The Economist

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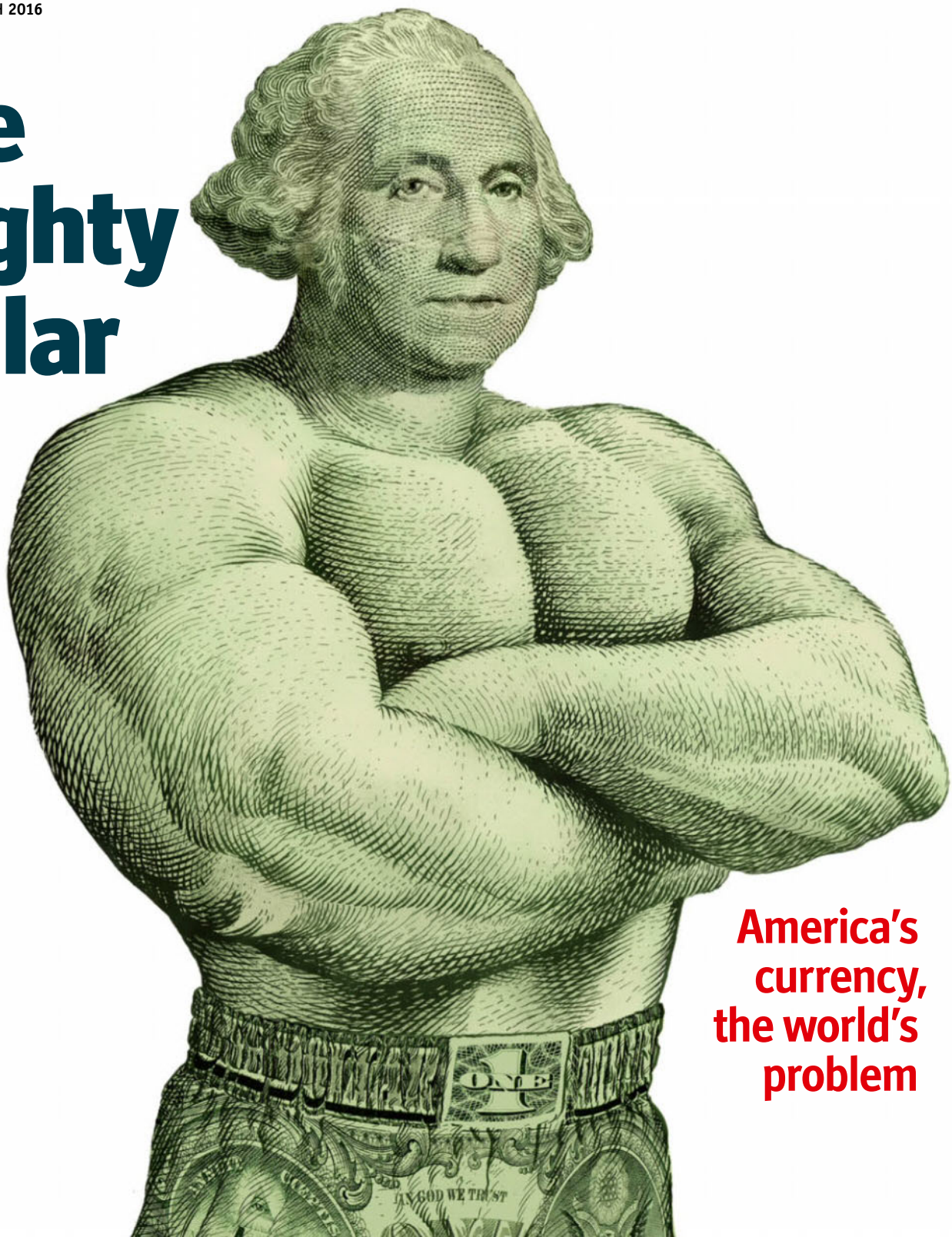
Cuba after Fidel

India's botched rupee plan

What Trump means for school reform

Getting ketchup out of a bottle

The mighty dollar



America's currency, the world's problem

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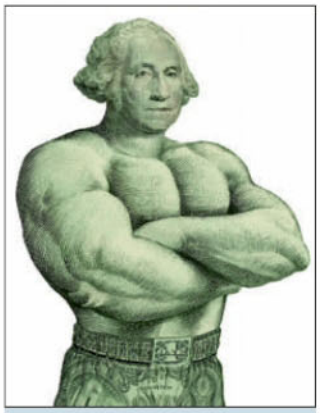

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Politics

Fidel Castro, who led a revolution in Cuba and ruled as a communist dictator for 47 years, died at the age of 90. He was an unyielding antagonist of the United States, which tried many times to assassinate him. In 1962 Mr Castro helped bring the world to the brink of nuclear war by inviting the Soviet Union to station missiles in Cuba. His brother, Raúl, formally replaced him as president in 2008, but he was the symbolic leader of the Latin American far left until his death.

Colombia's congress ratified a revised peace agreement with the FARC, an insurgent group with which the government has been at war for 52 years. Legislators opposed to the deal walked out before the vote. Colombians rejected the original agreement in a plebiscite in October. To avoid a second vote, President Juan Manuel Santos submitted the new deal to congress for ratification.

A plane carrying 77 people, including members of a **Brazilian** football team, crashed near Medellín in Colombia.

Jovenel Moïse won **Haiti's** presidential election in the first round with 56% of the vote, according to preliminary results. Mr Moïse belongs to the Haitian Shaved-Head Party, with which the former president, Michel Martelly, is also linked.

Canada's prime minister, Justin Trudeau, approved the expansion of the Kinder Morgan Trans Mountain pipeline, which carries oil for export from Alberta's tar sands to the west coast. Green groups say the decision will encourage production of an especially dirty form of petroleum.

On borrowed time

Park Geun-hye, the embattled president of **South Korea**, suggested she was willing to leave office, saying that parliament should decide her fate. Her opponents have been clamouring to impeach her over her involvement in an alleged extortion scandal.

The UN Security Council imposed new sanctions on **North Korea** in an attempt to force it to abandon its nuclear weapons. The latest measure restricts its exports of coal, a big source of foreign currency.

Thailand's rubber-stamp parliament acclaimed Crown Prince Maha Vajiralongkorn as king, ending an unexpected interregnum following the death of his father, King Bhumibol Adulyadej, in October.

Nawaz Sharif, the prime minister of **Pakistan**, appointed a new army chief on the retirement of the incumbent. It was the first time an army chief in Pakistan has retired at the end of his allotted term in 20 years.

Three human-rights advocates disappeared in **China**, apparently arrested by the authorities. Peng Ming, a veteran pro-democracy campaigner who was kidnapped by Chinese officials from Myanmar, was said to have died in jail.

Living to fight another day

South Africa's president, Jacob Zuma, survived an attempt to remove him as leader of the ruling African National Congress by party dissidents amid an influence-peddling scandal.

Scores of people were killed in **Uganda** in clashes between the army and supporters of a regional king, Charles Mumbere, who is accused of starting a secessionist movement.

Syrian government forces, backed by Russian bombing, made large gains in rebel-held eastern **Aleppo**. The rebels' last big redoubt has now been cut almost in half; many civilian casualties have been reported.

Israel fired two rockets towards Damascus, **Syria's** capital, possibly in an operation designed to disrupt flows of weapons toward Hizbullah, which is operating there in support of the Assad regime.

The could-be president

In **France** François Fillon, a socially conservative former prime minister, won the nomination of the centre-right Republicans for next year's presidential election. He wants to shrink the state, a radical stance in France. Polls suggest he would beat the National Front's Marine Le Pen, but he will need to convince the left to vote for him.

An employee of **Germany's** domestic intelligence agency was arrested on suspicion of passing information to Islamic fundamentalists.

Theresa May, **Britain's** prime minister, held talks with her opposite number from **Poland**, Beata Szydlo. The issue of allowing the hundreds of thousands of Polish people who live in Britain to stay after Brexit dominated the agenda. Negotiating the rights of EU migrants in the UK and British expats in the EU will be central to the Brexit talks.

The **UK Independence Party** got its third leader of the year. Paul Nuttall wants UKIP to replace Labour as the voice of the working class. A swing of less than 15 percentage points would reward UKIP with nearly 20 seats that Labour won in the 2015 election. A similar swing against the government would see UKIP take nearly as many seats from the Tories. Even if it managed such a feat, that would not make for much of an opposition party.

Top Trumps

Donald Trump chose Steven Mnuchin to be his treasury secretary. Mr Mnuchin is the founder of a film-financing firm that has helped fund dozens of Hollywood hits, including "Fantastic Beasts and Where to Find Them". He will have to conjure up some magic at the Treasury if he is to accomplish Mr Trump's agenda of tax cuts and big spending without blowing a hole in the budget deficit.

Mr Trump filled some other **cabinet positions**. Tom Price, a critic of Obamacare, was selected as health secretary.

Nancy Pelosi was re-elected as the Democrats' leader in the House, seeing off a challenge from a congressman who has said the party's defeat at the election should set off a "fire alarm because the house is burning down".

Black and white

Norway's Magnus Carlsen defeated Sergey Karjakin of Russia in a tie-breaker match to retain his title as world **chess champion**. Mr Carlsen's queen-sacrificing gambit stopped Mr Karjakin from becoming the first Russian world champion since 2007. The match had taken on geopolitical significance in part because Mr Karjakin was born in Crimea, which Russia annexed in 2014 ▸▸

Business

After months of haggling **OPEC** members agreed to the first cut in oil production in eight years. Non-OPEC members are expected to chip in with a cut of their own. Iran, which had been reluctant to reduce output so soon after returning to international markets, agreed to a token increase. The deal will reduce global production by almost 2%. Oil prices jumped in response.

Property bubbling

The Case-Shiller national index of **home prices** in America rose to a new peak in September, climbing 0.1% above the previous peak reached in July 2006, before the bust in the housing market (adjusted for inflation, the index is still 16% below that mark). The index increased by 5.5% in the 12 months to September, helped by buoyant markets in Dallas, Denver, Portland and Seattle. But house prices in cities in the forefront of the previous boom, such as Las Vegas, Miami and Phoenix, remain well below their all-time highs.

The OECD gave the thumbs up to **Donald Trump's** plan to boost infrastructure spending, saying it would boost America's economy, which is projected to grow by 2.3% next year, well above the 1.5% forecast for this year. But the organisation also warned that "an increase in protectionism could risk impairing already weak growth in global trade".

Meanwhile, **America's economic growth** rate in the third quarter was revised to an annualised 3.2%, up from an initial estimate of 2.9%. Consumer spending was stronger than had been thought. Rising workers' incomes also helped.

Mark Carney, the governor of the Bank of England, warned about the increasing level of household debt in **Britain**. The debt-to-income ratio is the highest since 2013. Unsecured debt accounts for a bigger chunk of this. The share of high loan-to-value mortgages (those greater than 90%) has nearly doubled since 2012. Over that same four-year period outstanding credit-card loans rose by £10bn ($15bn), hitting £66bn in October.

A suspected cyber-attack caused almost 1m customers of **Deutsche Telekom** to lose their broadband connection. Hackers are thought to have targeted households' internet routers with a software virus that disrupted their service. The code for the virus has been used before in other attacks on devices that retain the same passwords issued by their manufacturers.

Split personalities

The European Court of Justice began hearing legal arguments about whether **Uber** is a transportation firm or a digital service. The closely watched case has been taken to the EU's highest court by Barcelona's established taxi drivers, who, like taxi drivers the world over, complain that Uber has muscled into their market by circumventing local transport regulations. Uber says it is an "information-society services provider".

Pilots at **Lufthansa** went on strike again, causing the German airline to cancel thousands of flights. A dispute between management and cockpit and cabin crews over pay and conditions has dragged on for years. The strikes cost Lufthansa up to €15m ($16m) each day they are held. Siemens, an engineering company, this week called on both sides to reach an agreement because the strife was damaging Germany's image.

In a surprise move, **India's** central bank ordered the country's banks to transfer what amounts to half the cash deposited with them since the withdrawal of 500- and 1,000-rupee banknotes to its reserves. As people rush to beat a year-end deadline to deposit the notes in accounts, the banks have used their new-found wealth to buy bonds, unsettling the central bank's inflation hawks.

Banca Monte dei Paschi di Siena, a distressed Italian bank, took the first step in its recapitalisation plan by offering to swap €4.3bn ($4.6bn) in subordinated bonds for equity. The bank is trying to raise capital amid uncertainty about the outcome of Italy's constitutional referendum on December 4th. If the government loses the vote, Italy's banks are likely to be hit hard in the markets.

Must do better

The Bank of England's latest **stress tests** for British banks found that Barclays, Royal Bank of Scotland and Standard Chartered had "some capital inadequacies", but that all three now have "plans in place to build further resilience". **RBS's** new plan was submitted at the last minute and includes adding another £2bn ($2.5bn) to its capital cushion. The government still owns a majority stake in the bank eight years after bailing it out. The stress tests judged whether banks could withstand five years of financial turbulence. Conducted in March, they did not weigh up the scenario of Britain leaving the European Union.

Other economic data and news can be found on pages 78-79

The mighty dollar

Why a strengthening greenback is bad for the world economy

THE world's most important currency is flexing its muscles. In the three weeks following Donald Trump's victory in America's presidential elections, the dollar had one of its sharpest rises ever against a basket of rich-country peers. It is now 40% above its lows in 2011. It has strengthened relative to emerging-market currencies, too. The yuan has fallen to its lowest level against the dollar since 2008; anxious Chinese officials are said to be pondering tighter restrictions on foreign takeovers by domestic firms to stem the downward pressure. India, which has troubles of its own making (see separate leader), has seen its currency reach an all-time low against the greenback. Other Asian currencies have plunged to depths not seen since the financial crisis of 1997-98.

The dollar has been gradually gaining strength for years. But the prompt for this latest surge is the prospect of a shift in the economic-policy mix in America. The weight of investors' money has bet that Mr Trump will cut taxes and spend more public funds on fixing America's crumbling infrastructure. A big fiscal boost would lead the Federal Reserve to raise interest rates at a faster rate to check inflation. America's ten-year bond yield has risen to 2.3%, from almost 1.7% on election night. Higher yields are a magnet for capital flows (see page 59).

Zippier growth in the world's largest economy sounds like something to welcome. A widely cited precedent is Ronald Reagan's first term as president, a time of widening budget deficits and high interest rates, during which the dollar surged. That episode caused trouble abroad and this time could be more complicated still. Although America's economy makes up a smaller share of the world economy, global financial and credit markets have exploded in size. The greenback has become more pivotal. That makes a stronger dollar more dangerous for the world and for America.

Novus ordo seclorum

America's relative clout as a trading power has been in steady decline: the number of countries for which it is the biggest export market dropped from 44 in 1994 to 32 two decades later. But the dollar's supremacy as a means of exchange and a store of value remains unchallenged. Some aspects of the greenback's power are clear to see. By one estimate in 2014 a de facto dollar zone, comprising America and countries whose currencies move in line with the greenback, encompassed perhaps 60% of the world's population and 60% of its GDP.

Other elements are less visible. The amount of dollar financing that takes place beyond America's shores has surged in recent years. As emerging markets grow richer and hungrier for finance, so does their demand for dollars. Since the financial crisis, low interest rates in America have led pension funds to look for decent yields elsewhere. They have rushed to buy dollar-denominated bonds issued in unlikely places, such as Mozambique and Zambia, as well as those issued by biggish emerging-market firms. These issuers were all too happy to borrow in dollars at lower rates than prevailed at home. By last year this kind of dollar debt amounted to almost $10trn, a third of it in emerging markets, according to the Bank for International Settlements, a forum for central bankers.

When the dollar rises, so does the cost of servicing those debts. But the pain caused by a stronger greenback stretches well beyond its direct effect on dollar borrowers. That is because cheap offshore borrowing has in many cases caused an increased supply of local credit. Capital inflows push up local asset prices, encouraging further borrowing. Not every dollar borrowed by emerging-market firms has been used to invest; some of the money ended up in bank accounts (where it can be lent out again) or financed other firms.

A strengthening dollar sends this cycle into reverse. As the greenback rises, borrowers husband cash to service the increasing cost of their own debts. As capital flows out, asset prices fall. The upshot is that credit conditions in lots of places outside America are bound ever more tightly to the fortunes of the dollar. It is no coincidence that some of the biggest losers against the dollar recently have been currencies in countries, such as Brazil, Chile and Turkey, with lots of dollar debts.

The eye of providence

There are lurking dangers in a stronger dollar for America, too. The trade deficit will widen as a strong currency squeezes exports and sucks in imports. In the Reagan era a soaring deficit stoked protectionism. This time America starts with a big deficit and one that has already been politicised, not least by Mr Trump, who sees it as evidence that the rules of international commerce are rigged in other countries' favour. A bigger deficit raises the chances that he act on his threats to impose steep tariffs on imports from China and Mexico in an attempt to bring trade into balance. If Mr Trump succumbs to his protectionist instincts, the consequences would be disastrous for all.

Much naturally depends on where the dollar goes from here. Many investors are sanguine. The greenback is starting to look dear against its peers. The Fed has a record of backing away from rate rises if there is trouble in emerging markets. Yet currencies often move far away from fundamental values for long periods. Nor is it obvious where investors fleeing America's currency might run to. The euro and the yuan, the two pretenders to the dollar's crown, have deep-seated problems of their own. The Fed, whose next rate-setting meeting comes this month, may find it harder than before to avoid tightening in an economy that is heating up.

If the dollar stays strong, might protectionist pressure be defused by co-ordinated international action? Nascent talk of a new pact to rival the Plaza Accord, an agreement in 1985 between America, Japan, Britain, France and West Germany to push the dollar down again, looks misplaced. Japan and Europe are battling low inflation and are none too keen on stronger currencies, let alone on the tighter monetary policies that would be needed to secure them (see Buttonwood).

Stockmarkets in America have rallied on the prospect of stronger growth. They are being too cavalier. The global economy is weak and the dollar's muscle will enfeeble it further. ■

India's demonetisation

Modi's bungle

Narendra Modi's monetary reform had worthy aims. What a pity that it was so disastrously botched

INDIA is not the first country to introduce abrupt, drastic reform of its currency. But the precedents—including Burma in 1987, the former Soviet Union in 1991 and North Korea in 2009—are not encouraging. Burma erupted in revolt, the Soviet Union disintegrated and North Koreans went hungry. All the more reason for Narendra Modi, India's prime minister, to prepare the ground before the surprise announcement on November 8th that he would withdraw the two highest-denomination banknotes (the 500-rupee and 1,000-rupee, worth about $7.30 and $14.60). Yet he did not and the result is a bungle that, even if it does achieve its stated aims, will cause unnecessary harm.

Shops stopped accepting the old notes at once. Holders have until the end of the year to deposit them in banks or swap them, either for smaller-denomination notes or for new 500- and 2,000-rupee ones. That 86.4% by value of the cash in circulation is suddenly no longer legal tender has already caused predictable and needless hardship. It is too late—and politically unthinkable—to start again (see page 32), but Mr Modi should do more to limit the damage; and he should abandon the flawed leadership style that caused the mess.

Not the way to do it

The plan has laudable aims. Its initial popularity was based on the idea that the greedy rich, with their ill-gotten "black money" stored in stacks of banknotes, will get their comeuppance. Those who cannot justify the sources of their wealth will face punitive taxes. It also accords with Mr Modi's manifesto pledge to normalise India's black economy, estimated by the World Bank in 2010 to be worth about one-fifth of official GDP. The idea is that India will become more efficient, as more people and more money enter the banking system; counterfeit currency will become worthless; India's woefully low tax base will expand; and government coffers will enjoy a windfall of cash expropriated from the corrupt.

It is a pity, then, that Mr Modi's scheme to achieve these aims is so flawed. Banknotes are not just a way for the rich to store their wealth; they are also how the unbanked survive. As so often, the burden of this reform has fallen most heavily on the poor (see page 65). Over four-fifths of India's workers are in the "informal" sector, paid in cash. Untold numbers have been laid off because their employers cannot pay them. Tens of millions have queued for hours at cash machines and bank branches, to get rid of the useless notes and get hold of some spending money. A new business has sprung up in laundering cash for a fee for those without the time or inclination to queue, or with more notes than they can account for.

Cash is used for 98% by volume of all consumer transactions in India. With factories idle, small shops struggling and a shortage of cash to pay farmers for their produce, the economy is stuttering. There are reports that sales of farm staples have fallen by half and those of consumer durables by 70%. Guesses at the effect on national output vary wildly, but the rupee withdrawal could shave two percentage points off annual GDP growth (running at 7.1% in the three months to September).

With a bit of forethought, much of the mayhem could have been avoided. It turns out that the new notes are smaller and require all the country's ATMs to be reconfigured, which takes 45 days. Some 22bn notes are affected, but printing capacity is said by the previous finance minister to amount to only 3bn a month. So even if fewer notes are needed, because more money will be in banks, printing them will take some time. The banks were ill-prepared to handle about 8.5trn rupees in new deposits in the three weeks after demonetisation. After they used the deposits to buy bonds, lowering interest rates, the central bank had to order them to park the new money with it, in zero-interest accounts.

If Mr Modi's plea for patience for a 50-day period until the end of the year looks optimistic, so does the promise of "the India of your dreams", purged of the corrupt and their loot. In India's black economy of undeclared, untaxed income, all sorts of transactions, from medical bills to house purchases, are sometimes settled with suitcase-loads of banknotes. Yet even if the hoarders will be wary of another confiscation in the future, they will be tempted to make use of the new 2,000-rupee note just as they used the old 1,000-rupee one.

Moreover, Mr Modi was wrong when he said that the rich now need sleeping pills, while the poor sleep peacefully. In past seizures of illegal wealth, only between 3.75% and 7.3% was found to be kept in cash. The sleepless are those who need cash to get by; the truly rich are laughing all the way to their flats in London. The punitive taxes levied on black money that is deposited will feel like flea-bites. As for the counterfeiters, most estimates of the value of fake rupees are in the tens of millions of dollars, out of $250bn in circulation.

Both for the sake of Indians and for his premiership, Mr Modi needs to mitigate some of the harm he has caused. He should find ways of printing the new money more quickly. More important, he should also lengthen the period over which notes may be exchanged or deposited and allow the old notes to remain valid as payments for a range of goods and services (tax payments, say, would seem logical).

Somewhat too sensational

Much in India needs reform—abolishing restrictive labour rules, for example. In the past such reform has often been stymied by a system that favours government by committee. Mr Modi has lurched to the other extreme. The perceived need for secrecy (to take cash-hoarders by surprise) fed into the innate sense he has of his own infallibility and his misplaced faith in his technocratic skills. By designing a scheme that was needlessly callous and which is becoming increasingly unpopular, he has squandered political capital. In future he needs to consult more widely, centralise less decision-making in his own hands and acknowledge that not all criticism is partisan or special pleading from the corrupt rich. India, fortunately, is not North Korea, and is aware that leaders are fallible. Its federal, democratic system will give voters plenty of chances to let it be known how badly Mr Modi has messed up his rupee rescue. ■

Education in America

DeVos woman

Donald Trump's education secretary deserves a cautious welcome

FOR those looking for encouraging signs about what a Trump administration might accomplish, the nomination of Betsy DeVos as education secretary deserves a cautious welcome. The welcome is because giving parents choice over where their children are educated is a good thing. The caution because there have been enough failures in school reform to suggest that promising ideas can be discredited if done badly.

Both Republicans and Democrats suffer from blind spots on education reform. On the left there is a tendency to ignore bad public schools, pander to unions and indulge underperforming teachers. On the right the assumption is often that private is always better and that, once a voucher scheme has been set up, the work of school reform is done. The evidence suggests that what happens in the classroom is at least as important as the structure of the school system. This means recruiting and training teachers who give rigorous lessons and have high expectations of their pupils (see page 21).

Mrs DeVos has put money and effort behind vouchers, which parents can spend at private schools, and charter schools—public schools operating autonomously. In Michigan, her home state, the results have been poor. In a state where test scores have declined over the past decade, 80% of charters are below the state average in reading and maths. This is partly because Michigan ignored lessons from elsewhere.

The first of these is to exercise oversight. Milwaukee, the city in Wisconsin where school-choice was pioneered, began by allowing virtually anyone to open a school. This invited chancers, including a convicted rapist and a man who used taxpayers' money to buy himself a pair of Mercedes-Benz cars. As a result, Milwaukee is now more careful about who can start a school. So is Massachusetts, which has some of the best charters in the country. Michigan, in contrast, has favoured quantity over quality: the state is home to three of the ten school districts with the highest share of charter students in America.

A second principle is that oversight remains necessary even when vouchers and charters are up and running. Although the absence of bureaucracy is one of the biggest advantages of such schools, light-touch regulation is not the same as no regulation. As Milton Friedman, patron saint of the school-choice movement, put it, schools must meet "certain minimum standards laid down by the appropriate governmental unit". In New Orleans, which has a successful charter-school scheme, the school district is ruthless about weeding out poorly performing schools. Worryingly, Mrs DeVos led a campaign against preventing underperforming charters in Michigan from expanding.

As Friedman also knew, markets work well only if buyers have the data with which to make an informed choice. That leads to the third principle: schools receiving public money should publish facts and figures about their performance. The best gauges are based on pupil improvement and other measures of value-added, rather than raw test scores. Alas, Michigan's charters are among the country's least transparent.

Put your hands up for Detroit

America's education system is decentralised: federal money makes up just under 9% of funding for secondary schools. But Mrs DeVos can still make a big difference. Federal dollars change behaviour at the margins: witness the impact of the Obama administration's Race to the Top programme, which gives extra money to successful states. If states take the encouragement offered by the Trump administration to expand school choice, they should thank Mrs DeVos—then study how her home state could have done better. ■

South Korean politics

Park somewhere else

To spare her country months of drift, Park Geun-hye should resign now

MANY members of the party of South Korea's president, Park Geun-hye, want it. So does the opposition, which controls South Korea's parliament. So do most ordinary Koreans: they have been marching for it by the millions. Even Ms Park says she is ready to do it. So why has she not yet resigned?

Ms Park is hopelessly mired in an ever-deepening influence-peddling scandal (see page 29). She admits that she shared too much information about affairs of state with a close confidante, Choi Soon-sil, including advance drafts of many of her speeches. Ms Choi, prosecutors say, went on to use her clout with the president to extort money and favours from big companies and other organisations. Ms Park, the prosecutors allege, was an active participant in this racket, ordering her aides to help Ms Choi extract her payouts.

The response of Ms Park to the allegations has been muddled. She says the notion that she took part in influence-peddling is a politically motivated fabrication—even though the prosecutors behind the claim work for her administration. She has said that she will co-operate with the investigation into the scandal, but is refusing to speak to prosecutors. This week she said she had committed a "huge fault" and is willing to leave office, but that parliament should decide how and when. ▸▸

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Just what she meant by this is anyone's guess. Parliament had been about to impeach her, but Ms Park's offer is prompting second thoughts. Impeachment is a long and cumbersome process in South Korea. Once parliament has approved a set of charges, the constitutional court reviews them. It has six months to decide whether to turf the president out, triggering a new election. While it reflects, and during any ensuing election campaign, the prime minister serves as acting president.

Such protracted flux would do South Korea unnecessary harm. The economy is faltering because of a slowdown in China and feeble export growth in world markets. National security is parlous, with North Korea increasing the tempo of missile launches and nuclear tests just as Donald Trump, America's president-elect, threatens vaguely that he will withdraw American troops from the South. A distracted leader with an evaporating mandate would struggle to navigate such daunting waters, as would a temporary stand-in. If Ms Park truly wants what is best for the country, she should resign immediately, without any more fuss. Asking parliament to set the terms of her departure looks suspiciously like a delaying tactic that will end up only prolonging the agony.

South Koreans are fed up with Ms Park, guilty or not. Her approval rating is 4%—as bad as François Hollande's in France. Protests against her have attracted 1m people or more. A provincial governor and a parliamentarian deserted her party this week; ministers are resigning. Even the man who managed her election campaign says she should go.

Heir today, Geun tomorrow

Ms Park, the daughter of a previous president, has always seemed out of touch. She has given only one press conference each year, and none since the allegations surfaced. She seems hapless in the face of the scandal, proposing a series of compromises that parliament has batted away. She has given no fewer than three televised speeches to apologise, each one suggesting new remedies. One of her contrite gestures was to sack most of her closest aides, leaving herself even more isolated.

There can be no recovery from such a fiasco. But Ms Park could salvage a little dignity by ending the circus now. Her resignation would pave the way for an election within 60 days, drawing a line under the crisis. It would also help by putting paid to the idea that has so enraged her opponents: that the elites of South Korea can get away with anything, whereas ordinary people feel the system is stacked against them. ■

Latin America

After Fidel

The transition to a better Cuba will not be easy. Donald Trump could make it harder

FIDEL CASTRO was many things to many people (see pages 18-20). As Cuba mourns him, his fans offer praise for how he stood up to the United States in the name of Cuban independence and provided world-class health care and education to poorer Cubans. But his achievements were outweighed by his drab legacy. Much of that human capital was wasted by his one-party system, police state and the stagnant, centrally planned economy. Cubans say Mr Castro was "like a father" to them. They are right: he infantilised a nation. Anyone with initiative found ways to leave for exile abroad.

This is the baleful legacy that Raúl Castro, Fidel's younger brother and successor as president since 2008, must deal with. He has been trying to reform the economy, allowing small businesses, promoting private farming and welcoming some foreign investment. But he has been as determined as his brother to keep Cuba's one-party system intact. And his cautious economic progress has now almost ground to a halt. That coincided with the thawing of the cold war between Cuba and the United States, with the restoration of diplomatic ties after 54 years in 2015. The big question, then, is whether Fidel's death means that reform in Cuba will resume. The answer is probably yes, but not immediately. And the fate of Cuba, as ever, will be shaped partly by what happens in Washington.

The main reason for expecting economic reform to revive is necessity. Cuba has been propped up by petrodollars from Venezuela, another failed neo-Stalinist state in Latin America. But Venezuela is now almost broke, and aid has therefore been trimmed. Cuba's economy grew by only 1% in the first half of this year. Unlike Fidel, Raúl is keen on the "market socialism" of Vietnam and China. He should allow more types of private enterprise (for example, in professional services) and free wholesale markets. A crucial reform is to unify the two forms of peso currency, and devalue, which would create incentives for exports and investment. Raúl has repeatedly postponed this, because he fears that it would create losers before it creates winners. That is especially so because the American economic embargo remains in place, despite Barack Obama's removal of some curbs on tourism and business dealings with the island.

Much therefore depends on Donald Trump. The president-elect hints that he may reverse Mr Obama's opening. This would be a mistake on two counts. Renewed isolation would cut Cuba off from the trade and investment it needs to smooth the way for economic reforms. And history shows that isolation causes the regime to dig in, making political reform more difficult. If Mr Trump is wise, he will build on Mr Obama's policy and support the further opening of Cuban society.

A tale of Havana and have-nots

Raúl, who is 85, plans to step down as president in 2018. He is less popular than Fidel; his successors are even less likely to be able to build a personality cult like that of *El Commandante*. The budding private sector means that fewer people depend on the state. Cubans, especially the young, yearn for change.

The alternative is that a post-Castro Cuba would become more like Vladimir Putin's Russia, with a few political and military bigwigs looting their way to untold riches. Throwing up walls around Cuba would prepare for that wretched outcome, by giving the regime an excuse for its failure to improve living standards. Long-suffering Cubans deserve better. ■

Italy's referendum

You criticised the proposed constitutional reform in Italy and urged voters to say No in the referendum on December 4th ("A regretful No", November 26th). Part of your reasoning was that new members of the senate would be "picked from regional lawmakers and mayors by regional assemblies", and as these regions and municipalities form "the most corrupt layers of government", the consequence will be that the new senators "will enjoy immunity from prosecution". That is not exactly true. Since 1993, members of parliament no longer enjoy immunity from prosecution, that is, a criminal investigation, but they cannot be put in jail without an authorisation from parliament.

You also came out against the constitutional amendment because it "fails to deal with the main problem, which is Italy's unwillingness to reform". The Italian Constitutional Court recently rejected a central issue of reform, that of public administration. This decision was justified under the rules of the existing constitution that give large powers to the regions, which Matteo Renzi's referendum would eliminate. Is *The Economist* really sure the prime minister is "pushing for the wrong sort" of reform?

LUIGI CAPOGROSSI COLOGNESI
Professor emeritus of law
Sapienza University of Rome

The electoral law, the Italicum, is an ordinary law, it is not part of the constitution and not on the ballot on December 4th. Indeed, pending a judgment from the constitutional court, Mr Renzi has already pledged to modify it in order to assuage concerns, from the opposition, but also his own party, about a supposed excessive concentration of power in the hands of the prime minister.

Given the habit of Italian MPs to change party and often vote against their own leaders, a 54% majority is by no means a guarantee of a steady government, let alone a strongman. Mr Renzi is no Mussolini. He is just an embattled prime minister trying to survive the next government crisis.

MARCO DEL CIELLO
Vercelli, Italy

Whatever way the referendum goes, Italy's fundamental flaw is that the free market is restrained in too many ways, crowded out by an inefficient public sector, high taxes, protection of inefficient private industries and overregulation, not to mention corruption. Though they realise their public sector is inefficient, many Italians still believe it is the state's job to carry out what should be the business of the private sector. Unfortunately, public management is often inefficient and unmanageable all over the world. Italy is no different.

ROSS SHULMAN
Ithaca, New York

Coming from a publication based in a country that voted to leave one of the greatest geopolitical projects in history for no compelling rational reason, your advice that Italy is "worryingly vulnerable to populism" is a bit like Jamie Oliver telling my mother how to cook Ragù Bolognese.

For the good of my country, let's hope that your endorsement of the No vote will be paid as much heed as your backing of the Remain campaign before Brexit and your support for Hillary Clinton during America's presidential election.

OLIVER LARCHER
Bolzano, Italy

Mr Renzi once compared the Italian referendum to the pin code of a mobile phone, as a means to switch Italy on and unlock the path to more reforms. The metaphor is insipid, but the argument is not.

FABRIZIO COLIMBERTI
Brussels

State procurements

"Rigging the bids" described how tendering for government contracts in Europe has become less competitive (November 19th). Governments often raise the selection criteria for inclusion in the bidding for contracts to unrealistic levels, for example requiring a minimum of 15 years, experience in providing a service, in order to receive only "qualified bids". But this limits competition to a few big companies. A preference for "reliable" suppliers often makes it impossible for smaller companies to win contracts.

Moreover, the specifications to submit a tender are often overloaded with detailed requirements instead of stating fundamental needs. Big tenders are often supposed to be fulfilled entirely by a single supplier, which locks the government into only one provider and makes comparisons impossible over the course of the contract. However, laws do allow tenders to be divided into lots that can be provided by several contractors. The benefits are increased competition over time and better quality evaluations.

Governments could improve their practices, assuming that they can procure the right consultants to overhaul the tender process. But don't keep your fingers crossed.

TOMAS JONSSON
Stockholm

Proportional votes

Charlemagne (November 12th) wrote that America's electoral college "is a peculiar institution" because Hillary Clinton won the popular vote. Yet the electoral college is possibly a fairer method than the one used to select Europe's commissioners. One commissioner is selected from each of the EU's 28 countries, regardless of that state's population. Lithuania gets equal representation with Germany. At least the electoral college is indirectly linked to each state's population size.

STEVE HATCH
Albuquerque, New Mexico

Millennials' bugbear

You claim that people between the ages of 18 and 30 in Britain "are doing better than most people think" ("Generation Screwed or Generation Snowflake?", November 19th). Although we are on similar salaries to those of our parents when they were our age, we are paying in effect an extra tax of 9% on our earnings because of student-loan repayments. I was fortunate enough to graduate in 2012, so had a mere £20,000 in debt ($25,000), but anyone graduating now will have almost double that (taking into account both tuition fees and maintenance).

As a higher-rate taxpayer, I can therefore expect to have what amounts to a 49% marginal tax rate until at least my 30s. That, combined with the rental market in London, makes me significantly worse off than my parents' generation. They also will benefit from generous final-salary pension schemes that were available to them when they started work.

This is not generation snowflake, but generation cold reality.

DAVID LAMBERT
London

A political cocktail

I was astonished to learn of a correlation between heavy drinkers and Donald Trump's victory ("Illness as an indicator", November 19th). To win future elections, Democrats must immediately propose a return to Prohibition (with an exception for wine, in consideration of the coastal elites).

NEIL O'KEEFE
Lowell, Indiana ■

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The will to power

Cuba's communist leader, who outlasted ten presidents of the United States, has died at the age of 90

TO MEET Fidel Castro was to notice, first of all, his sheer physical presence. He was tall, erect and had a high, domed forehead that made him look naturally imperious. He was strong: as a youth he was awarded a prize as the best all-round sportsman in Cuba. He was brave to the point of recklessness: as a boy, he once rode a bicycle straight into a wall to prove his mettle. And he was determined, convinced of his own rightness, intolerant of contradiction and immune to compromise. These characteristics he had inherited from his father, a Spanish migrant who brought with him to Cuba the innate stubbornness of the *gallego* and who became a prosperous landowner.

The son, who was born illegitimate in Birán, in rural eastern Cuba, in 1926, added a prodigious ambition for power. Even the Jesuits who taught him saw danger coming in the big, headstrong boy, whose country slang from the cane fields of Oriente marked him out among his urban classmates. The Cuban revolution as it turned out—though not as many of its supporters had originally hoped—was above all an expression of Mr Castro's will and the unbridled exercise of his massive ego. In his cold-war heyday, he turned his small island into a pocket superpower, fomenting revolution across Latin America, dispatching armies to Africa and brazenly sheltering fugitives, political and criminal, from the United States.

Fidel—he was one of the few world leaders widely referred to by his first name—was lucky, too. He might have been killed many times: as an aspiring leader in the gangsterish ambience of Havana student politics; in his quixotic assault on the Moncada barracks in 1953, where some of his followers died; or in the desperate early weeks after the botched landing of the *Granma*, the overloaded pleasure boat that transported his tiny force of 82 rebels from Mexico three years later. Then there were the hundreds of attempts by the CIA to assassinate him, ranging from the farcical—an exploding cigar—to near-misses: a dose of botulism that burst before it could be added to a milkshake by a barman at the Habana Libre (ex-Hilton) hotel.

Had it not been for a fortuitous amnesty for political prisoners decreed by Fulgencio Batista, the dictator he went on to overthrow, he might have rotted for decades in prison. Then there was Cuba's island condition, protected from continental armies of liberation (except, as it turned out, Mr Castro's own). This had allowed Spain to hang on to its "ever-faithful isle" for seven decades after it lost its mainland American empire. It would allow Mr Castro's regime to survive the fall of the Berlin Wall despite the bankruptcy of his revolution. As it was, the most serious attempt to unseat him, the ill-fated Bay of Pigs expedition organised by the CIA in 1961, became his crowning triumph: submachinegun in hand, he directed the operation that saw his revolutionary forces kill or imprison the invaders, deprived of air support by the hesitation of President John F. Kennedy, before they could leave the beach.

That was not the Americans' only mistake. In 1952 Batista, a former army sergeant, staged a coup which ended Cuba's sole experiment with democracy after just a dozen years. The Eisenhower administration, obsessed with an all but non-existent communist threat in the Caribbean, backed what would be a deeply corrupt and brutal regime. Batista's coup thwarted Mr Castro's certain election to Congress and a promising career in democratic politics. Instead, by skilled propaganda and force of will, he turned himself into the undisputed leader not just of a ragtag band of armed guerrillas in the Sierra Maestra but of a broad and politically variegated movement for the restoration of democracy and the 1940 constitution.

A Marxist of convenience

The guerrillas in the mountains, together with sabotage and strikes across the island, broke the spirit of Batista's army and government. Batista himself fled, on New Year's Eve 1958, taking most of the Central Bank's reserves of dollars and gold. On arriving in Havana with his band of bearded revolutionaries in January 1959, Mr Castro installed a provisional government headed by a liberal judge. Its initial programme ▸▸

was populist: big wage increases, rent reductions and a radical land reform. But this was merely to buy time, while he built up the armed forces and security services—including the powerful political police, the G2—and cemented an alliance, begun in secret in the sierra, with the Cuban Communist Party. Before the revolution was even a year old, the "bourgeois elements" in the government were ousted, or resigned; over the next few months, critical media outlets were silenced one by one. Within six years, all private property, down to corner shops, was expropriated. By then, most of the middle class had been alienated and many of its members had fled to Miami.

A caudillo by vocation

Mr Castro did not always hate the United States. He had gone on honeymoon there, buying a white Lincoln Continental and feasting on T-bone steaks. A few weeks after coming to power he visited America again, this time in combat fatigues, but eating hot-dogs like a native and offering to be friends. President Eisenhower preferred to play golf, leaving his vice-president, Richard Nixon, to meet Mr Castro and to identify in him "those indefinable qualities that make him a leader of men".

By then neither side had illusions about the other. In 1958 in the sierra, having watched Batista's air force drop American-supplied bombs, he wrote to Celia Sánchez, his closest companion, "I swore that the Americans are going to pay dearly for what they are doing. When this war is over, I'll start a much longer and bigger war of my own: the war I'm going to fight against them." For its part, the Eisenhower government was quick to set in train measures aimed at overthrowing him. Nixon thought Mr Castro "either incredibly naive" or "under communist discipline".

Fidel was a Marxist of convenience, a Cuban nationalist by conviction and a Latin American *caudillo* by vocation. His hero was José Martí, a Cuban patriot who fought against Spain but was wisely wary of American covetousness towards Cuba. In the Spanish-American war of 1898, the United States hijacked the independence rebellion Martí had started and turned Cuba into a neo-colony. Under the notorious Platt amendment, America reserved the right to intervene in the island at any time. That was revoked in the 1930s, but American domination of the economy and the vital sugar industry continued until the revolution. It brought development—a large middle class lived well—but also deep inequality.

Fidel embraced Martí's nationalism and anti-imperialism, but not his belief in social democracy. He turned to communism because it was a useful tool of absolute power of a kind enjoyed by no run-of-the-mill strongman, coming, as it did, with the shield of Soviet protection (plus Soviet weapons and oil) for the duration of the cold war. America's trade embargo was almost as useful: it allowed him to blame the imperialist enemy for the woeful economic failures of his own central planning.

It was his brother, Raúl (younger by five years), who was the orthodox communist, as well as the quiet organiser who turned a tiny rebel army into a disciplined force of 300,000 in the two years after the revolution. It was Ernesto "Che" Guevara, Mr Castro's Argentine companion in arms, who was the Marxist theoretician.

In the early days, at least 550 (and perhaps 2,000 or more) opponents of the revolution were executed. Many of them were Batista henchmen whose demise was popular. Once the revolution was secure, Mr Castro's rule was repressive though not especially bloody. Nothing and nobody was allowed to diminish his power. "There are no neutrals," he declared. "There are only partisans of the revolution or enemies of it." The revolution, of course, was Fidel.

Many believe that he allowed Guevara to perish in Bolivia, or could have done more to try to save him, turning an awkward and unbiddable subordinate into a useful myth. Mr Castro was a troublesome ally for the Soviets. He took their money but not always their advice. He first embraced crash industrialisation, then dropped it in favour of the drive for a 10m-tonne sugar harvest. Both failed. Though sometimes persuaded to decentralise economic decision-making (which usually boosted output) he always ended up concentrating power in his own hands again.

He gave Cubans first-world education and health services, and did not care about the cost of these to the economy. But he offered neither opportunity nor prosperity, least of all freedom. Dissenters faced an awful choice: the risky crossing to Florida or the grim jails of Cuba's gulag. Most chose silence. Eventually Mr Castro would open a safety valve, letting those who might stir up trouble go abroad.

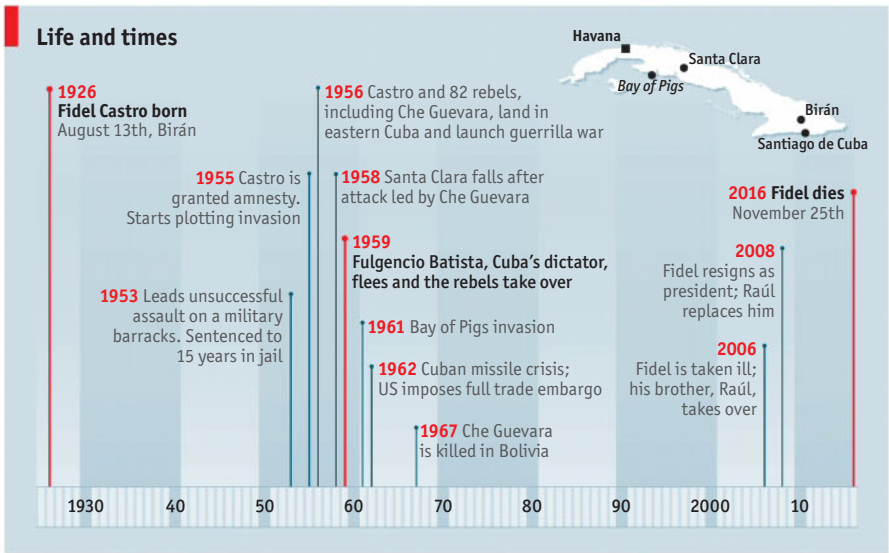
He never listened

Fidel was the inspirational leader, the man of action, the master strategist, the obsessive control-freak who micromanaged everything from hurricane preparedness to the potato crop. He was, above all, tireless. In marathon sessions, often beginning after midnight and ending after dawn, he would interrogate visitors about every facet of the political situation in their country. He loved details—the statistics of food production in every Cuban province or the properties of Chinese electric rice-cookers. He kept them in his head and would recite them in those interminable speeches.

He was careful to discourage an overt personality cult. He kept his private life—nine children and Dalia Soto del Valle, his second wife whom he married in 1980—largely hidden from public view. He promoted younger men only to discard them if they aspired openly to succeed him. His was the overwhelming presence, brooding like a weather system over Cuba's dilapidated streets; and his was the voice, droning on in televised speeches for hour after hour, alternately rising to a peak of righteous indignation and falling to a whisper of injured innocence. He never listened, said his sister, Juanita, who left for Miami.

Mr Castro operated on the world stage as no other Latin American leader had since the days of Francisco Miranda and Simón Bolívar, the South American independence heroes of two centuries before. He turned himself into an important player in the global conflict between the United States and the Soviet Union, between capitalist democracy and communist dictatorship. In seeking the protection of Soviet missiles he came closer than anyone else to turning that ideological confrontation into nuclear war.

Under his leadership, Cuba, an island



of just 11m people, became a "Latin American Sparta" (in the words of Jorge Castañeda, a Mexican critic of the revolution). In the 1960s he aided a generation of idealistic young Latin Americans who perished in doomed guerrilla ventures. Their main achievement was to help trigger takeovers by bloodstained anti-communist military dictatorships. A decade later Mr Castro dispatched his armies to Africa, to combat apartheid but also to prop up corrupt or repressive (but anti-American) regimes in places like Ethiopia and Angola. In the 1980s he armed and aided leftist revolutionaries in Central America. With the end of the cold war, over the past two decades, it has been Cuban doctors rather than soldiers that have been sent abroad, first as missionaries for Fidel's revolution and then as earners of scarce foreign currency.

Half-life in Havana

The fall of the Berlin Wall and collapse of the Soviet Union brought great privation to Cuba. The economy contracted by a third. Many forecast the imminent demise of Mr Castro and his revolution. He responded by declaring a "Special Period in Peacetime", cover for some limited and pragmatic reforms. He reluctantly allowed Cubans to set up small businesses, such as restaurants, repair shops and farmers' markets. He also legalised the use of the dollar and sought foreign investment, especially in developing a mass tourism industry. Again, as under Batista, Havana's hotels became a venue for sex tourism, as young black women sold their bodies to escape the revolution's hardships.

Remittances from Cuban-Americans, tourism and nickel mines, run by a Canadian firm, replaced sugar as the mainstay of the economy. The health-care and education systems were tapped for hard-currency earnings, too, with the development of biotechnology and medical tourism. State companies were given more autonomy to manage their budgets and to trade. All these measures helped Cubans to get by, but they introduced new inequalities and resentments, and loosened the regime's control over daily life.

Then, unexpectedly, new benefactors appeared, in the form of Venezuela's Hugo Chávez and, to a lesser extent, a booming China. Venezuelan subsidies grew to match the old Soviet largesse. With the economy growing again, Mr Castro reversed or reined in many of the reforms and became far more selective about foreign investment. As he had several times since 1959, he veered back towards Jacobinism, recruiting lumpen youth as "social workers" to wage war against corruption. In 2003, with the world distracted by the American invasion of Iraq, he launched a new political crackdown, arresting and imposing long jail sentences on 78 democracy activists and executing three would-be migrants who hijacked a ferry in a desperate attempt to get to Florida. Two years later he declared the Special Period over.

One evening in July 2006 Cuban state television broadcast a terse statement from Mr Castro saying that he had to undergo emergency abdominal surgery and was temporarily handing over his powers to a collective leadership headed by Raúl, his deputy. In 2008 Raúl formally replaced Fidel as Cuba's president and three years later as first secretary of the Cuban Communist Party. He pushed out Fidel's protégés and would-be successors, including Carlos Lage, the de facto prime minister. And he proceeded, quietly but methodically, to prepare Cuba for the time when a Castro would no longer be in charge.

Raúl is temperamentally Fidel's opposite, a tidy, practical man, lacking his brother's messianic streak. He is Sancho Panza to Fidel's Don Quixote. They even looked the parts (Raúl is said to keep statues of Cervantes's heroes at his house). There were no more late-night meetings. Raúl announced economic reforms that abolished many of the petty restrictions suffered by Cubans, who could once again buy and sell houses and cars, stay in tourist hotels and have access to mobile phones and the internet. He cautiously began to dismantle Fidel's centrally planned economy: more than 500,000 Cubans now work in a budding private sector of small businesses and farms. The island began to move inexorably towards a mixed economy. Some of Raúl's advisers talked enthusiastically of the Chinese and Vietnamese models.

Fidel didn't think much of that. China was a decadent consumerist society that had lost its values and its commitment to preserving equality, he thought. But he admitted to a foreign visitor, in an unguarded moment, "the Cuban model doesn't even work for us any more". Fidel kept his criticisms largely private. He wrote a column in *Granma*, the official organ, for a while, but its main subject matter was his increasingly incoherent ramblings about what he saw as the apocalyptic problems facing the world. He became a spectral presence in his compound in Siboney, a leafy enclave in the west of Havana of mansions built by the sugar barons he had expropriated. He was occasionally photographed with visiting leaders looking increasing frail and doddery. But he had outlasted ten American presidents and all his enemies.

A despot departs

True, he lived long enough to watch his revolution start to be dismantled. He even saw Cuba restore diplomatic relations with the United States in 2015 and an American president, Barack Obama, visit Havana and broadcast a call for the Cuban people "to choose their government in free elections". Of course he did not approve. "Cuba's president has taken steps in accordance with his prerogatives and powers," he wrote stiffly in a letter published in 2015. But, he added, "I don't trust the policy of the United States, nor have I exchanged any words with them," he growled.

No other man in the 20th century ruled as long while, through a mixture of charisma and tyranny, dominating his country so completely. On one hot summer night during the days of penury that followed the collapse of the Soviet Union, a crowd of disgruntled youngsters on Havana's *malecón*, its seafront drive, threatened to overwhelm the police and start a riot. Fidel appeared out of the night, and talked them out of it. Even many of those Cubans who abhorred him were in awe of him. That will not apply to any of his successors, not even Raúl. ■

Either you were with Fidel or you rotted in jail

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Education

Long-haul charters

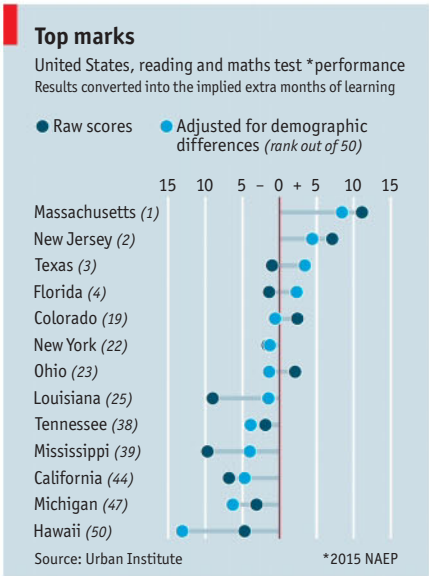
Betsy DeVos's appointment has given the school-reform movement a shot in the arm. Yet she may end up splitting it

IN 1983 the Reagan administration published "A Nation At Risk", an apocalyptic report into the state of American schools. It ushered in 33 years of uneven yet enduring bipartisan support for presidents' efforts to raise school standards. George W. Bush's No Child Left Behind Act and its successor, the Every Student Succeeds Act (ESSA), share more than quixotic names. Both were backed by majorities of both parties in Congress. Unfamiliar with such harmony, Barack Obama called ESSA, signed into law last December, a "Christmas miracle".

That sort of collaboration could soon become a rarity. On November 23rd Donald Trump, the president-elect, nominated Betsy DeVos, a philanthropist, as the next secretary of education. For three decades Mrs DeVos has used her family foundation and her leadership of conservative groups to lobby for "school choice", a broad term that can divide Republicans even from moderate Democrats.

For Mrs DeVos this has meant support for two causes. The first is the rapid expansion of charter schools, fee-free schools that are publicly subsidised but independently run. Her activism is one reason why charters in Michigan, her home state, have less oversight than almost any of the 43 states that allow them. And about 80% of Michigan's charters are run for profit, compared with 13% nationwide. The second cause is school-voucher schemes, which typically give public funds to poor parents to pay for the cost of places at private schools. Though Michigan voted against adopting vouchers in 2000, Mrs DeVos has helped to elect more than 120 Republicans across the country who are in favour.

Education secretaries are among the least powerful cabinet members. The federal government spends only about ten cents of every dollar that goes toward public schools. States and the more than 13,500 school districts matter more, especially after ESSA, which loosened the regulations placed on local governments.



Since that law passed just last year, Congress will be reluctant to consider a new bill on education reform. Mr Trump's proposal that $20bn in federal education funding should be diverted towards voucher schemes would struggle to win enough support in the Senate, says Rick Hess of the American Enterprise Institute, a think-tank. Most Democrats would oppose it, he notes. So too might Republicans sceptical of another big federal programme. They would prefer states to make their own decisions about vouchers.

But Mrs DeVos will still have clout. Her department can interpret federal rules in ways that make it easier for states to spend federal money as they like. She could also use the bully pulpit and her influence with conservative foundations to cajole governors to embrace vouchers.

Here she may find a receptive audience. Roughly half of states and Washington, DC, have some form of school-choice scheme. And though less than 1% of all pupils in America attend school on state-funded vouchers, this number is growing rapidly: from 61,700 in 2008-09 to more than 153,000 in 2015-16, according to the American Federation for Children, a school-choice group whose outgoing chairman is, as it happens, Mrs DeVos.

Would more vouchers help children? In theory they would, by more closely matching pupils to schools, encouraging new schools and fostering competition. But the evidence is mixed. A review last year led by Dennis Epple of Carnegie Mellon University concluded that vouchers are not "a systematically reliable way to improve their educational outcomes." In cities such as Milwaukee, New York and Washington, pupils using vouchers tend to have higher graduation rates than peers at public schools. There is also evidence from these ▸▸

cities, and from Sweden and Chile, that the competition brought by vouchers makes other schools improve their performance.

However, once at private school, there is little evidence that pupils using vouchers perform better in exams than if they had stayed put. They may in fact do worse. Studies published this year into schemes in Ohio and Indianapolis suggested vouchers reduced achievement among pupils who used them. Research published last year into vouchers in Louisiana was even more troubling. A study led by Atila Abdulkadiroglu of Duke University found that pupils who used vouchers to attend eligible private schools were 50% more likely to have "failing" grades than peers who stayed in public school.

An "evidence-based policymaker" would conclude that there are more promising areas for reform, says Joshua Cowen of Michigan State University, who has studied the Milwaukee voucher programme. Charter schools, for example. He notes that charters in cities such as Boston, New Orleans and New York have brought more choice for poor parents, while pupils' results are consistently higher than those of their peers in traditional schools.

These charters have done this by focusing on ends rather than means. The best succeed because they are well-managed organisations with skilful teachers, high standards and high expectations. Areas with successful charters also tend to strike the right balance between autonomy for schools and accountability, says Susan Dynarski of the University of Michigan. In Massachusetts, for example, the state decides who can set up charters, which can be shut down if their intakes do not keep up decent grades.

In contrast, partly as a result of Mrs DeVos's lobbying, Michigan is the wild (Mid) west of charter schools. Dozens of different outfits, including public universities, can authorise charters in exchange for a cut of the revenue going to those schools. Operators can therefore shop around until someone lets them set up a school. There are few rigorous, transparent and standard measures that allow parents to play an easy part in this market. Some schools in Detroit compete for pupils by offering them raffle tickets for iPads, rather than impressing their parents with academic results. No one holds the authorisers accountable, though they oversee $1bn in taxpayers' money every year.

Disruption is a feature of the Michigan system, not a bug, argues Mr Hess. Results at Michigan's charter schools improved faster than at traditional public schools between 2005-06 and 2010-11. But many are still awful. Most of their results remain below the state average—and overall, Michigan's schools are woeful. Michigan is one of just five states whose reading results among nine- and ten-year-olds were worse in 2015 than in 2003. The Urban Institute, a think-tank, has analysed the National Assessment of Educational Progress, a nationwide test of maths and reading. After accounting for demographics, Michigan is 47th out of all the states (see chart). Massachusetts is top—and is the only state with maths results near those of high-performing East Asian countries.

Sadly, in one of the less-noticed ballots on November 8th, Massachusetts voted against lifting its cap on charters—a victory for teachers' unions and their sympathisers. After three decades of progress, pragmatic reformers are thus in a bind. Led by teaching unions, the left is out to curb some of the country's best schools. Meanwhile, the risk of a Trump administration is that it is about to subsidise some of the worst. That would be some choice. ■

The next treasury secretary

You're hired

WASHINGTON, DC

Three main challenges await the next treasury secretary

IN SOME respects, Steve Mnuchin is a typical nominee for the post of treasury secretary. Like two of his last seven predecessors—and his father and brother—he climbed the ranks at Goldman Sachs, a bank. In the 2000s he briefly worked for George Soros, an investor. (On the eve of the election, Mr Soros featured alongside Lloyd Blankfein, Goldman's CEO, as a target of a Donald Trump attack on the "global power structure".) As the news of Mr Mnuchin's nomination broke, he spoke soberly on CNBC, a business news channel, of the need to reform the tax code.

Yet in other ways Mr Mnuchin is a rather unconventional nominee. In recent years he has mostly swapped finance for films. His entertainment company, in partnership first with Fox and later with Warner Bros, has produced blockbusters including "Avatar" and "Gravity". In his latest effort, a romantic drama about 1950s Hollywood, Mr Mnuchin even makes a cameo appearance—though that was not enough to stop it flopping over the Thanksgiving weekend. Earlier in 2016, Mr Mnuchin's fiancée, a British actress, drew some notoriety for writing a book, now withdrawn from sale, about her gap year in Zambia. In it, she told tales of rebel conflicts, the monsoon season and 12-inch spiders. Zambia contains none of these things.

Mr Mnuchin has made some time for finance on the west coast. In 2009 he and others bought IndyMac, a failed Californian bank. Renamed OneWest, the bank foreclosed on defaulting mortgage borrowers too zealously, according to its critics, leading to several lawsuits.

If the Senate confirms his appointment, Mr Mnuchin will face three main challenges in office. The first will be to get Mr Trump's fiscal policy straight. During the campaign Mr Trump proposed tax cuts that would, according to the Tax Foundation, a right-leaning think-tank, give the top 1% of earners a tax cut worth, on average, 12-20% of their incomes. But Mr Mnuchin told CNBC that there would be no net tax cut for the highest earners. Before the election Mr Trump criticised his opponent's plan for an infrastructure bank "controlled by politicians and bureaucrats" and proposed using tax credits to encourage private investment instead. Yet Mr Mnuchin suggested in mid-November that the incoming administration is looking at starting an infrastructure bank after all.

Steve Mnuchin: gold-man hired

The second challenge will be to live up to Mr Trump's promises on trade. Mr Mnuchin is thought to share his boss's protectionist instincts. He will determine trade policy alongside Wilbur Ross, Mr Trump's nominee for commerce secretary. Mr Ross, a billionaire investor in bankrupt firms, is a vocal critic of recent trade deals. At the commerce department, he will oversee trade enforcement, such as the imposition of tariffs. At the Treasury, Mr Mnuchin will have such responsibilities as declaring China a currency manipulator.

The final, overarching challenge will be to champion Mr Trump's growth agenda. Announcing the nominations, the transition team reiterated a promise to create more than 25m jobs over the next decade—18m more than is forecast today. Arithmetic suggests this pledge is fanciful: even if the labour-force participation of 25- to 54-year-olds returns to its record high, only 4.3m new workers will appear by 2024. To achieve consistently their economic growth target of 3.5-4%, Mr Trump's new team must instead hope for an unprecedented surge in productivity, driven, perhaps, by deregulation. More sober voices say growth of 2.5%, or, at a stretch, 3%, should be the goal. Assuming Mr Mnuchin can achieve that, he will have to find a way to sell it as a promise fulfilled. ■

Capital punishment and intelligence

Novel justice

WASHINGTON, DC

The Supreme Court considers the execution of prisoners with low IQs

FANS of "Of Mice and Men", the 1937 novella by John Steinbeck, will recall the character of Lennie Small, an oafish, dim-witted man whose physical strength is ill-matched to his love of rabbits. On November 29th, in a remarkable example of law imitating art, a hearing at the Supreme Court put Lennie back in the spotlight. The question is whether the fictional man's intellectual profile should help determine the fate of Bobby Moore, a real-life Texan awaiting execution.

Mr Moore, a man with an IQ in the 70s, was sentenced to die 36 years ago for killing a store clerk during a robbery. In 2014 Mr Moore had his death sentence revoked after successfully making a claim under *Atkins v Virginia*, a ruling of 2002 banning the execution of intellectually disabled people. But a year later the Texas Court of Criminal Appeals (CCA) sent him back to death row. The quarrel in *Moore v Texas* is whether the CCA used the right standard when it decided that Mr Moore—who at 13 could name neither the days of the week nor the months of the year, nor distinguish between addition and subtraction—is too clever to qualify for an exemption.

Smart enough to execute?

Clifford Sloan, Mr Moore's lawyer, argued that Texas's "unique approach" to measuring intellectual disability relies on "harmful and inappropriate lay stereotypes" which are "anti-clinical" and contradict the "core holding" in *Atkins*. In response, Scott Keller, the Texas solicitor-general, noted that the justices largely left it to the states to decide who qualifies as mentally retarded, or, in today's parlance, "intellectually disabled". The CCA, Mr Keller maintained, dutifully applied the three-part test endorsed in *Atkins*: low IQ, deficits in "adaptive functioning" and onset before the age of 18. The Texas court could not be faulted, he said, for turning to one psychological manual rather than another to flesh out the first two parts.

Mr Sloan's rejoinder to this claim was embraced by the four liberal justices and, it seems, by Justice Anthony Kennedy, the fifth vote Mr Moore needs to avoid execution. In *Hall v Florida*, a case from 2014, the Supreme Court ruled that standards for intellectual disability must be "informed by the medical community's diagnostic framework", and may not disregard established medical practice. But in evaluating Mr Moore's case, Mr Sloan noted, the Texas appeals court bashed the district court for relying on the current manual of the American Association on Intellectual and Developmental Disabilities. Instead, the CCA flipped back to an old standard from 1992, plus a list of seven factors springing, apparently, from the minds of the judges. None of the factors (including whether the person "can lie effectively" or "formulate plans") included a single citation.

Justices Stephen Breyer, Elena Kagan and Sonia Sotomayor zeroed in on the CCA's comment that as intellectual disability standards are "exceedingly subjective", they should be geared not to clinical standards but to the "level and degree of mental retardation at which a consensus of Texas citizens would agree that a person should be exempted from the death penalty." This idea alarmed Mr Breyer. The will of the people of Texas, he said, "has nothing to do with it." Standards for intellectual disability should be fashioned from the views of medical professionals, he implied, even if a rule that works for all 50 states is hard to come by.

Ms Sotomayor pressed Mr Keller to defend the CCA's reliance on Steinbeck's character to define who counts as intellectually disabled. One problem with fashioning standards after Lennie, Ms Sotomayor pointed out, is that the character seems just as capable as Mr Moore, who, as a teenager, made money cutting grass. "Lennie was working on a farm. How is that different from mowing a lawn?" And if Mr Moore's ability to hide weapons and lie disqualifies him from being intellectually disabled, why should Lennie be included? He sought to "hide the death of the rabbit he killed", Ms Sotomayor recalled, and yet he was held up by the Texas court as "not just mildly, but severely disabled".

Mr Keller tried to explain away the Lennie reference as a mere "aside" in a ruling that was otherwise consistent with both *Atkins* and *Hall*. But a majority of the justices seem sceptical that Texas's standards for measuring intellectual disability jibe with their precedents. Word on Mr Moore's fate should arrive in the spring. ■

Recounting Midwestern votes

Catharsis

CHICAGO

Recounts are tedious, expensive—and useful

MOST voters yearn for closure after an unusually bitter election campaign, but three of the four candidates for the presidency now claim that the election may not have been free and fair. The loudest is Donald Trump. The president-elect frequently alleged that the election process was rigged and voter fraud common in the run-up to the election. On November 27th he tweeted that he had won the popular vote, "if you deduct the millions of people who voted illegally." Jill Stein, the Green Party's candidate, raised millions of dollars for a recount of votes in Wisconsin, Pennsylvania and Michigan, where Mr Trump's margins of victory were thin. And after initial hesitations, Hillary Clinton's campaign joined the drive for a recount in the three Midwestern states which, together, handed Mr Trump his victory.

Ms Stein denies that she is pushing for a recount to overturn the election result. She says she is spurred by worries about the "hackability" of voting systems in the wake of the hacking of the Democratic National Committee's network, voter-registration databases in Illinois and Arizona and the e-mail account of John Podesta, Mrs Clinton's campaign manager. Some suspect that Ms Stein is partly driven by the publicity generated by her initiative and the inflow of funds (and donors' contact details) to finance the recount. The initiative has given her more airtime than ever before and brought in about $7m, more than she received in the whole year for her presidential run.

Recounts are unlikely to overturn the result. The election was decided, in effect, by slightly more than 100,000 people in three Midwestern states. Mr Trump won Wisconsin with a margin of 0.8% (or 22,000 votes), Michigan with a margin of 0.2% (11,000 votes) and Pennsylvania with 71,000 votes, a margin of 1.2%. But these margins are bigger than any overturned before in a recount.

Merle King, of the Centre for Election Systems at Kennesaw State University, argues that the hacking incidents during the campaign do not mean that voting systems can easily be infiltrated. Voting technology differs between states and even county by county, with some counties using paper ballots, others paperless technology, making a large-scale hack very tricky. Around 75% of all votes are cast on paper, which is safer than those cast on electronic voting machines, some of which provide no paper trail as backup and can be hacked, as researchers have shown. Nearly all states use federally certified technologies, such as encrypting results several times before they are transmitted to a central repository.

Philip Stark, a statistician at the University of California, Berkeley argues that elections never work perfectly because of human error. Recounts usually produce a different result. Ballots can be torn when they are put through a scanner and a sensitive scanner can count a mark where a pencil just rested as a vote. The goal, says Mr King, is to get a reasonable approximation of the result.

The recounters are on a tight deadline: the electoral college must do its work by December 13th. However costly and tiresome, argue Mr Stark and Ronald Rivest of the Massachusetts Institute of Technology, elections should be audited regularly, not only when margins are slim. If the results are confirmed, they will bolster voters' belief in the system. If the process goes badly, as was the case with the chaotic recount in Florida after the presidential election in 2000, it will trigger reforms, such as the famous banishment of hanging chads (partly-punched paper cards). Either way, voters will be able to move on. ■

Divorce

Disruptive innovation

DENVER

A spate of start-ups offer alternatives to traditional divorce

MOST of the employees at the Centre for Out-of-Court Divorce in Denver are trained in mediation or social work, but they also pay close attention to interior design. The centre, on the ground floor of a nondescript office block, is decorated with photos of smiling children and stocked with dolls' houses, stuffed animals and board games. It has three exits in case tensions flare and the separating partners need personal space. They have been used a few times since 2013, when the centre began helping to dissolve marriages, says Susan Carparelli, the centre's executive director; but not many.

The centre is one of several new enterprises that seek to make divorce cheaper and more amicable. Another, Wevorce, uses mostly online methods to guide couples through the process. Based on their answers to a survey, potential divorcees are assigned one of 18 "archetypes" and walked through the legal, financial and emotional processes of ending a marriage. Its website promises to help couples divorce in less time, for less money, with less conflict. Separate.us, which began operations in 2015, offers online legal guidance for divorcing pairs from $99.

Although parents who disapprove of their children's partners may be quick to warn that half of all marriages end in divorce, that statistic no longer holds true. According to the National Centre for Family and Marriage Research (NCFMR), a think-tank, the divorce rate in America has fallen by 25% from 1980, reaching a 40-year low. In 2015 there were 16.9 divorces per 1,000 married women, down from 22.6 in 1980. This dip is in part because of America's ageing population. Older couples are far less likely to divorce than younger ones. Another factor is that far fewer Americans are getting married in the first place, partly because not being married carries less stigma than before, says Susan Brown of the NCFMR. But divorce is still common—more than 800,000 marriages were annulled in 2014—and it is often costly and protracted. A survey by Nolo, a legal publisher, suggests the average American couple spends $15,000 and 10.7 months untying the knot.

It's a bargain

The legal system often adds insult to cost and time. Rebecca Love Kourlis, director of the Institute for the Advancement of the American Legal System, which helped create the Centre for Out-of-Court Divorce, explains that America's adversarial approach to divorce "fans the flames of controversy". Most divorces are handled through litigation. Even if the decision to part ways is mutual, that litigation always involves a plaintiff, or the person who proposed the divorce, and a defendant. Conflict-of-interest rules generally bar the same lawyer from representing both parties in a divorce proceeding. Only a handful of divorce cases are actually settled in court, but traditional litigation inherently promotes the idea that the couple's interests are at odds.

The Centre for Out-of-Court Divorce offers a more collaborative approach. For a flat fee of $4,500 partners who wish to uncouple are provided with a customised package of mediation, counselling, and assistance with financial planning and custody schedules. In a windowless conference room, aspiring divorcees sit at a table topped with multiple calculators and two separate boxes of tissues. On a whiteboard, they can work out school pick-up schedules and holiday budgets. Across the hall in the playroom, a therapist might watch how their child responds to various toys. Does he or she gravitate towards the miniature green bottles in the dolls' house? That prompts the therapist to find out whether one of the parents has been drinking to dull their pain. Divorces at the centre normally take 40 hours spread over six months, but there is no set time cap if a split turns out to be particularly complex.

Ms Carparelli recognises that the service will not be right for all couples. Where there is abuse or when the couple has a lot of trouble communicating, litigation may be more appropriate. But for a large share of separating couples it may well be the future, like "introducing a cell-phone into a world of landlines". ■

Louisiana's Senate race

Alamo on the bayou

BATON ROUGE AND METAIRIE

Democrats struggle to salvage some honour in this year's electoral finale

FOSTER CAMPBELL, the Democratic candidate in Louisiana's unfinished Senate race, is thrilled by the influx of support from beyond the state. "Send it on!", he says of the donations from Hollywood stars and others in the wake of Hillary Clinton's defeat. For some, his campaign has become a last stand against Republican hegemony, a political Alamo on the bayou. "Hallelujah!", he exclaimed at an event this week in Baton Rouge.

In a parallel universe, the outcome of the run-off on December 10th might have determined control of the Senate. In that case, chuckles Senator Roger Wicker, chairman of the National Republican Senatorial Committee, "there would probably be $10bn" pouring in. Still, he says at a gathering of Republican volunteers in Metairie, on the outskirts of New Orleans, "a one-vote majority", his party's current advantage in the incoming Senate, "is pretty precarious." Extending it is important enough for Mike Pence to visit on December 3rd.

He may be too late—because, as Robert Mann of Louisiana State University says, the "real race" may have been among the Republican candidates in the primary on November 8th. The non-partisan, 24-strong field included David Duke, a former grand wizard of the Ku Klux Klan; in a televised debate he bickered with the moderator and said Mrs Clinton "should be getting the electric chair". In an election format that encourages candidates to attack their party colleagues to solidify their vote, a fellow Democrat tried to tie Mr Campbell to Mr Duke. John Kennedy, the Republican front-runner, disavowed his side's mud-slinging in memorably expansive terms: "my campaign played absolutely no role in creating this story alleging…sexual relationships with prostitutes that were later murdered," he insisted, adding that his family was praying for the traduced man. (His rival sued the author and publisher of a book in which the slurs originated.)

The trouble, for Mr Campbell, is that precious little mud has stuck to Mr Kennedy, a long-term state treasurer who came first in the primary with 25% of the vote; Mr Campbell got 17%. And sleaze was vital to the long-shot Democratic victory in last year's governor's race: an infamous ad charged that the Republican contender, Senator David Vitter, "chose prostitutes over patriots" (Mr Vitter's retirement from the Senate opened up the current contest). The upset allowed Louisiana's Democrats to hope that, in the right circumstance, they could still compete in statewide elections.

Mr Campbell's team is striving to associate Mr Kennedy with both Mr Vitter and Bobby Jindal, an unpopular former governor. They also emphasise he used to be a Democrat. In a role-reversal that looks odd from a national perspective but makes sense in Louisiana, they say, in particular, that he formerly supported abortion. To the sound of a beating heart, a new ad from backers of Mr Campbell opens with the figure 22,581,040 emblazoned on screen, supposedly the tally of abortions during the years Mr Kennedy was pro-choice.

Jambalaya politics

He never was, Mr Kennedy maintains in Metairie. As for his defection, it was his old party that changed, not his convictions. "You can't be a conservative Democrat any more," he laments. After all, lots of Southern politicians have made the same switch, including Louisiana's other Senator, Bill Cassidy. These days, says Mr Mann, "nobody doubts that [Mr Kennedy] is a conservative." Disciplined if uninspiring—this John Kennedy is no Jack Kennedy—he hammers home the usual Tea Party demands for more freedom, fewer handouts and immigrants. He can do folksiness, too, backslapping and comparing Thanksgiving hunting hauls with his canvassers.

He "wouldn't know the difference between a bulldog and a billy goat," grumbles Mr Campbell, who in some ways seems a better fit with the voters. A cattle farmer, self-declared populist, former state senator and now public service commissioner—Huey Long, the legendary governor, once held the same post—he has always opposed abortion and owns 37 guns. His go-to anecdote tells of an uncle who lost both hands in a dynamite accident; sifting through shotgun shells with his hook to buy them individually (he couldn't afford a box), the uncle told young Foster, the son of a shopkeeper, that "Not everybody's daddy owns a store." "That changed my life," he says, inspiring him to champion the little guy against payday loan and petrochemical firms. Poverty and environmental damage are among Louisiana's main problems: he wants a higher minimum wage, more federal subsidies and corporate aid to fight coastal erosion.

His team reckons he can snatch the third of white votes which, in the state's stark electoral calculus, he needs to win, along with the Democrats' reliable black constituency. It helps, they think, that Donald Trump, who thrashed Mrs Clinton in Louisiana, will no longer be on the ballot. Anyway, Mr Campbell's populism overlaps with the president-elect's more than does his opponent's doctrinaire conservatism. "I don't agree with everything Mr Trump said or did," concedes Mr Kennedy, a fiscal hawk, of Mr Trump's spending plans. Mr Campbell says he could co-operate with Mr Trump over trade deals, term limits and other shared bugbears: "There ain't no wrong way to do the right thing."

The combined Republican vote in the primary was 61%. If Mr Campbell were running as one himself, he might well win. As it is, his chances are slim, which might explain why, despite the generosity of those far-flung sympathisers, the national Democratic Party is, as he puts it, "missing in action". One local insider likens the contenders to a knife and a fork. "You need a fork more," he says, "but in Louisiana, the knife is gonna win." ■

John Kennedy, in pursuit of voters

Lexington | The impresario-elect

Washington is becoming more comfortable with Donald Trump

THE elites of Washington are starting to feel better about Donald Trump. A sense of relief is creeping over them after the president-elect ditched several impossible campaign promises and named conventional conservatives, including a former Goldman Sachs banker, for some big jobs, offsetting the hard-right nationalists and populists given posts in his inner circle. For a moment they thought America might have elected a true demagogue, beholden to a pitchfork-wielding mob. They wondered if the businessman meant it when he roared "Drain the swamp in Washington!" at pre-election rallies, and vowed to ban lobbyists from his government. Now they think they see a cynic like so many others in politics, who ran as an outsider but will govern as an insider. He seems more manageable than they had feared.

Mr Trump is not an ideologue, the lobbying, business, diplomatic and political classes murmur approvingly. Just you wait, they predict, he will ditch his most crazily populist ideas, from starting a trade war with China to mass deportations, while allowing Republicans in Congress to cut taxes and slash business regulations. True, if he increases spending on infrastructure or defence then deficits might explode. But with luck the economy will boom, keeping Mr Trump's fieriest supporters happy.

They draw comfort from the array of conservative bigwigs, pillars of Congress and retired generals he has summoned for job interviews. Take foreign policy. Candidate Trump alarmed grandees from both parties with his cooing praise for President Vladimir Putin of Russia. Their fears ebbed once his search for a secretary of state led him to interview figures with more orthodox views, including Mitt Romney, who as the Republican nominee in 2012 called Russia America's "No. 1 geopolitical foe", and a former general, David Petraeus, who in 2015 claimed Mr Putin wanted to "resurrect the Russian empire". The Mr Trump of TV debates appalled conservatives by praising government-run universal health care in places like Scotland. President-elect Trump soothed Republicans by naming as his health secretary Representative Tom Price of Georgia, a surgeon-congressman who seems to view government-run medicine as something like gangrene. Pondering so many mixed signals, Trump apologists cross their fingers, squint a bit, and declare that they see a political pragmatist who may yet preside over a rather normal administration.

These folks are probably deluding themselves. All candidates worry about pleasing their supporters or building coalitions, even as they craft policies that reflect their core beliefs. But it is striking how often public acclaim is Mr Trump's first and last concern. Explaining in an interview with the *New York Times* why it would be "nice" for America and Russia to fight Islamic State together, he imagined how, if his plan succeeded: "The people will stand up and give me a massive hand." Over Thanksgiving weekend aides publicly questioned giving the State Department to Mr Romney—who had, after all, called Mr Trump a "fraud" during the election. The president-elect reportedly argued that Mr Romney "looks the part" of a world statesman—sounding more like a casting agent than a man assembling a government.

Those parsing Mr Trump's "Drain the Swamp" slogan for clues to his opinions about government reform should have been with Lexington at a rally in Kinston, North Carolina, on October 26th. Freshly disembarked from his Boeing 757, Mr Trump had just begun a thunderous attack on Hillary Clinton's health policies when he was distracted by a "Drain the Swamp" sign. "Look at that," he marvelled. When his team had coined the phrase three days earlier he had disliked it, he confided. But then he used it and "the place went crazy." Now, he beamed, "It's the hottest, it's like, trending all over the world…So we like that expression."

Many note how Mr Trump was helped by reality television, which made him an icon of success. But his rise recalls an older American tradition: vaudeville shows. In their heyday, just over a century ago, chains of vaudeville theatres spanned the continent, with big impresarios claiming to entertain 5m patrons a year. Shows of a dozen or more acts would make audiences gasp, weep and laugh in rapid succession—speed was a vaudeville obsession, as it is with Mr Trump, who promises to bring change "so fast". A history of the genre, "Vaudeville Wars" by Arthur Frank Wertheim, records how working men in cheap seats were wooed with turns like the "Two Skull-Crackers", whose mock combat ended with an axe-blow to a performer's head (beneath a cork- and steel-lined wig), or the "Diving Venus", a beauty in a tight bathing-suit who plunged into a glass tank. Respectable matrons were lured with such "dignity acts" as opera singers from Europe. Theatre-managers were told to ignore their expert tastes when judging performers: what counted was audience reactions.

The skull-crackers

America has elected an impresario-president. Imagine him peering past theatre footlights through clouds of cigar smoke, checking that every row is full and each face rapt. There is no guarantee that will make him a pragmatist: indeed, perhaps because he has so few fixed beliefs (beyond protectionism), he has appointed ideologues to key positions, like a vaudeville boss crafting a playbill to sell every last seat. His team so far includes hardline nationalists alongside conservative technocrats like his chosen transport secretary, Elaine Chao, the wife of the Senate majority leader, Mitch McConnell of Kentucky. Nor are grassroots supporters forgotten. He has claimed credit for strong-arming Carrier, a maker of air-conditioners, into keeping 1,000 jobs in Indiana, rather than sending them to Mexico. He has fired off tweets proposing, in breach of the constitution, that those who burn American flags should lose citizenship. If Washington grandees are shocked, they misunderstand Mr Trump. He has a knack for sensation. Applause is his drug. Elites are naive to imagine that this will make him more manageable. It is his show now. ■

Haiti's presidential election

The banana man cometh

The probable new leader is a little-known businessman with unclear policies

FOLLOWING the example of the United States, Haiti has elected as its new president a businessman with no experience in government. Jovenel Moïse, the smooth-domed nominee of the Haitian Shaved-Head Party (this is where the parallel with the American election breaks down), won outright in the first round of voting, held on November 20th. His plans for governing his impoverished country are fuzzy. If Mr Moïse simply brings political stability, many Haitians will be grateful.

That is no certainty. Last month's election was a re-run of a vote in October 2015, the results of which were annulled after several candidates alleged electoral malpractice. They included Jude Célestin, a leftist, who had come second to Mr Moïse. He fared no better in the re-run. Mr Moïse beat the field decisively, taking 56% of the vote, according to preliminary results. Haitian and international observers said the election was conducted fairly.

But there are problems. Turnout was a miserable 21%. It was held down by the devastation caused by Hurricane Matthew, which struck Haiti's south-west in October, and by voters' disillusionment with politics and elections. Around a tenth of the ballots were deemed invalid by vote-counters. Mr Moïse was elected with just 595,000 votes in a country of more than 10m people.

Three of the nine members of the electoral council refused to approve the preliminary results. Mr Célestin and the two candidates who finished behind him say they will challenge them. Violence has broken out sporadically since the election.

But Mr Moïse's margin of victory is so massive—he polled 36 percentage points ahead of Mr Célestin—that his victory is likely to be confirmed when the final result is published in late December. He owes his triumph in part to the failure of politicians linked to Fanmi Lavalas, the party of Jean-Bertrand Aristide, a popular two-time former president, to unite around a single candidate. Mr Célestin had to share left-leaning voters with two rivals.

Sweet Micky's friend

Mr Moïse was lucky in his mentor. He is a protégé of a former president, Michel Martelly, who sports an equally shiny pate (hence the name of the party that supports them). Mr Martelly governed without a functioning congress for nearly a year before stepping down last February. A caretaker has been in charge since. Mr Martelly is not loved, except as "Sweet Micky", a singer of Haitian merengue, his profession before he became a politician. But he has the backing of businesses, which provided money for Mr Moïse's presidential run.

Mr Moïse advertised widely and campaigned across the country, looking presidential as he stepped out of his helicopter. The former boss of Agritrans, an organic-banana plantation, he styled himself *Nèg Bannann nan* ("the banana man"), giving his campaign an appealing folksiness. Though plugged into Haiti's economic elite, he marketed himself as an outsider. Voters overlooked the millions of dollars in loans that Agritrans received from Mr Martelly's government.

What sort of president Mr Moïse will turn out to be is a mystery. Like his rivals, he talked a lot about boosting agriculture and manufacturing, and promised to clean up corruption, which was rife in Mr Martelly's administration. He offered few serious policy proposals. He may follow Mr Martelly in welcoming foreign investment. Some analysts think Mr Moïse, who comes from northern Haiti, will try to rebalance the economy away from Port-au-Prince, which produces two-thirds of the country's GDP.

Economists hope that Mr Moïse will encourage investment in rural areas, where more than half of Haitians work, and fight deforestation, which exacerbates the effects of hurricanes and other natural disasters. Other priorities are improving infrastructure, strengthening land-ownership rights and reforming the judiciary.

But the new president's first job on taking office in February, assuming that his victory is confirmed, will be to bring back a semblance of political stability. The vote in November continued the process, which began in August 2015, of electing new deputies and senators to Haiti's congress. Mr Moïse should appoint members of the opposition to his government, says Robert Fatton, a political scientist at the University of Virginia. A rapprochement with Mr Célestin would help soothe supporters of Lavalas, who are likely to continue their protests at least until the election results are made official. If Mr Moïse fails to win over some of his foes, warns Mr Fatton, "we'll have a bumpy ride." ■

Brazil

Trouble for Temer

SÃO PAULO

But the president will probably survive stormy times

MICHEL TEMER, Brazil's president, was as shocked as all his countrymen by the crash of an aeroplane in Colombia in which 71 people died, including most members of a popular Brazilian football team (see next article). The tragedy also had the effect of removing from the headlines other bad news that affects the president more directly. Data published on November 30th suggest that the economy will recover more slowly from a severe recession than many analysts had expected. A fresh scandal has forced yet another member of the cabinet to resign, the sixth in the six months since Mr Temer took charge. His efforts to reform Brazil's economy are making progress, but his government is in turmoil.

The latest scandal looks more like an embarrassment than a threat. Geddel Vieira Lima, who was in charge of the president's relations with congress, quit after the former culture minister, Marcelo Calero, accused him of demanding that an arm of the ministry unblock construction of a high-rise building in Salvador, in which Mr Vieira Lima had bought a flat. Mr Calero, who had resigned earlier, claimed that Mr Temer had insisted that he patch things up with Mr Vieira Lima.

To many Brazilians, already enraged by the massive corruption scandal surrounding Petrobras, the state-controlled oil company, that looked like Mr Temer pressuring Mr Calero to help his long-time friend. A tape of the conversation, which was leaked to the press, confirms that Mr Temer did ask Mr Calero to bring the solicitor-general into the dispute. The president says he was merely suggesting him as an arbiter. Many Brazilians do not believe him. Once again, Mr Temer took too long to get rid of an errant minister, they complain.

The controversy suggests that scandal will continue to plague Mr Temer's presidency, which began in May with the impeachment of his predecessor, Dilma Rousseff, for manipulating federal accounts. The Petrobras affair will continue to shorten political lives. A plea bargain between prosecutors and executives of Odebrecht, a construction firm at the centre of the Petrobras scandal, could lead to charges against 150-odd congressmen and several ministers, or so it is rumoured. "It would be disingenuous to say it doesn't worry me," Mr Temer admitted at a press conference on November 27th. Then there is the (slim) possibility that the electoral tribunal will annul the results of the presidential election in 2014, in which he was re-elected as vice-president, on the grounds that his campaign and that of Ms Rousseff were financed illegally.

News that GDP shrank by 0.8% in the third quarter of this year confirms that the economy was still in deep trouble. Temporary factors caused some of the decline. A dispute between Volkswagen and a supplier halted car production at some factories, and a drought cut coffee and maize harvests. Consumption, under pressure from high unemployment and household debt, fell along with investment. GDP will probably grow next year, but not by much.

Despite these storms, Mr Temer has kept Brazil heading in the right direction. His most important policy is a constitutional amendment to freeze federal spending in real terms for 20 years, which ought to reduce debt and interest rates and spur private investment. It passed the first of two tests in the senate on November 29th; a final vote is expected later this month. This week Mr Temer signed a law that gives foreign firms more access to deep-sea oilfields; and the federal government invited private firms to bid for the right to manage four airports. The central bank gave Mr Temer's economic policy a vote of confidence on November 30th by cutting its benchmark interest rate by a quarter-point, to 13.75%.

The prospect of much lower rates, and thus of a revival of business confidence, depends on a second big reform, to Brazil's budget-busting pension system. That is needed to carry out the spending freeze. It will provoke opposition from Brazilians who will have to work longer and retire later. Mr Temer has promised to send a draft reform bill to congress this year.

Ironically, the fuss over Mr Vieira Lima's flat may help get it through, argues Ricardo Mendes of Prospectiva, a political consultancy. The minister's departure opens up a job that Mr Temer can offer to a congressman who helps enact pension reform. Voters' anti-corruption vigilance has killed at least one dubious law: an amnesty for politicians who had accepted illegal campaign contributions. Mr Temer threatened to veto it, and legislators backed off. The lower house of congress has passed a worse measure, to give the appeals courts greater power to discipline zealous judges and prosecutors for "abuse of authority". If the senate approves it, voters will demand that Mr Temer veto that, too.

The odds are that he will spend the rest of his presidency, which ends at the end of 2018, battling scandals and grinding out legislative victories. As long as the scandals do not prevent the victories, Brazil should slowly recover. ■

A Brazilian tragedy

Brazil's wretched year got worse on November 28th when a chartered plane crashed into muddy slopes near Medellín, Colombia's second-biggest city. Most of the 77 people on board were Brazilians; all but six were killed. Among the passengers were 22 players from Chapecoense, an unglamorous football team from southern Brazil. It had been enjoying a run of success that reminded people of Leicester City's unlikely conquest of England's Premier League last season. The team was on its way to play its biggest-ever game, the final of the Copa Sudamericana, a continental club competition, against Atlético Nacional, a team from Medellín. Investigators have not established the cause of the crash. A leaked audio tape captures a pilot telling air-traffic controllers that the plane was running out of fuel and suffering from electrical failure. Brazil's president declared three days of national mourning. Several players from Atlético Nacional asked that the Copa Sudamericana be given to the grief-stricken Brazilian football club.

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South Korea's political crisis

A long goodbye

SEOUL

The president seems certain to leave office early, but how and when she will go remain in dispute

IT WAS her reputation for integrity that helped bring Park Geun-hye to power. Unmarried, childless and estranged from her siblings, Ms Park said shortly before she was elected president in 2012 that the South Korean people were her family: not for her the household corruption scandals that had dogged every previous president.

Yet four years on Ms Park's image is in tatters. And it is a friendship that she formed as a result of her "lonely life", as she put it, in the presidential Blue House that looks set to be her undoing. Choi Soon-sil, a confidante of Ms Park, was indicted on November 20th on charges of attempted fraud and abuse of power, and will face trial this month. Prosecutors say she used her connections to coerce 50-odd conglomerates to funnel 80bn won ($70m) to two cultural foundations, K-Sports and Mir, that she controlled.

The prosecutors have accused Ms Park of ordering aides to assist Ms Choi in the alleged shakedowns. One aide, Ahn Chong-bum, has been indicted for abuse of power and coercion; another, Chung Ho-sung, for divulging state secrets. In documents regarding the arraignment of Cha Eun-taek, a pop-video director indicted on November 27th for using his ties to Ms Choi to secure favours, prosecutors allege that Ms Park instructed staff to contact the bosses of KT and POSCO, two conglomerates, on his behalf. In 2014, they say, she also instructed aides to press Hyundai, a South Korean carmaker, into hiring Ms Choi's advertising agency and engaging a parts supplier owned by an associate of hers.

The authorities have named Ms Park as a suspect—a first for a sitting South Korean president. Her office has rejected the charges as "fantasy". Ms Park says she did nothing worse than let down her guard with people close to her. Yet in her third televised apology for the scandal, on November 29th, she seemed to accept the idea that she may not serve the remaining 15 months of her term, saying she would leave a decision on her fate to the National Assembly.

Resign on the dotted line

This woolly offer has created confusion among parliamentarians, who had looked almost certain to impeach her. Only 28 MPs from her conservative Saenuri party need to break ranks to reach the necessary two-thirds majority for an impeachment motion to pass, and considerably more than that had expressed their support for one. But Ms Park's hint at resignation has strengthened the hand of Saenuri loyalists, who say that Ms Park should be persuaded to leave office voluntarily, and caused the rebels to vacillate: on December 1st the party proposed that she resign in April.

Minju, the main opposition party, wants her to go much sooner, and says it is pressing ahead with impeachment. It has urged sympathisers in Saenuri not to backtrack. Yet a member of Minju says a vote is now "too risky given the cracks", including in its own ranks. Those who saw impeachment as a protest against Ms Park's stubborn refusal to step down find the possibility of a negotiated exit tantalising.

The divisions and delays are likely to fuel the anger of the hundreds of thousands who have rallied for weeks in Seoul and other cities demanding that Ms Park quit. Four-fifths of South Koreans now support her impeachment, twice as many as a month ago. They are incensed by the idea that Ms Choi—who was privy to presidential files on ministerial appointments and state visits even though she held no official position—might have pulled the strings of Ms Park's administration for her personal profit. Reports have surfaced of officials who were dismissed after raising concerns about Ms Choi's behaviour and influence, including a police detective who spent more than a year in prison after he was accused of leaking documents.

For years rumours had swirled about ties between Ms Park and Choi Tae-min, the father of Ms Choi and a six-times-married cult leader. He befriended her after her mother was killed in an assassination attempt on her father (a former military dictator). Ms Park's predecessor, Lee Myung-bak, said while campaigning against her for the presidential nomination in 2007 that if she became president, "it is Choi Tae-min's family who seize power." Ms Choi's then-husband was suspected of running Ms Park's campaign behind the scenes.

Many feel that Ms Park is incapable of reading the public mood. She said in her third address that she was "heartbroken" that her apologies had not eased resentment, yet she has refused to take questions from the press. Even her staunchest sup- ▸▸

porters have turned their backs on her: in Daegu, once her political stronghold, her approval rating, 3%, is even more minuscule than the 4% she polls nationwide. Her ineffectual leadership has been compounded by her scripted style; among her critics she was derided early on as "the notebook princess". Many are concerned that she has relied for advice mainly on trusted allies of her father. Kim Ki-choon, her former chief of staff, helped to draft the martial law that kept her father in power.

Ms Park's government is in disarray. She has already lost eight close aides, and this week accepted the resignation of her justice minister. She bowed out of the Asia-Pacific Economic Co-operation summit last month; some reports say an imminent meeting of the leaders of China, Japan and South Korea may be postponed until next year. The budget for 2017 must be passed by December 2nd. But MPs are preoccupied with politicking.

If Ms Park were to resign, an election for a successor would be held within 60 days, with the prime minister acting as president in the meantime. That would not leave parties much time to pick or prepare candidates. Impeachment takes much longer (one reason why it is favoured by some in Saenuri, which has no strong candidate yet). After the assembly passes an impeachment motion, the constitutional court has six months to review it. Six of the nine justices must approve it for the president to lose office.

The court has a conservative bent: five justices were picked by either Ms Park or Mr Lee, or by supreme-court justices appointed by them. They would have far more to chew over than in the only previous impeachment, in 2004, against Roh Moo-hyun, the president of the day, which they rejected within two months. That was for minor violations of election laws, to which Roh had already admitted. The charges against Ms Park are far more serious, and the investigation into the scandal is not yet complete. Later this month the prosecution service will hand its findings to a special prosecutor chosen this week by Ms Park from two candidates nominated by the assembly.

Ms Park's unloved prime minister, Hwang Kyo-ahn, would take over for the duration of the court's deliberation if MPs impeach her. That is awkward, given that Ms Park had moved to replace him in November, before retreating when MPs refused to consider the candidate she had nominated to succeed him. The head of the Justice Party, a minor opposition party, has said that the prime minister's role must be kept to a minimum if he takes over, and all important decisions discussed with the assembly—"Otherwise he too will be impeached." There are sure to be many more twists and turns, but Ms Park's days in office are clearly numbered. ■

Royal politics in Thailand

Better late than never

BANGKOK

A stalled succession is at last under way

FOR two centuries a hoary prophecy held that Thailand's Chakri dynasty would produce no more than nine kings. That curse looks to have been lifted in Bangkok on November 29th, when the ruling junta's rubber-stamp parliament invited Crown Prince Maha Vajiralongkorn—soon to be King Rama X—to take the throne. As *The Economist* went to press Thais were awaiting the completion of the last legal formalities required before the succession can be officially proclaimed.

The parliament's five-minute meeting ended an odd interregnum following the death of King Bhumibol Adulyadej on October 13th. That evening the government reported that the prince had chosen to delay taking the throne, to allow more time to grieve. This breached the palace's own rules and surprised the junta, igniting fears among outsiders that the succession was being contested behind the scenes. The high-living prince is unpopular among Thais and loathed by the elites, many of whom would have preferred his younger sister, Princess Sirindhorn, as monarch.

As it turns out, the seven-week hiatus may have slightly improved Prince Vajiralongkorn's standing among Thai royalists. At least some of them have accepted his foot-dragging as a mark of respect for the late king. The grieving prince has made no public statements but has managed to look regal at a series of processions and ceremonies (unlike in July, when paparazzi spotted him at a German airport sporting a too-small vest that revealed lurid temporary tattoos). Censors have embarked on a fresh effort to block local and foreign websites that carry criticism of him, a grave crime under Thailand's *lèse-majesté* laws.

The assumption for now is that the new king—whose powers are only loosely defined by law—will continue to spend much of his time in Germany, near Munich, where he maintains a court of around 200 people and to which he has retreated several times in the weeks since his father's death. Such an arrangement might not bother Thais much: they grew accustomed to an inactive monarch during the years King Bhumibol was ill. At some point the appointment of a new Privy Council will give observers a better indication of how Prince Vajiralongkorn intends to reign. So might a soon-expected reshuffle at the Crown Property Bureau, an institution which manages the royal family's investments and which is thought to command more than $50bn.

Thailand is still only at the start of a long period of national mourning, which will continue until King Bhumibol's cremation next October. Officials are planning an ornate pyre on a parade ground in the capital, topped by a 50-metre spire. Prince Vajiralongkorn's coronation ceremony will follow, perhaps in 2018. Having insisted that all this will not impede a general election scheduled for the end of next year—the first since a coup two-and-a-half years ago—members of the junta are now hinting that the vote may get pushed back.

The only certainty is that Thailand's leaders will continue to rely heavily on the late king's prestige. Since his death his portraits have multiplied around the capital. Officials say his birthday, December 5th, will remain a public holiday; this year's celebrations will include the auspicious assembly of 999 monks. Glorifying King Bhumibol has helped Bangkok's elites hang on to a dusty political culture which reveres rank, rewards status and devalues electoral democracy. They will not want to let the succession break the spell. ■

A seven-week switcheroo

India's demonetisation

The ropy rupee recall

DELHI

A botched reform brings pain to ordinary Indians, but not yet to Narendra Modi

FOR the Nuxalbari Estate in the lush hills of India's north-east, relief came in the nick of time. With winter pruning of its tea plantations at hand, 600 workers were threatening to strike. They could scarcely be blamed: the estate had not paid them in mid-November and now owed another fortnight's wages. This was not for lack of funds. Nuxalbari's account showed a healthy balance. But day after day its bank repeated the same refrain: yes, the government says it has a plan to help tea estates, but our local branch has no rupees. At his wits' end, the estate manager marched into the branch, along with bosses of trade unions and a tea planters' group, even as Nuxalbari's owners barraged the bank's headquarters with pleas. The bank at last relented, dispatching a courier weighted with sacks of cash from its vault on a night flight from Kolkata. The workers got their money in the morning.

Nuxalbari is lucky. Its owners enjoy sound finances and influence. As India enters its fourth week since Narendra Modi, the prime minister, abruptly voided 86% of the country's paper currency, many of its 1.3bn people have had no such luck. The Reserve Bank of India (RBI), the central bank, has been unable to print money anywhere near fast enough to replace the $207bn in 500- and 1,000-rupee notes that were outlawed overnight on November 8th. Unless India's four existing money presses can be speeded up, or bills quickly imported, experts reckon it could take five or six months before the money removed from circulation is fully replaced.

According to J.P. Morgan, an investment bank, Indians were making do at the end of November with a little more than a quarter of the cash that had been in circulation at the beginning of the month—and this in a country where cash represented 98% of all transactions by volume and 68% by value. The RBI has in effect been forced to ration new cash, most in the form of 2,000-rupee notes that are, owing to the lack of 1,000s and 500s, exceedingly difficult to break for change.

In such a vast country, the impact has naturally been variable. Employees of the finance ministry in Delhi, the capital, received a plump advance on their November salaries in crisp new bills, whereas the state governments of Kerala in the south and Bengal in the east say they have only a small fraction of the cash needed to pay bureaucrats' wages. Cheques won't do because banks do not have enough money either: reports in the Indian press reveal that whereas banks in the centre of Mumbai, the country's financial capital, are getting as much as three-quarters of the cash they need to meet demand, branches in the city's suburbs are getting less than half. Scroll, an online news site, reports that for one country branch in Bihar, a poor northern state, the ratio is more like a fifth.

Such was the case with Nuxalbari's local branch; it could meet some needs but not those of big planters. "Thanks to this so-called business-friendly government we are being made beggars for our own money," storms one of the estate's owners. "I feel like I'm in the middle of some Soviet-era nightmare."

The parched branches of big banks are still fortunate. For unexplained reasons the RBI has supplied almost no new cash at all to India's hundreds of smaller rural co-operative banks or to its 93,000 agricultural credit unions, so keeping millions of farmers from deposits that total some $46bn. It has also banned these institutions from competing with "pukkah" banks in exchanging old bills for new. With no cash flowing, farmers cannot even seek help from informal networks that in normal times account for more credit in rural areas than formal institutions. And although India's 641,000 villages house two-thirds of its people, they contain fewer than a fifth of its ATMs. These are being slowly modified to supply the new notes, which unhelpfully are smaller than old ones; for now most stand idle.

Starved of cash, India's rural economy is seizing up. A study by two economists at Delhi's Indira Gandhi Institute of Development Research found that in the second week of the drought, deliveries of rice to rural wholesale markets were 61% below prior levels. Soyabeans were 77% down and maize 29%. Prices have also collapsed. In Bihar, Scroll's reporters found desperate farmers selling cauliflower for 1 rupee ($0.01) a kilo, a twelfth of the prior price.

It is not only farm incomes that are pinched. An investigation by *Business Standard*, a financial daily, found that virtually none of the estimated 8m piece workers who hand-roll *bidis*, a kind of cigarette, has been paid since the cash ban. Another Indian daily, the *Hindu*, reports that more than half of the 600-odd ceramics factories in the town of Morbi, a centre of the tile industry in the state of Gujarat, with a combined output worth some $3.5bn a year, have temporarily closed because they cannot pay workers. In Agra, the hub of Indian shoemaking, some firms are paying workers with supermarket coupons to keep them on the job.

India's wealthy few have servants to take their place in the still dismally long queues snaking outside banks, but the pain reaches even to the top. A dentist in a posh part of Delhi is shocked by a 70% fall in trade since the cash ban. "All my patients can pay with plastic so I assumed I was safe, but I guess people are just being careful about spending in general." This does seem to be the case. A brokerage that surveys consumer-goods firms says November sales have fallen by 20-30% across the board. Property sales, which traditionally ▸▸

are made wholly or partly in cash, have plummeted even more.

Small wonder that Fitch, a ratings agency, on November 29th cut its forecast for India's GDP growth for the year to March 2017 from 7.4% to 6.9%. That is in line with most financial institutions' trimmed estimates, although some economists think the damage could be even worse. "There will be no or negative growth for the next two quarters," predicts one Delhi economist who prefers anonymity. "Consumer spending was the one thing really driving this economy, and now we are looking at a negative wealth-effect where people feel poorer and spend less."

Perhaps more embarrassingly for Mr Modi's government, there are few signs that its harsh economic medicine is achieving the declared goal of flushing out vast hoards of undeclared wealth or "black" money. Officials had predicted that perhaps 20% of the pre-ban cash would not be deposited in banks, for fear of disclosure to the taxman. Yet within three weeks of the "demonetisation"—well before the deadline to dispose of old bills, December 30th—about two-thirds of the money had already found its way into "white" channels. Some of this is doubtless illicit: inspectors of Delhi's bus system have found that the bulk of daily takings now mysteriously appears in the form of the banned bills, which public-sector firms can still deposit, rather than the usual small change. Reports from Maharashtra, in the centre of the country, suggest that brokers are offering to buy old notes with a face value of 10m rupees for 8.4m, suggesting that they have found ways of laundering them.

India's economy will eventually recover and may even gain strength: the forced priming of bank accounts and the switch to electronic payments will mobilise more money for lending and taxes. But there may be lasting damage to institutions, most notably the RBI itself. It failed, among other things, to warn the impatient Mr Modi that there were not enough new notes to replace old ones. It has issued a bewildering blitz of complex and sometimes contradictory instructions to banks. Its governor, Urjit Patel, has been perplexingly silent. Its reputation for probity, competence and independence is in tatters.

In another country, such a fiasco would spell disaster for the government in power. Particularly so, one would think, for a party that sailed into office on promises to boost growth, provide jobs and encourage investment. Mr Modi's opponents have blasted his policy as obtuse, destructive and downright criminal; some insinuate that his Bharatiya Janata Party (BJP) was tipped off about the ban. Opposition parties have held rallies and marches across the country and brought India's parliament to a standstill with demands for a vote on the ban, and for Mr Modi himself to debate its merits, to no avail so far.

Mr Modi has painted his critics as whiny profiteers who are running scared of his crusade. In stark contrast to the fissiparous opposition, which lacks any leader who combines charisma with national stature, the BJP has maintained rigid discipline. Mr Modi has also shifted the goalposts, notes Mihir Sharma, a writer and business columnist: "What started as a 'surgical strike' on black money is now called the dawn of a cashless society." In local elections in two states at the end of November his party even gained ground.

Some analysts in Delhi predict that once enough cash is printed to get the economy moving again, Mr Modi's government may simply insert cash into some bank accounts, such as those created under a government programme to bring banking to the poor, and declare this to be revenue from the black-money sweep. After all, pivotal elections in India's largest state, Uttar Pradesh, loom early next year. But if more cash does not soon appear, Mr Modi's future may look very different. ■

Politics in Afghanistan

Vice president

KABUL

The clue is in the name

THE vice-president of Afghanistan, Abdul Rashid Dostum, spent November 25th watching a game of *buzkashi*, a traditional version of polo in which the carcass of a goat serves as the ball. With his boss abroad, Mr Dostum was acting president. But his behaviour allegedly became downright unpresidential when he encountered Ahmad Ishchi, a political rival, amid the crowd. Mr Dostum is said to have punched Mr Ishchi in the face and then pinned him to the ground with his boot. His bodyguards administered a further beating before carting the injured Mr Ishchi away in an armoured vehicle. He has not been seen since. Protesters demanding his release were turned away when they visited Mr Dostum's palace, a sprawling pink and baby blue compound plastered with large posters of its owner.

Mr Dostum likes to talk about himself in the third person. He is a warlord first, politician second. He is known to Westerners chiefly for the time his henchmen packed hundreds of Taliban prisoners into shipping containers, leading to mass suffocation. It was startling, then, when Ashraf Ghani, a technocratic reformist, picked him as his running mate in 2014, probably to secure votes among Mr Dostum's fellow Uzbeks. That plan succeeded, but Mr Ghani has had to put up with the erratic warlord ever since. He divides his time between Kabul, where he grumbles in public, tearfully, about being marginalised, and his home territory in the north, where he mobilises unauthorised militias to fight the Taliban.

In his element

Mr Dostum (pictured) is perhaps the most glaring example of the immunity many Afghan warlords enjoy. Most recently, the Afghan government signed a peace agreement with Gulbuddin Hikmatyar, a blood-spattered Islamist, granting him immunity from prosecution for past war crimes. The UN hailed the deal as a necessary step towards national reconciliation, but Human Rights Watch complained that Mr Hikmatyar's return to national politics "will compound the culture of impunity".

The dilemma divides Afghans, too. The Solidarity Party of Afghanistan, or Hambastagi, is one of the fiercest critics of the commanders who deal in both ballots and bullets. Its spokeswoman, Selay Ghaffar, regularly hectors warlords. Others in Kabul, however, accept grim compromises in the quest for peace.

Hamidullah, a 19-year-old doing pull-ups in a public park, was appalled to watch the vice-president turn kidnapper. But he blamed all the leading politicians, including the president, for surrounding themselves with people of their own ethnicity, compounding decades of ethnic strife. "We need leaders who represent the whole country," he says.

Banyan | Asian values

One of the legacies of Taiwan's democracy movement is a growing openness to gay marriage

ON THE eighth floor in a gritty suburb of the capital, Taipei, sits the ten-year-old Wei-ming temple, a Taoist house of worship—but an unusual one. Nearly all the visitors buying bundles of prayers or bringing handwritten ones of their own to be burnt by the priest at the altar are gay. The deity receiving the prayers, and to whom the shrine is dedicated, is the Rabbit Spirit, a 17th-century folk deity from Fujian province in mainland China who protects men who have sex with men. In late imperial China, "rabbit" became a derogatory term for homosexual. In this temple the rabbits are reclaiming the label.

Warren peace

Taiwan's open tolerance of homosexuality and its liberal view of sexual minorities generally is unique within Asia. Taipei's annual gay-pride parade is a lively celebration that draws 80,000 people or so a year, including gay people from all over Asia. Perhaps religion has something to do with it: Taoism and Buddhism, the country's most widespread faiths, have less doctrinal objection to homosexuality than many religions. Some in Taiwan ascribe its tolerance to the island's long history of influences from the outside—centuries of settlement by mainland Chinese; Dutch and Japanese colonial rule; American popular culture—mingling with the island's aboriginal traditions to create a uniquely open, hybrid society. But that explanation only goes so far and, as elsewhere in Asia, older generations are much more conservative about gay issues than younger ones.

So the chief factor has to be Taiwan's modern political history, and in particular the struggle to throw off the thuggish dictatorship of Chiang Kai-shek's Nationalist Party or Kuomintang (KMT). Gay rights, feminism, environmental awareness and demands for political freedom: all emerged in the grassroots protest movement that led to the end of martial law in 1987 and culminated in full democracy.

Issues like gay rights thus became a badge of the island's democratisation, championed by a rowdy media. Chiang had once ruled that people with "sexual-orientation impairments"—ie, homosexuals—were mentally unfit to serve in the armed forces. But in 2002 the army began admitting gay and bisexual recruits. Discrimination was outlawed in hiring and at work. And a landmark education act in 2004 opened the way for tolerance to be taught even in primary school.

Around the same time a push was made to legalise gay marriage. That failed. But this year members from both the ruling Democratic Progressive Party of President Tsai Ing-wen (herself a longtime promoter of gay rights) and the more conservative KMT, now in opposition, have very similar gay-marriage bills before the national legislature. They would give same-sex couples the same rights as any others, including to adopt.

That would make Taiwan the only country in Asia to permit gay marriage, unless you consider New Zealand part of the continent. In contrast, in 2014 Singapore's Supreme Court upheld a law mandating a two-year jail term for men engaging in acts of "gross indecency"—ie, gay sex. Malaysia sends "effete" youths to boot camp. Aceh province in Indonesia punishes gay sex with 100 lashes. Thailand, one of Taiwan's few rivals in tolerance, has decriminalised gay sex, opened the army to gay recruits and banned most forms of discrimination based on sexual orientation—but legalising gay marriage remains a distant prospect. Nepal is also unusually liberal.

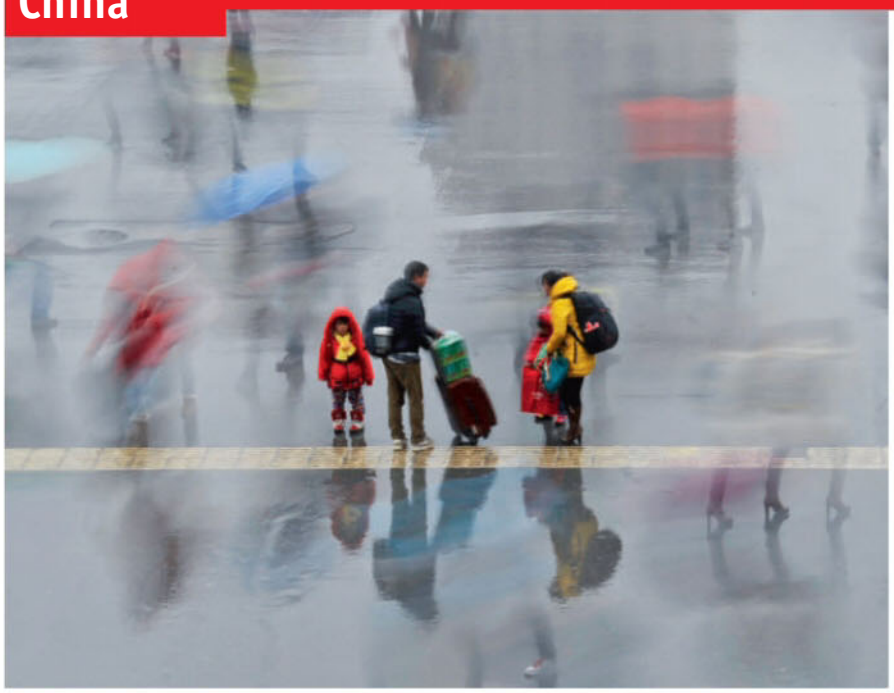
It is still possible that Taiwan's gay-rights movement will be a victim of its own success. In mid-November, as the legislature was reviewing the draft gay-marriage laws, some 10,000 protesters converged outside; some broke through the gates to stage a sit-in in the courtyard. Mainly Christians, they knelt and prayed, warning that the proposed laws were not only an affront to religion but would also promote promiscuity.

More Taiwanese support gay marriage than oppose it, according to polls. In response to the protests, Ms Tsai declared that "everyone is equal before love." But the president has other priorities, not least the economic issues that are of greatest concern to ordinary Taiwanese. How much political capital her government will expend on gay marriage is unclear. The legislature has called public hearings on the subject—a concession to the protesters.

Jason Hsu, a KMT politician who backs gay marriage, says pressure from constituents not to legalise it is growing fast. To drum up greater support, however, opponents are having to soften their tone. Many are suddenly calling for a law that would recognise gay partnerships but not marriages. "Protect homosexuals. Set up separate legislation," run the new banners.

Mr Hsu argues that that would be discriminatory, in that it would single out gay people for different treatment. Moreover, it is far from certain that adoption would be allowed under such a law. Even if, as elsewhere, such partnerships become a way-station on the road to gay marriage, Mr Hsu is against dawdling. "Taiwan", he says, "is a decade behind…We have to show the world it is still a progressive country."

Huge rival demonstrations are promised for this weekend. Many Asians admire Taiwan's lively popular democracy, in which spirited debates in parliament often reverberate in the streets. The young leaders of Hong Kong's pro-democracy "umbrella" movement of 2014, which brought central Hong Kong to a standstill with mass protests, were following the lead of the environmental activists who brought Taiwan's nuclear-power programme to a halt, and from the "sunflower" demonstrators who invaded Taiwan's legislature to block a free-trade deal with China. The fact that Taiwan is debating same-sex nuptials is encouraging. It would be even better if the country that hardly any others recognise became the first in Asia to recognise that gay people deserve equality. ■



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Internal migrants

More children, more grandparents

BEIJING AND XIAMEN

Migrant workers are reuniting their fractured families and demanding better public services

LIU HENGQING is 66. In 2007, after more than 30 years of marriage, she and her husband left Jian'ou, the town in Fujian province in southern China where they had lived until then, and followed in their children's footsteps—she to the provincial capital, Fuzhou, to take care of a newborn grandson, he to Xiamen, 250km (150 miles) away, to look after a granddaughter. "It takes a toll on you," she says, "especially being apart, but it's worth it." She launches into "The Pensioners' Marching Song", a popular parody of a classic military march:

> We are the kids' logistics force,
> We are their quartermasters.
> Listen, the kids are calling,
> We run to the market.
> Stuck in the kitchen, we care for them.

The march ends "Forwards! Forwards towards our last fight." The fight on the horizon is over China's social services and the *hukou* (household registration) system that restricts them. For Mrs Liu is part of a new wave of urban migration that is reuniting families, but putting extra strain on schools, hospitals and the government's social controls.

In the 1990s China saw the biggest mass migration in history. Hundreds of millions of underemployed peasants moved from the countryside to find work in cities. Economically, this was hugely beneficial. Socially, it was profoundly disruptive.

"Previously," says Wang Qian of the National Health and Family Planning Commission, part of the government, "migrants were mostly young workers." In 2000 about two-thirds were in their 20s or 30s. The *hukou* system largely prevents their children from getting public education and health care in the cities where the parents work, so most migrants left their children behind with grandparents or other relatives. Families were broken up. Left-behind children did not see their parents for months or years on end. Cities were full of adult workers and villages were relinquished to the very young and very old.

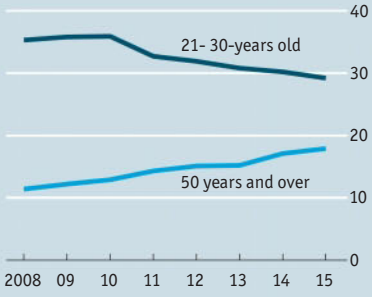
But the social strains were huge, and over the past few years migrant families have quietly started to put the three generations back together again. Helped by modest reforms to the *hukou* system (which have made it easier to change your status in some cities), the children and parents of migrants are leaving the villages to join the urban breadwinners. In 2000 there were 14m children of migrants living with their parents. By 2010 that number had more than doubled, to 29m (the total number of migrants was flat). More than half of all children of migrants are now living with their parents.

In 2008, 35% of migrants were aged between 21 and 30; they were the young workers' generation. By 2015, according to a new survey by the health and family-planning commission, the share had fallen to 29% (see chart). Over the same period, the proportion of migrants over 50 rose from 11% to 18%. To some extent this reflects the ageing of migrants who have lived in cities for years. But that cannot be the whole explanation. The number of migrants over 60 more than doubled, to 19m, in just seven years. Many, like Mrs Liu, have moved to cities after a lifetime in the countryside.

These changes have benefited families. Mrs Liu says her son would struggle to look after her grandson without her: "I just feel I need to help out while I can." But the shifts have happened so fast that government services are not keeping pace. *Hukou* restrictions mean that migrant children usually go to unofficial schools that are not registered with the municipal government and which frequently have low standards. In Beijing a study of 300 migrant schools found that only 63 were licensed. Some migrant children miss out on school entirely. The health and family-planning commis- ▸▸

Weary travellers

China, migrant workers by age, % of total



Source: National Bureau of Statistics of China

sion found that 4% of child migrants in Beijing and 5% in Shanghai were not enrolled in 2012. Another survey found that 86% of migrant children said they had no friends among the local children; 7% had no friends at all. As more left-behind children join their parents, such problems are likely to get worse and more schools will need to be built.

At the other end of the age spectrum, elderly migrants face three main difficulties: inadequate pensions, tough working conditions and gaps in the medical-insurance system. Only a third of them have pensions and, of those, most have so-called "rural pensions", which assume the recipient will be living in villages where the cost of living is low. At roughly 600 yuan ($90) a month, these stipends are not enough to live on in a city. Villagers with a rural *hukou* who have never been employed by a company often have no pension at all. The upshot is that more than half of elderly migrants either depend on their children for money, or must work.

The survey by the health and family-planning commission found that 22% of migrants over 50 have jobs. Almost 60% of older migrants, and 70% of older migrant women, never went to school or only to primary school. They cannot do skilled jobs: 70% of those in employment work in services, often as cleaners, with long hours and low pay. The survey found that half work more than 56 hours a week, while average earnings for migrants over 50 are only 2,500 yuan a month—1,000 yuan less than the average for all migrants. One older migrant in the capital explains how she used to make window frames on construction sites in Shandong province. "It became harder to get jobs, so I went to Beijing and became an hourly cleaner. We were still able to work. There was no point just sitting at home," she says.

She counts herself lucky in being healthy. Medical care for China's retired migrants is patchy to non-existent. Over 90% have some form of medical insurance. But those who are part of locally based plans can get medical attention only in the place where they joined—usually the village they left. Many therefore say they will have to leave the city when they can no longer look after themselves. A few local hospitals and clinics offer care to people from other areas. For example, the medical system in Sanya, a tourist resort in the far south, has an arrangement to treat people from the city of Harbin in the north-east. But such provisions are rare.

Duan Chenrong of Renmin University in Beijing told *China Daily*, a state-run newspaper, that "society has not paid enough attention to this group and governments should do more to improve services for them." As so often in China, social change is outstripping the government's ability to respond. ■

Adultery

The divorce whisperer

CHONGQING

Saving marriages is quite a business

WITH his slick navy suit, silver watch and non-stop smoking, Yu Feng is an unlikely ambassador for Chinese family values. The office from which he operates, in Chongqing in western China, looks more like a sitting room, with grey sofas, cream curtains and large windows looking out on the city's skyscrapers. Women visit him here and plead for help. They want him to persuade their husbands to dump their mistresses.

Mr Yu worked in family law and then marriage counselling before starting his business in 2007. He charges scorned wives 100,000-500,000 yuan ($15,000-75,000); cases usually take 7-8 months. He befriends both the two-timing husband and the mistress, encouraging them to find fault with each other, and gradually reveals that he has messed up his own life by being unfaithful. Most clients are in their 30s and early 40s. "This is the want, buy, get generation," he says; sex is a part of China's new materialism. But changing sexual mores and a rocketing divorce rate have prompted soul-searching about the decline of family ties. Mr Yu claims a 90% success rate.

The *ernai*, literally meaning "second wife", is increasingly common. So many rich men indulge that Chinese media sometimes blame extramarital relationships for helping to inflate property prices: some city apartment complexes are notorious for housing clusters of mistresses, paid for by their lovers, who often provide a living allowance too.

It is not just businessmen who keep mistresses: President Xi Jinping's anti-corruption campaign has revealed that many government officials do too. According to news reports Zhou Yongkang, the most senior person toppled by the current anti-graft crusade, had multiple paramours; former railways minister Liu Zhijun is rumoured to have kept 18.

China has a long history of adultery. In imperial times wealthy men kept multiple concubines as well as a wife; prostitution was mostly tolerated, both by the state and by wives (who had little choice). Married women, in contrast, were expected to be chaste. After 1950 concubines were outlawed and infidelity deemed a bourgeois vice. Even in the 1980s few people had sex with anyone other than their spouse or spouse-to-be.

Over the past 30 years, however, sexual mores have loosened and more young Chinese are having sex with more partners and at a younger age. Some clearly continue to wander after marriage. Some 20% of married men and women are unfaithful, according to a survey of 80,000 people in 2015 by researchers at Peking University.

In many respects growing infidelity is a predictable consequence of economic development. People are increasingly willing to put their own desires above familial obligations or reputation. Improved education and living standards mean they have more financial freedom to do so. Most Chinese couples previously had few chances to meet members of the opposite sex in social situations after marriage, but migration means that many couples live apart. Even if they live together, the pool of temptation has grown larger and easier to dip into, thanks partly to social media.

Businesses like Mr Yu's indicate that not all spouses see affairs as an unpardonable offence. But surveys also suggest that infidelity is the "number one marriage killer". Last year 3.8m couples split, more than double the number a decade earlier. China's annual divorce rate is 2.8 per 1,000 people (also double that a decade ago). That is not quite as high as America's 3.2, but higher than in most of Europe. That may be partly because Chinese people are more likely to get hitched in the first place: the law strongly discourages people from having children outside marriage. Even so, Chinese families are fraying fast.

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Israel

Sitting pretty

JERUSALEM

Binyamin Netanyahu is in a commanding position

THESE should be the best of times for Binyamin Netanyahu. At no point in the Israeli prime minister's almost 11 years in office has he enjoyed such supremacy at home, coupled with an absence of any serious difficulties or pressure from abroad. In the past few months he has expanded his coalition's majority from only one to six; tamed his most ferocious critic, Avigdor Lieberman, by giving him responsibility for the defence ministry; and purged his own Likud party of several rivals. The Knesset (parliament) is about to pass a two-year budget which should ensure political stability until 2019. The economy is growing at a sprightly 3.2% a year.

The opposition is in tatters. The main opposition grouping is the Zionist Union; its hapless leader, Yitzhak Herzog, has seen his credibility with his colleagues, and according to the polls with many of his voters, seep away towards Yair Lapid's small Yesh Atid party.

These are sunny days, too, for Israel's foreign relations. Boosted by trade in technology and arms, ties with African and Asian nations are flourishing. Mr Netanyahu has met Russia's president Vladimir Putin four times in the past 14 months, reaching quiet arrangements safeguarding Israel's interests in Syria, while continuing to insulate it from the bloody war across its border. Beneath the radar, Israel is working closely with its neighbours Egypt and Jordan to counter Islamic State. Farther afield, there is barely concealed close co-operation with the Sunni Gulf states on resisting Iran's influence in the region. In recent months a rapprochement has also been brokered with the prickly President Recep Tayyip Erdogan of Turkey. China is keen to do ever more business with Israel.

No progress is being made on the peace process with the Palestinians, but no one seems to care very much. Israel's relationship with Hamas, which rules the Gaza Strip, has shifted to one of cautious coexistence; the West Bank is mostly quiescent, with last year's "knife *intifada*" having fizzled out. Not long ago, Mr Netanyahu's critics were predicting a diplomatic assault if Israel didn't start talking to the Palestinians. Instead, the supposedly furious Europeans seem consumed by their own problems and have little appetite for Middle Eastern diplomacy; the most they have been able to manage is a weedy insistence that products from Israeli settlements in the West Bank be labelled as such. And for the first time Mr Netanyahu is about to deal with a Republican in the White House.

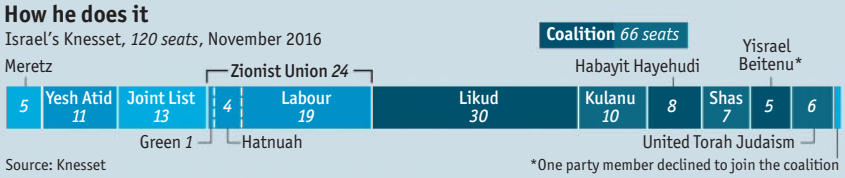
Throughout his time in office, Mr Netanyahu has had a difficult relationship with Washington—during his first term with Bill Clinton and over the past eight years with Barack Obama. Pro-Israel statements from Donald Trump and his advisers, who made sure to omit all mention of a Palestinian state from the Republican Party manifesto, raise the prospect of an administration which will no longer give him any grief over settlement-building in East Jerusalem and the West Bank.

Happy times for Mr Netanyahu, then? Yes, but there are a few storm clouds. In the absence of a challenge from the feeble centre-left opposition, his troubles, such as they are, come from within his own coalition. The right wing is keen to pass a law legalising the status of Amona, a settler outpost of 42 families built 20 years ago in the West Bank on privately owned Palestinian land. Israel's high court has ruled that the settlers must leave the outpost by December 25th. Defying the prime minister, his cabinet's legislative committee voted on November 13th in favour of the law. Caught between the right wing and the court, Mr Netanyahu now faces open rebellion from some of his own ministers.

Mr Netanyahu has been playing a dou- ▸▸

How he does it

Israel's Knesset, *120 seats*, November 2016



Source: Knesset

*One party member declined to join the coalition

ble game. To the world he expresses willingness to negotiate with the Palestinians, if only they were prepared to do so without preconditions. Meanwhile, he assures his right-wing constituency that a strategy of neither moving towards a Palestinian state, nor annexing the West Bank outright, is the only way to withstand international pressure while keeping the settlements. Critics, at home and abroad, thought that ultimately the international community would call his bluff. Instead, the arrival of President Trump may bring about the opposite outcome—his bluff is being called by the hawks at home.

But Iran these days looms much larger in Mr Netanyahu's calculations than any of this. For the past year, since Mr Obama secured the necessary Senate votes to block a Republican veto of the nuclear agreement with Iran, the country has largely disappeared from the prime minister's rhetoric. On November 13th it suddenly returned; in a speech Mr Netanyahu mentioned Iran no fewer than ten times. While his right-wing coalition colleagues want to use the new occupant of the White House to further their expansionist agenda in the West Bank, Mr Netanyahu is now much more hopeful that President Trump will make America Iran's Great Satan again.

There are other nuisances bothering the prime minister. Nearly every other week a new scandal erupts, often involving an aide or a family member. In the past few days it has been the case of his personal lawyer and adviser, who also works for the local representatives of the German shipyard building submarines for the Israeli navy. Mr Netanyahu has been fending off accusations that his support for buying more subs is connected to this link. Now the attorney-general has ordered a probe.

Mr Netanyahu's response has been to go on a bit of a crusade against the Israeli media. His office has begun issuing ferocious responses to exposés, attacking reporters for being "radical leftists". Some see a plan behind this. Hoping to win a fifth election, Mr Netanyahu, like President-elect Trump, may feel that vilifying the media is the way to success. ■

Kuwait

Bypassed by Dubai

KUWAIT CITY

As Kuwait falls behind, some blame democracy

KUWAITIS often compare their country with the other states of the Gulf, leading to something of an inferiority complex. Yes, it has the second highest GDP per person in the region (and the fourth-highest in the world), thanks to its large oil reserves and small population. But it has fallen behind countries like Qatar and the United Arab Emirates (UAE) in terms of dynamism and international appeal. Nowadays even Saudi Arabia looks more freewheeling, economically speaking.

Still, Kuwait distinguishes itself in one respect. It is the closest thing to a democracy in the Gulf. The ruling Al Sabah family is firmly in charge—it limits speech and appoints the most important figures in government, including the prime minister (who selects the rest). But a 50-member National Assembly is elected by the people (including women) and is often truculent. Indeed, in an election on November 26th voters kicked out over half the incumbents in favour of candidates who promised to confront the government over recent austerity measures.

The emir, Sheikh Sabah al-Ahmad al-Sabah, cited "security challenges" as a reason for calling the snap election. But the public focused on decisions earlier this year to raise the price of petrol and other subsidised commodities. This was necessary, said ministers, to close a deficit that reached $15bn last year owing to the low price of oil, which supplies 90% of government revenues. Voters saw it as a harbinger of future cuts to Kuwait's sumptuous welfare state. They want the assembly to put up more of a fight.

Pro-government types argue that the assembly holds Kuwait back from developing as fast as other Gulf states, where ruling families need not gain approval for their plans. Indeed, the Kuwaiti assembly often blocks big projects. Voters are concerned with keeping their government jobs and cheap public services.

But it is wrong to blame the assembly for Kuwait's stagnation. For the past three-and-a-half years it has simply done the government's bidding. Changes to the electoral law in 2012 led opposition groups to boycott two rounds of elections (but not the most recent one). In that time the government has made progress in building new houses and hospitals. But it has not put forward the type of broad economic vision that animates other Gulf states.

Innovative Dubai is the comparison that most frustrates Kuwaitis. That is in part because Kuwait was once the Gulf's trailblazer. It set up the world's first sovereign-wealth fund in 1953 and was a leader in health care. It started one of the first airlines in the region. But the decline of Kuwait Airways is instructive. As its fleet aged and losses piled up, carriers from Qatar and the UAE began offering better service and more routes. Politicians have talked of privatisation. But parliament, reluctant to mess with one of the country's biggest employers, has frustrated these efforts.

Let Dubai keep its bikini-clad beachgoers and cocktail-sipping tourists, say most Kuwaitis, who view such things with pious distaste. What they envy is Dubai's energy and efficiency. The UAE (of which Dubai is a part) ranks 26th in the World Bank's ease-of-doing-business index; Kuwait is 102nd. The ruling Al-Maktoum family of Dubai encourages development through a suite of companies known as "Dubai Inc". In Kuwait, the government owns most of the land and hampers its use by the private sector, says Michael Herb of Georgia State University. "There is no Kuwait Inc."

The government's failings extend to

Trouble in the family business

public services. It has neglected public hospitals and schools. Low electricity prices and a sweltering climate make Kuwait one of the world's biggest consumers of energy per person. But the government, which is the sole provider of electricity, has invested little in infrastructure. Parliament has delayed efforts to boost the supply. In 2014 a power outage shut down all three of the country's oil refineries, crippling fuel production for a week. Endemic corruption completes the dismal picture.

So Kuwaitis have responded to the government's call for austerity by telling it to put its own house in order. But beyond opposing cuts, few of the new MPs have a vision for the country. More stagnation seems likely and perhaps more elections; there have been four in the past five years. Quasi-democracy is seldom satisfying. ■

Syria

Aleppo falls apart

BEIRUT

The rebels face the collapse of their last big urban stronghold

WHEN Russia dispatched its warplanes to prop up the dictatorship of Bashar al-Assad, Barack Obama warned Moscow that its Syrian adventure was doomed to fail. Russia will get "stuck in a quagmire and it won't work", Mr Obama confidently predicted in October 2015. Russia's air force has since proven the American president profoundly wrong.

On November 28th pro-government forces backed by Russian bombers finally punched through rebel lines in the east of Aleppo. The breakthrough came two weeks after pro-regime forces launched an operation to recapture the rebels' last big urban stronghold. With the regime now in control of at least a third of the city's east, the fall of Aleppo looks almost certain.

For months the regime has sought to strangle the city's rebel-held east into submission. A siege has slowly sapped the strength and morale of its defenders. As the blockade tightened, Russian and Syrian warplanes relentlessly bombed civilian infrastructure, destroying hospitals, schools and bakeries in a bid to drain support for opposition fighters by making life unbearable for the east's 250,000 or so remaining civilians. These tactics, which have forced rebels to surrender in other parts of the country, have crippled eastern Aleppo. Food rations have almost run out and medical supplies are low. With the city's hospitals destroyed, doctors now treat patients in the basements of homes.

Spearheaded by thousands of Hizbullah and Iraqi militiamen, this week's swift advance of pro-regime forces has driven thousands of terrified civilians from their homes. They face a grim choice: stay in the east and face the bombs, or flee into areas controlled by a government that has arrested and tortured its opponents since the start of the war in 2011.

Most have chosen the former. As a result, residents in the east say apartment blocks that once housed five families now house as many as 20. So Russian and Syrian air strikes, which have killed hundreds of civilians in recent weeks, will prove even more lethal as the shrinking rebel enclave becomes more crowded.

The regime's advance elicited the usual flurry of empty statements from Western officials. Boris Johnson, Britain's foreign secretary, tweeted: "Devastating assault on eastern Aleppo—immediate ceasefire needed. Russia & Iran must use influence on Assad regime to end violence now." He ▸▸

Areas of control, November 30th 2016
Syrian government Rebels Kurds IS
Source: Liveuamap

HIV in Africa

Many battles won, but not the war

JOHANNESBURG

HIV is in retreat in many African countries, but not among the young

FOOTPRINTS painted in bright colours on the floor pass through the bustle of the Themba Lethu clinic in Johannesburg. They lead to a room where every week dozens of men are circumcised. Heterosexual men who get the snip cut their chances of contracting HIV by more than half, since the foreskin is delicate and tears easily. In South Africa, the country that has the world's largest number of HIV-infected people, such initiatives can save a lot of lives.

Even more important has been a huge expansion in the number of infected people receiving antiretroviral drugs. These not only keep people alive but also suppress the virus, making its carriers less contagious. In September South Africa became one of the first African states to adopt a "test and treat" protocol whereby anyone infected with the virus can get the drugs immediately, instead of waiting until the immunological symptoms of full-blown AIDS appear. By this time the patient may have infected other people.

Some researchers predict that several African countries will soon achieve "epidemic control", meaning that fewer people are newly infected each year than die of the disease. New data from the American President's Emergency Plan For AIDS Relief (PEPFAR), a programme launched by George W. Bush in 2003 under which more than 11m people now get treatment, suggests just how close that goal may be. In hard-hit countries, such as Zimbabwe and Zambia, the rate of new infections has more than halved. The prevalence of HIV (ie, the total proportion of the population who carry the virus) has also fallen sharply, though it remains horribly high.

The number of infants infected by their mothers in the womb or via breastfeeding fell by half between 2010 and 2015. In South Africa infected mothers now pass on the virus in only 2% of cases, compared with 45% among infected mothers who don't get the drugs.

Yet far less progress has been made among the young—and half of sub-Saharan Africans are younger than 19. With such a large cohort of youths starting to have sex, the total number of people with HIV is likely to rise even if the rate of new infections falls. Worryingly, efforts to reduce the spread of HIV are failing among young people and, in particular, among young women.

PEPFAR surveys show that, whereas three-quarters of Zimbabweans know whether or not they are infected (and almost 90% of those who know they are ill are being treated), only half of those under 24 know their HIV status. Girls and young women, many of whom have unsafe sex with richer, older men, are 14 times likelier to contract HIV than young men are. Girls who drop out of school are even more likely to become infected.

The new data suggest that Africa is on the cusp of beating back HIV. But to do so it will have to redouble its efforts to educate, test and treat more people. It would also help if more girls stayed in school, and if faster economic growth gave more young women the jobs and independence that might make sugar daddies' offers less tempting.

appeared to have forgotten that both Russia and Iran are directly involved in the bombardment of Aleppo.

America, its allies and the UN have all repeatedly failed to stop the slaughter or alleviate the suffering in Aleppo. Ceasefires have broken down and peace talks have collapsed. Russia and Syria continue to block UN requests to allow aid into the besieged east. Out-manoeuvred, Western diplomats have discussed lifting the siege by digging tunnels or sending drones to air-drop food and medical supplies. A lack of political will among their leaders makes both options improbable.

Mr Assad's government says it wants to take Aleppo, once Syria's largest city, before Donald Trump takes office. Once it falls, Mr Assad will control all the country's main urban centres. Pro-regime forces will then be able to turn their guns on the pockets of resistance around Damascus, the main highway from Homs to Aleppo and the rebel-held province of Idlib. With rebel forces in no shape to regroup, there is little to stop them. ■

Sudan

Tribulations, but no trial

KHARTOUM

A rump state run by an alleged war criminal struggles to make ends meet

DR MUNA ABDU, an ophthalmologist, is worried. "I am afraid of leaving my country for a long time," she says, her back to the Blue Nile, dark but for the lights of a few riverside restaurants as it flows towards its embrace with the White Nile in Khartoum. But she still plans to move to Saudi Arabia, where she will earn $6,000 a month—a sum that would take her three years to make in Sudan.

On some measures Sudan's economy is recovering, after the southern part of the country broke away to form South Sudan in 2011, taking with it 75% of the old nation's oil revenues. GDP has grown at around 3% a year since 2013. Inflation is in double digits, but well below its level in 2012-14, when it averaged almost 40%. However, on the black market the Sudanese pound trades at only a third of its official value against the dollar. There are just $800m of foreign exchange reserves left in the central bank, according to the IMF—enough to cover only a month of imports.

Businessmen are quick to blame American sanctions. These have been in place since 1997 (Khartoum harboured terrorists including Osama bin Laden in the mid-1990s) and were extended in 2007 because of the genocide in Darfur. But it is only in the past few years that international banks have started refusing to deal with Sudan, after America cracked down on sanctions-busters. One former chief executive tells of a $10m debt repayment for his company having to be made with a suitcase of cash.

Nervous banks have not, however, made trading with Sudan impossible. Artisanal gold mining is booming and the country exports plenty of livestock to the Gulf. But these do not make up for the lost oil revenues. Meanwhile, sanctions mean Sudan is mostly ineligible for relief on its

$48.2bn debt, 86% of which was in arrears at the end of 2015. One boost has come since September 2014, when Sudan expelled a number of Iranian diplomats and cosied up to Saudi Arabia. It has sent hundreds of soldiers to fight alongside the Saudis and against Iranian-backed Houthi rebels in Yemen. Since then, at least $2.1bn has been deposited in its central bank by Saudi Arabia and other friendly states. However, billions of dollars of Saudi investment and military aid that were reportedly promised have not materialised.

Nonetheless, the switch into the Saudis' orbit suggests that the Sudanese government wants to shed its pariah status. It is also co-operating with the EU to reduce illegal migration into Europe, cracking down on people-trafficking and improving its border security.

But the sanctions were renewed again on October 31st and still have strong bipartisan support in America's Congress. Walid Phares, an adviser to Donald Trump on the Middle East, says they should remain. America's position is unlikely to change given the record of Sudan's Arab-dominated Islamist government of slaughtering black African Muslims in Darfur, and Christians and animists in the south of the country (although most of these have now seceded). For nine months this year government forces attacked the Jebel Marra, a massif in central Darfur where the Sudan Liberation Army-Abdel Wahid (SLA-AW) are holed up. As many as 205,000 locals fled their homes; there are now perhaps 2.6m displaced people in Darfur, a region the size of Spain. Amnesty International claims to have evidence that the government used chemical weapons. It denies this, but restricts access to the area.

The SLA-AW, whose eponymous leader directs proceedings from Paris, has been reduced to harrying the Sudanese army. The other two main rebel groups, the Justice and Equality Movement (JEM) and SLA-Minni Minnawi, are in peace talks with the government. This is a sign of weakness, says Magnus Taylor of the International Crisis Group, a Brussels-based think-tank. The government seems to think it is close to victory after 13 years. But elsewhere in Darfur violence flares sporadically, particularly between Arab groups that used to be part of the Janjaweed, a state-sponsored horseback militia responsible for much of the killing and raping during the genocide. "There are weapons everywhere and a limited capacity or willingness to do anything about it," says Mr Taylor.

Meanwhile, negotiations with the Sudan People's Liberation Movement-North (SPLM-N), previously part of the South Sudanese rebel movement and now fighting in the border states of South Kordofan and Blue Nile, have broken down. Although Omar al-Bashir, Sudan's president, has extended the traditional rainy-season ceasefire, neither side is budging.

Back in Khartoum, the president was forced to start a "National Dialogue" after 170 people were killed in protests over fuel-subsidy cuts in September 2013. But the talks, which concluded in October, were largely cosmetic and left the powerful security forces under Mr Bashir's thumb. Sudan Call, a coalition of political parties and rebels that refused to join in, has failed to create a coherent opposition. Demonstrations against more cuts to subsidies in November have so far been suppressed.

So when middle-class Khartoumites gather to drink sugary coffee and sweet tea beside the Nile at night, they talk, not of replacing the president, but of leaving Sudan, like Dr Abdu. The remittances of the hundreds of thousands who have gone before them keep the economy alive. Meanwhile, Mr Bashir, whose arrest on charges of orchestrating the genocide was ordered by the International Criminal Court in 2009, looks unlikely to step down, let alone stand trial. ■

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The French presidential campaign

Liberté, autorité, dignité

LA FERTÉ-BERNARD

François Fillon blends rural conservatism and Thatcherism to fend off the far right

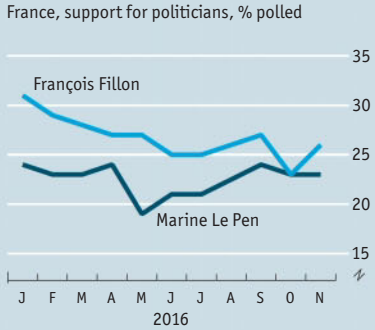
GENTLY sloping hills and medieval churches: the charms of La Sarthe in rural western France are as discreet as its people. There is nothing quite grand enough to catch the eye, nor grimy enough to avoid. In the little town of La Ferté-Bernard, there is an active parish and scout group. Rabbit is on the *menu du jour* at Le Dauphin restaurant. Yet local talk is about the new discount grocer, Lidl. And 70 volunteers at Secours Catholique, a charity, help with warm clothes, tinned food and weekly homework for families in difficulty. "We ask for a small contribution to preserve people's dignity," explains Monique Bouché, who runs the charity in the town.

Dignity and respect are words that recur often in La Ferté-Bernard. And they help explain why, in this provincial town, François Fillon secured a colossal 89% of the vote at the primary run-off to become the presidential candidate for the centre-right Republican party on November 27th. He beat Alain Juppé, his rival and fellow ex-prime minister. Mr Fillon, who comes from La Sarthe, is in tune with a conservative Catholic part of the electorate that feels that the French presidency has been damaged over the past decade, by Nicolas Sarkozy on the right and by François Hollande on the left. The question now is whether Mr Fillon can build on this mass support to head off the challenge by the far-right's Marine Le Pen, leader of the National Front (FN), for the French presidency next spring.

In some ways, Mr Fillon is a flawed candidate. Prime minister for five years under Mr Sarkozy, the 62-year-old can claim to represent neither novelty nor renewal, and is defenceless before Ms Le Pen's charge that the same faces always govern France. The son of a notary, he has the tweedy look of a country squire, and a Catholic-hued social conservatism to match. Although Mr Fillon does not propose to change the law, he voted against gay marriage (and is privately against abortion). His family values chime with the country's strong anti-gay marriage constituency, but make him toxic for the left. Were Mr Fillon to face Ms Le Pen in the second round next May, many on the left could abstain.

Could be close

France, support for politicians, % polled



Source: Kantar TNS

Mr Fillon could provoke a similar revolt against his economic policy, too. In order to free the economy and encourage job creation, he has drawn up a liberal programme, vowing to curb the unions; shrink the labour code from over 3,000 pages to just 150; end the 35-hour week; and trim the public sector, which accounts for a hefty 57% of GDP, by cutting 500,000 civil-service jobs. "I like being compared to Madame Thatcher," he declares. Thatcherism is usually a term of insult in France.

This may be what the French economy needs. But it is not a clear vote-winner. It cuts against France's lingering distrust of free markets and reverence for the state, as well as the tide of anti-globalisation sentiment. It will make Mr Fillon an easy target for irate trade unions and fearful civil servants. One Socialist deputy calls his policy "violent and dangerous". It will also encourage Ms Le Pen to use her protectionist politics to court the working-class vote, particularly in the French rustbelt of the north and east. Already the preferred candidate among working-class voters, she has begun to warn that Mr Fillon is out to "destroy" the French social safety-net.

Yet in deepest Fillon country the political dynamics look somewhat different. "People here say that they know things have to change, and that it will be difficult," argues Jean-Carles Grelier, the centre-right mayor in La Ferté-Bernard: "They are fed up with being sold dreams, and then being disappointed." Locals in the café talk about Mr Fillon's "common sense" and "honesty". They are readier to accept tough spending measures than politicians in Paris imagine, claims Mr Grelier, if it is part of a coherent plan to revive the economy—and a sense of pride in France. Mr Fillon, who warned back in 2007 that the French state was "bankrupt", has long argued that the French "are ready to hear the truth". Pre-

tending that nothing needs to be done, just to win power, he argues, amounts to "a hypocrisy…at the heart of the political and moral crisis" in France.

Mr Fillon's social conservatism, mixed with his close ties to Russia's Vladimir Putin (see Charlemagne), makes liberals deeply uneasy. But itcould help to damage Ms Le Pen in conservative parts of rural France. In southern France, in particular, he could siphon away many of the voters who might otherwise be drawn to Marion Maréchal-Le Pen, an FN deputy (and Ms Le Pen's niece) who promotes traditional family values and is close to the Catholic right. During his campaign, Mr Fillon declared that "the enemy is Islamic totalitarianism" and called for "strict" immigration controls. He secured 77% of the vote on the Côte d'Azur, home to Ms Maréchal-Le Pen's constituency.

Over the next six months Mr Fillon's candidacy will be a test case for whether mainstream leaders can find an electable alternative to populism within the boundaries of liberal-democratic politics. In a book he wrote last year he arrives at a liberalising ideology through observation—statist policies have not worked in France—and from a belief that prosperity is a precondition for preserving national sovereignty. To do so, Mr Fillon is trying to incarnate the leader who restored France's national pride, affirmed its independence, and earned its respect, and whose image he kept on his bedroom wall as a child: Charles de Gaulle. In La Ferté-Bernard, the reference resonates. The last French president to visit the town was de Gaulle in 1965; the only other political leader to do so since was Mr Fillon. Polls suggest it may be what the French want: he now tops voting in the first round, and beats Ms Le Pen in the second. Yet the FN leader is quietly waiting her turn, and has scarcely begun her campaign. She is not defeated yet. ■

Greek politics

Orthodox measures

ATHENS

As populism fails, a mainstream party makes a comeback

THE headquarters of New Democracy, a centre-right political party, is in an unexpected part of Athens. The building, surrounded by warehouses, housed a branch of a Japanese technology firm before standing derelict for years. Few other political types are nearby. The rent, at €9,800 ($10,400) a month, is a tenth of what the party's old office used to cost. Yet the relocation, which happened in August, is also symbolic. As the opposition party has moved to a cheaper part of town, so too does it hope that it can present itself to the public as a new, improved alternative to the Greek government. With Alexis Tsipras, the prime minister (pictured, on the left), growing less popular, New Democracy may well have a chance.

It has been a miserable year for Mr Tsipras and his left-wing Syriza government.

Raise your hand if you want to run this place

A deal struck in March by the European Union and Turkey stemmed last year's surge of migrants through Greece to northern Europe, but left 60,000 of them stuck in Greece in conditions that are often grim. Yet this is the least of the government's problems. In May, after much squabbling, it pushed through €1.8bn of tax increases needed to qualify for the next chunk of cash in its current bail-out package from the EU, the third since the euro crisis began in 2010. In November Mr Tsipras reshuffled his cabinet, replacing hardline leftists with younger, pragmatic folk, seemingly in order to placate Greece's creditors, who will meet on December 5th to tweak the latest bail-out programme.

Many of the government's reforms have been widely hated. Business owners grumble at Scandinavian-level VAT rates of 24% and a series of new taxes. From next year self-employed professionals, such as lawyers and doctors, earning over €40,000 a year are being asked to pay tax in advance for the coming year, while their average pension contributions have tripled, says Constantine Michalos, the head of the Athens Chamber of Commerce and Industry. Many will be unable to bear the burden, and some have already moved their businesses to Cyprus or Bulgaria, he adds. "Uncertainty about taxes is the worst thing," says Tina, who owns a betting shop in central Athens. "You don't know what they'll hit you with next."

This is hardly what Mr Tsipras promised when he took power in 2015, vowing to end austerity and renegotiate Greece's deal with its creditors. Syriza's popularity has been sliding while that of New Democracy, which led a coalition government in 2012-15, has risen. It has led in the polls since December 2015, according to pollsters at the University of Macedonia. This month it was ahead of Syriza by a whopping 15 percentage points (see chart). Kyriakos Mitsotakis, who was elected head of New Democracy in January (pictured, on the right), now leads Mr Tsipras on the question of who would make a better prime minister.

This is surprising. New Democracy is a ▸▸

long-established political party in Greece, rather than a rabble-rousing upstart. Mr Mitsotakis's father Konstantinos was prime minister in 1990-1993, and the family name is a turn-off for voters on the left. The younger Mr Mitsotakis is hardly a rebel: before going into politics he worked for McKinsey, a consultancy, and Chase, a bank. "When you look at my résumé, [it is] as close to the establishment as you can get," Mr Mitsotakis admits. Still, he argues that he is the "anti-establishment" candidate in his party. More convincingly, Mr Mitsotakis thinks that Greeks have had enough of chaos. If there were a snap election next year, a New Democracy offering realistic policy promises might persuade voters to abandon the hotheads of Syriza and embrace a more technocratic government. "Greece may be the first to beat populists at their own game," he says. ■

Turkey and Europe

End of the affair

ISTANBUL

Turkey's decades-long romance with the EU is fading fast

JUST before the Gulf war in 1990 (which he backed despite popular opposition), Turgut Ozal, then president of Turkey, squeezed into an army tank, posed for the cameras and proclaimed: "I am taking the shortcut to the European Community." A quarter-century later Turkey's dream of joining the European Union is all but dead. Denouncing the purges that followed July's brutal coup attempt, on November 24th the European Parliament called on EU leaders to freeze accession talks, which have been dragging on since 2005.

Turkey's current president, Recep Tayyip Erdogan, responded the next day by threatening to open the route to Europe to the 3m refugees living on his side of the Aegean. "You have betrayed your promises," he said, referring to a deal with the EU that commits Turkey to harbouring the refugees in exchange for billions of euros in aid and a promise of visa-free travel to Europe for Turkish citizens.

Leaders of EU states, who will discuss Turkey at a summit on December 15th, are unlikely to take the parliament's advice. Mr Erdogan is very unpopular in Europe, and mainstream politicians in France, Germany and Holland, all facing elections next year, are wary of indulging him. Yet they fear another refugee crisis even more. Many are also reluctant to jeopardise investments in Turkey. "If you rock the boat too much," says Marc Pierini, a former EU ambassador to Turkey, "you are putting your own economic interests at stake."

Yet the current relationship is not sustainable. European support for Turkey's accession has plummeted. The membership talks are going nowhere. In over a decade, the two sides have opened only 16 out of 35 negotiating chapters. Eight chapters are blocked over Turkey's refusal to recognise Cyprus, and are likely to remain so: reunification talks between the island's Turkish-occupied north and its south broke down on November 22nd.

Mr Erdogan views accession to the EU as Turkey's right because of its strategic importance. If there were ever a shortcut to membership, however, he has not found it. Today his government is openly flouting the EU's rules. Of the 37,000 people arrested since the July coup, including over 100 journalists and a dozen MPs from a pro-Kurdish party, only a handful have been formally charged. Some 120,000 others, including nearly 16,000 in the past week, have been sacked or suspended. Allegations of detainee torture are mounting, though Turkish officials deny them.

Mr Erdogan has backed calls to reinstate the death penalty, a red line for both the EU and the Council of Europe. On November 20th he suggested that Turkey consider the Shanghai Co-operation Organisation, a ▸▸

Corruption in Slovakia

Tart response

BRATISLAVA

A populist PM's salty tongue

IN FEBRUARY Zuzana Hlavkova, then an employee at Slovakia's foreign ministry, came to believe that inflated contracts tied to the country's presidency of the European Council were being awarded to firms allied with the governing Smer party. The 26-year-old Ms Hlavkova did something unusual: she reported it to her bosses, including the foreign minister, Miroslav Lajcak. When nothing happened, she quit her job and took her evidence to the local branch of Transparency International, a watchdog, and at the end of November they went public. Local media picked up the allegations, forcing the prime minister, Robert Fico, to respond. In a press conference on November 23rd he called the reporters "dirty, anti-Slovak prostitutes".

The pugnacious Mr Fico, who has been in power for nine of the past eleven years, has a habit of insulting journalists. In August he compared one to a "toilet spider". But if he seems nervous, one reason may be his sliding popularity. In 2014 he tried to move from prime minister to president, but lost in a landslide to Andrej Kiska, an entrepreneur. In parliamentary elections in March Smer bet that a xenophobic anti-refugee campaign would preserve its majority. Instead it lost 41% of its seats.

Smer now governs as part of a three-party coalition. In the spring, Mr Fico had double bypass surgery. His heir apparent, Robert Kalinak, the interior minister (nicknamed "the Handsome Fixer"), has been hurt by bribery allegations, and Mr Lajcak, who recently was a candidate for UN Secretary-General, has been tainted by this latest incident. (Both Mr Kalinak and Mr Lajcak deny wrongdoing.)

Mr Fico calls Ms Hlavkova's charges "a targeted attack on the Slovak presidency" of the council. Though nominally leftist, Smer is drifting right to hold on to its socially conservative voters. One of its coalition partners, the nationalist Slovak National Party, has grown more popular since the elections. Further to the right, the People's Party Our Slovakia openly defends the Nazi collaborationist regime that governed the country during the second world war. It won 8% of the vote in March under the slogan "With courage, against the system".

Having been in power so long, Smer can hardly claim to be against the system. Instead Mr Fico attacks the independent press and whistleblowers like Ms Hlavkova: "a new political culture where a young person spoke out", says Beata Balogova, editor-in-chief of *Sme*, a liberal daily. They have angered Mr Fico not by selling their honour, but by refusing to.

No questions, you dirty anti-Slovak

group that includes Uzbekistan, Russia and China, as an alternative to the EU. He has also threatened to put the accession talks to a referendum in 2017.

Turkish officials have been accusing the EU of double standards for years, with some reason. Many European leaders, from France's ex-president, Nicolas Sarkozy, to Germany's chancellor, Angela Merkel, saw no place in the EU for a Muslim country of 80m even when its democracy was in better shape. None rushed to Ankara to denounce the coup or offer support for civilian government.

Yet the language coming out of Ankara has become gratuitously hostile. Mr Erdogan accuses the West of siding with the outlawed Kurdistan Workers' Party (PKK)—and even with Islamic State. His foreign minister brags about refusing to take phone calls from his German counterpart. Pro-government newspapers claim, without evidence, that Western officials are plotting against Turkey. European diplomats warn that the damage may be hard to undo. "The longer this lasts, the more the EU will close itself off," says one. "The only way Turkey can prevent this is to turn down the volume and put a stop to the crackdown." Yet at this rate, an acrimonious break-up between Turkey and the EU appears to be just a matter of time. ■

Italy's referendum

Just trust me

ROME

Matteo Renzi asks for the power to change Italy

A TREMOR of magnitude 4.5 shook central Italy on November 29th, rattling areas that had been devastated by heavier quakes weeks earlier. It was a reminder that there is much to fear in the *bel paese*: seismic shocks, organised crime and, most urgently, the outcome of a constitutional referendum on December 4th.

The referendum will endorse or reject changes that include drastically reducing the powers of the Senate. And future Italian governments would have a much firmer grip on parliament since a new electoral law engineers for the leading party—even one that secures only a modest plurality—an assured majority in the lower house (the Chamber of Deputies). The prime minister, Matteo Renzi, argues that this streamlined legislature is essential in order to pass the structural reforms that Italy's sluggish economy needs.

Many fear the changes remove needed checks and balances, granting the government too much power. They would make it easier for the prime minister to determine who becomes president, and thus influence who sits in the constitutional court. (Most of its judges are chosen by either the president or parliament.) In the days before the vote, campaigners for the No side concentrated on attacking Mr Renzi for demanding excessive authority. The leader of the centre-right Forza Italia party, Silvio Berlusconi, who initially backed the reform, warned it would make the prime minister "master of Italy and the Italians". A subtler concern voiced by some constitutional lawyers was that, while Mr Renzi might be trusted with additional powers, they could one day be wielded by a leader with a shakier attachment to democracy.

Polls conducted before a ban on publication took effect, two weeks before the end of the campaign, showed the No camp ahead by almost 4 percentage points. But they also showed that between 40% and 60% of voters were still undecided or planning to abstain. And they did not reflect the impact of an issue that surfaced fully only in the last days of the campaign: the fear that a No vote could unleash a devastating financial chain reaction.

That risk centres on trouble at Italy's third-biggest bank, Monte dei Paschi di Siena. The government is hoping investors will recapitalise it, but they are reluctant to commit their money unless the vote comes out Yes. Were the bank to collapse it could ignite a full-blown banking crisis. Under new EU rules, holders of failing banks' bonds would have to absorb some of the losses. And there are a lot of them in Italy: households own about €170bn worth of bank bonds, or 49% of the total. A financial crisis would rapidly increase the borrowing costs of a country whose debt comes to 133% of GDP. The situation could look alarmingly reminiscent of 2011, when Italy's soaring bond yields threatened to blow up the euro.

Another worry is that Mr Renzi's defeat would open the door to government by the maverick Five Star Movement (M5S), a populist group which, though less radical than France's National Front or Spain's Podemos, is woefully unprepared to govern. The M5S is close behind Mr Renzi's Democratic Party in the polls. But the fall of an Italian government does not lead automatically to a general election. It hands the initiative to the president, who generally tries to avoid calling an election. The incumbent, Sergio Mattarella, could appoint a caretaker prime minister at the head of either a cross-party government or one made up of technocrats. Mr Renzi has ruled out staying in office, but some think it is possible he might be persuaded.

That, however, points to a third anxiety underlying the markets' nervousness: that a No vote would prolong Italy's political and economic stagnation. Any new government would immediately have to revise the electoral law, which currently applies only to the lower chamber, not the Senate. That could take a year. In the meantime structural reforms would be put off while Italy's lawmakers haggle over voting systems. Such government inertia is nothing new in Italy. But the country may no longer be able to afford it. ■

Voting with his Fiat

Charlemagne | Bear cave

François Fillon is a harbinger of Europe's ebbing will to resist Russia

VLADIMIR PUTIN must wonder what he did right. From the refugee crisis to Brexit, Europe's troubles have allowed the Russian president to portray himself as a bulwark of stability in a region of chaos. America's election brought an apparent Kremlin sympathiser to the White House. And now France is on the same track. François Fillon's victory over Alain Juppé in the presidential primary of the centre-right Republican Party leaves an avowed friend of Mr Putin as the favourite to occupy the Élysée after next spring's election. (Mr Fillon's most serious rival, the nationalist Marine Le Pen, has a yet more marked Moscow tilt.)

Mr Fillon's Russophilia is born of conviction rather than expediency, and he does not hide his views. During last week's debate with Mr Juppé he compared the Russian annexation of Crimea to Kosovo's declaration of independence from Serbia, an argument he could have lifted directly from the Kremlin. The expansion of NATO to Russia's borders in the 1990s, he muses, was a provocation bound to generate blowback. Little wonder Mr Putin singled out the "upstanding" Mr Fillon for praise before the vote.

Historical revisionism is one thing. More worryingly for Germany, France's partner in the four-party "Normandy format" set up to negotiate with Russia and Ukraine, Mr Fillon wants to scrap the economic sanctions that the European Union imposed on Russia over Crimea and its incursions in eastern Ukraine. Opinions in the EU are divided on Russia, from hawks like the Balts and Poland to doves like Italy and Hungary. So far Angela Merkel, Germany's chancellor, has held the club together, ensuring a regular rollover of the toughest measures. But the consensus is slowly fraying; to lose the French would be a shock.

Like other EU countries, France blows hot and cold on Russia. Few voters sympathise with Mr Putin. But energy firms and agricultural exporters chafe at the loss of business. The Kremlin's military playgrounds, real and potential, feel a long way from Paris. And a nation savaged by attacks sponsored by Islamic State (IS) is open to the idea of working with Mr Putin in Syria, over the heads of anxious eastern Europeans if necessary. In 2014 François Hollande, France's current president, hesitated for months before cancelling a €1.2bn ($1.3bn) warship deal with Russia, even as the EU's sanctions started to bite.

But France matters more than most. Leaders like Matteo Renzi, Italy's prime minister, may earn points at home by railing against sanctions, but at EU summits in Brussels they listen to Mrs Merkel and Mr Hollande and fall into line. In October, immediately before the latest such gathering, the pair met Mr Putin in Berlin and were shocked to hear him threaten to visit upon Aleppo the fate of Grozny, the Chechen capital pulverised by Russian forces in the 1990s. Mr Hollande's tough response impressed the Germans; and, in Brussels, Mr Renzi's call for a "strategic discussion" on Russia policy backfired. It is hard to imagine Mr Fillon acting this way.

The picture is further complicated by the election of Donald Trump. A German senior official says America's president-elect appears to have a set of "emotions and reflexes" rather than a foreign policy. Yet admiration for Mr Putin has been a constant of his otherwise flip-flopping worldview. His calls for *détente* with the Kremlin in the name of tackling IS are enthusiastically endorsed by Mr Fillon. The EU has held together on Russia partly because of transatlantic unity, including the occasional prod from Barack Obama. Should Mr Trump quietly let America's sanctions on Russia die, perhaps as part of a bigger deal on co-operation in Syria, Mrs Merkel's job will become near-impossible.

At first, this might not make much difference. Sanctions have failed to deter Mr Putin, who now relies on bellicose nationalism to drum up domestic support, since he no longer has an oil windfall to spend. Maintaining the EU's unity is not much of a prize, say some, next to the costs of confrontation with a nuclear-armed neighbour with whom European firms seek to trade. Nor would a wink from the West as Mr Putin's bombers raze Syrian cities differ much in practice from the current approach.

Moreover, if his hand is forced, Mr Fillon is unlikely to place Moscow before Berlin. President Fillon would surely devote his energies to reforming the French state (see page 41), not shattering EU unity. On the traditional post-inauguration visit to Berlin he can expect to receive an earful from Mrs Merkel (as Mr Hollande did in 2012, over his campaign remarks on Greece's bail-out). The Franco-German relationship remains at Europe's heart; Mr Fillon is not the sort of loose cannon who might demolish it.

Grin and bear it

The problem is not that Mr Fillon will become a Kremlin stooge at the heart of the EU. It is that he may make it harder for Europe to manage Mr Putin's caprices. What if one of the frequent incursions by Russian jets into NATO airspace triggers an incident? What if the Kremlin's disinformation machine attempts to turn a European election, as German spooks fear? What if Mr Putin makes a play for Belarus? Not breaking ranks on sanctions merely means sticking to the status quo; a fresh crisis will require a fresh response, and Mrs Merkel will not want to act without France.

Still, these are unpredictable times. Mr Fillon is not a shoo-in for election. The effects of Mr Trump's victory are hard to divine. Officials in both Paris and Berlin wonder whether an American rapprochement with the Kremlin might encourage Mr Putin, free from fears of American-sponsored "colour" revolutions at home, to stand down abroad—and perhaps even to become a more constructive partner on multilateral issues such as arms control.

And should Mr Putin not let up, Mr Fillon may undergo the same journey as Mrs Merkel, who turned decisively against the Russian president when he lied to her about his mischief-making in Crimea. (Such is the hope in Germany.) Mr Putin, as ever, is unpredictable and his plans unclear. The worry is that the election of Mr Fillon may render the EU unpredictable and unclear, too. ■

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The UK Independence Party

The battle for Brexit voters

Paul Nuttall, UKIP's new leader, hopes his party can replace Labour as the voice of the working class

"MY AMBITION is not insignificant," grinned Paul Nuttall after taking over from Nigel Farage as leader of the UK Independence Party (UKIP) on November 28th (pictured above, left, with Mr Farage). "I want to replace the Labour Party and make UKIP the patriotic voice of working people." For a man elected with just 9,622 votes it was a bold statement. Jeremy Corbyn was returned as Labour leader with 313,209 votes in September. Yet Corbynistas need only look to Scotland, where the Labour vote crumbled in the 2015 general election after decades of political dominance, as a warning of what could happen in northern England and Wales.

UKIP seems an unlikely home for working-class voters. The party's route to political influence began at the London School of Economics, where Alan Sked, a historian, established the Anti-Federalist League in 1991 (this week he called for UKIP to be dissolved after the referendum vote for Brexit). It then wound its way through the home counties, collecting support from disaffected middle-class Tories won over by Mr Farage, a pinstriped former City trader. Today, the party membership includes more free-market libertarians than trade unionists.

Yet Mr Nuttall has spotted a political opening. His calculation is that white working-class voters in the old industrial heartlands no longer have much in common with Labour, the party they have traditionally backed. Mr Nuttall gave a taste of the attacks to come in his victory speech. "[Labour] have a leader that will not sing the national anthem. A shadow chancellor who seems to admire the IRA more than he does the British army. A shadow foreign secretary who sneers at the English flag. And a shadow home secretary who advocates unlimited immigration." Evidence of a disconnect between Labour and its voters is not hard to find. Perhaps most revealing, two-thirds of the party's MPs voted a different way from the majority of their constituents in the referendum.

Can second- and third-generation Labour voters, who have a congenital dislike for the Tories, be persuaded to vote for UKIP? If it is possible, says Caitlin Milazzo of Nottingham University, Mr Nuttall is clearly the "man for the job". The 40-year-old grew up in Bootle, a hardscrabble town just outside Liverpool. In his speech he combined emphasis on traditional UKIP causes like immigration and Brexit with talk of greater social mobility, English devolution and more cash for the National Health Service. He proposes a referendum on the return of capital punishment.

That could prove an attractive combination, for these issues unite unhappy Labour voters and Kippers (just 9% of whom consider themselves left-wing, according to YouGov, a pollster). Indeed, some research suggests that there may be more appetite for populist causes than UKIP has been able to tap into. One analysis, by the British Election Study, found that 67% of Leave voters had "at least dabbled" with voting UKIP. YouGov calculates that 17% of Labour voters hold "authoritarian populist" views that chime with things that UKIP promotes. The party's populist counterparts in France and the Netherlands poll considerably higher. Rancorous Brexit negotiations, stagnant real wages and cuts to public services could fuel public discontent with mainstream politics.

Yet several barriers stand in Mr Nuttall's way. First, his party. Since its referendum success UKIP has not just lost its main purpose but also descended into farce. Diane James, who was elected as Mr Farage's successor on September 16th, resigned 18 days later, complaining that she lacked the support of her colleagues. She later left the party. Steven Woolfe, a member of the European Parliament who had long been talked of as a future leader, also quit, although only after being hospitalised following a fight with a fellow UKIP MEP.

Mr Nuttall has been conciliatory. He has said he will lead neither a "Faragista UKIP" focused on immigration nor a "Carswellite UKIP" talking up the benefits of Brexit. He has appointed Suzanne Evans, his main rival for the leadership, as his deputy and policy chief. Yet to have any success, he will also have to improve the ▸▸

party's organisation. Candidates for the 2015 election were selected late in the day, notes Ms Milazzo, which meant that most failed to build local reputations and there was no time to weed out cranks (one described Islam as an "evil cult").

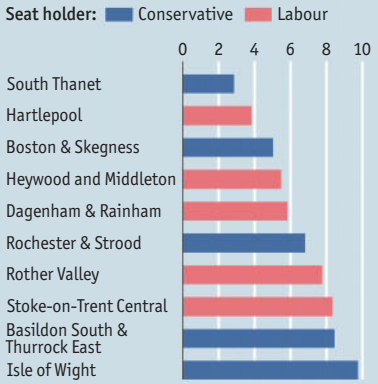
A lack of money may hinder such efforts. With Brexit achieved, donors are less willing to open their chequebooks. According to the Electoral Commission, an official watchdog, UKIP raised just £43,000 ($53,000) between June and September. Even the British National Party, a racist far-right outfit, attracted more money. Arron Banks, a prominent donor, has said that he may now focus on a new movement seeking to oust career MPs. Leadership ballots were sent to just 32,757 Kippers, suggesting the party's membership has fallen from around 46,000 at the 2015 election. Without Mr Farage's pulling-power, UKIP may struggle to turn the situation around.

Another barrier is the electoral system. UKIP's vote is dispersed across the country, which makes winning seats tricky in Britain's first-past-the-post elections. UKIP will have to challenge the Tories as well as Labour if it is to win more than a handful of seats (see chart). As it stands, that looks unlikely. With tough noises on Brexit and immigration, and support for selective grammar schools, Mrs May has made the Conservative Party more appealing to Kippers than it has been for a decade. "We have a watching-and-prodding brief on Europe at the moment," admits a UKIP spokesman. Difficult negotiations or hints that there may be a soft Brexit could change that.

Until then, Mr Nuttall's focus on Labour makes sense. Nevertheless, the scale of the task should not be underestimated. Even a 10% swing from Labour to UKIP would see the party pick up just five seats. Yet, as other countries have found out, populist uprisings often come with little warning. UKIP may be in a terrible mess. But Mr Corbyn ought to be worried. ■

Second wave

Britain, top ten constituencies where UKIP came 2nd in 2015 election, swing needed to take seat, %



Source: Electoral Commission

Trade with the European Union

Customs of the country

It may make sense to stay in a customs union with the EU, at least for a while

ARGUMENTS rage over whether post-Brexit Britain should try to stay in the EU's single market, perhaps by joining Norway in the European Economic Area (EEA). This week a report for Open Britain, a pro-EU lobby group, by the Centre for Economics and Business Research gave warning of the high costs of leaving the single market. Theresa May is keen not to rule anything out. But the prime minister also knows that EEA members have to accept free movement of people, rulings by the European Court of Justice (ECJ) and payments to the EU budget, all of which are anathema to Brexiteers.

Boris Johnson, the foreign secretary, and Liam Fox, the international-trade secretary, have suggested that Britain must leave the customs union as well as the EEA. Turkey, Andorra, Monaco and San Marino are outside the EEA but in a customs union with the EU. The Turkish model has clear drawbacks. It is meant as a move towards EU membership, not away from it. It covers industrial goods only, not agriculture or, crucially, services, which account for almost 80% of Britain's GDP. It has its own obstacles, such as testing and certification checks on exports. And, perhaps most upsetting to Brexiteers, it means applying the EU's common external tariffs without having any say in them, and it precludes free-trade deals with third countries.

Yet there may be political advantages to being in the customs union and not the single market. In particular, it does not require acceptance of free movement of people, budget contributions or being subject to the ECJ (though dispute settlement with Turkey is a controversial issue). It also avoids rules-of-origin checks on exports to ensure that they do not include parts from third countries. These impose heavy costs on Norway and other EEA members, which are not in the customs union. One trade lawyer says rules of origin can be so burdensome that sometimes companies prefer to pay export tariffs.

The customs union offers trade benefits as well. Remaining in it might allow Britain to stay in the EU's free-trade agreements with 53 third countries, which it will otherwise have to renegotiate. It would avoid the risk of a hard border and customs controls with Ireland, which Mrs May is keen not to impose. Blocking separate free-trade deals would certainly annoy Dr Fox, because it would largely do him out of a job. Yet in today's political climate, free-trade deals are increasingly hard to strike and even harder to ratify. And Dr Fox is widely seen as the most dispensable of Mrs May's Brexiteer ministers.

Whose rules, what origin?

Then there is the Nissan case. The government has given the carmaker unspecified assurances about keeping barrier-free access to the EU market. These may include a promise to stay in the customs union, at least for cars, which would explain why Mrs May said in Parliament recently that the customs union was not a "binary choice". Yet the idea of sector-by-sector membership is problematic. The EU has made plain its dislike of cherry-picking. And Jim Rollo of the UK Trade Policy Observatory (UKTPO) at Sussex University notes that it may be against the rules of the World Trade Organisation (WTO), which requires free-trade deals or customs unions to cover "substantially all the trade" among contracting parties.

Turkey would welcome Britain as a fellow member of its customs union, because, with its own hopes of joining the EU fast evaporating, it wants to renegotiate terms. The two countries could, for example, demand greater say in future EU trade negotiations that affect their interests. It might even be possible to add services trade in some form.

The customs union may not be a suitable long-term home after Brexit. But it could offer a transitional one that minimises the risk of falling off a cliff into trading on WTO terms alone at the end of the two-year time limit for Brexit set by Article 50 of the EU treaty. The UKTPO reckons it would take at least five years to negotiate and ratify a comprehensive free-trade deal with the EU after Brexit. Staying in the customs union during that time might not be such a bad idea. ■

Bagehot | Keir Starmer, noble Lilliputian

Labour's forensic spokesman cannot tame the forces Brexit has unleashed

SIR KEIR STARMER draws a horizontal line. He labels its left end the World Trade Organisation and its right end the European Union's single market. "We want to be as close to that as possible," he says, circling the second. "Trade and services without impediment, common regulation." Immediately to the left of the circle he draws a box with swift, straight strokes. "That's where we want to be," he says. But what does it mean? Three horizontal lines shoot across the page. He labels the top one "peace and security", the next "jobs and growth" and the lowest "immigration controls". "This is the public's order of priorities", he replies, squaring his notepad with the edge of table. Striking out the second two labels and reversing them, he adds: "but I worry the government thinks this."

Taking coffee with Sir Keir in the Berlin headquarters of the BDI, Germany's main business association, Bagehot was impressed. Whatever the subject, Labour's shadow Brexit secretary, opposing a cagey Tory government, will identify the factual bedrock, grind it into dust, shape it into bricks, enumerate them and carefully erect a neat, logical, impenetrable wall of argument. Little more than a month into the job, he has already put a list of 170 questions about Brexit to ministers. If the Supreme Court rejects the government's Article 50 appeal and insists that Parliament must have a say before Britain's two-year Brexit talks are triggered, he will become a big name in European politics.

On paper Sir Keir is poorly suited to the job. He became MP for Holborn and St Pancras only in May 2015, at 52. His prospects looked bright. A good friend of Ed Miliband (the former Labour leader, who joined him in Berlin), he would now be foreign or justice secretary had his party won. But now he is on the wrong side of most prevailing trends. As a human-rights lawyer, he has defended alleged terrorists and David Shayler, a whistleblowing spook; advocated an easing of right-to-die laws; and spoken out for judges. As director of public prosecutions, he oversaw trials of journalists accused of bribing public officials for stories. As an MP he represents a metropolitan finger of London that begins in the West End, takes in Bloomsbury, King's Cross and St Pancras and ends with Kentish Town and Highgate—a seat where council estates are interspersed with grand Victorian streets in which Labour posters dot the windows of houses worth millions of pounds. In an anti-expert, anti-liberal, anti-London age he is a red rag to populist bulls.

Yet in practice he is an excellent choice for the job. Three decades at the Bar have made him a crisp communicator, free of the abstract nouns and management jargon that infect the speech of other Labour moderates. Asked about the meaning of Donald Trump he echoes Zhou Enlai's supposed take on the French Revolution: "it's too early to tell." In an age of braggarts and posers, he is content to deal in modest thruths. Despite his name—his parents chose it in tribute to Keir Hardie, Labour's founder—he eschews tribalism and is close to liberal Tories like Andrew Tyrie and Dominic Grieve.

Moreover, where others would use the job as a platform for scoring points, Sir Keir considers himself a sort of national ombudsman. Brexit should not divide the 52% of Leavers from the 48% of Remainers, he says, but unite the 100% through a pragmatic deal in the middle of the spectrum. Hence his talk of using a parliamentary vote on Article 50 to "put grit in the machine" and his concern that the government's Great Repeal Bill, which will transfer EU laws wholesale to the British statute book, may not be sufficiently scrutinised in Parliament. His one-nation instincts also explain his quest to calm expectations of Brexit—"the sovereignty that we gain will be for a millisecond between the signature that ends the major treaty and the signatures that enter the new treaties"—and to act as an interlocutor between London and other capitals (from Berlin, Sir Keir went on to Brussels).

Brobdingnagian hopes, human reality

Though impressed, your columnist has two concerns. The first is Sir Keir's party politics. He may claim that Labour is "more united on Brexit than on any issue in recent history", but its far-left leadership still sees the EU as a malign, capitalist plot. After their meeting in Berlin, Bagehot received a call from an aide to Sir Keir insisting that subsequent pro-Brexit comments by John McDonnell, the shadow chancellor, did not reflect his boss's views. This gap between the shadow Brexit secretary and his front-bench colleagues surely hints at the tensions that will explode during next year's negotiations.

The second caveat is the sheer scale of Brexit. Many Remainers vest outsized hopes in Sir Keir. "He's what stands between the government and a hard Brexit," says one colleague. "Britain's last Remaining hope", bellows a headline on the Politico website. But that speaks to a delusion which should have died by now: that Brexit is a car with an accelerator, a brake and a steering wheel—a road-safe vehicle that individual politicians can control.

In fact the vote on June 23rd produced an intemperate, untameable animal. That much is evident in Sir Keir's haunted air. He sports the demeanour of a man who has looked the giant in the eye and seen its size. It is also evident in the jitters of Brexiteers, whose disgust at the slightest suggestion of parliamentary scrutiny and whose perma-fury at unconvinced Remainer commentators reveals more than they would care to admit. Deep down, such politicos know the truth. Brexit is not a machine but a voluble beast. It combines a vague mandate from voters, a furious purism among diehards, a mind-achingly complicated bureaucratic exercise and a volatile international political and trading environment. Anyone who claims to know how the coming years will turn out is therefore talking rubbish. Sir Keir's greatest virtue is that he seems to understand this. His keenest acolytes should follow suit. ■

Abortion

How to make it rarer

ATHENS AND SEOUL

In many countries abortion is the main form of birth control. The easiest, least controversial way to reduce it is often neglected

ABORTION, says Theodora, a Greek civil servant, was "an absolute necessity" when she became pregnant last year. Her husband had lost his job and money was too tight for a third child. The procedure, at a private clinic, was "efficient"; she was in and out in three hours. Hers was a typical experience for a middle-class Athenian woman. It is not uncommon for one to have four or five abortions, says a gynaecologist in Athens. In Greece abortion is seen as an ordinary form of birth control.

Most modern contraceptives, however, are not viewed that way. More than half of married Greek women use none at all. Withdrawal and condoms are the methods of choice for most couples who are trying not to have a baby—even medical students, who should know that these fail about a fifth of couples who rely on them for a year. Greeks commonly believe that the pill and other hormonal contraceptives cause infertility and cancer. They also distrust intrauterine devices (IUDs), possibly because they have been taught that tampons are unhealthy.

The same sort of nonsense keeps abortion rates high in many other countries. Statistics are patchy, especially in places where many abortions are done in private clinics or the procedure is illegal. But a recent study in the *Lancet*, a medical journal, estimated that 56m abortions are carried out each year worldwide, ending a quarter of all pregnancies. The annual rate, of 3.5 abortions per 100 women of childbearing age, is only slightly lower than it was in the early 1990s.

Although the abortion rate is stable or falling in most rich countries, it is rising in Latin America and some parts of Africa and Asia (see chart 1 on next page). Former communist countries have some of the world's highest rates. During Soviet times abortion was the only method of birth control, and in some countries the average woman would have five to eight abortions during her lifetime. By the time the Soviet Union fell apart it was spending about half of its reproductive-health budget on abortions and associated complications.

Zero tolerance, zero result

For many pro-life politicians, the answer to high abortion rates is to make abortion illegal or harder to get. Donald Trump, a recent convert to the pro-life cause, has vowed to appoint a conservative to America's Supreme Court. Many religious leaders fulminate against abortion, although Pope Francis softened the Catholic church's line slightly on November 20th. Abortion remains a grave sin, but penitent women can now be forgiven by parish priests and do not have to go to a bishop.

International comparisons show that bans and restrictions do little to cut the number of abortions. Most women will do what it takes to end an unwanted pregnancy, even to the point of risking their lives. According to the *Lancet* study, abortion is as common in countries where it is illegal or allowed only to save a woman's life as it is in those where it is provided on demand.

In many countries the authorities turn a blind eye when the rules are broken. Most of Latin America has strict laws, but a woman able to afford high fees can get a safe illegal abortion in a private clinic. (Poor women go to backstreet abortionists, and are sometimes seriously injured or even killed.) In South Korea abortion is legal only in cases of rape, incest or severe fetal abnormalities, or to save a woman's life. Still, a study for the government in 2005 estimated that 44% of pregnancies were aborted. A 35-year-old housewife in Seoul who had an abortion in 2011 says she simply went to the doctor who had delivered her two children and said she did not want the baby. Women who call clinics in Seoul to seek an abortion are told that the procedure is not provided but are often invited to come for a "consultation".

Where the authorities are more vigilant, women often go abroad or buy abortion pills on the black market. Women from Ireland, Poland and Malta can easily get abortions elsewhere in Europe. In 2015 ▸▸

nearly 3,500 women who gave Irish home addresses had abortions in public clinics in England. The internet has made it easier to arrange a safe abortion. Women on Web, a Dutch pro-choice group, offers online consultations on how to use misoprostol and mifepristone, a drug combination approved by the World Health Organisation for abortions during the first 12 weeks of pregnancy. It ships them all over the world. In many Latin American countries misoprostol is available as a treatment for stomach ulcers. To avoid suspicion, a woman might ask an elderly relative to buy the drugs for her.

Anti-abortion groups have grown louder in many countries in recent years. But they struggle to enact bans. In October conservative politicians in Poland, where abortion is available only in rare circumstances, backed away from a plan to ban it entirely, following large street protests. Women marched waving coat-hangers, which are sometimes used in do-it-yourself abortions.

When the patriarch of the Russian Orthodox Church called for a ban in Russia, the country's minister of health explained that this had been tried for a time under Stalin. It resulted in many deaths from illegal abortions but no change in the birth rate. Mr Trump's Supreme Court appointee will make little difference to America's abortion law in the short term. The court has a solid majority for keeping it legal.

Pro-life campaigners have succeeded in making abortions harder to get. In some American states a woman who seeks one must be told that it might cause cancer—a claim unsupported by scientific evidence. In recent years Russia and several other former communist countries have brought in mandatory counselling and "reflection periods" of several days before an abortion can be carried out. Russia's guidelines describe abortion as the "murder of a living child" and instruct counsellors to "awaken maternal feelings", convince the woman of "the immorality and cruelty" of abortion and lead her to conclude that the means to raise the baby can be found. Evidence of success is thin. Abortions declined slightly when the state of Mississippi insisted on counselling and a waiting period, but the proportion carried out after the first trimester rose and more women travelled to other states.

Studies of Western countries suggest that few women who have had an abortion regret their choice. Although women with pre-existing mental-health problems can see them worsen following an abortion, such problems also tend to worsen if they carry an unwanted baby to term. But in poor countries, where sterile rooms and well-trained doctors are in short supply, even legal surgical abortions can be risky. In the West less than 1% of abortions carried out by manual vacuum aspiration are followed by complications. In Bangladesh the share is 12%.

Much the best way to make abortion rarer is to prevent unwanted pregnancies. What works is well known: campaigns to educate couples about the various methods; training for doctors and nurses in birth-control counselling; and making contraceptives easy to get. Even in rich countries, however, some or all of these are missing. Bangladeshis and Malawians are keener users of contraceptives than Greeks or Italians (see chart 2). In plenty of countries, including Ireland and Russia, more than a third of married couples who use contraceptives rely on condoms. In Japan that share is an astonishing 90%.

The Catholic church continues to frown on contraception. And many couples fear social stigma and mythical side effects. In South Korea fewer than 5% of women use the pill because they think it is harmful to ingest artificial hormones. Even so, unmarried couples often forgo condoms to signal commitment; men know that women can obtain the morning-after pill without much difficulty and that abortions are a possibility. Professional advice is scarce. A gynaecologist who gave a lecture about sex and contraception at a nursing college was told afterwards that it had made the students "feel uncomfortable".

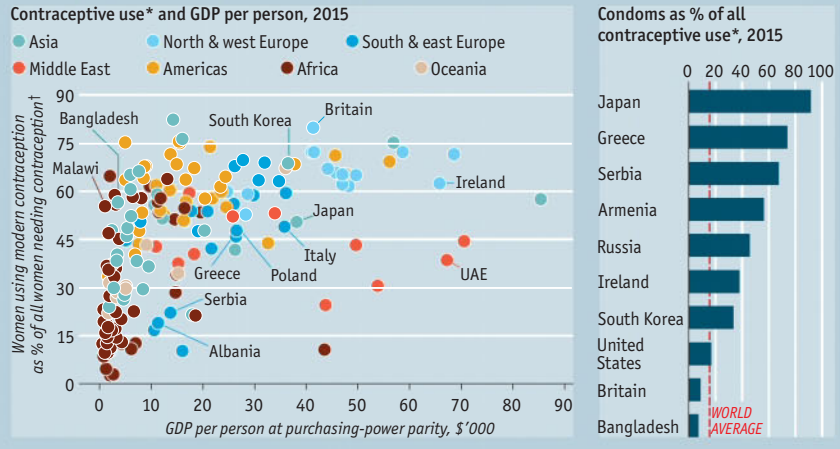
A fetish for latex

The head of one HIV clinic in Athens says Greek hospitals often recommend condoms as the most reliable method for avoiding pregnancy. In fact, of every 100 couples who rely on condoms for a year 18% will conceive, compared with 9% for the pill and under 1% for the IUD. Roula, a 30-year-old architect from Crete who studied in England, where four-fifths of women use contraceptives and hardly any rely on condoms to prevent pregnancy (as opposed to sexually transmitted diseases), describes the counselling on the range of contraceptives at her university's clinic as "enlightening". In Macedonia, where less than a fifth of women use contraceptives, some doctors view the IUD as a "foreign body" akin to a surgical tool accidentally left inside a patient. Others are averse to prescribing the pill to young women, believing that it will harm their physical development. (It won't.)

In former communist countries, few older doctors are trained to prescribe modern contraceptives. Luybov Erofeeva of the Russian Association of Population and Development, an advocacy group, says Russian women prefer condoms or withdrawal because they have heard from their mothers and aunts about the complications and side effects from contraceptive pills with high doses of hormones and primitive IUDs used in Soviet times.

In many countries, sex education in schools is woeful. A review of 16 European countries by the International Planned Parenthood Federation (IPPF), a campaign group, found that the subject was compul- ▸▸

Falling behind Bangladesh 2

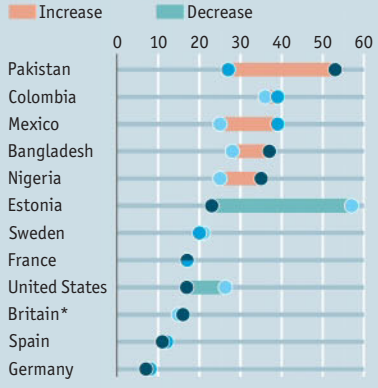


Sources: IMF; UN

*Excluding traditional methods such as withdrawal and rhythm
†15-44 year-old women wishing to avoid pregnancy who are married or are in a union

The north-south divide 1

Abortions per 1,000 women aged 15-44



Sources: Guttmacher Institute; ONS

*England and Wales

sory in only half of them and rarely included scientific information about contraceptives. The main message of a recent pamphlet offering guidance to South Korean teachers is to make the case that students should not have sex. One of the suggestions is to ask pupils to write letters to their imaginary future spouses, to focus their minds on remaining chaste.

Simply getting hold of contraceptives can be such a hassle that women give up. Russian women who want the pill often undergo an unnecessary pelvic exam by a gynaecologist. Some Greek doctors are unwilling to write a prescription for the pill that covers more than six months. Doctors in eastern Europe routinely order all sorts of unnecessary tests before prescribing contraceptives, contravening official medical guidelines.

Cost is often an even bigger deterrent. A Russian woman who wants an IUD has to pay for the device and for the appointment to have it inserted. Abortions in state hospitals, by contrast, are free. Half of the 16 European countries in the IPPF review provide no reimbursement for contraceptives; none fully covers all methods. Even in some countries with generous social welfare systems, including Germany and Italy, women have to pay for contraceptives, no matter how low their income.

This is despite contraception being cheap for governments to provide. England's National Health Service (NHS) offers every type of contraceptive free to everyone (better-off people must pay part of the cost for other prescriptions). Its buying power means it can pay less than £10 ($12.50) for a year's supply of the pill and just £18 for an IUD that prevents pregnancy for five years. England has one of the world's highest rates of contraceptive use.

Contraception also offers an excellent return on public investment. An abortion costs the NHS 13 times the amount it spends on the average contraceptive user per year. The Copenhagen Consensus, a think-tank, estimates that making contraception and sexual-health advice universally available would bring returns worth $120 for every $1 spent, mostly by reducing deaths in pregnancy and childbirth in poor countries.

Many miles to go

Even in England, with its well-run sexual-health clinics and policy of providing contraceptives free, about a fifth of pregnancies end in abortion. And a third of women who have abortions have had at least one before. It cannot be abolished, no matter how enlightened a government's policy. But the English have more-or-less the right attitude. A high abortion rate is best viewed as a public-health problem that can be cheaply addressed—not through pointless bans or restrictions, but by providing the means to avoid unwanted pregnancies in the first place. ■

Abortion in El Salvador

Miscarriage of justice

SAN SALVADOR

Where miscarrying can mean a life in jail

ON AUGUST 11th Sandra, a 19-year-old Salvadorean, went to her school's nurse with stomach pains and a fever. She dashed to the toilet. What happened next is disputed. Her lawyer, Bertha Deleon, says she felt a spasm, looked down to see a dead fetus, fainted and woke up in hospital. Police said she gave birth and murdered her baby. According to Ms Deleon, a doctor later concluded that Sandra had been at most five months pregnant and had an infection known to cause miscarriage. Yet she was charged with infanticide.

In most countries where abortion is illegal, only doctors who carry it out are punished. But El Salvador is one of a handful of countries that prosecute women for having them. Between 2000 and 2014 at least 149 Salvadorean women faced related charges; 23 were convicted for abortion and 19 for aggravated homicide. In 2014 the Citizens' Association for the Decriminalisation of Abortion, a campaign group, petitioned the Supreme Court to free 17 women jailed following reported stillbirths or other complications of pregnancy. (Protesters demanding their release are pictured below.) Three have been freed, though one faces an appeal that could return her to jail.

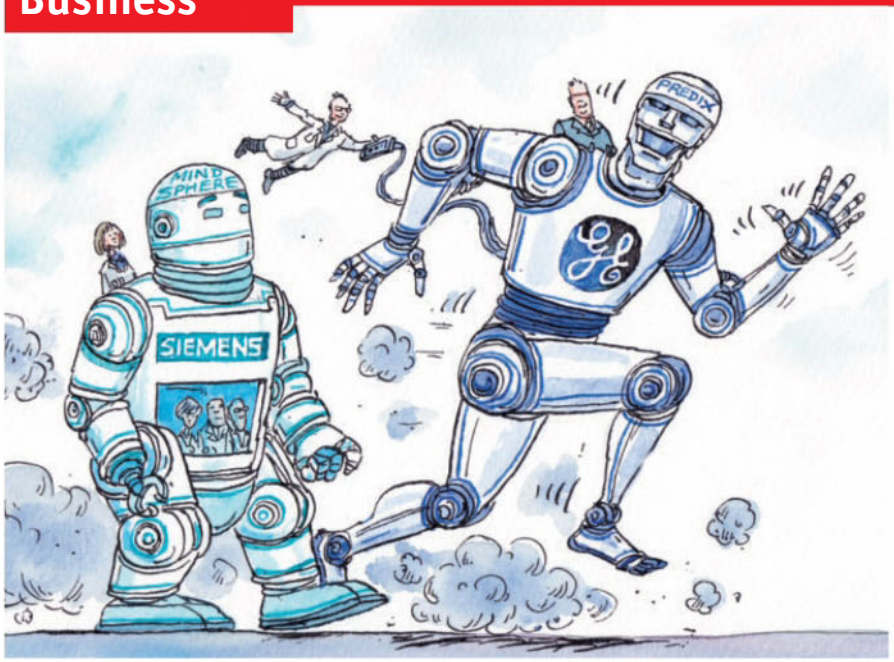
In 1998 El Salvador banned abortion in all circumstances. On paper, Nicaragua's law is as sweeping—but the authorities do not actually prosecute women. El Salvador's greater zeal followed the campaign for the 1998 law and a subsequent constitutional amendment that defined life as beginning at conception, says Jocelyn Viterna, a sociologist at Harvard. Feminists decided not to fight the law, she says, but to focus on issues such as sex education and access to contraception. With no opposition, pro-life groups decided to continue campaigning, this time to see the new law enforced.

Clandestine abortions are tricky to prosecute. Unless a woman becomes unwell afterwards, the procedure is easy to keep secret. So women arriving in hospital after obstetric emergencies have become the main targets. Doctors seeking to avoid charges of assisting a crime report them on suspicion of abortion. Prosecutors sometimes substitute charges of infanticide. "They arrive at the doors of the hospital bleeding and in pain," says Sara García of the Citizens' Association. "And instead of receiving medical attention they are handcuffed and accused of murder."

The campaign to free the 17 women—nearly all poor, uneducated and from rural areas—has sparked debate in a broadly anti-abortion country. Last month the governing left-wing FMLN party proposed decriminalising abortion in cases of rape and statutory rape, or when pregnancy threatens a woman's life or the fetus has no chance of surviving outside the womb. But reform of the law looks unlikely. In July the conservative opposition ARENA party argued for increasing the minimum sentence for abortion to 30 years.

The official autopsy of Sandra's baby was released on September 23rd. Doctors determined that it had no brain. Prosecutors dismissed murder charges against the teenager, who was facing 40 years in jail. Nevertheless, says Ms Deleon, her school's head teacher has refused to let her attend graduation because she "set a bad example".

Demanding mercy for the mothers of the stillborn



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Siemens and General Electric

Machines learning

MUNICH AND SAN RAMON

The world's two biggest industrial conglomerates differ on how best to go digital

IT DOESN'T take long to walk from Siemens's old headquarters in Munich to its new one, inaugurated in June: the German industrial conglomerate has built it right next door. The design is cutting-edge, as are the building's environmental features. It is packed with energy-saving sensors; channelled rainwater is used to flush the toilets.

General Electric, Siemens's big American rival, will soon have a new base, too. But it takes three hours to drive from the old site in Fairfield, a Connecticut suburb, to the new one in Boston. Its building will also boast plenty of green technology, such as a huge canopy made of solar panels, as well as spaces that the public can enter, including co-working areas and lounges. There will be laboratories both for internal startups and some from outside.

The two industrial giants aren't so much showing off as signalling transformation. Both firms are going through the most profound change in their corporate histories, attempting to switch from being makers of machines into fully digital businesses. GE's chief executive, Jeff Immelt, says the plan is to join the world's top ten software firms with sales of programs and services worth $15bn as early as 2020.

It is tempting to bracket the firms together for other reasons, too. The basic numbers make them look alike. With annual revenues of around $100bn each, they are the world's two largest diversified industrial conglomerates. About 70% of their markets overlap with each other, reckons J.P. Morgan, a bank.

But the similarities only go so far. GE mostly sells big, stand-alone products, such as jet engines and locomotives. It may look like a collection of distinct divisions, but it has a strong centre and can move swiftly. It is also greatly influenced by America's technology giants.

Siemens, in contrast, excels in product design and factory automation. It already has experience in digitising the entire life cycle of an industrial product, from design to fabrication, so it is in some ways already more of an IT firm than GE (though it still has a very long way to go). The German firm is more decentralised, featuring competing centres of power. Its top managers prefer to weigh options carefully, not always with great results: Siemens is about half as profitable as the American firm.

It is no surprise, then, that the two firms are also taking very different paths towards digitisation. GE is completely reinventing itself, whereas Siemens is staying close to its roots. What works best will be closely watched by other companies in all sorts of industries. They want to know what happens when operating technology, as represented by GE and Siemens, properly meets information technology. The first tends to be organised in vertical, industry-specific silos, such as machine tools and medical equipment. The second typically comes in horizontal, widely used layers, such as computer operating systems. Bringing it all together could go badly wrong.

Data have long been crucial for manufacturing and industrial goods. Siemens digitises its customers' factories; a typical GE jet engine contains hundreds of sensors. But now the data are no longer binned when the widget comes out of the factory or the plane has landed. Thanks to faster internet connections, cloud computing and clever algorithms, information can now be easily collected, stored in huge "data lakes" and sifted for insights.

That technology allows manufacturers to create what David Gelernter, a pioneering computer scientist at Yale University, over two decades ago imagined as "mirror worlds". GE wants to build a similar, "virtual twin" of every category of physical asset it sells, from locomotives to wind farms. This would allow engineers to test products before they are built and also let them feed the virtual model with real-world data to improve performance. "A digital twin is not just a generic model but based on the exact conditions in the real world," explains Ganesh Bell, chief digital officer at GE Power.

Not so byte-sized

Although the efficiency gains for a single product may be relatively small, they can add up to billions of dollars in savings for customers over the lifetime of equipment. More broadly, linking the physical and the digital worlds via the "internet of things" (IOT) could create up to $11trn in economic value annually by 2025, estimates the McKinsey Global Institute, a think-tank. A third of that could be in manufacturing.

It is not just the promise of such gains, however, that has prompted Siemens and ▸▸

GE to overhaul themselves. Digitisation is also a threat. If they do not satisfy customers' demands to replace machines less often and to spend less money on maintenance, others will. Big IT firms such as Google and IBM might come to control the virtual part of manufacturing by developing software and services to optimise factories and supply chains. That would slice off a big chunk of manufacturers' profits.

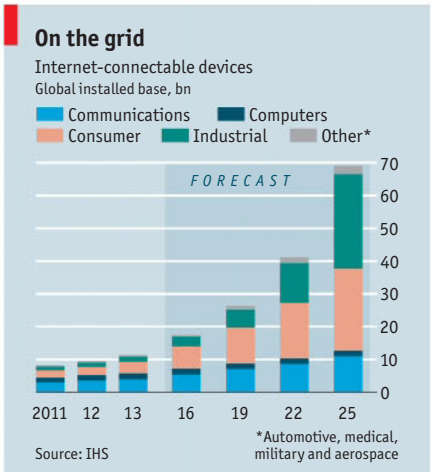
GE's answer has been to invest billions since 2011 in a data platform called Predix. It wants the system to become for machines what Android is for smartphones: the dominant host of industrial "apps" to manage, for example, clusters of wind turbines and fleets of locomotives. GE has set up Predix to be "open", meaning that it doesn't only work with its own machines or its own apps. For example, Pitney Bowes, a maker of heavy-duty mailing systems and products, uses the platform to analyse data from its machines in order to manage them better.

GE is also using Predix as a way to shake up its internal organisation. It set up a separate software unit in San Ramon, near Silicon Valley, to develop it. "We incubated the unit separately because it would otherwise have been killed by the main organisation," explains Bill Ruh, who heads GE Digital. Only in September last year did it merge the startup with the company's other digital activities, including its entire IT department, to form Mr Ruh's unit. It interacts with all other GE businesses, making sure that an algorithm to control electric motors in a locomotive, say, can also be used for similar devices in a wind turbine or a power plant.

GE is changing its culture in other ways, too. As an industrial conglomerate, the firm was known for its near-obsession with the Six Sigma management method. This uses statistics and incremental improvements to drive everything a company does close to perfection. Now GE wants workers to take a leaf from the world of startups and start making mistakes—an approach it is calling "FastWorks". The idea is to experiment more and to develop so-called minimum viable products that can be discarded quickly if they fail to take off.

Change your Weltanschauung

Siemens's digital transformation appears to be going more slowly (although that may be partly because its managers are less vocal about the firm's achievements). Its primary focus is still on software tailored to industry verticals, such as health care and manufacturing, rather than on a horizontal platform to fit all sectors. Only recently did it begin marketing MindSphere, its equivalent to Predix, more intensively. "Our customers live in worlds that are very different from each other," explains Horst Kayser, the firm's head of strategy. Siemens is also keen not to displease



an important group of customers: machine-tool makers that use components from Siemens. They want to maintain direct relationships with their own industrial customers, not have them interacting through a platform like MindSphere.

Because MindSphere is less important inside Siemens than Predix within GE, the German firm's organisational changes have so far been less radical. But it is trying to open itself up to ideas from outside. Internal startups used to be at the mercy of its budgeting process, which often meant that they were the first to lose funding. In June the firm created a separate home for such projects, called next47 (Siemens was founded in 1847 in a Berlin courtyard), which is part-incubator, part-investment firm. It has hired an American to run it, but rather than basing it in the German capital, which boasts a thriving startup ecosystem, it will remain in Munich.

Siemens has also started sending senior employees on so-called "learning expeditions" to startups to see how things can be done differently. Its employees are now encouraged to communicate across organisational boundaries and directly with bosses. The company would have to do much of this regardless of its priorities in the digital sphere; a reputation for being risk-averse and overly hierarchical is not the best way to attract young talent as Germany's population ages.

In other IT markets, one firm has quickly come to dominate, whether in online search (Google), computer operating systems (Microsoft) or corporate databases (Oracle). That seems to argue in favour of a gung-ho approach. GE is already well on its way to creating an "ecosystem" for Predix, says Nicholas Heymann of William Blair, an investment bank. It has agreed partnerships with big telecoms operators, consultancies and IT-services companies, not least to gain access to outside data sources.

Yet the consumer world and that of business differ. Online search and social-networking services are easy to scale, because human beings' needs are similar across the world. Particular industries and companies, on the other hand, often have specific requirements that call for customised products—not for a platform that is trying to be all things to all machines. That may help Siemens's more tailored, customer-centric approach.

Siemens's attitude to its industrial customers' data may also work better than GE's. Whereas individual consumers are by and large willing to give up personal information to one platform, such as Google or Facebook, most companies try to avoid such lock-in. Whether they are makers of machine tools or operators of a factory, they jealously guard their data because they know how much they are worth. Both GE and Siemens say their customers will keep control of their data in the new digitised world, but the real question is who will own the algorithms that are generated using these data. GE claims ownership, Siemens is much less categorical.

It is thus unlikely that a single platform will come to dominate the industrial internet. There will be plenty of room for Predix, MindSphere and other services, concludes Andreas Willi of J.P. Morgan. Nonetheless GE seems better prepared for a digital future. The firm now has a flexible organisation that can change course quickly. Siemens, by contrast, is still living in a more closed vertical world. Both new headquarters feature small museums displaying the firms' roots. No prize for guessing which one you can visit strictly by appointment only. ■

American business

The small fly

NEW YORK

Corporate tiddlers are among the winners in the new America

THERE have been plenty of swings in financial markets since America's election on November 8th. The Mexican peso has fallen against the dollar, reflecting worries about Donald Trump's protectionist tendencies. Ten-year bond prices have tumbled as investors factor in the likelihood of much higher government borrowing. One particularly striking move has been a surge in the share prices of small firms. The Russell 2000 index of American midgets has leapt by 12%, compared with a 3% rise for the S&P 500 index of multinational leviathans (see chart on next page).

Small companies are the backbone of America's economy, employing about half of the private-sector workforce. But they have had a rotten decade. The Russell index had lagged the stockmarket until the election. The country's 28m small firms—

Mom and...pop!

Share prices, January 1st 2016=100

Source: Thomson Reuters

most of them unlisted—have never fully recovered from the financial crisis of 2008. As of October, confidence had yet to rise back to the level of 2006, according to an index of optimism that is based on surveys by the National Federation of Independent Business, a lobbying group. Giant firms, meanwhile, have been playing a bigger role: two-thirds of all industries have become more concentrated since the 1990s.

Mr Trump knows a thing or two about struggling small firms—he runs one. The Trump Organisation would rank about midway in the Russell 2000 for the size of its revenues if it were listed. But there are three more substantial reasons why his administration could help small companies. First, tax. Profitable firms in the Russell 2000 pay a rate of 28% on their aggregate income, according to Barclays, a bank. Large multinationals are skilled at paying lower rates, mainly by stashing their profits abroad. Mr Trump's plan to cut the corporate rate from the current headline rate of 35% to 15% would help small firms disproportionately. (Big companies, meanwhile, may record lower foreign sales because of the strong dollar.)

Second, the plan to abolish Barack Obama's Affordable Care Act and to lighten regulation across the board is likely to please the owners of small firms. They rank health insurance and red tape as their two most pressing concerns. Last, the Trump administration is also likely to ease regulations on the local banks that typically supply credit to smaller firms.

A revival of animal spirits among the millions of small companies that already exist would boost America greatly. But the real test is whether more new firms are started. The rate of net company creation has gradually slumped to its lowest level since the 1970s. Among the reasons are a mounting burden of regulation and the difficulty of matching the purchasing clout and pricing power of giants such as Walmart. If over the next four years the administration manages to reverse this trend, it will have made a big step towards restoring the dynamism that made America's economy great. ■

The sharing economy (1)

Four walls in China

SHANGHAI

Airbnb comes late to the Middle Kingdom

"WE HAVE not focused on building our community in China," reads a peculiar announcement posted recently by Airbnb on its official blog. Despite the firm's apparent lack of enthusiasm for the Chinese, the world's biggest group of travellers, intrepid locals have still discovered the American home-sharing site. Tourists from the mainland have used the platform more than 3.5m times; Airbnb members in China have hosted nearly 1m visitors.

Perhaps abashed by this show of grassroots support, Airbnb is now making a big push in China. From December 7th a new legal entity (Airbnb China) will cater to all those neglected hosts and guests. To satisfy Chinese regulators the unit will store their data on local servers. The firm has also struck new agreements with the governments of Shanghai, Shenzhen, Chongqing and Guangzhou, which suggests that these big cities welcome its formal arrival. In addition to these developments, there are rumours that Airbnb is about to take over Xiaozhu, a mid-sized local rival that recently raised $65m of venture funding.

The mainland is certainly an attractive prize, with a big sharing economy that is projected to grow by 40% a year for each of the next five years. Local travellers made four billion trips inside China last year. The market for individual leisure lodgings inside the country could reach 10.3bn yuan ($1.7bn) next year, up from 6.8bn yuan this year, reckons iResearch, a market-research firm. Airbnb sees its rivals in China as parochial outfits. None of them have a global network or the means to build one, says Nick Papas, the firm's spokesman in Washington, DC.

But the American firm is late to the party, and local rivals are by now established. The strongest is Tujia, a venture-backed firm that is valued at more than $1bn and offers some 440,000 homes in over 300 cities. Unlike Airbnb's model, which connects homeowners with travellers, Tujia's also helps developers let out vacant properties—taking advantage of China's property glut—and also offers services to potential buyers of homes.

Other foreign tech firms have stumbled in China in the recent past. "The past decade has shown that it's very hard for American companies to use their own approach to do business in China," says Chen Chi, Xiaozhu's chief executive officer. He previously worked at the local divisions of Yahoo and TripAdvisor, two American internet firms which struggled to localise. This year Uber, a ride-hailing firm, had to retreat after spending a fortune trying to compete against Didi Chuxing, a well-funded and inventive local rival.

Even if foreign firms manage to hire savvy mainlanders, they are held back by having to report to faraway bosses with patchy knowledge of the market. "They end up behaving like rabbits, while we are a pack of wolves," says Mr Chen (in an interview before the news of Airbnb's interest in Xiaozhu). One Xiaozhu customer says he far prefers its cheaper prices and greater array of listings to Airbnb's offering. With over 100,000 listings in about 300 cities across the country (Airbnb has around 70,000 in fewer places), it would be a useful addition to Airbnb's empire.

A combined firm would still have to contend with regulatory confusion. Tujia's boss, Luo Jun, laments that there is "no clear national law supervising this industry." The requirements for special licences, police checks and identity verification vary widely by region. Doing business often means lengthy one-off negotiations.

Airbnb may reckon it is in the clear with its deals with four cities, but Tujia has made over 200 agreements with local authorities across the country. One businesswoman who rents out eight grand flats in Shanghai's old French Concession from landlords, and re-lets them on home-sharing sites, says that the police fine landlords as a matter of course every once in a while. A strong relationship with the government is a must for any sharing site, whether local or foreign, she says. It would also help to avoid being dismissive of local companies. Airbnb is still a long way off building its Chinese home from home. ■

Beware of the wolves

The sharing economy (2)

Airbnb for canines

SAN FRANCISCO

Putting a woof over their heads

THE majority of Americans see their pets as family members, surveys show. Those with dogs are more likely to call themselves pet "parents" than canine "owners". There are more of these parents than ever. In big cities such as San Francisco and Seattle, (owned) dogs outnumber children.

The ways in which companies are profiting from the trend are also multiplying. Not only is there organic dog food on offer, but packaged, raw food for dogs so they can follow a "paleo" diet reminiscent of what their ancestors ate in the wild. A different sort of indulgence is orthopaedic pet mattresses. This year Americans spent more than $400m on Halloween costumes for pets.

Overall, annual spending on pet food and products in America has risen by around 40% over the past ten years, to $43bn—a remarkable rate of growth for an already large industry, says Jared Koerten of Euromonitor, a research firm. Now a pack of startups has sniffed a fresh opportunity. Much as Airbnb has offered travellers an alternative to staying in a hotel, two firms, Rover and DogVacay, want to give pet owners an alternative to kennels when away from home.

Customers search for a nearby sitter and pay for their dog to stay in that person's home. The cost is around $30 a night, with the majority of that going to the sitter and around a fifth to the company—much less than you would spend to check your dog into a kennel.

The other big selling-point is that pets by and large receive better treatment. There are ways, apparently, to vet dog hosts to find the real pet lovers: only around 15% of those who apply to serve as sitters are approved. Besides offering pooches more attention and room to roam, the platforms try to offer extra add-ons that appeal to helicopter parents. Rover has launched a feature that enables customers to see how far their dog has been walked via the GPS in the host's phone. Like Airbnb, both DogVacay and Rover insure stays against accidents.

Another advantage of the model is that, unlike other platforms that match consumers with workers, like handymen or masseuses, for one-off visits, consumers often use dog-sitting services many times a year, and they tend to be loyal. That has helped DogVacay and Rover attract a lot of venture-capital money—around $140m between them.

But firms that connect pets with hosts will face daunting competition as they try to go global. Companies offering home-stays for dogs are now cropping up in many different countries, including Australia, Brazil and Britain. And unlike Airbnb, which pulls in customers thanks to its presence in lots of markets that people want to travel to, the network effect for services like DogVacay is local. Despite having anticipated the trend early, such firms may never achieve the same scale as an Airbnb. But then no one ever said it was easy to be top dog.

French energy

Bad reactions

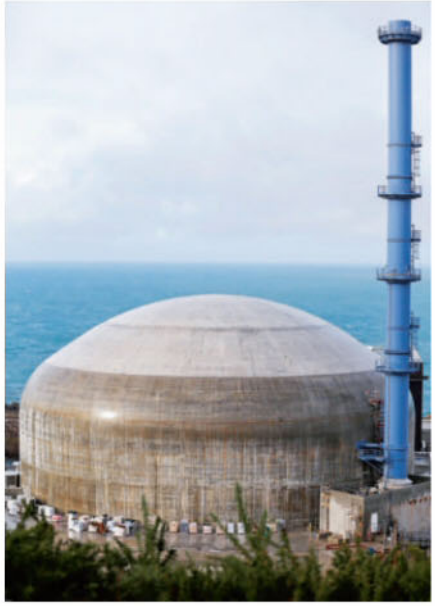
PARIS

Electricité de France is in turmoil

THESE are difficult times for Electricité de France (EDF), the country's quasi-monopolistic electricity provider, serving 88% of homes. Outages at no fewer than 18 of the 58 EDF-owned nuclear reactors that provide three-quarters of France's electricity have meant a slump in production: the company says annual nuclear output could fall to 378 terawatt hours (TWH), from 417 TWH last year. Eight reactors are currently lying idle and several may not restart for weeks or months. Power stations are burning coal at a rate not seen since the 1980s. As electricity imports and prices soar, officials are having to deny that a cold snap could bring blackouts.

The cause of the crisis—possibly faulty reactor parts throughout EDF's fleet—suggests it may not be easily contained. France's nuclear regulator, the Autorité de Sûreté Nucléaire (ASN), this summer ordered urgent tests of reactor parts, mostly bases of cylindrical steam generators. Inspectors are worried about high carbon levels found in steel forged by Creusot Forge, which is owned by Areva, another French firm, and by Japan Casting & Forging Corporation, a Japanese supplier. In some pieces carbon deposits are over 50% above permitted levels, risking fracture in case of a sudden change in the temperature of the steel.

The extent of faulty forge work is as yet unknown, as is whether Areva employees falsified data. ASN is clearly surprised that Areva failed to spot the problem. It is now



Under pressure

auditing thousands of files stretching back over decades. More faults are likely to emerge, the regulator reckons.

The cost for EDF is rising. As well as lost earnings from shuttered plants, switching one generator (a reactor can have three) can take six months and cost €150m ($159m). And its decision in November finally to stump up €2.5bn for Areva Nuclear Power (most of Areva, including Creusot Forge) now seems rather like paying to swallow a highly radioactive dinner.

The two firms have one important joint project: a new European Pressurised Reactor (EPR), built by Areva and mostly run by EDF. Here too, forging faults are a problem: they were first found last year on the installed reactor vessel at Flamanville 3, a new EPR near Cherbourg. Another serious source of concern is safety-valve design.

The regulator will rule on Flamanville's future in mid-2017. More tests or design changes may mean putting off its opening far beyond 2018.That would also deliver another blow to France's reputation in nuclear power. The only other EPR in Europe, that at Olkiluoto, Finland, is years overdue and three times over budget.

Delays might also hinder EDF in its plan to build two EPRs at Hinkley Point, in Britain, for £24.5bn ($30.7bn). British loan guarantees need certain conditions to be met, and these reportedly include seeing Flamanville operate by 2020. Steve Thomas, an energy expert in London, concurs with the opinion of many in the nuclear-power industry when he calls the EPR a dud. EDF is pushing on regardless, but the financial strain is mounting. In March, EDF's then chief financial officer, Thomas Piquemal, quit, calling Hinkley Point unaffordable.

The sense of crisis looks likely to grow. Yves Marignac, a nuclear-energy expert in Paris, calls EDF "already financially crip- ▸▸

pled". Only state backing prevents EDF's credit rating falling steeply, analysts say. And it is not only the ASN that has EDF in its sights. On November 22nd French competition officials raided its offices, seeking evidence that its dominant position is squeezing rivals and sending prices higher than they should be (even though lower electricity prices in recent years have sapped its revenues). Its share price has halved in two years.

The future looks bleak. Some four-fifths of French nuclear plants were built in a decade from the late 1970s. The plants have a 40-year lifespan, meaning that several a year face retirement over the next decade. Energy planners have assumed there will be extensions to 50 years or more. But the ASN may hesitate after the forging problems, or impose higher costs. Cyrille Cormier, a nuclear engineer who is now at Greenpeace, a campaign group that opposes nuclear power, says a total refit could cost EDF an extra €60bn-200bn.

Closing plants permanently would be extremely costly, too. France has never closed a large one. EDF may be under-provisioning the costs of decommissioning plants. It has set aside €36bn, less than the €45bn that Germany has allowed, even though France's neighbour has a smaller nuclear fleet. Then there is nuclear waste. The five pools storing spent fuel at La Hague, Areva's central reprocessing plant, are nearly full, says Mr Marignac. When sorrows come, they come in battalions. ■

Golf in Japan

Recovery shot

KANUMA, TOCHIGI PREFECTURE

As more businessmen hang up their drivers, some golf clubs take a new course

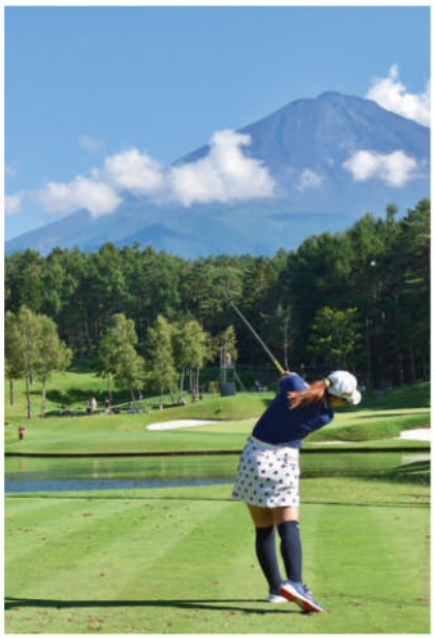
THE gold-coloured golf club priced at $4,700 that Japan's prime minister, Shinzo Abe, gave to Donald Trump, America's president-elect, in their first meeting last month may have been a piece of polished diplomacy. But it is unlikely to revive its posh Japanese maker, Honma, which calls itself "golf's aristocracy", presumably because it crafts the world's most expensive clubs. It went bankrupt after Japan's bubble-era splurge on new golf courses. Seven years ago a businessman from China bought the firm, hoping for an upswing.

Golf, long associated with extravagance in Japan, is flagging. Clubs have trimmed green fees as the level of golf-playing among Japanese has fallen by over 40% since a high in the early 1990s. As elsewhere, courses are in oversupply: Japan has over 2,300—half of Asia's total.

More than 120 have closed since 2010. Entrepreneurial types have converted about 70 into solar-panel plants, encouraged by state subsidies for alternative-energy production following the disaster in March 2011 at the Fukushima Dai-ichi nuclear-power plant. A few others have been turned back into farmland. Junichi Oishi of the Japan Golf Club Employers' Association in Tokyo thinks at least 500 more will need to shut within the decade.

The golf industry's health has long mirrored that of the economy, says Yuki Morita of the Japan Golf Association, which supports players and clubs. That is because of the importance of *settai*, or business-invitation, golf. In the late 1980s golf-club memberships were so valuable that they were traded like securities through brokers, the most exclusive fetching up to $2m. Fresh corporate recruits were expected to take up the game.

Many bubble-era players are by now in or nearing retirement. But in a way, Japan's ageing population should be a boon for golf, as demand rises from pensioners with time on their hands (courses take a few hours to reach by train from Tokyo, and play tends to be slow even by the sport's global standards, punctuated by lunches, beers and baths in *onsen* hot springs). Golfers in their 60s and 70s now account for half of all Japan's players. *Ohitorisama*, or "one-person", golf, where older players show up alone to meet other singletons for a round, is catching on.



Slow fade

But declining demand from companies and disinterest from the next generation more than offsets all this. Seishiro Eto, an MP who chairs a golf group inside the ruling Liberal Democratic Party, says that young players can't afford steep green fees of around ¥20,000 ($180) for an 18-hole round. A chunk of that is an entertainment tax that Mr Eto wants abolished (which the over-70s do not pay). In 1989 it was scrapped on most forms of fun, including billiards, mah-jong and pachinko, but not golf, considered a corporate luxury.

Slow economic growth has also squeezed businesses' entertainment budgets. At Kanuma Country Club in Tochigi prefecture, north of Tokyo, just a tenth of the golf played is the *settai* sort, down from over half in the early 2000s. Back then companies lavished expensive lunches and club souvenirs on their clients. Even today, big deals between executives regularly happen only after a round, says a public-relations manager at a large Japanese technology firm. But business relationships are struck up more easily now, and young employees tend to shun Saturdays spent small-talking on the greens.

Satoshi Tomita, who used to be a banker but who now advises startups, says the mood turned on *settai* golf soon after the financial crisis of 2008 struck. As cash-strapped banks shed flashy golf-club memberships, other firms followed suit. (In neighbouring South Korea, where business and birdies also go hand-in-hand, a recent anti-corruption law that sets monetary limits on gift-giving has meant a similar decline in expensive golf outings.)

Some clubs are trying to shed their stuffy image. Only 6% of Japanese men in their 20s play, and less than 1% of women. Last year Rakuten, an e-commerce giant, launched RakuGolf to pep up the market. The site offers discounts, lessons, free rentals and trials to players in their 20s at partner clubs, as well as short-course deals. A resort in Chiba prefecture, south-east of Tokyo, trialled a drone-delivery service by Rakuten in May and June, sending balls and snacks to golfers on the course. Kanuma Country Club wants to entice local youngsters with "The Land of the Wind", a manga, or Japanese cartoon, about a young champion golfer set at the club.

A few are relaxing stiff dress codes (one in Chiba bans shoes with more than three colours). A resort in the prefecture of Okinawa lets golfers play in swimsuits. Some hold "jeans days". Others offer faster versions of the game, such as a "pay-by-hole" system, and even a new international variant: footgolf, played with a football and huge holes. Traditionalists everywhere will shudder. But the game is flagging. ■

Schumpeter | King customer

Companies should be as obsessed with their most loyal consumers as their fans are with them

THE hero of Nick Hornby's novel, "High Fidelity", cannot get enough of vinyl records. By day Rob Fleming runs a record shop where he spends his time sampling the stock and constructing fantasy compilations with his equally obsessive assistants. By night he moons over his favourite songs. "Is it so wrong, wanting to be at home with your record collection?" he asks himself. "There's a whole world in here, a nicer, dirtier, more violent, more peaceful, more colourful, sleazier, more dangerous, more loving world than the world I live in."

Rob is an example of what management gurus dub "super-consumers", "lead consumers" or "high-passion fans". Only a tenth of customers are super-consumers but they account for 30-70% of sales, an even greater share of profits and almost 100% of "customer insights", says a new book, "Super-Consumers", written by Eddie Yoon of the Cambridge Group, a consultancy.

These people are not defined simply by the amount of stuff they buy (though they tend to be heavy users), but by their attitude to the product. Like Rob, they regard the things that they consume as answers to powerful emotional needs. Super-consumers exist in every imaginable consumer category, from the glamorous to the staggeringly mundane. There are people who wax lyrical about the serial numbers inside toilet rolls or who worship at the altar of Kraft's Velveeta processed cheese, which they call "liquid gold".

Often, Mr Yoon points out, companies treat super-consumers as weird obsessives to be dismissed or ignored. That is a mistake, for they can, when treated well, propel growth. As well as buying large quantities themselves, they infect their social circle with enthusiasm. American Girl, a maker of upmarket dolls, discovered that typical consumers spend a fifth more in markets where super-consumers are clustered.

High-passion fans often come up with ideas for improving products. They can also reveal interesting patterns in consumer markets: Generac, a producer of standby generators, discovered that people who buy lots of their generators are also more likely to be enthusiastic consumers of fridges (they often have several stocked up with food), multivitamins and life insurance. These are customers, in other words, who wish to be prepared for all eventualities.

But the most important role of super-fans is to force companies to focus on their core business. Managers love to immerse themselves in the side-disciplines of business—analysing big data or re-engineering supply chains. Super-consumers remind them that these are just a means to an end. Executives need to make sure that they often spend time with them—sitting in on product tests, joining chat rooms and hanging out at customer conventions. Blockbuster kept its accountants happy but alienated its core customers by charging late fees. Netflix, by contrast, keeps its disciples on board with constant binge-watching fodder.

How can companies strengthen their connection with super-consumers? The first thing to do is to discover them. Given all the data that companies are spewing out, they are not that hard to spot: they are the people who keep buying your stuff through thick and thin. The priority is to identify members of the all-important category of young, up-and-coming super-consumers. Companies can learn a lot about these people by studying their Twitter feeds or by reading those letters of complaint that show an emotional connection to the product. Some firms go further still: Nike and Adidas, for example, employ ethnographers to study their users "in the field".

The second task is to reward super-consumers for their loyalty. Fans adore being recognised by the objects of their affections. Airlines have excelled in this by creating a ladder of rewards for frequent flyers. Spotify identifies fans of particular musicians by studying their listening habits and then sends them offers for tickets when they are in town. Two American political magazines, *The Nation* on the left and the *National Review* on the right, both put on cruises that allow their most dedicated readers to hang out (for a price) with their star writers.

The main danger with taking super-consumers seriously is that companies may get trapped in their existing business model. Clayton Christensen of Harvard Business School pointed out in his book "The Innovator's Dilemma" that a big threat to established firms is that they focus obsessively on their most loyal customers at the same time as insurgents reinvent entire business categories. IBM, for example, was listening to people who wanted marginally better mainframe computers when Microsoft was pushing ahead into PCs.

Super-customers are always right

Yet the most successful interlocutors with super-fans are in fact the very high-tech companies that are most disruptive of old business models. The likes of Google and Facebook routinely provide their most passionate users with special access to their latest products and ask them to recommend improvements. The customers get the psychological satisfaction of being taken seriously by brand-name enterprises. The tech companies benefit from lots of free workers who debug their software and provide ideas for new products.

There are, moreover, plenty of super-consumers who are as obsessed with solving problems as they are with the products themselves. Eric von Hippel of MIT's Sloan School of Management has found that about 80% of breakthroughs in scientific instruments came from "lead-users" rather than the manufacturers. Even super-consumers who are fixated on old or existing products (such as fans of vinyl records in an age of digital music) can provide companies with lots of valuable advice and insights on stuff that makes money. Analysing big data is all very well. But nothing beats hanging out with your biggest fans. ■

Also in this section

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The world economy

The dollar squeeze

Why the greenback has rallied so hard and what its strength might portend

WHEN economic historians look back on the years following the global financial crisis, they might ponder the exact moment at which the boom in offshore dollar-lending reached its zenith. Was it September 2012, when Zambia issued its debut Eurobond (dollar-denominated bond), at a yield of 5.4%, and received $12bn of orders? Perhaps it was a year later, when investors gobbled up an $850m Eurobond issue by a state-backed tuna-fishing venture in Mozambique. In between Petrobras, Brazil's state oil company, was able to issue $11bn of ten-year bonds in May 2013, a record for an emerging-market firm, at a generously low yield of 4.35%.

Investors had reason to regret those purchases even before the dollar's latest surge. Between November 9th, when Donald Trump won the presidential election in America, and the Thanksgiving holiday, the dollar rose by 3% against a basket of rich-world currencies. Such a jump in so short a time is rare. The dollar-borrowing binge during these years helps explain why the greenback bounced so sharply.

By the end of last year, governments and businesses outside America had racked up $9.7trn of debts denominated in dollars, according to the Bank for International Settlements (BIS), a clearer for central banks. Of this, $3.3trn was owed by borrowers in emerging markets, much of it sitting on company balance-sheets. In countries with foreign-currency debts, the exchange rate acts as a financial amplifier. A stock of dollar debt is like a short position. When a shock hits, the scramble to short-cover drives up the dollar.

The latest leg-up in the dollar has a proximate cause. Investors expect Mr Trump to find common ground with Congress on cuts to corporate taxes and increases in infrastructure spending. A fiscal splurge may push the Federal Reserve to raise interest rates more quickly, drawing capital back to America and lifting the dollar. If corporate-tax cuts spur multinational companies to repatriate the pile of earnings they have hitherto kept offshore, it will further buoy the greenback.

Monetary policy in the euro zone will stay easy. The European Central Bank is expected to extend its bond-buying programme at its next big policy meeting, on December 8th. And Mr Trump's election is a "present" to the Bank of Japan, says Paul Sheard of S&P Global. In September it committed to overshoot its 2% inflation target. A weaker yen helps; in the weeks after Mr Trump's election, it fell by 7%.

If a strong dollar is cheered in Tokyo and Frankfurt, it is rather less welcome in emerging markets—for three reasons. First, sharp falls in currencies put pressure on central banks to raise interest rates, both to prevent further depreciation and to contain the resulting inflation. Turkey's central bank raised interest rates on November 24th in response to a fall in the lira to an all-time low against the dollar, for example.

Second, a stronger dollar also has an indirect impact on credit conditions in emerging markets. A study by Valentina Bruno of the American University in Washington and Hyun Song Shin, of the BIS, found that those emerging-market companies able to borrow in dollars act ▸▸

A crisis of currency

Sources: Federal Reserve; Bloomberg

like surrogate financial firms, lending on a chunk of borrowed funds at home. When the dollar was weak, such firms borrowed freely in global markets. A strengthening dollar, in contrast, causes a general tightening of credit in emerging markets.

A third effect comes from the legacy of past dollar borrowing. As firms rush to pay off their dollar debts, which loom ever larger in home-currency terms, they are likely to cut back on investment and jobs.

The impact of a stronger dollar is evident in rich-world finance, too. A shibboleth of finance is that foreign-exchange markets follow "covered-interest parity", which says the forward rate should reflect the current (or "spot") rate and the gap between interest rates on each currency. Otherwise an arbitrager could simply buy a currency today, lock in the forward price, pocket the interest and still take a profit when the forward contract is settled. The interest-rate gap implicit in forward markets should be zero. For dollar-yen contracts in three months' time it has blown out to almost 0.9%. That means firms and banks are paying far more than is normal to buy dollars with the currency risk hedged (see charts on previous page). The cost of hedging seems to rise with the dollar's ascent.

Parallels have been drawn with an earlier period of sustained dollar strength. The dollar's 50% increase between 1980 and 1985 was brutal for America's exporters. The pressure for higher trade barriers was only defused by the Plaza Accord of 1985, a rich-country pact to weaken the dollar. The biggest concern about the latest dollar rally is that it will spur not agreement but conflict. Mr Trump seems all-too eager to resort to protectionism in a misguided attempt to balance America's trade. A stronger dollar might be the trigger for such a disastrous move. ■

Buttonwood | Exaggerated reports

It is too early to say the era of low yields is over

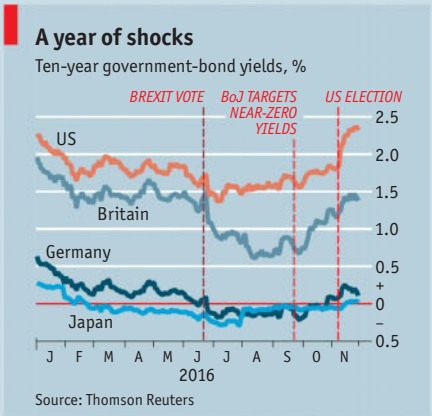
THE death of the long bull market in bonds has been called many times in recent years. Such a consummation is devoutly wished for by those who think the global economy will never get back to health until short- and long-term interest rates return to more normal levels.

Following the election of Donald Trump as American president, the funeral rites are being read again. The yield on the ten-year Treasury bond jumped from 1.73% (while the votes were being counted) to 2.36% at one stage; the yield on the two-year bond rose from 0.78% to 1.12%. (Bond prices fall as yields rise.)

The rationale for the shift is the belief that Mr Trump will push through a fiscal stimulus, in the form of tax cuts and infrastructure spending. Not only will that boost the American economy but it will allow the Federal Reserve to return monetary policy to more "normal" levels by pushing up rates from the current 0.5%. It could also lead to higher inflation in the medium term. Forecasts for American inflation in the early 2020s can be derived from the bond market. In July, they pointed to 1.4%; now they imply 2.1%. All three factors—faster growth, rising short-term rates and higher inflation—are usually drivers of higher bond yields.

In the course of 2016, moreover, fears of deflation and a sharp slowdown in the Chinese economy have steadily faded. As a result, it seems less and less likely that investors would want to own government bonds, especially as trillions of dollars-worth have been offering negative yields.

Nevertheless, this bond-market sell-off needs to be set in context. During the "taper tantrum" of 2013, when the Fed signalled a slowing of its quantitative-easing programme, the ten-year yield reached 3%. It was as high as 2.47% in June last year.



Moreover, other bond markets have not been as seriously affected by Mr Trump's election (see chart). In Germany, ten-year yields may no longer be negative but they are still just 0.2%. Indeed, the gap between German and American ten-year yields is at its widest since the 1980s. British yields are around where they were at the time of the Brexit vote but well below their level in January. In Japan the yield on the ten-year bond is still close to the central bank's target of zero.

Continued bond purchases by central banks are one reason why yields may not rise that far in Europe and Japan. What is more, pension funds and insurance companies will continue to be ready bond buyers—at almost any yield level—as they seek to meet regulatory requirements or to match their long-term liabilities.

Furthermore, it is not clear how much of Mr Trump's programme will be implemented, nor indeed whether economic growth or inflation will actually rebound. "The factors affecting inflation are long-term: globalisation, deregulation and automation," says David Lloyd of M&G, a fund-management group.

In addition, a rise in bond yields may play a part in choking off economic growth. The ratio of total debt (governments and private sector combined) to GDP has risen in both developed and developing economies since the 2008 crisis. "A large stock of debt needs a low interest rate to make it tolerable," says Mike Amey of PIMCO, a fund-management group.

And if 2016 has taught investors anything, it is to take account of political risk. In the past, this was a factor that bond investors in developed countries rarely had to worry about. "For a long time, politicians in the Western world have been dancing round the same handbag," says Mr Lloyd. "The policy differences have been largely rhetorical."

The rise of extremist politicians brings with it the risk of extreme outcomes. The problem for investors is that the implications of such shocks are not uniform. The Brexit vote was followed by a fall in bond yields (as cautious investors opted for the safety of bonds), but the election of Mr Trump caused yields to rise. Had the president-elect made a swift promise to pursue his protectionist agenda, however, bond yields might have fallen, since a tariff war would hurt economic growth. The election of Marine Le Pen as French president would probably cause European government bonds to sell off; yields in America and Japan might fall.

The biggest problem for investors is that ultra-low yields leave so little margin for error—the likely annual return on most long-dated bonds can be wiped out in an afternoon's trading. Government bonds may still find ready buyers, but they won't sleep as soundly as they used to.

The chart in last week's Buttonwood was incomplete. The correct version appears with the column online.

Economist.com/blogs/buttonwood

China's falling currency

A harder call

SHANGHAI

A strong dollar exposes the yuan's vulnerabilities

YUAN forecasters have had it easy for the past decade. But for a few isolated days, China's currency has been a one-way bet for years on end, whether appreciating against the dollar, pegged to it or, more recently, depreciating. The pace at which it has risen and fallen has also been predictable: the central bank always made it gradual. So Guan Qingyou, of Minsheng Securities, thought himself on solid ground when he predicted in early November that the yuan would stay above 6.82 per dollar for the rest of the year. Less than a week later he was proved wrong: the yuan fell to an eight-year low. Mr Guan published an apology: the art of knowing the yuan's future with any precision, he conceded, had become rather tricky.

Most analysts, investors and companies believe that the Chinese currency has further to fall against the dollar, but can only guess as to how far and how quickly. Their uncertainty reflects a new reality. The government, long able to exercise tremendous control over the yuan, has started to lose its grip. A new exchange-rate mechanism, introduced last year, has made the currency more flexible but also more responsive to global market trends. Dollar strength over the past two months has meant that the yuan, like just about every other currency in the world, has steadily lost ground against the greenback.

The central bank wants depreciation to be orderly. Indeed, compared with most other currencies, the yuan has outperformed since the start of October: it has stayed stable against a basket of currencies, which the central bank says is its primary target (see chart). But curbing declines against the dollar comes at a cost, eating into hard-earned foreign-exchange reserves. The yuan's future pivots around this question: will China be able to restrain market forces and guide the currency to a soft landing, or will the dam break and mild depreciation turn into a rout?

Investors are so far more cautious about betting against China than at the start of 2016, when some built up big yuan short positions in the offshore market. The government made life painful for them, raising the cost of borrowing yuan offshore and stepping up capital controls to support the currency onshore. A prominent hedge fund owned by Carlyle, a private-equity firm, was among those to suffer big losses.

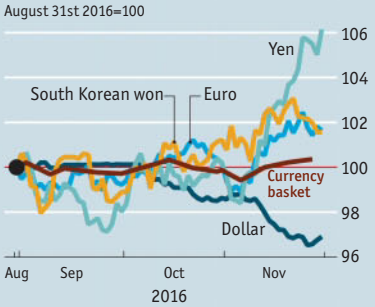
But if foreign investors are wary of another tilt at the yuan, sentiment inside China is turning more bearish. The currency has fallen 6% this year, and it will soon take more than seven yuan to buy a dollar, a psychologically important level. In real-effective terms (that is, against a trade-weighted set of currencies, controlling for inflation), the yuan is merely at a two-year low. But it is on the dollar exchange rate that most people still focus. Legions of entrepreneurs and ordinary households, who collectively have accumulated vast wealth, want to diversify their savings into other currencies.

The government has been fighting on a number of fronts to slow the tide of cash outflows. It has ratcheted up capital controls to limit investments in financial markets abroad. This month it drafted rules to make it harder for companies to acquire entities abroad. Regulators have concluded that at least some foreign acquisitions are being used to mask capital outflows. The central bank has also dipped into its reserves of foreign exchange—still the world's biggest at more than $3trn—to prop up the yuan. Officially, it has used up about $10bn a month since January. But Logan Wright of Rhodium, an advisory group, says a spike in trading volumes in the onshore market hints at much more aggressive, if concealed, intervention.

None of China's currency options is palatable. Faster depreciation would only spur greater outflows. A big one-off devaluation would be extremely risky, and threaten financial stability. Ever-stronger capital controls would hurt the economy, closing it off from the rest of the world. The one thing that would buy the yuan a bit of breathing-space would be a weaker dollar. But that is most definitely beyond China's ability to control. ■

Redback blues

Chinese yuan against:
August 31st 2016=100



Sources: Wind Info; Thomson Reuters

Oil prices

Viennese waltz

VIENNA

Could an OPEC deal mark the beginning of the end of cheap oil?

EXACTLY two years after Saudi Arabia coaxed its fellow OPEC members into letting market forces set the oil price, it has performed a nifty half-pirouette. On November 30th it led members of the oil producers' cartel in a pledge to remove 1.2m barrels a day (b/d) from global oil production, if non-OPEC countries such as Russia chip in with a further 600,000 b/d. That would amount to almost 2% of global production, far more than markets expected. It showed that OPEC is not dead yet.

The size of the proposed cut, the first since 2008, caused a surge in Brent oil prices to above $50 a barrel. Some speculators think it may mark the beginning of the end of a two-year glut in the world's oil markets, during which prices have fallen by half and producers such as Venezuela have come close to collapse. As long as prices continue to recover, Saudi Arabia can probably shrug off the fact that its previous strategy damaged OPEC at least as badly as non-members, and that this week's deal gave more breathing space to its arch-rival Iran than it would have liked.

The rally's continuation, however, depends on non-OPEC members such as Russia reliably committing to cut output at a meeting on December 9th. It also hinges on the speed at which American shale producers step up production, and on Donald Trump's dream of oil self-reliance.

Since the end of September, when OPEC sketched out a deal in Algiers to cut production, Saudi Arabia's oil minister, Khalid al-Falih (pictured), and his Iranian ▸▸

counterpart, Bijan Zanganeh, had engaged in a game of brinkmanship that at times seemed likely to doom this meeting. Oil prices have staged frenetic swings since then (see chart). Days before the Vienna gathering, some analysts gave it a mere 30% chance of success. The betting was that failure would push prices well below $40 a barrel, and possibly bring about the collapse of OPEC.

But Saudi Arabia, OPEC's biggest producer, realised that pragmatism was its best option. Its promised 4.6% cut in production is mirrored by many other OPEC members, though Iran was permitted a token increase as it recovers from nuclear-related sanctions. That may be galling for Saudi Arabia, but it is likely to benefit far more than Iran from the rise in oil prices, if sustained, than it will lose from lopping 486,000 b/d off its total output. It promises to cut to 10.05m b/d, which is not far below its level in the first quarter of 2016.

Moreover, the government's plans to modernise the economy and partly privatise Saudi Aramco, the state oil company, depend to some extent on higher oil prices, says Bhushan Bahree of IHS Markit, a consultancy. Counter-intuitively, he says that the kingdom needs higher oil revenues as "a bridge" to becoming a less oil-dependent economy. OPEC argues that a modest cut now will spur investment in new sources of crude that will prevent harmful oil shortages in the future.

The cuts take effect from January 1st and will last for six months. During that time, traders will monitor oil-tanker traffic to ascertain whether fewer are leaving port. They cannot monitor Russia's pledge to cut 300,000 b/d of production, because much of its production moves by pipeline, says Abhishek Deshpande of Natixis, a bank. But he believes that even so the agreement will start to cut global oil inventories next year. Non-OPEC output has fallen this year, adding impetus to the cartel's efforts.

Some speculators were bullish even before the deal. Pierre Andurand of Andurand Capital, a hedge fund, says the OPEC agreement could push oil above $60 a barrel within weeks. He notes that speculators were mostly betting on an OPEC failure, and that big oil consumers may need swiftly to protect themselves against rising prices. Airlines, for example, could scramble to hedge against soaring fuel costs.

If oil prices continue to rise, American shale producers will ramp up output, in effect capping the oil price. This may not happen as swiftly as some think. After all, there are suspicions that, to coax Wall Street investment, shale producers have exaggerated their ability to produce low-cost oil. But many of them are still standing, despite OPEC's best efforts to kill them off. The cartel cannot declare even Pyrrhic victory from the past two years. ■

The OPEC effect

Brent crude oil price, $ per barrel

Source: Thomson Reuters

African stockmarkets

Short of stock

KIGALI

Many African stock exchanges are too small to prosper

AS THE trading bell rings, a handful of brokers, in crisp scarlet jackets, gather around a whiteboard at the Rwanda Stock Exchange in Kigali. There are only seven listed companies, and it takes just a couple of minutes to write up the day's bids. But Celestin Rwabukumba, its chief executive, is excited for the future. "If it works elsewhere, then why not here?" he asks.

Why not indeed? Johannesburg, with a market capitalisation of nearly $1trn, is in a league of its own. But sub-Saharan Africa has many small exchanges, lots of them created in the 1990s to help privatise state enterprises. Most struggle to attract new issues. Seven of the eight domestic listings on the Uganda Securities Exchange came from government divestments. Older exchanges, in Kenya and Nigeria, are dominated by big firms: a third of Nigeria's market is the Dangote Group, a conglomerate with interests from cement to salt.

Stock-exchange leaders were in Kigali this week for the annual conference of the African Securities Exchanges Association. Much of the talk was about coaxing smaller, family-owned businesses to list. But many owners are loth to cede control or open their books to scrutiny, not least from the taxman. An initiative by Nairobi's bourse to ease listing requirements for small and medium-sized enterprises has attracted just five companies since it launched in 2013.

So privatisation remains the staple. Botswana sold off its national telecoms company this year, the biggest-ever new offering there. Another source of listings is local units of multinationals. MTN, a South African telecoms giant, is preparing to list in Nigeria, part of a settlement with authorities after breaking SIM-card rules. Tanzania has ordered eight telecoms operators, including three with international backing, to float 25% of their shares in 2016.

Liquidity is an even bigger challenge. Shares rarely change hands: outside South Africa, annual turnover is typically less than 10% of market capitalisation. In Nairobi, which relaxed rules on foreign ownership last year, foreign investors accounted for three-quarters of trading in the three months to September.

Some hope to stir up interest with new products. Nigeria has eight exchange-traded funds (ETFs), which track market benchmarks. Nairobi will roll out a host of derivatives next year. Even little Swaziland has its eye on ETF trades.

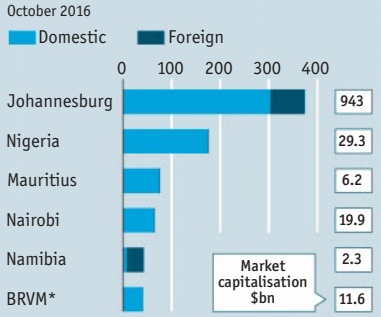
Regional integration can also help, pooling listings and liquidity into larger markets. Eight west African countries, which already share a common currency, list shares on the Bourse Régionale des Valeurs Mobilières (BRVM) in Ivory Coast. East African exchanges are working on a common trading platform. But governments view stockmarkets as national symbols. New regional exchanges are unlikely. "It's like having an airline," sighs Geoffrey Odundo, boss of the Nairobi exchange.

Nigeria and Kenya have the heft to forge ahead, but smaller exchanges could struggle. In a new paper, economists from Erasmus University, Rotterdam, and City University, London, examine 59 nascent stock exchanges around the world. They find that those which start out small, with few listings and low turnover, tend to remain so. Strong banks and growing savings increase the chances of success.

In short, exchanges must wait for economies developed enough to sustain them. In the meantime private equity, which between 2010 and June this year made deals worth $23bn in Africa, will offer an alternative to a public listing. Eventually investors may see the stockmarket as an exit strategy. Back at the Rwanda Stock Exchange, Mr Rwabukumba is playing the long game: "You have to start somewhere." ■

Starting small

Number of companies listed on stock exchanges October 2016



Source: World Federation of Exchanges

*West African regional exchange

Cyber-insurance

Hack work

NEW YORK

Insurers grapple with hacking that goes beyond data breaches

AS HACKERS wreak havoc with depressing regularity, the insurance industry finds itself forced to contemplate a whole new set of risks. They range from the theft of millions of credit-card numbers from American retailers to the disabling of the power grid, as happened in Ukraine last December. The dedicated "cyber-insurance" policies that companies offer against data breaches have become relatively routine. But the risks they insure under other policies are also affected by cyber-risks—and they are still struggling to understand this so-called "silent" cyber-exposure.

Insurance that protects firms who suffer data breaches has been on offer for around 15 years. It is much harder to put a precise value on, for example, stolen health records than on a property or car. Insurers sidestep the problem by covering only the direct costs that a company incurs from a hack. Typically, these include hiring a specialised forensics firm to work out exactly what was stolen, notifying affected customers (which 47 American states currently require), short-term business interruption and fines.

The industry will be shaken up by new EU data-protection rules, which come into force in 2018 and will impose stricter notification requirements and stiffer fines for data breaches than firms have so far faced in America. Partly because of this, the market for cyber-insurance, which represented only $2.5bn in global premium revenue in 2014 (90% of which came from American companies), is expected to treble by 2020, according to PWC, a consultancy. That would still leave it tiny in comparison with, say, the $670bn global motor-insurance market.

Data breaches are, however, for the most part a manageable nuisance rather than a disaster. Despite the hundreds that take place annually, only 90 since 2010 have been reported by American companies to regulators as having had a "material" impact on their business.

The bigger concern is the "silent" exposure: cyber-attacks that cause physical damage or bodily injury and can end up triggering other policies, such as life, home or commercial-property insurance. Often, such policies, though not designed with cyber-risks in mind, do not specifically exclude them either. In some cases the difference may be minor; a burglar who enters a house by hacking a "smart" lock will not necessarily steal more than one who breaks a window. But cases such as the massive damage caused to a steelworks in Germany in 2014 by hackers who messed with a blast furnace, or the hacking of the Ukrainian power grid (blamed by many on Russia), give insurers pause. They have added urgency to efforts to understand, measure and calibrate their exposures to these new threats.

With real-world precedents still too rare to form the basis of any reliable estimates, the industry has turned to using hypothetical scenarios. At the end of last year, for the first time, Lloyd's of London, an insurance market that specialises in niche and emerging risks, asked its syndicates (groups of insurers and brokers) to come up with "plausible but extreme" cyber-attack scenarios, and report back their estimated total exposure, in what is to be an annual requirement. The exercise follows a cyber-scenario report in May 2015 from the manage ▸▸

Bank supervision

Small overdraft in Chile

Revisions to the Basel 3 standards remain incomplete

A STEEP climb awaited the Basel Committee on Banking Supervision in Santiago on November 28th and 29th. The central bankers and regulators hoped to agree on revisions to Basel 3, the post-crisis version of bank-capital standards. On November 30th Stefan Ingves, the group's chairman and head of Sweden's central bank, said that "the contours of an agreement are now clear". But the climbers are still short of the summit.

The committee had proposed restricting the use of banks' internal models for calculating risk-weighted assets—which in turn help determine how much capital banks must have at hand. Models varied too much, it said; low risk-weights were flattering some banks' ratios. But European bankers and officials had complained for months that the proposals would penalise banks that have lots of (low-risk) corporate loans or mortgages (eg, in Germany or Sweden). They sniffed an American plot: American banks, holding fewer such assets, would be untouched.

Mr Ingves gave few details, but said that the new set-up would "largely retain" internal models, though with minimum values for important parameters (such as the probability of default). A "standardised" approach will replace alternatives based on banks' models for estimating operational risk (big fines, say, or cyber-security breaches).

Not surprisingly, the thorniest topic remains open. The committee had proposed an "output floor", a lower bound for the risk-weighted sum of a bank's assets, of 60-90% of the answer yielded by a standardised method. Mr Ingves said that he "expected" a floor to be in the final deal. But there is still work to do, and what happens next isn't yet clear. (The committee had set itself a deadline of the end of the year.) Central-bank governors and chief supervisors must endorse the new rules, once they are agreed on.

Overall, capital requirements may not change much. But some banks will face extra demands, albeit with a long period of adjustment. Stragglers are still catching up with existing rules: this week the Bank of England said that the Royal Bank of Scotland had fallen short in a "stress test" and had put forward new plans for restuffing its capital cushion. More than eight years after the crisis, wrangling over how to make banks safe continues. It'll last a little longer.

ment of Lloyd's itself on a hypothetical hacker-caused blackout of the entire power grid of the American north-east. It estimated this would cause direct losses to business revenues of $222bn, and a total dent in GDP of over $1trn over five years.

Many insurers are turning to outside expertise. Matt Webb of Hiscox, a specialist insurer, describes an "arms race" between analytics firms such as RMS and Symantec, offering their long-standing modelling prowess (RMS is already well-trusted on hurricane modelling, for example) to help insurers understand their cyber-liabilities.

But even if exposures are better understood, limiting them may prove tricky. Kevin Kalinich of Aon, an insurance-broker, points to the near-impossibility of drawing a line, for example, between cyber-war or cyberterrorism and "normal" hacking. Cyber-crime knows no geographical bounds, unlike, say, a Florida hurricane. Mr Webb reckons that insurance policies will at a minimum need explicitly to recognise that cyber-risks are covered or to exclude them—just as many policies already include exemptions for terrorism or war.

Although insurers are already helping companies with more humdrum data breaches, the industry still lacks a clearly formulated response to a larger-scale cyber-calamity. Inga Beale, CEO of Lloyd's, is optimistic that the market, thanks to its exacting modelling exercises and its unique risk-sharing structure, is better equipped than most. But only a devastating, real-life cyber-attack would test how effective its preparations have been. ■

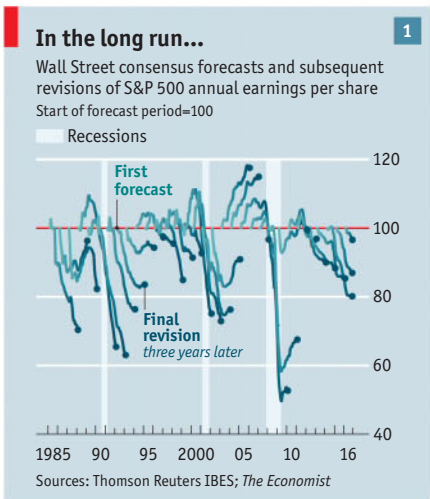
Analyst forecasts

Discounting the bull

Stock analysts' forecasts tend to be wrong in reassuringly predictable ways

"SELL-SIDE" analysts, whose firms make money from trading and investment banking, are notoriously bullish. As one joke goes, stock analysts rated Enron as a "can't miss" until it got into trouble, at which point it was lowered to a "sure thing". Only when the company filed for bankruptcy did a few bold analysts dare to downgrade it to a "hot buy".

Economic research shows that there is some truth to the ribbing. The latest figures from FactSet, a financial-data provider, show that 49% of firms in the S&P 500 index of leading companies are currently rated as "buy", 45% are rated as "hold", and just 6% are rated as "sell". In the past year, 30% of S&P 500 companies yielded negative returns.



Profits forecasts made more than a few months ahead have a dismal record of inaccuracy. According to Morgan Stanley, a bank, forecasts for American firms' total annual earnings per share made in the first half of the year had to be revised down in 34 of the past 40 years. Studying their forecasts over time reveals a predictable pattern (see chart 1).

In theory, a diligent share analyst should do his own analysis—that is, by projecting a firm's future revenue and expenses, and discounting them to the present. Such models, however, are extremely sensitive to different assumptions of growth rates. Since no one can know the future, analysts cheat.

Three statistical sins are common. Analysts can look at comparable companies to glean reasonable profits estimates, and then work backwards from their conclusions. Or they can simply echo what their peers are saying, and follow the herd. Or, most important, they can simply ask the companies they are following what their actual earnings numbers are.

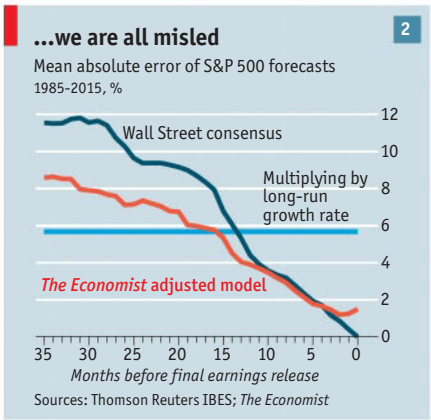
Surveys conducted by Lawrence Brown of Temple University found that two-thirds of sell-side analysts found private calls with company managements to be "very useful" in making their estimates. Analysts' need to maintain relationships with the companies they cover must colour their projections. They are judged primarily on the accuracy of their short-term forecasts, so there is little risk in issuing flattering, if unrealistic, long-term projections. In the short run, however, they have an incentive to issue ever-so-slightly pessimistic forecasts, so companies can "beat" expectations. Since the financial crisis, company profits have exceeded short-term analyst forecasts around 70% of the time.

So are forecasts are useless? Simply taking the market's earnings figures from the previous year and multiplying by 1.07 (corresponding with the stockmarket's long-run growth rate) can be expected to yield a more accurate forecast of profits more than a year in the future.

Yet the very predictability of the errors in analysts' forecasts suggests they could be informative, if they are properly interpreted. Taking forecasts of S&P 500 earnings from 1985-2015, *The Economist* has built a simple statistical model to try to take out the bias that taints Wall Street's prognostications. After controlling for the forecasts' lead time and whether or not they were made during a recession, we find that even our relatively crude model can improve upon the Wall Street consensus for forecasts made more than a quarter in advance (see chart 2).

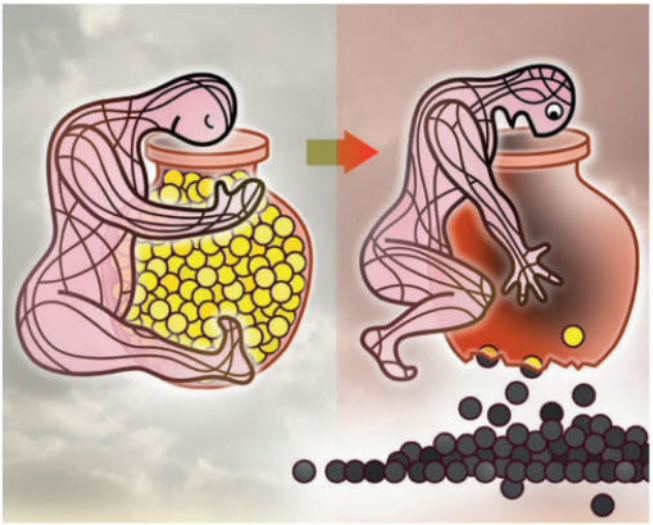
Adjusting for bias in short-term forecasts is harder. It is tempting simply to accept the errors—after all, they tend to be off by just a little. Data from Bloomberg show that the 320 S&P 500 companies that beat earnings expectations in 2015 did so only by a median of 1.4%. An alternative is to look at crowdsourcing websites such as Estimize. There punters—some amateur, and some professional—are shown Wall Street consensus estimates and asked to make their own forecasts. Estimize users beat Wall Street estimates two-thirds of time.

To some extent, judging Wall Street by its ability to make accurate predictions is silly. Harrison Hong, an economist at Columbia University, reckons that stock analysts should be viewed "more like media". The latest forecasts aggregated by Thomson Reuters suggest that the S&P 500 will yield earnings per share of $130.83 in 2017 and $146.33 in 2018. According to our model, that would imply that they believe the actual numbers will be closer to $127.85 and $134.30. Share analysts want to tell the truth. They just like making it difficult. ■



Free exchange | Paper pains

India's clumsy monetary reform puts its economy and institutions at risk



SUPPOSE that one day the government of a large and fast-growing economy became convinced that its highest priority was to purge the country of black-economy millionaires hoarding piles of illicit cash. Seeking popular approval, it sent the printing presses into overdrive, hoping to inflate away the value of these secret piles of wealth. It worked: rising prices struck a blow against the undeserving rich, and by egging on others to deposit their money in banks (where it could at least earn interest), the shadow economy shrank. The government could plough the newly created money into tax breaks and public-works schemes.

Critics, rightly, would stand aghast. Inflation would affect everyone who held cash, law-abiding or not. Much of the wealth of those enriched by the black economy would be insulated, because lots of their lucre is held not in cash but in property, gold or jewellery. Such heavy-handed measures could undermine the credibility of important government institutions. Fear that they might be used again in future could weaken confidence in the currency as a store of value—paving the way for some broader institutional failure, like hyperinflation. Long-run trust in the judgment of the state might be threatened.

On November 8th India's prime minister, Narendra Modi, announced a course of action just as radical as that described above, if the converse of it. He declared that all 500- and 1,000-rupee notes—making up 86% of the cash in circulation in India—could no longer be used in shops. More financially mature economies than India would struggle to cope with such a scheme, but this one floundered at once. Though Indians have until the end of the year to swap their defunct bills, the roll-out of new ones has been bungled. A broad cash crunch and broken supply chains threaten a sharp economic slowdown—albeit one that will abate, at least in part, as the cash squeeze is alleviated. India's "demonetisation" is a cautionary tale of the reckless misuse of one of the most potent of policy tools: control over an economy's money.

Unlike most currency reforms, designed to boost confidence in the currency, Mr Modi's motivation is different. The primary aim of demonetisation is reasonable enough: the government hopes to improve the functioning of the economy and boost its tax take by cracking down on the shadow economy. The vast majority of transactions in India take place in cash; many escape book-keepers' notice. Economists reckon that India's black economy accounts for at least 20% of GDP. Such off-the-books activity shields fortunes from taxation and allows corruption to flourish. Past efforts to attract black money into the light—using tax amnesties, for example—have had little effect.

Demonetisation forces the issue. Indians can swap their hoards of useless bills for useful ones, but those that cannot present paperwork accounting for their cash piles will receive unwanted attention, and tax bills, from the government. Demonetisation also increases use of electronic and bank-based payment systems, which will make record-keeping easier and more common, allowing government better to track and tax the proceeds.

Yet the government also reckons it can profit from bills that are not turned in. In economic textbooks, money is considered a liability of the central bank—a debt. In most modern economies that debt sits on its balance-sheet, and is offset, on the asset side, by holdings of securities like government bonds. The old and unreturned notes, if they are recognised as cancelled liabilities, would therefore create a huge positive asset position on the central bank's balance-sheet. The Reserve Bank of India could, if it chose, create new currency liabilities (that is, print money) and transfer that money to the government to spend. Some economists hope the money will be recycled back into the economy through a fiscal stimulus, which might help soothe some of the pain caused by demonetisation.

The status of this would-be windfall is uncertain. If the government allows Indians to redeem dead notes for live ones indefinitely, it is not clear when or if the RBI might recognise cancelled liabilities on its balance-sheet. So far, Indians are depositing their money in the banking system with impressive haste. Of the 14trn rupees ($207bn) invalidated by demonetisation, an estimated 8.5trn has already been deposited. Still, as much as 3trn rupees could remain in the wild as a potential government windfall, reckons a recent analysis by Credit Suisse, a bank.

The other rupee drops

However clever the plan looked on paper, it is both extraordinarily blunt and risky. Demonetisation will probably make only limited strides in shrinking the black economy while affecting all of India's 1.3bn citizens, the poorest most of all.

In much of the Indian economy, and especially outside big cities, where cash transactions are most common and financial infrastructure least developed, the sudden invalidation of a vast amount of outstanding currency represents a significant monetary shock. Not all of India's shadow economy—which provides real employment and income, if not real tax revenues—can migrate quickly and easily above board. Whatever cannot easily be shifted represents a potential loss of economic activity, and a drag on broader Indian economic growth. Similarly, if a cash crunch forces small firms without access to credit to shut down, the eventual alleviation of the cash shortage might not lead to an immediate and complete revival of economic activity.

Managing an economy's money is among the most important tasks of the government. Clumsy use of monetary instruments comes with high risk. John Maynard Keynes, an economist, was echoing Lenin when he wrote in 1919: "There is no subtler, no surer means of overturning the existing basis of society than to debauch the currency." Trust is fragile, and precious. ■

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Smart weapons

The vision thing

Bombs that can recognise their targets, rather than relying on satellites to steer them, are back in fashion

IT IS easy to forget, given the ubiquity of satellite-navigation devices in cars and mobile phones, that the Global Positioning System (GPS) of orbiting satellites on which they rely was originally—and, indeed, remains—a military technology. The system is, for instance, relied upon by the JDAM (joint direct-attack munition) kits that America's air force attaches to its free-fall bombs to turn them into smart weapons that can be guided with precision to their targets.

But JDAM and similar systems work only when they can receive signals from GPS satellites. And such signals are weak—approximately as powerful as a standard television transmission would be if the transmitter were five times as far away as the Moon is. They are thus easily jammed. For obvious reasons, details of the capabilities of jammers are hard to come by, but a Russian system called Pole-21, for instance, may be able to suppress GPS signals as much as 80km (50 miles) away.

One way to get around this—and to guide weapons automatically to their targets without relying on satellites—is to give weapons a map. That has been done in the past. The cruise-missile guidance systems which came to public attention in 1991, during the first Gulf war, worked in this way. But it was the Gulf war that also saw the first large-scale use of GPS by ground troops, and it is GPS, cheaper and simpler than map-based guidance, that has subsequently dominated the business of automatic navigation. Until now, that is. For the world's armed forces are looking again at giving their bombs and missiles map-reading capabilities.

Where the hell are we?

America's original map-based cruise-missile guidance system came in two parts. The first, Terrain Contour Matching or TERCOM, took a missile to the general area of its target using a radar altimeter and a series of digital maps that showed the elevation of the ground under sections of the planned route. By comparing the missile's actual altitude above this terrain with its expected altitude, TERCOM could follow contours and find its way. Once it was close to the target, a second system, the Digital Scene Matching Area Correlator (DSMAC), compared the view from a video camera with a set of stored images, in order to locate the bullseye.

Such a combined system was awkward and expensive, but at least it was the best available before GPS. Now, though, huge improvements in electronics have turned the tables. Israel is in the forefront, with a system which it calls Spice. Like JDAM, Spice is an add-on kit that turns unguided bombs into smart ones. It is designed and built by Rafael Advanced Defense Systems, an Israeli weapons company, and comes into service this month.

Spice contains an "electro-optical scene matching system" that resembles DSMAC's in as much as its memory is loaded with pictures of the target area, taken beforehand by aircraft (piloted or unpiloted) or by satellite. Spice's pictures, though, are of much higher resolution than those of DSMAC. On top of this the cameras that generate the real-time images with which those pictures are compared as the bomb falls towards its target work both in the visible and the infra-red parts of the spectrum. That means Spice can operate in darkness, and can penetrate smoke and fog. Moreover, unlike DSMAC, Spice stores enough data to cover the entire route to a target. It has no need of an accompanying system similar to TERCOM. Instead, it picks out and compares, en route, features like roads and buildings to find its way.

Spice's claimed performance is impressive. Rafael says it can guide a bomb released 100km from a target to a strike point within two metres of that target. The firm says, too, that its device is not confused by minor changes in the scenery around a target, which it can find even if some nearby areas have been obscured—say, by camouflage. Spice also has the advantage over GPS-guided weapons of working when a target's exact position is unknown, or if the co-ordinates have been misreported. All you need is a picture of what is to be hit, and an approximate location, for Spice to find and hit it.

Other countries, in particular America, are following Israel's lead. In January of this year, America's air force signed a contract with Scientific Systems, a firm in Woburn, Massachusetts, to develop what that company calls its Image-Based Navigation and Precision Targeting (ImageNav) system. Like Spice, this is a bolt-on system that ▸▸

works by comparing images from a camera with those in a database on board. If all goes well, development and testing should be completed by January 2018 and the result will, its makers hope, be able to strike within three metres of its intended target. The initial plan is to fit ImageNav to the air force's Small Diameter Bomb, a free-fall weapon at present guided by GPS. If this is successful, deployment on cruise missiles and drones will follow.

Meanwhile Lockheed Martin, the world's biggest aerospace firm, is working on an optical-navigation system called Northstar. This is based on a piece of non-military software called Hydra Fusion, which was developed by Lockheed Martin's Canadian subsidiary. Hydra Fusion creates a high-resolution, three-dimensional terrain map from ordinary video, by comparing successive frames of that video in light of information about how fast the vehicle carrying the camera was travelling. Though this is a trick which has been managed in the past, Hydra can do it on the fly, on a laptop computer. Previous systems have required hours of processing on high-end machines.

Once an area has been mapped, Northstar provides precise navigation information for bombs or missiles (or, indeed, for manned or unmanned aircraft). Crucially, the intelligence can be fresh because of the system's rapid processing time.

Fitting bombs and missiles with vision in this way thus looks like the future. That does not mean GPS will not be used as well—a belt-and-braces approach is often wise in war. But bombs that can see their targets, rather than blindly following their noses to a set of co-ordinates, are always likely to have the edge. ■

Super-slippery surfaces

The last drop

From boosting the output of power plants to pouring ketchup, new fluid-repellent surfaces will help

FOR anyone (and that is almost everyone) who has shaken and thumped a bottle of ketchup to squeeze the last dollop out of it, or flattened and then rolled up a tube of toothpaste to eject one final squirt onto their brush, help may soon be at hand. For more than a decade Kripa Varanasi and his colleagues at the Massachusetts Institute of Technology (MIT) have been creating and studying slippery surfaces for use in industrial equipment such as steam turbines and desalination plants.

More recently, they have found ways to apply their ideas to create internal coatings for containers so that their contents will flow out easily and completely, with no shaking, thumping or squeezing. And now they think they have discovered a way to adapt these super-slippery coatings to steer liquids across flat surfaces, opening up the possibility of pumping fluids around without the need for pipes.

The lotus position

Dr Varanasi's work started with what are known as super-hydrophobic water-shedding surfaces, a classic natural example of which is a lotus leaf. It repels water so effectively that droplets simply tumble off. The reason is that the leaf's surface is covered with microscopic structures which contain air pockets. This reduces the surface tension that would otherwise cause a water droplet to cling on. By coating the condensing areas used in steam turbines with similar surfaces his team believes it will be possible to speed up the shedding of water droplets. That would boost efficiency and, as most of the world's electricity is still generated by coal, gas and nuclear plants that rely on steam turbines, it would also save an awful lot of money.

The same idea has since been adapted to help move other substances, such as toothpaste, paint and ketchup. These have a gooeyness that means they can get into the air pockets and take a grip. To counter that, the researchers replace the air with liquids such as oils. The resulting surfaces are, in effect, self-lubricating—so that even the stickiest substances flow across them easily. The trick, says Dr Varanasi, is to have the right combination of surface structure and lubricating fluid, so that the oiling liquid does not get swept away by what is flowing over it.

Open sauce operating system

To create a completely emptyable container for a substance, be it ketchup, toothpaste, shampoo or face cream, means matching that substance to a specific surface structure and a bespoke lubrication fluid. The best way to do this, says Dr Varanasi, is to design the texture of the surface to trap a lubricant which is itself derived from the substance with which the container will be filled. That also has the benefit of not contaminating the product should some of the fluid escape. A lubricant for a food product, for instance, might be derived from a natural oil which it contains.

Dr Varanasi's team have developed a database of recipes that can be used to lubricate containers for a wide range of materials. In 2012 he and one of his students, Dave Smith, founded a company called LiquiGlide, which is working with a number of consumer-goods firms such as Elmer's, an American gluemaker, to create easy-to-pour, squeeze and shake containers for their products.

LiquiGlide has also devised a variant of the system that can be applied to the vast number of vessels and pipes in factories. This, the company claims, could reduce production losses considerably. At the moment, the tendency of things like paints to stick to piping, mixing tanks and so on means that as much as 30% of the material may be lost, especially during clean-ups in batch production, as when switching to a different colour of paint.

One feature of Dr Varanasi's liquid-impregnated surfaces is that droplets forming upon them tend to have a large area of contact. It increases the effects of the surface's temperature on a droplet. And that got Dr Varanasi and David Quéré of ESPCI, a research university in Paris, and their colleagues thinking about how to exploit one of those effects, known as thermocapillary motion. A change in temperature can alter the surface tension of a droplet, causing it to move. Usually, very large temperature differences are needed even for a droplet to move slowly. Out of curiosity they devised an experiment using a surface texture impregnated with oil. As they report in *Physical Review Fluids*, the researchers applied a temperature gradient and recorded the movement of water droplets. Even with low changes in temperature the droplets skipped along their slippery surfaces. The group have subsequently upped the speed at which they can propel water droplets to a heady ten millimetres a second. That is ten times quicker than has been reported ▸▸

on conventional surfaces.

Dr Varanasi and Dr Quéré have several ideas for making use of this discovery by selectively heating and cooling different areas of the surface to steer the droplets around. One is to create new types of microfluidic devices—or labs-on-a-chip, as they are known colloquially. These one-shot machines, about a centimetre across, are being increasingly used for things like analysing blood. To work, they have to be able to move reagents around inside themselves through tiny pipes and valves. This movement is hampered by surface tension, the effects of which increase as the dimensions of the pipework diminish. Dr Varanasi and Dr Quéré think that by selectively heating and cooling different areas of a liquid-impregnated surface, they could move and mix fluids without such intricate plumbing.

Steering fluids around might also help with the group's work in developing more powerful condensers. It may even solve one of the problems of space flight. Much conventional equipment depends on gravity to move liquids around inside it. That does not work in orbit. But thermocapillary motion would.

Meanwhile, back on Earth, most people might settle for saving even a little of what every year amounts to a massive lake of wasted condiments, bathroom products, creams and just about anything else that comes in bottles, containers or tubes. If Dr Varanasi has his way the days of shake and thump are numbered. ■

Ocean acidification

Unbalanced

Experiments on acidification's effects on animals move into the wild

GLOBAL warming is not the only environmental change that is being wrought by rising emissions of carbon dioxide. This gas, acidic when dissolved in water, is also lowering the pH of the world's sea water—a phenomenon known as ocean acidification.

How much to worry about this acidification (or, strictly, reduction in alkalinity, for there is no risk of the sea actually becoming acidic) is a matter of debate. The threat most talked of is to creatures that make shells out of calcium carbonate. As school chemistry experiments with chalk and vinegar demonstrate, calcium carbonate dissolves in acid, so an ocean less alkaline than it used to be might make life harder for shell-forming animals. Numerous laboratory experiments agree. There is also evidence that the shells of several widespread marine species are thinner and weaker now than they were a few decades ago. What there has not been, though, is a controlled study in the wild—at least, not until now.

Tough but vulnerable

The gap has been plugged by Miles Lamare of the University of Otago, in New Zealand, and his colleagues, who have just published their study in the *Proceedings of the Royal Society*. Dr Lamare observed that there are several places in the sea where acidification is happening naturally, because low-level volcanic activity is releasing carbon dioxide from submarine vents. Two such vents are located off the coast of Papua New Guinea. These, he thought, would be a good place for an experiment.

Marine biologists suspect that the threat of acidification is most serious to an animal when it is a small, planktonic larva. Dr Lamare and his colleagues therefore carried out their experiment on the larvae of *Echinometra*, a type of sea urchin. They hung cages containing these larvae, newly hatched from freshly collected adult urchins, in the water above the vents, and also in nearby water of normal pH, to act as a control. They then left the cages for a day or two, to let the larvae grow, before examining their charges under the microscope.

At the first vent site, the differences were startling. In this case all of the larvae came from adults collected in the control area, ie, living in water of normal pH. Those raised in the cages over the vent grew much more slowly than those in the control area. They were also more prone to develop asymmetrically.

At the second site, the picture was more complicated. In this case Dr Lamare carried out a more sophisticated experiment on larvae collected from adults that dwelled in the vents as well as from the control area. It tested both sorts of larvae in both locations, to see if the young of adults that had been living in the vent were inured to less alkaline water. Surprisingly, in light of the earlier result, pH made no difference to the growth rates of either sort of larva, though it still affected rates of asymmetry.

And that was not the only surprise. Dr Lamare also found that larvae whose parents had come from the vent grew larger than those whose parents had not, regardless of the site where they were raised. That does hint at genetic differences between vent-dwelling and non-vent-dwelling *Echinometra*—just not the one, namely acid resistance, that might have been expected.

As these somewhat confusing results show, a single experiment like this can yield only limited information. But what really counts is that scientists have now discovered an important natural laboratory in which to investigate the effects of ocean acidification further and, hopefully, find more definitive answers about what many see as a worrying problem. ■

Liver cancer

Zoned out

Why upsetting body clocks triggers tumours

DRINKING too much and eating too much are both good ways of getting liver cancer. But there is a third. The disrupted circadian rhythms caused by working shifts or crossing time zones also seem to induce the disease. Precisely how and why meddling with day and night cycles has such a dire effect on the liver remains an enigma, but a study just published in *Cancer Cell* by Loning Fu and David Moore at the Baylor College of Medicine, in Texas, sheds some light on the matter.

Among the liver's many jobs is making bile, a substance secreted into the intestine to break down the fats and oils in food. One of bile's main components is bile acid, a derivative of cholesterol. Dr Fu and Dr Moore knew from their previous research that disrupting the circadian rhythms of mice causes the rodents' livers to overpro-

duce this substance. They also knew that liver cancer commonly appears in mice engineered to lack certain genes required for the management of day-night cycles. This led them to suspect a link between liver cancer and too much bile acid. To take a closer look, they set up an experiment.

Working with a team of colleagues, the two researchers studied mice that had had their day-night cycles disrupted. A group of 80 of the animals which had previously lived on a cycle of 12 hours in light and 12 hours in darkness had the lights kept on, on one occasion, for 20 hours, instead. Three days later they were again subjected to four hours of darkness rather than 12. This alternation, at three-day intervals, was then kept up for 30 weeks. A group of 110 mice, meanwhile, were maintained on a constant 12-hour cycle as a control.

After 12 weeks, and again after 30 weeks, the team killed some of the rodents in order to look at their livers. They found that the livers of animals on the disrupted schedule had accumulated fat and showed evidence of damage. In particular, they overproduced bile acid. Eventually, after 90 weeks, they killed and examined the remaining animals. Just under 9% of the cycle-disrupted mice, they discovered, had developed liver cancer. None of the control mice had done so.

In need of regeneration

The probable cause of these differences emerged when the researchers ran two similar follow-up experiments using genetically engineered mice. Some of the mice lacked the gene needed to make the constitutive androstane receptor (CAR), a molecule involved in clearing away bile acid. This gene is activated when levels of bile acid get too high. CAR molecules help liver tissue to regenerate, since excess acid damages tissue, inhibiting regeneration. However, the cellular proliferation associated with regeneration is the sort of thing that can sometimes get out of hand and lead to cancer.

Other mice Dr Fu and Dr Moore looked at lacked a different gene, for a receptor molecule called FXR. This keeps bile-acid production under control in the first place.

In their experiment the researchers found that in mice lacking the gene for CAR, neither those with disrupted day-night cycles nor those used as controls developed liver cancer. In contrast, even if their day-night cycles were uninterrupted almost 30% of mice lacking FXR developed liver cancer. Among those with interrupted cycles the figure was above 60%. On the basis of these results Dr Fu and Dr Moore suggest that developing either a drug that blocks the activity of CAR, to stop cell proliferation, or one that activates FXR, to decrease bile-acid production, could save shift workers and frequent flyers from the threat of liver cancer. ■

Artificial intelligence

Eyes at the border

Machines are learning to find concealed weapons in x-ray scans

EVERY day more than 8,000 containers flow through the Port of Rotterdam. But only a fraction are selected to pass through a giant x-ray machine to check for illicit contents. The machine, made by Rapiscan, an American firm, can capture images as the containers move along a track at 15kph (9.3mph). But it takes time for a human to inspect each scan for anything suspicious—and in particular for small metallic objects that might be weapons. (Imagine searching an image of a room three metres by 14 metres crammed to the ceiling with goods.) To increase this inspection rate would require a small army of people.

A group of computer scientists at University College London (UCL), led by Lewis Griffin, may soon speed up the process by employing artificial intelligence. Dr Griffin is being sponsored by Rapiscan to create software that uses machine-learning techniques to scan the x-ray images. Thomas Rogers, a member of the UCL team, estimates that it takes a human operator about ten minutes to examine each x-ray. The UCL system can do it in 3.5 seconds.

Dr Griffin's team trained its system on hundreds of thousands of container scans provided by Rapiscan. The scans were missing concealed metallic objects that might pose a threat, so the UCL team took a separate database of x-rayed weapons and hid them in the container images. A paper the group presented at the Imaging for Crime Detection and Prevention conference in Madrid last week showed that in tests, the system spotted nine out of ten hidden metallic objects. Only six in every hundred readings flagged a weapon when there was nothing. Dr Griffin says this false positive rate has been reduced to one in every 200 since the paper was written in August. The group's software has also been trained to detect concealed cars.

Prettier than an x-ray

The UCL team hopes to test its software shortly on real containers, some with small weapons deliberately hidden inside. Assuming that works, Dr Griffin plans to integrate the artificial-intelligence system into Rapiscan's scanning systems over the next few months. The team is also aiming to train the system to detect "anomalies"—the machine-learning equivalent of a human hunch that something is not quite right about a scan. That could, for instance, be something unusual in the way things are positioned inside the container. Given enough data, the scientists reckon computers can train themselves to identify discrepancies like this.

It is not just in ports where machine learning could speed up scanning. Weary travellers dragging themselves through the slow crawl of airport security could also benefit. Suitcases are smaller than containers, and their contents are more predictable, so humans are able to inspect their x-rays quickly and thoroughly (although regular rest breaks are still needed).

Toby Breckon of Durham University is working on automated x-ray analysis to detect small items of the sort that might be contained in passengers' cabin and hold bags. He says his group has already had an algorithm installed in commercial scanning systems. Dr Breckon thinks intelligent scanning systems will at first operate in the background at airports, for instance rechecking bags in case human inspectors have missed something. They might also be used to flag bags that could be worth a manual inspection.

In time, however, automated screening systems may go from being useful tools for human operators to outperforming them. If his team can get its hands on the large amounts of security imagery it needs to feed into its software, Dr Griffin thinks container scanning, at least, might be entirely automated. Perhaps bag-scanning at airports might go the same way. But there will still be a need for people. Someone has to be around to check inside containers and bags with suspicious contents. ■

Also in this section

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Political trends

They want their countries back

Politicians and pundits had better start understanding populism. It is not a passing trend

The Populist Explosion: How the Great Recession Transformed American and European Politics. By John Judis. *Columbia Global Reports; 182 pages; $12.99 and £8.99*

POPULISM has already upended the politics of the West. Americans have elected a president who has described NATO as "obsolete" and accused China of ripping off their country. Europe's second-largest economy, Britain, is preparing to leave the European Union (EU). But the populist revolution still has a long way to go. The far-right Sweden Democrats have been near the top of polls in a country that is synonymous with bland consensus. Marine Le Pen, the leader of France's National Front, a party that wants to take France out of the euro and hold a referendum on France's membership of the EU, is a shoo-in for the final round of the presidential election.

The Western intelligentsia, snug in its echo-chamber, has done a dismal job of understanding what is going on, either dismissing populists as cranks or demonising them as racists. John Judis, an American author and journalist, is an admirable exception. "The Populist Explosion" is an extended think-tank report rather than an airport bestseller. It's also an excellent read: well-written and well-researched, powerfully argued and perfectly timed.

Populism comes in a wide variety of flavours, left-wing as well as right-wing and smiley-faced as well as snarling. But populists are united in pitting the people against the powerful. Spain's left-wing Podemos bashes "la casta", Britain's right-wing UK Independence Party (UKIP) demonises the liberal elite, and Italy's impossible-to-classify Beppe Grillo rails against "three destroyers—journalists, industrialists and politicians". Populists are united in suspicion of traditional institutions, on the grounds that they have been either corrupted by the elites or left behind by technological change.

But they differ in all sorts of ways that make a populist front across political or national boundaries difficult. Right-wing populism is typically triadic, portraying the middle classes as squeezed between two outgroups, such as foreigners and welfare "spongers". Left-wing populism is dyadic—it champions the masses against plutocratic elites or, as with Scottish nationalism, a foreign elite.

Populism was born in the prairies of the American Midwest: farmers, hit by falling grain prices and exploited by local railway monopolists, raged against "the money power" and organised new parties such as the People's Party. The rural populists forged alliances with urban workers and middle-class progressives. They found champions in mainstream politics such as Williams Jennings Bryan, who warned against crucifying the people on a "cross of gold", and Teddy Roosevelt, who railed against "malefactors of great wealth".

Populism profoundly shaped the 1920s and 1930s: not just in Germany and Italy (where dictators ruled in the name of the people) but also in America (where Franklin Roosevelt moved decisively to the left to head off a challenge from Huey Long, a Louisiana populist who promised "every man a king" and "a chicken in every pot"). The tendency retreated to a few islands of rage during the long post-war prosperity: France's National Front drew its support from marginalised groups such as the *pieds-noirs* forced from Algeria after decolonisation, and small shopkeepers who hated paying taxes.

But populism began to revive during the stagnant 1970s: in 1976 Donald Warren, an American sociologist, announced his discovery of a group of Middle American Radicals (MARS) who believed that the American system was rigged in favour of the rich and the poor against the middle class. And it continued to grow during the long reign of pro-globalist orthodoxy: for example, Ross Perot doomed George Bush senior's bid for a second term with a presidential campaign that prefigured many of the themes that Donald Trump has sounded more recently.

Mr Judis argues that the populist explosion is unlikely to be a mere temporary aberration: particular parties such as UKIP may implode, but the tendency draws on a deep well of discontent with the status quo. Technocratic elites lost much of their credibility in the global financial crisis in 2008. The EU has damaged its claim to be a guardian of democracy against populist extremists by repeatedly ignoring referendums in which voters rejected new treaties. The populists have shown a genius for taking worries that contain a nugget of truth—such as that unrestricted immigration is destabilising—and turning them into vote-winning platforms. And they ▸▸

have relentlessly broadened and deepened their appeal as establishment politicians have marginalised the issues that give them life, for example treating worries about migration as nothing but racism. France's National Front, the most mature of all the populist parties, has already extended its constituency from small businesses to blue-collar workers, pocketing districts that were once dominated by the left and now extending its appeal to public-sector workers.

Some blinkered commentators still see populism as no more than a protest movement: dangerous and disruptive but ultimately doomed by the advance of globalisation and multiculturalism, which are in turn driven by irreversible technological and demographic forces. A glance at history suggests that this view is questionable. Globalisation went into rapid reverse in the 1920s and 1930s despite the spread of aeroplanes and telephones. The proportion of Americans born abroad was 13.4% in 1920, but after the Immigration Act of 1924 that fell, reaching 4.7% in 1970. The Western elite may be as wrong about the long-term impact of populism as it has been about its short-term prospects. ■

America's relations with China

Careful what you wish for

The Beautiful Country and the Middle Kingdom: America and China, 1776 to the Present. By John Pomfret. *Henry Holt; 693 pages; $40*

IN 1943 Fei Xiaotong, China's most famous anthropologist, visited America and proclaimed it "paradise", arguing that his own country needed to embrace the American spirit. Americans created things, he said. They didn't dwell in the past. They had Superman. America was a land "without ghosts". Fei was typical of many Chinese before and since: an intellectual who loved the bottom-up, can-do character of America and wanted some of it for his own country, with its top-down traditions.

China has long tried to work out how much of America it really wants. In 1881, the *New York Times* predicted that "China cannot borrow our learning, our science, and our material forms of industry without importing with them the virus of political rebellion." Chinese leaders know the same is true today.

Wang and Paulson: who's teaching whom?

The two huge nations, each with their own distinct sense of their exceptionalism, have long been locked in a love-hate embrace. Americans, mesmerised by China, have held the upper hand, obsessively trying to reshape China in their own image and draw it out into the world. They first came to China in the 18th century to trade. The tea that was thrown into Boston harbour in 1773 had come from Xiamen. Profits from the China trade bankrolled the American Industrial Revolution. Labour from China built the American West. Missionaries and businessmen poured the other way across the Pacific Ocean.

The Chinese, for their part, once saw America as different from the European powers. "The Americans are pure-minded and honest," said Prince Gong, a 19th-century leader. But China's aim was always utilitarian. "The problem is how to control them to make them exploitable by us," he added.

This ebb and flow is the subject of John Pomfret's absorbing new book, "The Beautiful Country and the Middle Kingdom". The question woven throughout is what will happen now that China has adopted some American ways and is challenging America's strength. It has received an injection of urgency from the election of Donald Trump, who, if he follows through on his anti-China rhetoric, threatens to throw relations into one of their periodic troughs.

Mr Pomfret is a veteran China correspondent. Having first gone there as a student in 1980, he was expelled for his reporting during Tiananmen in 1989, before returning later for the *Washington Post*. He weaves a lively tale, peppered with a cast of adventurers, spies, preachers, communists and McCarthyites who have boosted ▸▸

Further reading

Popular works

Other classic works on the rise of anger at the elites

The Managerial Revolution (1941) by James Burnham. Burnham, a Trotskyite turned conservative, identified a new group at the heart of Western society: a managerial elite that was engaged in a ruthless drive for dominance not only against the traditional business elite (which it accused of being selfish) but also against the unwashed masses (which it accused of being the slaves of atavistic emotions such as nationalism).

The Rise of the Meritocracy (1958) by Michael Young. Written by the author of the 1945 Labour manifesto this idiosyncratic book—part sociology, part history, part science fiction—predicts that the masses will rise up in rage against the credentialled elite not just because the elite hogs all the top jobs but also because it can't conceal its conviction that people who don't make it into the elite are worthless.

The Revolt of the Elites and the Betrayal of Democracy (1995) by Christopher Lasch argues that America's elites have engaged in a concerted revolt against traditional American values such as patriotism and religion. But the more they have defined these values as barbaric the more they have given themselves permission to engage in a class war against people who embrace these values, either marginalising them or delegitimising them completely.

Who We Are: A History of Popular Nationalism (2002) by Robert Wiebe. Wiebe, who was a historian at Northwestern University, tries to explain why educated Westerners have made an enemy of popular nationalism. In the 19th century educated liberals regarded nationalism as an expression of popular sovereignty against transnational aristocratic elites. Today they are more likely to identify nationalism with xenophobia and atavism—leaving this elemental force to be captured by right-wing populists.

Who Are We? (2004) By Samuel Huntington. Huntington, who was a Harvard political scientist, argues that the defining division in American politics is not economic but cultural, between people who give different answers to the question of national identity: cosmopolitans who argue that America is defined by its universal values and middle-class nationalists who argue that it is defined by flag, family and American exceptionalism.

and sabotaged the relationship in turn over the years.

After Mao died, the dream of opening up China returned, and America poured in resources almost recklessly. "To do business [American companies] have been forced to hand their technology to the Chinese and essentially train Chinese companies to become their competitors," writes Mr Pomfret. American officials believed that it was worth it because, in time, Chinese interests would align with America's.

That has not yet happened, says Mr Pomfret, and many experts fear it never will. Personal friendships have continued but America now understands Prince Gong's words: that China may not be interested in the kind of partnership that America wants. Richard Nixon saw China's potential in 1971 ("Put 800m Chinese to work under a decent system—and they will be the leaders of the world"). But, before he died in 1994, he came to fear that "we may have created a Frankenstein."

America has helped China change. But the change, so far, is superficial. Underneath, Mr Pomfret makes clear, Chinese leaders have not laid new foundations on which to build a modern country. Despite the efforts of its new strongman, Xi Jinping, China cannot develop fully without greater freedoms. The would-be "Beijing consensus", the idea that economic reform can continue without political reform, is illusory. Yet China's leaders persist, and with broadening ambitions, too. In 2014, Mr Xi said it was time for the people of Asia to run Asia, presaging a push to dominate the South China Sea.

The financial crisis has shown up the incumbent superpower's flaws. Mr Pomfret quotes Wang Qishan, a senior leader, talking to Hank Paulson, America's treasury secretary, after the crash: "You were my teacher, but…we aren't sure we should be learning from you any more." Suddenly, it is China that is exorcising its ghosts, while America finds it has a few of its own, after all.

Mr Pomfret is not a classic optimist. He has spent years as a war reporter and seen too much of China's dark underbelly for that. He describes all the ways in which American engagement is failing: China refusing to shoulder more global responsibility; widespread Chinese cyber-espionage; a continued crackdown on intellectual freedoms at home. He quotes one senior academic saying that America's fears are "nearer to outweighing our hopes" than at any time since 1979.

Yet, in spite of all this, he does not foresee a confrontation, believing that a mixture of American engagement and containment will maintain stability. The relationship is not as dysfunctional as it seems, he says. And China is not as dangerous as it sometimes looks. The world must hope Mr Pomfret is right. ■

Why Europe became rich

Ideas matter

A Culture of Growth: The Origins of the Modern Economy. By Joel Mokyr. *Princeton University Press; 403 pages; $35 and £24.95*

IN THE year 1000 the average person in western Europe was slightly poorer than their counterparts in China or India. By 1900, things were very different. Western Europe was five times richer. Explaining the reasons behind this "great divergence" has occupied many an economic historian. In a new book, Joel Mokyr of Northwestern University offers his own take.

It is not a conventional economic history. The book contains few numbers, let alone regressions. This is because Mr Mokyr focuses on culture—something not easily quantified. For Mr Mokyr, "culture" means beliefs, values and preferences. And he argues that all three changed fundamentally in Europe after 1500.

To structure his argument, Mr Mokyr speaks of a "market for ideas", a system in which people "try to persuade an audience of the correctness of their beliefs". Like any market, it can "fail"—and, for most of history, it did. People in power stopped upstarts from challenging received wisdom. Manipulating nature was considered akin to defying God's will. For potential intellectual innovators, the fear of being called a heretic (or worse) created a disincentive to think big.

Then, almost by accident, Europe stumbled into an arrangement whereby the "market for ideas" flourished. The Royal Society, a club for scientific exchange founded in London in 1660, started a journal in which everyone from Christopher Wren to Robert Boyle battled over ideas. Its motto was "*nullius in verba*"—roughly, "take nobody's word for it". A transnational community known as the "Republic of Letters" sprang up. Many of its members never met in person, but with the printing press and improved postal networks, they could create knowledge more efficiently than ever before.

You, sir, are quite wrong

There were no sacred cows. When Leonhard Euler, a mathematician, thought that Isaac Newton had erred, the Royal Society asked a self-taught optician to see who was right. The greatest mathematical mind of his age, challenged by a nobody: what better example of what Mr Mokyr calls the "principle of contestability"?

This went along with a reassessment of what science was. Mr Mokyr sees the new approach encapsulated in the work of Francis Bacon (1561-1626). Bacon was a poor scientist and knew no mathematics, says Mr Mokyr. But he pushed scientific inquiry away from the mindless piling up of facts and towards making a difference to people's lives. "The true and legitimate goal of the sciences is to endow human life with new discoveries and resources," Bacon said. With this sort of science, useful, wealth-creating things were invented.

Why Europe, and not anywhere else, developed in this way is tricky to answer. Luck is surely part of it. Another explanation concerns Europe's geography. With Europe fragmented into lots of states, an intellectual who challenged received wisdom, and thus incurred the wrath of the authorities, could move elsewhere. Thomas Hobbes wrote "Leviathan" in Paris; for years René Descartes lived in the Netherlands. Rulers eventually came round to the idea that "progress" could not be stopped. By contrast, in China, says Mr Mokyr, free thinkers had few escape routes.

This book is not for someone looking for a general introduction to the "great divergence". Mr Mokyr barely considers other theories of why Europe grew first—that its people were relatively immune from disease; or that it was the first region systematically to colonise others. And his arguments are often highly abstract.

Those familiar with the historiography will have their own grumbles. Mr Mokyr's theory is, ironically, untestable. When he asserts that Bacon "was of unique importance to the development of the West", it is impossible to prove otherwise. He assigns monumental importance to the "Republic of Letters" but offers frustratingly little detail on how it actually worked.

The sheer elegance of Mr Mokyr's theory, however, has much to commend it. And it is refreshing that an economist is taking seriously the idea that ideas and culture make a difference to economic growth. Mr Mokyr has not fully explained the "great divergence", but he has offered some tantalising insights. ■

Global education

The learning power of PISA

Cleverlands: The Secrets Behind the Success of the World's Education Superpowers. By Lucy Crehan. *Unbound; 304 pages; £16.99*

FROM 2000 to 2002, about a third of a million 15-year-olds from 43 countries took similar tests in maths, reading and science. The results of the first Programme for International Student Assessment (PISA) were a pleasant surprise in countries whose kids aced the exams—such as Canada, Finland and Japan. But for the laggards, the PISA results led to a sense of crisis. "Are German Students Stupid?" asked *Der Spiegel*, a magazine.

The tests' influence has since grown. Teenagers from 72 countries or regions are part of the latest triennial analysis, which will be published on December 6th. Michael Gove, a former British education secretary, is just one politician hoping to see the success of his reforms reflected in future PISA scores.

PISA has its opponents. Some query the methodology. Others complain about reducing the purpose of school to passing exams. Still more critics add that policymakers who seek to ape high-achieving countries neglect the unique cultural reasons behind success. This debate forms the backdrop to what Lucy Crehan calls her "geeky gap year". As a science teacher in London she had read about countries that scored higher in PISA than England, and wanted to see their schools up close. So she taught in Canada, Finland, Japan, Singapore and Shanghai. "Cleverlands", her first book, is her account of that odyssey.

At each stop Ms Crehan discovers idiosyncratic reasons for the area's results. Finland's schools were a storehouse of national pride during Swedish and Russian rule. Teaching remains a respected and sought-after job. In Helsinki ten times as many students apply for education degrees as there are places.

Across East Asia she finds a culture that celebrates effort. In China graduation cards praise recipients' hard work—not how clever they are, as in America. In Singapore, extra tuition is so common that parents hire tutors to help their kids pass entrance exams for the best tuition centres. In Japan, as a mark of shared sacrifice, some mothers give up their favourite food during their children's punishing exam terms.

But dismissing the success of top performers as a result of culture alone is a "grave mistake", writes Ms Crehan. Policy matters, too, and laggards who change their ways can catch up. In top-performing countries, children do not start school until they are at least six or seven years old. Aside from Singapore, all the places she visits wait until children are in their mid-teens before diverting some to less academic tracks. Teachers are given time to practise and they receive feedback from peers. Pupils are expected to learn both facts and skills.

Other authors have gone on peripatetic school tours. In "The Smartest Kids in the World" (2013) Amanda Ripley follows American exchange students in Finland, Poland and South Korea. Her book is an easier read, while covering some of the same ground that "Cleverlands" does.

But Ms Crehan's work has the edge in relating reporting to research. Studies show that academic work can wait, she explains, because otherwise it can go over the heads of kids while hindering social skills and a love of learning. She shows that schools can delay selection without harming brighter pupils. This is for two reasons. First, intelligence is not fixed: slow starters can catch up, at least a bit. Second, expectations matter: in delaying selection, top-performing countries suggest to all pupils that they can achieve high standards. Theresa May, Britain's prime minister, who is intent on increasing the number of schools selecting the ablest pupils as early as age 11, should take note.

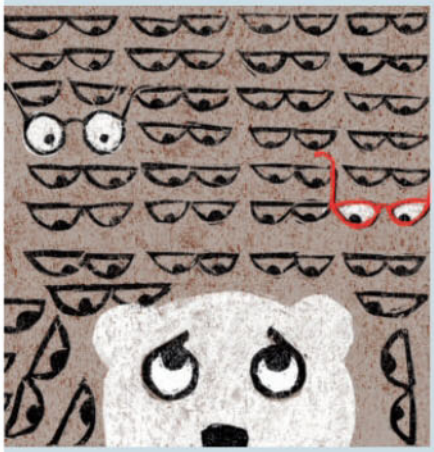
Too much writing about education is polemical and ill-informed. "Cleverlands" is neither. Ms Crehan is refreshingly fair-minded, acknowledges the limits of research and does not idolise highly stressful school systems. And yet her book is a powerful defence of the idea that there is a lot to learn from how other countries learn. It is time to swot up. ■

New fiction

Bearing up under the spotlight

Memoirs of a Polar Bear. By Yoko Tawada. Translated by Susan Bernofsky. *New Directions; 288 pages; $16.95. Published in Britain by Portobello Books in March 2017*

IN 2006, a baby polar bear named Knut was rejected by his mother, and raised by a keeper at the Berlin zoo in the spotlight of the global media. Knut's besotted fans often asked how a parent could forsake such a cute cub. Yoko Tawada, a Japanese-born author who has lived in Germany since 1982, gives a startling answer in this funny, subtle and strangely moving fable about the bonds that unite, and the gulfs that divide, humans and other animals. Leaving her son "wasn't an easy decision", writes Knut's mother Tosca, "but because of my literary work I didn't have enough time for him." Besides, "historical greatness" beckoned her little beast. Knut became a furry emblem of the dangers of global warming and the "struggle for conservation".



Ms Tawada gives three separate "memoirs" from a talented dynasty of bears. They perform first in the circus and then (a satirical point shrewdly made) amid the modern showbiz of environmental activism. Their Soviet-born matriarch masters the "spooky activity" of writing, and pens a famous memoir of stardom in the ring. Her daughter Tosca evokes the free-spirited "island" of circus life in post-war East Germany—by writing in the voice of her human trainer, Barbara. At last, sensitive Knut takes centre-stage. Poster-bear for climate change, he endures celebrity as the frail focus of "billions of worried eyes".

Ms Tawada respects the actual behaviour of bears even as her ursine authors inspect the vanity of humankind through an outsider's—or a migrant's—eyes. Although Barbara's boyfriend thinks that "the circus is nothing more than a metaphor," Ms Tawada brings her fine-nosed, soft-furred beasts credibly to life. The eerie tales told by Kafka's animal narrators have left deep claw-marks on this book. Ms Tawada, though, has a deadpan wit and disorienting mischief all her own, nimbly translated from the German by Susan Bernofsky. At a party where he scorns the tiny canapés ("as puny as half a dead mouse"), Knut hears a guest lament that "so many people are blockheads, impervious to irony, humour and innuendo." Those people may not enjoy this novel; everyone else should.

REPUBLIC OF CYPRUS
MINISTRY OF TRANSPORT, COMMUNICATIONS AND WORKS

Re-development of the Larnaca Port and Marina Area
MTCW/LCA1/2016
Invitation for Expressions of Interest

Background
The Republic of Cyprus ("RoC") through the Ministry of Transport, Communications and Works (the "MTCW" or the "Authority") has committed to proceed with a long term concession for the re-development and commercial exploitation of the Larnaca Port and Marina area (the "Project"), through an international competitive tender process (the "Tender Process"). The Government of the RoC sees this as an important opportunity to continue the modernisation of and investment in the RoC's economic infrastructure and efficiency.
The details of this process are described in the invitation for expressions of interest (the "Invitation") which is available from 23 November 2016 free of charge at the website www.eprocurement.gov.cy. Capitalised terms used in this announcement and not otherwise defined shall have the meaning given in the Invitation.

Overview
The Larnaca Port and Marina Area (the "Asset") subject to re-development, is located on the southeast coast of Cyprus at a distance of 6km from the Larnaca International Airport. The Asset is extending along the seafront of the city of Larnaca, adjacent to its center.

The Asset, comprises of a total area of approximately 510,000 sq.m, and includes the following: the Larnaca Marina; the Larnaca Port; and the land area, mostly unexploited, surrounding the marina and port infrastructure.

The Larnaca Marina was the first marina to operate in the Republic of Cyprus and currently has a capacity of around 350 wet berths and a dry storage capacity of around 200 boats. The Larnaca Port is the second largest seaport of the RoC and is a multipurpose port, serving both commercial and passenger uses. It can accommodate vessels up to 250m LOA and its draught reaches 12m. In addition to the marina and port facilities, the Asset also includes a land area of approximately 280,000m² available to be developed for other uses like residential and tourist development, retail/leisure development, office space and cultural/educational facilities.

The process
In the first phase of the Tender Process, interested parties are invited to express their interest in the Project and demonstrate that they fulfil the Criteria, set out in the Invitation, in order to qualify for the second phase. Qualified Parties will then be invited to participate in the second phase of the Tender Process, at the end of which they will be requested to submit binding bids. Interested Parties may express interest alone or by way of a consortium. Expressions of interest are required to be submitted by no later than 3 February 2017 (the "Closing Date") at the Tender Board of the Ministry of Transport, Communications and Works of the RoC. Requests for clarifications should be submitted through the Electronic Public Procurement System at www.eprocurement.gov.cy following relevant registration to the site.

Other terms
This Invitation has been prepared by the Authority. It does not constitute any offering and, to the extent permitted by law, the Authority and its advisors accept no liability in relation to it. This communication is not intended to form the basis of any investment decision or investment recommendation made by the Authority or any of its advisers and does not constitute the giving of investment advice by the Authority or any of its advisors. The issuance of this communication in no way commits the Authority to proceed with the Tender Process. The Authority reserves the right to amend the terms of, postpone or terminate the Tender Process without prior notice, to reject any or all of the expressions of interest and to terminate discussions with any or all Interested Parties at any time. No person acquires any right or claim for compensation from this communication, the Invitation or from their participation in the Tender Process against the Authority or its advisors for any reason or cause. For full terms and conditions please refer to the Invitation.

Courses

Economic data

% change on year ago

	Gross domestic product			Industrial production	Consumer prices		Unemployment	Current-account balance		Budget balance	Interest rates, %	Currency units, per $	
	latest	qtr*	2016†	latest	latest	2016†	rate, %	latest 12 months, $bn	% of GDP 2016†	% of GDP 2016†	10-year gov't bonds, latest	Nov 30th	year ago
United States	+1.6 Q3	+3.2	+1.5	-0.9 Oct	+1.6 Oct	+1.3	4.9 Oct	-488.2 Q2	-2.6	-3.2	2.32	-	-
China	+6.7 Q3	+7.4	+6.7	+6.1 Oct	+2.1 Oct	+2.0	4.0 Q3§	+266.6 Q3	+2.7	-3.8	2.77§§	6.89	6.40
Japan	+0.9 Q3	+2.2	+0.6	-1.3 Oct	+0.2 Oct	-0.2	3.0 Oct	+179.4 Sep	+3.6	-5.1	0.02	114	123
Britain	+2.3 Q3	+2.0	+2.0	+0.3 Sep	+0.9 Oct	+0.6	4.8 Aug††	-161.2 Q2	-5.7	-3.9	1.42	0.80	0.66
Canada	+1.3 Q3	+3.5	+1.2	+2.8 Sep	+1.5 Oct	+1.6	7.0 Oct	-53.6 Q3	-3.4	-2.7	1.58	1.34	1.33
Euro area	+1.6 Q3	+1.4	+1.5	+1.2 Sep	+0.6 Nov	+0.2	10.0 Sep	+376.3 Sep	+3.2	-1.7	0.27	0.94	0.95
Austria	+1.2 Q3	+2.4	+1.3	+2.6 Sep	+1.3 Oct	+0.9	6.3 Sep	+8.2 Q2	+2.6	-1.4	0.53	0.94	0.95
Belgium	+1.3 Q3	+0.7	+1.3	+4.4 Sep	+1.8 Nov	+1.8	8.0 Sep	+4.8 Jun	+1.2	-2.8	0.66	0.94	0.95
France	+1.1 Q3	+1.0	+1.3	-1.1 Sep	+0.5 Nov	+0.3	10.2 Sep	-34.1 Sep‡	-0.6	-3.3	0.71	0.94	0.95
Germany	+1.7 Q3	+0.8	+1.7	+1.1 Sep	+0.8 Nov	+0.4	6.0 Nov	+300.3 Sep	+8.6	+1.1	0.27	0.94	0.95
Greece	+1.6 Q3	+3.1	+0.2	+0.1 Sep	-0.5 Oct	nil	23.4 Aug	-0.2 Sep	nil	-5.1	6.58	0.94	0.95
Italy	+0.9 Q3	+1.3	+0.8	+1.8 Sep	+0.1 Nov	nil	11.7 Sep	+47.8 Sep	+2.4	-2.6	1.99	0.94	0.95
Netherlands	+2.4 Q3	+3.0	+1.6	+2.4 Sep	+0.4 Oct	+0.2	6.8 Oct	+59.7 Q2	+8.5	-1.1	0.40	0.94	0.95
Spain	+3.2 Q3	+2.9	+3.1	+1.2 Sep	+0.6 Nov	-0.4	19.3 Sep	+23.5 Sep	+1.4	-4.6	1.54	0.94	0.95
Czech Republic	+3.6 Q2	+1.2	+2.4	+2.7 Sep	+0.8 Oct	+0.6	5.0 Oct§	+3.7 Q2	+1.5	nil	0.54	25.5	25.6
Denmark	+1.1 Q3	+1.7	+1.0	-4.6 Sep	+0.3 Oct	+0.3	4.2 Oct	+23.6 Sep	+7.3	-1.0	0.40	7.01	7.06
Norway	-0.9 Q3	-1.9	+0.7	-13.7 Sep	+3.7 Oct	+3.5	4.8 Sep†‡	+23.6 Q2	+4.9	+3.0	1.64	8.51	8.68
Poland	+2.0 Q3	+0.8	+3.0	-1.3 Oct	nil Nov	-0.8	8.2 Oct§	-3.1 Sep	-0.4	-2.7	3.65	4.19	4.04
Russia	-0.4 Q3	na	-0.8	-0.3 Oct	+6.1 Oct	+7.0	5.4 Oct§	+30.2 Q3	+2.7	-3.7	8.86	64.6	66.0
Sweden	+2.8 Q3	+2.0	+3.2	+1.5 Sep	+1.2 Oct	+1.0	6.4 Oct§	+25.4 Q2	+5.0	-0.3	0.49	9.23	8.72
Switzerland	+2.0 Q2	+2.5	+1.4	+0.4 Q3	-0.2 Oct	-0.4	3.3 Oct	+66.1 Q2	+8.9	+0.2	-0.13	1.02	1.03
Turkey	+3.1 Q2	na	+3.1	-4.1 Sep	+7.2 Oct	+7.9	11.3 Aug§	-32.4 Sep	-4.8	-1.8	11.09	3.43	2.91
Australia	+3.3 Q2	+2.1	+2.8	+3.7 Q2	+1.3 Q3	+1.3	5.6 Oct	-52.8 Q2	-3.7	-2.1	2.67	1.35	1.38
Hong Kong	+1.9 Q3	+2.5	+1.6	-0.4 Q2	+1.2 Oct	+2.8	3.4 Oct‡‡	+13.6 Q2	+2.6	+0.6	1.40	7.76	7.75
India	+7.3 Q3	+8.3	+7.6	+0.7 Sep	+4.2 Oct	+5.0	5.0 2015	-16.2 Q2	-0.9	-3.8	6.25	68.5	66.7
Indonesia	+5.0 Q3	na	+5.0	+0.5 Sep	+3.3 Oct	+3.6	5.6 Q3§	-19.2 Q3	-2.2	-2.6	8.00	13,553	13,835
Malaysia	+4.3 Q3	na	+4.3	+3.2 Sep	+1.4 Oct	+1.9	3.5 Sep§	+5.6 Q3	+1.0	-3.4	4.42	4.47	4.26
Pakistan	+5.7 2016**	na	+5.7	+1.9 Sep	+4.2 Oct	+3.9	5.9 2015	-4.1 Q3	-0.9	-4.6	8.03†††	105	105
Philippines	+7.1 Q3	+4.9	+6.4	+9.9 Sep	+2.3 Oct	+1.7	5.4 Q3§	+3.2 Jun	+0.7	-1.0	4.52	49.7	47.1
Singapore	+1.1 Q3	-2.0	+1.3	+1.2 Oct	-0.1 Oct	-0.6	2.1 Q3	+63.0 Q3	+21.5	+0.7	2.30	1.43	1.41
South Korea	+2.7 Q3	+2.8	+2.7	-1.6 Oct	+1.3 Nov	+1.0	3.4 Oct§	+99.9 Oct	+7.2	-1.3	2.15	1,169	1,158
Taiwan	+2.0 Q3	+3.9	+1.0	+3.7 Oct	+1.7 Oct	+1.3	3.9 Oct	+74.7 Q3	+13.7	-0.5	1.13	31.9	32.6
Thailand	+3.2 Q3	+2.2	+3.0	+0.1 Oct	+0.3 Oct	+0.2	1.2 Oct§	+47.4 Q3	+5.9	-2.5	2.47	35.7	35.8
Argentina	-3.4 Q2	-8.0	-1.7	-2.5 Oct	— ***	—	8.5 Q3§	-15.4 Q2	-2.4	-5.0	na	15.9	9.68
Brazil	-2.9 Q3	-3.3	-3.2	-4.9 Sep	+7.9 Oct	+8.2	11.8 Oct§	-22.3 Oct	-1.1	-6.4	11.70	3.38	3.92
Chile	+1.6 Q3	+2.5	+1.8	-7.4 Oct	+2.8 Oct	+3.8	6.4 Oct§‡‡	-4.8 Q3	-1.9	-2.7	4.57	673	711
Colombia	+1.2 Q3	+1.3	+2.0	+4.0 Sep	+6.5 Oct	+7.6	8.3 Oct§	-15.7 Q2	-5.1	-3.7	7.31	3,056	3,148
Mexico	+2.0 Q3	+4.0	+2.1	-1.3 Sep	+3.1 Oct	+2.9	3.6 Oct	-30.6 Q3	-2.9	-3.0	7.28	20.5	16.6
Venezuela	-8.8 Q4~	-6.2	-13.5	na	na	+423	7.3 Apr§	-17.8 Q3~	-3.0	-24.4	10.57	10.0	6.31
Egypt	+4.5 Q2	na	+4.3	-11.7 Sep	+13.6 Oct	+13.1	12.6 Q3§	-18.7 Q2	-7.0	-12.4	na	17.9	7.83
Israel	+5.0 Q3	+3.2	+3.2	+2.6 Sep	-0.3 Oct	-0.5	4.5 Oct	+12.1 Q2	+2.9	-2.4	2.18	3.83	3.87
Saudi Arabia	+3.5 2015	na	+1.1	na	+2.6 Oct	+3.8	5.6 2015	-61.5 Q2	-5.6	-11.7	na	3.75	3.75
South Africa	+0.6 Q2	+3.3	+0.4	-0.1 Sep	+6.4 Oct	+6.1	27.1 Q3§	-12.9 Q2	-4.1	-3.4	9.05	14.0	14.4

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, Sept 35.92%; year ago 26.47% †††Dollar-denominated bonds.

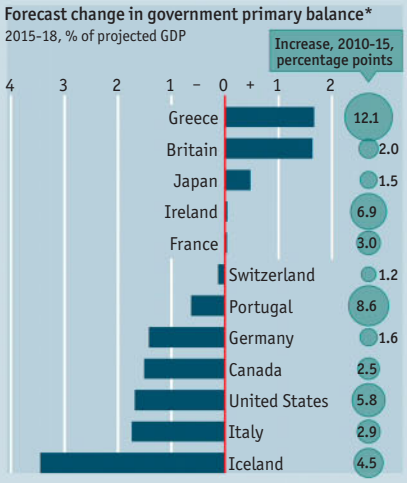
Markets

	Index Nov 30th	% change on one week	Dec 31st 2015 in local currency	Dec 31st 2015 in $ terms
United States (DJIA)	19,123.6	+0.2	+9.7	+9.7
China (SSEA)	3,403.2	+0.3	-8.1	-13.4
Japan (Nikkei 225)	18,308.5	+0.8	-3.8	+1.6
Britain (FTSE 100)	6,783.8	-0.5	+8.7	-7.9
Canada (S&P TSX)	15,082.9	nil	+15.9	+19.8
Euro area (FTSE Euro 100)	1,035.6	+0.7	-5.4	-7.6
Euro area (EURO STOXX 50)	3,051.6	+0.6	-6.6	-8.8
Austria (ATX)	2,519.6	+0.2	+5.1	+2.6
Belgium (Bel 20)	3,478.6	+0.3	-6.0	-8.2
France (CAC 40)	4,578.3	+1.1	-1.3	-3.6
Germany (DAX)*	10,640.3	-0.2	-1.0	-3.3
Greece (Athex Comp)	628.8	-0.6	-0.4	-2.7
Italy (FTSE/MIB)	16,930.4	+2.4	-21.0	-22.8
Netherlands (AEX)	457.2	+0.2	+3.5	+1.1
Spain (Madrid SE)	874.6	+0.6	-9.4	-11.5
Czech Republic (PX)	881.2	-0.8	-7.9	-10.1
Denmark (OMXCB)	757.3	+2.3	-16.5	-18.2
Hungary (BUX)	30,014.0	-0.5	+25.5	+23.6
Norway (OSEAX)	728.1	+0.3	+12.2	+16.6
Poland (WIG)	48,618.6	+0.2	+4.6	-1.4
Russia (RTS, $ terms)	1,029.1	+1.2	+20.2	+35.9
Sweden (OMXS30)	1,481.1	-0.1	+2.4	-6.5
Switzerland (SMI)	7,875.2	+1.6	-10.7	-12.2
Turkey (BIST)	73,995.2	-1.4	+3.2	-12.2
Australia (All Ord.)	5,502.4	-0.9	+3.0	+5.8
Hong Kong (Hang Seng)	22,789.8	+0.5	+4.0	+3.9
India (BSE)	26,652.8	+2.3	+2.0	-1.4
Indonesia (JSX)	5,148.9	-1.2	+12.1	+14.0
Malaysia (KLSE)	1,619.1	-0.7	-4.3	-8.0
Pakistan (KSE)	42,622.4	-0.6	+29.9	+29.8
Singapore (STI)	2,904.0	+2.3	+0.7	-0.2
South Korea (KOSPI)	1,983.5	-0.2	+1.1	+1.4
Taiwan (TWI)	9,240.7	+0.7	+10.8	+14.2
Thailand (SET)	1,510.2	+0.9	+17.3	+18.3
Argentina (MERV)	17,442.4	+0.4	+49.4	+21.9
Brazil (BVSP)	61,906.4	-0.1	+42.8	+67.0
Chile (IGPA)	21,020.3	-0.2	+15.8	+21.9
Colombia (IGBC)	9,572.3	-1.5	+12.0	+16.3
Mexico (IPC)	45,316.0	+0.3	+5.4	-11.0
Venezuela (IBC)	33,200.7	+30.1	+128	na
Israel (TA-100)	1,263.8	-0.2	-3.9	-2.5
Saudi Arabia (Tadawul)	7,000.2	+3.0	+1.3	+1.4
South Africa (JSE AS)	50,209.4	-0.8	-1.0	+9.4

Sources: Markit; Thomson Reuters. *Total return index.

Fiscal balances

Many countries will carry out fiscal easing over the next few years, according to the OECD, a think-tank. If the incoming American administration fulfils its promises to increase spending and cut taxes, the OECD reckons this alone could add 0.3 percentage points to global growth in 2018. In Britain there will be slower fiscal consolidation than before: the government has abandoned its target of a budget surplus by the end of the decade. Ireland has curtailed public spending in the years since the financial crisis, but austerity will ease off with a six-year plan for infrastructure spending and a 2017 tax cut for low-paid households. In Italy the 2017 budget aims to boost investment and lower corporate income tax.



Source: OECD *Budget balance excluding interest payments

Other markets

	Index Nov 30th	% change on one week	Dec 31st 2015 in local currency	Dec 31st 2015 in $ terms
United States (S&P 500)	2,198.8	-0.3	+7.6	+7.6
United States (NAScomp)	5,323.7	-1.1	+6.3	+6.3
China (SSEB, $ terms)	348.4	-1.6	-13.3	-18.3
Japan (Topix)	1,469.4	+1.5	-5.0	+0.3
Europe (FTSEurofirst 300)	1,350.9	+0.5	-6.0	-8.2
World, dev'd (MSCI)	1,715.4	+0.3	+3.2	+3.2
Emerging markets (MSCI)	858.5	+0.3	+8.1	+8.1
World, all (MSCI)	413.9	+0.3	+3.6	+3.6
World bonds (Citigroup)	893.7	+0.8	+2.7	+2.7
EMBI+ (JPMorgan)	763.3	+0.2	+8.4	+8.4
Hedge funds (HFRX)	1,190.4§	-0.1	+1.4	+1.4
Volatility, US (VIX)	12.7	+12.4	+18.2	(levels)
CDSs, Eur (iTRAXX)†	79.8	-2.4	+3.5	+1.1
CDSs, N Am (CDX)†	73.5	-0.6	-16.8	-16.8
Carbon trading (EU ETS) €	4.6	-15.2	-44.9	-46.2

Sources: Markit; Thomson Reuters. *Total return index. †Credit-default-swap spreads, basis points. §Nov 28th.

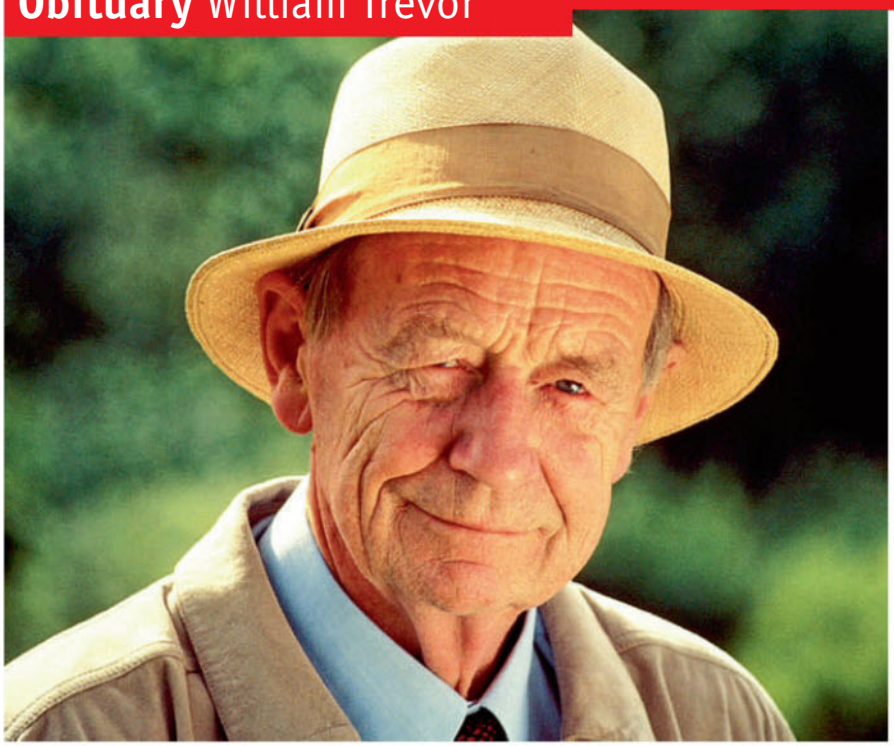
Indicators for more countries and additional series, go to: **Economist.com/indicators**

The Economist commodity-price index

2005=100

	Nov 22nd	Nov 29th*	% change on one month	% change on one year
Dollar Index				
All Items	143.4	145.8	+5.1	+15.5
Food	157.3	157.4	+0.8	+5.7
Industrials				
All	129.0	133.7	+10.9	+30.2
Nfa†	133.2	135.1	+6.7	+24.0
Metals	127.2	133.1	+12.9	+33.1
Sterling Index				
All items	210.0	213.6	+3.5	+40.1
Euro Index				
All items	168.4	171.3	+9.7	+16.0
Gold				
$ per oz	1,209.7	1,185.9	-8.0	+11.2
West Texas Intermediate				
$ per barrel	46.7	45.2	-3.1	+8.8

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.



Mystery and mastery

William Trevor (born William Trevor Cox), Irish novelist and short-story writer, died on November 21st, aged 88

BETWEEN 1989 and 2009 only three journalists interviewed William Trevor at length. That was quite enough. He met them punctually, at Exeter station or in Dublin, his tall slim figure bulked out with a tweed coat and floppy tweed hat. In his half-thatched Devon farmhouse he would settle into cushions and ply his guest with sherry. In the craggy face, the eyes were kind. But they also queried, silently, why anyone should find him interesting.

The interviewers came because he had written 19 novels and novellas and 13 collections of short stories, and had three times won the Whitbread prize. In literary circles, which he avoided, his exquisitely crafted stories were mentioned in the same breath as Maupassant, Chekhov and Joyce. Had he cared about the critics, which he did not, he would have been flattered by the comparison: especially with Joyce, whose "Dubliners" had done much to set him on his path. As it was, he preferred to keep the conversation well away from himself.

It was other people he found interesting. He observed them with the unstinting curiosity of a man dropped in the world for the first time. That girl adjusting her hair in a shop window—for whom? That youth gobbling chips from a paper bag—where did he live? A farmer, seen from the car, taking string from his pocket—for what purpose? That couple on the table behind, arguing—were they married, or not? Thus he found his characters, and their encounters. To these he could add from his constant nibblings and gnawings of tiny details: a creaking iron bed, a Georgian decanter, mounds of autumn leaves, a plate of sardine-and-egg sandwiches, a window stuck with paint, one high-heeled shoe. Gradually the people formed, lodged in his head, acquired histories. He became acquainted with their schooling, their marriages, the day when they had done such and such a thing, their way of dreaming, their favourite drinks. Once there, they thronged round his writing desk and would not go away.

They were full of secrets, disappointments and shame, these characters: withheld from each other, but not from him. He knew why Ariadne, the beautiful daughter of a Dublin landlady, with hands "as delicate as the porcelain she attended to", could never love Barney Prenderville, who loved her. He knew why Kitty and Davy, on honeymoon, visited the back-street chemist's in Tramore, and that Kitty would never after all go through with it. He knew more than either Roy or Henrietta, a middle-aged couple, when Roy half-explained and Henrietta half-grasped his affair with a mousy student; the tears oozed from beneath Roy's spectacles. And when the vampish Mrs Faraday, between cigarettes and cocktails, tried to chat up a fellow guest in the Albergo San Lorenzo ("Did you mind my wondering if you were married?"), he alone could anticipate the horror-twist that followed.

He did not analyse the mystery of these creations. Having invaded their lives as minutely as possible, he would dismiss them without a second thought or a second read. He had no ideas or philosophy to impart, he insisted. The people had come and gone, inexplicably. Their stories were sharp glimpses of a hidden truth, and he liked that; by contrast, a novel was a sprawling thing, full of byways and excrescences from which the exit was unclear.

Stout and soft rain

Interviewers did their best to find more in his art than that. His own history surely explained a lot. The fact that he had been brought up Protestant in the Catholic south of Ireland, had gone to 11 schools and had been forced to leave Ireland for England to make a living, must have endowed him with an outsider's soul and eye. He confessed, as Joyce had, that exile was beneficial. His England was a drably post-war foreign land. Ireland he evoked from his study in Devon, a canvas of whitewashed houses, lilting brogues, stout and soft rain that seemed ancient, rather than modern. Mentions of the Troubles were rare; he wrote with the same intensity, he admitted, about a housewife's feelings as she put on lipstick. For him, politics and heroics faded beside the simple struggles of ordinary people to come to terms with fate.

The melancholy of his writing suggested a well of sadness in himself. It was not there. His marriage was long and happy and his life had been largely fun ever since, in 1964, "The Old Boys" had launched him as a writer. He wrote from minute observation but also from outside his experience, and thought it would be very dull to do otherwise. He was not what he wrote.

Where then, he was asked, did his mastery come from? What was the secret of it? His disposition was to say nothing. But he would willingly describe the practicalities of writing: swift longhand on blue paper, then an Olympia typewriter, for five hours or so each morning, starting early. As the pages accumulated, so he cut and cut, often determinedly with scissors. The unnecessary sentence, the extraneous word, the repeated description, were pared to the thin bone. Before becoming a writer he had been a woodcarver, chipping and chiselling away to create forms. He might not have managed in wood the delicacy of Grinling Gibbons's lace and leaves, but he could do it in prose. His secret lay in what he left out—particularly that least penetrable or important thing, himself. ■

COMPETING TEAMS

Austin Knutson, Menglu Liu and Derek Schlenker

Josh Obregon, Julianne Harm and Josh Stubbendick

Beatrice Gorski, David Murchland and Rodrigo Cherniauskas

Sherwin Li, Ramis Jamali and Rodrigo Pantoja

Pedro Kim, Rituparna Ghosh and Khondoker Haider

Laura Reid, Courtney Kemp and Mario Romero

Francisco Cudell, Pedro Vilas-Boas and Rui Rosas

Michael Friedlander, Viral Kagrana and Noriko Kawashima

Peter Langer, Alexander D'Alfonso and Zintis Vandelis-Muir

Arthur Yep, Bjorn Commers and Enrique Curiel Arruego

Jon-Paul Navarro, Alex Moore and Jake Tremblay

Khanh Le, Jaime Aguero and Kylie Vo

Kyle Dedmon, Jose Hernandez and Jessica Grande