yokohama and Osaka also hold similar events annually. Cycle Dog's kit sells well at these shindigs, Ms Fidrych says.

Oshuushu, a popular Japanese blog, is dedicated entirely to beers from Oregon. The PDX Taproom opened less than a year ago in Tokyo's fashionable Shibuya district (Portland's airport code is PDX). The bar serves beer from Oregon only and has a small square of the famous carpet on the wall. Many eateries in Portland, rather than expanding in America, have decided to leap across the Pacific. Blue Star Donuts, which serves delicacies with names like Blueberry Bourbon Basil and Cointreau Creme Brulee, will soon have seven stores in Japan compared with six in America.

Teruo Kurosaki, author of a Japanese-language guidebook, "True Portland: Unofficial Guide for Creative People", says Japanese are interested in Portland not just because of its nifty gadgets or funky food, but because of its "future vision"—a combination of individualism, enterprise and greenery. For those who chafe at Japan's stale economy and hidebound culture, the image of young creative types, knitting old inner tubes into dog collars before cracking open a local brew, holds great allure.

Japan's political leaders are even getting in on the act. The mayors of several small Japanese cities, which face gradual extinction if young people cannot be persuaded to stay instead of moving to Tokyo or Osaka, have been visiting Portland in search of ideas. Mitsuhiro Yamazaki, who works in Portland's planning and development agency, has been invited to sprinkle some Portland magic over Aridagawa, a shrinking Japanese town, in part by redesigning a rural creche in a bid to persuade young women not to move away. He has not yet chosen a pattern for the carpet.

Religious freedom in Malaysia

Taking the rap

KUALA LUMPUR

Malaysia's culture of tolerance is under threat

NAMEWEE is a Malaysian rapper with a penchant for extravagant eyeware and a dangerous interest in politics. Police picked him up at the country's main airport in August, when he flew home from a spell abroad. A score of touchy groups had complained that an early cut of his latest video—which featured performers dressed as religious leaders gadding about a church, a mosque and a Chinese temple—insulted the dignity of Islam, a charge punishable by two years in prison. Authorities talked about asking Interpol to help them question his collaborators, a three-piece band based in Taiwan.

In gentler times Namewee's only offence might have been crimes against music. But Malaysian Islam is gradually growing sterner, and its promotion by the state more aggressive. These trends are getting a boost under the government of the prime minister, Najib Razak. Tormented by claims that a national investment firm has been looted, his party is keen to change the subject. So it is recasting itself as a defender of Islam, the religion of its ethnic-Malay supporters. All this is souring race relations and worrying neighbours, who fear the shift will nurture extremism.

A little over 60% of Malaysia's 32m citizens are Muslims, mainly ethnic Malays. Most of the rest—including Malaysians of Chinese and Indian descent, as well as various indigenous tribes—are Buddhist, Christian, Hindu or not religious. A constitution propagated at the end of British rule in 1957 guarantees non-Malays the right to follow a religion of their choosing, while also proclaiming, "Islam is the religion of the Federation."

That compromise has spurred endless debate over how far the government should patronise the faith of the majority. The United Malays National Organisation (UMNO), the outfit that has led Malaysia's ruling coalitions since independence, found religion in the 1980s while fending off a challenge from a pious opposition party. Mahathir Mohamad, UMNO president and prime minister from 1981 to 2003, claimed that Malaysia was an "Islamic country". His government created a department within the prime minister's office to regulate and promote Islam.

Malaysian Islam has grown increasingly conservative in the years since, influenced by austere theologies from the Middle East. Its promotion is a particular preoccupation of Malay nationalists, who insist the country's minorities have secured an unfair helping of its wealth. (Chinese and Indian Malaysians do better in school and tend to earn more.) Meanwhile the country's Islamic bureaucracy has expanded at both the federal and state level. Religious officials occasionally raid hotels in search of unmarried Muslim couples and other deviants (Justice for Sisters, a campaign group, says that at least 63 transgender women were arrested between January and May); Shia Muslims are also persecuted. A ruling in August reiterated that Malaysian Muslims may not leave the faith without the consent of the Islamic authorities, who never give it.

In theory Malaysia's non-Muslims are not subject to religious rules, but the atmosphere often affects them. Hostility towards church-building means that growing Christian congregations are meeting in warehouses and empty shops, says a clergyman. Functionaries in some public buildings have required Malaysians to cover their legs before gaining access to government services. Only last month bureaucrats said they preferred not to let Muslim families hire non-Muslim maids. Critics of religious authorities are often branded anti-Muslim; outspoken ones have sometimes been charged with sedition.

Mr Najib says the government will give secular courts, not Islamic ones, the sole right to rule in divorces when only one spouse is Muslim. That will simplify a handful of cases where people try to game the system. (For example, a divorcing husband converts to Islam on the assumption that the Islamic courts will give him custody of the kids.) Yet broadly Mr Najib is seen to be less independent-minded than his predecessors about religious policy, and more reliant on Islamic advisers.

Moreover, his party looks less inclined to rein in Islamist firebrands as threats to its six-decade rule mount. Mr Najib nearly lost a general election in 2013, when minority voters abandoned UMNO's coalition partners. Since then it has emerged that billions of dollars went missing from 1MDB, a state-owned investment firm, during the prime minister's first term. Mr Najib denies receiving any of the cash. He has kept his job even though an investigation by America's Department of Justice, made public in July, appears to implicate him.

Perhaps seeking an alliance that could sustain UMNO even without support from minorities, Mr Najib is cosying up to the Islamist opposition. In May his party fast-tracked the reading of a bill proposed by the Pan-Malaysian Islamic Party (PAS), which is seeking to increase the punishments Islamic courts may inflict on Muslims convicted of religious offences. Currently these are limited to a fine, six strokes of the cane or three years in jail. Some in PAS think that Muslims who drink alcohol should receive as many as 80 lashes, and those who have sex outside marriage 100.

UMNO had long opposed such measures, which some see as a step towards hand-chopping and stoning. The party may simply be dwelling on the subject because it has helped to tear apart the uneasy opposition alliance, which until recently included both PAS and secular parties. But UMNO may eventually conclude that more floggings are a reasonable price to pay for support from PAS.

All this is bound to exacerbate an exodus of young Malaysians, including many moderate Muslims. The World Bank has found that the number of Malaysians living in rich countries roughly tripled between 1990 and 2010, and that more than half of these emigrants have university degrees. A gradual exodus of minorities delights Malay supremacists but will make the country poorer.

A more immediate worry is that a rise in racially charged rhetoric will encourage radicals. Nearly 70 Malaysians have had their passports cancelled after joining Islamic State (IS) in the Middle East. Police recently arrested three men said to be plotting attacks on nightspots and a Hindu temple. Last year 11% of Malaysians quizzed by Pew, a pollster, claimed to have a "favourable" view of IS, compared with only 4% in neighbouring Indonesia. That, surely, should be a more pressing concern than Namewee's videos. ■

Banyan | A ham-fisted hegemon

Despite its economic and military might, China lacks the finesse to shape Asia to its liking

IT IS already being described as the moment when America's "pivot" to Asia was seen to have gone awry. Not the shock when Rodrigo Duterte, the new president of the Philippines, an American ally, caused titters by calling Barack Obama the "son of a whore"—but when he called a few days later for an end to American military assistance, including joint patrols in the South China Sea. "China is now in power," he declared, "and they have military superiority in the region."

China is chuffed. The Philippines, after all, had brought a landmark case against China's activities in the South China Sea to an international tribunal at The Hague. In July the tribunal rubbished China's territorial claims and criticised its construction of artificial islands. Outraged, China swore to ignore the ruling. America insisted it must be binding. Its interest in the South China Sea, it has always said, is in upholding international law. So imagine its embarrassment now. The vindicated plaintiff appears to be saying to China, "Go ahead, help yourself."

The intention of the pivot was to reassure America's allies in the region. Admiral Harry Harris, the commander of American forces across Asia and the Pacific, boasted last week that, in terms of American military hardware, "Everything that's new and cool is coming to the region." That includes the first of the Zumwalt class of destroyer, with looks straight out of "Star Trek" and a captain by the name of James Kirk. Yet although America has boosted its strength in the Pacific, its defence budget is severely constrained. Chinese military spending, meanwhile, has been growing by 10% a year, much of it on naval, satellite and cyberspace programmes designed to deny America access to the airspace and seas around China in any conflict, and to undermine America's commitments to its Asian allies.

America still has the world's strongest armed forces, and even the most fearsome military presence in East Asia. Yet the alchemy of power involves more than iron force, as Admiral Harris underlined by stressing another vital aspect of the pivot: the Trans-Pacific Partnership (TPP), a 12-country free-trade pact foundering in Congress. In August the prime minister of Singapore, Lee Hsien Loong, called TPP's ratification "a litmus test" of American credibility in Asia. With both presidential candidates opposed to TPP, and Mr Obama's chances of pushing it through the lame-duck Congress looking ragged, it is a test America will probably fail.

And yet it is still too early to call time on the pivot and declare China the next Asian hegemon. China remains far less adept as an alchemist of power—though not for want of trying. Its diplomacy towards its neighbours is full of "mutual respect", "win-win" relationships and "common destiny". President Xi Jinping makes much of his "One Belt, One Road" initiative to create infrastructure tying Eurasia closer to China by land and sea. Meanwhile China lavishes aid and state-led investment on smaller countries in South, Central and South-East Asia.

China's munificent approach towards its periphery, as Evelyn Goh of the Australian National University points out, is supposed to make it harder for countries drawn into China's economic embrace to maintain a system of regional security with America at the core. Some already see a new order asserting itself, with China again at the celestial heart of things, and neighbouring states orbiting like planets around it. Mr Duterte's own pivot would seem to be a case in point.

It all sounds very benign, especially since China's courtship emphasises a shared approach to development. That, in turn, rests on continuity in neighbouring states, reinforcing political elites and their existing priorities. Who would argue with that?

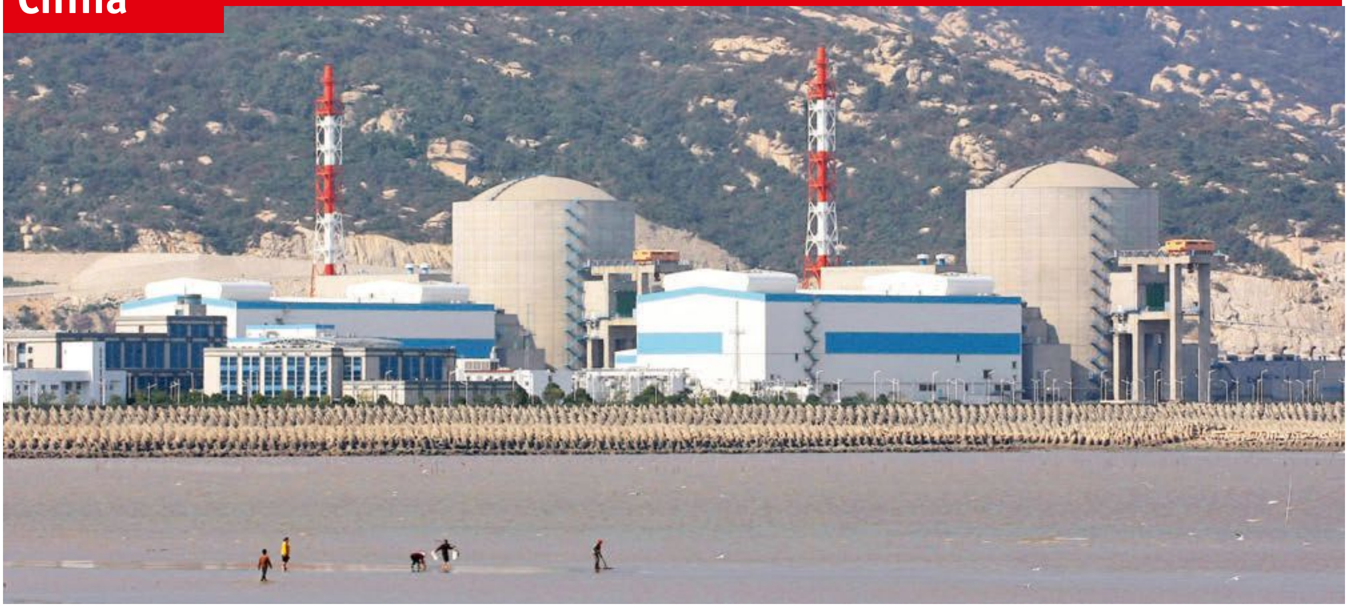
Well, for a start, anyone who opposes the prevailing political order in the courted countries. China's close involvement with the ruling elites in such places only adds to local resentment. In 2011 widespread animosity, even within the regime, led the head of Myanmar's military government, Thein Sein, to halt construction of a huge dam being built by Chinese state companies. The weakened junta subsequently ceded much of its power to Aung San Suu Kyi, who now heads an elected government, further diminishing China's influence. An own goal, in other words.

In Sri Lanka last year the surprise electoral defeat of the strongman president, Mahinda Rajapaksa, happened in part because his family had openly courted Chinese investment and benefited from it. The defeat put China on the back foot and opened the way for Indian re-engagement with the island. Tiny Laos is increasingly unhappy at being a Chinese client state, with locals chafing at Chinese loggers and plantations. The closed, communist country gave Mr Obama a hearty welcome earlier this month.

Next door in Cambodia, the flagrant cronyism from which key Chinese businessmen profit may prompt a backlash as soon as the ageing and thuggish ruler, Hun Sen, is seen to be ailing. Even in the Philippines, a provocation in the South China Sea, such as the start of construction on the Scarborough Shoal, from which China dislodged the Philippine navy four years ago, might cause Mr Duterte to tack back to the United States. Ordinary Filipinos, after all, are wildly pro-American.

Losing sight, losing its cool

China has two blind spots, Ms Goh concludes. The first is its tendency to downplay what she calls the "autonomous agency" of small neighbours. Any discomfort with its embrace is mistakenly ascribed to the machinations of America. The second is its failure to grasp how aggressive behaviour—not least in the South China Sea—undermines China's more benign efforts to win influence. The gap between growing material power and lagging status and clout is the "dissonance" that so frustrates Chinese leaders. And so the concern in the next few years is not that China gets its way, but that it doesn't, and proceeds to vent its spleen. ■



Nuclear power

A glowing future

LIANYUNGANG

China wants its nuclear industry to grow dauntingly fast

UPON learning (via a terse government statement) that their bustling port city in eastern China had been tipped as the likely site of a plant to recycle used nuclear fuel, residents of Lianyungang took to the streets last month in their thousands. Police, whose warnings against demonstrations were ignored, deployed with riot gear in large numbers but only scuffled with the protesters, who rallied, chanted and waved banners in the city centre for several days. "No one consulted us about this," says one woman who participated in the protests. "We love our city. We have very little pollution and we don't want a nuclear-fuel plant anywhere near us. The government says it is totally safe, but how can they be sure? How can we believe them?" she asks.

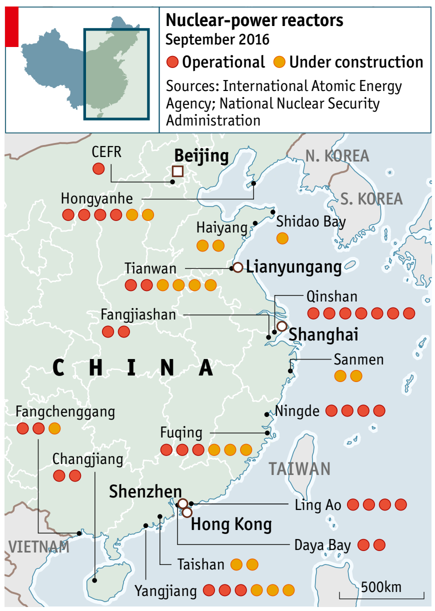
Such scepticism is shared by many in Lianyungang, which already hosts a nuclear-power plant (pictured), and elsewhere in China, where the government plans to expand nuclear power massively. China started its first nuclear plant in 1994. There are now 36 reactors in operation, and another 20 under construction (see map). A further four have been approved, and many more are in the planning stages. Only one new plant has been built in America, in contrast, since 1994; four more are under construction. By 2030 China is projected to get 9% of its power from nuclear, up from 2% in 2012. In absolute terms, its nuclear generation capacity will have increased eightfold over the same period, to 750 billion kilowatt-hours a year, roughly America's current level.

After disaster struck Japan's Fukushima nuclear power station in 2011, the Chinese authorities briefly halted this pell-mell rush toward the nuclear future, announcing a moratorium on the construction of new plants, urgent safety checks on existing ones and a prolonged policy review to decide whether nuclear power would remain a part of China's energy strategy. The following year, however, the government resolved to carry on with its nuclear-energy programme.

The need is clear. Despite slowing economic growth, energy consumption per person is projected to rise dramatically, with no plateau in sight before 2030. Pollution from coal-fired power plants, China's main source of electricity, causes widespread respiratory disease and many premature deaths each year, a source of persistent public anger. China has also made ambitious promises to reduce greenhouse-gas emissions. If it hopes to meet such targets, it will need to embrace nuclear, "because the only other truly reliable 24/7 source of electric power is coal," says Zha Daojiong of Peking University.

China's utilities are also keen. The state-owned firms that run all the country's nuclear plants are thought to earn a good return on their investment (their accounts are too murky to be certain), in part because their official backing allows them to finance new reactors very cheaply, and in part because regulators have fixed power tariffs in a favourable manner. One estimate put the return on nuclear assets between 2002 and 2012 at 7% a year, compared with 3% for coal- and gas-fired plants.

China even harbours ambitions to export its growing expertise in nuclear power. After relying first on Russian designs, and more recently importing American and French ones, China has also developed indigenous nuclear reactors. A recently approved deal with Britain, valued ▸▸



at $23 billion, will see China help finance a French-designed nuclear-power station and possibly build one of its own design later.

But China's nuclear push has its critics. These include those who live near proposed nuclear facilities. Many, like the protesters in Lianyungang, are happy to have the power they need to run their air-conditioners but want to keep the unpleasant parts of the operation far from their doorsteps. Chinese now has a word for NIMBY: *linbi*, a fusion of the words for "adjacent" and "shun". The government has repeatedly backed down in the face of public demonstrations, twice agreeing to relocate a uranium-enrichment plant, for example. It has also put the decision about the reprocessing plant in Lianyungang on hold.

Yet attitudes to nuclear power may be less hostile than in many Western countries. A study published in 2013 found an even split between supporters and opponents of expanding China's nuclear-power industry. Compared with their counterparts in the rich world, Chinese citizens showed much greater "trust and confidence in the government" as the manager of nuclear policy and operations, the emergency responder in case of accidents and the provider of reliable information about the industry. The lead researcher for that study, He Guizhen of the Chinese Academy of Sciences, says that even protesters like those in Lianyungang are not implacably opposed. "Their message is not really that you can't build these things no matter what, but that we are concerned about safety, especially after Fukushima, and we demand that you take safety seriously," she says.

It appears this message is getting through. Early this year the government acknowledged in a white paper that its system for responding to a nuclear accident had "certain inadequacies". In April officials revealed plans to draft a national nuclear-safety law. In May officials announced 600m yuan ($91m) in funding for six new nuclear-emergency squads, which would be ready for action by 2018. In August—on the same day that protesters marched in Lianyungang—China conducted its first "comprehensive nuclear-security emergency drill". This week the government said officials must consult locals before settling the location of new nuclear facilities.

Deborah Seligsohn of the University of California, San Diego, says that because China's nuclear-power industry is centrally run and limited to a handful of companies, authorities are able to keep tight control over safety standards, and that they have not hesitated to slow projects down when seeing signs of strain. Supervision, however, falls to several different agencies and levels of the bureaucracy. The burden of inspecting and managing the growing number of plants, she says, could be better handled by a more independent regulator in charge of its own budget.

In July *China Energy News*, a newspaper, reported that "quality problems" with domestically manufactured pump-valves were forcing some plants to shut down unexpectedly. (Most plants have since switched to imported valves.) More alarmingly, regulators this month revealed that a radiation-monitoring system at the Daya Bay nuclear-power station, which is within 50km of the huge cities of Shenzhen and Hong Kong, had been turned off inadvertently for three months before anyone noticed. Since no radiation leaked, the government deemed the oversight an event of "no safety significance"—one of several such lapses this year. The residents of Shenzhen and Hong Kong, presumably, would not see it in quite the same way. ■

Social mores

Shacking up

BEIJING

A rapid rise in cohabitation does not spell the end of marriage

WHEN Da Lin moved in with his girlfriend two years ago, his mother tried to stop them: she feared that their living together unmarried would sully his girlfriend's reputation and, by association, his too. She will be happy only after they finally marry next year (his family is buying the apartment, hers the car). That generational clash is replicated in thousands of families across China: cohabitation without marriage was long anathema and officially illegal until 2001. Today it is commonplace.

China's social mores are changing astonishingly quickly. Before 1980 around 1% of couples lived together outside wedlock, but of those who wed between 2010 and 2012, more than 40% had done so, according to data from the 2010 and 2012 China Family Panel Studies, a vast household survey (see chart). Some reckon even that is an underestimate. A recent study by the China Association of Marriage and Family, an official body, found that nearly 60% of those born after 1985 moved in with their partner before tying the knot, which would put the cohabitation rate for young people on a par with that of America.

The number of unmarried couples living together is growing for many of the same reasons it has elsewhere: rising individualism, greater empowerment of women, the deferral of marriage and a decline in traditional taboos on premarital sex. Greater wealth helps—more couples can afford to live apart from their parents. Yet Chinese cohabitation has distinctive characteristics. In rich countries, living together is most common among poorer couples, but in China youngsters are more likely to move in together if they are highly educated and live in wealthy cities such as Beijing and Shanghai. Shacking up is seen as a sign of "innovative behaviour", say Yu Xie of Princeton University and Yu Jia of the Chinese Academy of Social Sciences.

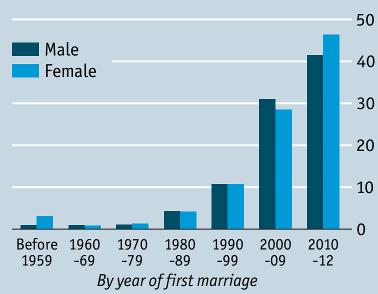
Elsewhere rising cohabitation represents the fraying of marriage: many couples never bother to wed. In China, however, cohabitation is almost always a prelude to marriage—as for Da Lin and his girlfriend—rather than an alternative to it. Marriage is still near-universal, although the skewed sex ratio resulting from China's one-child policy and a cultural preference for boys has resulted in a surplus of poor rural men who will remain unhappily single. Some highly educated women in cities forgo marriage too.

In some Western countries those who live together for an extended period enjoy some of the same legal rights and obligations as married couples. In China cohabitation carries no legal weight. And it is very hard for a child born out of wedlock to acquire a *hukou*, or residency permit, which provides access to health care, education or other public services.

In the 1980s virginity was considered a woman's chief asset and few couples dared to date openly, let alone live together. Now China is in the midst of a sexual revolution—some 70% of people have sex before marriage, according to a study conducted in 2012. Many young Chinese, however, still have conservative ideas about how their elders should behave: although cohabitation is also on the rise among the elderly, many of them avoid remarrying because their adult children oppose it.

Why wait?

China, cohabitation before first marriage, %



Sources: Yu Xie, Princeton University; Yu Jia, Chinese Academy of Social Sciences


North America will export more oil than it imports by 2020.
The global energy landscape is changing dramatically. For example, North American oil and natural gas production is sending the region's demand for imports plummeting to historic lows. This creates opportunities as well as risks. CME Group gives producers and suppliers the tools they need to capture these opportunities while managing risks in volatile oil and natural gas markets. This is how the energy industry can deliver in the face of ever-changing consumer demand. This is how the world advances. Learn more at cmegroup.com/fuel.
CME Group
CME Group is a trademark of CME Group Inc. The Globe logo is a trademark of Chicago Mercantile Exchange Inc. All other trademarks are the property of their respective owners.
Copyright © 2016 CME Group. All rights reserved.

Also in this section

For daily analysis and debate on America, visit
Economist.com/unitedstates
Economist.com/blogs/democracyinamerica

The campaign

President Trump?

NEW YORK

What was once unthinkable has now become only mildly improbable

IF A week is a long time in politics, then a month is an eternity. In mid-August, Hillary Clinton had opened up a seemingly unassailable polling lead of eight percentage points over Donald Trump. Quantitative forecasting models pegged her odds of victory near 90%, and betting markets approached an 80% probability. Mrs Clinton's cushion has now all but deflated. By Labour Day, Mr Trump had trimmed her lead in half. And just when the race appeared to be stabilising, the underdog had another growth spurt, picking up about three more points over the past two weeks. Mrs Clinton is now barely clinging to a one-point lead. That puts a man who calls for "unpredictability" in America's use of nuclear weapons in a near-tie for a presidential election just six weeks away.

Barack Obama held a similarly slim edge in national polling over Mitt Romney on the eve of an election he won comfortably in 2012. But the president had plenty of breathing room in state-specific polls, which turned out to be a better predictor of the outcome. By contrast, Mrs Clinton has lost even more ground in many state polling averages than she has nationally. Iowa, which Mr Obama carried by ten and six points in 2008 and 2012, seems to have slipped from her grasp entirely: the last two polls there have her trailing by eight and five. Recent surveys of Maine's second congressional district, which awards an electoral vote independent of the statewide winner, put Mr Trump up by 11, ten and five points; Mr Obama won it by nine. Four of the past five Ohio polls give Mr Trump a lead of at least three points. And Florida, which Mrs Clinton led by four in late summer, now looks like a coin-flip.

Mrs Clinton could afford to lose all of these places and still eke out a win. Recent polls show her maintaining an edge in Michigan, Wisconsin, Pennsylvania, Virginia and New Hampshire. But those states alone would leave her short of victory. With those in the bag, her easiest path to the presidency runs through Colorado, whose electorate is better-educated and more Hispanic than the national average. In July and August, her polling leads there ranged from five percentage points to 13. But the only survey taken of the state so far this month gave Mr Trump a four-point lead. If Mrs Clinton cannot hold on in the Centennial State, expect Mr Trump to be sworn in on January 20th.

There is no doubt that current polling suggests the election would be close to a toss-up if it were held today. As a result, betting markets now give Mrs Clinton just a 65% chance of victory. Democrats, as well as never-Trump Republicans and independents can only hope either that recent surveys misrepresent public opinion, that Mrs Clinton's superior campaign infrastructure will enable her to outperform them or that the polls will eventually swing back in her direction. There is solid evidence to back all three claims.

Editor's note: *The Economist* is conducting a survey of readers and subscribers. We are keen to find out more about your views of this newspaper. To take part please visit: **economist.com/survey16**

The news has recently been unkind to Mrs Clinton. On September 9th she said that half of Mr Trump's supporters belong in a "basket of deplorables". She then fell ill with pneumonia, and unwisely tried to conceal the ailment, giving ammunition for two of Mr Trump's attacks—that she is untrustworthy and that she is frail. Moreover, she had to take three days off from campaigning to convalesce, ceding the spotlight to Mr Trump. These stumbles coincided with his gains.

However, they may not have actually led many voters to change their minds. Some studies suggest that sharp swings in the polls, such as the "bounces" candidates enjoy after their conventions, are caused mostly by partisans being more eager to talk to interviewers following good news for their preferred candidates than they are after a setback. Andrew Gelman, a professor at Columbia University, has found that when a candidate seems to surge in the polls, the share of respondents who say they belong to that politician's party—and were thus always likely to be supporters—also increases.

Sure enough, recent battleground-state surveys showing Mr Trump ahead, like one in Ohio conducted from September 9th to 12th by the well-respected Ann Selzer, often contain more people calling themselves Republicans than do earlier polls. It is possible—though far from certain—that disgruntled Democrats haven't felt like picking up the phone of late when ▸▸

pollsters call, even if they are sure to pull the lever for Mrs Clinton in November.

Another argument for Mrs Clinton's chances is the disparity between her war chest and ground game and Mr Trump's. Even as small donors, whom Republicans have historically had trouble courting, have flocked to Mr Trump, his fund-raising lags far behind the establishment favourite's: Mrs Clinton pulled in $143m in August, compared with his $90m. That has enabled her to clobber him on the airwaves—she is outspending him on advertising by a factor of five—and to invest in a formidable get-out-the-vote operation. Mrs Clinton has opened over three times as many field offices in battleground states as Mr Trump has. And Mr Trump's continued battles with much of the Republican establishment—particularly in Ohio, whose governor, John Kasich, still refuses to endorse him—may also hinder co-operation between his staff and those working for down-ballot Republican candidates.

Moreover, Mrs Clinton's vaunted analytics department can target persuadable voters whose doors await a knock, and likely supporters with a middling propensity to vote who could use a ride to the polls, with the pinpoint accuracy of a Facebook advertisement. In contrast, Mr Trump has scoffed at data-driven campaigning, calling it "overrated". No one knows quite how much of a difference these factors will make, because in the past presidential candidates have generally fought each other to a draw in the ground game. But as long as they are worth more than zero, Mrs Clinton should show better results at the ballot box than she does in telephone polls.

The final argument in favour of Mrs Clinton's chances is that polling averages tend to revert towards their means, and that Mr Trump is now bumping up against his previous ceiling of around 40% of the vote. She will presumably benefit from returning to the campaign trail, and could get a boost from increased efforts on her behalf by Democratic heavyweights. Even if Mr Trump does well in the debates, they will likely push talk of deplorables and pneumonia off the front pages. Moreover, both the economy and the president's approval ratings have been on the rise of late, strengthening the appeal of Mrs Clinton's run for a third Obama term.

The two third-party candidates could also lose some of their lustre. They currently appear to be taking more votes away from the Democrat than the Republican—by a slight margin in the case of the Libertarian Gary Johnson, but a large one in that of the far-left Green Party's Jill Stein, who gobbles up 3% in national polls. But support for third parties tends to dwindle as elections draw near. The combination of the also-rans' expected absence from the debates, which only admit candidates averaging at least 15% in the polls, and the growing plausibility of a Trump presidency could drive Stein supporters worried about her playing Ralph Nader to Mrs Clinton's Al Gore into the Democratic camp.

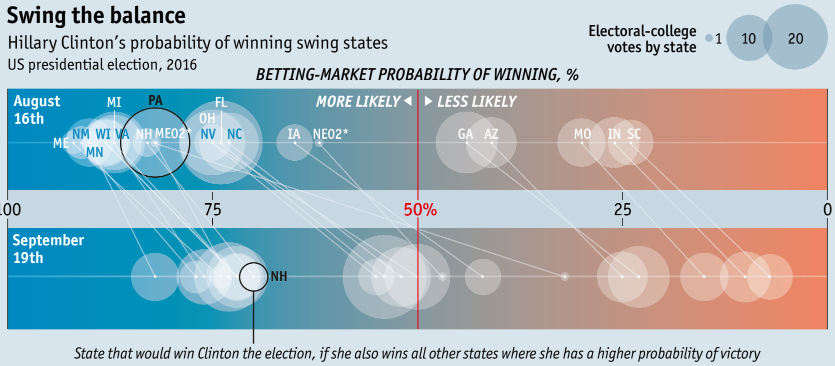
For all these reasons, it is far too early for Mrs Clinton's supporters to panic. But even though virtually every variable besides recent polls points in her favour, the race is now close enough that even a mild "October surprise"—perhaps in the form of the unflattering document-dump that Julian Assange, the head of WikiLeaks and a harsh critic of Mrs Clinton, promises is forthcoming—could vault Mr Trump ahead. Even without that, the idea that a Clinton landslide would lead to the banishment from American politics of Mr Trump's appeals to racial and cultural resentment is receding fast.

What academics call the fundamentals of the race—the economy is performing modestly well, the same party has held power for eight years, and neither side benefits from incumbency—suggest a tie between an identikit Democrat and a generic Republican. Mrs Clinton is the second-least-popular major-party candidate in modern history. The main reason she is ahead is that Mr Trump is the first. But in the month since he hired Kellyanne Conway as his campaign manager, he has mostly avoided self-sabotage. If he can continue to do so, the election could remain the nail-biter that fundamentals have indicated all along. ■

Swing the balance

Hillary Clinton's probability of winning swing states

US presidential election, 2016



Source: PredictIt *Maine and Nebraska split their electoral votes by congressional district. In both states, the second district is competitive

Bombs in New York

Sangfroid city

NEW YORK

New York and New Jersey react calmly to a terrorist attack

"INSHALLAH the sounds of the bombs will be heard in the streets. Gun shots to your police. Death to your oppression." So wrote Ahmad Khan Rahami in a blood-stained journal found after his arrest for planting bombs in Manhattan and in New Jersey. "Attack the Kuffar [non-believers] in their backyard," he also wrote.

That is exactly what Mr Rahami did. Rather than attack a landmark, such as Times Square, which had been unsuccessfully targeted in 2010, he is accused of placing bombs in Chelsea, a bustling Manhattan residential neighbourhood with lots of lively restaurants and bars. Thirty people were hurt in the bomb that exploded on the evening of September 17th. A second bomb, found four blocks away, was discovered and removed before it could harm. Earlier that day a bomb went off at a 5k fun-run for a military charity at the New Jersey Shore. No one was hurt. Bombs were also placed at a transport hub in Elizabeth, New Jersey. They were found by vigilant locals before the devices could explode.

The mayor of New York promised that the police presence, already increased because of the United Nations General Assembly, which draws 135 heads of state, would be "bigger than ever". For the most part New Yorkers just got on with it. By the next morning, they were back walking their dogs, jogging and brunching. But many were shaken by a text message from authorities at around 8am on Monday, asking for help in apprehending Mr Rahami. ▸▸

Commuters quietly locked eyes with each other. Less than two hours later, after a shoot-out with police, Mr Rahami was captured in New Jersey.

Prosecutors linked Mr Rahami to the bombs with fingerprint evidence and online sales records allegedly showing him buying ingredients for a bomb, from citric acid to ball bearings (to cause nastier injuries). The FBI also recovered video showing Mr Rahami practising planting a bomb.

His journal praises Anwar al-Awlaki, a radical cleric and al-Qaeda recruiter killed by American drone strike in 2011. He refers to the Boston marathon bombers, who used a pressure cooker similar to the ones he allegedly planted. He mentions Nidal Hasan, who killed 13 people at Fort Hood. It is not yet known if he acted alone. He was discovered sleeping in a doorway, which indicates that "he had nowhere to go," says Jimmy O'Neill, New York's police commissioner. An American citizen who left Afghanistan when he was about seven years old, Mr Rahami reportedly began to visit Afghanistan and Pakistan in 2011. He subsequently began wearing more traditional clothing and became more religiously observant. His family ran a fast-food restaurant called First American Fried Chicken.

On the same day as the Chelsea bombing, a man, who came to America when he was three months old from Somalia, stabbed ten people in a Minnesota shopping centre. Islamic State claimed him as one of its soldiers. So far no terrorist group has claimed Mr Rahami. He was not on any watch-list, but two years ago his own father had told authorities his son was acting like a terrorist. An FBI investigation drew a blank though Mr Rahami was arrested for hitting his mother and stabbing his brother. Inevitably, the case became presidential campaign fodder. Donald Trump called the attacks fresh evidence that America has an "extremely open immigration system" and needs to become less squeamish about profiling terror suspects by racial or religious background. Hillary Clinton chided Mr Trump for harsh anti-Muslim rhetoric and called him a "recruiting sergeant for the terrorists". ■

The campaigns

Heard on the trail

Soul searching
"He asked me about the painting. I said, 'I paint souls, and when I had to paint you, I asked your soul to allow me.' He was touched and smiled."
Artist Havi Schanz, on the portrait of Donald Trump that the candidate purchased at a charity auction. Washington Post

Best laid plans
"Plans you don't even know about will be devised because we're going to come up with plans—health-care plans—that will be so good."
Mr Trump tells Dr Oz about his replacement for Obamacare.

Gun-free zone
"I think that her bodyguards should drop all weapons. They should disarm immediately. Take their guns away, let's see what happens to her."
Mr Trump has advice for Hillary Clinton's security detail.

J'accuse
"I think that "Veep" has torn down the wall between comedy and politics, our show started out as a political satire but it now feels more like a sobering documentary. So I certainly do promise to rebuild that wall and make Mexico pay for it."
Julia Louis-Dreyfus, star of "Veep".

Line of fire
"I think that you have a lot of negativity in these questions."
Ivanka Trump, upset at tough questions, ended an interview with Cosmopolitan.

Special bus
"Those people need to get on board. And if they're thinking they're going to run again someday, I think that we're going to evaluate the process."
Reince Priebus, RNC chair, to the Trump holdouts in his party. CBS News

Crossing the Rubicon
"The president told me he's voting for Hillary!!"
Former president George H. W. Bush allegedly told the board of his foundation that he plans to vote for Mrs Clinton.

Pre-gaming
"It's a phony system. [The debate moderators] are all Democrats. It's a very unfair system."
Donald Trump complains about the debates. Fox News.

Worst of times
"Our African-American communities are absolutely in the worst shape they've ever been in before. Ever. Ever. Ever."
Donald Trump continues his outreach to African-Americans in North Carolina

Cyber-spying

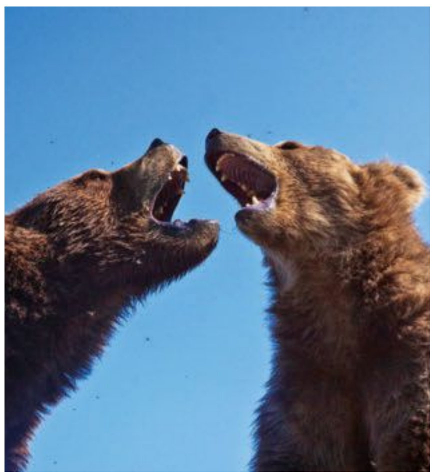
Bear on bear

What's worse than being attacked by a Russian hacker? Being attacked by two

THE breach of Democratic Party computer systems attracted plenty of headlines this summer. What has attracted less attention is that two separate teams of Russian hackers were at work, evidently unaware of each others' activities. One of them—nicknamed Fancy Bear by the cyber-security firm Crowdstrike—is thought to be linked to Russian military intelligence, the GRU. Its aim was to steal information and leak it. Dmitri Alperovitch of Crowdstrike, which was hired by the victims, terms this "active measures": spy parlance for direct intervention in a foreign country's affairs.

But another group, code-named Cozy Bear, was also inside the Democratic Party's computer networks. It was engaged in traditional espionage, quietly collecting information about the party's inner workings—a high-priority target for any foreign government, but particularly the Kremlin. Its interests, and the more sophisticated technical means it used, suggest that it was working for another part of Russia's intelligence apparatus. Don Smith of Dell SecureWorks, another cyber-security company, reckons that the subtler of the two bears was probably rather annoyed by the crudeness of the other attack. Without the leak of the e-mails, its victims would probably have remained unaware that they were being monitored.

The rambunctious Fancy Bear group also left some interesting fingerprints while stealing the Democrats' porridge. Previously unpublished analysis by SecureWorks gives some of the details. The groups took the day off on April 15th—which just happens to be the day Russia



Fancy meeting you here

honours its military electronic-warfare service. The main means of attack was authentic-seeming e-mails containing a bogus "change password" link. When clicked on this opened an (equally bogus) Gmail log-in page. Anyone typing in his credentials then gave the attackers access to his e-mail account (Hillary for America used a version of Gmail).

But to help the links evade spam filters, the attackers used a free, public link-shortening service called bit.ly—and were oddly careless in the way they did so. Unscrambling the links makes it possible to see whom else they attacked. Secureworks reckons the group created 213 short links aimed at 108 e-mail addresses on the hillaryclinton.com domain, ranging from senior advisers to junior staff involved in scheduling and travel. Around a fifth of the links were clicked on—though this does not reveal whether victims were also tricked by the bogus Gmail log-in page. Fancy Bear has used the same technique in previous attacks. Most were in the former Soviet Union (notably Ukraine), either politicians and officials or journalists and activists.

The big worry so far in America has been over what feels like direct Russian interference in the electoral process—not just with hacks and leaks, but the fear that voting machines might be targeted, to try to undermine the credibility of the result. The Democratic Party may be the tip of an iceberg. And the ease with which both lots of bears breached what should have been well-guarded systems highlights the gullibility and carelessness which lie behind most successful cyber-attacks—in politics, business or indeed everywhere else. ■

Campus sexual assault

Re-education

LOS ANGELES

Students starting college are trained in how to avoid committing rape

AT THE University of Minnesota, some 5,700 new students arrived on campus for orientation earlier this month. Each one of them has taken a course on campus sexual assaults. A new law, which came into effect on August 1st, made it mandatory for all university freshmen in the state of Minnesota to be given training within the first ten days of the school year. Minnesota is unusual for the breadth of its decree, but students, parents and university administrators across the country are asking the same questions about how widespread campus rape is and what to do about it.

California was the first state in the country to pass a law colloquially referred to as "Yes means yes", which requires affirmative consent for sex to be considered legal. New York followed suit in 2015. Last year George Washington University became the first to make training on sexual assault compulsory for new students. The White House has its own task force on protecting students from sexual assault.

Crime statistics suggest universities are no more dangerous in terms of sexual violence than other places where men and women both congregate, but that is not much solace. Statistics on sexual assault are notoriously hard to compile, but the best attempt from the Association of American Universities found that 23% of female undergraduates reported some form of sexual assault. An internal poll at Harvard suggested almost a third had. Victims of sexual assault rarely speak up; even when they do, sexual assault can be devilishly hard to prove. Yes to Sex, a phone application that was introduced in April, aims to help partners clarify and document sexual consent in under 30 seconds. But use of the service has not taken off: it has only a few, mediocre reviews on the iTunes store. Without such pre-planning, proving consent was or wasn't given after the fact is often difficult.

Many sexual assaults happen during the "red zone", the time between the start of the school year and Thanksgiving, says Kathryn Nash, co-founder of TrainED, a company that counsels colleges on legal compliance. "A high percentage" of these cases involve freshmen. Miss Nash attributes this to freshmen being on their own and having access to alcohol for the first time. She says that in 75% of cases one or both parties have been drinking. Various public-health studies link sexual assault and binge-drinking, though some students think this is blaming the victim. Sheryl Morrison, whose daughter Victoria is a freshman at Saint Thomas University in Saint Paul, blames "irresponsible drinking behaviour" for the majority of incidents, adding that her daughter does not drink. Tony Burton, a freshman at the University of Minnesota, says that most of the tips in the training he went through were "common sense." This is not the case for everyone. "A lot of kids arrive at college thinking 'if someone doesn't say 'no' I can keep going,'" Miss Nash explains.

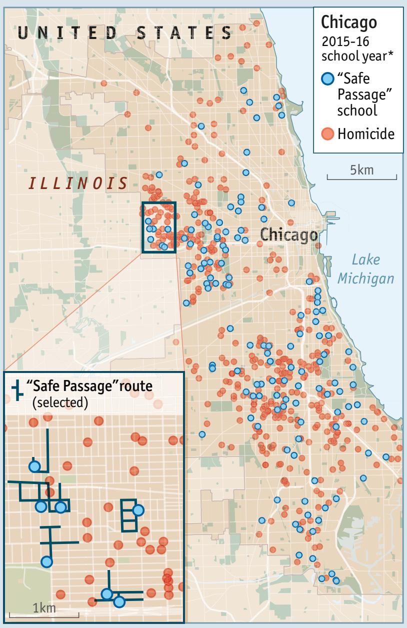
Ann Olivarius, a lawyer for victims of sexual assault, believes the problem has been exacerbated by the availability of pornography. The internet has made sexually explicit images and videos accessible to anyone with a smartphone. This, she says, has engendered a sense of sexual entitlement among men. On the other hand, the web has focused attention on the problem. News of sexual assault spreads much more quickly and widely than it did before the era of digital media, which may encourage more people to come forward.

Because rape violates criminal law, it must be proved beyond reasonable doubt. To increase conviction rates, the White House is pressuring univerities—by naming them publicly, fining them or threatening to withhold funds—to deal with more cases on campus, where rape has to be proved just on the balance of probabilities. The sanctions a university can administer are less severe than prison time, but on the extreme end they can still amount to "career capital punishment" says one university president, who is hiring former judges to staff his college's tribunal. ■

Safe passage

Nearly 400,000 public-school students made their way through the streets of Chicago to attend their first day of school on September 6th. For some, the journey can be perilous. As these students walked through streets plagued by gang violence, they were joined by 1,300 security guards in yellow vests stationed along predefined routes in the city's most dangerous neighbourhoods.

These "community watchers" are part of a programme designed to protect Chicago students as they travel to and from school. The initiative began in 2009, after a 16-year-old honour-roll student was beaten to death in the street. This school year 142 schools with a total of 75,000 students have safe routes. Since the start of 2016 Chicago has recorded over 500 murders, more than New York and Los Angeles combined and a 50% increase over the same period last year. Figures compiled by the *Chicago Tribune* reveal 33 of these victims were under 17.



Sources: Chicago Public Schools; Chicago Police Department

*September 8th 2015-June 21st 2016

Election brief: Fiscal policy

Money's the conversation

WASHINGTON, DC

Hillary Clinton's fiscal plan is fiddly. Donald Trump's is absurd

FISCAL policy has tumbled from the top of the political agenda with remarkable speed. For most of Barack Obama's presidency, controlling the national debt, which spiked from 35% of GDP to over 70% after the recession, was a priority for Republicans. Democrats were less worried, but still saw the need for America to fix its long-run challenge: soaring spending on Medicare (public health insurance for the over-65s) and Social Security (public pensions). Mr Obama set up a doomed bipartisan commission with the task of doing just that. Yet in this election, the Republicans have abandoned their fiscal hawkishness. And the long-run barely gets a look-in.

That is not all down to Donald Trump. The economic recovery, combined with sharp cuts to spending (triggered by the failure to reach a deficit-reduction deal) have reduced borrowing significantly, from 9.8% of GDP in 2009 to 2.5% in 2015 (in 2016 it will be a little higher). Republicans in Congress—which, unlike the president, actually writes the budget—have also had a change of heart. Their economic priority is now to boost growth by cutting taxes and red-tape, which they blame for the slow recovery from the financial crisis. Faster growth, they say, would lead to healthier public finances.

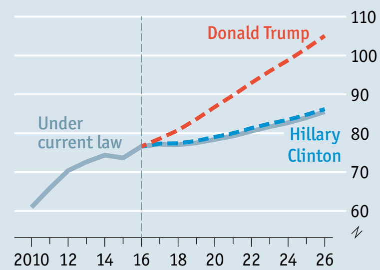
Mr Trump has assumed that cause with gusto. He promises to raise economic growth to 3.5% or even 4%, up from an average of 2.1% since the end of the recession. But he also pledges extra spending, on infrastructure, veterans, education, child care and so on, as well as defence, a more usual GOP priority. Mr Trump is imprecise about numbers. But his expansion of the military would alone cost $450 billion over a decade, says the Committee for a Responsible Federal Budget (CRFB), a fiscally hawkish think-tank. (For comparison, today's total national debt is about $14 trillion, or 77% of GDP.)

Big spending on top of tax cuts has transformed an unrealistic agenda into a fantasy. Start with the growth predictions. America is growing slowly in part because baby-boomers are retiring. The population aged 25-54 will grow by just 0.3% a year until 2024, compared with 0.9% between 1994 and 2004. Mr Trump promises to create 25m new jobs, presumably over two terms—20m more than is forecast today. It is not clear who would fill these vacancies. Restoring the labour-force participation of prime-age workers to its record high would unearth only 4.3m new workers. To achieve rapid growth Mr Trump would instead need productivity growth to average 2.6%, says the CRFB, a level not reached in any ten-year period in modern history.

Even conservative economists see this. Growth of only 2.8% would call for a "gold medal"; reaching just 3% would put Mr Trump in the "hall of fame", says Douglas Holtz-Eakin, who ran the Congressional Budget Office for two years under George W. Bush. The Tax Foundation, a non-partisan think-tank, reckons tax cuts can significantly boost growth, but still says that Mr Trump's tax plan would cost $2.6 trillion-3.9 trillion over a decade.

The king of debt

National debt under central estimate of candidates' proposals, as % of GDP



Source: Committee for a Responsible Federal Budget

Mr Trump promises to free up funds by lopping 1% a year off the roughly one-third of the budget that is left after defence, Social Security and Medicare. This adds up to a 29% real-terms cut over a decade to budgets that have already been slashed since 2011. Even assuming he manages this, and that there is no new infrastructure spending, the CRFB reckons Mr Trump would send the national debt soaring to 105% of GDP by 2026 (see chart). And this is before accounting for growth, which, in spite of Mr Trump's tax and regulatory policies, would probably fall as a result of his immigration crackdown and trade barriers.

Mr Trump has launched his tax plans three times, yet they remain vague. At first, he promised to tax income from small firms, which are usually treated like any other earnings, at a maximum rate of 15%. After many analysts noted that this might cause high-earners to masquerade as small-businesses, the policy disappeared. It had been dropped, the campaign told the Tax Foundation, before promising the small-business lobby that it remains.

Finally, the plan is steeply regressive. The incomes of the poorest rise by 1-8% (depending on growth effects, and on small-business taxes). But thanks to a whacking cut to the top rate of tax, from 39.6% to 33%, the incomes of the top 1% of earners would surge by 10-20%. Yet Mr Trump claims, inexplicably, that a couple earning $5m a year would see a tax cut of just 3%.

Compared with such a shambles, it is obvious that Hillary Clinton's policies are much more serious. But that is not the same as saying they are desirable.

Mrs Clinton, whose pledges are precise enough to be quantified, wants new spending totalling about $1.7 trillion over a decade. Her best ideas concern infrastructure, on which she would spend an extra $250 billion. A further $25 billion would capitalise a federal infrastructure bank. This would lend $250 billion to projects that can make a return, such as toll bridges. (Mr Obama has tried to set up such a bank; 32 states already have their own.)

Many other programmes make up the other spending. Having been pushed leftward on the issue by Bernie Sanders, Mrs Clinton would guarantee that by 2021 households earning less than $125,000 pay no tuition fees at public universities in their states. She would cap child-care costs at 10% of income, fund paid parental leave and create tax-credits to encourage firms to share their profits with workers, hire apprentices and invest in manufacturing.

Mrs Clinton promises to pay for all this with a combination of higher taxes on the rich—for example, an additional 4% tax on incomes over $5 million. She has also proposed various new taxes on business, such as a fee on big banks. Her plan very nearly funds itself, according to the CRFB.

The Clinton agenda, though, is too complicated. America's clunky tax and welfare system needs simplification, not endless new deductions, credits and phase-outs. American businesses take 175 hours per year to comply with all taxes, compared with 110 hours in Britain. Complexity is hardly unique to Mrs Clinton's policies: it is a product of America's incrementalism and lobbying. But it is still unwelcome.

To the extent that the candidates do talk about America's longer-term fiscal woes, Mrs Clinton is the more credible. For instance, she promises to expand the Affordable Care Act's fledgling cost-saving experiments in Medicare. Yet because the trust fund for Medicare runs dry only in 2028, and the Social Security fund only in 2034, this issue will only really grab politicians—and electorates—later. Mr Trump is not interested; Mrs Clinton, for once, not scrutinised. America would be best-served by a rigorous contest of economic ideas. It is not getting that. ■

Lexington | Millennial falcon

Hillary Clinton's attempts to swoop on young voters are meeting with some resistance

IT IS hard to know whether Hillary Clinton should be cheered by the lightning visit that she paid on September 19th to Temple University, a large, publicly funded college in Philadelphia—or plunged into gloom. On the upside for Team Clinton, it was easy to find students won over by her half-hour speech, a strikingly personal appeal to young voters that painted Donald Trump as a bigot and herself as a lifelong advocate for progressive causes. The candidate pandered on policies, but also sought to recruit the young as partners in a mission to fix the country. "I need you," Mrs Clinton pleaded at one point, adding a promise that "young people will always have a seat at any table where any decision is being made"—a pledge which, depending on how the Clinton White House defines the meaning of "young", "seat" and "at", should enliven meetings with the joint chiefs of staff.

One convert was Michelle Ferguson, a 20-year-old linguistics major who, like many Temple students, backed Mrs Clinton's leftist rival, Senator Bernie Sanders of Vermont, during the Democratic presidential primary. "She earned my vote today," Ms Ferguson enthused as she left the Clinton rally, held in a hall with room for just 300 students, decorated with campaign placards bearing the artful slogan "Love trumps hate", and an array of large red letters simply saying: "Love". What won over Ms Ferguson was hearing Mrs Clinton recall her youth as an activist, whether campaigning for boys imprisoned in adult jails in South Carolina, or urging schools to build wheelchair ramps. The undergraduate was taken aback to hear Mrs Clinton recall her reluctance to run as a senator for New York, because the former First Lady thought of herself as "an advocate, not a politician". Ms Ferguson called that "really inspiring", because she is an activist herself, and had always been unsure whether Mrs Clinton shared her values or was merely driven by ambition.

On the downside for Team Clinton, it is dauntingly late to be making such conversions. Less than two months before the general election, Mrs Clinton remains unloved by many young Americans who came of age around the year 2000 or later (earning them the demographic label millennials). When pollsters offer young people a four-way choice between Mrs Clinton, Mr Trump and casting protest votes for the Libertarian and Green Party candidates, as few as 31% of them have backed the Democrat in some recent polls. That the young dislike Mr Trump still more, handing him as little as a quarter of their votes in those same four-way surveys, offers scant comfort. In 2008 and 2012 President Barack Obama did not just win 60% or more of votes cast by millennials, he prodded record-breaking numbers of the young to turn out. That not only made the electorate youthful, but more diverse too—because younger Americans are less likely to be white. In 2016, given Mr Trump's thumping leads among older voters and among white voters, Mrs Clinton can ill-afford to leave millennials feeling "meh".

To hear Mrs Clinton described by many students, she sounds less like a working politician than a figure from history, ready to be cast in bronze or engraved on a postage stamp. The Democrat does not excite the young because "God bless her, she's been around for ever," suggested Conor Freeley, a Temple student and Democratic activist volunteering at her rally. A former Sanders-backer, Mr Freeley is now working hard to register voters on his overwhelmingly Democratic campus. Complicating his task, classmates raise qualms about Mrs Clinton's character—meaning her honesty—more often than her policies, while her status as the first woman nominee of a major party is "absolutely taken for granted". Another student at the speech, Tom Sacino, lamented that many of his friends want nothing to do with this election: "They say: Trump's a racist, and Hillary's a liar."

Mrs Clinton finds herself in the painful position of being at once tiresomely familiar to many younger voters, and yet mysterious to them. A Clinton campaign bigwig, watching the Temple speech from the back of the room, noted polls showing that a "not insignificant percentage of millennial voters" see no real difference between Mr Trump and Mrs Clinton on climate change. "That's not true, he thinks climate change is a hoax," the bigwig growled, predicting "a lot of work" to educate young voters. In her speech Mrs Clinton duly recited something like a progressive *credo*. Her promises included new gun-safety laws, tackling the "soaring cost of college" with advice from Mr Sanders, a higher minimum wage, cheaper child-care and a big push on renewable energy: all issues that millennials say are important in polls.

Bernie's harvest

In campaign appearances, Mr Obama has chided the young to remember "all the work" that Mrs Clinton has done over the years and the obstacles that she has overcome. Mr Sanders has spoken on college campuses in swing states, and urged his admirers to defeat Mr Trump by backing Mrs Clinton—the woman he painted for so long as an unprincipled agent of the billionaire classes. Until a few days ago such appeals to pragmatism pained Laurana Seymour, a student of English and political science who co-founded "Temple Students for Bernie Sanders" during the presidential primary. She says that during the primary Mr Sanders "clarified" why she dislikes Mrs Clinton, with his scathing attacks on his rival for giving paid speeches to Goldman Sachs, a bank, for backing free-trade deals and supporting the 2003 invasion of Iraq. Ms Seymour was reluctant to hear Mr Sanders in his new role on the general-election trail, explaining: "I didn't want to be scared into voting for Clinton." But now she will "most likely" vote for Mrs Clinton. She blames headlines predicting that Pennsylvania could be the state that decides the election, and the nastiness of the Trump campaign. In short, she has been scared into a Clinton vote. That is hardly an uplifting way to win over the young. In a brutal election season, it may have to do. ■

Also in this section

Paraguay

Polka lessons

ASUNCIÓN

The surprising success of a landlocked country

MANY visitors to Paraguay never get beyond Ciudad del Este, the second-largest city. Brazilian day-trippers cross the Paraná river on the Friendship Bridge, shop in grungy malls and return laden with cheap electronics, Chinese-made blankets and Armani jeans, some of them genuine. The law limits the bargain-hunters to $300-worth of duty-free goods a month; they, and the border guards, ignore it.

Brazil's recession has dented this tacky trade. "Normally, you couldn't pass through here because of the crowds," sighs a taxi driver on Monseñor Rodríguez, the main thoroughfare. Sales at SAX, the city's swankiest mall, fell 90% last year. Other sources of export earnings are also suffering; the price of soyabeans has halved since 2012. Only electricity, powered by the massive Itaipu dam near Ciudad del Este and sold to Brazil, is doing well.

And yet this landlocked, sparsely populated country is coping better than many in the region. Its GDP grew by 6.2% year-on-year in the second quarter of 2016. It will expand by around 3% this year and next, forecasts the IMF. That would place it in the top tier among South American economies (see chart). A recovery in commodity prices is expected to help, but some of Paraguay's success comes from adding new activities to its traditional ones. Instead of just farming and flogging cut-price goods to tourists, the country is starting to manufacture things. Its own consumers are shopping more. Though outsiders still think of it (if they think of it at all) as a cheap bazaar and weird haven for fugitive Nazis, Paraguay is becoming a modern country.

At X-Plast, on the southern fringes of Ciudad del Este, room-sized injection moulders extrude plastic toys and garden chairs, one every minute or so, mostly destined for customers in Brazil. The slump there has hurt sales and profits but not obliterated them, says Regina Toyota, the firm's manager. That is because production costs are low. Itaipu's electricity powers the machines. Labour is relatively cheap. Non-wage costs add a third to basic pay in Paraguay but double the cost in Brazil, Ms Toyota says. Taxes on sales and incomes are the lowest in Latin America.

Paraguon

GDP, % change on a year earlier

Source: IMF

A dozen *maquilas* in the suburbs of Ciudad del Este churn out everything from clothing to car parts; five years ago there were none. Across Paraguay investors have set up 70 such firms in the past three years, more than during the previous decade.

These ventures are the basis of an industrial sector that could end Paraguay's reliance on weather-dependent farming and electricity exports, says Gustavo Leite, the industry minister. Brazil imports $70 billion-worth of goods annually from Asia. Mr Leite thinks Paraguay could capture a tenth of that, doubling its industrial production and transforming the country into "Brazil's China". That is a worthy, if hyperbolic, goal. To achieve it, Paraguay will have to maintain its sensible economic policies and do far better in providing infrastructure, education and health care.

It is reaping the benefits of economic orthodoxy, which was introduced by Alfredo Stroessner, a strongman who also murdered dissidents and promoted smuggling during his long reign from 1954 to 1989. His successors have largely kept to his fiscal philosophy. Budgets have been roughly in balance and public debt is low. The central bank aims for an inflation rate of 4.5% and usually gets close. Commercial banks are healthy (in part because they charge high interest rates and face little competition). Regulation, like the tax code, is business-friendly. Independent trade unions, suppressed under Stroessner, are weak.

Paraguay's president, Horacio Cartes, who belongs to the Colorado party, once led by Stroessner, has tried to modernise the dictator's framework. He has replaced political hacks in ministries with Western-educated technocrats (the finance ministry ▸▸

and central bank were already staffed by professionals). He has pushed through a law to limit central-government deficits to 1.5% of GDP but continues to spend money on anti-poverty programmes. Along with steady economic growth and rising wages, these have cut the poverty rate in half, to 20%, between 2003 and 2014.

While Brazilian shoppers are holding back, Paraguayans are spending more. Shopping centres, blocks of flats and hotels are springing up in Asunción, the once-sleepy capital. Its residents are imbibing less *tereré*, a traditional cold drink made from the yerba mate plant, and more lattes in new European-style cafés. Its streets, unlike those of Ciudad del Este, are congested. But Mr Cartes's socially sensitive version of laissez-faire has its drawbacks. Matthias Otto, owner of a trendy café in Asunción, likes low taxes but not the crappy public services that go with them. Blackouts are common, he complains.

Mr Cartes, a tobacco magnate, won the presidency in 2013 in part by promising to ramp up spending on public works with cash from the private sector. But turning aspirations into asphalt has been difficult. A new law promotes public-private partnerships (PPPs) but officials lack the expertise to set them up. A tender to build and operate a motorway through the semi-arid Chaco region attracted a single bid (which was accepted). A new transmission line from Itaipu has helped reduce power cuts at X-Plast, says Ms Toyota. But a plan for a second line from the smaller Yacyretá dam down the Paraná river has stalled.

Nor has Mr Cartes reduced much the shadow economy, which employs perhaps two-thirds of workers and pays salaries that are 40% lower than those in the formal sector. Although the unemployment rate is just 6%, the share of workers who are underemployed is twice that. Fujikura, a maker of electrical wiring for cars in Ciudad del Este, tutors workers to make up for their lack of a basic education. In the neglected north a Marxist insurgency simmers (and boiled over in August, when guerrillas killed eight soldiers).

Mr Cartes's attempt to modernise Stroessner's model has met resistance from his own Colorado party, which has a majority in congress. A law passed in 2014 allowed citizens to look up salaries of civil servants; it turned out that several were drawing more than one. They were sacked. Party hacks took revenge by blocking Mr Cartes's initiatives in congress. It stripped the government of its power to sign PPPs without congressional approval. Unable to offer shiny infrastructure projects, the president has seen his popularity slide. His attempt to amend the constitution to let him seek a second term in 2018 looks doomed. If it succeeded, he might lose to Fernando Lugo, a left-wing former bishop who was president until 2012, when he was impeached over allegations of failing to keep order or prevent nepotism. Mr Lugo is now a popular senator.

Paraguay's next president is unlikely to abandon economic caution. Even Mr Lugo did not run ruinous deficits. The country's gradual progress is thus likely to continue. It is coming to resemble its more prosperous neighbours: Brazil, Argentina and Uruguay. With that comes a new sense of national self-confidence. "We used to dance tango or samba," notes Santiago Peña, the finance minister. "Now we dance the polka," the national dance brought by central European immigrants. Perhaps the Brazilians crossing the Friendship Bridge will take the time to learn a few steps. ■

Declassifying documents

Sunlight diplomacy

BUENOS AIRES

The United States tries to win friends by revealing past misdeeds

ON THE morning of September 21st 1976, Orlando Letelier, a Chilean dissident, was at the wheel of his Chevrolet Malibu on his way to work at a think-tank in Washington, DC. A former foreign minister in Salvador Allende's government, he had been jailed by the military regime that took power in 1973. After his release, he went to the United States and became one of the junta's most prominent critics. He wrote letters and lobbied Congress to withdraw military aid to the generals. His work had not gone unnoticed in Santiago, Chile's capital. As his car rounded Sheridan Circle a bomb beneath his seat exploded, killing him and Ronni Moffitt, a colleague sitting beside him. The murder is the only state-sponsored terrorist attack to have struck the United States' capital.

Truth at last

For decades people suspected that Augusto Pinochet, Chile's military dictator, was behind the murder. Evidence of that came to light only in October 2015, when John Kerry, America's secretary of state, gave Michelle Bachelet, Chile's president, a pen drive containing hundreds of newly declassified documents. One of them, a memo in 1987 from George Shultz, an earlier secretary of state, to Ronald Reagan, quoted a CIA finding that "President Pinochet personally ordered his intelligence chief to carry out the murders." The revelation came too late to be used to try the despot; he died in 2006. Chile welcomed it anyway. "It helps us to clarify a painful historical moment for our country," said Heraldo Muñoz, Chile's then-foreign minister.

Mr Kerry's disclosure was an example of "declassification diplomacy", the use of once-secret documents to shed light on the United States' role in past conflicts (or knowledge about them) and thereby improve its standing in the world. Some of the revelations make past administrations look bad. But those who support the policy say they can heal wounds, advance American goals and provide evidence in trials of abusive officials.

Mr Kerry delivered the Letelier documents to Ms Bachelet as part of an effort to persuade her to accept detainees released from Guantánamo Bay. In 2014 Joe Biden, the United States' vice-president, handed documents to Brazil's then-president, Dilma Rousseff, with information about torture by the country's military government in the 1970s. This was an attempt to repair relations after Edward Snowden disclosed that American spies had tapped her phone. In March this year Barack Obama said the United States would give Argentina files on its role in the "dirty war" waged by Argentina's military government against its own citizens in the 1970s and 1980s. These revealed that Henry Kissinger, the United States' top diplomat in the 1970s, had continued after he left office to express sympathy for a crackdown on dissent by Argentina's military rulers. Mr Obama hoped the declassification would deflect criticism during his visit to Buenos Aires on the 40th anniversary of the coup.

Bill Clinton was the first American president to authorise a project to declassify Pentagon and CIA documents related to human-rights abuses in Latin America. During the 1990s his administration released material on military regimes in El Salvador, Guatemala and Chile. But these disclosures were generally reactions to events, such as Pinochet's arrest in London in 1998, argues Peter Kornbluh of the National Security Archive, a Washington-based NGO that helps researchers find ▸▸

such documents. Mr Obama, by contrast, uses document dumps proactively as a tool of United States foreign policy, Mr Kornbluh says.

It is earlier disclosures that are now showing up as evidence in courts. One haul, released in 1993, may help the prosecution in the trial of 20 military officers accused of murdering six Jesuit priests and two women in El Salvador in 1989. Declassified documents will provide 40% of the evidence against the defendants, says Almudena Bernabeu, who has prosecuted human-rights cases in Latin America.

Declassification diplomacy has critics. People who regard Mr Obama as the United States' "apologist-in-chief" think it strengthens their case. A more convincing objection is that it can upset settlements in countries trying to overcome past conflicts. Ironically, "here the US is intervening again, this time with a moral heavy hand," says Christopher Sabatini, a lecturer at Columbia University in New York. "That can reopen old wounds." He is worried about Colombia, which is on the verge of ending a 52-year-long war with the leftist FARC guerrilla group. Fighters who confess to human-rights crimes will not serve time in jail under the proposed peace agreement. The United States will have to be careful about declassifying documents that might disrupt that accord, Mr Sabatini says.

Nor does declassification always work as a diplomatic gambit. Ms Bachelet did not accept Guantánamo detainees. Still, the United States has set an example of openness that should be copied by more secretive regimes, such as Cuba's. Further releases of American documents could help convict perpetrators of crimes in Chile and El Salvador. But time is running out. Whether ageing war criminals are brought to justice will depend in part on the next occupant of the White House. ■

Bello | Of growth and globalisation

Latin America wants to rejoin the world. Will the world reciprocate?

"FROM Argentina to the World" is the slogan. This month President Mauricio Macri welcomed 1,600 business leaders to Buenos Aires, inviting them to invest in and trade with his country. That marked a big change. During 12 years of rule by Cristina Fernández de Kirchner and her late husband, Néstor Kirchner, Argentina cut itself off from the world, nationalising foreign businesses, curbing imports and severing normal ties with the IMF. The Kirchners once stood up Carly Fiorina, the boss of Hewlett-Packard, an American computer giant, when she went to visit them at the Casa Rosada.

Some countries in Latin America, especially those on the Pacific seaboard, like Mexico, Chile and Peru, never turned their backs on globalisation. Others did. Boosted by record prices for their commodity exports, they turned inward and subjected their economies to state controls, repeating on a smaller scale the model that failed the region in the 1970s.

Mr Macri's initiative is not the only sign of a renewed desire to connect with the world. Brazil's congress is poised to roll back a law that gave Petrobras, the state-controlled oil company, a monopoly over deep-water operations. Michel Temer, the new president, is set to loosen rules governing national content in the oil industry. In Ecuador Rafael Correa, a left-wing populist who boasted that his country was doing well because it disregarded the IMF's recipes, plans to stand down as president next year amid a recession. His government has already accepted a $364m no-strings loan from the fund for earthquake reconstruction; whoever wins the election is likely to seek a conventional IMF programme.

These changed attitudes respond to a harsh reality. Because of the end of the commodities boom, 2016 will be the sixth

successive year of economic deceleration in Latin America. True, the IMF's forecast of an aggregate contraction of 0.4% this year is depressed by the recessions in Brazil, Argentina and Venezuela. The fund assumes the first two will recover next year, and that the region will post a return to growth, of 1.6%. In other words, even those countries that pursued responsible macroeconomic policies are growing at a mediocre rate of 3% or so. The IMF reckons that the region's potential (ie, non-inflationary) growth rate has fallen from 4.5% to 3%. That is not enough to satisfy the aspirations of an expanded middle class, nor to complete the task of abolishing poverty.

So what is to be done? Thanks to better policies, some countries have adjusted smoothly to lower commodities prices. Their currencies have depreciated without triggering high inflation. With central banks now poised to cut interest rates, cheaper currencies ought to trigger strong export-led growth. But there is little sign of that. During the years of boom and strong currencies, many Latin American manufacturing firms lost the links they once had to export markets. Restoring them takes time and effort. It is harder still because world trade is now expanding much more sluggishly than in the recent past.

Latin America's need to conquer new markets comes as globalisation is in retreat elsewhere. After years of procrastination, the Mercosur trade group (based on Brazil and Argentina) in April began formal negotiations for a trade pact with the European Union. Because of the farm protectionism of France and others, the Europeans are unlikely to offer anything useful. Earlier this year, Chile, Mexico and Peru signed the proposed 12-country Trans-Pacific Partnership. This now looks stillborn, since both candidates in the American presidential election oppose it. Donald Trump threatens to throw up barriers around what is still, despite the rise of China, by far Latin America's single largest export market.

At the turn of the century, parts of Latin America suffered the kind of backlash against globalisation that now affects Europe and the United States. The likes of the Kirchners and Venezuela's Hugo Chávez railed against "neoliberalism" and "savage capitalism", by which they meant the free trade and free markets that underlie globalisation. They attributed the extreme inequality which scars Latin America to "imperialism", just as Mr Trump blames foreigners for the loss of American industrial jobs.

One lesson from Latin America is that governments can ease inequality through social programmes. Another is that disconnecting from the world makes the poor worse off, as they are today in Venezuela. Having gone through its anti-globalisation backlash, Latin America is finding that the world now offers fewer easy gains than in the past. So it will be hard to make up for lost time. But at least the region is (mostly) back on the right track.

Lion island ready to take on the world

With investment flowing in and Sri Lankan companies headed out to conquer the world, the lion island is ready to roar again.

SRI LANKA was formerly known as "Serendip", the land of lions. When its very first king arrived in 468 BC, he brought a flag with a lion on it, and the animal on its modern standard today continues to represent the bravery of the Sri Lankan people against difficult odds.

Sri Lanka is now still a little-known country for most outsiders, often eclipsed by its giant neighbor, India. But after putting an end to more than 25 years of civil war, its people have finally emerged from the conflict with an economy that has returned to growth and welcomes foreign investment.

The country's public and private business leaders now have a common goal: to move Sri Lanka into the ranks of the world's developed countries.

Its capital, Colombo, ranked by some analysts as the world's fastest-growing city, provides clear evidence of the country's upward profile. Sri Lanka's 4.8 percent growth in 2015 has made it a focus of investment opportunity for an increasing number of international companies.

Sri Lankan companies, on the other hand, are also moving beyond its borders to offer their goods and services to the global economy. The trickle of foreign investment that was the norm during the years of conflict has turned into a steady inflow in these heady post-war days.

"The global market is now looking for ways to be more efficient," says Dinesh B. Saparamadu, founder and chairman of Colombo-based hSenid group of companies. "We will further enhance our processes and provide third-party integration to bring in greater flexibility, best practices and the latest technology to our customers."

Sri Lankan companies in traditional sectors are not staying behind either. "Many companies already disrupt the market, but apparel has yet to do so," comments Harsha Guneratne, managing director of Hela Clothing. "Hela will revolutionize the apparel sector by creating change and leading the charge on the global stage."

As the old Ceylonese proverb says: "It's the rain that fills the rivers, not the dew." With investment flowing in and Sri Lankan companies headed out to conquer the world, the lion island is ready to roar again. •

High tech revolutionary takes on the world

"At this point, we are moving our focus from Sri Lanka to the global market. This new direction will help us achieve our latest goal — to become a billion dollar company."

KUSHAN KODITUWAKKU
Managing Director

ORANGE® ELECTRIC

www.orelcorporation.com

Produced by:

WER World Eye Reports

AT the age of 22, Kushan Kodituwakku took over the family business. Because of his youth, a lot of people were betting against him, but he proved them wrong and transformed Orel Corporation by not only to keeping it going, but also by modernizing and growing it ten-fold in the next five years.

"At this moment we are 100 times bigger than when I took over the steering wheel of the company in 1995," says Kodituwakku, managing director of Orel — the fastest growing electrical and IT company in Sri Lanka. Also known as Orange Electric, the company has since become a Sri Lanka-based global player with a new focus on global IT.

Orel started out as a light switch manufacturer, later expanding its portfolio into the lighting, industrial and IT areas. Together with its latest move to the international arena, it aims to become Sri Lanka's largest IT employer through engagement in the areas of driverless cars, security cameras and artificial intelligence.

"It all started when we got a buy-out offer from one of the world's leaders in electrical accessories," recalls Kodituwakku. "However, we refused to sell our business, and that's when we started our global dream."

"At this point, we are moving our focus from Sri Lanka to the global market," he continues. "This new direction will help us achieve our latest goal — to become a billion dollar company."

Kodituwakku confidently foresees strong growth for his company in international markets — around 15 to 20 percent annually, and he has the track record to back his aspirations.

In 2016, Orange Electric partnered with another innovative Belgium company — Kinetura — to manufacture and distribute a revolutionary shape-changing (metamorphic) lighting fixtures. Production is now underway to meet strong global demand.

The company bets on its innovation capabilities powered by a work environment that prioritizes flexibility and shies away from rigidity. "With the course technology has taken we cannot imagine what the world will be like in even just 10 years' time, so we have to be innovative and think ahead," Kodituwakku says. "This will be the key for us to reach our billion dollar goal."

"On the other hand we are not rushing things," he concludes. "We would rather enjoy the journey by taking one confident step at a time, than the destination." •

Kushan Kodituwakku, Managing Director of Orel

Also in this section

For daily analysis and debate on the Middle East and Africa, visit
Economist.com/world/middle-east-africa

Syria's widening war

The ceasefire unravels

BEIRUT

A resumption in fighting signals even darker days for Syria

AFTER months of diplomatic wrangling America's secretary of state, John Kerry, hoped he had finally struck a deal with Russia that would help end the war in Syria, which has killed perhaps half a million people. For the plan to work, both sides needed to lay down their weapons for one week and allow aid into besieged parts of the country. If that happened the truce would then be extended, paving the way for Russia and America to launch joint military action against Islamic State and Jabhat Fatah al-Sham (JFS), a terrorist group and former al-Qaeda offshoot.

But the plan never got that far. Although the fighting ebbed, the Syrian government blocked most aid deliveries into rebel-held areas, and stripped vital medical supplies from the few that it did allow across the front lines. On September 19th the Syrian regime refused to extend the seven-day ceasefire, accusing rebels of failing to uphold their side and citing an air strike by American and coalition forces that mistakenly killed 62 Syrian soldiers.

But the real breach came soon after Russian and Syrian warplanes went back into action, pounding rebel-held neighbourhoods in the northern city of Aleppo. A UN aid convoy was bombed—the first attack of its kind since the start of the war. American officials said Russian jets were to blame, citing radar tracks that showed them above the convoy when it was hit. Russia denied it, claiming variously that the trucks had simply caught fire or been shelled.

Ban Ki-moon, the secretary-general of the UN, called it a "sickening, savage and apparently deliberate attack". His officials said that if the convoy was deliberately targeted, that would amount to a war crime. (Syria has seen many war crimes in the past five years.) A day later aircraft bombed a mobile clinic in a rebel-held part of Aleppo, killing four medical staff. The UN and several other humanitarian groups said they were suspending aid convoys.

A ceasefire that had taken months to negotiate took only hours to unravel. "They were unloading the aid in a warehouse when the bombs hit. I spent the night pulling the dead out," says Ammar al-Selmo, the director of Aleppo's White Helmets, a volunteer civil defence force that works in rebel-held areas, of the attack on the UN aid convoy.

Areas of control, September 19th 2016
Syrian government · Islamic State · Other rebel · Jabhat Fatah al-Sham *(formerly Jabhat al-Nusra)* · Kurds · Contested
Source: Institute for the Study of War

Mr Kerry, whose plan probably represented America's last real diplomatic effort under the presidency of Barack Obama to slow the killing, is still scrambling to salvage what is left of it. But unless he can convince his Russian counterpart, Sergei Lavrov, to renew the ceasefire (and persuade the Syrian regime to ground its aircraft, an appeal Mr Kerry made at the UN on September 21st), then dark days lie ahead.

Fighting will probably intensify as the Syrian government, backed by Iran and Russia, doubles down on its efforts to crush rebels in eastern Aleppo, their only major urban stronghold. The fall of Aleppo would at last give President Bashar al-Assad what he craves: dominion over the country's main cities, industrial hubs and transport links, including access to the sea (see map). In a troubling sign of the fighting to come, Iran has apparently taken advantage of the truce to reinforce its militias around the city. America is now considering arming Kurds in northern Syria, which would pit it against Turkey, a NATO ally.

Rebel forces are also preparing for another round of fighting. A long-discussed merger between more mainstream Islamist groups and JFS is back on the cards.

Rebels in arms

"The merger is a goal for all the Syrian rebel factions. If it was successfully done it would mean a significant turn in the path of the revolution," says Captain Abdul Salam Abdul Razaq, a military spokesman for Nour al-Din al-Zinki, a key rebel group in northern Syria that once received American military support.

The merger talks are still at an early stage. Mainstream rebels fear that forming a coalition with JFS would expose them to American air strikes. The two sides also ▸▸

disagree on their visions for Syria's future. Still, if a fresh round of fighting begins, then a stronger military alliance of Islamist factions would stand a better chance of fending off Mr Assad's advances.

Such a deal would probably torpedo Mr Kerry's ceasefire plan as well as America's broader aim of trying to arm moderate rebels to fight against Islamic State. Moscow already accuses America of failing to separate mainstream rebel factions from "terrorist" groups like JFS, a precondition of any joint military action between the two countries. Rebels have so far been reluctant to separate, fearing that doing so will only result in them ceding territory to the Syrian army.

Even if Mr Kerry persuades the warring parties to extend the ceasefire, there is little chance that peace talks will yield results. The political opposition to Mr Assad is weak and the rebels' trust in the UN has reached a new nadir. America has little leverage over Russia, Iran or Syria.

"The longer this goes on for, the more difficult it will be to hold the centre ground together," says Salman Shaikh, a former UN official and expert on the Middle East. "One consequence is likely to be the further radicalisation of the mainstream opposition ... a five-year conflict could easily become a 10-year conflict." ■

Saudi Arabia

The real game of thrones

RIYADH

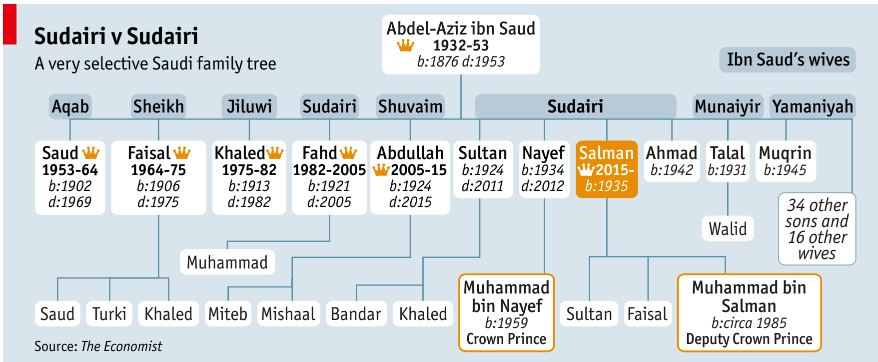
The crown prince stands between the king and his favoured successor

IF YOU turned on the news in Saudi Arabia a decade ago, you were likely to see a relatively young, reform-minded prince who was bent on securing the kingdom's future. Muhammad bin Nayef was out front, dealing with the country's most pressing challenge, terrorism. He was clever, media-savvy and ambitious. There was little doubt that he wanted to be king.

In April last year, four months after King Salman, his uncle, had ascended to the throne, he duly became crown prince. That was a dramatic break with tradition, because the past six kings of Saudi Arabia have all been sons of the founding monarch and several more are still alive. They were waiting in a brotherly queue. But at last it was decided that the succession would jump a generation. Prince Muhammad bin Nayef, now 57, is officially next up.

That now seems less certain. In the past year King Salman's own much younger son, also a Muhammad, aged only 31, has burst onto the scene as minister of defence and deputy crown prince, tasked with weaning the kingdom off oil. Overshadowing his older cousin, he has hogged the limelight, promising a string of drastic reforms. King Salman seemed to be grooming him to be his immediate successor.

Sudairi v Sudairi
A very selective Saudi family tree



Source: *The Economist*

Crown Prince Muhammad is unlikely to take the mooted demotion lying down. He has been in tough spots before. He has survived several assassination attempts. In 2003 he bolstered his reputation by personally accepting the surrender of an al-Qaeda leader. In 2009 he was nearly killed at a similar meeting when a supposedly rehabilitated terrorist exploded a bomb apparently placed in his rectum.

This week Crown Prince Muhammad (or MBN, as he is known in diplomatic circles) represented Saudi Arabia at the UN general assembly in New York where world leaders congregate, dampening speculation that he may have been formally sidelined in favour of his young cousin. Although such speculation is taboo in the kingdom Saudis whisper about palace intrigue. Each prince respects the other in public, but signs of tension abound.

Take the Saudi-led war in Yemen, spearheaded by Muhammad bin Salman (MBS) just weeks after he became defence minister last year. At first he flaunted his leadership, meeting generals and visiting foreign capitals, always with the press in tow. But as the intervention turned sour, it was respun as a collective decision. Blame, in other words, should be shared. "What was noticeable was that Muhammad bin Nayef didn't come rushing in to say, 'Yes, that's right'", says Bruce Riedel of the Brookings Institution, a think-tank.

In December MBN seemed to go into a sulk. He went to Algeria, oddly staying there for six weeks and neglecting his duties back home. There has since been an effort to display harmony in the royal family. But if the crown prince did become king, he might well sack his young cousin. So the 80-year-old King Salman, whose faculties are said to be fading, may need to move fast if he wants his boy to succeed.

That may not be easy. The kingdom has traditionally been ruled by a royal consensus. Many princes are loth to let MBS jump the queue. The war in Yemen is already an albatross around his neck. His economic reforms are causing real pain.

Moreover, the crown prince is well liked. Saudi royals and Western diplomats praise him as serious and hard-working. Ordinary Saudis view him as their protector. He boosted his standing this month by overseeing a tranquil *haj*, the Muslim pilgrimage to Mecca, marred last year by a deadly stampede. Human-rights groups are less impressed, blaming him—among other things—for the execution in January of a Shia cleric accused of terrorism. But he seems steadier than his youthful cousin. As the kingdom undergoes an economic shake-up, no one is sure who will lead it. The only thing you can bet on is that his first name will be Muhammad. ■

Free speech in Palestine

Gagged in Gaza

RAMALLAH

Hamas and Fatah try to silence the press

LAST month Human Rights Watch (HRW) accused Palestinian authorities of detaining and torturing critical journalists. Two days later the secret police proved the human-rights campaigners right. Plain-clothes officers arrested Mohammed Othman, a journalist who has criticised Hamas. He was detained for a day and a half and, he says, beaten, deprived of food and forced into painful positions.

Freedom of speech is enshrined in Palestine's basic law. However, researchers from HRW found five other journalists and activists who were detained recently in Gaza and the West Bank (which are ruled respectively by the Islamist Hamas and the secular Fatah movements). Most of the detained journalists said they had been tortured. One was threatened by an officer brandishing a gun.

There are few data on such arrests, which both factions deny are politically motivated. Anecdotally, though, many Palestinians say they have increased. Just 20% think they enjoy press freedom, according ▶▶

to a March poll; 66% believe they cannot openly criticise the Palestinian Authority (PA). Even a Facebook post can provoke a visit from the authorities. In May, for example, officers hauled in a student who called the PA "rotten" on social media.

The attack on free speech is a symptom of the rot in Palestinian politics. Mahmoud Abbas, the president, has served 11 years of a four-year term, with few accomplishments to show for it. Two-thirds of his constituents want him to resign. Hamas won legislative elections in 2006 as the alternative to a corrupt Fatah, but today presides over a scene of utter despair in war-ravaged, blockaded Gaza.

Both organisations have been jittery ahead of a municipal election that was scheduled for early October. Palestinians have not held a nationwide ballot since 2006, so the smallest votes, even on university campuses, become fraught with meaning. Fatah campaigners have complained of harassment from the Hamas authorities in Gaza, and vice versa.

Both sides, then, breathed a quiet sigh of relief on September 8th, when the Palestinian high court suspended the election. It will be delayed at least until next year.

Mr Othman, for his part, is already back at work. A week after his release, he filed a story on Hamas's efforts to restrict the foreign press. There was much to say. In May the group banned an American photographer from entering the territory, saying that her work "reflects badly on Gaza". A new intelligence office at the border peppers arriving journalists with questions; on a recent trip, one agent took an oddly detailed interest in how often your correspondent visits Washington, DC.

Young Palestinians often joke that their next intifada, or uprising, will be against their own leaders instead of Israel. For now, their rebellion is largely confined to news websites and social media. But without any way to express their views at the ballot box, it is unlikely to stay there. ■

Uganda's Jobless Brotherhood

Snouts in the trough

NAIROBI

Protesting against porky politicians

SQUEALING, the ten tiny piglets ran around in panic as policemen booted them with such force that they flew into the air. What ought to have been a comical sight—painted pigs dashing around outside Uganda's parliament—was marred by the same violence that is meted out to all opposition, no matter how peaceful, against the government of Yoweri Museveni, who has been in power for 30 years.

The pigs were released on September 15th by two activists from the self-styled Jobless Brotherhood in protest against a decision by MPs (or "MPigs" as the group calls them) to award themselves 200m Ugandan shillings ($59,000) each to spend on fancy new cars.

It was not the Brotherhood's first porcine protest. In June 2014 two members made it into the lawmakers' car park with animals. Last year they dropped piglets in Kampala and Jinja (in the latter a police chief accused the Brotherhood of "holding an unlawful assembly and violating the rights of pigs").

"If you started feeding a pig in the morning...it will continue eating up to evening," one activist told the local press. "This is the same way our MPs are behaving; they never get tired of money."

Graft in Uganda made headlines in 2012 when it emerged that $12.7m in donor funds had been siphoned from the Office of the Prime Minister, prompting a number of European nations to suspend aid. Pig protests are a form of dissent that is also used in neighbouring Kenya, which is also under the microscope amid allegations of corruption. Both countries are seen as equally crooked by foreign investors: they are tied at 139th out of 167 in Transparency International's Corruption Perceptions Index (where number 1 is the cleanest country).

The Brotherhood, which claims to have 5,000 members, blames graft and cronyism for Uganda's high rate of underemployment. Norman Tumuhimbise, one of the group's founders, angrily recalls being turned down for a job as a policeman after finishing six months of training because better-connected Ugandans were hired instead.

The official unemployment rate in Uganda is only 1.4%. But there is a catch: some 90% of Ugandan workers have informal jobs, says Gemma Ahaibwe of the Economic Policy Research Centre in Kampala. Those jobs are often ill-paid and unproductive. The growth of the formal economy is hampered by red tape and bad infrastructure, just as millions of young people are entering the labour market (almost half of Ugandans are under the age of 15). Economic growth, which was rapid from 1987 to 2010, has fallen dramatically and is now barely faster than the rise in Uganda's population. Small wonder that disaffected youngsters are demanding that their rulers take their snouts out of the trough.

Johannesburg's new mayor

Capitalist crusader

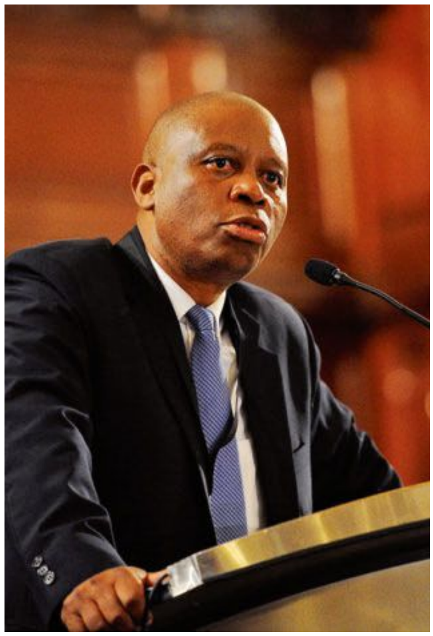
JOHANNESBURG

A hair-care tycoon aims to put a shine on the city of gold

A FEW weeks after Herman Mashaba became mayor of South Africa's biggest city, tragedy struck. A group of illegal miners known as *zama-zamas* ("chancers", for the risks they take) were trapped in an old mineshaft at Langlaagte, the Johannesburg farm where prospectors first discovered gold in 1886. At least three of them died.

To Mr Mashaba, the disaster was a symptom of the breakdown of law and order. It was also a chance to look for capitalist solutions to lingering problems, such as the sky-high unemployment that makes *zama-zamas* risk their lives. Langlaagte is the "commercial foundation" of Johannesburg, Mr Mashaba declared in his inaugural speech to the city council a few days later. It ought to be a tourist site, and have its "commercial potential" unleashed.

Mr Mashaba, 57, calls himself the "Capitalist Crusader" (the title of a book he published last year). Among South African politicians he is a rare breed: a scrappy self-made millionaire, a libertarian and a capitalist in a country so left-leaning that even the finance minister is a former member of the communist party. Mr Mashaba, who hates red tape and statism, decries the "culture of dependency" that has developed under the African National Congress (ANC), which has ruled since the first democratic elections in 1994. He criticises the party's racial affirmative-action poli-



Afro capitalist at the helm

cies and is against a proposed national minimum wage, calling it "an evil system" designed to prevent the poor from advancing. "The ANC's corrupt patronage policies have killed entrepreneurship," he says.

Raised in a backwater near Pretoria, Mr Mashaba was cared for by his sisters while their mother, a domestic worker, raised other people's children. Angry at the lack of opportunities for blacks under apartheid, he dropped out of university and got a job at a supermarket before starting his own business, Black Like Me, that makes hair-care products for black consumers. The venture made him rich.

He has since handed control of the business to his wife, and more recently served as chairman of South Africa's Free Market Foundation, a think-tank. Frustrated with the ANC's corruption under President Jacob Zuma, in 2014 he joined the opposition Democratic Alliance (DA), a liberal, pro-business party. Being mayor was the last job he ever wanted, Mr Mashaba says, sitting in his new office. But the DA was keen to have a high-profile black businessman as its candidate, and won him over.

His victory came as a surprise. The DA never expected to win control of Johannesburg, and did so only with the support of smaller parties, including the populist Economic Freedom Fighters (EFF). (The ANC won more votes than the DA, but not a majority.) Mr Mashaba is now the flag-bearer for the DA's strategy to break out of its base in the Western Cape. Its plan is to win big cities and run them well. This, it hopes, will persuade voters to give it a shot at running the country.

So how much can Mr Mashaba do? South African municipalities are "masters of their own destiny", says Andrew Siddle, a consultant. They have considerable autonomy in some areas. But they have little say over important issues such as policing and education. Despite such constraints, successive DA mayors in Cape Town have won over black voters by cutting graft, encouraging private investment and diverting money from rich (and still mainly white) suburbs to poorer townships.

Johannesburg, with a population of nearly 5m, has scope to do more. It has a budget of 54.8 billion rand ($3.9 billion) and collects most of its own taxes. Transfers from the National Treasury are allocated by formula, so there is little that the ANC-controlled national government can do to trip him up. His main challenge will be to keep the support of the EFF without making too many concessions to its (radical, leftist) ideology. It voted for him mainly to spite the ANC, and has declined to enter a formal coalition. That means that city budgets and other votes can only pass with the EFF's support. Mr Mashaba will also have to contend with a city bureaucracy that is politicised and largely pro-ANC. Many civil servants resent his plans to stop them giving jobs to party loyalists and contracts to pals.

Mr Mashaba argues that he can be both pro-poor and pro-business. He promises to boost Johannesburg's economic growth rate to 5% a year and to cut unemployment from 31% to less than 20%. Already he has started handing out title deeds to residents of Soweto, giving them formal ownership of their own homes. This week he said that the city's tender process would be opened to public scrutiny. But when he announced plans to privatise the city's strike-plagued rubbish-collection service, Pikitup, the EFF threatened to vote him out of office. He swiftly retreated.

The DA has had a run of good publicity. Its other new mayors, in Tshwane (Pretoria) and Nelson Mandela Bay (which includes Port Elizabeth), have won plaudits for turning down the luxury cars that come with their jobs. But the real test in all three cities will be whether the DA can cut crime and graft, improve services and boost growth. Only if it governs better than the ANC will it win national power. ■

Nigeria's war against indiscipline

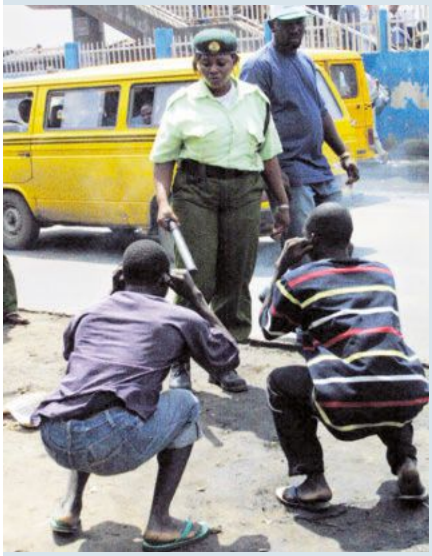
Behave or be whipped

LAGOS

A former dictator dredges up old social policies

NIGERIANS might be forgiven for thinking they have travelled back in time. Their president, Muhammadu Buhari, has revived some of the economic policies he favoured when he was last in power, as a military dictator in the 1980s, such as restricting imports and propping up the currency. Such retro thinking has failed to rescue Nigeria from its first recession in 20 years; indeed, it has probably made it worse. And now social policy is going back in time, too.

Under a new "national reorientation" campaign called "Change Begins with Me" Mr Buhari wants to tame Nigerians. Moral "degeneration", he says, is the reason that drivers run red lights and militants blow up pipelines. "Our value system has been badly eroded," the president lamented in a speech that plagiarised Barack Obama's 2008 victory address. A presidential spokesman blamed an "overzealous" speech-writer who will face "appropriate sanction".



The frog jump—a national sport

Others may face the same fate. A "War Against Indiscipline" brigade, first drafted by Mr Buhari in 1984, was relaunched last month and is hunting for funds for its 150,000 volunteers, who are patriotically clad in green and white. According to the National Orientation Agency (whose Orwellian departments include one for "Behaviour Modification"), their job is to restore order and "inculcate the spirit of nationalism in all Nigerians".

Nigeria's public services have been hollowed out by years of corruption, and some locals remember the era of military rule as more orderly. Others remember it as brutal. During Mr Buhari's first War Against Indiscipline soldiers used horse whips to beat those who littered or jumped queues and punished others by making them jump like frogs. "It became totally arbitrary," says Clement Nwankwo, a human-rights campaigner. One of his friends, he recalls, was jailed for owning an unlicensed telex machine.

The dangers of unleashing the moral police are manifest. One man has been arrested for naming his dog after the president. In Kano, a mostly Muslim northern state, an Islamic unit called the *Hisbah* has long terrorised people accused of committing adultery.

Mr Buhari's critics gripe that, if he wants to make Nigeria a more moral country, he should start by cleaning up the government. Police officers regularly extort bribes with menaces. The army is accused of killing and torturing civilians. In Lagos the state government's "Kick Against Indiscipline" enforcement team demands weekly bribes from long-suffering roadside vendors.

Matthew Kukah, a bishop in the northern city of Sokoto, doubts that Mr Buhari's campaign will work. "Chaos is a function of scarcity," he argues. "You cannot expect hungry people to line up for a few bags of rice."

Also in this section

For daily analysis and debate on Europe, visit
Economist.com/europe

European defence

The fog of politics

After the Brexit vote, the European Union is pushing for more military integration. Its proposals mostly miss the point

TERRORISM, Russian bullying, chaos in the Middle East and the possibility of a President Donald Trump: it is no surprise that the European Union wants to put defence and security at the top of its agenda. As the European Commission's president, Jean-Claude Juncker, put it in his "State of the Union" speech on September 14th: "Europe needs to toughen up. Nowhere is this truer than in our defence policy."

Although personally devoted to the federalist vision of a European army, Mr Juncker was careful not to raise its spectre on this occasion. Instead, he rattled off a number of ostensibly more achievable goals, some of which had been floated a few days before in a paper prepared by the French and German defence ministers. It was discussed at last week's informal summit of European leaders in Bratislava; next week, EU defence ministers will be back there to take the talks further. The goal is to have a set of proposals agreed in time for the next summit in December.

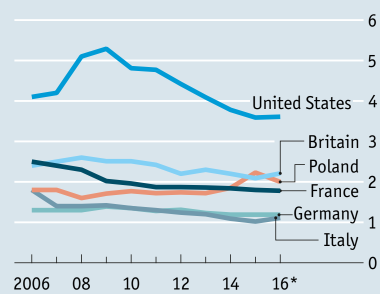
Most of the ideas are fairly old ones to enhance co-operation between the armed forces of willing EU members; they are being dusted off to meet the new mood of anxiety. The proposals include the establishment of a permanent military headquarters to plan and run EU military and civilian missions, such as Operation Sophia, launched last year against migrant-traffickers in the Mediterranean, and Operation Atalanta, an anti-piracy campaign off the coast of Somalia that began in 2008. Up till now, such missions have been run from HQs in nominated member states.

Britain has long vetoed the idea, worried that it would be expensive, duplicate stuff that NATO is much better equipped to do and unsettle the alliance. Brexit makes the new HQ more probable. NATO seems relaxed, as long as it stays relatively small: say, a few hundred people compared with the 8,500 NATO employs to do this sort of work. Finding the money for even such a modest outfit, though, will not be easy.

Another goal of the Franco-German plan is something called "permanent structured co-operation", or PESCO. This would allow a core group of countries voluntarily to take steps towards greater integration of their military capabilities. There has been nothing to prevent it being used in the past; Britain could not have stopped it. But the desire to do so has been lacking. Nick Witney, a former head of the European Defence Agency (EDA), which promotes co-operation in acquiring military equipment, remains sceptical of PESCO because it is hard to decide who should join and who should not.

Bucks for the bangs

Defence spending, % of GDP



Source: NATO

*Estimate

Relations between NATO and the EU, often tense, have recently improved. At the NATO summit in Warsaw this summer, the two organisations issued a joint declaration on how they would work together against new threats such as cyber-attacks, uncontrolled migrant flows and "hybrid warfare" (the mix of conventional force, political subversion and disinformation that helped Russia conquer Crimea). NATO insiders say "the atmospherics are different now" and there is little risk of the EU supplanting NATO.

An idea that deserves a cautious welcome is the creation of an EU fund to finance defence-related research and development. It will start small but the aim is for it to grow to around €3.5 billion ($3.9 billion) within a few years. Again, the problem is not the concept, but getting member states to cough up the money.

Similarly, a new emphasis on "pooling and sharing" military kit, a longstanding aim of the EDA and of NATO, is nice in theory but has proved hard in practice because governments fret about losing control of their forces. Some countries have come together to share aerial-tanker capacity, but pooling and sharing can work only if there is a firm understanding about how such assets will be used in a crisis.

Europe's biggest shortcoming in defence is not its command structure but its capabilities. Successive American administrations have implored their European al- ▸▸

lies to stop cutting their military budgets and to spend what money they have on the things that matter. That means modern equipment rather than static divisions, bloated bureaucracies and pork, says Kori Schake, a former Pentagon official now at the Hoover Institution, a think-tank.

In the past year, most European defence budgets have stopped declining. Some are now gently rising. But only a handful of NATO's European members—Britain, Estonia, Greece and Poland—meet the alliance's 2% of GDP spending target (see chart on previous page). If the new push for EU defence acts as a spur to more spending on modern kit, the Americans will be happy; but if it is just posturing, their exasperation will only be reinforced.

Jonathan Eyal of RUSI, a British think-tank, has a different concern. Much of this activity, he believes, is a sign of desperation on the EU's part that the member state with the most effective armed forces will soon quit the club. But Europe, he says, is having the wrong debate. "The most urgent need," he says, "is to find a way to keep Britain as integrated in Europe's defence as possible." ■

Russian politics

The hollow election

MOSCOW

The lowest-ever turnout for Duma elections suggests Vladimir Putin is losing touch with his political base

ON THE face of it, Vladimir Putin got everything he wanted. On September 18th his United Russia party won a thumping three-quarters majority in the parliamentary elections. There were no protests of the sort that marred its last victory in the Duma five years ago. The president called this a sign of stability and trust in his party.

It is anything but that. The Kremlin made every effort to ensure the elections were as sterile and low-profile as possible. It banned and harassed genuine opposition parties and their leaders. And it persuaded many that nothing depended on voters. The official turnout was 48%—the lowest ever in the history of Russian elections. This average included several ethnic regions, such as Chechnya and Dagestan, where the turnout was an improbably high 80% or more. In the largest cities, such as Moscow and St Petersburg, only a third of voters cast their ballots, down from two-thirds five years ago. Alexei Navalny, an opposition politician who led the protests in 2011 and was barred from taking part in this election, told his followers: "You have not lost because this was not an election."

Only one name matters

After Mr Putin's first term in office, which ended in 2004, the Duma ceased to be a democratic forum; it merely rubber-stamped the Kremlin's edicts. But its standing—and that of United Russia—was sustained to an extent by high oil prices and a growing economy. At least the Duma could not be ignored, as it provided a rare means of access to the Kremlin, which distributed the oil rent. With the sharp fall in oil revenues, the economy in recession and real incomes dropping, this is no longer the case. Social scientists note that the urban middle class—the most economically active part of the country—has no real representation; United Russia is just a vehicle for the Kremlin to exert power.

By shutting out the opposition and marginalising even the tame Duma, the Kremlin is pushing Russian politics into uncharted and potentially dangerous territory. Mr Putin's latest victory turns the Duma into more of a sham. As a result, he risks becoming detached. In the view of Gleb Pavlovsky, a political analyst and former adviser to Mr Putin, Russia's leaders are like pilots flying in heavy turbulence with the cockpit dials all painted over.

There are signs of tension even among Mr Putin's core voters. According to the Centre for Social and Labour Rights, a monitoring group, the number of labour protests has grown by 22% since 2014. Tractor drivers who recently staged a protest, taking a cue from long-haul lorry drivers last year, were promptly detained. The main causes of the almost daily labour unrest are not political, but bread-and-butter issues such as incomes falling and wages not being paid. Strikingly, some of the regions most prone to stoppages also had the lowest turnout in the elections, among them Irkutsk in south Siberia, where just 28% of voters cast their ballots.

Beyond the factories, Russian politics is being conducted mostly among the Kremlin's power cliques. Recent "soft" purges include the sacking of Sergei Ivanov, Mr Putin's chief of staff; elsewhere tactics are harsher as sacked regional governors and mayors increasingly end up in jail. As the economic pie shrinks and civil ways of balancing interests disappear, expect the internal struggles to turn nastier.

One harbinger is the growing power of the Federal Security Service, the successor to the Soviet KGB. On election night *Kommersant*, the country's first private newspaper, reported that the Kremlin intended to recreate the Ministry of State Security, as the KGB was known under Stalin. It would incorporate separate agencies dealing with foreign intelligence and the protection of top officials.

As a former KGB man, Mr Putin sees himself as the only decision-maker and the secret police as his most effective tool to ensure stability. Soviet leaders had the same impression. ■

Criminal justice

Think before you clink

RIGA

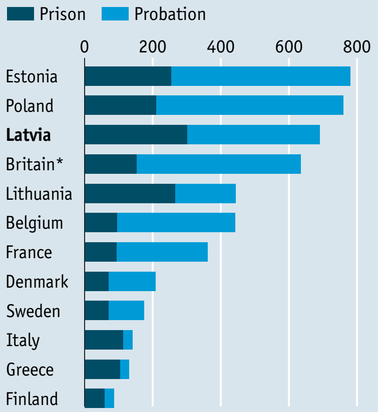
Why a rise in community punishment is not cutting prison rates

ILONA SPURE sighs with regret when she recalls how, in Soviet times, a thief could get two years in prison for pilfering a jar of jam. Now the director of Latvia's prison service, she says that even after the country regained independence in 1991 it kept the Soviet habit of putting a lot of people behind bars. In 2004, when it joined the EU, Latvia still had its highest rate of incarceration: 337 people per 100,000, compared with the EU average of 122.

"We thought there was no alternative to prison," says Ms Spure. No longer. In recent years judges have been handing out ever more "community work service", in which offenders perform unpaid jobs like sprucing up shabby buildings or cleaning parks. Last year such punishments were applied in 53% of convictions, up from 28.5% in 2011 and none at all before 1999.

Better in or out?

Prison population and probation rates
Per 100,000 population, 2010



Source: M. Aebi *et al*, "Have community sanctions and measures widened the net of the European criminal justice systems?", *Punishment and Society*, Vol.17(5)

*England and Wales

In this way Latvia is part of a broader pattern. The use of alternative sentences, such as community service and electronic monitoring, has been rising across Europe. In the early 1990s few countries bothered to collect data on what were then rare sentences. By 2010, however, 17 out of 29 countries surveyed had more probationers than prisoners (see chart), according to a paper published last year by researchers from the University of Lausanne. This trend is also apparent in America. Michelle Phelps of the University of Minnesota has found that the number of adults under some form of probation increased from 1.1m to 4m, or 1 in 60 adults, from 1980 to 2011. She calls it the rise of "mass probation".

Yet alternative sentences have not been matched by a fall in the incarceration rate. A study in 2014 by Natalia Delgrande of the University of Lausanne found that from 2000-12 rates of community service and imprisonment both increased in most of Europe. In other words, countries that lock up more people also tend to hand out more non-prison sentences.

What has happened is a "widening of the net", says Catherine Heard of the Institute for Criminal Policy Research, a British think-tank. Rather than serving as an alternative to prison, such sentences are often applied as additional punishments—often to deal with newly criminalised offences, such as breaking welfare rules or anti-social behaviour. Ms Heard says that non-prison sentences are increasingly designed to control and monitor offenders rather than reform them.

Judges often remain attached to jail terms, or lack discretion. Mandatory minimum sentences or compulsory punishments for parole breaches mean they are left with no choice but to send convicts to prison. (From 1995 to 2009 there was a 470% increase in the number of people imprisoned in England and Wales for non-compliance with community sentences.)

Latvia is thus unusual, in that the use of alternative punishments has coincided with a sharp drop in prisoners, from 7,646 in 2004 to 4,409 in 2015. This is in large part because in 2013 the cash-strapped government cut the sentences of non-violent prisoners and decriminalised several other offences. "We could no longer afford the prison population that we had," says Anhelita Kamenska of the Latvian Centre for Human Rights. Imants Jurevicius, the head of Latvia's probation service, is keen to expand the use of counselling and addiction treatments. But he says it is hard to convince older judges of their merits.

Good pointers are to be found in Norway, Scotland and, indeed, in parts of Latvia, where the probation services work closely with the rest of the legal system. Judges are given more discretion and seek advice on sentencing from probation officers. Such an approach is harder to sell to the public, acknowledges Laila Medin of Latvia's ministry of justice. But she argues that even in a country with prisons dating back to 1833, another form of criminal justice is possible. "We will never be fully Norwegian but we can be less Soviet." ■

The politics of haute coiffure

Scissor and tongs

PARIS

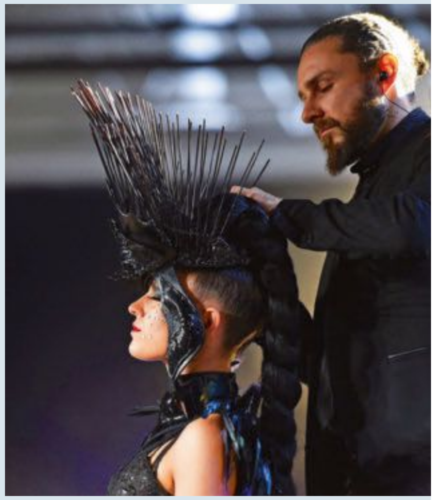
French politicians ruffle hairdressers at their own peril

IT IS a rite of passage for any French politician seeking high office to linger at the annual Paris agricultural fair, petting heaving bulls and nibbling regional charcuterie. This bestows on besuited city types essential national virtues, linked to the land, earthy muscularity and *la France profonde*. Last week, though, saw a parade of male would-be candidates for next year's presidential election pressing the flesh in a less traditional setting: amid the heat tongs, hair extensions and tubs of cream peroxide at the Paris hairdressing fair.

Hair, it seems, is a new political battleground. At the Mondial Coiffure et Beauté on September 11th-12th Bruno Le Maire, a centre-right would-be candidate on his way to a lesson in *lissage brésilien* (Brazilian hair-straightening), bumped into Emmanuel Macron, an aspirant from the left, fresh from a barber's shave. Even Alain Juppé, another centre-right hopeful, turned up, though the balding former prime minister conceded wryly that his own needs were minimal. In July it emerged that the Elysée palace was paying nearly €10,000 ($11,000) a month—more than three times the national average wage—to employ President François Hollande's personal hairdresser.

Political hair wars are partly to do with the industry's popularity. More employees work in hairdressing in France today than in the wine industry. With over 83,000 hair salons, and 95,000 workers, French heads are among the best tended in Europe. The number of salons has grown 20% over the past decade. It is easier to find a hairdresser in many French villages than a butcher. With 1m clients coiffed every day, hairdressers have the ear of their customers for long periods, as peroxide bleaches or perms set. Charm a hairdresser, and electoral rewards may follow.

A year ago Mr Macron, then economy minister, tried to trim regulations protecting the profession as part of a broader liberalisation designed to help newcomers set up businesses. Existing rules require hairdressers to hold a *brevet professionnel*, or professional qualification, before opening a salon. The two-year course includes a written exam in applied physics and chemistry and a three-hour written French paper. When Mr Macron said he wanted to cut the requirement, the profession was livid. "Ours is a *métier* where you absolutely need a qualification," says Bernard Stalter, head of France's National Union of Hairdressing Businesses. Hairdressers downed scissors and took to the streets. In the end the minister backed down, and quit last month. The whistling that greeted his arrival at the Paris salon suggests that they have not forgotten. Politicians, beware of ruffling hairdressers.



The sharp end of the campaign

Drug wars

Hash and burn

TRAGJAS

Albania seeks to contain the spread of cannabis plantations

IT IS peak season and dozens of sweat-drenched men are labouring in the fields near the Albanian town of Tragjas, harvesting a bumper crop of cannabis. Overseeing them are policemen with sub-machine-guns and face masks. Saimir Tahiri, Albania's interior minister, swoops down in a helicopter to observe the destruction of the plantations. Piles of two-metre high bushes are set on fire. Mr Tahiri admits the choking fumes can be a problem for the policemen but adds that this is the least of their concerns. Europe's drug war is being fought here, he says, and billions of euros are at stake.

Albania is a major entrepot of the European drugs market. The country has long been a base from which criminal gangs smuggle everything from cigarettes to heroin, cocaine, cannabis resin and other illicit substances into the rest of Europe, according to the European Monitoring Centre for Drugs and Drug Addiction, Europe's drug agency. Increasingly, Albania has also become a big outdoor producer of the cannabis herb, which is distributed with the help of a complex network of Albanian organised-crime groups.

One of the biggest destinations is Italy, where dope is smuggled in on speedboats, lorries and private planes; last month smugglers tried to slip through on jet skis. One Italian newspaper headline declared, only somewhat hysterically, that "rivers of drugs" are flowing from Albania to its shores. Each day this summer Italy's Guardia di Finanza, a paramilitary police force, has overflown Albanian territory to relay the co-ordinates of cannabis plantations to Mr Tahiri's men. Nearly all reported plantations are destroyed, he says. By late August this year, he claims his men destroyed a million cannabis plants—up from the half million recorded in 2014.

Others are less sure. Locals complain that several plantations—those which are hardest to get to—have survived. Albanian politics is rich with accusations of links between politicians and the drugs mafia. Lulzim Basha, the head of the opposition Democratic Party, claims that even Mr Tahiri himself is protecting key drug lords. Mr Tahiri vehemently denies the claim. Mr Basha also alleges that during the election campaign three years ago Edi Rama, Albania's Socialist prime minister, made dirty deals with local mafiosi in order to deliver votes; now, he thinks, Mr Rama is in hock to them. The Socialists dismiss this; they argue instead that in the eight years when Mr Basha's centre-right party was in charge cannabis was openly grown in the small village of Lazarat. Production was so extensive that it was reported by the interior ministry be worth to €4.5 billion ($6 billion), or half of Albania's GDP, in 2014, when Lazarat was raided by police.

Through the haze of burning cannabis, facts are difficult to establish. Plantations have spread beyond Lazarat. But Italian officials refuse to talk about whether the Albanians are serious in dealing with them. Last year Dritan Zagani, a senior Albanian policeman, sought political asylum in Switzerland after allegedly telling the Italians about a new drugs route; the Albanian police say he was leaking information to the mafia.

One diplomatic source says that the cannabis problem is "getting worse". But regardless of the true scale of the eradication, it is unclear whether the policy has any real impact. Other countries, such as Morocco, also supply pot to Europe. In Latin America the destruction of coca bushes generally hurts small producers but leaves the kingpins untouched. Mr Tahiri is defiant, however. Despite tiny resources pitted against big drug money, he says, his men are working better than ever this year. For the Albanian government it is a question of law and order, and of credibility in Europe—particularly as it seeks to join the EU. Mr Tahiri says mafiosi should know there are "no more untouchables". ■

Architecture in Sweden

Nobel, unprized

STOCKHOLM

Protests reveal NIMBYism mixed with indifference to the past

FEW Swedes have been as influential as the bearded chemist and inventor of dynamite, Alfred Nobel. Yet his countrymen appear reluctant to promote him. And this is not because they think it outrageous that Leo Tolstoy and Mark Twain never won the Nobel Prize for literature, but Eyvind Johnson and Harry Martinson (who just happened to sit on the Nobel panel) did. Rather, it is more a question of indifference to history.

Take the kerfuffle over a plans for swanky new centre in Stockholm, the Nobel Centre or *Nobelhuset*. Since 2011 the city of Stockholm and the Nobel Foundation, the non-profit group which administers the prizes, have been discussing a sea-front edifice to serve as a new prize-giving venue and research centre. In April Stockholm's municipal council approved its construction; the county council will decide later this year, with building due to start in 2017.

But the design is dynamite

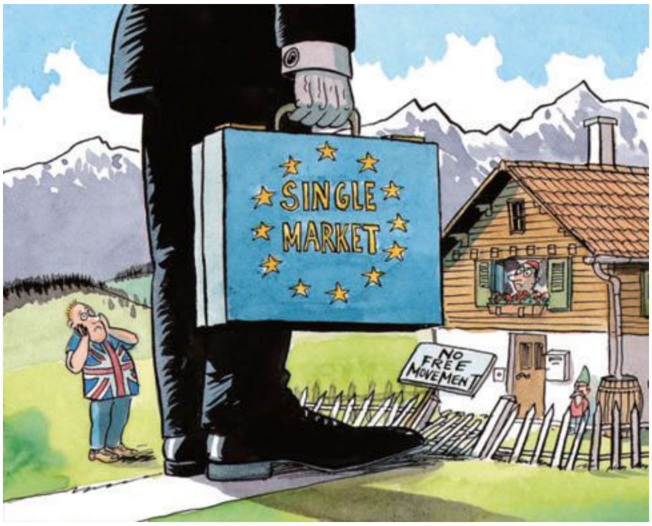
David Chipperfield, a British architect, won the commission over several Swedish bidders. His design is a shimmering block of copper, glass and stone in Blasieholmen, an area which faces the Baltic Sea and is close to the well-heeled east side of the city. The total cost of the project, which is partly funded by donations from local bigwigs, is 1.2 billion Swedish krona ($140m).

But locals are not impressed. Three protests have taken place outside the Nobel Foundation headquarters over the past six months, each drawing crowds of around 700 people. "It's an insensitive, brutal assault on Stockholm's beautiful cityscape," argued Gosta Grassman, an organiser, before the most recent protest. A historic customs house, which is due to house refugees, will be torn down. Others argue that the peninsula is not equipped to handle tourist buses. Even Carl XVI Gustaf, the king of Sweden, has uncharacteristically weighed in, telling Swedish media that the customs house should be preserved and that the Nobel centre did not need to be "so gigantic".

Most protesters are driven by NIMBY-ish concerns: many worry that the centre will reduce the value of their homes. But the debate also hints at how little Swedes celebrate Nobel himself. Only a small museum exists in his home town Karlskoga, close to Bofors, an arms manufacturer which he helped build. Another smallish museum, which mostly focuses on the prize, opened in Stockholm in 2001. He left his fortune to the pursuit of peace; but his fellow Swedes don't care.

Charlemagne | The parable of Ticino

The harsh lessons from Switzerland for Brexiteers



FOR the European Union's high priesthood in Brussels, the right of people to live and work anywhere in Europe is sacred. But free movement is a worldlier concern for Franco Puffi, who runs Precicast, a high-tech metal foundry in Ticino, a Swiss canton next to the Italian border. Fully 90% of those who toil in its workshops are Italian, as are the engineers who design its moulds and the managers who seek new export markets for aerospace and biomedical components. Mr Puffi would like to employ more locals, but says the Swiss prefer banking and public-sector jobs. Northern Italians, by contrast, value industrial work and have the technical skills he needs. Their country's economic woes make them "hungrier". And there are a lot more of them.

For others, that is precisely the problem. "Ticino is confronted with Italy," says Norman Gobbi of the Ticino League, a local party that backs immigration curbs. "And Italy is an example of the non-functioning of the EU." Switzerland, a small, federal construct that protects its sovereignty furiously—it became a full UN member only in 2002—is in many respects a curiosity. Its relationship with the EU, governed by a complex set of bilateral deals, is no exception. But its recent experience provides lessons for others, not least a Brexiting Britain, on how far European states outside the EU can set the terms of their relationship with the union.

Since 2002 all EU citizens have had the right to live and work in Switzerland (and vice versa). Millions of Italians live within 50 kilometres of the border. Tens of thousands of them commute across it every day. In 2014 concerns that Italians were undercutting local wages drove 68% of Ticinese to vote "yes" in a national referendum that called for curbs on immigration and cross-border commuting. The proposal squeaked through by 20,000 votes. Some credit the Ticinese with its victory.

In doing so they landed Switzerland with a giant headache. A "guillotine" clause in Switzerland's accords with the EU means that unilaterally overturning the free-movement provisions jeopardises the rest of the agreements reached in 2002, which cover everything from procurement to agriculture. One government study found that scrapping all this could, by 2035, leave Swiss GDP 7.1% lower than it would otherwise be.

Owing largely to immigration, the Swiss population has grown by over 10% in a decade. As a country of nothing but "water and rocks", in the words of Paolo Beltraminelli, the centrist president of Ticino, Switzerland has always had to look abroad to plug labour gaps. But anti-immigrant populists have a deadly weapon: the popular initiative, which triggers lots of referendums. In 1970 a proposal to cap immigrants at 10% of the total population (bar Geneva) almost succeeded; today the figure is 23%. Votes against burqas and minarets have followed, as concerns about asylum-seekers and Muslims were added to the mix.

The EU was at first minded to compromise with Switzerland over free movement. But that changed after last year's election in Britain returned a government with a mandate to renegotiate its EU membership. Fearful that concessions to the Swiss would be seized on by the British, the EU toughened its stance; the Brexit vote in June made things worse. Now the Swiss look set to back down. This week the lower house of parliament approved a law that encourages employers to recruit in Switzerland before looking abroad; hardly the strict curbs demanded by the right-wing Swiss People's Party (SVP) that proposed the referendum.

Infuriated, the SVP could seek a second referendum to overturn the law, or to tear up the bilateral deals entirely. The Ticinese won't wait: on September 25th they are set to approve a local initiative, backed by Mr Gobbi, to privilege Swiss workers over foreigners. The proposal is a legal nonsense; such matters are national rather than cantonal responsibilities. Much more of this sort of thing, says Mr Puffi, and he will move Precicast to Italy.

Given the choice, Swiss voters tell pollsters they would not ditch the accords with the EU to cut immigration. But hardliners think the backlash against migration across the EU means that one day Brussels will have to take a less rigid stance; and that it is in the EU's interest to keep Switzerland happy. The parallels with the British debate are irresistible: Brexiteers, too, argue that the EU will have to bow before the will of referendum voters. Yet Britain's vow to cut immigration from the EU will mean losing some access to the single market, possibly including the "passporting" rights that allow financial firms to operate freely across the EU. Confronted with the potential collapse of Britain's most important trading relationship, the promise to keep out Polish workers will look less compelling, or so some pro-EU voices suggest.

The meaning of sovereignty

There is another lesson from the Alps. The Swiss are hanging tough for now on a further EU demand: that the "static" bilateral agreements become "dynamic", meaning that Switzerland automatically accepts new developments in EU law, be they new rules from Brussels or rulings by the European Court of Justice. Foreign judges are as distrusted in Switzerland as they are in Britain, and the Swiss can in theory pick and choose which rules to apply (in practice many are simply copy-pasted from Brussels). Refusing the EU's demands means Switzerland will be cut out of future single-market developments, such as energy integration.

Britain will face a similar dilemma. Whatever access it maintains to the single market, the rules will inevitably change; if Britain does not apply them automatically it will be progressively excluded from it. Britain may be far larger than Switzerland, a small country surrounded by the EU; and its security and police ties with the rest of Europe give it extra clout in striking a deal. But like Switzerland, Britain will face tough questions about what it means to preserve sovereignty when its biggest trading partner is making rules over which it will have no say. Immigration could be the least of its worries. ■

Also in this section

For daily analysis and debate on Britain, visit
Economist.com/britain

Prisons

Jails break

Proposed reforms will do little to improve the deplorable state of prisons in England and Wales

ON SEPTEMBER 20th riot police were summoned to Lincoln prison and inmates moved out after what tight-lipped authorities called a "disturbance". The week before, a coroner's court blamed failings at Glen Parva, a young-offenders institute, for a prisoner's death last year. The governor said that squeezed resources meant staff were unable to stop inmates killing or hurting themselves. Police in Cumbria this month launched an investigation into two deaths and spiralling allegations of sexual assaults at HMP Haverigg; its population is to be halved amid concerns over safety.

Conditions in prisons in England and Wales are grim and getting worse, according to the official inspectorate. The performance of a quarter is worrying, up from less than 2% in 2012, says the prison service. Buildings are crumbling, infested with rats and cockroaches. They have become unacceptably violent and dangerous, say inspectors. In the year to June 2015, 105 prisoners killed themselves, compared with 59 in 2010. More men and women are hurting themselves and they are doing so more frequently. Assaults, both on other prisoners and on staff, are soaring (see chart). Eight people were murdered last year; none was in 2012. Those released are coming to them for help because prisons are so violent that they dread returning, say Steve Freer and Val Wawrosz, retired prison officers and founders of Tempus Novo, a charity that helps ex-offenders find work. Liz Truss, the new justice secretary, faces a crisis. So far, she has been slow to react.

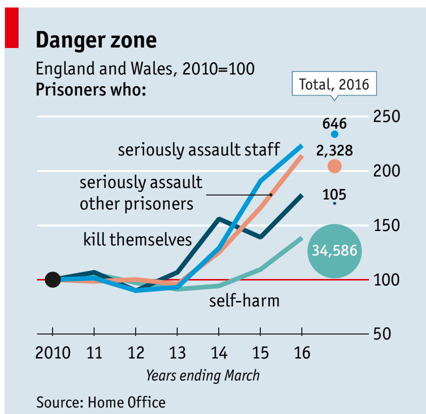
At the root of this lie two structural problems: overcrowding and understaffing. Even as crime has fallen in England and Wales, the prison population has remained high. Prisons hold 11% more people than they can decently accommodate, by the government's own standards. Locking up just ten more inmates each would push 32 of the 117 prisons over their "operational capacity", above which they would be officially unsafe.

These figures are fractionally better than two years ago but conditions have worsened as budgets have been squeezed. The prison service is doing more with less. Between 2010 and 2015 it was forced to cut its budget by a quarter, making savings of £900m ($1.2 billion). Last year its riot squad was called out over 340 times—up from 118 in 2010. In the past five years the squad's budget rose from £1.6m to just £1.8m.

Crucially, the number of front-line officers has fallen by a quarter since 2010 (see chart on next page). Increasingly aware of the impact, the prison service has been trying to recruit new ones. It has hired 2,250 officers since 2015 but so many others have left—a third resigning—that there has been a net gain of just 440. Fewer staff means prisoners spend longer banged up. Nearly a fifth spend less than two hours a day outside their cells. In Belmarsh in London some are let out for just 30 minutes.

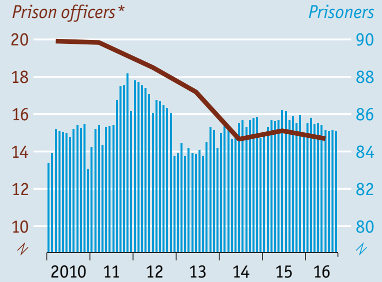
On top of these systemic problems has come another challenge: the increased use of synthetic drugs, particularly cannabinoids such as "spice" and "black mamba". In 2010 there were only 15 prison seizures of spice. By 2014 that had risen to 737. According to User Voice, a charity, a third of prisoners surveyed this year said they had used spice in the past month: just 8% had used heroin and 14% cannabis. The drug, which is sprayed onto plant matter and smoked, can cause vomiting, seizures and heart attacks. Prisoners on spice can become violent, hurting themselves or others. It is often stronger than the cannabis it resembles so people mistakenly overdose. So common are call-outs to deal with bad reactions that the emergency vehicles are known as "mambulances".

Spice does not show up in prison drugs ▸▸



Downturn of the screws

England and Wales, '000



Sources: Home Office; Howard League

*Years ending June 30th

tests. It is easy to get hold of. Possession of such substances by the general public was only banned in May this year (smuggling them into prisons has always been illegal). Synthetic drugs are cheap on the outside but sell for up to ten times their street value in prison. Dealers are keen to get them into prisons because they can test new versions there. Dilapidated buildings are making that easier; drones have been caught flying them through broken windows in Pentonville prison in London. Spice is so common that prisoners say it is being sold for coffee and exchanged for food.

More drugs and fewer staff is a toxic mix. Officers are rarely searched, making smuggling easier for them. Low wages make it appealing. Frequent trips to accompany inmates to hospital mean even fewer officers on prison wings. Overstretched and inexperienced staff search cells less frequently and less effectively so drugs and weapons are easier to hide. "It's a perfect storm," says one ex-con. In the past, officers worried that such conditions would lead to riots. Better security systems make mass disturbances less likely, reckons the same ex-offender, but concerns are growing that officers will be murdered.

Michael Gove, briefly justice secretary before being fired by the new prime minister, Theresa May, proposed giving governors more autonomy in a series of "reform prisons". He also talked quietly of reducing the prison population. Campaigners listened with interest. But reform prisons were a distraction from wider problems, suggests Andrew Neilson of the Howard League for Penal Reform, a charity. Fixing the overcrowding and shoring up staff are more pressing. Ms Truss says she is committed to reform but has yet to reveal her plans, leaving Mr Gove's in doubt. Since being appointed she has emphasised the need to improve prison safety, a focus that Mr Neilson welcomes. But she has also ruled out any "arbitrary" reductions in the prison population. Ms Truss may be biding her time, working out the best strategy. But time is not on her side. She once suggested that prisons ought to be "tough, unpleasant and uncomfortable". They are. ■

Chinese investment in Britain

Hinkley hangover?

GLASGOW

A ding-dong over a nuclear plant should not deter Chinese investors

RESPLENDENT in a pinstriped suit, Sun Lizhi talks of the opportunities for his waste-recycling company, Linyi Tianwei, in Britain. From Shandong province in eastern China, Mr Sun was in a large delegation of Chinese businessmen visiting Scotland this week. He is looking for business partners and hopes that British investors will be attracted by the 20 patents he has developed. Asked why he is in Britain rather than Germany, Italy or anywhere else, he answers with one word: "trust". Mr Sun, like many Chinese investors, perceives Britain to be a fair and honest place to do business.

If he had been a government official, his answer may have been a little more cautious, following a summer of back-and-forth between the two governments over proposals to build a new nuclear plant at Hinkley Point in Somerset. Having suspended the controversial project shortly after succeeding David Cameron as prime minister, Theresa May on September 15th finally gave it the green light again, albeit with conditions attached. Électricité de France (EDF), a French state-owned firm, is building the reactor, and the Chinese have stumped up £6 billion ($7.8 billion)—about one third of the cost. Chinese officials accepted Mrs May's right to review it, argues Paola Subacchi of Chatham House, a think tank, but they felt "betrayed" by the manner in which it was done. They were not consulted, so the episode has "undermined the trust that the Chinese have in this government," says Ms Subacchi.

Raising some red flags

So far, however, the Hinkley hoo-ha does not seem to have dulled the Chinese appetite, especially among private companies, for British expertise and assets. Last year, Chinese inward investment in Britain reached $3.3 billion. Gordon Orr, formerly of McKinsey in China, hopes that the bust-up might yet turn out to be just a blip. But he says that the Chinese certainly noticed that, just as the Hinkley deal was delayed, SoftBank, a Japanese company, was allowed to snap up ARM, Britain's most successful technology company, for £24 billion with hardly a murmur of official disapproval. To the Chinese, says Mr Orr, this was like the American government letting a foreigner buy Google. Chinese diplomats still talk of a possible golden era of co-operation between the two sides, but Xu Jin, a counsellor at the Chinese embassy in London, also talks of the need for "trust" in a trading partner. He now expects China to begin a feasibility study on building a nuclear reactor at Bradwell in Essex when Hinkley is finished.

It is private businessmen who are most worried about any official fallout from Hinkley, says Mr Orr. If the mood in Beijing sours towards Britain, they fear they might be discouraged from continuing their buying spree of British assets, which has been boosted by the post-referendum fall in the value of the pound. Chinese companies have been active recently in the renewable energy, oil and gas, and biomedical sectors. In May China's Creat Group Corporation bought Bio Products Laboratory, a leading maker of blood plasma products, for £820m. As the Chinese economy grows more sophisticated, there is huge interest in buying or partnering with British technology companies to help in China.

And then there is the promise of the "northern powerhouse"—a scheme proposed by the former chancellor of the exchequer, George Osborne, to boost the north of England—and HS2, a high-speed rail link. Mr Osborne launched the £12 billion procurement process in Chengdu last year, wanting China to part-finance some of the projects. With his departure from government, the Chinese have lost their main cheerleader and, with doubts over whether such costly projects will continue, there could be more trouble ahead.

Increasingly, people wonder whether Mrs May is as committed to the projects or the co-operation with the Chinese that characterised the Cameron-Osborne era. But with all the money looking for opportunities abroad, it may take more than that to stop the flow of Chinese investment. ■

Bagehot | Not drowning but waving

Their scepticism about Brexit gives the Liberal Democrats a welcome new distinctiveness

THERE was a time when a whiff of existential angst wafted about Liberal Democrat conferences. The Conservatives under David Cameron had turned all modern and reasonable. Labour under Ed Miliband had shed its authoritarian streak. Were the Lib Dems too indistinct from their Tory coalition partners? Or did they risk becoming a pale replica of Labour? What exactly were they for, again? With little room on either side, positioning the party was like reversing a car into a tight parking space without mirrors. At times it felt the Lib Dems were just splitting the difference between their rivals: before last year's general election Nick Clegg, then their leader, pledged to bring "heart" to a Tory government or "head" to a Labour one.

By contrast Tim Farron, his successor, enjoys the freedom of the open road. Labour has pirouetted off to the left. Under Theresa May the Conservatives are edging away from some of Mr Cameron's liberalism. And there is Brexit. Three months after the referendum, right-wing Eurosceptics are setting the agenda, the country is heading for a hard break from the European Union and Labour is putting up little opposition (its MPs are now overwhelmingly for abandoning free movement of people).

Thus there was a purposeful swagger to the Lib Dems who gathered in Brighton from September 17th. The party may have been reduced from 56 to eight MPs in last year's election—the price of five years in power—but it now holds an uncontested, positive role: as the only unequivocal, nationwide, functional advocate of a properly open Britain. In his speech on September 20th, Mr Farron declared himself ashamed by Britain's reluctance to take in refugees: "I will not stand by and watch my country become smaller, meaner and more selfish," he spat. He invited businesses worried about Brexit to ditch the Tories and switch to his own truly "free market, free-trade, pro-business" party. In a portentous passage recalling Tony Blair's penchant for grand historical narratives he cast British politics today as a giant *Kulturkampf* between open and closed.

At the heart of the speech were two gambles. The first was a commitment to giving Britons a vote on the Brexit deal Mrs May negotiates, before it is inflicted on them. Plenty take umbrage at the idea. Vince Cable, the former business secretary, called it "seriously disrespectful" to voters. Mr Farron's other risk was to admire some of Mr Blair's reforms, like the minimum wage and investment in public services. This was a bold move in a party many of whose members joined as a statement of opposition to Mr Blair (and some of whom had sung "Tony Blair can fuck off and die" at a conference disco the night before).

But so it had to be. With so few MPs, the Lib Dems need stark, attention-grabbingly polarising messages. Such is their puny size and such is the muscular role they seek to play, now is not the time for nuance; something which Lib Dems—who like restraint and middle ways—will have to get used to. Mr Farron is also right to focus on winning voters from Labour. Mrs May remains popular. It was among centre-left voters that Lib Dem support fell most precipitously during the coalition years, observes Mr Clegg. And it is among these folk, in metropolitan Lib Dem-turned-Labour seats like Cambridge and Bristol West, that the opposition's flaccid anti-Brexit exertions create the largest opening for the party (unlike the 15 broadly Eurosceptic seats in rural south-west England which they lost to the Tories last year).

This deserves to be seen as part of a longer mission: to create a Lib Dem core vote. The party collapsed so ubiquitously last year partly because it does not have any socio-economic base on which to fall back. The Tories have family, faith and flag. Labour has what remains of the industrial working class. The Lib Dems, according to a paper published in 2015 by Mark Pack and David Howarth, two party strategists, need to forge a similar relationship with the well-educated, internationalist urban types who make up the most pro-openness fifth of the British population, but who have no fixed abode in the party-political spectrum. Mr Farron's uncompromising hostility to Brexit is the substantiation of this strategy.

Harder, faster, liberaler

But is he the right figurehead? The Lib Dem leader's cheeky-chappy routine is less statesman than Sunday-school teacher. Watching his speech Bagehot half expected him to address the crowd as "boys and girls", or perhaps whip out a tambourine. He is not a forceful orator; his address was better on the page than in the hall. And while the conference was atwitter about the Lib Dems' successes (they have won lots of recent council by-elections and gained some 16,000 members immediately after the referendum), in national polls they have made no progress since the election. In London, surely the capital of the putative Lib Dem core vote, they performed abysmally in May's mayoral election despite fielding a good candidate. Mr Farron may be part of the problem. One year into his leadership, fully 65% of voters do not have any opinion of him, positive or negative; the figure seemingly not improving with time. Even allowing for his party's Lilliputian profile, that is grim.

Mr Farron has set his party on the right post-referendum course and deserves more time to make a go of it. But if he fails to deliver in the next year his party must be ruthless and replace him. Mr Clegg—who might offer the heft Mr Farron lacks, though he is loyal to his successor—sums up the conditions well: "We have an electoral system that blocks competition; a government that a vast number of people didn't back and just bromides and platitudes on how Brexit is going to happen. When I write that all down…it just doesn't seem sustainable to me." These circumstances make the Lib Dems distinctive. They also intertwine the party's pro-openness vocation with the national interest like never before. For the party to fall short would be unforgivable. ■

The Montreal protocol

To coldly go

Extending an old treaty that saved the ozone layer could improve cooling technology—and slow global warming

THE world's most lauded environmental treaty could be about to notch up a new success. In 1974 scientists discovered that chlorofluorocarbons (CFCs), chemicals used in refrigeration and as propellants in products such as hairsprays, release chlorine into the stratosphere as they decompose. This depletes the ozone that protects Earth from ultraviolet radiation. CFCs are also powerful greenhouse gases, which absorb solar radiation reflected back from the planet's surface and so trap heat in the atmosphere.

Initially, the consequences for the ozone layer caused most concern. In 1985 a gaping hole in it was found above Antarctica. Two years later, leaders from around the world acted decisively. They signed a deal, the Montreal protocol, to phase out CFCs. Now ratified by 197 countries, it has prevented the equivalent of more than 135 billion tonnes of carbon-dioxide emissions, and averted complete collapse of the ozone layer by the middle of the century. Instead, by that point the ozone hole may even have closed up.

Now America and China are leading efforts to use the Montreal treaty to solve another urgent problem—one that is a legacy of its original success. Barack Obama and Xi Jinping are among the presidents and prime ministers pushing for a deal at meetings in Rwanda next month. In order to manage without CFCs, firms replaced them in applications such as refrigeration, air-conditioning and insulation with man-made hydrofluorocarbons (HFCs). These substances do not deplete ozone and last in the atmosphere for just a short time. However, they still contribute hugely to global warming.

The average atmospheric lifetime for most commercially used HFCs is 15 years or less; carbon dioxide can stay in the atmosphere for more than 500 years. But, like CFCs, HFCs cause a greenhouse effect between hundreds and thousands of times as powerful as carbon dioxide while they linger. Total emissions are still relatively low, but are rising by 7-15% a year. Controlling HFC emissions has been under discussion for the past decade; America and China, the world's two biggest polluters, made a deal on the issue in 2013, which paved the way for co-operation on limiting carbon emissions ahead of UN-sponsored climate talks in Paris last year. There leaders agreed to keep warming "well below" levels expected to be catastrophic.

Average global temperatures are already 1°C higher than in pre-industrial times; along with urbanisation, electrification and rising incomes in developing countries, this is boosting demand for air-conditioning. In several large, hot countries, including Brazil, India and Indonesia, the number of units sold is rising by 10-15% annually. Cavernous fridges and freezers mean that HFCs can account for almost half a supermarket's greenhouse-gas emissions. Other big polluters include fast-food outlets, with their under-counter refrigerators, ice-cream machines and the like. These are gaining popularity in the developing world: one estimate suggests that by the end of this year India's fast-food industry will be twice as large as four years ago. Globally, cooling devices could cause HFC emissions equivalent to 8.8 gigatonnes of carbon dioxide by 2050—almost as high as the peak level of CFCs in the late 1980s.

Move along, please

America wants action on HFCs speedy enough that emissions will peak in 2021 and then start to fall; after recent talks in Hangzhou between Mr Obama and Mr Xi China may be ready to commit to reaching that point by 2023. Brazil, Indonesia and Malaysia lean towards 2025, and India has lobbied for a later date, closer to 2030. But many African countries and low-lying island states, concerned already by the changing climate, are pushing for a tighter timetable. Whatever the deadline, and however steep the cuts, the plan is to require rich countries to act faster, while allowing poorer ones more time to adjust.

In 1991 a fund was established to help developing countries meet their obligations under the original Montreal protocol. Its cash grants, training and technical assistance since then have amounted to more than $3 billion. Though the exact sum needed to sweeten an HFC deal will not be decided until next year, it will need to be considerable, since many developing countries manufacture the white goods that will be affected. Though the fund will only partially cover countries' costs, rich countries look set to offer more to poorer ones that act ahead of schedule.

Action on short-lived climate pollutants such as HFCs, methane and soot is not an alternative to cutting emissions of carbon dioxide, which hangs around doing harm much longer. But a deal on HFCs would benefit the climate fast—and not only in the most obvious way, by obliging countries to cut emissions of these powerful greenhouse gases in order to meet their obligations. On its own this direct effect could make a real difference. An ambitious deal, for example one demanding that they start to be phased out by 2020, would avert the equivalent of 100 billion-200 billion tonnes of carbon-dioxide emissions by 2050, enough to chop 0.5°C from the rise in average global temperatures by 2100 (see chart). In the context of the agreed goal of global climate policy, which is to limit such warming to less than 2°C, this is significant.

Just as important is that the Montreal protocol is a "start and strengthen" treaty, says Durwood Zaelke of the Institute for Governance and Sustainable Development, an American think-tank. The improvements to technology and manufacturing spurred by even a modest deal could lead to a transition from HFCs much more quickly than envisioned, as firms, knowing they will have to switch eventually, decide not to delay.

This is what happened with CFCs: progress was so fast that the original timetable, which varied between rich countries and poorer ones, was replaced by a goal of complete elimination within a decade when it became clear that this was feasible. In some sectors firms are already preparing to move away from HFCs: in 2015 the Consumer Goods Forum, an international industry group whose members include Walmart and Tesco, began enacting a plan to phase out the substances.

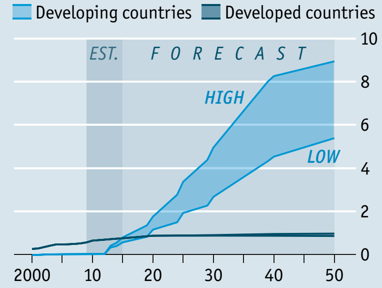
A big question is what to use instead. Since different HFCs remain in the atmosphere for varying lengths of time, and therefore have varying impacts on the atmosphere, one possibility is to substitute the shortest-lived for those that linger. Some HFCs commonly used in refrigeration could be replaced by others that would have an impact more than 1,000 times smaller. Honeywell, an electronics giant, already makes air-conditioning units containing these less-damaging alternatives. But patents covering such substances have been a sticking point in past discussions, says Achim Steiner, until recently the head of the UN Environment Programme.

Other possible replacements include isobutane, propane and propylene, all of which occur naturally. These hydrocarbons are cheap and non-toxic, and can be

Into the fire

Hydrofluorocarbon (HFC) consumption

Bn tonnes CO_2 equivalent



Source: *Proceedings of the National Academy of Sciences*

used as coolants without the same harm to the ozone layer. Another option is ammonia, which is already present in some large industrial cooling systems. Even carbon dioxide can be used, though that may seem counter-intuitive, since it is the gas most to blame for global warming. But tonne for tonne it is far less warming in the short term than many other greenhouse gases. The reasons it is of such concern are that so much more of it has been released, and that it hangs around for so long.

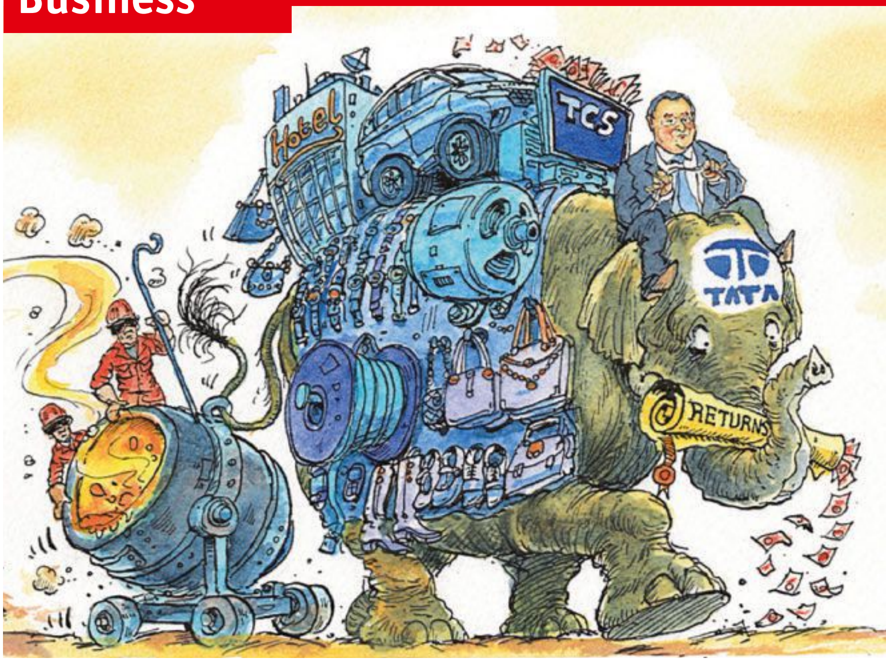
Officials representing extremely hot countries, such as Kuwait and Saudi Arabia, at climate talks fret that these natural replacements for HFCs will simply not be as effective. But there is a good reason to focus research and development on them, says Drew Shindell, who works for Duke University on aerosols and climate change. Their effects on the atmosphere are already known. No one wants more unintended consequences, as with the replacement of CFCs with HFCs.

The third way in which extending the Montreal protocol could benefit the environment is that, as devices are redesigned to use new coolants, firms can take the opportunity to make them more energy-efficient as well. That would cut carbon emissions from power generation. Again, this happened after the original deal: some cooling appliances sold afterwards were 60% more efficient than those they replaced. By 2000 close to half of America's large air-conditioning units—the types found in office buildings—had been converted or replaced to eliminate CFCs. According to America's Environmental Protection Agency, the switch saved enough electricity to power 620,000 homes.

Efficiency gains from the original protocol were less pronounced in the developing world, since fewer appliances were in use at the time. That is changing. In hot spots such as Delhi, air-conditioning can make up half the power load on a summer's day. A deal to tackle HFCs could be the catalyst for a much-needed efficiency drive. Without it, if global warming continues unabated, rising demand for fans, refrigeration and air-conditioning could increase electricity usage by four-fifths globally between 2010 and 2100. Less wasteful cooling methods could avert that rise, which would have climate-changing implications, no matter the coolant used. The scale of the possible savings can already be seen in South Korea. Air-conditioning units on sale there require half as much energy as is typical elsewhere.

Lee Kuan Yew, the first prime minister of Singapore, once said that air-conditioning was the greatest invention of the 20th century (since it enabled people to work comfortably in offices in the tropics). Over the next 100 years, it may prove even more important. As well as contributing to climate change, it will play a big part in enabling humanity to adapt to it. Research published last year in *Nature*, a scientific journal, found that warmer-than-usual years boosted economic growth in both rich and poor countries, but only up to an annual average of 13°C, above which temperature productivity suffered. As 2015 proved the hottest year on record, and 2016 looks certain to steal that title, a deal that means air-conditioning does as much good and as little harm as possible is what a warmer world needs. ■

Survival kits, new and improved



For daily coverage of business, visit
Economist.com/business-finance

Tata Group

Mistry's elephant

MUMBAI

India's most important business group is socially responsible but financially disappointing

CHIEF executives in the West share some familiar gripes: quarterly-results-obsessed analysts who make it impossible to think about the long term; activists pressing for change before investments come to fruition; and sluggish economic growth. How envious they must be of Cyrus Mistry, the boss of the Tata Group, India's largest conglomerate. Its central firm, Tata Sons, is unlisted. Tata Trusts, the charities that own two-thirds of Tata Sons, think in terms of decades, not years. India is the world's fastest-growing large economy. Given such favourable circumstances, Mr Mistry's peers might well look at the uninspiring financial performance of much of his group since he took over in December 2012 and conclude they could do better.

The firm is rightly admired at home. Founded in 1868, it has long embodied the notion of corporate social responsibility. Employing nearly 700,000 people, it operates in a wide array of industries, among them table salt, IT, steel, watches, power plants, leather goods, a slew of shopping chains, tea, trucks and buses, undersea cables, mobile telephony and luxury cars and hotels. It has not relied on political favours to grow, unlike many rivals. Its expansion abroad, for example with its purchase in 2000 of Tetley, a maker of tea, and in 2008 of Jaguar Land Rover (JLR), a carmaker, filled many Indians with pride.

Many people had nonetheless expected Mr Mistry to usher in change. He is only the sixth group chairman in nearly 15 decades. He is also the first from outside the Tata family, hailing from a construction dynasty that owns the only substantial stake in Tata Sons that is not owned by Tata Trusts. The expansionist strategy of his long-standing predecessor, Ratan Tata, which increased the group's revenues from around $6 billion to $100 billion over two decades, had expanded the firm's girth but dented returns in some parts of its business. A period to take stock of Tata's portfolio of businesses would hardly have been controversial. Expand-then-refocus cycles are routine at multinationals.

But there is little sign that Mr Mistry is inclined that way. Tata remains active in 100 different business lines, many of which are themselves diversified. Far from slimming down, Tata is eyeing still further expansion: defence, infrastructure and financial services are the latest targets. There is a growing sense that it lacks the "refocus" gene altogether. Nearly four years into Mr Mistry's tenure, the listless performance that could once have been blamed on things like slowing Chinese demand seems to be entrenched. One former adviser to several Tata CEOs says that "the risk is that Tata uses its long-term emphasis and ethical way of doing business as an excuse to tolerate underperformance."

The results of only two of its main businesses stand out: JLR, which Tata rescued from a period of mismanagement by Ford, and Tata Consultancy Services (TCS), an extremely well-run IT-services firm. Last year this business generated profit of 244 billion rupees ($3.7 billion); Tata's total profits are probably not far north of 300 billion rupees (the figure is not public but can be estimated). TCS's share-price surge in the past decade is responsible for roughly 80% of the growth in value of Tata Sons' holdings in Tata's listed operating companies (now worth $65 billion) in that period.

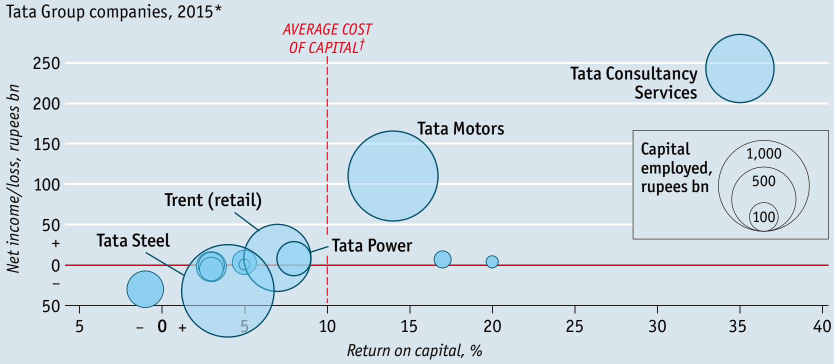
The rest is a mixed bag. Seven of the nine-largest listed Tata entities in terms of capital employed have negative economic value added, meaning that their earnings before interest and tax translate into a return below their overall cost of capital. Roughly six in ten rupees deployed by Tata are in businesses yielding returns below its cost of funding, up from three in ten rupees eight years ago.

When TCS is included, Tata claims a decent-enough 12.5% return on capital employed. Without it, the figure for the major listed companies dips into single-digits. The Tata Trusts might be accepting a trade-off: lower returns in exchange for the Tata Group behaving in a socially responsible fashion. But they have not said this.

The steel business eats up about half of the capital that earns low returns. Tata catapulted itself onto the global stage with its $13.1 billion acquisition of Corus, an Anglo-Dutch rival, in 2007. A turn in the commodity cycle from 2012, along with Chinese industrial overcapacity (see page 62), has hit it particularly hard. Corus was at one point reportedly losing £1m ($1.3m) a day. Most other groups would have long ago taken action to stem the losses, such as closing down the firm's operations in Britain. But that is not the Tata way. Having sold part of ▸▸

Truncated returns

Tata Group companies, 2015*



Sources: Company reports; *The Economist* *Year ending March 31st 2016 †Estimated group average

the British business for £1, it is belatedly exploring a joint venture to share the pain of the remaining losses.

Several other of the group's big businesses are visibly struggling. A power-generation unit guzzles capital but emits little profit. A sub-scale mobile-telecoms operator is in a costly row with NTT DoCoMo, a Japanese joint-venture partner; Tata is disputing a $1.2 billion arbitration award against it. Its hotels subsidiary, which operates the Taj brand at home and beyond, is a perennial lossmaker. The domestic automotive business, which makes half of all India's trucks and cheap passenger cars, has long struggled. There are dozens of other smaller businesses, but they hardly affect the conglomerate's bottom line.

Tata's sprawl is made possible in part by its structure. Although Tata Sons, the parent company, is not listed, most of the operating companies are—and they are usually majority-owned by outside shareholders. So Tata Sons owns just over a quarter or so of Tata Steel, for example, or of Tata Motors. Those businesses own small stakes in each other and, jointly, 13% of Tata Sons. Such cross-ownership means that while understanding what is happening at individual Tata companies is fairly easy, judging (and managing) the direction of the entire group is fiendishly hard.

In theory outside shareholders could push for changes, for example divestments. Small spin-offs occur but rarely anything sizeable. In practice shareholders nearly always defer to Tata Sons, which has a great deal of say over who goes on the subsidiaries' boards and grants the right to use the powerful Tata brand. Many are big Indian institutional investors with little appetite for taking on Tata.

Nirmalya Kumar, Tata's head of strategy, argues that the group's set-up (which is common in India and other emerging markets) is ideally suited to business houses building new ventures. Tata's heft has indeed been useful in the past for entering markets. Size helped it raise capital when it was scarce and to lobby government. At the same time, the presence of outside shareholders brings at least some market discipline.

But the structure also adds another layer of bureaucracy to a group that scarcely needs it. Tata is "deliberate in its thinking in a way that can feel like obstructivism", is how one business partner of the group puts it. According to a former senior employee, the aim is to move steadily forward while avoiding difficult decisions.

The structure also makes it harder to enjoy the benefits of being a diversified group. Silos are hard-wired into it. Because they are owned by different sets of shareholders, Tata's telecoms and cable arms are unable to offer a lucrative "triple play" of services, for example. Three different Tata companies have large Indian retail networks (it is a partner of Zara, a clothing group, and of Starbucks Coffee in India, as well as running its own shops). But as these are separate legal entities they cannot jointly negotiate cheaper leases or merge their supply chains. At least seven different Tata companies vie for defence contracts but must do so separately. Some Tata companies openly compete against each other: Tata Technologies, a division of Tata Motors, is increasingly in the same business as TCS, for example.

The companies cannot co-operate financially, either. Tata Group presentations advertise healthy overall financial metrics, such as net debt levels that are barely higher than equity. On the face of it, the group's companies certainly generate enough profits to pay creditors. But that assumes the net cash on TCS's balance-sheet can be used to service, say, Tata Steel's debt. Outside shareholders make that impossible.

As a result, there are pockets of financial strain inside the group. One gauge of stress is the proportion of net debt held by units that are highly leveraged relative to their profits. Five years ago, 37% of net debt contracted by major listed Tata companies was held by entities whose net debts were more than three times EBITDA (earnings before interest, tax, depreciation and amortisation). Now the figure is over 90%.

Bits of Tata pay big risk premiums to borrow while others have oodles of spare cash, an approach that makes no sense, especially in India, where capital is expensive to begin with. Most bankers who lend to Tata firms do expect that Tata Sons would ultimately bail out creditors to a company facing default even absent a formal guarantee. But Tata Sons insists it would not. Such uncertainty may raise the cost of capital across the entire group.

Tata higher-ups make another argument: that the success of TCS shows the merits of diversification. True, but the group's reliance on its star performer goes beyond merely flattering group-level financials. TCS's dividends, instead of being paid out to Tata Sons' shareholders (including the charities), are mostly retained there and finance much of the conglomerate's growth, including capital calls from other listed entities that have performed poorly.

And what if, as many expect, the IT outsourcing industry gets tougher? TCS is not invincible. Its growth has slowed in recent years. Annual increases in sales dropped from an average of 30% in 2011-13 to half that in the past two years. Further slowing is expected: the firm's shares dropped by 5% on September 8th because it gave a gloomier outlook for future results. Some analysts now factor in revenue growth below 10%, and compressed margins to boot.

Will Indian ingenuity hold the fort?

Part of that is cyclical: global banks and insurance firms, which are big customers, are cutting costs where they can, for example. But there are structural factors at play too. The business model that propelled TCS and its rivals to their current heights—using lots of skilled but cheap Indian IT engineers to install and maintain international companies' computer systems—is evolving rapidly as clients turn to automated solutions. TCS's sheer size also makes further growth harder.

If Tata did wish to put more emphasis on shareholder returns—it says that it is only one metric it uses to gauge success—the next steps are obvious: it would flog some businesses, concentrate on improving the returns of others, and use the resulting proceeds to buy out outside shareholders in its operating firms. The group could then function as one entity, taking advantage of synergies among the different business lines. With the exception of JLR and TCS, which have proved their worth abroad, it might also refocus its attention on fast-growing India, where just a third of its turnover now comes from.

It is possible that Mr Mistry knows this, and is biding his time until he has fully grasped how different bits of the group work. Mr Tata regularly spoke up for his company and for Indian business, but his successor is retiring, inside the firm and out. A quarter of his time each year is swallowed up by around 700 hours of chairing meetings with the boards of the major operating companies. "He's very analytical, a numbers guy, but if he has a grand vision he hasn't shared it," says an employee. He has not given an interview to the media since taking over. But in a statement on September 13th he did speak of Tata companies needing "to earn the right to grow".

That the revered Mr Tata still chairs the Trusts that bear his name may make it trickier for Mr Mistry to be his own man, however. Upon retirement, Mr Tata publicly called for his successor to target $500 billion in revenues by 2021, a figure that group executives say is still on the cards. Mr Mistry has shown some signs that he knows what needs to be done. For the moment, however, he appears dangerously content just to sit atop what has grown into an impressive but lumbering pachyderm. ■

Autonomous vehicles

Who's self-driving your car?

The battle for driverless cars revs up

WITH its successful test of robo-taxis on the streets of Pittsburgh last week, Uber has dominated recent headlines on autonomous vehicles. But behind the scenes three groups—technology giants such as Uber, carmakers and a whole fleet of autoparts suppliers—are in a tight race. Each is vying to develop the hardware and software that make up the complex guts of a self-driving vehicle.

A couple of years ago tech firms appeared well ahead in this battle. But, Uber aside, they have dabbed the brakes of late. The recent departure from Google of Chris Urmson, the company's figurehead for autonomous vehicles and the man who once promised it would put self-driving cars on the road by 2017, is a significant reversal. The recent slimming of the team at Apple that is devoted to building an autonomous electric car, also shows that tech firms are not having it all their own way (though Apple's possible tie-up with McLaren, a British maker of sports cars and Formula 1 racing team, would be one way to put its carmaking ambitions back on track).

Carmakers, meanwhile, are making more of the running after a slow start. Despite recent safety concerns, Tesla, an electric-car maker, is making progress with its Autopilot system. In 2017 Volvo, which is also working with Uber to get cars to drive themselves, will test self-driving cars by handing them for the first time to a select group of ordinary motorists. And in August, Ford said it would launch a fully-autonomous car, without steering wheel or pedals, for car-sharing schemes by 2021.

All parties recognise that the biggest profits from autonomy will come from producing an "operating system"—something that integrates the software and algorithms that process and interpret information from sensors and maps and the mechanical parts of the car. Tech firms probably have the edge here. But carmakers and suppliers are not giving up easily. So they are involved in a bout of frenzied activity to keep control of the innards of self-driving cars. In July, for example, BMW, Mobileye, an Israeli supplier that specialises in driverless tech, and Intel, the world's biggest chipmaker, said they were joining forces.

Another strategy for carmakers is to develop autonomous driving in-house. They ▸▸

But can it fly?

Autonomous car insurance

Look, no claims!

Self-driving cars are set radically to change motor insurance

ON THE list of industries set to be disrupted by autonomous cars, the motor-insurance business can claim a high place. The regime of compulsory insurance in rich countries, with the insurer of the at-fault driver paying for damage, is reasonable in a world where 90% of accidents are caused by human error. But autonomy is supposed to mean that accidents drop by up to four-fifths, and those that occur may not be a human's fault. The motor-insurance market may shrink by 60% by 2040, according to KPMG, an accounting firm.

Lawyers and insurers concur that liability will move from private car-owners towards manufacturers for crashes when a car is in autonomous mode. But under the current legal system in Britain and America an owner might still be blamed for an accident in self-driving mode if, say, he neglected to install the latest software update, says Richard Farnhill of Allen & Overy, a law firm. A manufacturer might equally well try to shift the blame to a components supplier.

The best way to avoid endless blame-shifting and litigation may be what lawyers call a "strict" liability regime that automatically places responsibility on the owner. The insurer would keep an important role, of ensuring speedy victim compensation and assigning blame to the manufacturer or other at-fault parties. But that approach would still mean lower risk, and hence lower premiums, for insurers.

That regime also assumes that private car ownership remains widespread. But autonomous cars in the future may well be owned and operated in fleets, perhaps by a souped-up Uber or by car manufacturers. Personal motor insurers would be out of luck. Only those who specialise in commercial fleet insurance would do well. Some manufacturers would simply "self-insure" and assume liability. Volvo, Google and Mercedes have said they will do so with their self-driving cars.

Hélène Chauveau, head of emerging risks at AXA, a French insurer, reckons that the persistence of existing risks, like manufacturing defects, and the emergence of new threats like hacking, will leave a role for insurers. Yet generally, notes Anand Rao of PWC, an accounting firm, they have been slow to react to faster-than-expected technological progress. There are no actuarial tables, it seems, to help insure against that.

are hoovering up smaller firms that have useful self-driving technology, notes Andrew Bergbaum of AlixPartners, a consulting firm. Ford has put money into a lidar company (lidar is a type of remote-sensing technology), and into another that sells mapping services. It has also acquired two other firms that specialise in machine-learning and other artificial-intelligence technology.

The losers in this race look likely to be the big parts-makers, whose relationship with their main customers could become strained. Over time carmakers have largely ceded to them the job of developing new technology. If they turn back the clock and reintegrate vertically that may leave less business for the suppliers.

The tech giants still have huge advantages. As well as their financial resources, they are in the best spot to claim the big profits from the operating system. Apple's plans to build a car may be swiftly revived if it buys McLaren. And Google is ahead in machine-learning, the vital element in developing algorithms that will eventually replace drivers. But carmakers are coming up surprisingly fast on the inside lane. ■

A Chinese steel merger

Welding bells

SHANGHAI

Will China cut overcapacity in steel?

FEW industries are in worse shape than China's steel sector. Years of over-investment and a cooling economy have resulted in vast excess supply. Crude steel-making capacity reached a record level of 1.2 billion tonnes at the end of 2015. China's steelmakers lost some $10 billion last year, with more than 90% of those losses coming from state-owned firms.

This is the background to the news on September 20th that two state-run steel firms, Baosteel and Wuhan Iron and Steel, are to be joined. The two firms are far from being equals. Wuhan is in financial distress; Baosteel, which brings in three times as much revenue and is better-run to boot, has probably been forced into the deal. The bigger firm's listed arm will issue shares and absorb Wuhan's publicly-traded division. The parent companies are also expected to merge. The resulting colossus, which the Chinese media has dubbed Baowu, will have over $100 billion in assets. It will produce 60m tonnes of steel a year, making it second only to Luxembourg's ArcelorMittal.

The reason to cheer is that this deal might spark a wave of consolidation. There are some 200 steel firms on the mainland.

Plenty more where that came from

Other countries often accuse China of dumping cheap steel on the global market; such charges cropped up again at the recent G20 summit in Hangzhou. Despite official promises to rationalise the industry, mainland mills produced over 100m tonnes in June; exports shot up by nearly a quarter. The cut-throat competition that results erodes margins for all. Local patronage and subsidies prevent money-losers from ever going bust.

News of this week's deal sparked renewed interest in another long-talked-of merger, of Bengang Steel Plates and Angang Steel, first mooted over a decade ago. Both firms halted trading of their stocks, denying any plans to merge. There was also speculation that Hebei Iron & Steel Group and Shougang Group, two state-owned firms in northern China, might merge into another national champion.

Even if, as seems likely, a few more big mergers do happen, scepticism is warranted. If officials force strong firms to absorb loss-making mills, instead of shutting them down, they may create bigger, weaker companies. A record of failed policies around steel suggests that the promise of capacity cuts that mergers offer may be hollow. This is especially so in the cases of Baosteel and Wuhan, which have both recently been replacing older mills with new steel-making capacity; it may be hard to turn them in the direction of cutting it.

The government naturally claims that it is serious about slashing excess capacity in industrial sectors, including in steel. But occasionally it acknowledges the obvious. In May a senior Chinese official let slip that there has, in fact, been "no improvement in overcapacity". The Baowu deal could provide a template for reforming the entire steel sector, but only if it is done properly. As one veteran steelman in China puts it: "the devil is in the details, and now we get to see some of the details." ■

Stock splits

Split ends

NEW YORK

A Wall Street practice is dying out

LAST month Intercontinental Exchange (ICE), an American firm that owns financial exchanges, said it would do a stock split, dividing each of its existing shares into five new ones. The split won't increase ICE's underlying value—slicing a pizza three or four times doesn't make it bigger. But an old Wall Street rule of thumb holds that more shares with a lower price means a broader investor base. Retail investors can better afford a $60 stock than a $280 one.

That argument ought to resonate strongly. Share prices are near an all-time high. The average cost to buy a single share for a member of the S&P 500 index is now $88. But ICE is unusual. The incidence of stock splits is near an all-time low. In the past decade only 3% of S&P 500 firms each year split their shares, compared with 13% in the 1980s.

Several factors explain the decline. The more companies finance themselves with debt, and the less equity they raise, the less they care about whether their shares are bite-sized. Today equity raising in America is at subdued levels.

The proportion of the American stockmarket that is owned by large institutions—as opposed to retail punters—has more than doubled since 1980 to 70%. They are indifferent to paying $60 or $600 for a security.

And more bosses seem to have bought into Warren Buffett's view of stock splits. They attract low-quality, short-term speculators, the famed investor has long argued. He only reluctantly issued a new class of Berkshire Hathaway B-shares in 1996 to let small investors in and split those in 2010 because of an acquisition. Berkshire's B-shares trade at $145, while its A-shares are the most expensive of any public firm, at $218,000 a pop.

So, when Facebook, a social network, splits its stock in the nearish future—approved in June by its shareholders—it will not signal a revival. It says it is creating class-C shares, without voting rights, to ensure that Mark Zuckerberg can maintain long-term control of the firm.

Indeed, the main fans of stock splits these days are high-frequency traders, share exchanges and brokers, who like them because they lift trading volumes and boost their profits. American managers mostly appear to believe that their shares are already traded quite frequently enough, thank you—and have decided to quit the split.

Berlin's tech scene

The freaks are coming

BERLIN

As Rocket Internet fizzles, other startups take off

ROCKET INTERNET has just moved into a splendid, red building in central Berlin, around the corner from Checkpoint Charlie. The lease runs for the next 15 years, a signal of intent from a firm that brags of becoming the biggest online conglomerate outside America and China. Inside, everything is new. Alexander Kudlich, the managing director, jokes he should remove his shoes before stepping on a just-laid, thick, grey carpet in the boardroom.

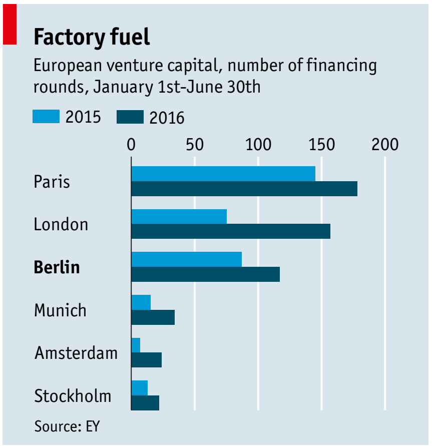
The timing is awkward. Just as staff entered the building, in early September, Rocket warned about its financial performance this year. It had losses of €617m (just under $700m) in the first six months; the full details came in earnings announced this week. Few are surprised that Rocket, which went public in 2014, had to lower the values of some of its creations. Kinnevik, an investment firm with shares in Rocket that had some of the same holdings, had already done so.

Mr Kudlich claims "we are more bullish than five years ago". But Rocket is finding life tougher than before its IPO. Its shares are down by almost half in the past year, leaving it valued at some €3 billion.

The most creative digital types have long scorned Rocket as a factory for copy-cat startups. Nonetheless, it used to do three things very well. It built up e-commerce companies quickly, often within days, mimicking other (usually American) startups. It pumped its own versions full of capital and they often became market leaders, typically in emerging markets. Second, it raised that capital effectively: tapping stuffy (and mostly German) investors who twigged that they should have a digital strategy but who found tech entrepreneurs baffling. Lastly, Rocket was skilled at recruiting brainy-but-conservative business-school graduates, who were taught to execute plans and made to toil frantically hard.

But being a company builder got much harder once startups such as Uber and Airbnb showed they could quickly internationalise themselves. One prominent investor in Berlin's technology scene says that founders should throw a parade for Oliver Samwer, Rocket's chief executive, for jumpstarting the city's tech ecosystem, but still calls the firm's copy-cat approach "an abomination". The era of Rocket-style incubation is over: "nobody does it now".

Rocket itself seems to accept as much. It plans to refocus itself as a later-stage investment firm, more like a private-equity outfit. That reflects how the wider Berlin scene is evolving. Startups are no longer content to copy others; they want to build empires that rival some of the biggest names in tech. "We need a Tesla or a Google to change the ecosystem," says another founder of tech firms, arguing that Berlin is well-placed to match traditional German engineering strengths with more creative technology types. In other words, he says, "we need more freaks."



They may be coming. Christophe Maire, a veteran of the Berlin scene, says it is flourishing, with firms scaling up in fintech, digital health, artificial intelligence, mobility, food technology, cyber-security and more. "We see formidable, original companies emerging."

Some, such as SoundCloud, a music-streaming service, are struggling to find a business model in the face of more established outfits, such as Spotify. But newer firms are rising. One is Relayr, which was founded in 2013 and has ambitions to become a platform for the "internet of things". It works with firms such as Bosch to develop sensors that set up machinery (such as lifts, kitchen appliances or elaborate espresso machines) to send data to and receive instructions from owners.

Another is ResearchGate, a social network for scientists founded in 2008 that has completed three rounds of funding, including a $35m investment from Bill Gates and a few other investors in 2013. It has over 10m members. Its founder, Ijad Madisch, claims to lead, with some justification, the "coolest startup in Germany" because it has succeeded in creating a place for researchers from all around the world to collaborate. They share vast amounts of data and experiments—including failed ones. Neither Relayr nor ResearchGate resemble Rocket-style copies, and many more firms should be able similarly to draw on Germany's strength in industrial products and in scientific research.

Meanwhile, Berlin startups' success in attracting finance is continuing (see chart). More venture-capital funds are setting up, as well as additional accelerators and "business clubs" for startups. One of them, The Factory, in a renovated brewery, is putting entrepreneurs in the same building as people from SoundCloud, but also from big old firms such as Deutsche Bank or Siemens. The hope is that Germany's stock of financial and engineering knowledge can be brought fruitfully together with people who have bright ideas. Hardly rocket science, but it might take off. ■

PowerPoint slide, Berlin style

Schumpeter | Against happiness

Companies that try to turn happiness into a management tool are overstepping the mark

LORD Percy of Newcastle, Britain's minister of education in 1924-29, was no fan of the fad for happy-clappy "progressive" education that spread among the country's schools on his watch. He declared that it was all nonsense: "a child ought to be brought up to expect unhappiness." This columnist feels the same suspicion of the fashion for happy-clappy progressive management theory that is rushing through the world's companies and even some governments.

The leading miscreant is Zappos, an online shoe shop. The firm expects its staff to be in a state of barely controlled delirium when they sell shoes. Pret A Manger, a British food chain, specialises in bubbly good humour as well as sandwiches. Air stewards are trained to sound mellifluous but those at Virgin Atlantic seem on the verge of breaking out into a song-and-dance routine. Google until recently had an in-house "jolly good fellow" to spread mindfulness and empathy.

A weird assortment of gurus and consultancies is pushing the cult of happiness. Shawn Achor, who has taught at Harvard University, now makes a living teaching big companies around the world how to turn contentment into a source of competitive advantage. One of his rules is to create "happiness hygiene". Just as we brush our teeth every day, goes his theory, we should think positive thoughts and write positive e-mails.

Zappos is so happy with its work on joy that it has spun off a consultancy called Delivering Happiness. It has a chief happiness officer (CHO), a global happiness navigator, a happiness hustler, a happiness alchemist and, for philosophically minded customers, a happiness owl. Plasticity Labs, a technology firm which grew out of an earlier startup called the Smile Epidemic, says it is committed to supporting a billion people on their path to happiness in both their personal and professional lives.

The trend is not confined to the private sector. Several governments, including those of America, Britain, France and Australia, now publish for the benefit of their citizens regular reports on levels of national well-being. Bhutan has long measured its gross national happiness, and the United Arab Emirates boasts a brand-new Ministry of Happiness.

Businesspeople have long known there is money to be made in the field. Dale Carnegie, a leadership guru, said the best way to win friends and influence people was to seem upbeat. Disneyland is still "the happiest place on Earth". American firms regularly bid their customers to "have a nice day". One of the sharpest books published on the phenomenon is "The Managed Heart" from 1983, in which Arlie Hochschild, a sociologist at the University of California, Berkeley, noted that many employers demanded "emotional labour" from workers in the form of smiles and other expressions of "positive emotion". Firms are keen to extract still more happiness from their employees as the service sector plays an ever greater role in the economy. Run-of-the-mill service firms are fighting for their lives against discounters. As customers, most people prefer their service with a smile rather than a snarl.

Some firms are trying to create some wellbeing, too, showering their employees with mindfulness courses, yoga lessons and anything else that proves that managers are interested in "the whole person". Only happy fools would take that at face value. Management theorists note that a big threat to corporate performance is widespread disengagement among workers. Happy people are more engaged and productive, say psychologists. Gallup claimed in 2013 that the "unhappiness" of employees costs the American economy $500 billion a year in lost productivity.

One problem with tracking happiness is that it is such a vague metric: it is difficult to prove or disprove Gallup's numbers since it is not entirely clear what is being measured. Companies would be much better off forgetting wishy-washy goals like encouraging contentment. They should concentrate on eliminating specific annoyances, such as time-wasting meetings and pointless memos. Instead, they are likely to develop ever more sophisticated ways of measuring the emotional state of their employees. Academics are already busy creating smartphone apps that help people keep track of their moods, such as Track Your Happiness and Moodscope. It may not be long before human-resource departments start measuring workplace euphoria via apps, cameras and voice recorders.

Be miserable. It'll make you feel better

The idea of companies employing jolly good fellows and "happiness alchemists" may be cringe-making, but is there anything else really wrong with it? Various academic studies suggest that "emotional labour" can bring significant costs. The more employees are obliged to fix their faces with a rictus smile or express joy at a customer's choice of shoes, the more likely they are to suffer problems of burnout. And the contradiction between companies demanding more displays of contentment from workers, even as they put them on miserably short-term contracts and turn them into self-employed "partners", is becoming more stark.

But the biggest problem with the cult of happiness is that it is an unacceptable invasion of individual liberty. Many companies are already overstepping the mark. A large American health-care provider, Ochsner Health System, introduced a rule that workers must make eye contact and smile whenever they walk within ten feet of another person in the hospital. Pret A Manger sends in mystery shoppers to visit every outlet regularly to see if they are greeted with the requisite degree of joy. Pass the test and the entire staff gets a bonus—a powerful incentive for workers to turn themselves into happiness police. Companies have a right to ask their employees to be polite when they deal with members of the public. They do not have a right to try to regulate their workers' psychological states and turn happiness into an instrument of corporate control. ■

Also in this section

For daily analysis and debate on economics, visit
Economist.com/economics

Norway's global fund

How to not spend it

OSLO

It is tough for a small democracy to run the world's biggest sovereign-wealth fund

TWO decades after Norway's government paid a first deposit into its sovereign-wealth fund, the country is learning how to manage a behemoth. The vehicle, which is used to invest abroad the proceeds of Norway's oil and gas sales, has amassed a bigger fortune than anyone expected, thanks to bumper oil prices. As the direct benefits of oil decline—around 46% of Norway's expected total haul of oil and gas is gone—the relative importance of the fund will grow. The annual revenues it generates now regularly exceed income from oil sales.

This week the "Pension Fund Global" was worth Nkr7.3 trillion ($882 billion), more than double national GDP. No sovereign-wealth fund is bigger. It owns more than 2% of all listed shares in Europe and over 1% globally. Its largest holdings are in Alphabet, Apple, Microsoft and Nestlé, among 9,000-odd firms in 78 countries.

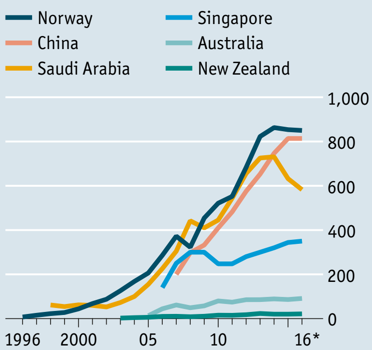
In designing the fund, Norway got a lot right. Its independence is not constitutionally guaranteed, but it is protected as a separate unit within the central bank, overseen by the finance ministry and monitored by parliament. It is run frugally and transparently; every investment it makes is detailed online.

Other funds might copy those structures, but would struggle to mimic the Nordic values that underpin them. Yngve Slyngstad, the fund's boss, says growth came "faster than anyone had envisaged", and that a culture of political trust made it uncontroversial to save as much as possible. A budgetary rule stops the government from drawing down more than the fund's expected annual returns (set at 4% a year). The capital, in theory, is never touched. Martin Skancke, who used to oversee the fund's operations from the finance ministry, attributes the trust the institution enjoys to relatively high levels of equality and cultural homogeneity. It also helps that many rural areas recall poverty just two generations ago.

Yet expectations of the fund may change as Norway itself does. Tesla-driving Norwegians are now less shy about flaunting their wealth. Those under 50 have known only a world in which the 5.2m Norwegians are among its wealthiest people. Immigration is higher than ever, especially after an influx of Syrian refugees.

Top of the world

Sovereign-wealth funds by total assets, selected
$bn



Source: Sovereign Wealth Fund Institute

*At June 30th

Progress, a populist, anti-immigrant party, has long wanted more oil cash spent at home. As a junior coalition partner since 2013, in charge of the finance ministry, it has curbed its urge to splurge. But in the first half of this year the government for the first time took more from the fund than it deposited from its oil revenues: a net withdrawal of Nkr45 billion. Recent low returns meant that the fund's capital fell slightly, too.

It is too early to see any long-term trend, but some are worried. "It is very hard to have a huge sum of money at the bedside and to tighten your belt at the same time," says someone close to the fund. Mr Slyngstad is sanguine but acknowledges that few democracies sustain sovereign-wealth funds: politicians always prefer higher spending and lower taxes. He denies ever feeling political pressure. But others' appetites are evidently growing—if not to spend more, then to use the fund differently. One complaint is that relatively modest dollar returns on investments (5.5% a year since 1998) reflect too much caution among those who guide the fund's strategy.

Sony Kapoor, a leading critic of the fund, argues that it "screwed up" in the past decade by failing to invest in emerging markets that were hungry for capital, and by ignoring unlisted assets, such as infrastructure. He says the fund missed out on "$100 billion to $150 billion" as a result. Worse, he says, its supposed caution in fact exposed it to high risk by concentrating its assets in rich economies.

Defenders of the fund's strategy dismiss this criticism, arguing that poorer ▸▸

countries often offer too few suitable, big investment opportunities. But this is not the only criticism from Mr Kapoor and others. In a democracy, morality counts. The ethics of investment are debated ever more hotly. Politicians, NGOs and others increasingly say moral concerns should outweigh others, and even profits.

The fund refuses to invest in firms with products deemed unethical, such as tobacco or many sorts of weapons. It is also becoming more activist in the approach to its portfolio, divesting from those seen as grossly corrupt and flagging concerns over companies' misuse of water and energy, or any risk that they benefit from child labour.

It is also getting more outspoken on subjects like high executive pay. It has said it will join class-action lawsuits against Volkswagen over the firm's fiddling of fuel-emissions results. The fund has been instructed by parliament to help fight climate change. So 1% of its portfolio is in firms deemed to be green. It has divested from heavy polluters, firms involved in deforestation and, this year, from coal companies.

Such restrictions create dilemmas. The fund still invests in oil, for example: Royal Dutch Shell is one of its biggest holdings. Its ethical advisers argue that it can achieve more by promoting good practices within oil firms. But a former adviser admits the fund's climate-change brief makes such investments a "paradox".

In effect, the fund is exporting Norwegian values as well as capital. In the future it could turn against more products—sugar and fast-food, say, because of obesity. So far the fund's managers see no serious financial cost from blacklisting 100 or so companies. But they do not deny that some ethical decisions do entail trade-offs. Their own shareholders, the Norwegians themselves, may not always let them do what is right rather than what pays. ■

Buttonwood | Take cover

An anomaly that shows markets are not as liquid as before

THE most dangerous words in finance are: "This time is different." But sometimes markets can genuinely change. After the 2007-08 financial crisis, markets are less efficient and liquid than before.

The evidence can be found in the currency markets, as a paper* in the latest quarterly bulletin from the Bank for International Settlements (BIS) explains. In foreign-exchange markets it is possible to buy currency at today's rate (the spot market) or at some future point (the forward market). Any student of the currency markets will quickly come across the idea of "covered-interest parity". This states that the gap between the spot price and the forward price will equal the interest-rate differential between the two countries.

Imagine that American 12-month interest rates are 10% and Japanese rates are 5%. Japanese investors will be tempted to buy dollars, earn interest on them for a year and then cover the exchange-rate risk through a forward deal. So lots of people will be selling dollars in the forward market. They will keep doing so until the dollar is 5% cheaper there than in the spot market, and there is no profit in the trade.

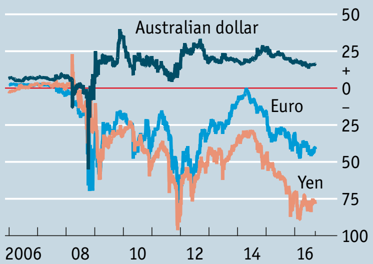
In the foreign-exchange market, which is highly liquid, the possibility of profitable arbitrage should be rare—the equivalent of $100 notes lying on the pavement. But the covered-interest parity rule has been consistently breached in some corners of finance since 2008. In the immediate aftermath of the collapse of Lehman Brothers, the anomaly could be put down to a temporary freezing of markets. Yet the world is not in crisis mode today.

The BIS argues that two factors explain the phenomenon. First, many participants in the foreign-exchange markets are seeking to hedge their exposures, almost regardless of the costs. Take a Dutch pension fund which decides to invest in Treasury bonds because it trusts the American government's creditworthiness. The pension fund's liabilities—payments to Dutch retirees—are in euros and it does not want to take the currency risk of owning dollars. So it will borrow dollars (in order to buy the bonds) and exchange them for euros in the swap market, the equivalent of doing a forward currency deal.

Disparity

Three-year interest-rate differential (relative to $) between the foreign-exchange swap market and the money market

Basis points



Source: Bloomberg

Another group of inveterate hedgers are international banks which, by the nature of their business, will have both assets and liabilities in a wide range of currencies. When those assets and liabilities are not matched, they will want to eliminate the foreign-exchange risk.

If hedging demand was evenly balanced between currencies, this would not be a great problem. But it seems there is more demand to hedge American-dollar risks or exposures, relative to the yen and the euro, than the other way round. (The reverse is true for Australian dollars, as the chart shows.)

The effect is to drive up the cost of dollar borrowing in the foreign-exchange swap market, to a point where it is out of line with the cost of borrowing dollars in the money markets. Or to express the problem in a different way, the forward currency rate gets out of line with the interest-rate differential between the two currencies (as conventionally measured in money markets).

At this point, if theory held, the arbitrageurs should swoop in and eliminate the discrepancy. Either the banks could do this themselves (via their trading desks) or they could lend money to hedge funds that hoped to profit from the anomaly. But in the post-2008 world, banks are constrained in the way they can use their balance-sheets. Regulators have insisted that banks hold more capital to reflect the risks involved in arbitrage activities.

The financial sector will not collapse because covered-interest parity no longer applies. But it is a sign of the times: similar oddities have emerged in the interest-rate swap market. For the efficient-market hypothesis to hold true, markets must be liquid enough for arbitrageurs to bring prices back to normal when anomalies occur. But banks are unable to provide the same levels of liquidity as they did in the past. In a sense, that is a good thing. Banks were not charging enough for the use of their balance-sheets before 2008 and many got into trouble as a result.

But it is also a bad omen for when the next crisis hits. Markets may freeze even more quickly than before and asset prices may get even more out of whack than they did in 2008. As long as central banks are still pumping liquidity into the markets, it is tempting not to worry. But they won't always be so generous.

* "Covered interest parity lost: understanding the cross-currency basis", *BIS Quarterly Review*, September 2016

Economist.com/blogs/buttonwood

ADVERTISEMENT

EXPERIENCE THE WARMTH OF MEDICAL KOREA

THE HEALING POWER OF *JEONG*

One of the most subtle and powerful ideas in Korean culture is *jeong*. This many-faceted concept includes feelings of sympathy, reciprocity and human attachment—but it's more than the sum of its parts. Where Western thought often sees something like love as a feeling that occurs *within* a person, *jeong* exists just as much *between* people. It's a force that permeates space and relationships with care and a sense of duty.

In Korea, *jeong* is a consideration in professional spheres as well as in personal life. It has particular resonance in service industries such as health care, hospitality and education. In medicine, it has been particularly potent, enlivening the sense of professional duty that doctors, other practitioners, and institutions feel towards their patients with a distinctively Korean sense of warmth and human connection.

MORE THAN A FEELING

Of course, in medicine, feeling alone can never be enough. Treating patients with the care that arises from a sense of responsibility and connection means acquiring consummate skill and applying the latest technology. Korea has developed world-leading medical schools to give its doctors the best possible training, along with a wide range of education programmes for allied professionals.

Medical Korea has also been enhanced by the national affinity for science and high technology that created electronics and automotive superstars like Samsung and Hyundai. Demonstrating the country's strength in medical research, theses from Korean institutions are frequently cited in international journals, particularly in the field of liver transplantation. Indicators show a high penetration of advanced medical equipment: in 2015, Korea ranked fourth in the OECD for MRI units per capita and sixth for CT scanners. The outcomes speak for themselves. OECD data on five-year survival rates for cervical cancer shows Korea in second place, behind only Norway, and the country ranks first in survival rates for colorectal cancer.

Having increased the rate of organ transplantation by 200% between 1996 and 2001, today Korea has the highest rate of living organ donors in the Asia-Pacific region—more than double that of neighbouring Japan. The country is also internationally renowned for its excellence in plastic surgery and beauty therapies, and for the reasonable price of care. In 2014, it offered the least expensive health care of any OECD country. This has made Korea an increasingly attractive destination for medical tourists: more than a million foreign patients visited between 2009 and 2015.

SHARING THE EXCELLENCE OF MEDICAL KOREA

Having developed such a sophisticated health-care system, and being deeply embedded in the global and regional economy, Korea sees a duty and an opportunity to share its medical expertise with the wider world, and thus to spread the warmth of *jeong* to global society.

A central part of this effort is the Medical Charity Program introduced by the Korean Health Industry Development Institute (KHIDI). Under this initiative, overseas patients whose countries cannot provide adequate care for serious conditions can receive treatment in Korea, with all costs for airfares and treatment covered.

Government agencies are also working to promote Medical Korea to consumers abroad, so they can more easily take advantage of Korean technology, infrastructure and expertise. To help break down language barriers while allowing medical practitioners to focus on their technical specialties, the Korean government provides a programme of training courses for medical interpreters and co-ordinators.

Along with differences in language, Medical Korea also accommodates diverse cultures. Its hospitals provide a range of religious facilities, including prayer rooms and halal meals, to cater to the needs of patients from a range of nationalities and backgrounds.

ENSURING CONVENIENT, RELIABLE CARE

Significant work has gone into giving foreign patients confidence in Korean medical institutions and ensuring that care is easy to access. Overseas patients will appreciate the speed of service: waiting periods are shorter than in other advanced countries, including the United States and Germany. Twenty-one Korean hospitals are accredited by Joint Commission International (JCI), and KHIDI also works to assure international patients of local institutions' commitment to safety and quality of care.

With the goal of promoting trust in Medical Korea, changes to government regulation have been made to ensure the provision of safe services by qualified professionals, and to safeguard patients' rights. Merely burdensome restrictions have been lifted to increase convenience, while hospitals and related agencies have been obliged to join liability insurance schemes to help protect patients against the possibility of accidents or malpractice.

At the same time, Medical Korea provides numerous services that welcome overseas patients into its health-care system. Immigration and visa consulting are available, as is legal aid and a guide to claiming VAT refunds for cosmetic surgery. Interpretation services are offered in ten languages, while the Medical Korea Information Center, operated by KHIDI and Seoul City, acts as a starting point for enquiries and a place to offer feedback. In a similar venture to deliver one-stop service, the Korean government manages the Medical Korea Health Check-up website (http://health.medicalkorea.or.kr), where medical tourists can research, compare and book check-ups and other medical services from 115 programmes offered by 22 different providers.

Today, thanks to the combined efforts of Korea's government, health professionals and medical institutions, the country is attracting people from many countries in their search for first-class care. In comfort and with confidence, the world can now experience the warmth and healing power of Medical Korea.

Medical Korea Information Center
+82 1577 7129
www.medicalkorea.or.kr
callmcc@khidi.or.kr

KHIDI Korea Health Industry Development Institute

Asian markets

Chinese sneezes

Financial contagion from China now rivals that from America

INVESTORS have long been wary of America's sneezes, knowing they can give the world a cold. In Asia they now also fret about Chinese rhinitis, which is proving just as contagious. For financial epidemiologists, this is something of a puzzle. It is to be expected that germs can spread from China, Asia's biggest economy, to others in the region. But it is surprising quite how infectious they are proving. Unlike America, enmeshed in global markets, China's economy is in self-imposed quarantine, protected by capital controls that limit its interactions with others.

Yet China's impact on Asian stockmarkets is now nearly as potent as America's. Two recent papers, one from the IMF and one from the Bank for International Settlements (BIS), a forum for central banks, reveal the extent of the change over the past decade. The IMF estimates that the correlation between the Chinese stockmarket and those in other Asian countries has risen to more than 0.3 since June last year (1 is a "perfect" correlation), double the level before the global financial crisis. That is still below the 0.4 correlation between America and Asia, but the gap is closing fast (see chart). According to the BIS, Asian equities track swings in the Chinese market about 60% more closely since the crisis.

Investors already knew that China's problems can ripple through Asian and, indeed, global markets. When Chinese shares crashed last summer and early this year, so did shares almost everywhere else. And when China let the yuan fall by 2% in August 2015, the currencies of other emerging markets tumbled. (The IMF found that the correlation between Asian currencies and the yuan is now more than 0.2, twice the pre-2008 level.)

Both reports cite the sheer heft of China's economy as the main driver of the rising correlations. The data show that Asian countries with the strongest China trade ties are most affected by its market moves. Investors there are more likely to hold shares in companies that sell lots of widgets to China. They are understandably alarmed when stockmarket falls suggest that the Chinese economy is in trouble. And depreciation of the yuan, along with signalling economic weakness, makes it more expensive for those in China to buy things from abroad.

Trade, however, is not the only means of transmission. Financial linkages now account for about two-fifths of the correlations between China and other Asian markets, up from virtually nothing before 2008. Despite capital controls, China has opened channels that allow investors to buy its shares or lend to its companies. These foreign investments may be tiny relative to the size of China's economy, but China's wealth is now so great that they are still big in absolute terms. Foreign holdings of Chinese shares and bonds are worth about $2 trillion, more than for any other emerging market.

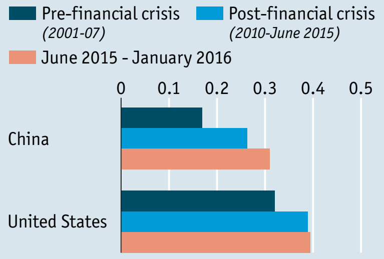
Asian investors have been particularly bold: claims on China and Hong Kong are worth more than 10% of GDP for South Korea, Taiwan and Singapore. As capital controls are relaxed, these financial connections will only deepen. For now, China's bond market exists in a universe of its own. When the yuan becomes a funding currency for others, Chinese interest rates will affect those around Asia.

A tightening of correlations in Asia could, as the BIS notes, be welcome. In recent years markets across the globe have tended to move in the same direction, making it harder for investors to diversify. As cross-holdings proliferate in Asia, with China as a focal point, there is a real possibility that Asia's financial cycles will find their own rhythm, pulling apart from other bits of the world. China and America will still suffer sneezing fits. With any luck, they will catch their colds at different times. ■

China shakes the markets

Equity-market returns

Correlations with Asian stockmarkets, excluding China



Source: IMF

Wall Street

Waking up

NEW YORK

A spate of mergers, public offerings and even a rumour: streetlife stirs

IGNORE the record share prices and what that would seem to suggest about the year unfolding on Wall Street. Activity has been so slow that many bankers off for their August holidays wondered if there would be any reason to return. That has abruptly changed. "Every product we have is busier post-Labour Day than pre-," says J.D. Moriarty, of Bank of America Merrill Lynch, referring to the holiday on September 5th. Eighteen companies plan to list this month and a further 100 are getting ready, according to Renaissance Capital, a research firm.

Normally, a soaring stockmarket would be a fillip for all corners of finance. But until the holiday, the only consistently busy area this year had been the debt market. Low rates led borrowers to issue as many new bonds and refinance as many old ones as they could.

Elsewhere: no animal spirits. Investors seemed tired of punting or lacked funds. Their brokers were scared to encourage business because of a vastly complex new regulation, known as the "fiduciary rule", introduced in April. Trading volumes—and commission income—were weak.

Nor had record share prices led to the usual spate of public offerings. 2013 and 2014 each saw more than 200; 2015 started in the same vein. Then the business froze.

Jessica, a unicorn in nappies?

Companies evidently found the money they needed from private sources, or decided whatever they needed was not worth the (increasing) cost of listing. In the first quarter of 2016, just eight companies listed. This expanded to 59 by the end of August, but that still marked a rotten year.

Higher share prices and low interest rates would normally also stimulate mergers and acquisitions. But these have been rarer as well. Several large deals blew up ▸▸

because of regulatory intervention, perhaps the most important being the alliance of Pfizer and Allergan, an effort by Pfizer to shift from a high tax-regime in America to Ireland's low-tax one. Antitrust concerns thwarted some other deals, such as the proposed merger last December of Staples and Home Depot, two large retailers facing internet competition.

Many had expected things to continue in the same vein. Brexit was seen as a blow to any firm operating in Europe; China's slowdown to any operating in Asia. The American election campaign unnerved businesses about the prospects for growth and more adept regulation. Yet, suddenly, the mood has changed—for no obvious reason. Rather, the old magic—of rock-bottom interest rates and sky-high share prices—seems to be working at last. After the initial shocks, people have stopped talking about Brexit and China's slowdown—or at least have stopped citing them as reasons to derail deals.

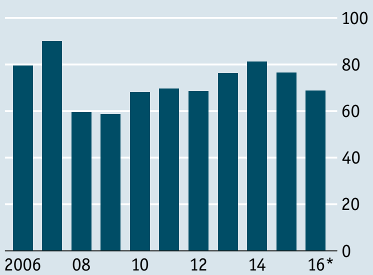
The new listings reflect an unusually broad spectrum of businesses: from a Bermudian bank (Butterfield) that began trading on September 16th to the pending offerings by AzurRx Biopharma, a Brooklyn-based pharma developer, Valvoline, a producer of car lubricants, e.l.f. Beauty, which sells low-cost cosmetics, and several software companies.

The merger market is also sparky. One massive deal (which may also face antitrust hurdles) was announced this month—the acquisition by Bayer, a German chemicals giant, of Monsanto, the world's biggest seed company. Several smaller but still chunky deals are in the pipeline. The Honest Company, a baby-products business created only five years ago by Jessica Alba, a movie star, is rumoured to be for sale for $1 billion.

Steven Chubak, an analyst at Nomura, still reckons the investment-banking world will be subdued for the rest of 2016—but far less so than earlier this year. The bankers who work on mergers, new offerings and the like are more bullish. Call them up and the reply is a garbled excuse, as they rush to catch a flight. Time to get up! ■

Signs of life

US investment-banking revenue, $bn



Sources: Nomura; Dealogic

*Year to September 20th, annualised

Deutsche Bank

Won't pay! Can't pay?

A $14 billion demand from America adds to the German lender's troubles

BILLS for pre-crisis buccaneering are still coming in. Deutsche Bank, Germany's biggest lender, confirmed on September 15th that America's Department of Justice (DOJ) had asked for $14 billion to settle possible claims connected with the underwriting and sale of residential mortgage-backed securities (RMBSs) between 2005 and 2007. The next day Deutsche's share price, already reeling after a wretched year, plunged by 8%. It was groggier still after the weekend, closing on September 20th at a 30-year low (see chart).

American banks have settled with the DOJ for amounts between $3.2 billion (Morgan Stanley) and $16.7 billion (Bank of America), as well as agreeing on smaller sums with the Federal Housing Finance Agency (FHFA), another regulator. Deutsche, which settled with the FHFA for $1.9 billion in 2013, insists that it will not pay anything near to what the DOJ has asked for, and it surely won't. Citigroup, which reached an RMBS deal with the department in 2014, reportedly haggled its way from $12 billion to $7 billion.

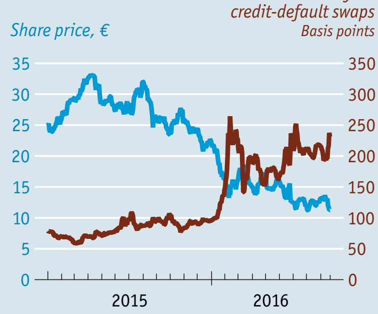
Even so, Deutsche can ill afford a hefty bill. In 2015 it lost €6.8 billion ($7.4 billion). John Cryan, the chief executive for the past 14 months, scrapped the dividend and has told shareholders to expect nothing (and no profits) in 2016. After the shares' latest tumble, Deutsche trades at around a quarter of the net book value of its assets. The price of five-year credit-default swaps (a form of insurance against default) on its senior debt is well above that paid by Europe's other leading banks. Data released this week by America's Federal Deposit Insurance Corporation on capital-asset ratios suggested that Deutsche's status as the riskiest of a score of big banks is worsening.

Deutsche's ratio of equity to risk-weighted assets, an important measure of a bank's resilience, was 10.8% at the end of June, weaker than its peers'. Mr Cryan intends to raise it to 12.5% by 2018. With risk-weighted assets of around €400 billion, that 1.7% gap works out at nearly €7 billion.

The disposal of Deutsche's stake in Hua Xia, a Chinese bank, is expected to make up around 0.5 points of that gap. The sale of Postbank, a German retail business, though put off for the time being, should eventually fill a bit more of the hole. So will cost cuts and the ditching of other, "non-core" assets. (Changes to international bank-capital rules, which will increase risk-weighted assets by giving extra emphasis to operational risk, will push in the other direction.) A big fine will make it harder to close up the rest without asking investors for more capital.

A fine mess

Deutsche Bank



Source: Bloomberg

The bank has already set aside €5.5 billion for litigation expenses. However, that covers not only the RMBS claims but also the potential cost of investigations by American and British authorities into whether lax controls at Deutsche allowed money-launderers to whisk cash out of Russia. Every extra euro of penalties, on either count, will take Mr Cryan further away from his equity-ratio goal.

Analysts had reckoned that Deutsche might pay $3 billion or so—around the bottom of the American banks' range of penalties—from its litigation pot for RMBSs. Now the market guesses, from the scant evidence of the DOJ's demand, that the price may be twice that, or more; uncertainty about the outcome is adding to the jitters.

Other European banks—Barclays, Credit Suisse, HSBC, the Royal Bank of Scotland (RBS) and UBS—are also in the DOJ's sights. Shares in Credit Suisse and RBS shuddered most after the DOJ's demand to Deutsche, falling by 4% or so. The Swiss lender has provided SFr1.6 billion ($1.6 billion) for legal costs of all sorts. RBS has set aside £7.5 billion ($9.7 billion), but this does not include possible RMBS penalties. (Among the state-owned British bank's woes are the mis-selling of insurance and a shareholder lawsuit over a rights issue in 2008, months before calamity struck.) But if estimating Deutsche's bill is brave, taking a stab at the rest is downright foolhardy.

Recently rumours have swirled that Deutsche might merge with its domestic rival, Commerzbank, or sell its asset-management arm to raise cash. Mr Cryan has told his staff not to "become distracted by speculation about alleged mergers or sales plans." The boss continued: "We have enough on our plate to solve on our own." Indeed they do. ■

Correction: In last week's issue we inaccurately reported Morgan Stanley's calculation of average personnel costs in Japan. The correct figures are ¥8.8m per year for civil servants, ¥7.1m for workers in large firms and ¥4.2m for those in medium-sized ones. Sorry.

Free exchange | The emperor's new paunch

No holds are barred in Paul Romer's latest assault on macroeconomics

PAUL ROMER made his name modelling the production of knowledge and the growth of economies. Now the World Bank's chief economist, his latest, unusual, contribution to economics includes a "meta-model" of himself. "For more than three decades," he alleges, "macroeconomics has gone backwards." Why, his meta-model asks, is he one of the few willing to say so?

What Mr Romer says is unusually brutal. After over 30 years of "intellectual regress", the study of booms and busts now reminds him of a lipstick-wearing pig or an obsolete scientific embarrassment like the phlogiston theory of fire. The field is dominated by a tight-knit congregation, he argues, unified by deference to authority, not facts. Their revered leaders rely on high-handed assumptions to make their models work. But they do not admit to these inadequacies, pretending their naked assumptions are clothed in fine theoretical robes.

One illustration is their answer to an old scientific problem: identification. This problem besets even the simplest blackboard model of demand and supply, represented in textbooks by two intersecting diagonal lines, one sloping upwards (because sellers supply more when prices are high) the other downwards (because buyers demand more when prices are low). Drawing these lines is necessary to answer many big economic questions, such as how many extra jobs will be created if a payroll tax is cut (increasing the demand for labour by reducing its price) or how many additional rigs become viable when the oil price rises.

But how do we know a curve's true slope and position? The lines themselves are unobservable. A diligent economist can only note their intersections, recording each combination of price and quantity, perhaps as dots on a graph. If supply (and only supply) moved randomly, the resulting dots would trace out the demand curve: they would show how much demand expands and contracts when prices fall and rise, thanks to variations in supply. The curve's slope and position would be "identified".

But that is not how the world typically works. Instead, the pattern of dots will probably reflect shifts in demand as well as supply. That makes it impossible to identify either curve from the dots alone. This identification problem is particularly severe in macroeconomics, which has a lot of moving parts, many of which move each other. To estimate one popular macroeconomic model, an economist must pin down the equivalent of 49 "slopes", Mr Romer points out.

Solving this problem is fiendishly difficult. Economists can hunt for scraps of relevant microeconomic evidence, such as household surveys. They can wait for natural experiments. Or they can make flat assumptions: presuming, for example, that the monsoon affects food supply but not demand. Alternatively, they can rely on theory. Through logical reasoning they can try to deduce some law of markets or behaviour (perhaps that pay reflects productivity or that markets clear). Whatever the merit of these deductions, they make it far easier to draw lines through dots.

Indeed, many economists cling to stark, crude theories about market efficiency or rational behaviour precisely because it helps them pin down all those slopes and other parameters. If they did not care about these defining numbers, they could afford to entertain messy, finespun beliefs about human nature and market institutions. But then they would be called sociologists.

The pressures of identification can thus lure macroeconomists into bad or narrow theories. But Mr Romer also accuses them of something worse: hypocrisy and obfuscation. They purport to solve the identification problem by relying on deep theory, but in fact resort to shallow assumptions. Indeed, economists used humbly to admit they had pinned down their models by assuming one thing or another. Now, they do so by theorising one thing or another. But these deductive proofs often rely on earlier, questionable assumptions. In between the assumptions and the proof is enough mathematical "blah blah blah" (as Mr Romer puts it) to hide the assumptions' full role. And an arbitrary assumption in one part of the model can affect everything else in it.

The ridicule-intimidation equation

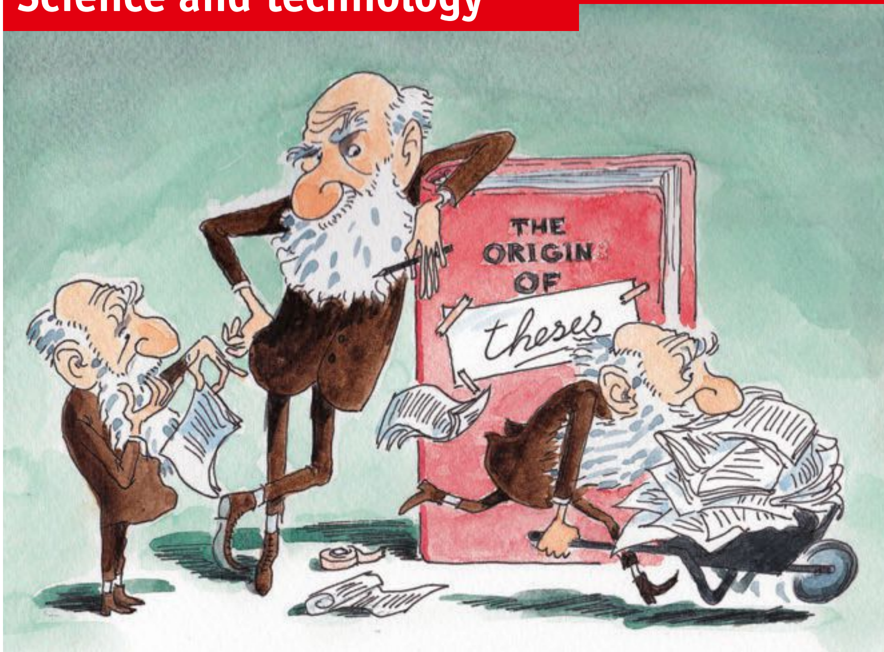
Mr Romer says these analytical habits flow from the top. If Nobel laureates indulge in them, others will follow suit. Even sceptics clever enough to spot what is going on will keep quiet.

But will they? Several prominent economists have voiced similar doubts about the field. One paper Mr Romer cites is entitled "back to square one"; another complains about "unappealing assumptions". A third, uncited, even argues that macroeconomics has cultivated a "pretence of knowledge": it acts as if it is better than it is. These contributions back up Mr Romer's complaints about economics, but not his gibes about deferential economists.

In his meta-model of himself, Mr Romer explains that because he is now a practitioner, with no need to add to his research credentials, he faces an unusually low price of dissent. Other leading critics are also professionally secure. But their continued interest in research proves that you do not have to leave the ivory tower to criticise it. What distinguishes Mr Romer's dissent is not the content but the tone, full of what the kids call "snark". He observes that the emperor has no clothes, then laughs at his paunch. Mr Romer's meta-model of himself can explain what he says, but not how he says it. It is, in effect, missing one equation.

To complete Mr Romer's model, we could rely on theoretical deduction. Instead we turned to survey evidence: asking the man himself. He replied, via his blog, that gentle criticism had failed and that "ridicule is the best antidote to intimidation." Through satire, he wants to allay people's fears of criticising the macroeconomic papacy. But if the intimidation is less than he supposes, perhaps the ridicule had a sharper gradient than he intended. ■

Economist.com/blogs/freeexchange



Also in this section

For daily analysis and debate on science and technology, visit

Economist.com/science

Why bad science persists

Incentive malus

Poor scientific methods may be hereditary

IN 1962 Jacob Cohen, a psychologist at New York University, reported an alarming finding. He had analysed 70 articles published in the *Journal of Abnormal and Social Psychology* and calculated their statistical "power" (a mathematical estimate of the probability that an experiment would detect a real effect). He reckoned most of the studies he looked at would actually have detected the effects their authors were looking for only about 20% of the time—yet, in fact, nearly all reported significant results. Scientists, Cohen surmised, were not reporting their unsuccessful research. No surprise there, perhaps. But his finding also suggested some of the papers were actually reporting false positives, in other words noise that looked like data. He urged researchers to boost the power of their studies by increasing the number of subjects in their experiments.

Wind the clock forward half a century and little has changed. In a new paper, this time published in *Royal Society Open Science*, two researchers, Paul Smaldino of the University of California, Merced, and Richard McElreath at the Max Planck Institute for Evolutionary Anthropology, in Leipzig, show that published studies in psychology, neuroscience and medicine are little more powerful than in Cohen's day.

They also offer an explanation of why scientists continue to publish such poor studies. Not only are dodgy methods that seem to produce results perpetuated because those who publish prodigiously prosper—something that might easily have been predicted. But worryingly, the process of replication, by which published results are tested anew, is incapable of correcting the situation no matter how rigorously it is pursued.

The preservation of favoured places

First, Dr Smaldino and Dr McElreath calculated that the average power of papers culled from 44 reviews published between 1960 and 2011 was about 24%. This is barely higher than Cohen reported, despite repeated calls in the scientific literature for researchers to do better. The pair then decided to apply the methods of science to the question of why this was the case, by modelling the way scientific institutions and practices reproduce and spread, to see if they could nail down what is going on.

They focused in particular on incentives within science that might lead even honest researchers to produce poor work unintentionally. To this end, they built an evolutionary computer model in which 100 laboratories competed for "pay-offs" representing prestige or funding that result from publications. They used the volume of publications to calculate these pay-offs because the length of a researcher's CV is a known proxy of professional success. Labs that garnered more pay-offs were more likely to pass on their methods to other, newer labs (their "progeny").

Some labs were better able to spot new results (and thus garner pay-offs) than others. Yet these labs also tended to produce more false positives—their methods were good at detecting signals in noisy data but also, as Cohen suggested, often mistook noise for a signal. More thorough labs took time to rule these false positives out, but that slowed down the rate at which they could test new hypotheses. This, in turn, meant they published fewer papers.

In each cycle of "reproduction", all the laboratories in the model performed and published their experiments. Then one—the oldest of a randomly selected subset—"died" and was removed from the model. Next, the lab with the highest pay-off score from another randomly selected group was allowed to reproduce, creating a new lab with a similar aptitude for creating real or bogus science.

Sharp-eyed readers will notice that this process is similar to that of natural selection, as described by Charles Darwin, in "The Origin of Species". And lo! (and unsurprisingly), when Dr Smaldino and Dr McElreath ran their simulation, they found that labs which expended the least effort to eliminate junk science prospered and spread their methods throughout the virtual scientific community.

Their next result, however, was surprising. Though more often honoured in the breach than in the execution, the process of replicating the work of people in other labs is supposed to be one of the things that keeps science on the straight and narrow. But the two researchers' model suggests it may not do so, even in principle.

Replication has recently become all the rage in psychology. In 2015, for example, over 200 researchers in the field repeated ▸▸

100 published studies to see if the results of these could be reproduced (only 36% could). Dr Smaldino and Dr McElreath therefore modified their model to simulate the effects of replication, by randomly selecting experiments from the "published" literature to be repeated.

A successful replication would boost the reputation of the lab that published the original result. Failure to replicate would result in a penalty. Worryingly, poor methods still won—albeit more slowly. This was true in even the most punitive version of the model, in which labs received a penalty 100 times the value of the original "payoff" for a result that failed to replicate, and replication rates were high (half of all results were subject to replication efforts).

The researchers' conclusion is therefore that when the ability to publish copiously in journals determines a lab's success, then "top-performing laboratories will always be those who are able to cut corners"—and that is regardless of the supposedly corrective process of replication.

Ultimately, therefore, the way to end the proliferation of bad science is not to nag people to behave better, or even to encourage replication, but for universities and funding agencies to stop rewarding researchers who publish copiously over those who publish fewer, but perhaps higher-quality papers. This, Dr Smaldino concedes, is easier said than done. Yet his model amply demonstrates the consequences for science of not doing so. ■

Wireless communication

In a whole new light

Lighting fixtures that also transmit data are starting to appear

FLICKERING lamps are normally a headache-inducing nuisance. But if the flickering happens millions of times a second—far faster than the eye can see or the brain respond to—then it might be harnessed to do something useful, like transmitting data. That, at least, is the idea behind a technology dubbed Li-Fi by its creators.

Li-Fi works with light-emitting diodes (LEDs), an increasingly popular way of illuminating homes and offices, and applies the same principle as that used by naval signal lamps. In other words, it encodes messages in flashes of light. It can be used to create a local-area network, or LAN, in a way similar to the LANs made possible by standard, microwave-based Wi-Fi.

Such LANs would, Li-Fi's supporters believe, have two advantages over standard Wi-Fi. One is that light does not penetrate walls. A Li-Fi LAN in a windowless room is thus more secure than one using Wi-Fi, whose microwave signals pass easily through most building materials and can thus be listened to by outsiders. The other advantage is that light does not interfere with radio or radar signals in the way that microwaves sometimes do. Li-Fi can therefore be installed in hospitals, nuclear plants and other sites where Wi-Fi might create dangerous interference with electronic kit.

One business about to benefit from this selectivity is commercial aviation. Though aircraft avionics have been hardened over the years, to reduce the risk of interference from radio and microwave signals, using Li-Fi would make absolutely certain. It would mean that LANs could be set up in

Once upon a time

the cabin, distributing entertainment to passengers and permitting those with Li-Fi-equipped phones and computers to contact the outside world.

This arrangement would also save on weight, as passenger-entertainment systems would no longer have to be fed by cables. To this end Airbus, a big European aircraft-maker, let Velmenni, an Indian firm, spend six months earlier this year installing and testing a Li-Fi network in a mocked-up passenger cabin of one of its planes. Velmenni hopes to use passengers' reading lights to broadcast the signal. Luciom, a French firm, is even further advanced. In January 2017 it will begin installing Li-Fi on passenger jets built either by Airbus or by its American rival, Boeing (a non-disclosure agreement forbids it from saying which one).

In the longer run, though, it is buildings that Li-Fi's manufacturers have their eyes on. PureLiFi, a British firm that sells components to lighting manufacturers, plans to use the same cable to carry power and data to the LEDs themselves. That should make the system simple to install. PureLiFi is also designing LEDs that radiate data even when dimmed, so that a film can be streamed into a room and shown with the lights down.

Installing a Li-Fi LAN, then, should not be too difficult. But for the technology to succeed, computers, phones and other signal-receiving devices will also have to be modified, so that they can pick up and reply to optical transmissions. To give that capability to existing kit engineers at Luciom have made a dongle that plugs into a standard USB port. This dongle contains both an ordinary LED (though it is one that emits infra-red flashes, which are invisible to the human eye) to send data to the LAN, and the opposite of an LED—a photodiode that converts light into electricity rather than the other way around—to receive data.

PureLiFi, looking further ahead to a time when Li-Fi has become routine, is miniaturising such components with the intention of embedding them into devices at the point of manufacture. Nor is it alone in this desire. Zero.1, based in Dubai, says it has managed to tweak the cameras in the latest smartphones to run Li-Fi. Perhaps more pertinently, the intentions of Apple, the world's most valuable listed company, were revealed earlier this year when it emerged that the term "LiFiCapability" is buried in the code of the iOS 9.1 operating system used by one of its most successful products, the iPhone.

Li-Fi may spread outdoors, too. Sunlight spoils its signals during the daytime, but in the hours of darkness Li-Fi-enabled streetlamps should work perfectly well. Gabe Klein, an entrepreneur who was once the boss of Chicago's transport department, says the city has begun testing the idea of adding Li-Fi to the LED-based street lighting now being installed there. One potential beneficiary of this idea, if it succeeds and spreads, is Trópico, a Brazilian streetlamp-maker. According to Daniel Auad, Trópico's owner, the Li-Fi-enabled streetlamps the firm is now working on should sell for about $325 a piece—a premium of only $75 over the non-enabled variety.

The technology may even be co-opted as a navigation tool in places, such as many buildings, that signals from the satellite-based global-positioning system cannot reliably penetrate. In this case the flickering LEDs act not as message-carriers but as beacons, permitting suitably equipped devices to locate themselves. Luciom has already installed such beacons in the ceiling lights of Orly airport, near Paris, and in a hypermarket in Lille. In Orly, the beacons (which are currently under test and used only by employees) will eventually show passengers to, for instance, the correct baggage carousel for their flight. In the hypermarket they direct shoppers with a Luciom dongle on their smartphones to the locations of desired items.

Li-Fi, then, seems to be developing as a useful addition to the list of ways electronic devices can communicate. That it will actually replace conventional Wi-Fi seems unlikely. But by extending the amount of spectrum available for communications it may, as it were, lighten the load. ■

Computerising archaeology

Burnt offering

How to read an old scroll without opening it

IN 1970 archaeologists digging at Ein Gedi, an ancient settlement on the shores of what is now called the Dead Sea, dug up the ark of a synagogue that had stood on the site from about 800BC until it was destroyed by fire in around 600AD. Within was a trove of scrolls but sadly, though the ark had protected them from the worst of the blaze, they were badly scorched. They were, indeed, so damaged that any attempt to handle them simply made things worse. That left archaeologists with a cruel dilemma: attempt to read their discoveries, which would destroy them, or preserve them as found, but remain ignorant of what they said.

Technology, however, marches on. In a paper just published in *Science Advances*, a team led by William Seales, a computer scientist at the University of Kentucky, describe how they have managed to read one of the charred scrolls without having to open it—or, indeed, to touch it at all.

The first part of Dr Seales's remote-reading method was to take an X-ray of the scroll—or, rather, multiple X-rays from different directions that could be combined by a computer into a three-dimensional representation of the scroll's interior. This is a well-established procedure. It is, for example, the basis of medical CAT scanning. The real wizardry came when the 3D image was fed into a series of computer algorithms that attempted to "unroll" the scroll virtually, leaving it to be read at an archaeologist's leisure.

To do this, the algorithms in question had to perform several tricky tasks, the first of which was to work out, purely from the swirling shapes present in the 3D model, how to distinguish particular layers of a rolled-up scroll from those above and below. In the case of the Ein-Gedi scroll, that was made harder by the fire, which had damaged individual layers unpredictably.

This done, the next step was to look for subtle density variations that might correspond to the presence or absence of ink—and thus reveal individual letters. The final task was to take the hundreds of small images spat out by the algorithms and stitch them into a single, larger one. This was a matter both of science and of art. The algorithms got the jigsaw right only half of the time, meaning people had to do much of the work by hand.

The result, though, was worth the effort. The outcome of Dr Seales's labour is a computer image showing the scroll as it would look if it were unrolled (see picture). The resolution is so good that the text is easily legible, as are the guidelines scored by its scribe. The scroll, which was written around 200-300AD, turns out to be part of Leviticus. It is thus the oldest known example of one of the books of the Pentateuch, the first five books of the Bible.

A tour de force, then—and not, Dr Seales hopes, a one-off. His technique should be usable on other damaged scrolls, of which archaeologists have plenty. Besides those recovered from Ein Gedi, there is, for example, the trove found in the library of a villa in Herculaneum, a Roman town that was destroyed by an eruption of Vesuvius in 79AD. Similar techniques to Dr Seales's have read parts of some of these, but no one has yet "unrolled" one in its entirety. Other objects, such as lockets or amulets that have written messages (of love, perhaps, or prayers or magical spells of protection) inside them, should be suitable too. There is even a rumour that America's spooks are interested. It is not only archaeologists who might want to read something without opening it. ■

Read all about it

Vaccine manufacture

Rehydration therapy

A new technique may democratise vaccine production

MAKING vaccines often involves growing bugs—and these days the bugs in question are frequently genetically modified. There are, with good reason, strict regulations about the use and transport of such modified organisms, for fear that something bad might escape and thrive in the wild. And this has led to vaccine-producing bugs being grown in secure, centralised "foundries", whence their products are distributed to the wider world.

That works well when the relevant bits of the wider world have decent infrastructure for handling vaccines—particularly networks of reliable refrigerators, known as cold chains, to keep them stable. But this is not always so, especially in certain parts of the tropics, where vaccines are often needed most. So it would be nice to have a safe and robust way of making vaccines on site in such places, thereby shortening the cold chain. And, as he reports in *Cell*, James Collins of the Massachusetts Institute of Technology thinks that he may have developed one.

The fear of an engineered bug escaping and thriving does not extend to bits of bugs, since these cannot reproduce by themselves. Dr Collins therefore set himself the task of assembling a vaccine factory consisting only of the cellular components needed to synthesise the pertinent molecules, rather than of whole cells—and doing so in a way that could be freeze-dried for easy transport and storage.

He knew from previous work on these components that it was possible to isolate ▸▸

and freeze-dry them individually in ways that permitted them to be reactivated by the addition of water. What he did not know was whether they could then be assembled into something that would yield medically useful proteins if provided with the appropriate DNA.

Building on the previous work, he and his colleagues studied how solutions containing rehydrated protein-production machinery responded when given DNA templates that encoded (among other things) the antigens used to make vaccines against anthrax, botulism and diphtheria. All were readily turned out by the rehydrated cellular machinery.

In the case of diphtheria they also tried exposing their antigens to the antibodies which need to bind to them in order to let the immune system develop resistance. Such binding, they found, took place—meaning antigens produced this way might, in principle, be used as a vaccine. Given that diphtheria vaccine is extremely sensitive to temperature and is thus one of the most challenging to distribute to remote places, this is an encouraging result. If it can be commercialised, the process of vaccine manufacture and distribution might be greatly simplified. ■

Data security

That's the way to do it

A Cambridge don shows the FBI how to save money on phone hacking

IN FEBRUARY the Federal Bureau of Investigation (FBI), America's national police force, took Apple, a tech giant, to court. At issue was an iPhone that had belonged to Syed Farook, a terrorist who, with his wife, had shot and killed 14 people in California the previous December. Farook was subsequently killed.

The FBI wanted Apple to write a special operating system to let it bypass the phone's security and get at any data stored inside. Apple objected, on the ground that doing so would undermine the security of its own products and that, once created, such a digital "skeleton key" would pose a risk to every iPhone in existence. The FBI, for its part, insisted there was no other way into the iPhone in question.

Security experts were dubious about the bureau's argument. A paper published by Sergei Skorobogatov, a computer scientist at Cambridge University, proves that they were right to be sceptical. Farook's phone, it seems, could probably have been cracked in two days, using off-the-shelf electronics equipment, for less than $100.

The problem the FBI faced was that the phone was encrypted, as are all iPhones. It was also locked with a PIN. Encryption meant the information stored in it was a mass of meaningless gibberish. To restore it to readability required that the phone be unlocked, by entering the PIN correctly. On the face of it, that is not a big obstacle. By default, such codes are four digits long, giving only 10,000 possible combinations. In principle, it is easy to try every combination until you hit the right one by chance.

But iPhones also contain features designed to make such "brute-forcing" hard. After six wrong guesses a user must wait a minute before trying again. That delay rises rapidly with subsequent failures. And iPhones can also be set to wipe themselves clean after ten failed attempts to log in.

At the time of the court case, therefore, several independent experts suggested the FBI try something called NAND mirroring ("NAND" refers to the type of memory used in smartphones). James Comey, the FBI's boss, said that would not work. But it is exactly what Dr Skorobogatov has done. NAND mirroring makes a copy of a phone's memory in its undisturbed state. Using an iPhone of his own, Dr Skorobogatov was able repeatedly to overwrite its memory with the copy he had made before he began his guesses. This caused the instrument to forget that he had made any guesses at all, avoiding any temporary lockouts and ensuring that the data would never be wiped clean. That, in turn, permitted him to brute-force the PIN six guesses at a time, resetting the phone to its original condition between each batch of guesses.

Each PIN must be entered by hand, which is laborious. Resetting the phone's memory requires that the device be rebooted, which takes several seconds each time. An exhaustive check of all 10,000 variants of a 4-digit PIN would therefore take about 40 hours, he reckons, although on average the time to find the correct number will be half as long.

Why, then, did the FBI believe going to court was the only way to recover Farook's data? One suspicion at the time was that it did not. Instead, it wanted to set a broader legal precedent, forcing information-technology firms to help it when asked. On this view, the case was chosen because refusing would make Apple look bad.

In the event, the bureau pulled out just before an appeal was to be held. And it did, eventually, find a way into the phone. Reports suggest it paid an unknown cyber-security company $1.3m to hack the phone. On the basis of Dr Skorobogatov's evidence, it seems it overpaid by $1,299,900. ■

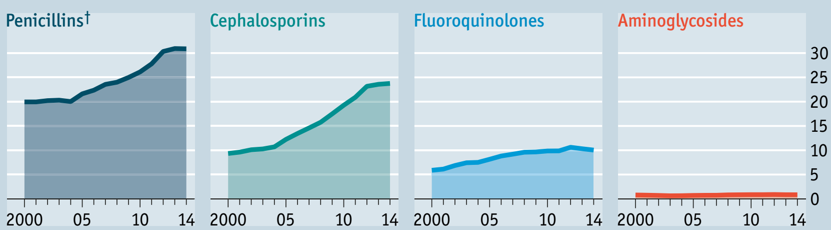
Resistance to antibiotics

All around the world, drug-resistant infections are on the rise. They now kill more than 700,000 people a year. In 2014 nearly 60% of samples of *Escherichia coli*, a common gut bacterium, collected from patients in hospital were strains that could not be treated with penicillins. About 25% were resistant to one or both of two other commonly used sorts of antibiotics.

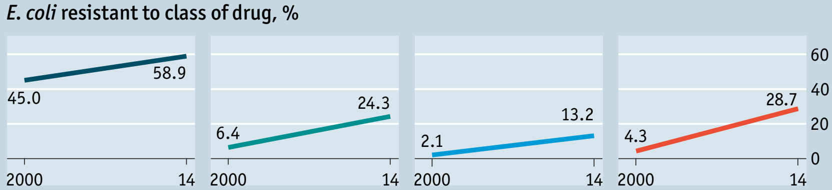
The main reason for this resistance is overuse of antibiotics by people, both on themselves and on their animals. Between 2000 and 2014, the number of standard doses of antibiotics used increased by 50%. By 2050 drug-resistant infections could cost between 1.1% and 3.8% of global GDP, according to a report published on September 19th by the World Bank.

Two days later, the United Nations held a meeting of heads of state to mull the matter over—only the fourth occasion that the General Assembly has debated a health problem. The assembly did not adopt any targets to curb the use of antibiotics, as some scientists have urged it to do. But its members did promise to draw up and pay for national plans to tackle the issue. There is no time to waste: on current trends, drug-resistant bugs could kill as many as 10m a year by 2050.

Standard doses of antibiotics consumed worldwide*, bn



E. coli resistant to class of drug, %



Source: Centre for Disease Dynamics, Economics & Policy

*By humans only †Broad spectrum only

Also in this section

For daily analysis and debate on books, arts and culture, visit

Economist.com/culture

American art

Rediscovery

How forgotten African-American artists are coming back into the mainstream

THROUGHOUT history artists' canvasses have mostly been stretched on a frame. "Carousel Change" is an exception. This work, painted by Sam Gilliam in 1970, hangs loosely from five knots, a mass of glowing pink, yellow and orange folds like a partly gathered sail. It hangs in the California home of Pamela Joyner, a prominent collector of African-American art. Nicholas Cullinan, who has curated several important American art exhibitions, calls Mr Gilliam "one of America's greatest living abstract painters". Which will surprise some, because even in the art world there are those who do not know of the 82-year-old African-American.

Ms Joyner is one of several private collectors who are pushing museums to show more work by black Americans—not just by today's superstars, but also by their forgotten predecessors. Their efforts are paying off. In 2015 the Obamas hung a new acquisition, a radiant circle painting by Alma Thomas, a pioneering abstract artist, in a prominent position in the White House (pictured). Placed near works by Josef Albers and Robert Rauschenberg, two white men who are much more famous, it was a statement.

On September 24th the president will open the National Museum of African-American History and Culture in Washington, DC: in the lobby is a lustrously glazed installation by Mr Gilliam. The trend is spreading. The Kunstmuseum Basel also has plans for a Gilliam show. Next month the Musée du Quai Branly in Paris will open an exhibition of almost 150 years of African-American art. And in 2017 Tate Modern will mount a show of mid-20th-century black American artists. Ms Joyner's 300 works dating back to the 1950s, the subject of a book published this month, will form the basis of a touring show, starting at the Ogden Museum in New Orleans at the end of next year.

The embarrassing, some say shameful, question is how artists like Mr Gilliam and Thomas, and Norman Lewis, another abstract expressionist, were ever forgotten. Lewis was the only black artist to take part in the discussions that founded abstract expressionism at Studio 35 in New York in 1950, alongside Willem de Kooning and Robert Motherwell. Thomas became, in 1972, the first black woman to have a solo show at the Whitney Museum of American Art. Mr Gilliam, early in his career, was given a rare introductory exhibition at the Museum of Modern Art (MOMA).

But in the 1960s, 1970s and 1980s, African-American abstract artists were caught in a lose-lose situation. "The conventional art world expected black painters to paint black subject matter; meanwhile the black community felt that the artistic community should create uplifting images of black people," Ms Joyner says. Figurative artists, like Charles White, a socialist-realist, were often considered by museums to be formally uninventive. All found it hard sustaining a presence in what was, by today's standards, a small, exclusive art market.

Forty years later the picture has radically changed. A younger generation of black American artists—Kerry James Marshall, Glenn Ligon, Kehinde Wiley, Kara Walker, Theaster Gates and Njideka Akunyili Crosby (see following article)—have found international success. Next year Mark Bradford, a social-abstractionist based in Los Angeles, will represent America at the Venice Biennale. Christopher Bedford, director of the Baltimore Museum of Art, calls Mr Bradford "one of the most significant painters of his generation".

These artists did not forget their African-American predecessors; indeed, they often championed them in discussions about their work. This endorsement has influenced the art market, especially as collectors often start with contemporary art and work back. Mr Bradford is represented by one the market's leading galleries, Hauser & Wirth, which earlier this year took on one of his inspirations, a 76-year-old abstract painter, Jack Whitten. "The market is hungry for material, and if the material is good—and relatively undervalued—it will eat it up," says Franklin Sirmans, director of the Pérez Art Museum in Miami. Swann Galleries, which has dedicated African-American sales, confirms that the market for many of the older generation of artists is growing rapidly.

Mr Gilliam's prices at auction have risen threefold in just three years. Last December a work by Lewis set a record at Swann, making just under $1m. "Norman Lewis is the founding father of African-American abstract painting and has had a significant influence on the painters of today," says Mr Bedford.

Market validation is one thing, but for ▸▸

many collectors, it is museums that really matter. In America and increasingly abroad, museums are dependent on philanthropists to collect art, fund exhibition programmes and lend works. Young curators who are keen to make their mark are working more and more closely with philanthropists eager to make a case for under-represented artists. Patrons like Patricia Phelps de Cisneros and Estrellita Brodsky have helped museums build their Latin American collections. Now philanthropists like Raymond McGuire, a banker, and A.C. Hudgins, a collector, are doing the same for African-American artists.

Ms Joyner says that 30 years ago Lowery Sims, the first black curator at the Metropolitan Museum of Art, "planted the seed in my mind, that these artists don't get enough backing from the traditional art world, so it's necessary for the African-American community to instigate and participate in their support." A member of the president's committee on arts and humanities, a trustee of the Tate Americas Foundation and on the board of the Art Institute of Chicago, she says she approached her art activities "with a mission and a strategy to be a catalyst to reframe history".

As the displays at Tate Modern and MOMA demonstrate, museum collections are changing. For a few, this represents the triumph of identity politics over aesthetic value. For many more, it is a reminder that museums are not, and never were, neutral spaces; their collections and judgments are shaped by the new as much as they are by new vistas on the old. It is a chance to contemplate a wider, more complex and exciting narrative: how African-American artists show a different version of America, and how some, like Mr Gilliam, have changed the language of art itself. ■

Contemporary art

Join the queue

Managing one African-American artist's career

NJIDEKA AKUNYILI CROSBY, a young artist based in Los Angeles, is currently the talk of the art world. Dozens of wealthy collectors want to buy her latest works, yet none is for sale—at least, not to private individuals.

Ms Crosby's first European solo show will open at the Victoria Miro Gallery in London on October 4th, the week that Frieze Art Fair starts. Now 33, she moved from Nigeria to America at the age of 16. Her "Afropolitan" identity has forged a highly distinctive visual style. She works mostly on paper, creating large-scale interiors that combine serene human figures with dense areas of collage and image-transfer that subversively evoke her Nigerian heritage. "Her paintings have a distinct vocabulary," says Glenn Scott Wright, a director at Victoria Miro, which represents Ms Crosby. "You can go around an art fair with 10,000 works and you would know hers immediately."

In June, at the Art Basel fair in Switzerland, the gallery sold Ms Crosby's "Super Blue Omo" (pictured), a painting from 2016. The buyer was the Norton Museum of Art in West Palm Beach, Florida. Having held the first major museum survey of the artist earlier this year as part of its "Recognition of Art by Women" series, it was at the head of a queue of more than a dozen public institutions waiting to buy Ms Crosby's painstakingly crafted works. Victoria Miro has pitched the prices at below $100,000, enabling museums to buy with their own funds.

The smile is real

In March at the Armory Show in New York, Victoria Miro offered a self-portrait diptych, showing Ms Crosby seated on a wooden chair, that was bought by the Whitney Museum of American Art. Displayed, at the artist's request, unframed and suspended from metal clips, it can currently be seen in the museum's "Human Interest: Portraits from the Whitney's Collection" exhibition in New York. Other works have been acquired by Tate Modern in London, the Museum of Modern Art in New York, the Los Angeles County Museum of Art and the Yale University Art Gallery.

"Super Blue Omo" will be one of ten works in Victoria Miro's Crosby show, "Portals". About half of these will be new paintings that will be for sale, but only to public museums (private museums also cannot buy her work). "We don't want her art to become all about money and reselling," says Mr Scott Wright, who estimates that it will take another two years before Victoria Miro begins to offer the artist's work to private collectors.

Meanwhile, the waiting list of museums has risen to 18. For all Victoria Miro's attempts to keep the stopper in, though, the resale market for Ms Crosby's work may be about to be released from the bottle. On September 29th, at Sotheby's, a private New York collector is selling "Untitled", a painting from 2011, at an estimated price of $18,000-$25,000. With its pair of bare feet in front of a mirror, this might not be the most alluring of her compositions. But it is the first to appear at auction. Food for the impatient.

Shirley Jackson

Ghost stories

Shirley Jackson: A Rather Haunted Life. By Ruth Franklin. *Liveright; 607 pages; $35 and £25*

NEARLY 70 years after it was first published, Shirley Jackson's short story, "The Lottery", is still chilling. It begins benignly: on an otherwise "clear and sunny" day, every household in an unnamed village gathers to draw lots. But this unfussy account of an arcane local ritual ends with screams. "It isn't fair," cries the woman with the marked slip as everyone, even her own children, pelts her with stones.

Never before had the *New Yorker*, which printed the story, received so much mail about a work of fiction. Calling it "shocking" and "pointless", many outraged readers cancelled their subscriptions. Others were simply confused. Jackson, then a 31-year-old mother of two and pregnant again, wrote the story in a single sitting, but was never able to offer consistent explanation for what it was about. The notion that otherwise ordinary villagers were capable of such extraordinary inhumanity seemed fairly obvious to her, especially after the second world war.

Jackson would complete ten books for adults—two of them bestsellers—before she died of heart failure at 48 in 1965. Yet she is still known primarily for "The Lottery", which was published in an anthology of American classics for students as early as 1950. This oversight of her other work is a shame, writes Ruth Franklin in her lively and authoritative new biography. The

Hidden turmoil

problem, she suggests, is that critics have tended to underestimate Jackson's haunting stories, often dismissing them as genre fiction. But the author needs to be seen among such American Gothic masters as Henry James and Edgar Allan Poe, who used terror as a way to reveal the darkest corners of the psyche.

Jackson wrote mostly about women. Before the rise of feminism, she considered those who wanted to be more than obedient wives and mothers. Many of her novels, particularly her late, great "The Haunting of Hill House" (1959) and "We Have Always Lived in the Castle" (1962), essentially transform a home into a prison. Quite a few of her heroines go mad. Even as Jackson sold amusing essays to women's magazines about her madcap life with four children and a hapless husband, her menacing fiction revealed the turmoil roiling beneath the surface. "Her body of work constitutes nothing less than the secret history of American women of her era," Ms Franklin writes.

Born to a well-to-do family, Jackson always felt an outsider. She never met the expectations of her mother, who would criticise her all her life. Ms Franklin suggests that this toxic relationship not only informed Jackson's fiction (her heroines are all "essentially motherless"), but also prepared her for marriage to Stanley Edgar Hyman, a literary critic she met at university, who tormented her with his cruelty and infidelity. As both a housewife and breadwinner, Jackson struggled to balance life and work (like many men of his generation, Hyman refused to lift a finger at home). But she found that motherhood helped her writing, as it forced her to concentrate during the few hours she could steal at her typewriter.

Hyman's hectoring and her mother's apparent disdain steadily eroded Jackson's confidence and precipitated an extended bout of agoraphobia, which imprisoned her in her home. She seemed destined to live the remainder of her days like one of the lonely and anxious characters from her stories. But she began writing and lecturing again before she died. Jackson may have been unable to venture out on her own, but she plotted her escape in her fiction. In a novel she began writing before she died, the narrator abandons her husband and children and takes a room in a boarding house. "All I had", she writes, "was myself." ■

The Pentagon

The space between

How Everything Became War and the Military Became Everything: Tales from the Pentagon. By Rosa Brooks. *Simon & Schuster; 438 pages; $29.95*

IT SEEMED simple enough. The White House wants a surveillance drone to monitor an evolving showdown over human rights in Kyrgyzstan. A member of staff at the National Security Council calls the author, Rosa Brooks, at the Pentagon to tell her to send it on its way. Ms Brooks explains that this is not how the chain of command works in the military. Where would the drone come from? Which job would it no longer be doing? Who was going to pay for it? Whose airspace would it operate from? The incredulous response: "We're talking about like, one drone. You're telling me you can't just call some colonel at CentCom and make this happen?"

The story illustrates two themes in an interesting and worrying book, "How Everything Became War and the Military Became Everything". The first is the growing tendency of politicians and bureaucrats in Washington to turn to the armed forces when something, almost anything, needs doing. The second, despite or perhaps because of this, is the gulf in understanding that is making civil-military relations increasingly fraught. But Ms Brooks has a wider purpose, which is to examine what happens to institutions and legal processes when the distinctions between war and peace become blurred and the space between becomes the norm, as has happened in America in the decade and a half since the attacks of September 11th 2001.

Ms Brooks, a law professor at Georgetown University and a columnist for *Foreign Policy*, has direct experience of what she writes. Not only did she marry a lieutenant-colonel in the army's special forces, but she went to work for the "vast, bureaucratic death-dealing enterprise", otherwise known as the Pentagon, in 2009, serving for two years as an adviser to the formidable Michèle Flournoy (who would probably be defence secretary in a Clinton administration).

What she found there is that as the money available for conventional diplomacy and development aid precipitately declines, so the armed forces with their relatively inexhaustible resources are called upon to fill the gap. As one general puts it, the American military is becoming "a Super Walmart with everything under one roof". Because its culture is proudly can-do, it gets on with the demands made on it without much complaint.

One consequence is that actual fighting has become something that only a small minority of soldiers do. Ms Brooks finds that through the recent, long wars most soldiers have spent their time supervising the building of wells, sewers and bridges, resolving community disputes, working with local police, writing press releases, analysing intelligence and so on. In many ways, Ms Brooks finds this admirable. The problem, she says, is that soldiers are not necessarily the best people to do this kind of work, lacking the inclination, the training or the experience to be much good at it.

The hope in the Pentagon nowadays is that it can return to its core purpose of deterring and preparing for proper, high-tech state-on-state wars. Counter-insurgency and nation-building have fallen out of fashion. Hillary Clinton has recently echoed Barack Obama in promising no "boots on the ground" in Iraq (despite the fact that there are about 5,000 pairs of them there and twice as many in Afghanistan). The reality is that you do not always get to choose the kind of wars you fight or how you fight them. ▸▸

The muddying of the lines that normally exist between peace and war also has implications for what happens at home. Laws may be suspended or passed during a war that has a clear beginning and end without too much lasting damage. But when a state of semi-war becomes more or less permanent, the erosion of basic legal and democratic principles becomes a greater danger. The difficulty in closing down Guantánamo; the continuing arguments over where the line between vigorous interrogation and torture lies; the legal murkiness of using drones to carry out the targeted killing of America's enemies are all reasons for concern.

Ms Brooks struggles to find solutions to these intractable problems. But she suggests that a more phlegmatic approach to the limited threat that terrorism really represents, along with an acceptance that eradicating it may not be possible, would allow people to think more clearly about how far they want to sacrifice civil liberties in responding to it.

She also calls for better understanding by politicians and national-security civilians of what the armed forces can and should be used for. Yet while she deplores the tendency to "dial 1-800-Military" whenever there is a problem, she sees no way out of the continuing expansion of the army's role. If that is so, she argues, perhaps the best option is to start recruiting into the armed forces more of the kind of people who can respond effectively to a wide range of "complex and often inchoate threats" from refugee flows driven by climate change, ethnic conflicts, cyber-attacks or terrorists intent on developing biological weapons. In other words, military skills would be integrated with civilian skills "within a single large but agile organisation". It is a nice idea. But one guaranteed to annoy almost everybody. ■

Johnson | Hidden in plain sight

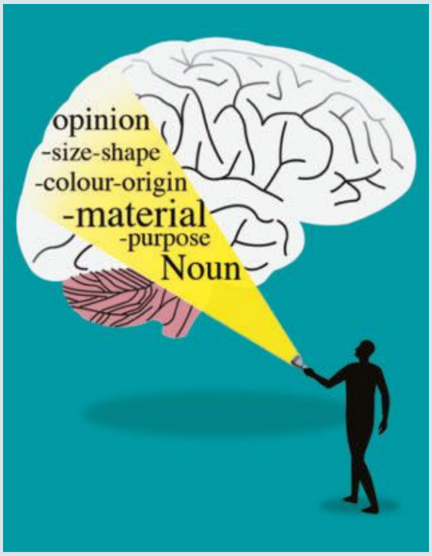
Most people don't know they know most of the grammar they know

WHO can say what order should be used to list adjectives in English? Mark Forsyth, in "The Elements of Eloquence", describes it as: opinion, size, age, shape, colour, origin, material, purpose and then Noun. "So you can have a lovely little old rectangular green French silver whittling knife. But if you mess with that word order in the slightest you'll sound like a maniac." Mr Forsyth may have exaggerated how fixed adjective order is, but his little nugget is broadly true, and it has delighted people to examine something they didn't know they knew.

Clearly, then, the discipline of linguistics needs a marketing overhaul, because this is exactly what linguistics consists of: describing the rules, many of them hidden and not obvious, of the human language ability. Given how eagerly word-nerds recently shared this tit-bit about adjective order on social media, the lecture-halls for linguistics classes should be crammed to the rafters.

Instead, as most linguists only too ruefully admit, upon confessing their profession at cocktail parties they tend to be told: "Oops, better watch my grammar around you." Just as many psychologists moan that outsiders think the discipline is mainly about abnormal psychology, linguists haven't sufficiently spread the word that they are not out to ban split infinitives or correct the misuse of "whom". They consider themselves scientists (in a discipline that overlaps with psychology, cognitive science and others) in trying to learn how the human mind works.

They've found out many wonderful things about rules you know, but don't know you know. For example, a question can be formed from a statement by turning the questioned element into a question-word (like "where") and moving it to the front of a sentence. "Steve went to Toronto. Where did Steve go?" But that doesn't work when the element in question is itself a clause: in "John wonders where Steve went to university" "went" can't become "Where does John wonder that Steve went to university?" Everyone knows that the latter is awkward or even unacceptable, but very few people outside the world of linguistics know why. In fact, it took linguists themselves quite a while to work out the details.



There are hidden rules not just in grammar, but at every level of language production. Take pronunciation. The –s that marks a plural in English is pronounced differently depending on the previous consonants: if the consonant is "voiced" (ie, the vocal chords vibrate, as in "v", "g" and "d"), then the –s is pronounced like a "z". If the consonant is "unvoiced" (like "f", "k" and "t"), then the –s is simply pronounced as an "s". Every native English-speaker uses this rule every day. Children master it by three or four. But nobody is ever taught it, and almost nobody knows they know it.

Because linguists spend their careers trying to tease out what people actually do say and why, they get cross when people equate "grammar" with a host of rules that most people don't actually observe. Take the so-called rule against ending sentences with a preposition. In fact, saying things like: "What are you talking about?" is deeply embedded in the grammar of English. "About what are you talking?" strikes real speakers of English as absurd. So it annoys linguists to no end to hear the latter "rule" associated with "grammar", while the real, intricate grammar already embedded in the mind is ignored.

Sometimes our mental grammars don't know what to do with unusual cases. Take the newish verb "to greenlight", meaning to approve a project. What is its past tense? "Light" has the past tense "lit". But some people go for "greenlighted" (*Variety*, a film-industry magazine, prefers this) whereas others go for "greenlit". Why the confusion? It's because "to greenlight" was formed anew from a noun phrase, "a green light". One mental rule is that new words are always regular; hence "greenlighted". But other people's mental grammars see "greenlight" as a form of the verb "to light", an existing irregular verb with the past tense "lit"; hence "greenlit".

This implicit grammatical knowledge overwhelms, in its intricacy and depth, the relatively few rules that people must be consciously taught at school. But since the implicit stuff is hidden in plain sight, it gets overlooked. It is cheering to see that things like the adjective-order rule can go viral on social media. Perhaps it can make people more likely to associate "grammar" not with drudgery, but with fascinating self-discovery.

THE FLETCHER SCHOOL

TUFTS UNIVERSITY

"GMAP is a unique program that has made me think deeply and differently about how the world works."

– *Per-Olof Schroeder,* GMAP 14
Senior Director, Microsoft Office Division Western Europe

Courses Include:
Corporate Finance and Global Financial Markets
Foreign Policy Leadership
International Business and Economic Law
International Macroeconomics
International Negotiation
International Politics
International Trade
Leadership and Management
Security Studies
Transnational Social Issues

CLASSES START JANUARY AND JULY.

GLOBAL MASTER OF ARTS PROGRAM

An intensive, one-year master's degree program in international affairs, GMAP brings together distinguished mid- and senior-level leaders to examine issues at the intersection of business, law, diplomacy, finance, development, and geopolitics. The GMAP hybrid learning format offers the ability to pursue a graduate degree program without career interruption or relocation.

MEET GMAP ON THE ROAD

Washington, D.C.: September 29
Singapore: October 19
Jakarta, Indonesia: October 20
Brussels, Belgium: October 17–18
Germany (multiple cities): October 19–25
New York City: November 3
Abu Dhabi, UAE: November 14–15
Dubai, UAE: November 16–18
London, England: December 1

Visit us at fletcher.tufts.edu/GMAP and contact us at fletcher-gmap@tufts.edu for more information and to RSVP.

Tenders

SPECIFIC PROCUREMENT NOTICE (SPN)

The Liberia Electricity Corporation (LEC) Announces:

Request for Qualification (RFQ) for a Management Services Contract (MSC)

Monrovia, Liberia
September 23, 2016

1. The United States of America, acting through the Millennium Challenge Corporation (MCC) and the Government of Liberia (the"Government" or"GOL") have entered into a Millennium Challenge Compact for Millennium Challenge Account assistance to help facilitate poverty reduction through economic growth in Liberia (the Compact) in the amount not to exceed US$256,726,000. Liberia's Compact entered into force on January 20, 2016.

2. The Liberia Electricity Corporation (LEC), is conducting the procurement using a Quality and Cost Based Selection (QCBS) method in accordance with MCC Program Procurement Guidelines, which are provided on the MCC website *(www.mcc.gov/ppg)* to select a bidder to serve as Operator of the LEC system under a three year management services contract, with an option of extending for another two years (the MSC). The Liberia Electricity Corporation (LEC) now invites applicants to submit a Pre-Qualification Application. More details on the format and details of the Application are provided in the Request for Qualifications (RFQ).

3. A Pre-Application Webinar will be held as described in the Proposal Data Sheet (PDS), Section II of the RFQ, on **October 6, 2016 at 3 PM GMT**.

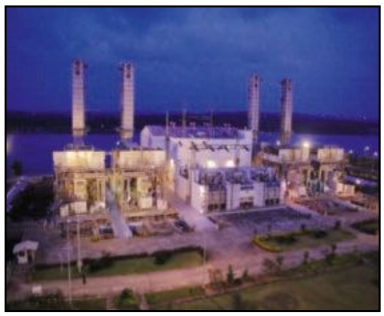
   Applicants should use the link at
   https://attendee.gotowebinar.com!register/8221157669972075778
   to register for the Webinar.

4. Potential Applicants interested in receiving the RFQ and submitting an Application should register their interest by sending an e-mail with subject: **RFQ for MSC for Liberia Electricity Corporation** to mscliberia@patrp.com, giving full contact details of the Applicant; this will ensure that the Consultants receive updates regarding this RFQ. The RFQ will be sent free of charge, electronically in pdf format.

Ian Yhap,
Chairman,
LEC

Business Opportunities

Barge Mounted Power Plant For Sale



- Natural Gas based 250 MW (ISO condition) barge mounted Combined Cycle Power Plant for sale
- Plant configured on aero derivative Gas Turbines (GE, USA) and once through Steam Generators (IST, Canada) on single barge
- Amenable for
  - Fast relocation
  - Fuel conversion
  - Conversion to DualFuel capability
- Operating frequency of 50 Hz and evacuation voltage of 220 kV/230 kV
- The Gas Turbines have clocked nearly 35,000 hours and are in very good operating condition. They have useful life of more than 20 years.

Interested parties may contact us by e-mail at:

powerbargesale@gmail.com

Economic data

% change on year ago

	Gross domestic product			Industrial production	Consumer prices		Unemployment rate, %	Current-account balance		Budget balance	Interest rates, %	Currency units, per $	
	latest	qtr*	2016†	latest	latest	2016†		latest 12 months, $bn	% of GDP 2016†	% of GDP 2016†	10-year gov't bonds, latest	Sep 21st	year ago
United States	+1.2 Q2	+1.1	+1.5	-1.1 Aug	+1.1 Aug	+1.3	4.9 Aug	-488.2 Q2	-2.6	-3.2	1.67	-	-
China	+6.7 Q2	+7.4	+6.6	+6.3 Aug	+1.3 Aug	+2.0	4.1 Q2§	+256.1 Q2	+2.7	-3.8	2.58§§	6.67	6.37
Japan	+0.8 Q2	+0.7	+0.5	-4.2 Jul	-0.5 Jul	-0.1	3.0 Jul	+167.6 Jul	+3.4	-5.0	-0.03	101	121
Britain	+2.2 Q2	+2.4	+1.6	+2.1 Jul	+0.6 Aug	+0.7	4.9 Jun††	-161.9 Q1	-5.4	-3.9	0.95	0.77	0.65
Canada	+0.9 Q2	-1.6	+1.2	-1.3 Jun	+1.3 Jul	+1.7	7.0 Aug	-51.1 Q2	-3.2	-2.5	1.15	1.32	1.32
Euro area	+1.6 Q2	+1.2	+1.5	-0.5 Jul	+0.2 Aug	+0.3	10.1 Jul	+384.5 Jul	+3.2	-1.8	nil	0.90	0.89
Austria	+1.2 Q2	+2.7	+1.3	+0.9 Jun	+0.6 Aug	+1.0	6.0 Jul	+10.5 Q1	+2.8	-1.4	0.13	0.90	0.89
Belgium	+1.4 Q2	+2.2	+1.3	+6.3 Jun	+2.2 Aug	+1.8	8.3 Jul	+6.5 Mar	+1.2	-2.8	0.25	0.90	0.89
France	+1.4 Q2	-0.2	+1.3	-0.1 Jul	+0.2 Aug	+0.3	10.3 Jul	-22.5 Jul‡	-0.5	-3.3	0.28	0.90	0.89
Germany	+1.7 Q2	+1.7	+1.6	-1.2 Jul	+0.4 Aug	+0.4	6.1 Aug	+300.2 Jul	+8.4	+0.4	nil	0.90	0.89
Greece	-0.4 Q2	+0.7	-0.6	+4.1 Jul	-0.9 Aug	nil	23.4 Jun	+0.3 Jul	-1.1	-4.5	8.61	0.90	0.89
Italy	+0.8 Q2	+0.1	+0.8	-0.3 Jul	-0.1 Aug	nil	11.4 Jul	+54.5 Jul	+2.3	-2.6	1.29	0.90	0.89
Netherlands	+2.3 Q2	+2.5	+1.5	+2.4 Jul	+0.2 Aug	+0.3	7.2 Aug	+62.0 Q1	+9.8	-1.4	0.09	0.90	0.89
Spain	+3.2 Q2	+3.4	+2.9	-5.2 Jul	-0.1 Aug	-0.4	19.6 Jul	+22.7 Jun	+1.3	-4.3	1.06	0.90	0.89
Czech Republic	+3.6 Q2	+3.7	+2.4	-14.0 Jul	+0.6 Aug	+0.7	5.3 Aug§	+3.7 Q2	+1.2	-0.5	0.29	24.3	24.2
Denmark	+1.0 Q2	+1.8	+1.1	+2.2 Jul	+0.2 Aug	+0.8	4.2 Jul	+18.1 Jul	+6.8	-2.5	0.09	6.69	6.66
Norway	+2.5 Q2	+0.1	+1.0	-1.4 Jul	+4.0 Aug	+3.5	5.0 Jul‡‡	+23.6 Q2	+5.3	+3.0	1.27	8.32	8.22
Poland	+3.0 Q2	+3.6	+3.1	+7.4 Aug	-0.8 Aug	-0.8	8.5 Aug§	-1.3 Jul	-0.8	-2.9	2.86	3.86	3.74
Russia	-0.6 Q2	na	-0.5	+0.7 Aug	+6.8 Aug	+7.1	5.2 Aug§	+38.4 Q2	+3.3	-3.7	8.19	64.3	66.2
Sweden	+3.4 Q2	+2.0	+3.3	+4.2 Jul	+1.1 Aug	+1.0	6.6 Aug§	+25.4 Q2	+5.6	-0.4	0.29	8.60	8.35
Switzerland	+2.0 Q2	+2.5	+1.1	-1.2 Q2	-0.1 Aug	-0.5	3.4 Aug	+66.1 Q2	+9.7	+0.2	-0.38	0.98	0.97
Turkey	+3.1 Q2	na	+3.2	-8.4 Jul	+8.0 Aug	+7.7	10.2 Jun§	-28.9 Jul	-4.7	-2.0	9.79	2.98	3.00
Australia	+3.3 Q2	+2.1	+2.8	+3.7 Q2	+1.0 Q2	+1.3	5.6 Aug	-52.8 Q2	-4.4	-2.1	2.13	1.32	1.40
Hong Kong	+1.7 Q2	+6.5	+1.5	-0.6 Q2	+2.4 Jul	+2.5	3.4 Aug‡‡	+11.7 Q1	+2.7	nil	1.09	7.76	7.75
India	+7.1 Q2	+5.5	+7.6	-2.4 Jul	+5.0 Aug	+5.2	4.9 2013	-16.2 Q2	-1.2	-3.8	7.04	67.0	65.7
Indonesia	+5.2 Q2	na	+5.0	+7.1 Jul	+2.8 Aug	+3.8	5.5 Q1§	-18.7 Q2	-2.2	-2.4	6.95	13,136	14,458
Malaysia	+4.0 Q2	na	+4.3	+4.1 Jul	+1.5 Aug	+1.9	3.4 Jun§	+5.3 Q2	+1.2	-3.4	3.59	4.14	4.27
Pakistan	+5.7 2016**	na	+5.7	nil Jun	+3.6 Aug	+3.9	5.9 2015	-2.5 Q2	-0.7	-4.6	8.03†††	105	104
Philippines	+7.0 Q2	+7.4	+6.3	+10.1 Jul	+1.8 Aug	+1.7	5.4 Q3§	+3.2 Jun	+2.5	-1.3	3.61	47.9	46.5
Singapore	+2.1 Q2	+0.3	+1.8	-3.6 Jul	-0.7 Jul	-0.7	2.1 Q2	+58.4 Q2	+19.4	+0.7	1.85	1.36	1.41
South Korea	+3.2 Q2	+3.2	+2.6	+1.6 Jul	+0.4 Aug	+1.0	3.6 Aug§	+104.4 Jul	+7.4	-1.3	1.60	1,120	1,175
Taiwan	+0.7 Q2	+0.2	+0.6	-0.4 Jul	+0.6 Aug	+1.3	4.0 Aug	+75.7 Q2	+13.5	-0.6	0.75	31.4	32.5
Thailand	+3.5 Q2	+3.2	+3.0	-5.1 Jul	+0.3 Aug	+0.3	1.0 Jul§	+42.4 Q2	+8.0	-2.5	2.22	34.8	35.8
Argentina	+0.5 Q1	-2.7	-1.2	-2.5 Oct	— ***	—	9.3 Q2§	-15.4 Q2	-2.3	-5.1	na	15.1	9.39
Brazil	-3.8 Q2	-2.3	-3.3	-6.6 Jul	+9.0 Aug	+8.2	11.6 Jul§	-27.9 Jul	-1.0	-6.6	11.85	3.24	3.98
Chile	+1.5 Q2	-1.4	+1.6	-1.8 Jul	+3.4 Aug	+4.1	7.1 Jul§‡‡	-5.1 Q2	-1.8	-2.5	4.25	666	683
Colombia	+2.0 Q2	+0.8	+2.0	-6.2 Jul	+8.1 Aug	+8.0	9.8 Jul§	-15.7 Q2	-5.5	-3.7	7.18	2,896	2,994
Mexico	+2.5 Q2	-0.7	+2.1	-1.0 Jul	+2.7 Aug	+2.9	3.8 Jul	-30.9 Q2	-3.0	-3.0	6.11	19.9	16.7
Venezuela	-8.8 Q4~	-6.2	-14.8	na	na	+532	7.3 Apr§	-17.8 Q3~	-2.8	-24.2	10.58	9.99	6.30
Egypt	+6.7 Q1	na	+3.0	-8.6 Jul	+15.4 Aug	+11.6	12.5 Q2§	-18.7 Q2	-6.8	-11.4	na	8.88	7.83
Israel	+2.7 Q2	+4.0	+2.7	+1.7 Jul	-0.7 Aug	-0.3	4.7 Jul	+12.1 Q2	+3.6	-2.2	1.78	3.77	3.94
Saudi Arabia	+3.5 2015	na	+1.0	na	+3.8 Jul	+4.4	5.6 2015	-59.5 Q1	-7.3	-12.6	na	3.75	3.75
South Africa	+0.6 Q2	+3.3	+0.3	+2.5 Jul	+5.9 Aug	+6.0	26.6 Q2§	-12.9 Q2	-4.3	-3.4	8.62	13.7	13.5

Source: Haver Analytics. *% change on previous quarter, annual rate. †*The Economist* poll or Economist Intelligence Unit estimate/forecast. §Not seasonally adjusted. ‡New series. ~2014 **Year ending June. ††Latest 3 months. ‡‡3-month moving average. §§5-year yield. ***Official number not yet proved to be reliable; The State Street PriceStats Inflation Index, June 36.96%; year ago 26.70% †††Dollar-denominated bonds.

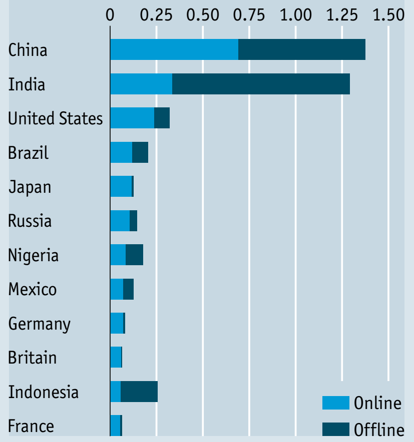
Markets

	Index Sep 21st	% change on: one week	% change on Dec 31st 2015: in local currency	% change on Dec 31st 2015: in $ terms
United States (DJIA)	18,293.7	+1.4	+5.0	+5.0
China (SSEA)	3,167.4	+0.8	-14.5	-16.8
Japan (Nikkei 225)	16,807.6	+1.2	-11.7	+5.5
Britain (FTSE 100)	6,834.8	+2.4	+9.5	-3.7
Canada (S&P TSX)	14,710.8	+2.4	+13.1	+18.9
Euro area (FTSE Euro 100)	1,021.7	+0.8	-6.6	-4.3
Euro area (EURO STOXX 50)	2,982.2	+0.6	-8.7	-6.4
Austria (ATX)	2,362.9	+1.4	-1.4	+1.1
Belgium (Bel 20)	3,566.5	+1.8	-3.6	-1.2
France (CAC 40)	4,409.6	+0.9	-4.9	-2.5
Germany (DAX)*	10,436.5	+0.6	-2.9	-0.4
Greece (Athex Comp)	562.1	+1.1	-11.0	-8.7
Italy (FTSE/MIB)	16,349.8	-1.1	-23.7	-21.7
Netherlands (AEX)	447.5	+1.5	+1.3	+3.9
Spain (Madrid SE)	882.7	+0.8	-8.5	-6.2
Czech Republic (PX)	864.8	-0.3	-9.6	-7.3
Denmark (OMXCB)	846.9	+1.3	-6.6	-4.1
Hungary (BUX)	28,254.3	+0.6	+18.1	+24.1
Norway (OSEAX)	668.4	+1.1	+3.0	+9.6
Poland (WIG)	47,625.2	+1.4	+2.5	+4.9
Russia (RTS, $ terms)	979.5	+0.9	+13.9	+29.4
Sweden (OMXS30)	1,422.7	+0.9	-1.7	-3.6
Switzerland (SMI)	8,226.5	+0.8	-6.7	-4.4
Turkey (BIST)	77,915.9	+1.1	+8.6	+6.5
Australia (All Ord.)	5,429.4	+1.9	+1.6	+5.5
Hong Kong (Hang Seng)	23,669.9	+2.1	+8.0	+7.9
India (BSE)	28,507.4	+0.5	+9.2	+7.8
Indonesia (JSX)	5,342.6	+3.8	+16.3	+22.1
Malaysia (KLSE)	1,658.7	-0.2	-2.0	+1.7
Pakistan (KSE)	39,771.4	-1.4	+21.2	+21.2
Singapore (STI)	2,850.7	+1.5	-1.1	+3.2
South Korea (KOSPI)	2,036.0	+1.8	+3.8	+8.7
Taiwan (TWI)	9,228.5	+3.7	+10.7	+15.7
Thailand (SET)	1,487.2	+2.0	+15.5	+19.6
Argentina (MERV)	16,292.5	+4.8	+39.5	+19.3
Brazil (BVSP)	58,393.9	+2.3	+34.7	+64.3
Chile (IGPA)	20,277.8	+0.3	+11.7	+18.8
Colombia (IGBC)	9,879.7	-2.3	+15.6	+26.7
Mexico (IPC)	46,929.2	+2.5	+9.2	-5.0
Venezuela (IBC)	12,044.7	-0.5	-17.4	na
Egypt (Case 30)	7,937.8	-2.4	+13.3	-0.1
Israel (TA-100)	1,262.2	+0.5	-4.0	-1.0
Saudi Arabia (Tadawul)	5,948.9	-3.7	-13.9	-13.8
South Africa (JSE AS)	50,757.8	-3.3	+0.1	+13.1

On and offline

By year's end some 3.5 billion people, or 45% of the world's population, will be internet users, according to the ITU. China and India, the world's most populous countries, do not just boast the top two spots in online population rankings; they are also home to the most people still offline, accounting for over 40% of the world's unconnected. Thanks to the rapid expansion of mobile networks, and wider ownership of the devices that connect to them, internet access has spread to places where traditional infrastructure is lacking. Mobile subscribers are expected to outnumber those with electricity or running water at home by 2020, by which time the ITU hopes three-fifths of the world will be netizens.

Population by access to the internet, 2015, bn



Sources: ITU; IMF

Other markets

	Index Sep 21st	% change on: one week	% change on Dec 31st 2015: in local currency	% change on Dec 31st 2015: in $ terms
United States (S&P 500)	2,163.1	+1.8	+5.8	+5.8
United States (NAScomp)	5,295.2	+2.3	+5.7	+5.7
China (SSEB, $ terms)	353.4	+0.2	-14.9	-17.1
Japan (Topix)	1,352.7	+2.9	-12.6	+4.4
Europe (FTSEurofirst 300)	1,347.3	+1.2	-6.3	-3.9
World, dev'd (MSCI)	1,703.2	+0.6	+2.4	+2.4
Emerging markets (MSCI)	898.8	+1.5	+13.2	+13.2
World, all (MSCI)	413.4	+0.7	+3.5	+3.5
World bonds (Citigroup)	957.7	+0.2	+10.1	+10.1
EMBI+ (JPMorgan)	805.0	+0.5	+14.3	+14.3
Hedge funds (HFRX)	1,184.5§	+0.3	+0.9	+0.9
Volatility, US (VIX)	14.6	+18.1	+18.2	(levels)
CDSs, Eur (iTRAXX)†	73.3	+5.0	-5.0	-2.6
CDSs, N Am (CDX)†	79.8	+3.3	-9.7	-9.7
Carbon trading (EU ETS) €	4.2	+6.0	-49.0	-47.7

Sources: Markit; Thomson Reuters. *Total return index.
†Credit-default-swap spreads, basis points. §Sept 19th.

Indicators for more countries and additional series, go to: **Economist.com/indicators**

The Economist commodity-price index

2005=100

	Sep 13th	Sep 20th*	% change on: one month	% change on: one year
Dollar Index				
All Items	133.4	137.5	-0.5	+6.5
Food	152.6	158.5	-0.7	+6.4
Industrials				
All	113.5	115.8	-0.3	+6.6
Nfa†	122.5	126.7	+1.5	+17.6
Metals	109.7	111.1	-1.2	+1.9
Sterling Index				
All items	184.1	193.1	+1.3	+26.1
Euro Index				
All items	147.6	153.1	+0.8	+6.1
Gold				
$ per oz	1,325.0	1,315.3	-1.8	+16.8
West Texas Intermediate				
$ per barrel	44.9	43.4	-8.8	-5.8

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.

Sizzling

Vertamae Smart-Grosvenor, Gullah writer and culinary griot, died on September 3rd, aged 79

HERE is how to cook cow peas: "Remove all the peas that look weird and wash and soak in cold water. Cook in some kind of boiled meat until done." That was how her Aunt Rose cooked them—Rose Ritter Polite, fine as she could be, who used to cry when she got her hair cut, who saved her baby niece from being thrown into the fireplace (her mother had a touch of "childbirth fever"), and who also made the best red rice: "Fry smoke bacon in a skillet and then add your fresh tomatoes. Cook for a hot minute and then add cold cooked rice and cook for another 20 minutes."

The recipes in Vertamae Smart-Grosvenor's first book, "Vibration Cooking: or, The Travel Notes of a Geechee Girl", include no lists of ingredients or numbered steps and few precise measurements. Instead, she talks to the reader. Her book is an extended disquisition on art, family, race and food; she had been everywhere, met everyone and had strong opinions about everything.

Her recipes came wrapped in stories. "Neal fried chicken" was for her friend Larry Neal, a scholar of African-American theatre; its three-hour soak in milk because "we hadn't seen each other for a long time …I took the chicken and soaked it for three hours so we could talk."

She was not a trained chef. She cooked by "vibration", meaning the intuition that comes from practice, observation and curiosity. Drawing on west Africa's oratary tradition, she called herself a "culinary griot": interested in the stories behind the food, and its route to the table. On the page and in the kitchen she excavated American cuisine's half-forgotten African roots.

She took a meandering path to the page. Born in South Carolina, she spent her adolescence in Philadelphia, where she befriended Eunice Waymon, another precocious young black woman who was as interested in music as Ms Smart-Grosvenor was in theatre (and later found fame as Nina Simone). When Ms Smart-Grosvenor was 18, she boarded a boat for Paris, where she fell in with expatriate Beats: William Burroughs, Allen Ginsberg, Gregory Corso, James Baldwin and a painter named Robert Grosvenor, whom she married (they later divorced).

Kitchen talking

After she returned to America, she became active in the Black Arts Movement, a politically engaged group of black poets, playwrights and other artists that emerged in the wake of Malcolm X's assassination in 1965. She began acting, appearing on Broadway and staging improvised performances in Tompkins Square Park, in the now-trendy East Village neighbourhood of New York. For around three years, she was a Space Goddess in Sun Ra's Solar Myth Science Arkestra, reciting her poetry while Mr Ra improvised on the keyboards.

Through it all, she cooked. Artists need to eat, after all, and "cooking", she wrote to a friend, "is a creative thing. Cooking is one of the highest of all the arts." Food, for Ms Smart-Grosvenor, was never just sustenance. It connects people to their pasts and experiences. It is a means of expressing and receiving love, of making people feel welcome and appreciated.

Her heritage left her with closer connections to Africa than most other Americans have. She was born in South Carolina's Lowcountry—a rural, marshy, estuarine region then unconnected to the American mainland—and grew up speaking Gullah, a creole English similar to dialects used in the Caribbean and Sierra Leone. Other Americans long looked down on Gullah or Geechees (Clarence Thomas, a reticent American Supreme Court justice born just down the coast from Ms Smart-Grosvenor in Georgia, attributes his reluctance to speak from the bench to childhood mockery of his accent). Gullahs were so used to hiding or downplaying their heritage that her book's "Geechee Girl" subtitle struck some as shockingly bold.

Ms Smart-Grosvenor was not afflicted by reticence: a regal figure, six feet tall, with a warm but appraising gaze. Her smoky, honeyed voice, with just a slight Gullah lilt, perfectly suited her radio work, which ranged well beyond food; a series on AIDS in America won a big award in 1990.

She favoured African clothes—headwraps and bright colours. In her first book she recalls a white man from Georgia who asked her why she dressed like an African when she was an American. "I am free and free to define myself," she wrote. "Now, if a squash and a potato and a duck and a pepper can grow and look like their ancestors, I know damn well that I can walk around dressed like mine."

"Vibration Cooking" made her famous when it came out in 1970, but she bristled at being known as a "soul food" cook. "While certain foods have been labelled soul food," she wrote, "and associated with Afro-Americans, Afro-Americans could be associated with all foods." Her book includes recipes not just for collard greens and gumbo, but also for Turkish coffee, saltimbocca and salade niçoise, which she admits "is a French name, but just like with anything else when soul folks get it they take it out into another thing." She chose to write about the cuisine of black Americans because that was what she knew best, and because she believed black American cooks and the food they created were long unappreciated. But she was at home in the kitchen and the world beyond. ■

The Economist 1843

THE ECONOMIST UNWINDS

Dress reversal

Turning couture's business model on its head

THE SCIENTISTS WHO MAKE APPS ADDICTIVE

CAVIAR DIPLOMACY BY THE CASPIAN SEA

CHINA'S ORPHANS OF PROGRESS

JOHN LANDGRAF, CREATOR OF THE WORLD'S BEST TV

DO YOU NEED A VIRTUAL ASSISTANT?

+ THE FAROES: HOT FOOD IN A COOL PLACE

DRONE RACING ON THE RISE