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America's one-year-old president

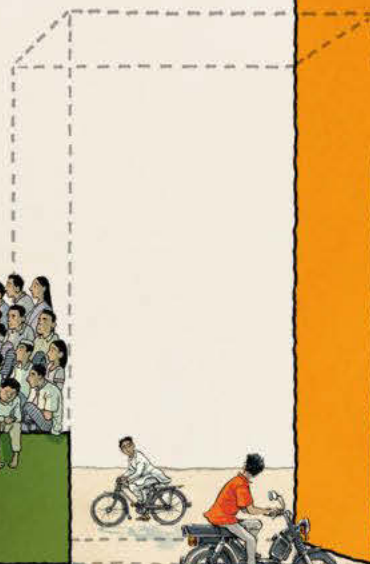
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India's missing middle class





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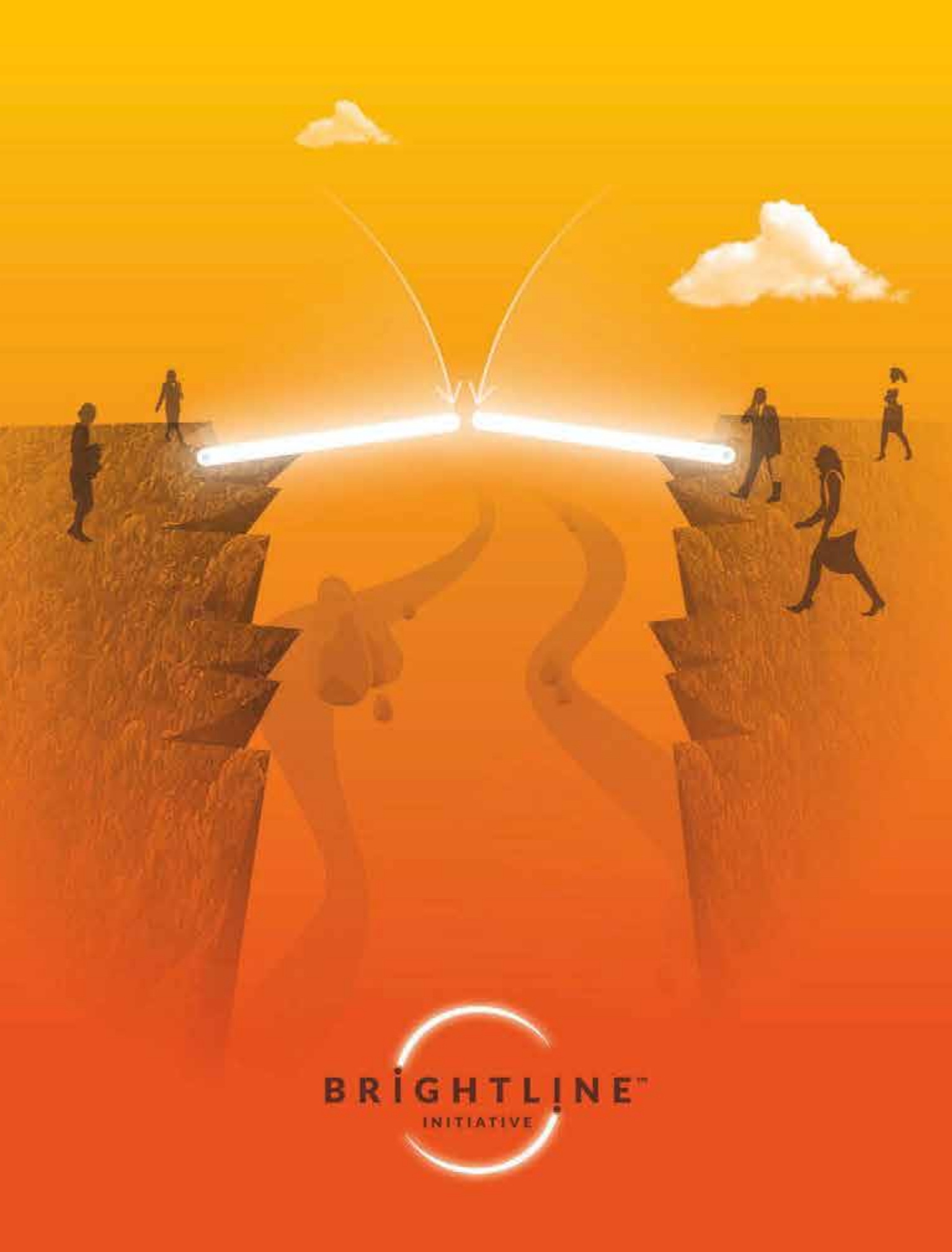
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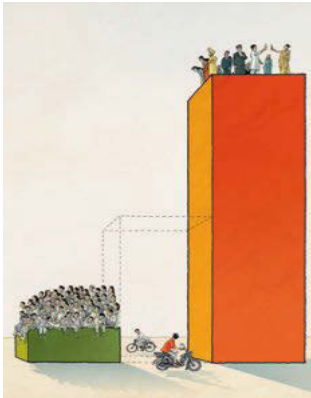


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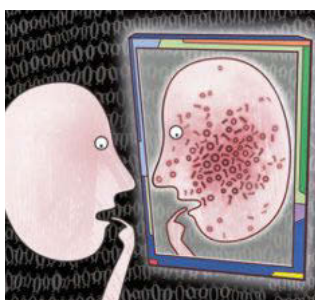
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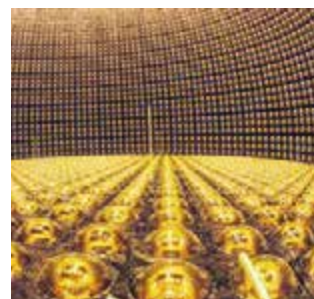
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Politics



Donald Trump reacted angrily to a fly-on-the-wall account of his first nine months in the White House. The president's lawyers tried, but failed, to stop publication of "Fire and Fury" (the book submits that some of Mr Trump's aides question his mental capacity). Stephen Bannon, Mr Trump's former right-hand man, in particular earned the president's wrath for divulging all to the book's author.

Mr Trump indicated a willingness to work with Democrats on **immigration** reform. His overtures came shortly before a judge blocked the president's attempt to end protections for immigrants who came to America illegally as young children. Meanwhile, the government revoked the special status afforded to 200,000 people from **El Salvador** that allows them to live and work in America.

At least 17 people were killed in southern **California** by mudslides that swept down hillsides stripped of bushes and trees by recent wildfires.

A federal court found that the boundaries of **North Carolina's** congressional districts were drawn to favour Republicans and ordered the legislature to come up with a new map for the midterm elections. It is the first time a court has declared as unconstitutional districts that have been gerrymandered along partisan, rather than racial, lines.

Joe Arpaio, "America's toughest sheriff", who received a pardon from Mr Trump for

contempt of court, decided to run for a Senate seat in **Arizona**.

No peace at any cost

Colombia's president, Juan Manuel Santos, suspended peace talks with the ELN, a guerrilla group that has been fighting the government since 1964. He recalled Colombia's negotiator after the ELN attacked an oil pipeline and a naval base. A ceasefire which began in September expired on January 9th. Colombia made peace with the FARC, a larger guerrilla army, in 2016.

In **Peru**, President Pedro Pablo Kuczynski reshuffled his cabinet after the furore caused by his decision to pardon Alberto Fujimori, a former president who was in jail for corruption and human-rights crimes. He swore nine ministers into a "cabinet of reconciliation".

The Inter-American Court of Human Rights ruled that signatories of the American Convention on Human Rights must recognise **same-sex marriages**. Bolivia, Cuba, Honduras and Peru are among the signatory countries that accept neither gay marriage nor civil unions.

Taxing times

More than 200 people were arrested and dozens injured in clashes between police and protesters in **Tunisia**, after people took to the streets against the government's austerity measures. Protests also broke out in **Sudan**, where a cut in government subsidies has led to a doubling of the price of bread.

Soldiers in **Ivory Coast** looted weapons and burned down

parts of an army base, continuing a string of mutinies over pay that have rocked the country since last year.

South Africa's currency soared upon news that Jacob Zuma had stepped down as president of the country well ahead of the end of his second term in office in 2019. Although many in the African National Congress would like him to resign to make way for Cyril Ramaphosa, the party's new leader, the report was false.

The Israeli government banned the leaders of 20 organisations that support a boycott of **Israel** from entering the country. The list includes an American Jewish group.

Let the games begin

In the first talks between the two **Koreas** in almost two years, the North agreed to send a team to the Winter Olympics in the South next month. The pair also agreed to more talks to defuse tensions, but the North refused to discuss curbing its nuclear programme.

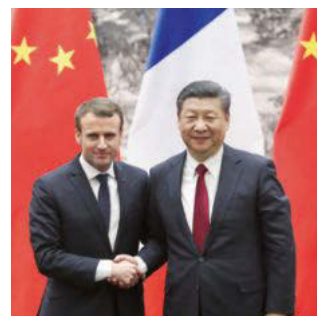
America cut off military assistance to **Pakistan**, on the ground that it was not doing enough to prevent militants based in the country from mounting attacks in neighbouring Afghanistan.

India's supreme court started a review of the part of the penal code that criminalises gay sex. An earlier ruling on Indians' right to privacy has stirred hopes among activists that the court may soon throw out the relevant clause.

An Indian newspaper revealed that it had obtained access to personal data about the 1.2bn Indians who have signed up for the government's **biometric identification scheme**. The agency that runs the scheme said it was strengthening the database's security.

An Iranian oil tanker collided with a cargo ship in the **East China Sea**. There were fears for the crew after the vessel caught fire. Bad weather hampered efforts to control the

blaze, raising concerns about an environmental catastrophe.



France's president, Emmanuel Macron, visited **China**. He gave his Chinese counterpart, Xi Jinping, a horse called Vesuvius, and amused Chinese-speakers with a mangled attempt to say "Make our planet great again" in Mandarin in a public speech. Mr Macron said China planned to buy 184 Airbus A320 jetliners.

The path of least resistance

Theresa May, **Britain's** prime minister, carried out the first reshuffle of her cabinet since a general election last year. The rejig followed some high-profile departures in the past few months, including of her deputy. Reports had suggested up to a quarter of her ministers might go, but in the end few changes were made as senior ministers clung to their jobs. Like her misjudged timing of the election, the reshuffle appeared to undermine Mrs May's authority further.

Poland's new prime minister, Mateusz Morawiecki, sacked three members of his cabinet, in what was seen as an attempt to mend fences with Brussels. The European Commission has proposed sanctioning Poland for the government's attempt to increase its power over the judiciary.

A letter signed by 100 **French** female artists and academics, including Catherine Deneuve, a film star, criticised the wave of sexual-harassment allegations sweeping entertainment and politics, describing it as a "witch-hunt" and defending men's "freedom to pester". According to the letter's signatories the allegations are creating a new "puritanism".

Business

James Damore, who was sacked last year by **Google** after writing a memo that claimed biological factors accounted for the gender gap in Silicon Valley, filed a lawsuit alleging the company discriminates against white men. The suit, which incorporates complaints from another former employee, maintains that Google is obsessed with diversity and its workplace is hostile to conservatives. It accuses Google of operating illegal employment quotas based on race and gender. The case will be allowed to proceed if a judge decides that it is valid as a class-action lawsuit.

Calling the changes

Alti announced a restructuring plan that it hopes will allay fears about the pile of debt it has accumulated through a series of audacious takeovers. The telecoms group intends to spin off its business in America and reorganise its European operations, creating a new unit for its assets in France, its biggest market. Patrick Drahi, the company's founder, will remain the largest shareholder.

A darling of Wall Street when it launched an IPO in 2014, **GoPro** decided to stop making drones, the market for which is saturated. It also faces stiffer competition for its Hero range of wearable action cameras from advances in smartphone technology. Its share price tanked.

An agreement reportedly fell apart through which **AT&T** would have sold phones made by **Huawei**, which is based in China. Huawei was counting on the deal to break into the American market. It has in effect been shut out of the country after Congress raised questions in 2012 about the company's links to the Chinese army, concerns that Huawei insists are ill-founded.

The euro zone's **unemployment rate** fell to 8.7% in November, the lowest since January 2009. As always, the

average rate masked big differences among countries. Germany's rate of 3.6% stood in contrast to Greece's 20.5%. In America the unemployment rate remained unchanged at 4.1% in December.



Britain's **manufacturing** sector looked better than at any time since early 2008, according to the latest data. The Office for National Statistics said there was strong broad-based growth across manufacturing, with the largest contribution coming from renewable-energy equipment. There was a negative note: construction output continued to struggle, despite a small uptick. It has contracted over the past half year.

Huntsville in Alabama was selected as the site for a new \$1.6bn factory that will make cars for Toyota and Mazda, creating 4,000 jobs. Home to

several other **carmaking** plants, Alabama will eventually become the second-biggest vehicle-producing state in America, after Michigan.

A revamp of its stores and improvements to its online service paid dividends for **Target** in the Christmas shopping season. The American retailer reported a solid rise in sales for November and December compared with the same two months in 2016. Other bricks-and-mortar retailers, including Macy's, also had a good Christmas. One big exception was Sears, which said sales in the two-month period slumped by 17%.

Byron, a British gourmet-burger chain, said it could close up to a third of its restaurants as part of a turnaround plan. The firm opened shop in 2007 and says its market has since "changed profoundly".

Mar-a-Lago keeps its view

The Trump administration's proposal to open up waters off almost the entire coast of the United States to **oil and gas drilling** prompted howls of protests from environmentalists. The geographical extent of the plan, which envisages 47 new sales of drilling leases, surprised observers, though

few think energy companies will operate in much of the area. Republican politicians have also pushed back against the scheme. The governor of Florida secured a commitment that exempts his state's coast.

Warren Buffett appointed Gregory Abel and Ajit Jain as vice-chairs to the board of **Berkshire Hathaway**, fuelling speculation that either one of them, or even both, will succeed the 87-year-old investor when he eventually steps down as chief executive and chairman of the holding company he leads.

A Kodak moment

In what is a good snapshot of the mania for crypto-currencies, **Kodak's** share price soared by 300% after it announced a new service based on blockchain technology to give photographers more control over the rights for their pictures. The once-storied company fell on hard times when it misjudged the shift from photographic film to digital imagery. It now hopes to get a boost from digital currencies by issuing a **KODAK-Coin** that photographers can be paid in.

Other economic data and news can be found on pages 76-77



The missing middle class

There is a hole where India's middle class should be. That should worry the government and companies



AFTER China, where next? Over the past two decades, the world's most populous country has become the market *qua non* of just about every global company seeking growth. As its economy slows, businesses are looking for the next set of

consumers to keep the tills ringing.

To many, India feels like the heir apparent. Its population will soon overtake its Asian rival's. It occasionally grows at the kind of pace that propelled China to the status of economic superpower. And its middle class is thought by many to be in the early stages of the journey to prosperity that created hundreds of millions of Chinese consumers. Exuberant management consultants speak of a 300m-400m horde of potential frapuccino-sippers, Fiesta-drivers and globe-trotters. Rare is the chief executive who, upon visiting India, does not proclaim it as central to his or her plans. Some of that may be a diplomatic dose of flattery; much of it, from firms such as IKEA, SoftBank, Amazon and Starbucks, is sincerely meant.

Hold your elephants. The Indian middle class conjured up by the marketers and consultants scarcely exists. Firms peddling anything much beyond soap, matches and phone-credit are targeting a minuscule slice of the population (see page 16). The top 1% of Indian adults, a rich enclave of 8m inhabitants making at least \$20,000 a year, equates to roughly Hong Kong in terms of population and average income. The next 9% is akin to central Europe, in the middle of the global wealth pack. The next 40% of India's population neatly mirrors its combined South Asian poor neighbours, Bangladesh and Pakistan. The remaining half-billion or so are on a par with the most destitute bits of Africa. To be sure, global companies take the markets of central Europe seriously. Plenty of fortunes have been made there. But they are no China.

Centre parting

Worse, the chances of India developing a middle class to match the Middle Kingdom's are being throttled by growing inequality. The top 1% of earners pocketed nearly a third of all the extra income generated by economic growth between 1980 and 2014, according to new research from economists including Thomas Piketty. The well-off are ten times richer now than in 1980; those at the median have not even doubled their income. India has done a good job at getting those earning below \$2 a day (at purchasing-power parity) to \$3, but it has not matched other countries' records in getting those on \$3 a day to earning \$5, those at \$5 a day to \$10, and so on. Middle earners in countries at India's stage of development usually take more of the gains from growth. Eight in ten Indians cite inequality as a big problem, on a par with corruption.

The reasons for this failure are not mysterious. Decades of statist intervention meant that when a measure of liberalisation came in the early 1990s, only a few were able to benefit. The workforce is woefully unproductive—no surprise given the abysmal state of India's education system, which churns

out millions of adults equipped only for menial work. Its graduates go on to toil in small or micro-enterprises, operating informally; these “employ” 93% of all Indians. The great swell of middle-class jobs that China created as it became the workshop to the world is not to be found in India, because turning small businesses into productive large ones is made nigh-on impossible by bureaucracy. The fact that barely a quarter of women work—a share that has seen a precipitous decline in the past decade—only makes matters worse.

Good policy can do an enormous amount to improve prospects. However, hope should be tempered by realism. India is blessed with a deeply entrenched democratic system, but that is no shield against poor decisions. The sudden and brutal “demonetisation” of the economy in 2016 was meant to target fat cats, but ended up hurting everybody. And the path to prosperity walked by China, where manufacturing produced the jobs that pushed up incomes, is narrowing as automation limits opportunities for factory work.

All of which means that companies need to deal with the India that exists today rather than the one they wish to emerge. A strategy of waiting for Indians to develop a taste for products that the global middle class indulges in—cars as income per head crosses one threshold, foreign holidays when it crosses the next—may lead to decades of frustration. Only 3% of Indians have ever been on an aeroplane; only one in 45 owns a car or lorry. If nearly 300m Indians count as “middle class”, as HSBC has proclaimed, some of them make around \$3 a day.

Big market, smaller opportunities

Companies would do better to “Indianise” their business by, for example, peddling wares using regional languages preferred by hundreds of millions of Indians. Pricing matters. Services proffered at the same price in India as Indiana will appeal to mere millions, not a billion. Even for someone in the top 10% of Indian earners, an annual Netflix subscription can cost over a week's income; the equivalent in America would be around \$3,000. Apple ads may plaster Mumbai, Delhi and Bangalore, but for only one in ten Indians would the latest iPhone represent less than half a year's salary. The biggest consumer hits in India have been goods and services that offer stonking value: scooters and mobile telephony have grown fast, but only after prices tumbled.

The sharpest businesses work out which “enablers” will allow Indians to gain access to new goods. Electrification drives demand for fridges. Cheap mobile data (India is in the midst of a data-price war that has hugely benefited consumers) are a boon to streaming services. Logistics networks put together by e-commerce giants are for the first time making it possible for a consumer in a third-tier city to buy global fashion brands. A surge in consumer financing has put desirable baubles within reach of more Indians.

Insofar as it is the job of politicians to create a consumer class, successive Indian governments have largely failed. Businesses hoping the Indian middle class will provide their next spurt of growth should be under no illusion. Companies will have to work very hard to turn potential into profits. ■

Trump's America

One year old

Washington is all Trump all of the time. That is bad for America



ALMOST one year into Donald Trump's presidency, you have to pinch yourself to make sense of it all. In "Fire and Fury", Michael Wolff's gossipy tale of the White House, which did not welcome Mr Trump's anniversary so much as punch it in the face, the leader of the free world is portrayed as a monstrously selfish toddler-emperor seen by his own staff as unfit for office (see our review on page 70). America is caught up in a debate about the president's sanity. Seemingly unable to contain himself, Mr Trump fans the flames by taking to Twitter to crow about his "very stable genius" and, in a threat to North Korea, to boast about the impressive size of his nuclear button.

Trump-watching is compulsive—who hasn't waited guiltily for the next tweet with horrified anticipation? Given how much rests on the man's shoulders, and how ill-suited he is to the presidency, the focus on Mr Trump's character is both reasonable and necessary. But, as a record of his presidency so far, it is also incomplete and a dangerous distraction.

Many happy retweets

To see why it is incomplete, consider first that the American economy is in fine fettle, growing by an annualised 3.2% in the third quarter (see page 27). Blue-collar wage growth is outstripping the rest of the economy. Since Barack Obama left, unemployment has continued to fall and the stockmarket to climb. Mr Trump is lucky—the world economy is enjoying its strongest synchronised upswing since 2010. But he has made his luck by convincing corporate America that he is on its side. For many Americans, especially those disillusioned with Washington, a jeremiad over the imminent threat to all of America from Mr Trump simply does not ring true.

Despite his grenade-throwing campaign, Mr Trump has not carried out his worst threats. As a candidate he spoke about slapping 45% tariffs on all Chinese goods and rewriting or ditching the North American Free-Trade Agreement with Canada and Mexico. There may soon be trouble on both those fronts, but not on that original scale (see page 60). He also branded NATO as obsolete and proposed the mass deportation of 11m illegal immigrants. So far, however, the Western alliance holds and the level of deportations in the 12 months to September 2017 was not strikingly different from earlier years.

In office Mr Trump's legislative accomplishments have been modest, and mixed. A tax reform that cut rates and simplified some of the rules was also regressive and unfunded. His antipathy to regulation has invigorated animal spirits, but at an unknown cost to the environment and human health. His proposed withdrawal from the Paris climate agreement and the fledgling Trans-Pacific Partnership was, in our view, foolish, but hardly beyond the pale of Republican thinking.

His opportunism and lack of principle, while shameful, may yet mean that he is more open to deals than most of his predecessors. Just this week, he combined a harsh plan to deport Salvadoreans who have temporary rights to live and work

in America with the suggestion of a broad reform to immigration (see next leader). He also said that he will be going to Davos, where he will rub shoulders with the globalists.

The danger of the Trump character obsession is that it distracts from deeper changes in America's system of government. The bureaucracy is so understaffed that it is relying on industry hacks to draft policy. They have shaped deregulation and written clauses into the tax bill that pass costs from shareholders to society. Because Senate Republicans confirmed so few judges in Mr Obama's last two years, Mr Trump is moving the judiciary dramatically to the right (see page 28). And non-stop outrage also drowns out Washington's problem: the power of the swamp and its disconnection from ordinary voters.

Covfefe and other mysteries

As we have written repeatedly over the past year, Mr Trump is a deeply flawed man without the judgment or temperament to lead a great country. America is being damaged by his presidency. But, after a certain point, raking over his unfitness becomes an exercise in wish-fulfilment, because the subtext is so often the desire for his early removal from office.

For the time being that is a fantasy. The Mueller probe into his campaign's dealings with Russia should run its course. Only then can America hope to gauge whether his conduct meets the test for impeachment. Ousting Mr Trump via the 25th Amendment, as some favour, would be even harder. The type of incapacity its authors had in mind was a comatose John F. Kennedy had he survived his assassination. Mr Trump's mental state is impossible to diagnose from afar, but he does not appear to be any madder than he was when the voters chose him over Hillary Clinton (see page 32). Unless he can no longer recognise himself in the mirror (which, in Mr Trump's case, would surely be one of the last powers to fade) neither his cabinet nor Congress will vote him out.

Neither should they. Alarm at Mr Trump's vandalism to the dignity and norms of the presidency cuts both ways. Were it easy for a group of Washington insiders to remove a president using the 25th Amendment, American democracy would swerve towards oligarchy. The rush to condemn, or exonerate, Mr Trump before Mr Mueller finishes his inquiry politicises justice. Each time Mr Trump's critics put their aim of stopping him before their means of doing so, they feed partisanship and help set a precedent that will someday be used against a good president fighting a worthy but unpopular cause.

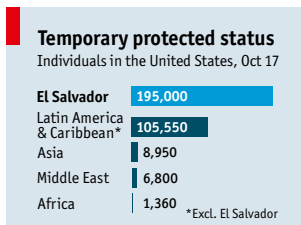
That logic holds for North Korea, too. Mr Trump is not the first president to raise questions about who is fit to control nuclear weapons—consider Richard Nixon's drinking or Kennedy's reliance on painkillers, anti-anxiety drugs and, during the Cuban Missile Crisis, an antipsychotic. Ousting Mr Trump on the gut feeling that he might be mentally unstable smacks of a coup. Would you then remove a hawk for being trigger-happy or an evangelical for believing in the Rapture?

Mr Trump has been a poor president in his first year. In his second he may cause America grave damage. But the presidential telenovela is a diversion. He and his administration need to be held properly to account for what they actually do. ■

Immigration

Time for a fix

Stripping Salvadoreans of their right to remain in America is a mistake—unless it spurs immigration reform



ELENA AGUILAR came to America illegally from El Salvador in 1996 to escape her children's violent father. Earthquakes in her home country in 2001 brought her good fortune of a sort: she was among 290,000 Salvadoreans who received "temporary protected status" (TPS) from the American government. That allowed her to live and work in America—in York, Pennsylvania, renovating and renting out houses—while El Salvador recovered. The American government has renewed Salvadoreans' protected status periodically ever since. Ms Aguilar's children have grown up in the country.

On January 8th the Trump administration said enough was enough. From September 2019 the 200,000 or so Salvadoreans who still have TPS will have to leave if they cannot find a legal way to remain (see page 35). The Salvadoreans share their plight with 46,000 Haitians, who got TPS after an earthquake in 2010, and 2,500 Nicaraguans, protected after Hurricane Mitch in 1998. Some 60,000 Hondurans, also exiled by Hurricane Mitch, await word of their fate.

Donald Trump won the presidency promising to keep out unwanted foreigners and expel those with no legal right to be in the country. Some of his ideas for doing that, such as building a wall on the Mexican border and barring citizens of some Muslim countries, are unworkable, discriminatory or both. On January 9th a federal judge temporarily banned the administration from deporting 800,000 migrants who came to America as children and were protected by Barack Obama's Deferred Action for Childhood Arrivals (DACA) programme.

Ending TPS for Salvadoreans and others is legally and politically easier. Temporary ought to mean temporary, the administration contends. The emergency that led to TPS is over. El Sal-

vador has rebuilt schools, repaired roads and restored water supplies, helped by American aid. Salvadoreans who go home will find themselves in a poorer and more dangerous country than America, but that is true of many places. If TPS becomes nothing more than a pretext for illegal immigrants to settle, how can the government extend such protection to citizens of countries that may be ravaged by future disasters?

Those are good points. Still, America is making a mistake. Salvadoreans with TPS have been in the country for at least 17 years; Hondurans and Nicaraguans have been there even longer. Many have jobs, mortgages and American children, some of whom do not speak Spanish. Even if it was unwise to let them stay so long in the first place, that does not mean it is right to expel them now. Mr Trump should not suddenly and capriciously uproot families who, after 17 years, have inevitably come to see themselves as settled.

Take the heat

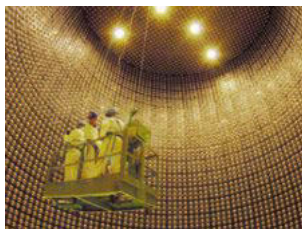
Shorn of TPS, many Salvadoreans will join America's 11m illegal immigrants with no right to work. Unless, that is, Congress passes a comprehensive immigration reform that treats all of them humanely and fairly. Any sensible law would offer many—especially those in the country longest—the right to work and a path to permanent residence.

In a televised meeting with Republican and Democratic lawmakers on January 9th, Mr Trump appeared to open the door to such a reform, saying that he would "take the heat" for disappointing supporters who fervently oppose anything that looks like amnesty. It is hard to know whether he means it—he has contradicted himself so often. And even if he does, he will face a monumental task in persuading Congress to go along. But the prize would be great: peace of mind for Ms Aguilar and hundreds of thousands like her, and a feat of statesmanship for a president who so far has none to his credit. ■

Particle physics

Lord of the rings

The Large Hadron Collider has pushed the frontiers of knowledge farther than ever before. Encore



last missing piece of the Standard Model, one of the most successful theories physicists have devised.

Since its inception in the 1970s, the Standard Model has correctly predicted the existence of a range of particles—including the Higgs itself. Yet it cannot explain everything. It cannot say

why the Higgs has the mass it does. Nor does it have anything to say about dark matter, the mysterious stuff thought to make up almost 85% of the mass of the universe (see page 67).

Physicists have wrestled with these and other problems for years. Many of their ideas for explaining them, such as Grand Unified Theories and supersymmetry, are now themselves several decades old. As colliders and detectors have failed to turn up the particles these theories conjecture, the models have been tweaked and ever-larger colliders and detectors have been put to work testing them. The failure thus far to find the predicted particles raises the question of whether to build a larger collider even than the LHC. To probe very new territory would require a ring 100km in circumference, about four ▶▶

► times that of the LHC. The protons colliding together at such a facility would have a combined energy more than seven times higher. Scientists at CERN and in China have developed independent proposals for a particle accelerator of this size, with most of the money coming from local sources and the rest from international funds. Should a new collider be built at all? And if so, where?

The answer to the first question is “yes”. The failure to find any of the phenomena predicted by Grand Unified Theories, supersymmetry and the like is not a reason to stop trying, through experiments both small and grand. An even larger and more sensitive collider would have a better chance of finding evidence to support these theories (or, indeed, of turning up something entirely unexpected). And should it not do so, that too would be valuable information. Scientists often make the case for the value of negative results. By making it so much harder to believe in longstanding theories, this would be the most important null result in the history of physics.

The importance of negative results is a riposte to the objec-

tion that the money involved, of \$20bn or more, would be better spent in other areas of science—hunting exoplanets, say—where the chance of discoveries is higher. Nor is it clear that money saved in one area would find its way to others. America’s decision to cancel, in 1993, the construction of the Superconducting Super Collider in Texas did not noticeably improve the funding of other fields.

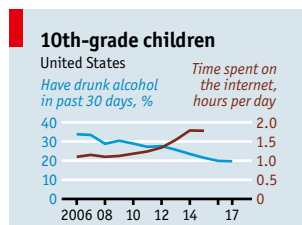
We’re going to need a bigger collider

As for the question of where a new facility should be, China’s case is stronger. For China itself, a collider would spawn high-tech manufacturing hubs to make the advanced coolants, magnets and computing infrastructure required. And just as an influx of European scientists into America in the mid-20th century invigorated progress, so China’s often insular scientific world would be cracked open by an infusion of foreign physicists. Because of its scale and technological demands, the next super-collider to be built may well be the last one. This time the jolt of excitement should come from the East. ■

A generation’s mood

Teens and screens

Cutting adolescents’ use of smartphones and social media is a poor solution to their problems



FIRST they went for tobacco, coal and sugar. Now they are targeting smartphones and social media. On January 6th two large investors in Apple demanded that the technology company must help parents curtail their children’s iPhone use,

citing research into the links between adolescent social-media habits and risk factors for suicide, such as depression. Old and new media abound with reports about phones’ addictive, mind-warping properties. On the school run, parents compare tactics for limiting screen time.

Something has made today’s teenagers different from teenagers in the past. As well as being far more temperate and better-behaved, they seem more anxious and unhappy (see page 51). School surveys by the OECD, a club of mostly rich countries, suggest that 15-year-olds find it harder to make friends. In America—though, phone-bashers should note, not in the rich world as a whole—suicides of young people are up.

Before stampeding for the off switch, parents and others should ask two questions. First, are iPhones, Instagram and so on actually to blame for adolescents’ problems? Second, will curtailing their use do much good? On the available evidence, the answers are, respectively, maybe and no.

Some studies of Britain and America, which conduct large surveys of young people, have found correlations between heavy technology use and unhappiness. Correlation is not causation, however: it could be that unhappy people seek refuge online. And the correlations are very weak. Only about 1% of the variability in young people’s mental wellbeing can be explained by social-media or smartphone use. One British study suggests that eating breakfast regularly is more than three times as important.

Perhaps technology has messed up all young people, even

those who abstain from it. Maybe it makes everyone feel left out, or thwarts all intimate connections: if your friend is always looking at her phone, it may not matter much whether you are. But if the effects are so amorphous it is hard to know what to do. Should parents gang up on teenagers as a group and enforce a universal crackdown? Should they deal with the inevitable charge of unfairness by applying the same restrictions to themselves? Good luck with that.

Parents who worry about their teenage offspring (which is to say, all parents) can do something, however. Prod them out of the house, and worry a bit less about what they get up to. There is plenty of evidence for the cheering effects of hanging out with friends. Yet youngsters are doing less of this. Over-protective parents are probably one reason.

Social pressure is another. It is revealing of broader attitudes that, in Britain, “teenagers hanging out on the streets” is a standard measure of anti-social behaviour. The authoritative Crime Survey of England and Wales asks people whether it is a problem where they live, alongside things such as drug dealing and burnt-out cars. That the rate of adolescent hanging-out has dropped from 33% to 16% in ten years may please criminologists, but is unlikely to signal happier teenagers.

Put them to work

A last cause of teenage angst could be the economy and the job market. The great recession hit young people harder than others. Some teenagers believe they face crushing competition, not only from their peers but from foreigners and robots. All the more reason for governments to work on improving schools and to get rid of job protection for older workers. Teenagers, for their part, could probably handle a bit more work. Even though homework is associated with higher test scores, it declined by an hour a week across the OECD between 2003 and 2012, from six hours to five. Some put in that much time on their phones in a single day. ■

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Russia today

Sir Tony Brenton's letter on engaging with Russia is a classic demonstration of ivory-tower wishful thinking (December 23rd). To even try to blame the Western media for the poor state of British-Russian relations has no basis whatever in reality. What Sir Tony seems to advocate is that we (the British, the West) ignore Russian provocations (too many to list here) at the expense of any foreign-policy values and principles that we may have (for example, over the Litvinenko murder or the Magnitsky case) in order to co-operate with Moscow over such things as countering Islamist extremism or strategic weapons control. Only a diplomat would argue that these are either/or choices.

Russia will engage with the West if it suits Russian goals, otherwise, based on the historical record, it probably will not. We should do the same. No one, in the media or elsewhere, is obsessed with Russia or with Vladimir Putin's autocracy. Instead analysts and observers in the media and, hopefully, in government, argue that Russia and Mr Putin need to live up to commitments made in the past to such basic matters as the integrity of Europe's post-1945 borders, human rights and the rule of law as the price for wider, deeper co-operation.

ROBIN KNIGHT

US News & World Report bureau chief, USSR 1976-79
London

Slavery was global

Kareem Abdul-Jabbar is one of the outstanding people of the 20th century, but I am curious about the reason given as to why he converted to Islam: because the "history of the Christian world with the slave trade was very seedy" (Lexington, December 23rd). That is indeed true. However, the first civilisation to ply the black slave trade on a large scale was Islamic. According to Fernand Braudel's "A History of Civilisation", this mostly took place between Niger and Darfur, via

Arab markets in east Africa. Estimates by various authors show that the volume of the Islamic slave trade, running through the Arabian Peninsula and then to the Far East, lasted longer into the 20th century than the European slave trade, the demand for which fell dramatically by the mid-1850s.

GEORGE BRAFF

Big Sur, California

Governing Italy

Charlemagne included Italy among the countries in the EU that "have long thumbed their nose at principles, including respect for the rule of law" (December 23rd). Italy has its problems, as do others, and is aware of its shortcomings, which it has addressed at times successfully and at times less so. Never, however, has it failed to tackle its problems as a democracy working to the standards imposed by respect for the rule of law. This it has managed to do through especially taxing times. Unlike Germany's response to the Red Army Faction, for example, Italy did not make recourse to exceptional legislation when confronting the threat from the red brigades terrorist movement. Dealing with a constant flow of immigrants is stretching the system at the seams but however inadequate Italy's refugee centres may seem, they are a far cry from the likes of the ill-famed Calais "camp".

ANTONIO ARMELLINI

Ambassador (retired)
Rome

Dana Gas

"Sukuk and see" (January 6th) gave the impression that Dana Gas was unable to pay the coupon on its *sukuk*, or Islamic bond, because of liquidity issues; has been ordered to pay holders of its *sukuk* by the British High Court; and that the ongoing legal proceedings will negatively hurt the Islamic finance industry. In fact, none of those points is correct.

First, the strong growth in global *sukuk* issuance in 2017 demonstrates that there has been no impact on the wider industry, and there is no logical

reason why the case should have any bearing on *sukuk* in general. The Dana Gas case is a very specific situation, with a *mudarabah* structure (equity partnership) which has particular problems as a matter of law in the United Arab Emirates. This structure is shared by only five other non-financial issuers. Second, the British High Court found that the purchase undertaking is valid and enforceable; however there has been no ruling yet that Dana Gas has to pay any amount, as that cannot be determined before the conclusion of legal proceedings in the UAE. Finally, the company initially sought a consensual resolution, which would have replaced the unlawful instrument with a new *sukuk* compliant with UAE law, which would account for coupon payments. Dana Gas had over \$500m in cash on its balance-sheet. To pay the coupon would have been illegal, and this was clearly communicated to the market.

DUNCAN MACLEAN
Legal and commercial director
Dana Gas
Sharjah, United Arab Emirates

A lift for the government

Although the Equitable Life building in New York boasted the first elevator in an American office ("Higher still and higher", December 23rd), the government was not far behind. In 1875 the first elevator in a government property was installed in the Executive Office building, next door to the White House. The Equitable Life elevator perished in a fire in 1912, but Elevator 1 in the Executive Office building continues to operate today.

ROBERT RIDEOUT

Columbus, Ohio

Conservation for big cats

Your poignant account of the tiger, T3, heading back home to Pench from the Panna tiger reserve where it had been relocated, risking its life as it passed human settlements and crossed fields, shows the need for corridors that connect wildlife habitats ("A tiger's

tale", December 23rd). With development now a holy cow, the Indian government is easily persuaded to disregard conservation concerns and allow roads, canals, electricity towers, mining and human settlements to fragment habitats. These can be reconnected by corridors of tree and vegetation cover that provide food and shelter to predator and prey. We planted 300,000 trees to improve the Kanha-Pench wildlife corridor, and in a gratifying development, a relocated tiger, ST10, has started frequenting the area of our Trees for Tigers project adjoining the Sariska reserve.

PRADIP SHAH

Co-founder

Grow-Trees.com
Mumbai

In vino veritas



Rather like an oenophilic Parkinson's Law, the capacity of a guest to imbibe his host's wine may expand with the capacity of the decanters ("Cheers!", December 23rd). Experience of entertaining in France has taught me to use elegant 100ml glasses for British friends and late-19th-century 200ml goblets for French ones. Yet the volume of wine consumed is identical for both. However were I to reverse the glasses, the French would consume the same amount, but the Brits twice as much.

PETER BREESE

Simorre, France ■

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Executive Focus



UN Office for the Coordination of Humanitarian Affairs (OCHA) – Senior Leadership Positions

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RESEARCH DIRECTOR AND EXECUTIVE DIRECTOR MERCATOR INSTITUTE FOR CHINA STUDIES, BERLIN

The Mercator Institute for China Studies (MERICS) was founded in 2013 based on an initiative by Stiftung Mercator. MERICS pursues practice-oriented China research focusing on contemporary issues and is one of the largest institutes of its kind in the world. The institute investigates important topics and fields of activity relevant to relations with China, disseminates its research findings among the general public, and makes its expertise on China available to decision-makers in the political and business fields and society at large. MERICS has its headquarters in Berlin.

The institute is currently seeking a new Director and hopes to fill the position as soon as possible.

We are looking for a person who will represent the institute in public and in the media and who will assume responsibility for the coordination and administration of all research activities undertaken by MERICS. Along with the relevant professional and personal skills, the institute's Director requires a comprehensive understanding of how to work with civil society and endowments, and a keen interest in think-tank development and innovation.

Candidate qualifications/profile

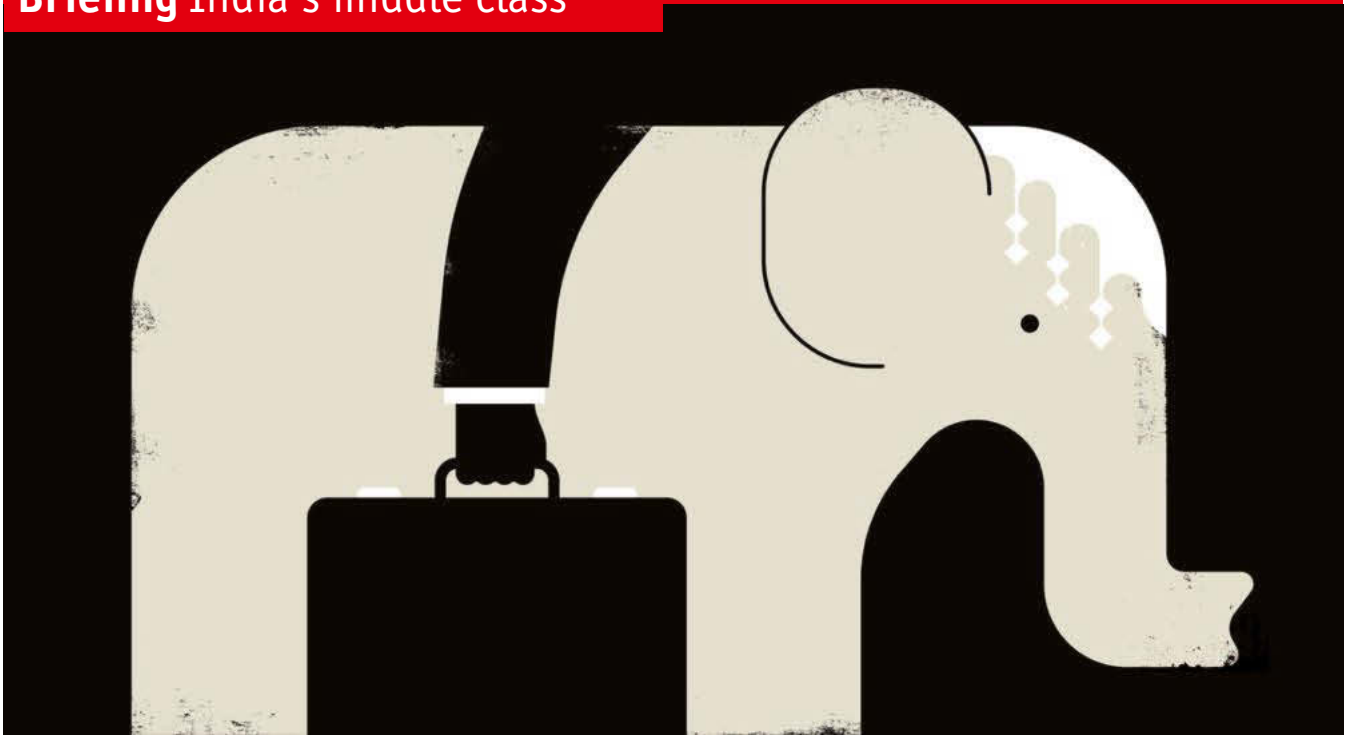
- Extensive research and leadership experience in leading research institutions focusing on contemporary China
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- Publications in internationally prestigious journals
- Proven success in the acquisition of third-party funding
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- Strong organizational ability and capacity for conceptual and strategic thinking
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- Resilient network across political institutions in Germany and the EU, civil society, the media and the private sector
- Strong communication skills and powers of persuasion in a range of environments and contexts
- Excellent knowledge of Chinese, long period spent in China an advantage
- German as native language an advantage

Tasks

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The elephant in the room

MUMBAI

Multinational businesses relying on Indian consumers for bumper growth face disappointment

THE arrival of T.N. Srinath into the middle class will take place in style, atop a new Honda Activa 4G scooter. Fed up with Mumbai's crowded commuter trains, the 28-year-old insurance clerk will become the first person in his family to own a motor vehicle. Easy credit means the 64,000 rupees (\$1,000) he is paying a dealership in central Mumbai will be spread over two years. But the cost will still gobble up over a tenth of his salary. It will be much dearer than a train pass, he says, with pride.

Choosing to afford such incremental comforts is the purview of the world's middle class, from Mumbai to Minneapolis and Mexico City to Moscow. Rising incomes and the desire for status have, in recent decades, seen such choices become far more widespread in a host of emerging markets—most obviously and most spectacularly in China. The shopping list of the newly better off includes designer clothes, electronic devices, cars, foreign holidays and other attainable luxuries.

Many companies around the world are looking to India for a repeat performance of China's middle-class expansion. India is, after all, another country with 1.3bn people, a fast-growing economy and favourable demography. And China's growth is flagging, at least by the standards of the past two decades. Companies which

made a packet there, both incomers such as Apple and locals like Alibaba, are seeking pastures new. Firms that missed the boat on China or, like Amazon and Facebook, were simply not allowed in, want to be sure that they do not miss out this time.

Enthusiasm about India is boundless. "I see a lot of similarities to where China was several years ago. And so I'm very, very bullish and very, very optimistic about India," Tim Cook, Apple's boss, recently told investors. A walk around the Ambience Mall in Delhi shows he is not the only multinational boss with big ambitions in the country. Indian brands like Fabindia, a purveyor of fancy clothes and crafts, are outnumbered by Western ones such as Levi's, Starbucks, Zara and BMW. The slums that host a quarter of all India's city dwellers feel a long way off.

Beyond the mall, Amazon has committed \$5bn to establish a presence in the world's biggest democracy. Alibaba has backed Paytm, a local e-commerce venture, to the tune of \$500m. SoftBank, a Japanese investor, has funded a slew of startups premised on the potential buying power of India's middle class. Uber, the world's biggest ride-hailing firm, has hit the streets. Google, Facebook and Netflix are vying for online eyeballs. IKEA is putting the finishing touches to the first of 25

shops it plans to open over the next seven years. Paul Polman, boss of Unilever, has described India as potentially the consumer giant's biggest market. Reports put out by management consultants routinely point to 300m-400m Indians in the ranks of the global middle class. HSBC, a bank, recently described nearly 300m Indians as "middle class", a figure it thinks will rise to 550m by 2025.

But for some of the firms trying to tap this "bird of gold" opportunity, as McKinsey once called it, an awkward truth is making itself felt: a lot of this middle class has little money to spend. There are many rich people in India—but they number in the mere millions. There are a great many more who have risen above the poverty line—but not so far above it that they spend much on anything other than feeding their families. And there is less in between the two than meets the eye.

Missing the mark

Companies that have tried to tap the Indian opportunity have found that returns fell short of the hype. Take e-commerce. The expectation that several hundred million Indians would shop online was what convinced Amazon and local rivals to invest heavily. Industry revenue-growth rates of well over 100% in 2014 and 2015 prompted analysts to forecast \$100bn in sales by 2020, around five times today's total.

That now looks implausible. In 2016, e-commerce sales hardly grew at all. At least 2017 looks a little better, with growth of 25-30%, according to analysts (see chart 1 on next page). But that barely exceeds the 20% the industry averages globally. Even after years of enticing customers with heavily ▶▶

discounted wares, perhaps 50m online shoppers are active in India—roughly, the richest 5-10% of the population, says Arya Sen of Jefferies, an investment bank. In dollar terms, growth in Indian e-commerce in 2017 was comparable to a week or so of today's growth in China. Tellingly, few websites venture beyond English, a language in which perhaps only one in ten are conversant and which is preferred by the economic elite.

India has yet to move the needle for the world's big tech groups. Apple made 0.7% of its global revenues there in the year to March 2017. Facebook, though it has 241m users in India, probably the most in the world in one country, registered revenues of just \$51m in the same period. Google is growing more slowly in India than in the rest of the world. Mobile phones have become popular as their price has tumbled—but most handsets sold are basic devices rather than the smartphones that are ubiquitous elsewhere in the world.

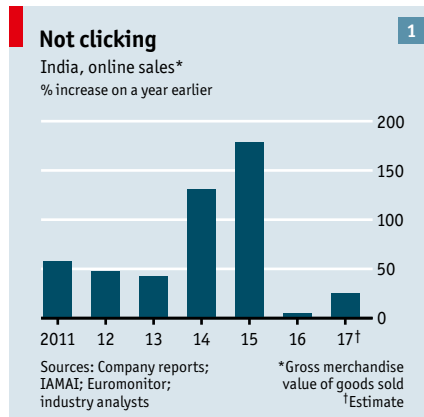
Eating their words

Fast-food chains once spoke of a giant market. Their eyes were bigger than Indian stomachs. Despite two decades of investment McDonald's has hardly any more joints in India than in Poland or Taiwan. The likes of Domino's Pizza and KFC have struggled to come close to expectations that were once sky-high. Starbucks says it has big plans for India but has opened about one new coffee shop a month over the past two years, bringing its total to around 100—on a par with Utah or the United Arab Emirates. A new Starbucks opens in China every 15 hours, adding to 3,000 already operating.

Executives remain relentlessly upbeat in public—even if investments do not always follow. Anurag Mehrotra, boss of Ford India, told the *Financial Times* in May that car sales in India were set to double every three to five years. That would be an extraordinary change in fortunes: sales grew by around 20% overall in the six years to 2016. There is one car or lorry for every 45 Indians, according to OICA, a trade group. The Chinese own five times as many. Motorbike sales have grown fast but only because their price has tumbled by 40% since 2000, points out Neelkanth Mishra of Credit Suisse, another bank.

India-boosters point to middle-class services that have taken off. With 20% annual growth in passengers, aviation is already booming at the rate Mr Mehrotra hopes to see in the car industry. But taken together, all India's domestic airlines are no larger than Ryanair, the world's fifth-biggest carrier, according to FlightGlobal, a consultancy. SpiceJet, an airline, says that 97% of Indians have never flown. A mere 20m Indians travelled abroad in 2015, about one in 40 adults.

Optimists also argue that the rapid



growth of things like Chinese mobile-phone brands shows that the Indian middle class is out there and spending—just not on Western brands. Locally based fast-food chains that undercut McDonald's or KFC have done much better than the new arrivals. But local consumer businesses face much the same problem as multinationals. Inditex, Zara's parent firm, has around 20 clothes shops in India, fewer than in Ireland, Lithuania or Kazakhstan. For the kind of goods the global middle class aspires to own at least, executives whether at global or local firms clock the number of potential customers at 50m and no more. Even selling basic consumer goods does not necessarily work. Hindustan Unilever, which purveys sachets of shampoo for just a few rupees, has seen virtually no sales growth in dollar terms since 2012.

"The question isn't whether Zara or H&M can open 50 stores in India. Of course they can. The question is whether they can open 500," says a banker who asks not to be named, on the ground that it is best not to be seen questioning the Indian middle-class narrative. "You can try to push beyond the 50m people who have money, but how profitable would that be? Companies can expand for a time, but the limits to growth are getting obvious."

The bullish argument that brought Western brands to India was basically this: although the country remains, for the most part, very poor, its population is so enormous



that even a relatively small middle class is large in absolute terms, and fast overall growth will, as in China, quickly increase its size yet further. This assumes two things. One is that the middle class in India is the same relative size as in other developing countries where marketers have succeeded in the past. The other is that growth will benefit this middle class as much as other parts of the population. Neither is true in India, which as well as being poor is deeply unequal, and becoming more so.

For all the talk of wanting to tap the middle class, no firm moving into India thinks it is targeting the middle of the income distribution. India's mean GDP per head is just \$1,700, and 80% of the population makes less than that. Adjust for purchasing-power parity by factoring in the cheaper cost of goods and services in India and you can bump the mean up to \$6,600. But that is less than half the figure for China (see chart 2) and a quarter of that for Russia. What is more, foreign companies have to take their money out of India at market exchange rates, not adjusted ones.

Defining the middle class anywhere is tricky. India's National Council of Applied Economic Research has used a cut-off of 250,000 rupees of annual income, or about \$10 a day at market rates. Thomas Piketty and Lucas Chancel of the Paris School of Economics found in a recent study that one in ten Indian adults had an annual income of more than \$3,150 in 2014. That leaves only 78m Indians making close to \$10 a day.

Meagre market

Even adjusting for the lower cost of living, that is hardly a figure to set marketers' heartbeats racing. The latest iPhone, which costs \$1,400 in India, represents half a year's pay for an Indian who just makes it into the top 10% of earners. And such consumers are not making up through growing numbers what they lack in individual spending power. The proportion making around \$10 a day hardly shifted between 2010 and 2016.

Another gauge is whether people can afford the more basic material goods they crave. For Indians, that typically means a car or scooter, a television, a computer, air conditioning and a fridge. A government survey in 2012 found that under 3% of all Indian households owned all five items. The median household had no more than one. How many of them will be anywhere near able to buy an iPhone or a pair of Levi's if they cannot afford a TV set?

To get in the top 1% of earners, an Indian needs to make just over \$20,000. Adjusted for purchasing-power parity, that is a comfortable income, equating to over \$75,000 in America. But in terms of being able to afford goods sold at much the same price across the world, whether a Netflix subscription or Nike trainers, more than 99% ▶▶

of the Indian population are in the same league as Americans that count as below the poverty line (around \$25,000 for a family of four), points out Rama Bijapurkar, a marketing consultant.

The top 1% of Indians, indeed, are squeezing out the rest. They earn 22% of the entire income pool, according to Mr Piketty, compared with 14% for China's top 1%. That is largely because they have captured nearly a third of all national growth since 1980. In that period India is the country with the biggest gap between the growth of income for the top 1% and the growth of income for the population as a whole. At the turn of the century, the richest 10% of Indians made 40% of national income, about the same as the 40% below them. But far from becoming a middle class, the latter's share of income then slumped to under 30%, while those at the top went on to control over half of all income (see chart 3).

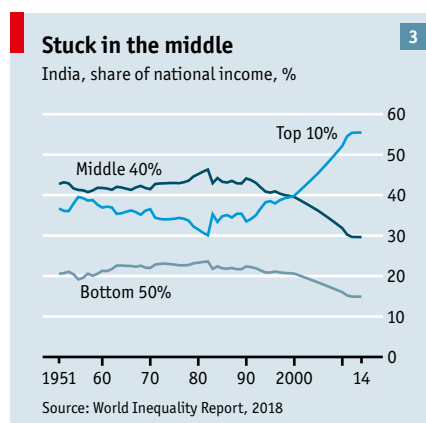
Such economic success at the top leaves less for everyone else. Consider the 300m or so adults who earn more than the median but less than the top 10%. This group has fared remarkably badly in recent decades. Since 1980, it has captured just 23% of incremental GDP, roughly half what would be expected in more egalitarian societies—and less than that captured by the top 1%. China's equivalent class nabbed 43% in the same period.

The rich get richer

Some have doubts about Mr Piketty's methodology. But other surveys suggest pretty similar distribution patterns. Looking at wealth as opposed to income, Credit Suisse established in 2015 that only 25.5m Indians had a net worth over \$13,700, equating roughly to \$50,000 in America. And two-thirds of that cohort's wealth was held by just 1.5m upper-class savers with at least \$137,000 in net assets.

India's middle class may be far from wealthy but the rich are truly rich. There are over 200,000 millionaires in India. Forbes counts 101 billionaires and adds one more to the list roughly every two months. It shows. The Hermès shop next door to the Honda dealership frequented by Mr Sriniath sells scarves and handbags that cost far more than his scooter. Flats in posh developments start at \$1m. In other emerging economies, there are fewer very rich and a wider base of potential spenders for marketers to tap.

In absolute terms, India has wealth roughly comparable to Switzerland (population 8m) or South Korea (51m). Although India's population is almost the size of China's, it is central Europe, with a population about the size of India's top 10% and boasting roughly the same spending power, that is a better comparison. Global companies pay attention to markets the size of Switzerland or central Europe. But they do not look



to them to redefine their fortunes.

Confronted by this analysis, India bulls concede the middle class is comparatively small, but insist that bumper growth is coming. The assumptions behind that, though, are not convincing. For a start, the growth of the overall economy is good—the annual rate is currently 6.3%—but not great. From 2002 China grew at above 8% for 27 quarters in a row. Only three of the past 26 quarters have seen India growing at that sort of pace.

Another assumption is that past patterns will no longer hold and that the spoils of growth will be distributed to a class earning decent wages and not to the very rich or the very poor. Yet the sorts of job that have conventionally provided middle-class incomes are drying up. Goldman Sachs, another bank, estimates that at most 27m households make over \$11,000 a year—just 2% of the population. Of those, 10m are government employees and managers at state-owned firms, where jobs have been disappearing at the rate of about 100,000 a year since 2000, in part as those state-owned enterprises lose ground to private rivals.

The remaining 17m are white-collar professionals, a lot of whom work in the infor-

mation-technology sector, which is retrenching amid technological upheaval and threats of protectionism. In general, salaries at large private companies have been stagnant for years and recruitment is dropping, according to CLSA, a brokerage.

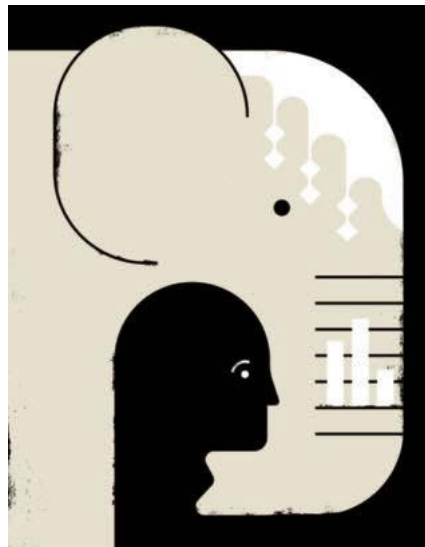
Might those below the current white-collar professional layer graduate to membership of the middle class? This happened in China, where hordes migrated from the countryside to relatively high-paying jobs in factories in coastal areas. But such opportunities are thin on the ground in India. It has a lower urbanisation rate than its neighbours, and a bigger urban-rural wage gap, with little sign of change. It is not providing jobs to its young people: around a third of under-25s are not in employment, education or training.

There are other structural issues. Over 90% of workers are employed in the informal sector; most firms are not large or productive enough to pay anything approaching middle-class wages. "Most people in the middle class across the world have a payslip. They have a regular wage that comes with a job," points out Nancy Birdsall of the Centre for Global Development, a think-tank. And women's participation in the workforce is low, at 27%; worse, it has fallen by around ten percentage points since 2005, as households seem to have used increases in income to keep women at home. Households that might be able to afford luxuries if both partners worked cannot when only the man does.

Spent force

Across the income spectrum, households that do make more money tend to spend it not on consumer goods but on better education and health care, public provision of which is abysmal. The education system is possibly India's most intractable problem, preventing it becoming a consumer powerhouse. Attaining middle-class spending power requires a middle-class income, which in turn requires productive ability. Yet most children get fewer than six years of schooling and one in nine is illiterate. Poor diets mean that 38% of children under the age of five are so underfed as to damage their physical and mental capacity irreversibly, according to the Global Nutrition Report. "What hope is there for them to earn a decent income?" one senior business figure asks.

None of this leaves India as an irrelevance for the world's biggest companies. Whether India's consumer class numbers 24m or 80m, that is more than enough to allow some businesses to thrive—plenty of fortunes have been made catering to far smaller places. But businesses assuming the consumer pivot in India is the next unstoppable force in global economics need to ask themselves why it already looks to have run out of puff—and whether it is likely to get a second wind any time soon. ■





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Demography in Japan (1)

Staying alive

TOYAMA

In the first of two articles on Japan's ageing population, we look at a small city trying to shrink with dignity

THE snow accumulating on the Japan Alps is a reminder of the unforgiving winters in the city of Toyama. Kazuko Onagawa, at 87 years old, is unfazed. Lithe and trim, she power-walks around a swimming pool in the Kadokawa Preventative Care Centre. After she dries off she may drop into the gym, rehabilitation room or massage parlour. A doctor is permanently on site in case she or her friends overdo it. "I'm fit for my age," she smiles. "Winters don't worry me."

About 30% of Toyama's 418,000 residents are 65 or older, an even higher proportion than in Japan as a whole, where it is 27% (see chart). By 2025, the proportion in Toyama is projected to be 32%. In addition to greying, the population is also declining. The city had 421,000 people in 2005; by 2025, it will have 390,000.

As the population ages and shrinks, the services residents need have changed. The Kadokawa Centre, for example, is built on the site of a primary school that closed in 2004. But overhauling public services is costly, and the declining number of people of working age means there is ever less tax revenue to help pay for the shift. To remain solvent, the city has decided to shrink not just in population, but in size, concentrating residents and services in the centre.

Most of Japan is in a similar quandary. About 400 schools shut every year; some are being converted into retirement homes. In 2016 there were 300,000 more

deaths than births. If Japan continues on its present course, it will have shed nearly a third of its population (and four out of every ten workers) by the time Mrs Onagawa's grandchildren retire in 2065.

Japan will not accept mass immigration, says Masashi Mori, the mayor of Toyama. Efforts to raise the birth rate have had little success, although there are a few exceptions (see next story). The only alternative is to learn to live with far fewer people. That implies great upheaval, which Toyama hopes to minimise.

The city's first focus has been public transport. Old people who don't get out and about tend to be less healthy and need more help. But buses can be daunting even for the relatively spry. At any rate, the num-

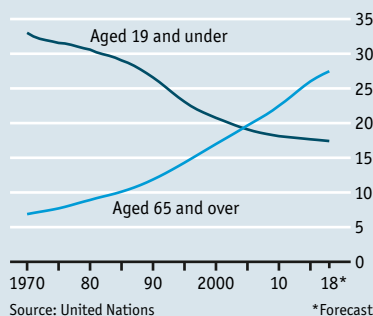
ber of passengers on the city's buses fell from 40,000 a day in 1995 to 17,000 in 2012. The cost of nursing care, meanwhile, has risen by 21% since 2010. The solution, the city government decided, was to build a tram system that is easy for old people to use, and to encourage them to live close to it. It used mainly existing train lines and second-hand rolling stock to keep costs down. There are no barriers in the stations and no steps up onto the trams, to make them easy for frailer passengers to use. Those aged 65 and over can buy a discounted ticket to go anywhere on the network for ¥100 (\$0.90). The number of passengers using the city's trains more than doubled when the first refurbished line was opened in 2006; the number of passengers in their 70s rose by more than three times.

The city government subsidises both the construction and the purchase of new housing within 500m of one of the new tram stops, and rents out several properties itself. It also pays two-thirds of the cost of running the Kadokawa Centre, and offers further grants for those opening facilities catering to old people within the city centre. The elderly are given free admission to museums and the zoo, provided they bring a grandchild with them. The city even subsidises the wages of old people hired by local firms.

The result of all this has been that the population of the city centre is rising, even as that of the rest of the city falls. The centre is now home to 37% of residents, up from 28% in 2005. By 2025 the city government hopes the proportion will be 42%. The boom in the centre has brought new shops and other businesses, helping to stabilise tax revenues. The cost of providing municipal services has fallen, says the mayor, who is in his fourth term. As he puts it: "We want a small city for old people to live comfortably and happily." ■

Fewer schools, fewer steps

Japan, % of population



Demography in Japan (2)

Cash for kids

NAGICHO

A small town doubles its fertility rate

A PATCHWORK of nondescript houses nestled at the foot of a mountain, Nagicho looks like an ordinary Japanese town. On closer inspection, something extraordinary marks it out: babies. Yuki Fukuda is one of many local mothers with three children. The bump under her winter coat indicates that another is on the way, part of a baby bonanza that has seen the town's fertility rate double since 2005.

Not surprisingly, reporters have flocked to this remote corner of the country to see if there is something that promotes fecundity in the water flowing down from Mount Nagi. The cause appears to be more prosaic: economics. Alarmed by the dearth of children, the local government increased incentives to have babies. The fertility rate rose from 1.4 (meaning that the average woman will have 1.4 children in her lifetime, roughly the national rate) to 2.8 in 2014. Provisional figures suggest the rate has since fallen back to 1.9, but even if correct, that remains well above the national average.

Mrs Fukuda will receive a "celebratory" gift of ¥300,000 (\$2,682) when she gives birth. A subsidised baby-sitting service is available for just ¥1,800 a day, along with subsidised carseats and other baby accessories. When her children reach secondary school, she will receive ¥90,000 a year for each one who attends. In theory, this stipend is to cover the cost of getting children to school, especially for people who live relatively far away. And whereas usually all but the poorest and the old in Japan

have to pay 30% of their health-care bills (with the national government picking up the rest), in Nagicho the local government pays the 30% for children.

Other initiatives are more creative. The town relies on a network of volunteers to help keep its two nurseries open. Businesses that move to the town receive rent-free land—a gesture that has lured at least three companies since 2014, says Yoshitaka Kumagai, a local government official. The city is also offering a clutch of refurbished or newly built apartments and houses for rent at subsidised rates.

Mr Kumagai insists all this largesse has merely boosted the share of the town's ¥4bn annual budget devoted to raising the fertility rate from 2% to 3%. Like thousands of other shrinking communities across Japan, the town was desperate, he says. Nagicho has lost a third of its population since 1955, and a third of the 6,100 residents who remain are over 65. "We're trying to hold the line at 6,000 people," he says.

The town's dilemma is replicated across the country. Deaths outstripped births by a record 300,000 in 2016; government projections say the population of 127m could plummet by almost a third over the next 50 years. Shinzo Abe, the prime minister, has pledged to raise the fertility rate to 1.8. To that end, much of the ¥2trn in extra public spending approved by the Cabinet last month is slated for child care.

Could Nagicho be replicated elsewhere? Hiroko Kaihara, who moved to the town years ago with her three children and works in one of the nurseries, thinks not. There is a slowness to life that is attractive, she says, and a sense of community. "Mothers feel safe having more children; it's not easy to create those conditions." Mrs Fukuda says she also struggles to put her finger on why families are larger. The money helps, she admits, but that is not the main reason. Perhaps there is something in the water after all. ■

Detente on the Korean peninsula

Games amid the frost

SEOUL

The two Koreas are talking again. But to what end?

NORTH and South Korea had not spoken to one another in almost two years. In fact, southern officials had been attempting to use the hotline between the two governments regularly, but the North had refused to pick up. In the end, however, it took just 11 hours of face-to-face discussion, on January 9th, for the two sides to agree that the North would participate in the winter Olympics next month, which South Korea is hosting in Pyeongchang, a district just 50 miles from the heavily fortified border between the two.

The North agreed to send athletes, officials, reporters and a cheerleading squad. The pair even discussed the idea of their teams parading together at the opening ceremony. They resolved to reopen a second hotline on the west coast to discuss military matters, and will meet again for talks, possibly to discuss reducing tensions along the border. Moon Jae-in, South Korea's president, even held out the prospect of a summit with Kim Jong Un, the dictator who runs North Korea.

Yet few in South Korea and beyond are setting much store by the detente. North Korea's overtures are tactical, reckons Robert Kelly, of Pusan National University in South Korea. Aside from reducing tensions, he says, the aim is probably to drive a wedge between South Korea, its ally America and its neighbour Japan, both of which reckon now is the time to raise pressure on the North, not reduce it. The North may also hope to secure a relaxation of increasingly harsh UN sanctions.

Taking part in cultural activities such as the Olympics costs North Korea nothing, but gives it a sheen of respectability. (It has taken part in many sporting events, including the Asian Athletics Championships in 2005, which Ri Sol Ju, now Mr Kim's wife, attended as a cheerleader.) In the same way, allowing reunions of families split between the two countries, which the South proposed, would be a "pseudo-concession for the North Korean side", says Mr Kelly, who points out that South Korea typically pays for these get-togethers.

On more important issues, the North appears predictably recalcitrant. It vehemently rejected South Korea's suggestion that they should resume negotiations over an end to the North's nuclear programme. Mr Kim's regime appears to see the weapons as a guarantee of its survival, and so is unlikely to give them up. Even as he first made overtures to the South in his new ►►



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year's speech, Mr Kim reiterated the "reality" that North Korea is a nuclear state and will "mass-produce" nuclear weapons.

Observers note that the North rarely acts in good faith. It has reneged on previous agreements and tends to talk when it needs money. *Joongang Ilbo*, a centre-right South Korean daily, warned the government not to "get drunk on the conversational mood" and forget that denuclearisation is the only way to long-term peace. Rex Tillerson, America's secretary of state, has said much the same. Many observers assume that the North merely plans to string South Korea along while it perfects its nuclear arsenal.

lear arsenal.

Nonetheless, Donald Trump's administration, initially cool about the prospect of North-South talks, has endorsed them (although it has warned Mr Moon against appeasing the North). America has agreed to postpone regular joint military exercises with South Korea until the games conclude. This is a striking shift of tone for Mr Trump, who recently boasted on Twitter of having a bigger and better nuclear button than Mr Kim.

In theory the next round of talks could get into issues that stop short of denuclearisation but reduce the chance of an acci-

dental conflagration. South Korea is concerned to avoid flare-ups in the demilitarised zone, which separates the two countries. It could try to persuade the North to pick up the hotline more consistently when the South calls, or even to allow the International Atomic Energy Agency to inspect its nuclear facilities.

Ri Son Gwon, the head of the North's delegation, joked that bilateral relations are "more frozen" than the winter weather. It was a rare example of a North Korean official telling the truth. Whether he repeats this remarkable feat during the talks remains to be seen. ■

Parenting in Singapore

Rules are thicker than blood

SINGAPORE

A bizarre court case exposes the city-state's Victorian attitudes to families

IT SOUNDS like something out of a Lewis Carroll novel. First, a father had to petition the courts to be allowed to adopt his own biological son, who was born in America with the help of a surrogate, and thus was not automatically considered his child under Singaporean law. Then on December 27th a judge ruled that the adoption would not be allowed. That, in turn, prevents the child, who lives in Singapore with his Singaporean father and his father's Singaporean partner, from becoming a Singaporean citizen. Instead each year his parents will have to apply for temporary leave for him to remain. As well as being topsyturvy, the case feels like a scene from "Alice in Wonderland" in another way: the Singaporean government's attitude to families is remarkably Victorian.

The two men involved in the case did not have a child lightly. After they had been a couple for 15 years and had lived together for nine, they looked into adopting, but found that an "unwritten policy" barred gay couples from adopting in Singapore (as written ones did until recently in much of the West). What is more, an unwed, heterosexual man can only adopt a boy. After much research, the couple paid \$200,000 to an American firm to help them conceive abroad. "We thought that in starting our family, the best way was surrogacy," says one.

But under Singaporean law, any child born to an unmarried couple (including all gay ones) is deemed illegitimate. That means the parents do not receive a "baby bonus" from the state or certain tax breaks accorded to the parents of legitimate children. The child does not automatically inherit anything when both parents die. The family will have a harder time gaining access to public housing. And illegitimate children born abroad to

a Singaporean father are not automatically entitled to Singaporean citizenship, depriving them of yet more benefits.

In her ruling, which the couple plan to appeal, Shobha Nair, the judge, tut-tutted about "the use of money to encourage the movement of life from one hand to another" (payment for adoption is illegal in Singapore). But many heterosexual Singaporean couples conceive using foreign surrogates each year, although they may attempt to conceal this from the authorities.

Ms Nair also excoriated the pair for trying to find a way to start a family, or for "walking through the back door of the system when the front door was firmly shut". She claimed that "it is no place of this Court to dictate to the applicant what a family unit ought to...look like," even as her ruling firmly laid out that the ideal family unit, in the eyes of the Singaporean state, entails the marriage of a man to a woman.



Just don't procreate

Pakistan and America

Here we go again

WASHINGTON, DC

America freezes military aid to Pakistan

IT WAS only a matter of time before Donald Trump, with his deep conviction that foreigners are taking America for a ride, discovered Pakistan. "The United States has foolishly given Pakistan more than 33 billion dollars in aid over the last 15 years, and they have given us nothing but lies & deceit," America's president raged in his first tweet of 2018. "They give safe havens to the terrorists we hunt in Afghanistan...No more!" On January 4th America announced that it would suspend most security assistance to Pakistan pending a more credible effort to expel the Taliban and other enemies of Afghanistan's government from the Pakistani side of the two countries' long border.

The State Department estimates the suspension will cost Pakistan \$2bn in aid already budgeted. It is similar to many previous American efforts to change the behaviour of the generals who dictate Pakistan's security policy. The administration of Barack Obama froze aid to Pakistan several times for the same reason—the generals' refusal to crack down on the militants, chiefly, in recent years, a jihadist network founded by Jalaluddin Haqqani, a former anti-Soviet commander who is based in the Pakistani tribal area of North Waziristan (see map on next page). Mr Obama suspended \$800m in aid in 2011 and \$300m in 2016. Congress blocked the sale of F-16 fighters to Pakistan the same year.

None of those admonitions worked. Pakistan's powerful military spy agency, the Inter-Services Intelligence, appears to have pushed the Haqqani network from Miran Shah, North Waziristan's capital, farther towards the lightly monitored frontier. But the generals are reluctant to squeeze harder. They fear more blowback of the

sort Pakistan has suffered from previous campaigns against militants. Since 2003 around 30,000 Pakistani soldiers and civilians have been killed by jihadists.

What is more, Pakistan's army has long considered Islamist militants as useful auxiliaries in their regional rivalry with India. Convinced, not without reason, that Western forces will soon leave Afghanistan, at least some of the generals wish to preserve the Haqqanis and other fighters for future proxy wars there. The fact that India has emerged as an important ally of Afghanistan's embattled government and also, all Pakistani generals believe, provides increasing support to the militants targeting Pakistan who have found sanctuary in Afghanistan, has hardened that resolve.

America's latest action is not likely to shift this calculus, even if it is bolstered, as American officials suggest it could be, with more aggressive sanctions, such as rescinding Pakistan's status as a "major non-NATO ally" or suspending America's (relatively paltry) development aid. Pakistan's generals are too focused on their regional concerns and too indignant about American bullying. Moreover, they know they hold a trump card: the power to stop America supplying its forces and the Afghan government via Pakistan. (The only alternative supply route requires Russia's consent, an equally awkward arrangement.) For this and other reasons, America probably has less influence in Pakistan than at any time since it invaded Afghanistan in 2001.

In particular, its assistance to the country has already been greatly reduced: in 2011 America furnished Pakistan with \$3.5bn. Meanwhile, China, which has billed Pakistan as its "irreplaceable all-weather friend", is increasingly making up the shortfall. It is rumoured to be planning a naval base close to the Pakistani port of Gwadar, on which it obtained a 40-year lease last year. (Both China and Pakistan deny this.) The port is part of a \$57bn infrastructure project, the China-Pakistan Economic Corridor, which is intended to connect landlocked western China to the Arabian Sea. America's leverage with Pakistan looks modest by comparison. ■



India's biometric ID scheme

Uniquely vulnerable

DELHI

A supposedly watertight store of Indians' personal data proves leaky

ADHAAR, India's project to issue every resident a unique, biometrically verifiable identification number, is big, bold and in many ways brilliant. Aadhaar IDs provide a quick, easy and theoretically foolproof way for civil servants and firms to know for sure with whom they are dealing. Officials say the scheme allows better targeting of welfare. Businesses love how easy it makes checking credit histories and vetting job applicants, among other things.

An Aadhaar card allowed your correspondent to apply for and walk away with a driver's licence in under half an hour. It provides proof of address and other data that in other countries—and in pre-Aadhaar India—would require a stack of documents. But civil libertarians have long worried that the government or, worse, crooks who gain access to the data will put Aadhaar to nefarious use. Some 200 government entities have been shamed for publishing private Aadhaar data, and more than one private firm with licensed access to Aadhaar data has been caught using it for purposes other than those agreed. Now proof has emerged that the whole database is not as watertight as claimed.

Earlier this month the *Tribune*, an English-language daily, revealed that for \$8 or so a reporter had bought illegal access to the entire Aadhaar database, barring cardholders' fingerprints and iris scans. For just \$5 more she was able to print out ID cards with any Aadhaar number. The Unique Identification Authority of India (UIDAI), which runs Aadhaar, compounded the

embarrassment by filing a police report against the reporter and her paper.

The ensuing outcry made headlines, and UIDAI quickly changed its tune, underlining its commitment to press freedom and to finding the real culprits. On January 10th it quietly added more layers of security. When fully applied in June, UIDAI's new system will allow cardholders to hide their actual 12-digit Aadhaar number behind a changeable virtual ID code. It will also be far more selective about who has access to what level of data.

The changes may have come just in time. The scandal in the press, experts say, revealed only one of Aadhaar's weaknesses, which UIDAI had already tried to fix. The breach exploited by the *Tribune* was through one of tens of thousands of private Aadhaar registration providers who had been licensed to process ID applications—an understandable expedient given the huge number of applicants. In a tacit admission of concern, UIDAI has revoked many of these private licences, but apparently forgot also to revoke the former licence-holders' access to its database.

Ananth Padmanabhan, a researcher at the Carnegie Endowment for International Peace, a think-tank, describes the decision to recruit so many private agents as a recipe for trouble, but points out wider problems. One is what he calls "overseeding": Aadhaar is now linked to more than 150 other databases, including less secure and more detailed data on residents stored by several Indian states. Some of these state troves, disturbingly, include information on religious affiliation and use mobile-phone data to track citizens' movements. Another design flaw is in the structure of UIDAI. "It is a very strange beast," says Mr Padmanabhan, "They made the custodian of data the regulator. Those duties should be separated."

Until now, successive governments, dazzled by India's heroic vault into the digital age, have blithely shrugged off concerns about Aadhaar. The current one, under Narendra Modi, the prime minister, has instead tried to cajole all Indians to join, even though participation in Aadhaar is supposed to be voluntary, by making an Aadhaar ID a requirement for a growing number of public and private services, including school lunches, pensions, tax registration, bank accounts and mobile phones. No wonder that more than nine in ten Indians—1.19bn people—have signed up so far.

Nikhil Pahwa, a digital-rights activist, reckons that Aadhaar was misconceived from the outset. The government put too much faith in the system's designers, and was in too much of a hurry to get Aadhaar up and running. "So what we get is a public repository of private data being handed over to private enterprise," he says. "When they say, 'Big data is the new oil,' I answer, 'But my data is not your resource.'" ■

Banyan | Restore and forget

Why the Meiji restoration of 1868 still divides Japan



THE story of Japan's modernisation began 150 years ago this month, when a band of young samurai and their allies overthrew the Tokugawa shogunate and with it seven centuries of feudal rule. Under the shoguns (military rulers), merchant and cultural life—centred upon bustling Edo—had been far from stagnant, as the stunning woodblock prints of Hokusai and Hiroshige attest. But Japan had for more than two centuries been closed and inward-looking. Its stratified society was absurdly rigid.

Above all, the warrior class was ill-equipped to deal with the growing threat posed by the gunboats of America and other Western countries, which had been sailing into Edo Bay and forcing the shoguns to sign treaties opening the country to foreign trade. The contest was unequal. The West had ironclad vessels and the latest guns. The samurai had ceremonial armour with face masks designed to show off impressive false moustaches.

The leaders launched their coup with the slogan “Revere the emperor, expel the barbarians”. For the first part, they called on tradition. They put the imperial line, hitherto mere props in Kyoto, back at the centre of the polity. They brought the 12-year-old emperor, Mutsuhito, up to Edo (now renamed Tokyo, or Eastern Capital), affirmed his unbroken descent from the sun goddess and claimed to rule on his behalf. Mutsuhito died in 1912; posthumously he was given the title of Emperor Meiji. Hence the name for the coup: the Meiji restoration.

As for the second part, far from expelling the barbarians, the new leaders embraced them. In April 1868 a famous “Charter Oath” decreed that “knowledge shall be sought throughout the world” to strengthen imperial rule. Fifty high officials set off on a 22-month world tour to take in everything they could about American and European government, industry, trade, education and warfare. Back in Japan they launched a frenzy of industrial development, administrative reform and military modernisation not even matched by China's more recent headlong growth. The Meiji restoration was actually a revolution.

For Shinzo Abe, Japan's current prime minister, the restoration resonates. Mr Abe comes from Yamaguchi, known in feudal times as Choshu. Leaders from Choshu were at the head of the revolution. Mr Abe once told this columnist he identified with them because they did “not simply look inward, but looked...to

the world's wider horizons”. The Choshu men, he explained, saw the threat from Western imperialism. Japan's harsh choice was either to be the meat served at a Western banquet or a guest at the table. By modernising, Japan became the only big country in Asia to safeguard its independence. It joined the Western high table.

Mr Abe sees lessons in all this, and since he came to office in 2012 he has appeared to be in a tearing hurry to implement them. At home Japan is imperilled by a weak economy, a risk-averse establishment and an ageing, shrinking population. Overseas, China threatens Japan not just in economic terms but, as it grows more assertive, militarily too. A revived economy (with more opportunities for women at work), a vigorous diplomacy and, notwithstanding the constraints of a pacifist post-war constitution, a stronger defence are to him the right responses. (They also help confront the threat posed by a nuclear North Korea.)

The government has gone all-out to promote the 150th anniversary, starting with a push in 2015 to acquire UNESCO “world heritage” status for various spots important in the ensuing industrial revolution. One striking site is Hashima, an island off the coast near Nagasaki that sits above a former coal mine, operated by the Mitsubishi conglomerate, that ran under the sea bed. It was once the most densely populated spot on Earth, housing miners and the families. (Today its post-apocalyptic ruins are best known as the lair of James Bond's nemesis in “Skyfall”.)

The government website celebrating the Meiji restoration idealises the period as one of grass-roots change and human rights as much as innovation. Yet for ethnic groups whose territory was annexed and culture stifled, such as the Ainu in the north and Okinawans in the south, it was not much fun. The rank-and-file in the new conscript army were brutalised. Workers in the mines and mills led harsh lives. And women, points out Tomomi Yamaguchi of Montana State University, were kept down. They could not vote, divorce or own property. Most Japanese women find little appeal in the nostalgic push by Mr Abe's Liberal Democratic Party to return to the Meiji era's “family values”.

Don't mention the war

There is another problem. The Meiji restoration sowed the seeds of Japan's 20th-century aggression. The first war dead whose souls were honoured at Tokyo's Yasukuni shrine, later controversial for honouring war criminals, were those who died fighting for the restoration (though even the losing side was supposedly fighting for the emperor). The authoritarian constitution of 1890, borrowed from that of Bismarck's Germany, fostered emperor-worship and glorification of the armed forces—powerful features of Japan's war machine.

By the time of Japan's defeat in 1945 thousands of Koreans and Chinese had been forced to work the mines in Hashima, among many other sites. Mr Abe's government, after much resistance, promised UNESCO it would reflect this history. Yet on Hashima neither the guides nor the pamphlets and signs refer to it. Members of Mr Abe's government, and at times the prime minister himself, seem to deny the existence of forced labour at all.

You can see the conundrum without sympathising with it. Those, like Mr Abe, who are less than frank in acknowledging Japan's wartime past, are worried about pulling on a thread. No clear event, no Reichstag fire, marked the moment when the country lurched into militarism. If aspects of what the Meiji restoration wrought come into question, what is there left to be proud about? The quest to find a modern identity for Japan continues. ■



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Agriculture

Dreaming big

BEIJING

Chinese farming is changing profoundly, but gradually

COMMUNIST countries have always liked model workers. Zhang Xinsheng is China's latest farmer to be anointed. He is no gnarled son of the soil but the owner of four companies and a farm where vegetables are grown under plastic sheets. In 2012, when he set up his agricultural venture in the central province of Henan, it took Mr Zhang six months to amass 53 hectares (130 acres) by persuading villagers to lease their plots of land. In 2017 he assembled another 47 hectares in half that time—thanks, he told a local newspaper, to rural land reforms. He plans to triple his farm's size and turn the village, Luodian, from a poor grower of grain into a specialist producer of vegetables.

Mr Zhang's story exemplifies a profound transformation in Chinese agriculture that has been unfolding since the 1980s. It involves a shift away from a preoccupation with producing enough grain for the country's needs, towards boosting rural incomes by encouraging farmers to grow more profitable crops and use scarce arable land more efficiently. The government is eager to speed up this change. It is not proving easy.

China grows enough staples to feed its 1.4bn people. The rice crop of 2017 was a record; output of grains has risen more than 40% since 2003. Cereal yields per hectare

are higher than Canada's. This is a stunning success for a country where millions starved in Mao's Great Leap Forward, and has freed millions from the rural grind to join China's industrial revolution.

But these feats on the farm have come at a cost. China uses twice as much fertiliser and pesticide per hectare as the world average, contributing to catastrophic levels of soil pollution. In northern China, the country's bread basket, wheat farmers use far more water than this bone-dry region can afford or replace. And because food quantity has taken priority over quality, there have been huge food scares.

The rural economy remains backward. A recent agricultural census showed there were 314m people employed in farming in 2016. That is 40% of China's workforce. Yet agriculture accounts for less than 9% of GDP, which means that rural labour is still extremely unproductive.

Moreover, the exodus from the land has slowed, implying that the problem of underemployment is not going away. The farming population fell by 100m in the decade to 2006 but only 28m in the following ten years. Most of those still tilling the fields are old and ill-schooled. In 2016 more than half of all farmers were over 55 and almost half had only a primary education.

Since all successful Chinese revolutions

have begun in the countryside, the Communist Party is alarmed. In October China's president, Xi Jinping (whose PhD thesis was on "rural marketisation"), unveiled a "revitalisation strategy" for the countryside that would "prioritise agriculture". Though vague, the strategy signals a renewed emphasis on reforming two vital aspects of farming.

First, prices. This year, for the first time, the government will lower the guaranteed sum that it pays farmers for wheat. Minimum prices for maize and rapeseed were scrapped in 2015. This shift should encourage greater efficiency. There will be less incentive for farmers to grow grain in places where it is costly to do so, such as in the north where water is scarce. The government will still help them, however, by boosting farm subsidies.

The legacy of Mao

Just as important are changes to land tenure, aimed at encouraging the growth of larger farms and new investment in them. Almost all farmland in China is owned by village collectives. In the 1980s households were given the right to use a portion of the land for themselves. Since 2008 they have had the right to lease these rights to others (this is how Mr Zhang put together his vegetable operation). But there has been a bottleneck: a lack of legal clarity about the boundaries of farmers' fields. This has hampered the growth of larger farms. The recent census found only 4m "scaled-up farms", 2% of the total. Almost 30% of them were in livestock or fish farming, compared with only 4% for all farms. This reflects the continued importance of ideology: animals are regarded as private property but land as collective. This impedes the growth ►►

▶ of large, privately owned, crop-growing ventures. Mao hated rural landlords (millions of them may have died in his purges). His thinking endures among bureaucrats.

In 2018 officials will complete work on handing out certificates to farmers with details of their plot boundaries. This should spur consolidation. Even so, it will remain hard for people like Mr Zhang to borrow money to rent land, since land-use rights cannot be used as collateral. Pilot programmes allowing this are under way, but there is no nationwide scheme. And there is no hint that China is willing to let farmers own land in order to capture the benefit of rising land prices—a common route to wealth for farmers in other countries but still anathema to the party's ideologues. Until that happens, the growth of large farms is likely to remain slow. ■

Family trees

Ancestral longings

SHANGHAI

A tech billionaire's quest exposes gaps in Chinese genealogies

WHEN Richard Liu asked for help in tracing his family history, thousands of people offered suggestions. Little wonder: Mr Liu, the founder of JD.com, a popular online mall, is worth about \$10bn. There are more than 65m people in China who share his surname—some would love to connect their family branches to his bountiful tree. But constructing an accurate lineage could be tough, not only because of the huge number of Lius. In a country that in recent decades has seen the biggest movement of people in history away from their ancestral homes, genealogical records are patchy.

Veneration of ancestors is part of Chinese culture. Traditionally this required the scrupulous updating of genealogies by family elders. These were recorded in books known as *zupu* that listed members of each generation—though typically only the men. *Zupu* were often kept in ancestral shrines (such as the one pictured, dedicated to a clan surnamed Li in the southern city of Guangzhou). But war and migration in the past two centuries have complicated matters. Under Mao, the Communist Party tried to stamp out ancestor worship. Many *zupu* were destroyed. Mr Liu was born in Jiangsu, an eastern province, and can trace his heritage back to a branch of the Liu family in the central province of Hunan. There the trail goes cold because the relevant *zupu* is missing, say local media.

In the West, people trying to trace their lineage often consult websites that provide data from sources such as census records

The environment

Feeling green

Gauging public opinion is hard. Explaining it is harder

CHINA'S leaders no longer pay single-minded homage to the cult of GDP. But although their goals have become more eclectic, they often pursue them in much the same way: by setting measurable, quantitative targets that are used to rate and motivate provincial officials.

In December the government published its first annual “green index”, ranking all 31 provincial-level governments by six yardsticks, including green growth, the efficient use of natural resources and environmental management. This “objective” index was accompanied by a survey of residents’ “subjective” satisfaction with their environment, a rare example of officials asking people directly how they feel about the government’s work and publishing the results. To guard against bias, each region’s survey was carried out by pollsters from elsewhere, who telephoned a random sample of residents.

The responses correlated reasonably well with the authorities’ objective index of environmental quality (one of the six components of the overall green index) but there were some notable outliers (see chart). The residents of Tianjin, a northern municipality close to Beijing, were more satisfied with their environment

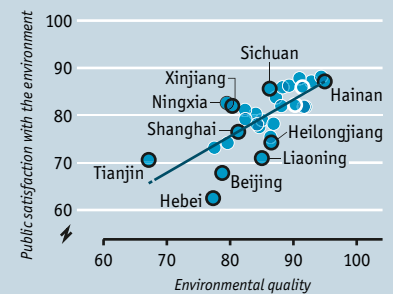
and church registers. Such sites enable users to link their trees with others. But in China there is little in the way of official historical records that contain genealogical data and are open to commercial databases. Local gazettes often provided infor-



Rich pickings for genealogists

Happiness and greenness

China, environmental scores, 2016
By provinces and municipalities, 100=maximum



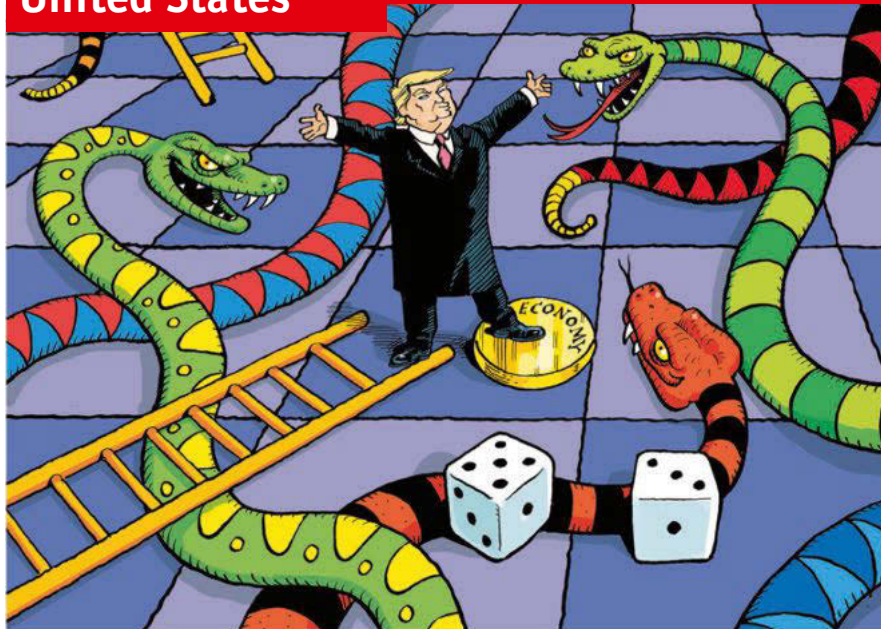
Source: National Bureau of Statistics

than one would expect, given that it ranked bottom on the objective index. People in the desert-like provinces of Xinjiang and Ningxia were also surprisingly satisfied. Beijingers, on the other hand, were far more unhappy even than their city’s unimpressive ranking of 28th on the objective index (and an unusually blue-skied winter) would appear to warrant. Perhaps the capital’s environmental shortcomings are unusually hard to measure. Or perhaps its citizens are unusually hard to please.

mation about members of prominent families, but were silent about the masses.

Yet not all is lost. Over the past couple of decades, clan associations have re-established themselves and worked to compile records again. *Zupu* that were hidden in Mao’s day, or taken abroad, have helped to fill in gaps. Some family elders have “put their collective memory down on paper”, says Huihan Lie, founder of My China Roots, a genealogy service. The paucity of surnames in China—almost 85% of people share just 100 family names—is not necessarily an obstacle. Given names can also provide clues. They are usually made up of two characters, with the first one sometimes chosen from a generational sequence of names ordained by the recipient’s clan. Mr Liu knows the sequence for eight generations in his family.

Websites are helping to make the search easier. My China Roots recently received private funding to build an online *zupu* database, starting with records from southern provinces where they are often more complete. Eventually the plan is to include Hunan, where Mr Liu’s search is focused. With luck, searching for ancestors will someday be as easy as online shopping. ■



Trump and the economy

No discredit where none is due

WASHINGTON, DC

Donald Trump's economic policy has not been as bad as expected. Meanwhile, the economy is booming. The first in a set of articles assessing this presidency so far

AS IT became clear that Donald Trump would win the presidential election, in the early hours of 9th November 2016, Asian financial markets tanked. But within hours of his victory investors changed course. A Trump presidency, they reasoned, would mean tax cuts, deregulation and infrastructure spending—in other words, more growth. A year after Mr Trump took office, it looks like the rethink was justified. Little of what was feared about Mr Trump's economic policy has come to pass. To some, rising economic growth, which exceeded 3% in the second and third quarters of 2017, combined with accelerating blue-collar wages, suggest that Mr Trump has delivered on his promise to invigorate the economy.

In truth, Mr Trump has benefited from a global economic surge that has lifted confidence—and stockmarkets—across the rich world. His timing with regard to the labour market was particularly fortunate. He came to office with unemployment at 4.8% and falling (it is now 4.1%). Pockets of strong wage growth, and high consumer confidence, are the natural result.

However, Mr Trump has at least not disrupted the economic recovery. His worst ideas, particularly with regard to trade, remain on the shelf. There have been no across-the-board tariffs on Chinese or Mexican imports, as he threatened. In April the president supposedly came close to pulling out of the North American Free-Trade

Agreement (NAFTA), which would have been cataclysmic for many firms. But he stepped back from the brink; the deal is instead being renegotiated. Similarly, Mr Trump's threats to withdraw from a trade agreement with South Korea now look like bravado. Talks to amend that deal, and in particular its clauses regarding cars, began on January 5th.

Other areas of trade policy have shifted, but not wrenchingly so. America has blocked judicial appointments to the World Trade Organisation's appellate body, which, though disruptive, is hardly the wholesale attack on the international trade order that some had feared. Some change is cosmetic. The White House has drawn an unusual amount of attention to trade disputes that would have been considered dull in the past.

It is not just trade policy that has been more moderate than expected. The tax cuts that Mr Trump signed into law in December were restrained compared with what he promised on the campaign trail. Their cost (in revenue lost) is estimated at around \$1.5trn over a decade, before accounting for their effect on economic growth. Mr Trump's final campaign proposals would have been more than four times as pricey, according to the Tax Policy Centre, a think-tank. Among other things, the president relented on his demand for a 15% corporate tax rate. It fell to 21% instead.

The tax cuts are still poorly timed, be-

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cause the economy does not need fiscal stimulus at the moment. Yet they should boost growth somewhat, depending on how much the Federal Reserve tightens monetary policy in response. That may depend on Jerome Powell, Mr Trump's nominee to chair the Fed, from February. (Mr Powell's nomination was an example of moderation. He is widely expected to continue the approach of Janet Yellen, the incumbent whom Mr Trump fiercely condemned while running for office.)

On regulation Mr Trump has stayed much closer to his campaign rhetoric. Government agencies have all but stopped writing new rules. The clean power plan, President Barack Obama's flagship environmental regulation, is being unwound. The Federal Communications Commission has voted to repeal net neutrality rules. The administration let Mr Obama's proposed rule on overtime pay die in court and delayed new regulations governing retirement advice. Numerous smaller rules have been postponed or weakened, too. At a minimum, deregulation has made business owners swoon.

There is still time for Trumponomics to go wrong. NAFTA renegotiation is supposed to be concluded before the Mexican electoral cycle accelerates in mid-February, but America's demands have been ill received. Legal deadlines are approaching in a disputes over steel (see page 60). And Mr Trump may also soon put tariffs on Chinese consumer electronics, as punishment for theft of American intellectual property.

But if a trade calamity can be avoided, the prospects for the economy in 2018 are good. There are few threats emanating from outside Washington. The administration may even make some badly needed infrastructure investments. Pessimists who were wrong about 2017 must be careful not to repeat the error. ■

The judiciary

Full-court press

WASHINGTON, DC

Donald Trump's judicial appointments may prove his most enduring legacy

AMERICA'S judges are supposed to be above party politics and yet are often appointed by politicians and then asked to rule on disputes that can sway elections. On January 9th federal judges in North Carolina gave the state two weeks to redraw its congressional map. In a caustic ruling written by James Wynn, an appellate judge nominated by Barack Obama, the court found that the state's current map—which let Republicans win ten of the state's 13 districts with just 53% of the total overall vote—was “motivated by invidious partisan intent”, and violated the first and 14th Amendments. North Carolina vowed to appeal, which could see the case added to two other gerrymandering suits at the Supreme Court. The head of North Carolina's Republican Party accused Mr Wynn of “waging a personal, partisan war on North Carolina Republicans.”

If Republicans get their way, Democrat-appointed judges like Mr Wynn will soon comprise a smaller share of the federal judiciary. No president has confirmed more federal appellate judges (12) in his first year than Donald Trump. He has also seen six federal district-court judges confirmed, and one Supreme Court justice, Neil Gorsuch. Another 47 nominees await confirmation; 102 more federal judgeships remain open for Mr Trump to fill. With two of the Supreme Court's liberal justices, and its one unpredictable member (Anthony Kennedy) aged 79 or older, the president may get to name another justice, cementing the Court's conservative bent.

Mr Trump's tax reform, penchant for deregulation and foreign-policy direction could all be reversed by the next president. But because federal judges serve for life, the largely young conservatives whom Mr

Trump has placed on the bench will have an impact on American life and law that long outlasts his administration.

The federal judiciary is organised into 12 regional circuits and the nine-member Supreme Court. Around 400,000 cases are filed yearly in the federal system, which has around 1,700 judges. Each of these circuits has several district courts (there are 94 in all), which hear civil and criminal federal cases, and one appellate court (there are 13: one for each circuit and the appellate court for the federal circuit), which hears appeals against decisions made by federal district courts and agencies. Because the Supreme Court hears so few cases, federal appellate courts define most contested matters of federal law.

Every president leaves his mark on the federal bench, but Mr Trump's will be larger than most, for two reasons. First, Senate Republicans confirmed fewer judges in Barack Obama's last two years (22) than in any two-year period since 1951-52. Mr Obama left office with 107 federal judgeships still vacant—including Mr Gorsuch's seat, held open because Senate Republicans refused to give Merrick Garland, Mr Obama's nominee, a hearing. This was more than twice the number George W. Bush had at his presidency's end. Second, in 2013 Senate Democrats eliminated the filibuster for lower-court nominees, which means judges can be confirmed with a simple majority vote, rather than the 60 required to break a filibuster. For many conservatives, this opportunity alone—rather than fear of letting Hillary Clinton exploit it—justified their support for Mr Trump.

He has not disappointed. The dithering and incompetence that have defined much of his tenure have been absent from his ju-

dicial-selection process. Some argue that the administration and Senate are pushing too many nominees through too quickly, but that is their prerogative: senators can slow the process if they feel steamrollered. Mr Trump has nominated orthodox conservatives whom the Republican-controlled Senate has happily confirmed.

During his campaign, Mr Trump promised that the judges he nominated would be “all picked by the Federalist Society”, America's leading organisation of conservative and libertarian lawyers. Many of his nominees have ties to the group, as do Mr Gorsuch and Don McGahn, the president's counsel. Mr McGahn told a Federalist Society gathering in November that the administration wanted to nominate “strong and smart judges...committed originalists and textualists [who] possess the fortitude to enforce the rule of law”. Mr Trump's nominees, he crowed, “all have paper trails...there is nothing unknown about them.”

That list of qualities contains subtle digs at the two types of judges conservatives want to avoid. The first, embodied by David Souter, whom George H.W. Bush appointed, is the nominee with a thin record on constitutional issues who turns liberal on the bench. John Roberts, the current chief justice, exemplifies the second type: many conservatives deride him as a squishy institutionalist who caved in to public pressure when he twice voted to uphold the Affordable Care Act.

The maturing of the conservative legal movement, which was in its infancy when Mr Bush picked Mr Souter in 1990, and the strength of its pipeline and networks, has made wild-card nominees less likely, particularly under Mr Trump, who appears happy to be guided by the “Federalist people”. That does not mean, of course, that presidents know how judges will vote on each issue for ever. But Republican judicial nominees share a legal philosophy that is sceptical of executive and federal power and inclined towards “originalism”, which interprets the constitution's meaning narrowly, as it would have been understood when it was written.

Republicans like originalists for various reasons. Social conservatives believe liberal justices invent constitutional justifications for socially progressive rulings such as those on abortion and gay marriage, while business types appreciate originalists' scepticism of government regulation. Conservative judges view originalism as an essential bulwark against the judicial and presidential usurpation of legislative powers. Liberals believe such a philosophy hinders social progress. They will have ample opportunity to test that theory: a federal judiciary stocked with originalist judges will be hostile to an ambitious federal government. That suits Republicans well, but could frustrate Democrats for decades to come. ■





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NEVER SLEEPS.

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HARMONY
THRIVES.

WHERE
TOMORROW
IS TODAY.

WHERE
CITIES ARE
BORN SMART.

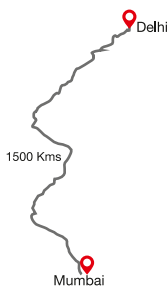
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Lobbying

A year in the swamp

WASHINGTON, DC

Swamp Inc. is not only surviving Donald Trump, it is thriving

OF THE three resounding slogans of Donald Trump's presidential campaign—the pledges to “build a wall”, “lock her up” and “drain the swamp”—none has come to fruition. To be fair, none could be enacted by executive fiat alone. A border wall would require appropriations from Congress. Hillary Clinton could be jailed only by a stubbornly independent justice system. On the business of swamp-draining, however, there is much that the executive branch could do on its own. Yet Washington remains as boggy as ever.

Lobbyists are a hardy species, capable of surviving both the lean years of gridlock and the feeding frenzies of unified government. They thrive when policy is in flux, preserving old perks and pushing for new ones. “The honest answer is that the influence industry grew almost as much in Trump's first year as it did in Obama's,” says one long-time lobbyist. Not all lobbying activity in 2017 has yet been reported—but it may well be the most profitable to date, given the flurry of activity around the passage of the tax bill in December, which was a swampy affair. The bill was crafted in secret and rushed through; Democratic senators had to receive their copies, with some amendments handwritten, from lobbying firms instead of from their Republican colleagues. Although Mr Trump had promised to close the loophole for carried-interest on private-equity investments, that one survived. The bill was plump with new goodies: alcohol excise taxes were cut by 16%, for example.

Part of the problem lies in congressional incapacity. Under a more normal administration, the White House would set a clear policy agenda and Congress would respond. Mr Trump has largely abrogated this role. Mitch McConnell, the Senate majority leader, supposedly once said that the president will “sign anything we put in front of him”. As well as managing their fractious backbenchers, Republican leaders must also juggle policy-crafting. Their ability to do so has been diminished by a long-term decline in the number of employees in agencies like the Government Accountability Office, Congressional Research Service and Congressional Budget Office, which are charged with providing unbiased information to members. Their staff numbers have fallen by 40% since 1979. Within Congress, low salaries ensure that staffers remain young and inexperienced: more than half are under 30. In the

Attention-seeking

All the president's tweets

WASHINGTON, DC

They are dispatches from the id rather than cunning manipulation

THE president's dearest supporters and bitterest opponents are united in their wish that less attention be paid to his social-media habit. Stephen Miller, a policy adviser, and Sarah Sanders, the press secretary, have tried valiant defences, but many Republicans prefer to feign ignorance. Some of Mr Trump's critics detect a more insidious motive, “a weapon to control the news cycle”, as George Lakoff, a professor emeritus at Berkeley, puts it. In this reading, the president is a puppet-master whose tweets distract from scandal and divert attention from substantive issues. These critics have it backwards: Mr Trump is actually taking cues from the media, specifically Fox News, an entertainment channel, rather than attempting to lead them.

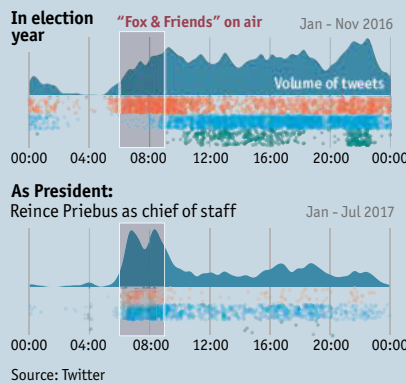
Matthew Gertz of Media Matters, a progressive watchdog, has documented nearly 60 cases in the past three months where Mr Trump appears to be tweeting in response to Fox News segments. The alarming North Korea tweet came 12 minutes after a report on the channel about Mr Kim's “nuclear button”. Michael Wolff's new book says the presi-

dent has three television screens installed in his bedroom; the *New York Times* reports that he has a “Super TiVo” device, allowing him to record cable news and watch it later; private schedules obtained by Axios show the president takes hours of “executive time”—a delightful euphemism for telly, tweeting and telephoning. The bulk of Mr Trump's tweets as president have come in the early morning when “Fox & Friends”, a fawning programme, airs (see chart).

When John Kelly became chief of staff, aides set out to control the flow of information to the president. But Mr Kelly is powerless to shield the president from his favourite channel, which runs reports on the scheming deep state and the need to fire Robert Mueller, the special counsel. The president sometimes seems to take them literally. In October Mike Pompeo, the CIA director, met at Mr Trump's suggestion a former intelligence officer and frequent Fox News guest who has advanced the theory that sensitive e-mails from the Democratic National Committee were leaked, rather than hacked by Russian operatives.

Feeling Foxy

Donald Trump's tweets, by time of day



House of Representatives, the typical legislative director, a senior post, is only 31, according to data crunched for *The Economist* by Legistorm, a congressional monitoring service. Experienced staffers are often poached by lobbying firms, where they can enjoy higher salaries and still be called on to assist their younger colleagues with the difficult task of writing law.

But even within the executive branch, over which Mr Trump has complete control, little has been done to clean house. From the start, the “beachhead teams” designed to oversee federal agencies soon

after the inauguration were full of ex-lobbyists. The senior ranks of the administration are stuffed with former lobbyists. Former denizens of Trumpland, like Corey Lewandowski, Mr Trump's former campaign manager, and Roger Stone, a former adviser, swiftly returned to lobbying. Public Citizen, a watchdog group, has identified 44 people connected to Mr Trump and Mike Pence, the vice-president, who have registered as lobbyists, generating \$42m in billings. Foreign countries seem especially keen to hire them.

Regulatory action rarely seems to go ►►

▶ against business interests. Energy firms could have no better friend than Scott Pruitt, the head of the Environmental Protection Agency, who has zealously overturned rules in their favour. All the while transparency initiatives, like the publication of White House visitor logs, have been rolled back. Mr Trump's personal conflicts of interest are hard to know given his refusal to release his tax returns. Populist governance this is not.

Presidents of all stripes have pledged to tackle influence-peddling, usually with little success. Barack Obama's attempts to halt the revolving door between public office and private gain were ineffective. Because America has a well-developed market for influence, supply-side restrictions issued by the White House are unlikely to fix matters. For Mr Trump, this need not be a hindrance: he is sure to boast that he has drained the swamp in 2020 anyway. ■

Missile defence

The other kind of leaking

There is no guaranteed defence against Mr Kim's missiles—yet

THANKS largely to Kim Jong Un (aka "Little Rocket Man"), missile defence of the American homeland is a hot topic. Next month the Trump administration is expected to publish a review of the nation's defences against ballistic-missile attack. Funding for the Missile Defence Agency (MDA) is likely to exceed \$11bn for 2018, over \$3bn more than the president's original request (assuming Congress can come up with a deal on the overall budget). An emergency request of nearly \$5bn for additional "missile defence and defeat" funding was made in November.

The intelligence agencies had assured Mr Trump when he took office that not until 2020, possibly even 2022, would Mr Kim have a reliable intercontinental ballistic missile (ICBM). That relatively comforting assessment was blown apart in July when North Korea successfully tested two missiles with the range to hit cities in the continental United States, and, in September, when it conducted an underground explosion of what appears to have been a thermonuclear device.

Since then, the priority has been to reassure Americans that they can be protected from Mr Kim—whom Mr Trump's national security adviser, H.R. McMaster, has alarmingly (and without evidence) described as "undetectable". In October, Mr Trump boasted to Sean Hannity of Fox News: "We have missiles that can knock out a missile in the air 97% of the time, and

if you send two of them, it's going to get knocked out." Most missile experts were horrified by the president's blithe confidence in the effectiveness of the only missile-defence system, known as ground-based mid-course defence (GMD), that is intended to shield the United States from a limited ballistic-missile attack. They fear Mr Trump may persuade himself that a pre-emptive attack on North Korea would be risk-free, at least for America.

As far back as the wildly over-ambitious Reagan-era strategic defence initiative ("Star Wars"), missile defence has been as much an aspiration as a policy, according to Michael Elleman, a former missile engineer now at the International Institute for Strategic Studies. Local and regional systems, such as Patriot missiles, the ship-based Aegis and THAAD (Terminal High Altitude Area Defence), have become effective. But GMD, which has to hit a much faster moving target from further away, has not progressed to the same extent.

In the wake of the September 11th 2001 attacks, the Bush administration needed a response to the growing threat of ballistic-missile technology proliferating to "rogue" regimes, such as Iran, Iraq and North Korea. Consequently, the GMD was quickly cobbled together with a mixture of old and new technology and hurriedly commissioned in 2004. Today's GMD and its associated systems span 15 time zones, comprise seven different types of sensors (on land, at sea and in space) and 44 interceptors, each costing \$75m, deployed at military bases in Alaska and California. GMD is designed to track, intercept and destroy an incoming nuclear warhead outside the earth's atmosphere through the force of the collision alone.

Yet even now, after \$40bn has been invested in it, GMD still has the hallmarks of an immature system. Tom Karako, a missile-defence analyst at the Centre for Strategic and International Studies, concedes that many of the improvements that were planned and expected have not yet come to pass. GMD's interceptors have been test-

ed 18 times, succeeding on ten of them. In May last year, a successful intercept was carried out for the first time against an intercontinental ballistic missile of the kind Mr Kim would need to reach the west coast. But three out of four previous tests had ended in failure.

Mr Trump's 97%-success-rate claim appears to be based on a misunderstanding of the MDA's arithmetic. The actual "single shot probability of kill" of GMD interceptors is 56%. The MDA has taken 60% as its benchmark and calculated that if four interceptors were launched at one warhead, the kill probability would rise to 97%. However, James Acton, who works on nuclear policy at the Carnegie Endowment for International Peace, questions this. "If one interceptor fails because of a design or manufacturing flaw," he points out, "the others may fail too because they have the same problem."

Moreover, test successes have been under ideal conditions. With just a few minutes' reaction time and faced with several incoming missiles, each equipped with multiple decoys, some "leakage" is almost inevitable, thinks Mr Elleman.

What should the missile-defence review recommend? Mr Acton thinks it may go for a big increase in the number of interceptors based in Alaska—perhaps up to 100. But he questions whether that would really improve capability, because of the system's inherent flaws.

Another possibility is speeding up the deployment of the Multi-Object Kill Vehicle, which would give each interceptor missile multiple shots at incoming warheads and is due to be ready in 2025. A more radical option would be to develop solid-state lasers small enough to be carried by drones, which would fly close to an enemy country and kill missiles in their vulnerable boost phase. That may be a decade away. In the meantime, someone should explain to Mr Trump that, at least for the foreseeable future, there is no certain defence of the homeland against even a fairly limited ballistic-missile attack. ■



Diagnosing from a distance

What's on the president's mind

The Trump presidency is nowhere near 25th-Amendment territory

ANY political system that puts great power in the hands of a single person must also reckon with the problem that creates. It is sensible to make provision to remove the king or president from office if he becomes incapacitated. Yet the existence of such a provision also risks inviting a coup. The framers of the constitution were acutely aware of this, and decided to fudge it. Meanwhile, in Britain, George III's bouts of mania invited questions about who is really in charge when the monarch is on the throne but out of his mind. Speculation about President Donald Trump's mental state, ever-present since before his election, increased when he tweeted that his nuclear button was "much bigger" than Kim Jong-Un's. Being Mr Trump, he followed up with his own self-analysis, declaring that he is a "very stable genius".

Most psychiatrists are wary about pronouncing on the mental state of people they have not examined, but that has not stopped a few from having a go at Mr Trump. Bandy Lee, a psychiatrist at Yale and editor of a book called "The Dangerous Case of Donald Trump", briefed members of Congress before Christmas. More than 50 Democrats have signed up to a bill to compel the 45th president to submit to an examination of his fitness for office.

Speculation about what is on the president's mind begins with assertions that he might be in the early stages of dementia. Those who argue this begin with the observation that the president's father had Alzheimer's disease. That is not, by itself, strong evidence. There is a version of Alzheimer's that is almost guaranteed to be passed on from parent to child, but it tends to show up in people in their 40s and 50s. The other strains are less strongly heritable, meaning family history is a useful part of a diagnosis, but not more than that.

Then there are observations based on the president's use of language. When transcribed, Mr Trump's extempore speeches are unusually jumbled. But that might always have been the case: it is hard to be certain because his voluminous published writings were ghostwritten by someone else. Becoming less lucid when speaking is a fairly normal part of ageing. Researchers report that tip-of-the-tongue moments, when a speaker struggles to find the word he is looking for, become more frequent with each passing decade.

In theory it would be possible to take the president's speech patterns, run them



through software and then compare the change over time with what might be expected as part of normal ageing. (Doctors have been through George III's correspondence and found that he had periods of extreme logorrhoea when he was unwell, writing sentences consisting of 400 words with only eight verbs.) There are two problems with this. First, there is no established baseline for what normal ageing looks like. Second, Mr Trump's changes of career, from property developer to TV star to presidential candidate, would naturally lead to a change in how he uses words. A proper test for early-stage dementia would require several different types of brain scan, reasoning, memory and genetic tests. In the view of a leading researcher who runs an institute dedicated to early diagnosis and treatment of dementia, it would be "highly irresponsible" to diagnose anyone on language use alone.

If the evidence for dementia is thin, what about that other frequent diagnosis—that the president has narcissistic personality disorder (NPD)? The checklist for this syndrome in the fourth edition of the Diagnostic and Statistical Manual (DSM) includes: "has a grandiose sense of self-importance", "is preoccupied by fantasies of unlimited success", "believes that he or she is special and unique", "requires excessive admiration" and has "unreasonable expectations of especially favourable treatment or automatic compliance with his or her expectations". That might sound familiar. "I alone can fix it," Mr Trump declared at his nominating convention in 2016. John

Oldham of Baylor College of Medicine, who presided over the compilation of the chapters in DSM-5 on personality disorders, says that the president's behaviour (especially his exaggerated need for admiration and praise) "reflects things we see in people with NPD".

Yet Dr Oldham also cautions that a lot of successful people have a touch of narcissism. What he calls "healthy narcissism" tips over into disorder territory when it impedes a person's ability to form normal bonds with other people. By way of example, Dr Oldham mentions a patient whose idea of meaningful interaction with family members was to give extravagant gifts. This man sought help after his son attempted to commit suicide and his wife threatened to leave him. Unlike asthma, people who have NPD do not think they have it, and there are no drugs recommended for treatment. Unlike dementia, it need not impair memory or basic reasoning.

Whatever Mr Trump is thinking about, he is a long way from 25th-Amendment territory. This is the provision of the constitution added in 1967, after Woodrow Wilson's strokes, Dwight Eisenhower's heart attacks and John F. Kennedy's assassination. Clause three of the amendment covers what happens when the president knows he will be unconscious; it has been used three times, once when Ronald Reagan underwent medical procedures and twice when George W. Bush did so.

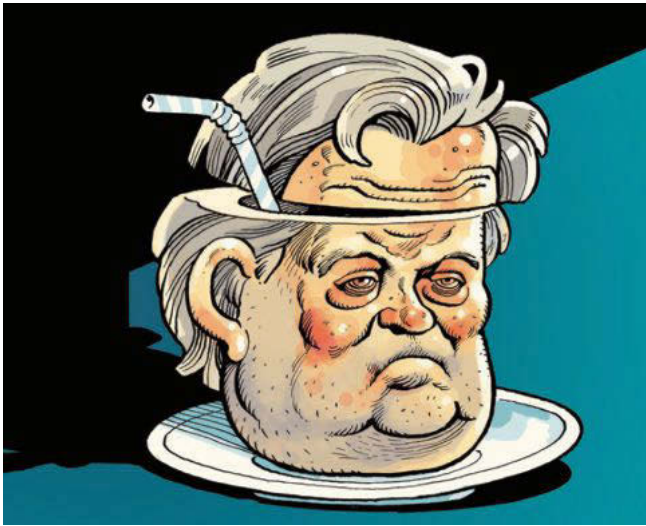
Clause four is designed to deal with cases where the president is so out-of-it that he is unable to hand over authority. Again, clause four's authors were not specific about what might legitimately trigger it, and they worried about coups. But clause four seems designed for a situation where the president is either rendered unconscious, or is wandering around the White House unable to recognise his own reflection. Even then, to make the 25th Amendment stick still requires super-majorities in both houses of Congress.

The rush to diagnose the president might be taken as evidence of Trump-dereangement syndrome: the president's critics find him so maddening that he drives them to despair. There is also a mild irony here, of a kind that partisan thinking often throws up. Left-leaning advocates for more humane treatment of the mentally ill tend to argue that mental illness is a normal part of human experience, and that a touch of one disorder or other ought not to disqualify someone from doing an important job (depressed pilots and epileptic lorry-drivers aside). Yet left-leaning critics of the president are, in this case, arguing that he should be declared incapable.

There are plenty of reasons to think that Mr Trump is ill-suited to the presidency. These have become more apparent over the past year, but all were there before his election. Madness has little to do with it. ■

Lexington | Banished Bannon

Stephen Bannon had a chance to make American politics better. He made it much worse



AFAN of military history, Stephen Bannon may know of Nikephoros, a Byzantine emperor who was vanquished and decapitated by a Bulgar khan who, for extra humiliation, then fashioned his skull into a drinking cup. President Donald Trump's erstwhile muse might even feel he has experienced something similar, at the end of a week in which he has been denounced and excommunicated by the president, jettisoned by his conservative benefactor, Rebekah Mercer, and, on January 9th, shunted from his position at the helm of Breitbart News, a hard-right website which gained huge exposure from his former success. The same day, in a jaw-dropping televised meeting with congressional leaders, Mr Trump airily suggested he might support a package of liberal immigration reforms. This was the modern-day equivalent of supping from Mr Bannon's gilded skull.

The spur to his demise was Mr Bannon's lead role in briefing Michael Wolff, author of the caustic takedown of the Trump administration, "Fire and Fury", that has titillated Washington and enraged the president. Mr Bannon offended especially by describing a meeting between Russian operatives and members of the Trump campaign team, including the president's eldest son and son-in-law, as "treasonous", "unpatriotic" and "bad shit". The Trump team had previously dismissed it as a non-event. Yet Mr Bannon's astonishing rise to, arguably, the second-most-powerful position in America, and precipitous fall need to be understood more broadly, especially by the Republican Party.

He had terrible flaws and American politics is, for now at least, well-rid of him. Yet Mr Bannon was largely motivated by his concern for an issue of existential importance to Republicans: a widening gulf between their mainstream leaders and the disaffected white working-class supporters who represent a big chunk of their support. Given power, on the coat-tails of a victory for Mr Trump that he did much to bring about, Mr Bannon had an opportunity to narrow that gap, and thereby transform America's political landscape. He blew it spectacularly, for many reasons, including hubris, the intemperance of his character, the nastiness of his tactics and the incoherence of his ideas. The gulf persists. And if the Republicans learn nothing from Mr Bannon's missed opportunity, they will suffer for it.

Unlike Mr Trump, Mr Bannon is intellectually curious, ob-

essed with history and well-read. Like his former patron, he is a successful man of rough-edged stock, who spent years trespassing in elite circles: in Mr Trump's case, Manhattan society, in Mr Bannon's, Goldman Sachs and Hollywood. That perhaps helps explain their main point of convergence—a resentful conviction, which Mr Bannon suggests came to him after a spell in Asia, that working-class Americans have been screwed by immigration, globalisation and adventurist foreign policies perpetuated by both parties, at the bidding of the fat-cat donors who have benefited from them the most.

There is plainly some truth to that; economic disruption and wage stagnation, in part fuelled by globalisation, are the central problem of rich democracies. Lamentably, none of Mr Trump's and Mr Bannon's main solutions, an "America First" mix of border controls, protectionism and isolationism, provide a convincing answer to it. Yet Mr Bannon, unlike Mr Trump, who is probably more fussed about the stockmarket than working-class Americans, has at times broached more imaginative fixes.

For example, he has espoused better union representation for workers, higher taxes on the rich and a crackdown on corporate tax-dodging. He also has a well-judged sense that if the Republicans, many of whom would consider such steps heretical, could only find answers to working-class economic grievances they might rule, in a culturally conservative country, almost untrammelled. That is a sort of imagination and ambition the American right, held captive by its donors, badly needs.

The trouble is, Mr Bannon's record in and since leaving government has been so dismal and self-defeating as to discredit his views and even his values. Many of his policy proposals, especially those most challenging to conservatives, would require bipartisan support. Yet he dedicated himself to offending the left at all costs—thus, for example, his disastrous early attempt at a Muslim travel ban, timed, on a Friday evening, to cause maximum distress to unwitting travellers. And so, too, in his support for Mr Trump's baffling equivocations on the white supremacist violence that rocked Charlottesville last year.

"Race-baiting" is still race-baiting

Mr Bannon justified his divisive methods in Machiavellian terms—arguing that outraged liberals would lurch ever further to the unelectable left. Yet the Democrats, riding a wave of revulsion with Mr Trump's and Mr Bannon's chauvinism, have instead won most recent elections—including in Alabama's Senate race, where the self-consciously intellectual Mr Bannon disgraced himself by stumping for a lascivious philistine.

Mr Bannon's incessant anti-establishment scheming, including manoeuvres against Paul Ryan and Mitch McConnell, has meanwhile prevented him interesting almost any mainstream Republican in his novel ideas, except sometimes the president, who now says he is insane. Republican leaders instead executed a tax reform so loaded for the rich that it is unclear whether they will even campaign on it ahead of the mid-term elections.

Thus has Mr Bannon, following and enabling Mr Trump, helped infect his party with a cultural populism in which racism and authoritarianism thrive, and to which the president, despite his conciliatory words on immigration, will probably return. At the same time, he has done nothing to bring about an urgently required reappraisal of the Republicans' stale economic agenda. Indeed, by discrediting radicalism with his performance, he has probably made it less likely. He will not be missed. ■

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Immigration

A fearful welcome

LOS ANGELES AND SAN SALVADOR

The United States wants to expel up to 200,000 Salvadoreans. Both they, and their home country, will struggle to adjust

LUCIEN MARISON LANDAVERDE is feeling glum. Her father left El Salvador to “search for a better life” in the United States. He now lives in Virginia with three daughters who were born in the country and works as a cook. Ms Landaverde remained in San Salvador, El Salvador’s capital, putting in long hours at an ice-cream shop to earn \$100 a month. Every month her father sends her double that amount.

On January 8th he called to say that he would soon return to El Salvador. That morning the United States’ Department of Homeland Security had announced that it would end temporary protected status (TPS) for nearly 200,000 Salvadoreans who got permission to live and work in the country after a pair of earthquakes struck El Salvador in 2001. Ms Landaverde’s father was among them.

They have until September 2019 to find another legal way to remain in the United States. Those who do not face deportation. Ms Landaverde has mixed feelings about her father’s return. She would like to see more of him, but “it’s going to be very difficult,” she says.

The Salvadoreans are not alone. Smaller numbers of Hondurans and Nicaraguans were granted TPS after Hurricane Mitch wreaked havoc in 1998 (see chart). Citizens of all three Central American

countries had their status renewed every 18 months for nearly two decades. Donald Trump, who promised to get tough on immigrants when he was campaigning for president, has found TPS a convenient way to keep that pledge. His administration has stripped Nicaraguans of their status, as well as Haitians who were stranded after an earthquake in 2010. Hondurans may be next. (Citizens of other disaster-struck countries, such as Rwanda and Liberia, were sent home more quickly.)

El Salvador is in shock. If all the Salva-

doreans in the TPS programme were to come back, which is highly unlikely, the country’s population would swell by 3%. It is in no state to receive and reintegrate them. “It’s going to make a dent,” says Mari Aponte, a former American ambassador to El Salvador.

That will be apparent to returning Salvadoreans as soon as they arrive at the country’s main repatriation centre in La Chacra, a gang-ridden suburb of San Salvador. Some 200 orange plastic chairs are arranged in rows in the waiting room. A light-studded Christmas tree sags in the corner. Down the hall is a playpen for deported children.

Pamela Chacón Rodríguez, who works at the centre, explains that El Salvador has an agreement with the United States that limits the number of deportation flights to eight a week, each carrying no more than 135 people. Under their agreement, the United States cannot send home more than 56,000 Salvadoreans a year. But even that, combined with people expelled from Mexico, would stretch the centre’s resources, Ms Rodríguez says. The United States has sent home 39,000 Salvadoreans in the past two years.

Shockwaves would ripple out from La Chacra. Remittances from Salvadoreans living in the United States account for a colossal 17% of GDP; those from people with TPS send over an equivalent of 2% of GDP. Total remittances from the United States jumped by more than 10% in the first 11 months of 2017, possibly because many Salvadoreans feared that their dollar-earning days might be numbered under Mr Trump. Any decline caused by deportation will reduce consumption and increase poverty, says Carmen Aida Lazo of ESEN ▶▶

Homeland insecurity

United States, individuals with temporary protected status, by country of citizenship October 2017

El Salvador	195,000
Honduras	57,000
Haiti	46,000
Nepal	8,950
Syria	5,800
Nicaragua	2,550
Sudan	1,040
Yemen	1,000
Somalia	250
South Sudan	70

Source: Congressional Research Service

► University in San Salvador.

Nor can the labour market easily absorb tens of thousands of returnees. Although the official unemployment rate is just 7%, more than 40% of workers are underemployed and two-thirds are in the informal sector. The economy creates 11,000 jobs a year for the 60,000 people who enter the workforce, reckons Fusades, a think-tank. Employers will not welcome the typical TPS holder, who is 40-something and used to much higher wages than they can pay for menial work.

An even bigger problem will be re-adjusting to life in El Salvador, says Hugo Martínez, the foreign-affairs minister. The average Salvadorean with TPS has spent 21 years in the United States. Nine in ten have jobs and a third are homeowners. Their families include 192,000 children born in the United States. Most Salvadoreans who emigrate have rural roots. When they return, many will face an unpalatable choice between moving to the countryside, where their relatives are, or staying in the cities to seek employment.

El Salvador's horrific levels of crime will be another shock. Although the murder rate dropped slightly in 2016, the country remains one of the world's most violent places. San Salvador's murder rate in 2016 was 30% higher than that of any other city outside Venezuela. Returning migrants are targets for extortion by gangs such as MS-13, whose American branch Mr Trump has denounced as "vile". The gangsters see people with American connections as rich and ripe for robbing. Many deportees will look for ways to get back to the United States, joining the 250 Salvadoreans who leave the country every day.

The point of no returning

Just how many the United States will deport is unclear. Roberto Lorenzana, chief of staff of Salvador Sánchez Cerén, El Salvador's president, estimates that around half of the 195,000 Salvadorean TPS holders will be eligible to apply for permanent residence. Many will do almost anything to avoid returning to their birthplace, including moving to Canada, which has an "express-entry" process for skilled workers. César Ríos of the Salvadorean Migrant Institute thinks no more than 15% of TPS holders will return to El Salvador and that virtually none will do so voluntarily. Many will stay in the United States illegally, even if they lose their jobs and homes.

The United States government knows where to find them, notes Tom Jawetz of the Centre for American Progress, a leftist think-tank. They are thus easier to deport than the vast majority of the 11m migrants who are in the United States illegally.

Many Salvadoreans are praying that the United States Congress will intervene to stop expulsions. Four proposed bills would offer permanent residency to TPS

holders from El Salvador, Haiti, Honduras and Nicaragua. Some of those have bipartisan support.

Mr Trump startled Americans (and Salvadoreans) on January 9th when, in a televised meeting with Republican and Democratic lawmakers, he suggested that he would support a comprehensive immigration reform that would allow many illegal immigrants to stay. Knowing his anti-immigrant political base would not like the idea, he promised to "take the heat" for an ambitious reform. No one knows whether to take him seriously. The Salvadorean government will lobby hard for relief of any sort from Congress. But Salvadoreans with temporary protection have been around long enough to know that the United States' dysfunctional legislature is unlikely to save them. ■

Pope Francis in Chile

In search of lost sheep

SANTIAGO

Can a papal visit lure Chileans back to Catholicism?

WHEN a visit by Pope Francis to Chile was announced last June, the country's devout Catholics no doubt hoped it would help bring lapsed ones back to the fold. But as Chileans await his arrival on January 15th for a three-day visit, followed by two days in Peru, the preparations have highlighted the increasing irrelevance of the Catholic church to many Chileans. Half of Chileans regard the visit as of little importance and a large majority disapprove of the government contributing 7bn pesos (\$11m) towards security and logistics. "The money should be spent on the poor, above all on health," fumes Sonia Meza, an evangelical who works as a maid, from La

Florida, a suburb of Santiago.

The lack of enthusiasm contrasts with the ecstatic reception of John Paul II in 1987, during the 17-year dictatorship of Augusto Pinochet. Then, more than three-quarters of Chileans were Catholic. The church was respected for its staunch defence of human rights and the visit was used to rally opposition to Pinochet. A hymn written by locals for the occasion, "Messenger of life, pilgrim of peace", followed John Paul wherever he went.

Over the three intervening decades, trust in the Catholic church has declined dramatically, according to surveys by Latinobarómetro, a pollster (see chart). Less than half of Chileans now call themselves Catholics, a figure that will shock many. An annual survey by the Catholic University's Centre for Public Policy, which uses a slightly different methodology, comes up with a figure of close to 60% and shows Catholicism falling more slowly.

The Catholic church has been losing adherents across Latin America. But in other countries people are shifting mainly to evangelical churches. The same trend is visible among poorer and less educated Chileans. What marks Chile out is the behaviour of its richer and better-educated youngsters. Elsewhere in the region, they are staying with Catholicism; in Chile they are abandoning faith altogether. "There is an advanced and fairly rapid process of secularisation" in Chile, says Ignacio Irazábal of the Centre for Public Policy.

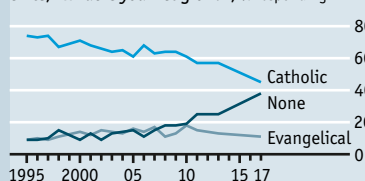
In part this is because Chile is the region's richest country, and its most open economy. That has facilitated the spread of social trends from outside Latin America. It is also because of revelations about the sexual abuse of children by priests. The Latinobarómetro poll suggests that criminal cases filed against Fernando Karadima, the priest in charge of El Bosque, an upmarket parish in Santiago, triggered an exodus from the church. They came to public notice in 2010. Father Karadima had close connections to Chile's elite, raising suspicions that powerful patrons had allowed him to act with impunity for many years. Francis's appointment of Juan Barros, an associate of the disgraced priest, as bishop of the diocese of Osorno was seen by many Chileans as a disastrous mistake.

Trust in the Catholic church is now lower in Chile than in any other Latin American country, says Marta Lagos of Latinobarómetro. And the share of Chileans who say they have no religious belief is similar to that in Uruguay, which has a longer history of secularisation.

The church is also increasingly out of step with Chileans on matters of sexual morality. It campaigned against divorce, which became legal in 2004, and against last year's relaxation of the strict abortion law. Church leaders seem more concerned by such matters than by injustice and in- ►►

The flying nones

Chile, "What is your religion?," % responding



"How much confidence do you have in the church?" % responding "a lot" or "some"



Source: Latinobarómetro



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equality, says Fernando Montes, a Jesuit priest and former rector of Alberto Hurtado University in Santiago.

Some Catholics hope that young people will find Francis's environmentalism, modest lifestyle and open manner attractive. His agenda emphasises matters of social justice. It includes a visit to a women's prison, a meeting with a group of Mapuche, Chile's most numerous indigenous people, and a celebration of immigrants.

No one doubts that hundreds of thousands will flock to see him. Three giant masses are planned, in Santiago, Temuco in the south and Iquique in the north. Hotels in Temuco expect hordes of Argentines to cross the border to see the first Argentine pope; Peruvians will swell the congregation in Iquique. Chileans who stay at home will be able to watch the pope's progress around the clock. That does not mean they will follow him back to church. ■

Legal weed

StatCannabis

OTTAWA

Government accounts start to measure the cannabis economy

IF AN agency of your government asked whether you had recently smoked a joint and how much you paid for it, would you tell it? Canada's statistics agency, informally known as StatCan, is about to find out what that country's citizens would do. On January 23rd it will invite Canadians to disclose their cannabis habits anonymously through an app. Its nosiness is entirely professional. Canada's government, led by Justin Trudeau, plans to legalise the recreational use of cannabis by July 1st. StatCan needs reliable data in order to incorporate the newly respectable consumer-goods sector into national accounts.

Ever since Mr Trudeau said during the election campaign in 2015 that a Liberal government would legalise marijuana, discussion has focused on who would be authorised to sell it and what level of government would get the money from cannabis taxes. Government departments in charge of health, tax, security and others are changing procedures and reassigning bureaucrats to prepare for legalisation.

StatCan has an especially tricky job. It has to estimate the contribution to the economy made by the production, distribution and sale of cannabis. To do that it must know what the cannabis economy looked like when lighting up was a crime. The last time Canada dealt with anything like this was in the 1920s, when prohibition ended and the Dominion Bureau of Statistics kept the national accounts.

"We can't as national accountants just put in a number post-legalisation," says Jim Tebrake, the StatCan official in charge of accounting for cannabis. That would make it look like the economy had got a sudden boost from activity that was already going on illicitly. To avoid that, the agency needs to publish data going back to 1961, the base year for the accounts. It will incorporate the data into the official figures once it is confident they are reliable. While Uruguay and several American states, including California, have legalised cannabis, Canada's statisticians are using neither country as a model. Once Canadians can get legally bombed, measuring the worth of indulgence will get easier.

Just hunting for past data can be risky, as a researcher in Parliament's budget office discovered. The legislature's technology unit spotted that he was looking at weedy websites and amassing files of fragrant data and shut down his computer account. He had to persuade the in-house detectives that his work was legitimate.

Production is the most difficult part of the cannabis value chain to measure. "The producers are harder to find than the customers," says Mr Tebrake. That is mainly because, unless they grow the stuff for the legal medical-marijuana market, they are mainly career criminals. In the United States, undercover agents sometimes collect data on production. Canada relies on information from police and border officials on seizures of cannabis. But those data depend on whether the traffickers or the police get lucky in a given year.

Health surveys by StatCan and other agencies are one way to measure consumption, but people do not always tell the truth about such habits. To arrive at a dollar value for the market, statisticians need information about price, too. StatCan, along with other agencies, has turned to priceofweed.com, where users anonymously post the amount, price and location of their purchases. The sample is far

from perfect. The data come from just one source, and people who post on priceofweed.com may not be representative. The website lists just the 15 most recent buys for each location.

To get around that problem, StatCan looked at information gleaned by Dark Crawler, a piece of software that can roam the web in search of priceofweed's past data. To go further back in time, it is gathering data collected by academics, including Luca Giommoni, an expert in illicit markets from Cardiff University in Britain, and David Décarry-Héty of the University of Montreal. StatCan's crowdsourcing app will supplement rather than replace the priceofweed information.

On the day StatCan releases the app, it will publish its first estimates of the cannabis economy dating back to 1961 on a new cannabis hub. It will have a space for anyone to suggest more accurate data. If people think the price is too low, they will be able to suggest tweaks, which would raise the value of the cannabis economy. People on the street have a lot of information, says Mr Tebrake. (If they can remember it.)

Parliament's budget office made a first stab at estimating the size of the market: it guessed that in 2018 Canadians would spend C\$4.2bn-6.2bn (\$3.4bn-5bn) on cannabis, or about 0.2% of GDP. That is a little less than they spend on beer. Before incorporating its estimates into national accounts, StatCan has to figure out how much existing activity, such as electricity used by illicit "grow-ops", is being used in the cannabis economy.

After legalisation, StatCan plans to ask 10,000 households every three months how their behaviour has changed. "We see it almost as our statistical duty to try to develop a data set to measure this event," says Mr Tebrake. The agency's work might help other countries contemplating legalisation of black markets. The more smokers distort their perceptions of reality, the less statisticians can afford to do so. ■





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South Africa

Failed by the state

JOHANNESBURG

How 143 mentally ill South Africans were sent to their deaths

“MY DAUGHTER was the first to die,” says Maria Phehla, pulling her thin yellow jersey tight, as if to contain the grief consuming her birdlike frame. “It was a painful death.”

It was also an untimely and needless one. Ms Phehla’s daughter, Deborah, was 46 years old when she died just three days after South Africa’s health authorities moved her from a specialised mental-health hospital to an unlicensed charity. Deborah, who was mentally impaired, “died alone, locked up in an outbuilding [when] she choked on her own blood,” says Ms Phehla (pictured above). An autopsy found that her stomach contained two lumps of hard plastic, each the size of a fist, and balls of brown paper. “She was starving,” says Ms Phehla. “She ate whatever was in the room.”

Deborah’s death may have been the first, but it was far from the last in what lawyers are calling South Africa’s worst human-rights abuse since the end of apartheid. Over the course of about nine months in 2016 and 2017 at least 142 other mentally ill people—or more than one in every ten patients caught up in the tragedy—died of thirst, hunger or other sorts of neglect. All were from a group of about 1,200 patients who had been transferred out of Life Esidimeni, a professionally managed and privately owned institution that was inexplicably closed down by the government. Many were tied up, bundled

onto the backs of pickup trucks and sent to supposedly non-profit care homes, where they died at a rate that would have rivalled even Stalin’s gulags. In one, the misnamed Precious Angels home, 23 out of 58 patients died in less than a year under the care of a woman whose only qualification was a certificate in teaching toddlers.

South Africa is one of the continent’s richest and most advanced countries. But the mental-health scandal illustrates the government’s deepest flaw. Parts of the state have been so hollowed out by cronyism and corruption under the presidency of Jacob Zuma that they fail woefully to look after its most vulnerable people. The story of Life Esidimeni hints at the scale of the challenge that will face Cyril Ramaphosa, the new reformist head of the ruling African National Congress (ANC) and the favourite to be South Africa’s next president after elections in 2019.

Following orders

Details of the scandal have emerged through legal proceedings that have been broadcast live. Tragically, these were deaths foretold. When word first emerged of the plan to move patients to the care homes, doctors, patient advocacy groups and family members all pleaded with the government to halt it.

Some went to court to stop it, withdrawing their action only when the government agreed that patients would not be

moved without the families’ consent or to facilities that were not as good as Life Esidimeni. Yet, just a few months later, the government broke its promise, moving patients so quickly and shambolically that many were sent without medicines or medical records. So chaotic was the move that the authorities lost track of many of the patients: 59 are still missing, and nine of the dead have not been identified.

The transfer of patients was ostensibly aimed at saving money. But an investigation by the health ombudsman, a public watchdog, concluded that it would probably drive up costs. Ideological hostility to for-profit corporations (such as Life Esidimeni) may have played a role. But it cannot explain why patients were handed over to charities that were so plainly unsuitable.

The tragedy is far from unique. “Although you won’t find anything else on this scale, we hear reports on a daily basis of mini-Esidimeni scandals around the country,” says Mark Heywood, one of the founders of Section 27, an advocacy group that went to court to try to stop patients being moved. Jack Bloom, a shadow minister of health in Gauteng province for the opposition Democratic Alliance, points to other crises, such as one in KwaZulu Natal, the second-most-populous province, where hundreds of cancer patients have died because radiotherapy machines are not working and hospitals are not staffed.

Such cases highlight a wider failure in the health service because of “corruption, a breakdown of accountability and a culture of impunity [within government]”, says Mr Heywood. There was ample evidence of all this at the hearings into Life Esidimeni, where a string of senior officials have blamed others for the tragedy. Take, for example, Makgabo Manamela, the province’s director of mental health. A report by the health ombudsman found that ►►

▶ she played a leading role in moving patients and put them at risk by illegally certifying the facilities they were moved to when they were plainly unsuitable. Yet, under cross examination, Ms Manamela insisted that she should not be blamed. “I was following the instructions of my superiors,” she said. “It was not the plan that people would pass on [die].”

Her boss, Tiego Selebano, testified a few days later that he was not to blame either, since he too had been obeying orders and had been under “pressure” from the then provincial health minister, Qedani Mahlangu, to move the patients. Ms Mahlangu, meanwhile, has yet to offer an excuse. Her lawyer told the legal proceedings in November that she was too busy to testify before late January because she was studying financial markets and wealth manage-

ment at a British university.

None of the officials involved in the tragedy has been fired (though several have been suspended and face disciplinary hearings), nor have any politicians other than Ms Mahlangu resigned. Lawyers say that there seems to be enough evidence for prosecutors to bring criminal charges against officials or the managers of care homes. But few expect this to happen, since the National Prosecuting Authority has become politicised under the presidency of Mr Zuma, who faces 783 charges of fraud and corruption.

Many of those who lost loved ones say they do not want retribution, but merely the truth. “They told me lies,” says Ms Phehla, as she struggles to understand how and why her daughter died. “Even now I want answers.” ■

The Gambia's spooks

Out of the shadows

BANJUL

The Gambia's once-ruthless intelligence agency is opening up

DEEP inside the headquarters of the National Intelligence Agency of the Gambia is a dark and airless dungeon barely big enough for one person. Infested by mosquitoes and reeking of urine, the notorious *bambadinka* (crocodile hole) was dreaded by opponents of Yahya Jammeh, the Gambia's president from 1996 to 2017. Mr Jammeh used the agency as his own secret police. The country's spooks developed a reputation for kidnapping and torturing dissidents, often in the *bambadinka*.

After losing an election in December 2016, Mr Jammeh tried to hold on to power, but was pushed out a month later by the country's neighbours. (He now lives in Equatorial Guinea.) Freed from his malign influence, the intelligence agency is trying to repair its image. For a start, it has renamed itself the State Intelligence Service. Its most notorious thugs have been arrested, some spooks have been sacked and the rest are getting human-rights training.

Entering the intelligence agency's headquarters is still an unnerving experience. Unlike other government buildings, there is no sign outside, just guards. But its site is also a reminder of the change that has swept the country: it is next to the high court, where nine former officials, including a former director-general, are on trial for allegedly beating an opposition leader to death.

Adama Barrow, the president, defeated Mr Jammeh in 2016 with promises of wide-ranging reforms, including a pledge to make the security services more accountable to the public. Under its new head, Ousman Sowe, the intelligence service is opening up. Late last year Mr Sowe, a career civil servant, went on a nationwide tour, meeting mayors, religious figures and village chiefs, and explaining that his job was to protect rather than terrorise them. Last month Mr Sowe granted this newspaper his first sit-down interview.

“We are still the secret service and we will still have our shadows,” says Mr Sowe. “But we also want to be an open, public institution that commands the confidence of the people.” He vows that people will not be mistreated or tortured by the agency—it has even introduced the hashtag #nomore-excesses on Twitter. “We want the public to come to us, not run away,” says Mr Sowe, who studied conflict resolution in the Department of Peace Studies at Bradford University in Britain. He says he believes in the subtle art of persuasion. ▶▶

War and wildlife

Conflict's other casualties

When humans fight, animals suffer too

HUMANS bear the brunt of war. But other creatures get caught in the crossfire. During Mozambique's bloody civil war from 1977 to 1992, giraffe and elephant herds in the Gorongosa national park shrank by more than 90%. Between 1983 and 1995, while the Lord's Resistance Army terrorised Uganda, topi and roan, two species of antelope, were wiped out completely in the country's Pian Upe reserve.

Sometimes, however, fighting can help conservation. Elephant numbers rebounded when war-torn Rhodesia (now Zimbabwe) became too perilous for poachers in the 1970s. A survey in 2016 identified 35 cases of this “refuge effect” around the world. For some radical environmentalists, the notion that culling humans may be good for animals makes intuitive sense. Yet it is wrong.

Rob Pringle and Joshua Daskin, ecologists at Princeton and Yale Universities, studied 253 populations of large herbivores in protected areas across Africa from 1946 to 2010. More than 70% of African parks were affected by war during this period. Like poachers, researchers steer clear of war zones. So Messrs Pringle and Daskin had to ferret out population estimates from sources beyond the usual academic papers, including faded reports from colonial times.

Their work, published this week in *Nature*, a scientific journal, confirms that wars do wildlife more harm than good. Not only do they expose animals to bombs and landmines, they increase the demand for ivory and bushmeat, which are used to finance and feed armies.

During armed conflicts, local norms and institutions that help protect animals also often break down.

Even one year of war in two otherwise peaceful decades may cause populations to decline. The two researchers also found that the damage depends on how frequently fighting flares up, not how intense it is. This suggests that wildlife suffers chiefly as a result of conflicts' indirect effects on society rather than their direct toll on the savannah.

This grim conclusion comes with one consolation. Total exterminations such as Pian Upe's are vanishingly rare. And when hostilities cease and people's lives return to normal, so do those of other mammals. In Gorongosa, where Mr Pringle and Mr Daskin conduct their own fieldwork, the pachyderms are back to 80% of their pre-war numbers.



Pachyderms for peace

▶ The Gambia and its intelligence service appear to be moving in the right direction, but may have some way to go. Mr Sowe's own career began with a stint as an analyst for the intelligence agency during the Jammeh years. He claims never to have witnessed anything untoward. Human-rights groups may find that hard to swallow. They also warn that real change will require more than just good public relations. "To

be effective, security-sector reform needs to be part of a broader political process that includes independent outside oversight, and accountability for abusive and criminal conduct," says Reed Brody of Human Rights Watch, a New York-based monitor.

The *bambadinka*, meanwhile, is not being used. Even so, Mr Sowe is not going to break entirely with tradition and put up a sign outside the agency's headquarters. ■

European governments kept quiet for nearly a week after the first signs of unrest. When Federica Mogherini, the European Union's foreign-policy chief, finally broke her silence, it was only to call for restraint. Emmanuel Macron, France's president, criticised America and its Middle Eastern allies for loudly supporting the protesters.

The EU has a larger concern: the fate of the nuclear deal between Iran and six world powers. After years of painstaking diplomacy, the agreement, signed in 2015, imposed limits on Iran's nuclear programme in exchange for relief from sanctions. Iran is largely keeping up its end of the bargain, says the International Atomic Energy Agency (IAEA), which inspects its nuclear facilities. In October Mr Trump nonetheless refused to certify its compliance, as he must do every three months. As *The Economist* went to press, he faced another deadline.

Last time Mr Trump stopped short of reinstating American sanctions, which could prompt Iran to withdraw from the deal. By mid-January he must again decide whether to do so. European diplomats worry that the protests will give him a pretext. The head of Iran's nuclear agency said he might then stop co-operating with the IAEA. But Iran has an interest in preserving the deal and keeping the other signatories on board. Unlike America, the EU has completely lifted economic sanctions. If Iran kicks out nuclear inspectors, those too could be reimposed.

European countries could assuage Mr Trump by working to counter Iran's meddling in Syria, Iraq and elsewhere. Congress wants to use targeted sanctions to punish Iranian officials who preside over human-rights abuses. America could also hone existing sanctions, which have unintended consequences. Many protesters communicated over Telegram, a popular messaging app, before the regime blocked it. Activists in other countries might have switched to Signal, a similar app. It is harder to shut down because it uses Google's cloud-computing platform to disguise its traffic. That platform, however, is largely blocked in Iran—by Google itself, which fears falling foul of American sanctions.

Such a change could help during the next round of protests, which is all but inevitable. Iranians had high expectations for Mr Rouhani. They remain unmet. Though GDP is growing, unemployment is stubbornly high. Corruption is widespread. Water shortages, poor air quality and the bungled response to a deadly earthquake last November have damaged the regime's reputation. In contrast with the protests of 2009, which were led by an urban elite, the recent unrest occurred in towns and small cities that cheered the Islamic revolution in 1979. A generation later, its promises ring hollow to an ever larger portion of Iranians. ■



After the protests in Iran

Blame games

CAIRO

As the unrest in Iran dies down, the regime and the West consider their next move

ANGRY Iranians are still in the streets, but the widespread protests that have been rocking Iran appear to be fizzling out. Starting on December 28th, Iranians came out to complain about high prices, low wages and a lack of jobs. The interior minister put the crowds at 42,000, spread across dozens of cities and towns. Even if that is an underestimate, it falls far short of the scale of protests nine years ago, when hundreds of thousands demonstrated against a fishy election. Still, the unrest has spooked the regime, in part because demonstrators called for a complete change of government. The response was forceful. More than 20 people were killed. A reformist MP says that 3,700 were arrested.

The regime and countries in the West are now pondering their next steps. On January 9th Ayatollah Ali Khamenei, Iran's supreme leader (pictured), blamed America and Britain for the protests; his officials claim to have evidence that they were directed from abroad. "This won't be left without a response," he said on Twitter. But so far the government has only banned

the teaching of English in primary schools, warning of a "cultural invasion".

The regime has acknowledged home-grown problems, too. Mr Khamenei says the protesters' grievances "must be dealt with and heard". Hassan Rouhani, the president, has gone further, arguing that the unrest was due to cultural and social restrictions imposed by clerics. He blamed "the gap between officials and young people". But he may struggle to close it: his presidency has been riven with infighting, and the hardliners who wield real power distrust him. The government may instead focus on areas where there is agreement, such as shutting down illicit credit institutions, many of which have gone bust, wiping out ordinary Iranians' deposits.

Donald Trump hailed the protesters for "finally acting against the brutal and corrupt Iranian regime". But some in America and Europe fear that embracing the dissidents will undermine them. Similar thinking led Barack Obama to keep mum in 2009. Even then, the regime accused protesters of being foreign agents. This time

Protests in Tunisia

Austerity bites

CAIRO

Anger over the Tunisian government's belt-tightening spills over into unrest

ALMOST seven years to the day after they toppled a dictator, sparking the Arab spring, Tunisians are back on the streets. Since January 8th thousands of people have joined protests about economic hardship. There has been unrest in the capital, Tunis, where demonstrators ransacked a supermarket. It is worse in the impoverished interior, where the Arab spring protests began. Police stations have been burned and shops looted. One person has died; dozens have been injured.

The protesters are angry about a new finance law, which took effect on January 1st and caused widespread price hikes. Many of the changes are aimed at the wealthy: taxes on marble, jacuzzis and yachts all rose steeply. But the law also affects everyday goods, such as bread, vegetables and phone cards. The value-added tax was raised by a percentage point.

Youssef Chahed, the prime minister, acknowledged that the country was “having difficulties”, but dismissed many of the protesters as “vandals”. His government argues that it has no choice but to raise taxes. It hopes to bring the deficit down to 4.9% of GDP, from an estimated 6% last year. Such changes are a condition of a \$2.8bn loan package agreed with the International Monetary Fund in 2016. The fund froze the second tranche of the loan last year because reforms were moving too slowly.

None of this matters to a public frustrated with a stagnant economy. Inflation hit



Peas, bread and airtime!

5.3% last year. The dinar has lost over 40% of its value against the dollar since 2011. Unemployment is around 15%. The minimum wage, about \$160 per month, is not enough to support even small families. Hamma Hammami, the head of the leftist Popular Front, says protests will continue until the government cancels the law. The Tunisian General Labour Union, the country's largest, wants a higher minimum wage and price controls on staple goods.

More unpopular changes loom. Tunisia's main fiscal problem is a public sector that employs 800,000 people, or a fifth of all workers. Their wages eat up around 14% of GDP, one of the highest percentages in the world. Hiring is largely frozen, but the government scrapped plans for lay-offs and a salary freeze under pressure from unions. Instead it will offer voluntary redundancies. With private-sector jobs scarce, few are likely to accept. ■

Saudi Arabia's budget

Taxing times

CAIRO

A new levy is one step towards fixing Saudi Arabia's fiscal woes

MANY Saudis saw in the new year by posting photos of their Starbucks receipts on social media. On January 1st the kingdom imposed its first-ever value-added tax (VAT), a 5% levy meant to help close a yawning budget deficit. It covers most goods and services, though sectors like health and public transport are excluded. (The United Arab Emirates did the same.) Some Saudis were angry about the higher cost of living. Others complained of being overcharged. But the reform, like others promoted by Muhammad bin Salman, the crown prince, went off with little real fuss.

Unveiled in December, the kingdom's new budget of \$261bn is its largest ever, a further reversal of a belt-tightening scheme imposed after oil prices crashed in 2014. Ministries had been ordered to slash their spending on new contracts by 5% in 2016, cuts that helped push the economy into recession. The new budget calls for a big boost in capital spending and an 11% bump in the health-care budget.

It also means a deficit of \$52bn, or 7.2% of GDP. Though smaller than last year's (see chart), that is still a hefty shortfall. Since 2014 the kingdom has drawn down more than \$250bn of its foreign reserves. Though the central bank's coffers have been replenished a bit in the past two months, reserves are still close to their lowest level since 2011. Saudi officials had hoped to balance the budget next year. The deadline has been postponed until 2023.

They may still struggle to meet that target. The VAT is expected to net just \$6bn this year. A new fee on expatriate workers should bring in a similar sum. Fuel prices have been raised: the cost of the lowest-grade petrol is up by 83%. To cushion the blow, civil servants will receive an extra 1,000 riyals (\$267) per month. Retirees and students will also get larger payments.

Oil revenues are expected to increase by 12% in 2018, to \$131bn. Higher prices, though, will help less than before. Last year the government cut the tax rate on Aramco, the state-run oil giant, from 85% to 50%. The move makes the firm more attractive to investors ahead of a planned IPO. It also takes billions in annual revenue off the table. In the long term, Prince Muhammad wants to diversify the Saudi economy away from petroleum and the public sector. The budget assumes non-oil growth of 3.7% this year, more than double the rate in 2017. That may be too rosy.

One group that is not receiving new benefits is the royal family itself. As of January 1st the state stopped covering their utility bills. Three days later police arrested 11 princes who staged a sit-in at a palace in Riyadh, the capital. They were upset about having to pay for water and electricity for the first time in their lives. Among them were said to be two sons of the chairman of Almarai, a dairy conglomerate. His net worth is estimated at close to \$4bn.

The squeeze on spoiled royals has helped to soothe public frustration. In November more than 200 royals and businessmen were detained in an anti-corruption sweep. Many have been released after handing over part of their wealth. In December Prince Muhammad was spotted on television talking to Prince Mutaib, a former head of the National Guard caught up in the purge. Days later Ibrahim al-Asaf, an ex-finance minister also detained, was photographed at a cabinet meeting. A few prominent names are still in gilded detention, notably Prince Alwaleed bin Talal, who holds big stakes in Citigroup and Apple. Authorities have reportedly set the price for his freedom at \$6bn—or one year's worth of revenue from the VAT. ■

My kingdom for a surplus

Saudi Arabia, budget balance, % of GDP





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Germany

Freedom and its discontents

BERLIN

Germany is silencing “hate speech”, but cannot define it

“WHAT the hell is wrong with this country?” fumed Beatrix von Storch to her 30,000 Twitter followers on December 31st: “Why is the official police page in NRW [North Rhine-Westphalia] tweeting in Arabic?” The MP for the hard-right Alternative for Germany (AfD) party detected in the force’s multilingual new-year greeting a bid “to appease the barbaric, Muslim, rapist hordes of men”. The next day her tweet—and, for 12 hours, her entire account—vanished from Twitter. In the subsequent political storm Alice Weidel, co-leader of the AfD, came to Ms von Storch’s defence: “Our authorities are subordinating themselves to imported, rampaging, groping, punching, stabbing migrant mobs,” she tweeted. That, too, was promptly deleted.

Germany’s memories of the Gestapo and the Stasi undergird its commitment to free speech. “There shall be no censorship,” decrees the constitution. Even marches by Pegida, an Islamophobic and anti-immigrant movement founded in 2014, receive police protection. But the country of Kristallnacht and the Holocaust also takes a punitive attitude to what it deems “hate speech”. Inciting hatred can carry a prison sentence of up to five years, Hitler’s “Mein Kampf” is available only in annotated form, and it is illegal to single out any part of the population for insult or other abuse that could “breach the peace”.

Irmela Mensah-Schramm, a Berlin pensioner who spray-paints over swastikas and other racist graffiti, is a national hero.

Reconciling these two convictions—for free speech and against hate speech—is becoming harder, particularly since Angela Merkel’s refugee gambit in 2015. Opening Germany’s borders to some 1.2m mostly Muslim migrants has fuelled the rise of nativist outfits like the AfD and Pegida. Racist propaganda and sensationalist reports (some, though not all, fake) of criminal and rapist immigrants have rippled across social media. In 2016, for example, the number of criminal investigations into online hate speech in Berlin rose by 50%. A number of the newcomers from the Middle East and Africa are anti-Semitic. Confronting such ills without encroaching too much on freedom of expression is tricky.

The most prominent example of the balancing act is the new Net Enforcement Law (NetzDG), of which Ms von Storch’s and Ms Weidel’s tweet were early victims. Inspired by the rise of fake news and a report suggesting that only a minority of illegal posts on social media were being removed within a day (and just 1% or so on Twitter), the law cleared the Bundestag last June and came into force on January 1st. It sets out 20 things defining a comment as “clearly illegal”, such as incitement to hatred or showing the swastika. Once posts are flagged by users, a social-media firm

has 24 hours—extended to a week in complex cases—to check and remove those that contravene the rules, or face a €50m (\$60m) fine. In the first week, Facebook’s over 1,000 German moderators have had to process hundreds of thousands of cases.

Overwhelmed by the volume and wary of incurring such huge fines, social-media firms are erring on the side of censorship. On January 2nd *Titanic*, a satirical magazine, joked that Ms von Storch would be its new guest tweeter. Two of the subsequent tweets mocking the AfD politician were censored. When *Titanic* republished them, its account was suspended for two days. The epitome of NetzDG’s overreach came last weekend when an old tweet by Heiko Maas, the justice minister who had introduced the law, calling an author who opposes immigration an “idiot” was removed, seemingly under its provisions.

Too much anti-hate?

Criticism is mounting. The AfD has been joined by the liberal Free Democrats, the Greens and the socialist Left party in calling for its repeal. The Federal Association of German Newspaper Publishers is also opposed. Its director warns that social-media firms are defaulting to deletion in cases of doubt, to control costs. The government says it will review the law’s effects in several months’ time.

Predictably, one man’s protest is another’s hate speech. On December 8th Israeli flags were burned at the Brandenburg Gate in Berlin in response to Donald Trump’s recognition of Jerusalem as the country’s capital. Despite accompanying chants of “Israel, murderer of children”, the local police said the act was covered by freedom of speech legislation and was thus protected—prompting the Israeli ambassador to urge that the law be changed and Armin ►►

▶ Schuster, an influential Christian Democrat MP, to argue that immigrants found guilty of burning the Israeli flag should be expelled from Germany. His idea may come into practice: the CDU is planning to change deportation rules in time for Holocaust Memorial Day on January 27th, to make it easier to remove anti-Semitic newcomers.

Mrs Merkel's refugee policies have also fuelled free-speech debates by making her government reliant on Recep Tayyip Erdogan, Turkey's president, whose co-operation has helped reduce the flow of migrants through the Balkans. Last April the chancellor declined to block the prosecution of Jan Böhmermann, a German comedian who had made crude jokes about Mr Erdogan, under an archaic law against in-

sulting foreign heads of state (which has since been repealed).

All of which points to a broader truth: regulating speech was easier in the past, when Germany was a more settled, homogeneous and conformist place. The wave of new arrivals since 2015 has accelerated its long-term evolution into a more plural, fragmented country. Long after Britain and France, Germany is becoming a land of immigrants. The arrival of the AfD in the Bundestag after its election in September increased the number of groupings there to a record six, up from three for most of the post-war period. The internet is generating dissenting and outspoken competitors to the country's more cautious established media. This new, more open and varied Germany is harder to govern. ■

thoritarian and illiberal. One measure under consideration, for instance, would reduce from a month to 15 days the deadline for lodging an appeal against a refusal of asylum. Another would increase the maximum period of detention for illegal immigrants from 45 days to 90. In December refugee charities were outraged when the government ordered a census of migrants in emergency reception centres. "Not all foreigners in France are terrorists; not all foreigners in France are benefit-scroungers," declared an angry Sonia Krimi, a deputy from Mr Macron's own party, La République en Marche (LRM), in parliament.

To head off a rebellion within the governing party, which remains a loose centrist movement of mostly first-time deputies, the government has begun a series of meetings with them to explain the broader context. Last year more asylum-seekers in France applied from Albania, a country considered safe, than anywhere else. Barely 6% of them were granted asylum, compared with an average of 36% across all nationalities. Of the 3,249 Syrians who applied in 2017, by contrast, 95% were accepted as genuine refugees. If asylum-seekers are to be treated humanely and efficiently, says the government, it needs to sift out the bogus ones and enforce the rules. In a new-year message, Mr Macron spoke of France's "moral and political duty" to act as a land of refuge for those fleeing persecution. But, he added, "we cannot welcome everybody."

Fresh from a trip to China, Mr Macron was this week heading to Italy to discuss Mediterranean migrant flows, and then to the northern port of Calais to look at cross-channel movements. He is likely to sound a tough note. For the idealists in his own party, some drawn into politics from humanitarian work, limiting open borders is a difficult message to hear. ■

France

Ideals meet reality

PARIS

Emmanuel Macron plans to tighten the rules on immigration and asylum

SHORTLY before dawn, a queue has already formed along the pavement outside the immigration office. Applicants, mostly men, wait in silence, their jackets zipped against the winter chill. Discarded sleeping bags and torn strips of cardboard boxes lie on the ground. Huddled beside the nearby canal is an encampment of coloured tents. A tall burly man from Nigeria, clutching a thick file, says he is appealing against his first asylum refusal, giving his name as Michael Emmanuel. "Like Macron!" he exclaims. "I came before he was elected, but he's like Angela Merkel: he opens up borders."

In 2017 a record 100,000 people asked for asylum in France. Although this was only half the number that applied in Germany, it marked a jump of 17% on the previous year. Many migrants used to shun France, preferring Germany or Sweden; they often passed through France only to reach Britain. At one point in 2015, when Germany opened its doors to an influx of Syrians and Iraqis, the French authorities rented coaches and drove to Munich to try to tempt some to France. But the coaches came back half-empty. Now the mood has shifted. A surge of applicants, led by Albanians, Afghans, Haitians and Sudanese, is putting fresh pressure on the processing system—and on the unity of President Emmanuel Macron's governing party.

During his campaign, to liberals' delight, Mr Macron declared that Mrs Merkel had "rescued Europe's collective dignity" by opening the doors. Fighting off the ultra-nationalist Marine Le Pen, the candidate

repeatedly made the case for open borders and a humane response to asylum-seeking. Yet in office he seems to have hardened his line. A new immigration and asylum bill, designed to tighten the rules, is due to be unveiled next month. As its contours emerge, Mr Macron's government finds itself charged with betraying those principles, not least by some of its own deputies.

Edouard Philippe, France's centre-right prime minister, says that the bill will help to accelerate asylum procedures, improve conditions in reception centres and "strengthen the efficiency" of rules on illegals. Its critics, however, condemn it as au-



The world en marche



Georgia and Russia

Pragmatic but principled

TBILISI

Georgia is now less confrontational towards Russia. The EU is impressed

BENEATH the wooden balconies of Tbilisi's charming Old Town, the faux-medieval signs offering wine tasting are as likely to be in Russian as in Georgian or English. Even some of the graffiti is in Cyrillic script. After the Russia-Georgia war in 2008 (pictured), Russian tourists stayed away, so visitors tended to be addressed in English. But now they are back, and so is their language.

A new generation of Georgian political leaders is equally pragmatic when dealing with Russia itself. The two countries still have no diplomatic relations. But their officials hold regular bilateral talks. And practical initiatives are easing trade, travel and transport between the two. "This government is bending over backwards not to antagonise Russia," says Ojars Kalnins, a Latvian politician and diplomat.

This is very different from Georgia's approach under the former president, Mikhail Saakashvili. He relished provoking Vladimir Putin, reportedly calling him "Lilli-Putin", and was unabashed about his admiration for America, which in turn regarded him as a democratic beacon in a region of autocrats. But tensions with Russia increased, culminating in a five-day war which Georgia lost. In his final years in office Mr Saakashvili was seen as increasingly authoritarian, and in parliamentary

elections in 2012 his party was beaten by Georgian Dream, a movement led by the country's richest man, Bidzina Ivanishvili, an idiosyncratic billionaire.

So is Georgia slipping away from the West and back into Russia's orbit? Not quite. "The confrontational tone that was dominant during the Saakashvili era has been replaced by a muted tone. But the content itself is not very different," says Salome Zurbashvili, a former foreign minister under Mr Saakashvili and now an independent MP. Georgia is still keen on Europe, and aims to join the European Union. On the key issue of borders, it remains firm. Backed by the EU and NATO, the government views the Russian-sponsored breakaway regions of Abkhazia and South Ossetia as occupied Georgian territory.

EU officials welcome the Georgian government's "pragmatic but principled" approach to Russia. They hope that calmer rhetoric and better trade and transport links will improve the atmosphere and the chances of resolving the border dispute. But Georgia's conciliatory efforts are not being reciprocated by Russia. Instead Abkhazia and South Ossetia are being integrated more into Russian structures, crossing points have been closed and last year Russia moved the latter's de facto border farther into Georgian territory.

Meanwhile, Georgia is still inching closer to the EU. Officials describe it as one of the countries most likely to be admitted to the club, thanks to political reforms, like improving minority rights. In 2016 an "association agreement", easing trade between the EU and Georgia, came into force. In March 2017 the EU gave Georgians visa-free access. Further progress, though, will be harder; EU environmental standards and worker protections, for example, will be painful to meet.

Some also worry that the ruling Georgian Dream is stifling opposition. After the election in 2012, Georgia was praised for its first peaceful political transition since independence. But dozens of officials from the previous government were then arrested, often being charged with abuses of power. They include a former prime minister, Vano Merabishvili, who is still in prison. "Georgian Dream has consolidated power, but we don't see many checks and balances," says Vano Chkhikvadze from Open Society Georgia Foundation, a human-rights group.

Particularly worrying is the murkiness that surrounds Mr Ivanishvili, still the country's most powerful man even though he stepped down as prime minister in 2013. Before entering politics he was a shadowy presence, known for an exotic taste in pets—rumoured to include kangaroos, zebras and penguins—and lavish philanthropy. He paid for homes for residents of his home village, and for Tbilisi's flamboyant new cathedral; he also occasionally

swooped in with cash gifts for struggling intellectuals. He still pulls strings from his futuristic palace overlooking Tbilisi, and his generosity has boosted his popularity and power. Ministers are said to fall and rise by his favour.

Some suggest that Mr Ivanishvili is allowing elected Georgian Dream politicians greater control. If so, the country could be entering a new phase. Today the Georgian government lacks an overarching ideology. Faced with the challenge of dealing with Russia, while convincing voters that the reforms that might let Georgia into the EU are worth the effort, it could do with some vision—something Mr Saakashvili, for all his flaws, never lacked. "He was crazy creative," says Ms Zurbashvili. Georgia is better off without crazy; but a bit more creativity could be welcome. ■

Kosovo

After the war

PRISTINA

The slow process of building a country

IN 1991 Armend Malazogu leapt off the back of an army lorry. Then aged 18, the Kosovo Albanian was escaping being drafted into Serbia's fight with Croatia. The Yugoslav civil wars were just beginning and would eventually spread to Kosovo. Now, 18 years after the end of the Kosovo war and almost ten after the statelet declared independence, most indicators paint a bleak picture. Unemployment is around 33% and GDP per person, at \$3,660, is the lowest in the region. Yet Mr Malazogu, now one of Kosovo's most successful entrepreneurs, reckons things may be less gloomy than the numbers suggest.

Kosovo's officials say that their country's economy is being hobbled by disputes with Serbia, which refuses to accept its independence and threatens legal action against major foreign firms wanting to invest in it. Russia has led objections to ►►



► Kosovo becoming a member of the United Nations, and five members of the EU do not recognise it.

But for Mr Malazogu, all this is just an excuse for the government's flat-footedness. External pressure has not stopped his IT companies from prospering and subsidising Frutomania, his fruit-juice brand. In the past five years production at the Frutomania plant has increased by 60% a year. Since 2016 an agreement with the EU has opened its giant market to him.

In a small plant set in the orchard-covered hills of Kravarice, machinery is squelching and squirting. Bottles trundle around the production line, labels are slapped on and a lorry outside is waiting to be loaded up with juice for Hungary. Frutomania has contracted supplies from a thousand small fruit producers in Kosovo and Albania who, until now, often just sold their crop in buckets at the roadside.

Mr Malazogu says the problems he faces are more down-to-earth than the issue of UN membership. He has to import bottles, caps and labels because Kosovo produces none and the government is not doing anything to encourage potential manufacturers. And Kosovars are the only Europeans west of Russia who still cannot travel without visas to the Schengen zone.

Gjirafa, an internet company, is another of Kosovo's new business successes. It is one of a handful of Kosovar firms to have raised capital abroad. (Funding is a big problem for most companies in Kosovo.) Its revenues have increased tenfold a year for three years. It has prospered by filling niches deemed too small to bother with by the world's internet giants. Its search-engine algorithms are designed to hunt for Albanian-language pages. It runs an Albanian equivalent of YouTube and Netflix. In a region without Amazon or Alibaba, on December 10th it massively expanded its e-commerce capabilities. This means, says its CEO, Mergim Cahani, that even tiny local firms can now sell to anyone in Kosovo, Albania and Macedonia. Gjirafa will collect and deliver for them. For the western Balkans, that is a business revolution.

Education is another big headache, though. Kosovo's system is "obsolete" says Vllaznim Xhiha, another entrepreneur, who made his fortune in Switzerland. He is not waiting for the government to modernise it. He has opened two "maker spaces" to encourage hundreds of young people to learn about technology.

Kosovo has some statistics to be thankful for: its economy is reckoned to have grown by 3.5% last year. Remittances from the diaspora can be a lifeline for many, though they also distort the economy. Why work for the average income of €360 a month if someone already sends you that? More than half of young Kosovars dream of leaving, it is true. But, says Mr Xhiha, "our image is worse than our reality." ■

Dementia

Village people

HOGEWYK

A new way of caring for the vulnerable old

ANJA, who is in her 80s, says she has lived here for one hour. In fact, it has been almost a year. Like all of her neighbours, she has severe dementia. But if she is feeling particularly perky, she can buy lagers at the local supermarket, get coiffed at the hair salon and play bingo as night falls. She can dip her feet into the local fountain, or even cycle into it. She lives in Hogeweyk, thought to be the world's first "dementia village", near Amsterdam.

Dementia villages are gated communities designed for people who suffer from dementia, a term used to describe a set of symptoms (such as memory loss and confusion) that are caused by a variety of brain diseases. Hogeweyk's 150 residents live in six-room houses, each designed around one of four "lifestyles". These are selected for patients after tests and interviews alongside their families. Anja (not her real name) and her housemates live in a "traditional" home. They eat starchy *stamppot* stews and have a sewing machine that says it is "Made in West Germany". "You won't find Danish [modern or minimalist] design here," says Eloy van Hal, who founded the village in 2008. The neighbouring house is furnished with pink floral wallpaper and kitschy plastic chandeliers; all part of the "urban" style.

Hogeweyk's allowance of small freedoms gives peace of mind to people who have lost a part of theirs. Grouping residents by lifestyles is meant to establish continuity between their former lives and the nursing facility. The idea is based on reminiscence therapy, which holds that anxiety in dementia patients can be

reduced by creating a familiar environment. It is catching on. A dementia home in Rotterdam has built a "remembrance museum" in its basement where residents can ogle over childhood artefacts. In Dresden, one nursing home has a room set up to recall the former East Germany. A poster of Erich Honecker, a former leader of the East German communist party, looms over communist paraphernalia and bulky cassette tapes playing 1960s hits. Sometimes fakery keeps residents safe. One home in Düsseldorf has a fake bus stop. Residents who decide, in their confusion, that they want to go somewhere else tend to line up patiently there. After they have waited for a bus that will never come, a carer lures them back to their homes.

Hogeweyk received over 1,400 visitors this year, keen to copy the concept in their own countries. It is not hard to see why. In 1993, when it was still a regular nursing home, 50% of patients were being given antipsychotic drugs. In 2015, only 8% were. In a client satisfaction survey from 2010, the home scored 9.1 out of 10, compared with 7.5 countrywide.

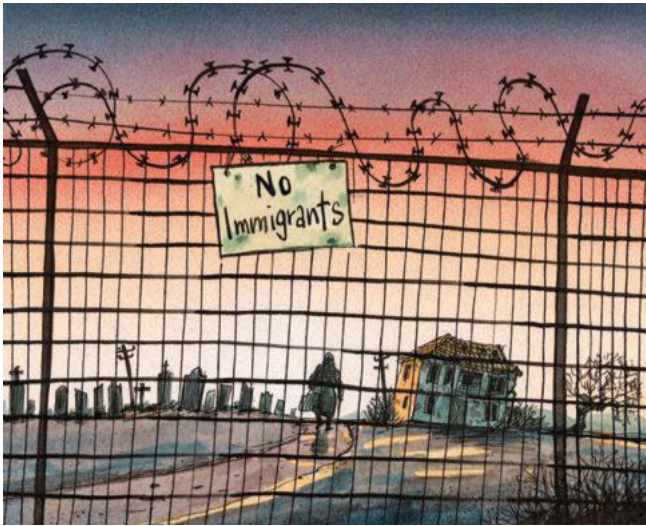
Hogeweyk exists because the Netherlands can pay for it. Like all care homes in the country, it is primarily state-funded. A national insurance system covers the hefty €6,000 (\$7,160) monthly cost for each patient, with the richest people paying up to €2,400 into the scheme each month. In all, the Netherlands spends 4.3% of its GDP on long-term care, the highest in the OECD. It may take a village to help dementia patients. But it takes a country to pay up.



Comfort for the afflicted

Charlemagne | Incredibly shrinking Bulgaria

Depopulating countries in Eastern Europe do not want immigrants



IF HELL is other people, then Ekaterina Svetulkova must be in paradise. She sits alone eating sunflower seeds on a stone bench in Banitsa, the village in north-west Bulgaria she has called home for 58 of her 82 years. Once upon a time, bakers churned out delectable loaves and famous actors visited to give performances that delighted the locals. Now, Ms Svetulkova sighs, “There is not a living soul here.” (Though there is a kitten dozing on her hand-knitted slippers.) With her children living elsewhere and few friends left, she would not know where to turn if she had an accident. That makes for “a scary sort of loneliness”, she says.

The UN projects that Bulgaria’s population will fall from 7.2m to 5.2m by 2050, making it the world’s fastest-shrinking country (the next nine are also in eastern Europe). This demographic catastrophe, concentrated in the countryside, finds its cruellest expression in Bulgaria’s neglected north-west, the poorest region of the poorest country in the European Union. Every year the nearby city of Vratsa, a former industrial hub fallen on hard times, shrinks by around 2,000 people. Employers say they cannot find skilled workers; locals say there is no work. People here are poorer, unhappier and likelier to leave than elsewhere in Bulgaria. Kalin Kamenov, Vratsa’s mayor, says that without investment and state support his town will be virtually extinct in ten years.

Bulgaria presents perhaps the most extreme case of the depopulation that is ravaging much of eastern Europe. The post-communist transition was particularly traumatic (and delayed) here; in the 1990s the fertility rate plummeted and hundreds of thousands of young people flocked to the richer, stabler countries of western Europe, leaving the older and less-skilled behind. Today over 1m Bulgarians live abroad, around 700,000 of them in the EU. Western European countries like Germany have older populations, but their wealth leaves them better placed to weather the fiscal implications of a declining workforce, and they are importing immigrants. In rapidly ageing Bulgaria, already Europe’s fifth-greyest country, nearly 60% of pensioners are below the government’s poverty line of 321 lev (\$196) a month. “We have a rich-country problem, but we’re not a rich country,” says Georgi Angelov, an economist at the Open Society Institute in Sofia.

Governments have produced endless strategies to arrest the demographic decline. None has helped much. Speaking in

booming Sofia, one of the few places in Bulgaria with a growing population, Valeri Simeonov, a deputy prime minister in charge of demographic policy, outlines his plans to plug labour shortages by attracting foreign workers, not least from neighbouring countries with Bulgarian minorities such as Ukraine or Moldova. Several thousand already work at the beaches and ski resorts during tourist seasons. Policies are being prepared to attract more people for longer. In eight months, Mr Simeonov boasts, the government has done more to improve the demographic outlook than all its predecessors.

Yet there is a catch. Mr Simeonov, who leads the far-right National Front for the Salvation of Bulgaria, says his hunt for talent does not extend to refugees, whom he dismisses as “adventurists” seeking to suck Europe’s welfare states dry. Thanks in part to a border fence manned by guards with a reputation for brutality, the refugees who poured out of Turkey in 2015-16 largely bypassed Bulgaria for Greece. That has not stopped Bulgaria’s politicians from whipping up anti-refugee hysteria. Rumen Radev, the Socialist president, vows to stop Bulgaria becoming “Europe’s migrant ghetto”. In 2016 Vratsa’s council banned refugee centres, though none existed or had even been proposed.

Some find irony in the hostility of depopulating eastern European countries to receiving refugees (an issue that now falls to Bulgaria to resolve, as it takes over the six-month rotating presidency of the EU’s ministerial meetings). Others see a clear political logic. For Bulgarians on the sharp edge of depopulation, writes Ivan Krastev, a political scientist, “the arrival of migrants signals their exit from history”. Far-right parties are not particularly strong in Bulgaria, but perform best in areas of decline. And Bulgaria is not interested in adding to its integration troubles, says Mr Simeonov, when it has enough difficulties with its own “gypsy refugees” (the language is decorous; in 2014 Mr Simeonov dismissed Bulgaria’s Roma as “arrogant, ferocious anthropoids”).

Hope I die before I get old

The refugee question is to some degree a red herring; few would wish to stay in a hostile, low-wage country to which they have no links when richer ones are so close. Attracting workers from closer to home seems a better bet. So does enticing émigrés back. In recent years emigration has slowed and more Bulgarians are returning, although because of its low birth rate—in part the consequence of the earlier exodus of youngsters—the country is still losing the equivalent of Vratsa’s population of 50,000 every year.

Optimists look to well-run Estonia which, having lost 17% of its population since its liberation from Soviet rule, has lately enjoyed a small net inflow. Poland, which has taken in hundreds of thousands of Ukrainians to service its booming economy, is an alternative model, but also a rival. Bulgaria is doing well—the employment rate is higher than ever, and the public finances are sound—but so are its richer neighbours. Corruption (Bulgaria is rated the worst country in the EU by Transparency International), red tape, bad schools and a lingering stench of gangsterism still mar it in the eyes of foreign investors. And even if those returning can help revitalise Bulgaria’s economy, as they have in former countries of emigration like Ireland, they are unlikely to reverse the demographic damage. Bulgaria’s prospects do look a bit brighter than they have for a while, and its notoriously morose people have noticed: last month a poll found a majority expressing optimism for the first time in two decades. But in future there will be far fewer Bulgarians to share this good cheer. ■



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Business and workers

Situations vacant

SHEFFIELD

Firms are not adapting fast enough to a tightening labour market

MORE sick days are taken in January than in any other month, as employees shun the chilly weather for a day under the duvet. Yet some firms are finding that their workers are not coming back at all after the Christmas break. A week back in the home country sometimes persuades migrant workers from the European Union to stay there. As well as the British weather, they now face a weak pound—and, of course, the looming prospect of Brexit.

Since the vote in 2016 to leave the EU there has been a sharp rise in the number of European migrants leaving Britain. In the year to June 2017 a total of 123,000 packed their bags, 28,000 more than during the previous year. Overall, net migration of EU citizens fell by 43%; among those from the “A8” countries of central and eastern Europe, it fell by 81%.

The drop threatens to compound the difficulty of recruiting workers in what is already a tight labour market. Unemployment, at 4.3%, is at its lowest since 1975. Firms in some industries are struggling to fill vacancies. Among skilled trades, chefs are particularly in demand. A report commissioned by the construction industry in 2016 warned that within a decade the pool of labourers could shrink by 20-25%.

Some argue that having fewer workers would do Britain good. The abundance of foreign labour in recent years has helped to keep a lid on wages in some low-paid jobs. With fewer migrant workers, firms might

be forced to train lumpen locals and invest more in technology, thus improving Britain's poor productivity. That argument was given a boost this month by figures showing that productivity grew by nearly 1% in the third quarter of last year, the sharpest rise since 2011 (albeit following a bad first half of the year).

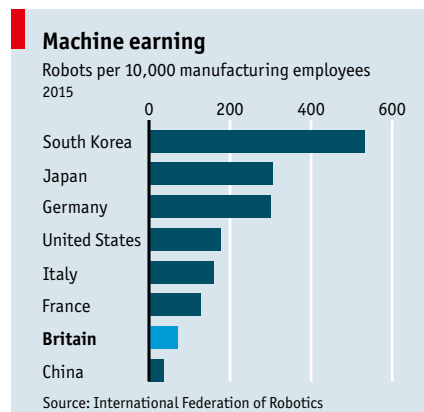
Yet the signs are that firms are being slow to respond to the drying up of the labour pool. Their first course of action might be to pay higher wages, in order to recruit more local workers and retain EU employees. Some employers have done this. Real annual wages in agriculture, which is particularly vulnerable to any decline in migrant workers, increased by over 3% in the three months to October, more

than any other industry. Other migrant-heavy businesses, however, have done just the opposite: wages in food manufacturing fell by 1% and those in construction by 0.2% during the same period.

Improving conditions would be another way to fill vacancies. Andrew Green, head of the Craft Guild of Chefs, says that the culture of bullying in kitchens pushes new recruits out of the profession just as much as the low wages. He remembers the roasting trays and pots flying in his direction decades ago, and acknowledges that little has changed. Some restaurants are tackling the 70-hour weeks that chefs often have to work. Several Michelin-starred restaurants, including Le Gavroche in London and Sat Bains in Nottingham, have reduced their opening hours to retain staff. Similarly, the Road Haulage Association is to launch a campaign to advertise better working conditions for drivers, of whom there is a national shortage.

If firms cannot hang on to people, they may replace them with machines. Robots tend not to make good chefs, even if they are less prone to tantrums. But in other industries, such as food manufacturing and agriculture, there is considerable scope for further automation. The Resolution Foundation, a think-tank, has estimated that 10-35% of today's jobs could be automated by the early 2030s. Sensors are already so highly developed that at a factory run by Premier Foods, near Sheffield, a machine can pick up brittle poppadums from a line and bag them, removing the need to employ five pairs of human hands.

Yet Britain is lagging behind in its use of robots (see chart). Martin Howarth, director of the National Centre of Excellence for Food Engineering at Sheffield Hallam University, warns that automation in food manufacturing is low, behind countries such as Germany and Japan. According to ▶▶



▶ the Institute for Public Policy Research, a think-tank, capital investment in Britain's low-wage industries, as a percentage of their output, is about 14%, compared with 15% in France and over 20% in Germany.

Construction companies are among those experimenting with processes that reduce the need for human workers. Laing O'Rourke, one of Britain's biggest building firms, has pioneered "off-site" construction methods at a factory in Worksop, where parts of buildings are prefabricated and then assembled on site. Berkeley Homes, another big firm, has bought a site in Kent to build 1,000 prefab homes a year. But these are the exceptions. Factory-based construction accounts for just 6% of Britain's housebuilding, as against 9% in Germany and 13% in Japan, according to Arcadis, an engineering consultancy.

Firms may begin to recruit more from among those who have been under-represented in the workforce. The government wants to "transform" the employment of disabled people, 49% of whom are in jobs, compared with 81% of all workers. It has

provided money to help people with mental-health conditions into work. Some businesses have recently started courses to attract disabled workers. They include Mitie, another property company, which runs a small recruitment programme in conjunction with the National Autistic Society.

The elderly are another potential source of new workers. Between 1995 and 2015 the number of working people in Britain aged over 65 more than doubled, to over 1m. Still, their participation rate in the labour market is lower, at 11%, than the G7 average of 15%. Attracting elderly and disabled workers will require companies to be flexible and to offer more training. Yet workers in Britain get less employer-provided training than in any other EU country except Poland, Greece and Romania.

As Brexit approaches and the economies of the EU grow faster than Britain's, the squeeze on the labour market is likely to tighten. Although some firms are taking action, most industries look unprepared. Many bosses are still taking a wait-and-see approach. They are running out of time. ■

may arise from putting into treaty terms the agreement to avoid a hard border in Ireland. Britain thinks this commitment can be made consistent both with leaving the EU single market and customs union and with diverging from EU regulations. Yet few in Brussels (or Dublin) agree.

Indeed, regulatory divergence and how to manage it will be central to future trade negotiations. The EU is taking a tough line: if Britain leaves the single market and customs union and wants regulatory divergence, it can only have a deal that is mainly restricted to trade in goods. Michel Barnier, the EU's chief Brexit negotiator, likes to argue that Mrs May's own "red lines", on ending free movement of people and escaping the jurisdiction of the European Court of Justice, point to a free-trade agreement little more comprehensive than those with South Korea or Canada. There can be no bespoke deal and no cherry-picking, the EU insists; and Britain must also maintain a level playing-field on regulation, competition and state aid.

Britain's response is broadly to accept the trade-off that exists between regulatory divergence and access to the single market, but also to note that the country is unique in starting in full compliance with EU law. That should leave room for a bigger deal, accompanied by an agreed mechanism for settling disputes over any regulatory divergence. All the EU's trade deals are bespoke to some degree, even those for countries like Norway that are members of the European Economic Area (and thus also of the single market). And when Mr Barnier insists that he cannot add financial services to the mix, the British government notes that exactly this was proposed in the EU's abortive free-trade talks with America half a decade ago.

The next step will come at the end of March, when EU leaders will issue negotiating guidelines on trade to Mr Barnier and his team. Before Christmas there was some talk of Mrs May delivering a big speech about exactly what Britain wanted on trade, but this is now being played down. Already in her Florence speech last September she made clear that she was looking for a deal on a far more ambitious scale than Canada's, including one that covered services as well as goods.

One hope in London is that, when the hard bargaining begins, the other 27 EU countries may not be as united as they were in the Article 50 talks last year. Germany and France are backing a tough line to protect the integrity of the single market, but several other countries besides Ireland are keen on a deep free-trade deal with Britain. In return, some of Mrs May's red lines may be blurred a little. But in the end she cannot avoid the choice between insisting on extensive regulatory divergence or cleaving close to EU rules. Much will turn on her answer. ■

Britain and the European Union

Now for the difficult bit

The government girds itself for a year of testing talks

NO MATTER how hard Theresa May tries to focus her reshuffled government on other matters, Brexit seems certain to overwhelm the agenda this year. The EU wants a deal agreed on by October so as to allow enough time for ratification before March 29th 2019, when Britain is due to leave. The deal should comprise three parts: fixing the terms for a post-Brexit transitional arrangement; giving legal effect to the Article 50 withdrawal deal that was provisionally struck last month; and drawing up an agreed framework for the future trade relationship.

Both sides have contingency plans for no deal at all, but the expectation after last month's draft agreement is that one will now be done. The easiest bit should be transition, talks on which are due to start this month. Britain accepts that this "implementation period" will prolong the status quo without voting rights, although a few knotty issues remain, such as how to set fishing quotas without any British say. Officials in London concede that it will be impossible to make transition legally watertight by the end of this March, but its principles should be clear enough to reassure businesses such as airlines that must plan a year ahead. The trickiest question of all may be whether there can be explicit

provision to extend transition beyond the end of 2020, the EU's preferred cut-off date, but that could yet be fudged.

Giving legal effect to the Article 50 withdrawal agreement will throw up more problems, not least whether payment of Britain's exit bill can be made contingent on the future trade deal. The thorniest issue



Bagehot | Failure to relaunch

Theresa May has added a botched reshuffle to her lengthening list of botches



THE Conservative Party appointed Theresa May as its leader because it thought she had a safe pair of hands. The party was so traumatised by the vote to leave the European Union—and so terrified that Brexit would tear it apart—that it turned to the person who was a byword for stability. Mrs May had spent six years in the Home Office without any particular disasters. She had skilfully straddled the In/Out divide on Brexit. Even her most conspicuous defect—the fact that she had never knowingly said anything of any interest about anything—looked in those desperate times like a virtue.

Since becoming leader she has demonstrated beyond doubt that her hands are anything but safe. She triggered Article 50 of the EU treaty (which set a two-year deadline for leaving) without having done the necessary preparations. She called a general election which destroyed her majority. She gave the worst leader's speech at a party conference in living memory. Just before Christmas it looked as if she was at last beginning to regain her authority, thanks to a successful budget and the conclusion of the first stage of the negotiations to withdraw from the EU. But whatever goodwill she had accumulated was destroyed by this week's cack-handed cabinet reshuffle.

The most polite words being used in Westminster to describe the reshuffle are “farcical” and “shambolic”. Many less polite words are also being thrown around. An exercise designed to highlight Mrs May's strength served to highlight her weakness. An opportunity to refresh the cabinet ended with most senior people left in place.

Downing Street had prepared the ground for a significant reshuffle, with a combination of bigging-up here and doing-down there. Jeremy Hunt would move from health, where he has been for five years. Andrea Leadsom would be spending more time with her family. The business department would be given to somebody more dynamic than Greg Clark. But Mr Hunt not only persuaded the prime minister to leave him in his job, he also added social care to his portfolio. Mr Clark remains at business. Ms Leadsom is still leader of the House. The only significant person to leave the cabinet, Justine Greening, happens to be a gay woman from a marginal constituency.

Mrs May compounded her failure to make some widely antic-

ipated changes by making unnecessary ones. It is only worth incurring the costs of moving people, in lost experience and bureaucratic disruption, if you move them up the ladder or into a more appropriate job. In two prominent cases the reshuffle was all costs and no benefits. Dominic Raab is an able lawyer who was also one of the leaders of the Leave campaign. She moved him sideways from the Ministry of Justice to housing. Rory Stewart has rare experience on foreign affairs as a diplomat and academic. She shunted him into Mr Raab's old job.

The reshuffle exposed more than Mrs May's weakness vis-à-vis her colleagues. It also emphasised the emotional limitations of the Maybot. She has worked closely with Mr Hunt for years. You might have thought she would sense how he would feel about being moved in the middle of a health-care “winter crisis” that threatened to destroy his legacy. It also demonstrated the narrowness of her horizons. She focused on changing the guard at Conservative Central Office and even arranged a photo shoot to prove how diverse the party is becoming. But voters hardly care about party apparatchiks. She reinforced the sense that the Tories care more about presentation than problem-solving by changing the name of two Whitehall departments.

Mrs May is a politician who doesn't really like politics—rather like a footballer who dislikes round objects or an actor who hates make-believe. But her biggest problem is more fundamental: she doesn't have any ideas. Even in normal times, politics runs on ideas more than anything else—if you know where you are going and why you want to get there then you can ride over minor problems like botched reshuffles. In these abnormal times, ideas matter more than ever. Britain is embarking on its period of greatest disruption since the second world war. The party that inflicted this change on the country has a duty to demonstrate how it can use its new-found freedoms to make life better, particularly in areas that were heavily influenced by the EU such as migration and farming. Britain is also seeing the limits of the economic model that Margaret Thatcher pioneered in the 1980s. The Tories need compelling solutions to problems generated by this approach, such as the fact that the National Health Service is too fragmented, or that Jeff Fairburn, the boss of Persimmon, a building company, has just been paid an annual bonus of over £100m (\$150m).

A difficult hand

Plenty of Conservatives are thinking seriously about such things. Bagehot took a break from watching the reshuffle to listen to Nick Boles give an interesting talk on Teddy Roosevelt's idea that capitalism needs to be saved from itself, by using the state to break up monopolies and promote the interests of consumers and small businesses. Mr Boles thinks that could provide a model for the Tories. One of the few bright points in the reshuffle was the promotion of cerebral MPs such as Rishi Sunak (to housing) and Sam Gyimah (to higher education). But it is hard to see how the party can harness new thinking when its leader is so averse to ideas. Mrs May's desk is the place where good ideas go to die.

The British system provides two safeguards against national atrophy. Parties can sack prime ministers if they are not up to the job. And electorates can kick out governments when their time is up. But Mrs May is locked in place, because her party is terrified of provoking a civil war over Brexit. And booting out the Tories would mean electing an opposition that has been captured by a neo-Marxist clique. This week's reshuffle was light relief compared with contemplating Britain's deeper political problems. ■



Teenagers' behaviour

The youth of today

LOS ANGELES

Young people in rich countries are better behaved and less hedonistic than in the past, but also more isolated

AT THE gates of Santa Monica College, in Los Angeles, a young man with a skateboard is hanging out near a group of people who are smoking marijuana in view of the campus police. His head is clouded, too—but with worry, not weed. He frets about his student loans and the difficulty of finding a job, even fearing that he might end up homeless. “Not to sound intense,” he adds, but robots are taking work from humans. He neither smokes nor drinks much. The stigma against such things is stronger than it was for his parents’ generation, he explains.

Young people are indeed behaving and thinking differently from previous cohorts at the same age. These shifts can be seen in almost every rich country, from America to the Netherlands to South Korea. Some have been under way for many years, but they have accelerated in the past few. Not all of them are benign.

Perhaps the most obvious change is that teenagers are getting drunk less often (see chart 1 on next page). They start drinking later: the average age at which young Australians first try alcohol has risen from 14.4 to 16.1 since 1998. And even when they start, they sip rather than chug. In Britain, where a fifth of 16- to 24-year-olds do not drink at all, the number of pubs is falling by about 1,000 a year, and nightclubs are faring even worse. In the past young people went out for a drink and perhaps had something to eat at the same time, says Kate Nicholls, head of the Association of Licensed Multiple Retailers, a trade group.

Now it is the other way round.

Other drugs are also falling from favour. Surveys by the European Monitoring Centre for Drugs and Drug Addiction show that the proportion of 15- to 16-year-olds who have tried cigarettes has been falling since 1999. A rising proportion of teenagers have never tried anything mind-altering, including alcohol, tobacco, cannabis, inhalants and sedatives. The proportion of complete abstainers rose from 11% to 31% in Sweden between 2003 and 2015, and from 23% to an astounding 61% in Iceland. In America, all illicit drugs except marijuana (which is not illicit everywhere) have become less popular. Mercifully, the decline in teenage opioid use is especially steep.

Nor are young people harming each other as much as they used to. Fighting among 13- and 15-year-olds is down across Europe. Juvenile crime and anti-social behaviour have dropped in England and Wales, and with them the number of juvenile convicts. In 2007 almost 3,000 young people were in custody; by 2016 the number was below 1,000.

Teenagers are also having less sex, especially of the procreative kind. In 1991, 54% of American teenagers in grades nine to 12 (ages 14-18) reported that they were sexually experienced, and 19% claimed to have had sex with at least four partners. In 2015 those proportions were 41% and 12%. America’s teenage birth rate crashed by two-thirds during the same period. As with alcohol, the abstention from sex seems to be carrying through into early

adulthood. Jean Twenge, a psychologist at San Diego State University in California, has shown that the proportion of Americans aged 20-24 who report having no sexual partner since the age of 18 rose from 6.3% for the cohort born in the late 1960s to 15.2% for those born in the early 1990s. Japan is a more extreme case. In 2015, 47% of unmarried 20- to 24-year-old Japanese men said they had never had sex with a woman, up from 34% in 2002.

In short, young people are less hedonistic and break fewer rules than in the past. They are “kind of boring”, says Shoko Yoneyama, an expert on Japanese teenagers at the University of Adelaide. What is going on?

They tuck you up

One possible explanation is that family life has changed. A study of 11 countries by Giulia Dotti Sani and Judith Treas, two academics, found that parents spend much more time on child care. In America, the average parent spent 88 minutes a day primarily looking after children in 2012—up from 41 minutes in 1965. Fathers have upped their child-care hours most in proportional terms, though they still do much less than mothers. Because families are smaller, the hours are spread across fewer offspring.

Those doted-upon children seem to have turned into amenable teenagers. In 28 out of 34 rich countries surveyed by the World Health Organisation, the proportion of 15-year-old boys who said they found it easy to talk to their fathers rose between 2001-02 and 2013-14. Girls found it easier to talk to their fathers in 29 out of 34 countries. The trend for mothers is similar but less strong. And even teenagers who do not talk to their parents seem to listen to them. Dutch surveys show that teenagers have come to feel more pressure from their parents not to drink. That is probably the main reason for the decline in youthful ▶▶

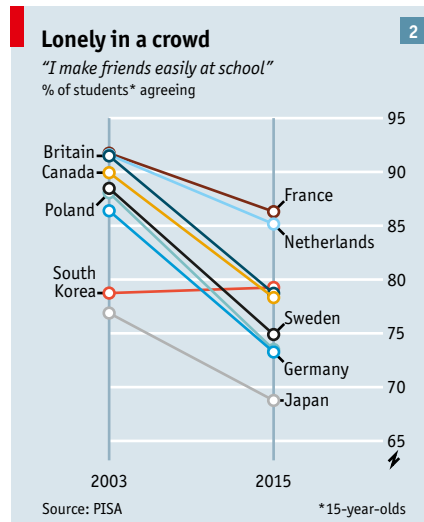
▶ carousing since 2003.

Another possibility is that teenagers and young people are more focused on school and academic work. Across the OECD club of rich countries, the share of 25- to 34-year-olds with a tertiary degree rose from 26% to 43% between 2000 and 2016. A larger proportion of teenagers believe they will go on to university.

As a result, they may be staying at home more. Mike Roe, who runs a drop-in youth club in Brighton, in southern England, says that ten or 15 years ago clubs like his often used to stay open until 11pm on school nights. That is now regarded as too late. Oddly, though, teenagers are not necessarily filling their evenings with useful work. Between 2003 and 2012, the amount of time 15-year-olds spent doing homework fell by an hour a week across the OECD, to just under five hours.

Meanwhile paid work is collapsing. In 2016 just 43% of American 16- to 19-year-olds were working in July, during the summer holidays—down from 65% two decades earlier. The retreat from lifeguarding and burger-flipping worries some Americans, including Ben Sasse, a senator from Nebraska, who argues that boring paid work builds character and resilience. Teenagers are no fools, however. The average 16- to 19-year-old American worker earned \$9.20 an hour in 2016. Though an improvement on previous years, that is a pittance next to the cost of university tuition or the large and growing wage differential between professional-level jobs and the rest. The fall in summer working has been mirrored by a rise in summer studying.

Ann Hagell, a British adolescent psychologist, suggests another explanation. Today's young people in Western countries are increasingly ethnically diverse. Britain, for example, has received large flows of immigrants from Africa, south Asia and eastern Europe. Many of those immigrants arrive with strong taboos against drinking, premarital sex and smoking—at least among girls—and think that only paupers send their children out to work. Ms Hagell points out that teenage



drinking is rarest in London, where immigrants cluster.

Finally, technology has probably changed people's behaviour. Teenagers are heavy internet users, the more so as they acquire smartphones. By their own account, 15-year-olds in OECD countries spent 146 minutes a day online on weeknights in 2015, up from 105 minutes in 2012. Chileans lead the rich world, putting in an average of 195 minutes on weekdays and 230 minutes on weekend days.

Social media allow teenagers' craving for contact with peers to be squared with parents' desire to keep their offspring safe and away from harmful substances. In America, surveys known as Monitoring the Future have recorded a decline in unsupervised hanging-out, which has been especially sharp since 2012. Teenagers who communicate largely online can exchange gossip, insults and nude pictures, but not bodily fluids, blows, or bottles of vodka.

The digital trade-off comes at a cost. Sophie Wasson, a psychologist at Harvard-Westlake, a private high school in Los Angeles, says that some teenagers seem to use social media as an alternative to face-to-face communication. In doing so, they pass up some opportunities to develop deep

emotional connections with their friends, which are built on non-verbal cues as well as verbal ones. Ms Wasson believes that social media widen the gap between how teenagers feel about themselves and what they think their friends want them to be. Online, everybody else is always happy, good-looking and at a party.

Technology also enhances surveillance. Parents track their children's phones and text frequently to ask where they are. Benjamin Pollack, a student at the University of Pennsylvania, remembers attending a camp in Israel when he was in high school. He communicated with his mother every day, using Facebook Messenger and other tools. As it happens, his mother had attended the same camp when she was a teenager. She contacted her own mother twice in eight weeks.

Worries about teenagers texting and playing computer games too much (and, before that, watching too much television) have largely given way to worries about smartphones and social media. Last November Chamath Palihapitiya, formerly a Facebook executive, said that his children were "not allowed to use that shit". But strong evidence that technology is rewiring teenagers' minds is so far lacking. American and British data show that, although heavy internet use is associated with unhappiness, the correlation is weak. One paper on Britain by Andrew Przybylski and Netta Weinstein suggests that heavy computer and smartphone use lowers adolescents' mood much less than skipping breakfast or skimping on sleep.

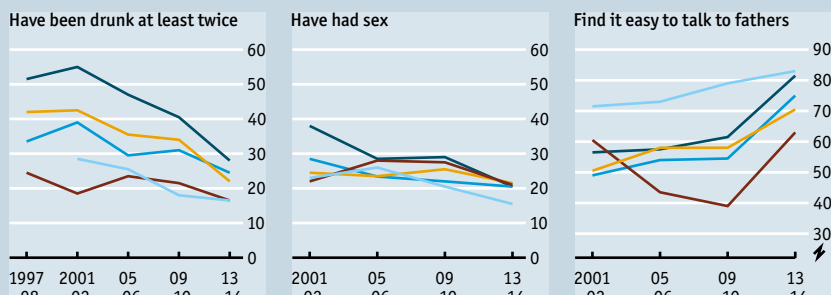
Sufficient unto the day

Still, something is up. Whether it is a consequence of phones, intrusive parenting, an obsessive focus on future job prospects or something else entirely, teenagers seem lonelier than in the past. The OECD's PISA surveys show that the share of 15-year-olds who say they make friends easily at school has dropped in almost every country (see chart 2). Some Western countries are beginning to look like Japan and South Korea, which struggle with a more extreme kind of social isolation in which young people become virtual hermits.

Perhaps they will get round to close friendships in time. One way of thinking about the differences between the youth of today and yesterday is that today's lot are taking it slow. They are slow to drink, have sex and earn money. They will also probably be slow to leave home, get married and have children. What looks to older generations like indolence and a reluctance to grow up might be, at least in part, a response to medical developments. Babies born today in a rich country can expect to live for at least 80 years. Goodness knows at what age they will be entitled to state pensions. Today's young people have all the time in the world. ■

Teen angels

Behaviour and attitudes of 15-year-olds
Average of boys and girls, % of total





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Digital music

Float of a celestial jukebox

Spotify has changed how people listen to music. To make money it may have to upend the industry yet again

IN JUST a few short years Spotify has evolved from *bête noir* of some of the world's most prominent recording artists to perhaps their greatest benefactor. The Swedish company transformed the way people listen to music, and got them used to paying for it again after digital piracy had crippled sales. Global revenues from music streaming, which Spotify dominates with 70m subscribers, more than tripled in three years, to an estimated \$10.8bn last year, for the first time surpassing digital and physical sales of songs and albums.

But if it is earning billions for others, Spotify is losing money for itself—with an operating loss of nearly \$400m in 2016—because it pays out at least 70% of its revenues to the industry, mostly in royalties. As it prepares for a “direct” listing on the New York Stock Exchange (see next article) it must convince investors that it has a path to profitability. Some reckon it can find one, but only at the expense of the labels it has enriched: by paying them less in royalties; by getting them (and others) to pay for promotions and data services; and even by competing with them directly, by making its own deals with artists. In other words, Spotify may only be able to make money by reshaping the industry yet again.

The economics of recorded music had shifted twice in the internet era before streaming came along, first owing to illegal file-sharing services such as Napster, then because of iTunes from Apple, which

broke up the album. Retail music sales in America plunged by almost half, from a peak of \$14.6bn in 1999 to a low of \$6.7bn in 2014 (see chart 1). Spotify, which had launched its streaming application in 2008, was only a minor source of revenue but a major target of artists who believed they would never make money earning a fraction of a penny per song streamed.

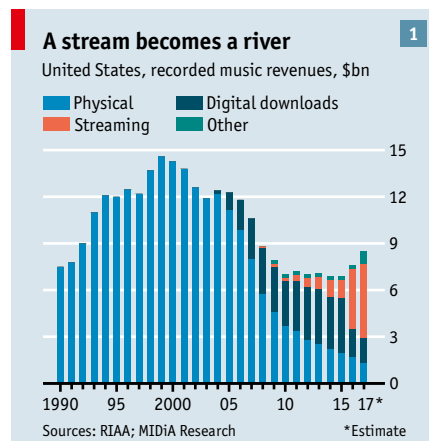
But Daniel Ek, the founder of Spotify (pictured), has long argued that the virtues of streaming would be manifest only when it achieved scale. That has begun to happen. In addition to Spotify's subscribers who pay \$10 a month (at least 70m more use its ad-supported free service), Apple Music has 30m subscribers and oth-

er music services have at least 70m more, according to MIDIA Research, a consultancy (see chart 2). Songs from the most popular artists now routinely surpass 1bn streams on subscription services—“Shape of You” by Ed Sheeran was Spotify's top track in 2017 as of early December, with 1.4bn streams. On average a billion streams on subscription services brings in about \$7m for big labels, with perhaps \$1m of that going to the artists. Another pot of money goes to songwriters and composers.

With a big and widening lead over its competitors, Spotify has quickly become the industry's most important distributor. Redburn, a research firm, estimates that in the first quarter of 2017 Spotify accounted for 17% of the \$5bn in revenues taken by record labels, and its share is growing. That gives it several points of leverage that could help it turn around its operating losses.

Spotify's most obvious power is its ability to make stars via its playlists and recommendation algorithms, much as radio DJs used routinely to do with simple airplay. Spotify has more than 2bn playlists; most of them are made by users themselves, but Spotify's own curated lists attract millions of followers. Redburn reckons that up to 20% of streams are via one of Spotify's own playlists. AWAL, an independent label run by Kobalt, a music-services company, says that getting on a Spotify playlist boosts a music act's streams by 50% to 100%. Spotify would have to be careful how to monetise this clout, lest it be suspected of charging for a place on its playlists. But last year it did begin testing “sponsored songs” on its free service.

Another source of power for Spotify is its granular data on listening habits, ranging from where songs are listened to most and at what times, to what other acts a certain song's listeners will also tend to like. Spotify provides a lot of data at no charge ▶▶



▶ to industry players, some of which either it must do (for calculating royalty payments) or considers wise to do.

Mr Ek says making data freely available helps artists use the platform better, which in turn benefits Spotify. Its data are already used by labels, artists, promoters and ticket sellers in planning album releases, artist collaborations and concert tours. But analysts believe that, as Spotify gets bigger, it can do far more with its data and extract a good price—from promoters of live events, say, as well as ticket sellers.

The streaming service's most intriguing point of leverage is that it could use these advantages to become a recorded-music label itself, working directly with artists. Matthew Ball, an analyst, argues that Spotify is sure to start cutting deals with artists in which it pays an upfront guarantee and promises a percentage of streaming revenue that is much smaller than it pays labels, but far more than artists get now.

The maths for these sorts of deals may be simplest for established artists, for whom performance is most predictable (though many will use their clout to get better deals with their existing labels). But with its data and playlist advantages Spotify can identify, elevate and theoretically sign contracts with up-and-coming artists, too. The channels that the labels knew so well, such as radio and record stores, have diminished in importance: "Breaking artists is one of the most important things labels do but it is becoming harder than ever," says Mark Mulligan of MIDIA.

Becoming a label will not happen soon, partly because it would infuriate the incumbents who supply most music. But the growth of Spotify's core business has come at a cost that is hard to ignore. Its royalty payments are a built-in, large expense. (Some rights-holders are clamouring for even more; in December Wixen Music Publishing sued Spotify for \$1.6bn.) Competition from other paid streaming services mean it is hard for it to raise its own prices. To fund itself Spotify raised \$1bn in debt in 2016 under terms that allowed two of the lenders, TPG, a private-equity group,

and Dragoneer, a hedge fund, to convert to equity at a discount that increased with time, making an early public listing desirable. As long as its losses mount, it will seek other ways to turn a profit.

That threat gives the labels an incentive to accept lower royalty payments from Spotify. They have another reason, too: Alphabet's YouTube, a source of free listening for perhaps more than 1bn people a month, which generates far less in royalties than subscription streaming. By helping Spotify, the industry helps itself.

Spotify has indeed negotiated reductions in royalty payments in the past year, beginning with Universal Music Group, a division of Vivendi and the largest supplier

of music to the service, which reportedly agreed to be paid 52% of revenues, down from 55%. Spotify struck similar deals with the other two big labels, Warner Music Group and Sony Music.

Still, big-label bosses have long been conflicted about the company that changed their industry (and in which they each have a small equity stake). Early on they were sceptical about whether Spotify would make them much money. Now they may worry they are creating a future rival, much as the Hollywood studios licensed their content to Netflix. For the first time in 20 years the music industry is growing strongly. The fight for who comes out on top may have only just begun. ■

A new way to float

Direct flight to NYSE

Spotify opts for an unusual way of going public. Can it be a model for others?

FOR seasoned bankers and starry-eyed entrepreneurs alike, doing an IPO, or initial public offering, is synonymous with the very idea of taking a firm public. No wonder, then, that the decision by Spotify, a music-streaming service, to opt for an unconventional alternative called a "direct listing" has prompted debate. Instead of paying investment banks hefty fees to arrange an IPO, Spotify plans to have existing shares simply switch one day to being tradable on the New York Stock Exchange (NYSE).

IPOs themselves have become rarer, as startups such as Uber and Airbnb have chosen to raise money through private markets instead. Although there was an uptick in the number of IPOs in America in 2017—108, compared with 74 in 2016—the average number of IPOs has remained at around 100 annually since 2000, compared with over 300 in the course of the two previous decades. But until now no big company had contemplated direct listing as an alternative. The structure has been seldom used: in America, examples include a few vehicles for investing in property and a handful of small biotech firms. Among American exchanges, only NASDAQ has so far allowed such listings; the NYSE has proposed a change to its own rules that would allow them (it is still to be approved by regulators).

An IPO contains many elements: investment banks drum up investor interest through a roadshow, sign up new investors, set a target price, line up blocks of shares from existing shareholders, underwrite new share issuance and smooth trading on the first day by guaranteeing a floor for the share price. A direct listing comes with no such luxu-

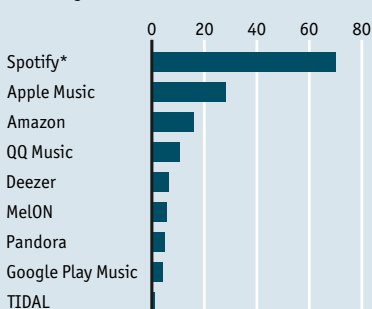
ries. With no new share issuance, all shares that come to market must come from existing shareholders. But with no special provisions for large blocks of trades, they will only be able to sell what the market will bear; a large sell-off would cause the price to plummet. And if too few shareholders sell, the first days may see thin and volatile trading, resulting in strange pricing for the shares.

Why would Spotify go for the direct option? The savings on underwriting fees are not trivial. Perhaps more important is that without the 3-6 month lockup period typically seen in IPOs (presold blocks aside), existing holders will be free to sell shares when they like. In the meantime, they need not fear their holdings being diluted. Spotify may think its well-known brand does not need a full roadshow. The onerous terms of a \$1bn loan Spotify took from TPG and Dragoneer, two investment firms, may have also played a part. The loan not only became dearer the longer Spotify stayed private; it also included an exchange of debt into equity at a level tied to an IPO price.

Others may follow in Spotify's path. The publicity around direct listing has prompted "intense interest", says Anna Pinedo of Morrison Foerster, a law firm. A senior IPO banker insists that direct listing is a "niche" suitable only for the small subset of private companies that already have a large number of shareholders. But some privately held tech companies do indeed have big shareholder bases and brands as well-known as Spotify's; if they decided they did not need new capital as part of listing, the direct option could fit the bill. If Spotify's listing goes smoothly, IPOs may no longer be the only game in town.

Chart topper

Streaming music subscribers, June 2017, m



Sources: MIDIA Research; company reports

*January 2018

Speculative execution

Silicon meltdown

Even if chips are never hacked, their flaws have consequences

THE timing could hardly have been worse. Just as the tech industry was preparing for its big annual trade show, CES, held this week in Las Vegas, it was hit by one of the most worrying computer-security scares of recent times. On January 3rd it emerged that most microprocessors, the brains of electronic devices, are vulnerable to hacker attacks aimed at stealing sensitive data, such as passwords or encryption keys. Instead of enthusing over the new gadgets presented at the event (see box), many attending discussed only one question: how great would the damage be?

Once the weaknesses became public earlier this month (researchers had first discovered them in June), some cyber-security experts said the only full protection would be to replace all affected processors. The problem is baked into the chips and enables two separate, but similar, attacks. The first, called Meltdown, makes it possible to dissolve the virtual walls separating the digital memory used by different programs, letting hackers extract data. The second, Spectre, enables a rogue program to trick a legitimate one running on the same computer to divulge information.

The scale of the threat can be overplayed. Computer firms have been toiling for months on software “workarounds” to fix the weaknesses and these are being deployed. By around January 13th, says Intel, a chipmaker, such programs will be available for more than 90% of its products. The question now is whether any attacks will occur outside the confines of a research lab, says Linley Gwennap of the Linley Group, a consultancy (lab researchers already have code running that exploits the flaws). Some predict that Meltdown will soon be forgotten, but that Spectre will plague computers for years because it offers many avenues of attack.

Even if hackers never pounce, however, the fact that the flaws have to be addressed means they will have an economic impact. Almost any computer can theoretically be attacked, but providers of cloud-computing services, such as Amazon Web Services and Google, are most vulnerable. Individual machines in the firms’ data centres often process jobs from many clients at once; hackers could rent capacity on them to get information from their virtual neighbours. These companies had already started to roll out patches before the design flaws became widely known.

In the case of Meltdown the patches

The Consumer Electronics Show

All things AI

LAS VEGAS

Artificial intelligence ruled and tech giants were out in force at CES

WHEN the electronics industry meets in Las Vegas at CES, its main trade show, buzzwords abound. But rarely has one been as pervasive as this week. “Artificial intelligence” or variations on the theme (“AI-driven”, “AI-powered” and so on) were slapped across most new products—although often the artificial overcame the intelligence.

Those attending gawped at an interactive bathroom mirror on the stand of Haier, a giant Chinese white-goods maker. Look into it, like the Wicked Queen in Snow White, and instead of being told you are the fairest, your data profile appears on the glass. It displays weight (from an interactive scale), urine-test results (from a sensor on a connected lavatory) and other health-related things.

For those attentive visitors who could see past the AI assault, another theme could be identified: firms innovating around how they innovate. Haier’s stand also had a new device that is the result of combining its product development with that of another of its brands, GE Appliances (GEA)—namely, a washing machine that reads wireless tags sewn into garments’ care labels by the manufacturer and picks the right cycle.

GEA, which was bought by Haier in 2016, is launching a new service called Giddy to help other big companies make hit products from fringe ideas. The offering is part of “FirstBuild”, GEA’s innovation lab, which helps entrepreneurs take new concepts through to small volumes of the finished product. An example is an induction cooker that uses Bluetooth to control cooking temperatures from a smartphone.

Japan’s Panasonic used CES to tout a new project to change how it designs, builds and sells consumer products, called HomeX. It wants its divisions to work together rather than stay in silos, and is also collecting more data to understand customers’ needs (instead of engineers adding features that few use).

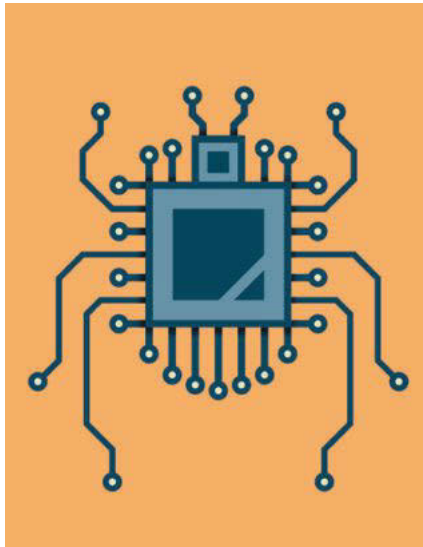
CES also underlined that firms will increasingly need to co-operate with tech giants on innovation. As more consumers get used to smart speakers such as Amazon’s Echo, they will want other devices to understand voice commands, too. The e-commerce giant and Google were busy cutting deals to get their virtual assistants into other firms’ products. AI may come to mean “audio intelligence” at next year’s show.

come at a cost: they lower a computer’s performance. Firms say they have not yet seen a big impact, but even a few percentage points of number-crunching power matter, says Stacy Rasgon of Bernstein Research. In the case of Google, whose data centres are said to house more than 1m servers, the performance impact could

amount to the equivalent of tens of thousands of servers. Cloud providers are likely to demand compensation from Intel, which makes most of the processors used in data centres.

Intel has already been hit by at least three class-action lawsuits over these vulnerabilities. If they do get exploited at scale, the firm could face a public-relations disaster similar to one in 1994 when news emerged of a bug that caused its Pentium processors occasionally to divide numbers incorrectly. Although the flaw did not affect most users, Intel was forced to replace many processors, leading to a \$475m charge against its earnings.

The chip giant maintains that this time is different, noting that back then the problem stemmed from a bona-fide bug in its chips; now it is the result of a weakness in the way that most processors are designed, which also affects products from other chip firms, including AMD and ARM. Yet even if the firm does not take a financial hit, the episode will have made its chief executive, Brian Krzanich, look bad. In late November, nearly six months after Intel was warned of the vulnerabilities, he sold Intel shares worth \$39m. The firm says that the sale was unrelated and executed under ▶▶



▶ an automated trading plan, but this scheme was set up in October.

Mr Krzanich could do without the distraction, since Intel has other, bigger problems. It still reigns over the markets for chips that power personal computers and standard servers in data centres. Yet the action in the semiconductor industry has shifted to processors that excel at processing reams of data for artificial-intelligence services, such as those sold by NVIDIA. Intel is not standing still. It has bought Nervana Systems, an AI tech firm. But it has yet to prove itself in this new world.

Meltdown and Spectre are also likely to lead to soul-searching in the computer industry as a whole. Paul Kocher, one of the researchers who found the vulnerabilities, has said that they are chiefly a result of putting performance ahead of security. They stem from efforts to accelerate computers that date back to the 1990s. In order to save valuable nanoseconds when running a program, processors tackle some snippets of code ahead of time, a trick called “speculative execution”. Hackers can use bits of information that are not needed and are discarded, to their advantage.

There is no easy fix to this. Speculative execution is as fundamental to the working of modern chips as assembly lines are to a modern factory. More broadly, the economic incentives in the computing business favour speed and sharing over security, which promotes brittleness and fragility. The computer industry will survive this one-two punch, but other blows are bound to keep landing. ■

Companies and the environment

Low-carb diet

Some firms are voluntarily imposing carbon pricing on themselves

ECONOMISTS have long argued that the most efficient way to curb global warming is to put a price on the greenhouse-gas emissions that cause it. A total of 41 OECD and G20 governments have announced either a carbon tax or a cap-and-trade scheme, or both. Add state and local schemes, and they cover 15% of the world’s emissions, up from 4% in 2010. Voters concerned about climate change are egging them on. So, too, are corporate bosses. More firms are imposing such pricing on themselves, even in places where policymakers are dragging their feet.

Of the 6,100-odd firms which report climate-related data to CDP, a British watchdog, 607 now claim to use “internal carbon prices”. The number has quadrupled since CDP first began posing the query in its an-



Disney offsets its air miles

nual questionnaire three years ago. Another 782 companies say they will introduce similar measures within two years. Total annual revenues of these 1,389 carbon-price champions amount to a hefty \$7trn. Most come from rich countries, but more developing-world firms are joining them.

Corporate carbon-pricing comes in two main varieties. The first involves business units paying a fee into a central pot based on their carbon footprint. Microsoft, for example, charges all departments for every kilowatt-hour of dirty energy they contract or air mile flown by executives, to help meet firm-wide climate targets. This payment, equivalent to \$8 per ton of carbon dioxide, is designed to encourage those who can cut emissions most easily to do more, and nudge everyone to do something, says Rob Bernard, who oversees the software giant’s environmental activities.

Tracking exactly how much of the power a business unit consumes comes from coal, say, is not always straightforward. Fee-based systems like Microsoft’s therefore remain rare. Although some smaller firms have toyed with them, Disney is the only other big multinational to use one. Many more firms use shadow carbon prices to stress-test investments for a world of government-mandated levies.

Investors increasingly demand that companies take that possibility seriously—81 countries mention a carbon cost in their national pledges to limit global warming under the Paris climate agreement of 2015. Plenty of the Paris promises remain just that for now, but bosses ignore them at their peril, cautions Feike Sijbesma, who co-chairs the Carbon Pricing Leadership Coalition, which groups green-minded governments and businesses under the auspices of the World Bank.

In his day job as chief executive of Royal DSM, Mr Sijbesma has made the Dutch food producer examine all proposed ventures to check whether the sums still add up if a ton of carbon dioxide cost €50 (\$60),

well above the going rate of €6 or so in the European Union’s emissions-trading system, which is kept low by an oversupply of permits. Where they do not, alternative feedstocks or cleaner energy suppliers must be found. If a project still looks unprofitable, it could be discarded altogether.

Businesses ranging from European supermarkets (France’s Carrefour and Britain’s Sainsbury’s) to Indian cement-makers (ACC, Ambuja and Dalmia) espouse shadow pricing. Some add flourishes. Besides assessing capital projects at €30 per ton of carbon dioxide, Saint-Gobain, a French maker of building materials, factors in a higher price of €100 per ton when choosing between long-term research-and-development projects. AkzoNobel, a Dutch chemicals giant, uses €50 per ton for most investments, but double that for those with lifetimes of 30 years or more.

These are some of the most ambitious schemes; many others lack bite. Plenty of firms which declare their shadow prices set them below \$10 per ton of carbon dioxide. As John Ward of Vivid Economics, a consultancy, points out, that is “just high enough so it has no real impact”. Companies which use higher prices should treat them as more than a “spreadsheet exercise”, counsels one climate-change expert. Oil majors have priced in carbon for years when assessing exploration projects. But there is little evidence that high-price scenarios swayed their investment decisions.

Nevertheless, the trend for firms to incorporate carbon pricing is welcome. Some of the less impressive schemes could in time come to resemble Microsoft’s or Royal DSM’s meatier ones. Such voluntary steps will not stop the planet sizzling. But they help firms prepare for when governments do bring in pricing schemes. In December China launched a market for trading carbon emissions which is the world’s largest. The clearest sign of progress would be for similar policies elsewhere to render internal exercises redundant. ■

Family-run businesses in Taiwan

End of the line

TAIPEI

Taiwanese bosses are the Chinese-speaking world's oldest

DESPITE her father's pleas, Cherry Liu refused to work for the family business, a small electronic-components company founded in 1979 on the outskirts of Taipei. A 34-year-old diamond dealer based in Sydney, Ms Liu says she is simply not passionate about gadgets such as circuit-breakers. Nor are her siblings. Her 64-year-old father cannot find a successor, but he will not even consider recruiting someone outside the family, she says. He fears that a newcomer might leave and take the family's precious list of customers and suppliers with him.

Taiwan's economic boom was fuelled by people like Ms Liu's father, entrepreneurs who started from nothing to build successful family-run companies, many of which are now huge. These firms still dominate Taiwan's export-reliant economy, which specialises in high tech. Of all listed firms, 70% are family-run, compared with 33% for Chinese firms and 40% for Hong Kong-based ones. Almost three-quarters of family concerns are operated by their original founders, according to a report in 2017 by the Taiwan Institute of Directors.

A succession crisis is likely to be the eventual result. Taiwanese business is run by the very oldest chief executives in the Chinese-speaking world, notes Allen Tsai of the Institute of Directors; the average age of a Taiwanese boss of a (listed) company is 62, compared with 47 for Chinese ones. These founders (and those of unlisted firms, too) usually eschew outsiders; their children are often uninterested. Only 9% of firms have written succession plans, according to PricewaterhouseCoopers Taiwan; the global average is 15%.

Foxconn, the world's largest contract electronics manufacturer and one of Taiwan's best-known firms, is among the firms dogged by speculation about succession. Its founder, Terry Gou, is 67; about a decade ago he enlisted the help of academics to develop succession plans for senior executives in different divisions and subsidiaries. Mr Gou was initially interested in finding a successor for himself, says Tang Ming-je of National Taiwan University, who took part, but later dropped the idea.

Mr Gou's children have expressed no interest in taking over the business, although one of his sons, Gou Shou-cheng, discreetly involves himself in Foxconn deals. He runs a company that operates an electronics shopping mall in Taipei, and heads charities, all owned by his father's

Peak season for health clubs

The squeezed middle

Low-cost gyms and luxury ones will profit most from the January rush

EVERY year, like clockwork, swathes of humanity go through the same routine. On December 26th and January 1st, as the fog of cheese, chocolate oranges and champagne lifts, remorse creeps in. Online searches for "get fit" and "lose weight" surge (see chart). Health clubs of all shapes and sizes stand ready to respond. "Intent typically takes seven to 14 days to turn into reality," notes Humphrey Cobbold, chief executive of Pure Gym, Britain's largest gym chain. So this week will be one of the busiest for the gym industry globally.

There will be other ripple effects, too. According to recent data from Cardlytics, which monitors spending in Britain, people spend 18% more in sports shops the week before joining a gym (compared with the week prior), and 16% more in speciality health shops. Spending on fashion items also increases around the time of joining a gym.

Many gym recruits will wear their new togs for an ordeal known as high-intensity interval training. In the basement of Another Space, a "boutique" club near London's Leicester Square, music pumps and lights flash as a trainer

shouts instructions to a group of mostly young women. They are pushed through bursts of burpees, handclap push-ups and various kicks and punches at boxing bags. The regime is murderous, but the club's luxurious changing rooms and made-to-order-smoothie bar soothe some of the pain. Such high-end gyms can charge up to eight times as much as low-cost ones, based on two visits a week over a year, estimates Ray Algar, an industry analyst. Boutique venues such as SoulCycle or Pure Barre are popping up, particularly in big cities and often backed by private equity.

They are at one end of a bifurcating fitness market. At the other are budget gyms, which have accounted for the bulk of gym growth in recent years. America's market leader, Planet Fitness, promises "the best value on the planet", and has over 10m members; its shares soared in 2017. One in seven people in Britain is a gym member, and 35% of private memberships are low-cost, up from 14% in 2013, according to Leisure DB, a data firm. Mid-range clubs, meanwhile, have fared less well. Virgin Active recently sold its less luxurious facilities in Britain to avoid being squished in the middle.

Pure Gym expects soon to reach 1m members. Part of its appeal is that, unlike traditional gyms, members are not bound by a long contract. "We have taken a £500 decision and turned it into a £20 decision," says Mr Cobbold. That will be good news for some gym converts because many will soon suffer a second round of regret. Most new joiners do not plan to squander money. But gyms thrive on non-attendance. According to the IHSA, an industry body based in Boston, fewer than half of gym members in America hit the treadmill at least twice a week—until the exercise cycle begins anew the following January.

Gym cycle

Google searches, worldwide, 100=maximum



Source: Google Trends

company. But he keeps such a low profile that one analyst who monitors Foxconn was unaware of his role. Other large firms facing succession dilemmas include Quanta Computer and Tatung, a conglomerate.

Succession is not the only problem. President Tsai Ing-wen has called for the country's companies to innovate, urging Taiwanese manufacturers to update their long-established pattern of taking orders from branded Western companies to make gadgets like computers and smartphones. Her government is trying to encourage new fields, including smart machinery,

green energy and biotech. That may jar with the instincts of family-run firms. Wei Tsung-che, an economist with the semi-official Chung-Hua Institution for Economic Research, noted in a recent study that companies with ageing bosses often plan only for the short term, rely too much on their past experience and are reluctant to make bold, disruptive changes.

Their children, often educated abroad, could be potential disrupters if they want to work in the family firm. But they often find that their knowledge of current consumer preferences, from social-media plat- ▶▶

forms to apps, are ignored because their parents have the last word on strategy.

When the next generation is both keen to get involved and listened to, Taiwanese family custom can still send plans awry. In Japanese family-run firms one successor tends to be named, whether someone from the dynasty or an adult employee who is “adopted”. The usual practice in Taiwan, by contrast, is to divide up the company between all the children.

Sometimes sibling rivalry gets out of hand. Evergreen Group, which owns EVA Airways, one of Taiwan’s two big carriers

alongside China Airlines, has suffered chaotic management ever since its founder, Chang Yung-fa, died in 2016. He had named Chang Kuo-wei, his fourth son by his second wife (formerly his mistress), as his successor and main heir. As his will was not legally watertight, his three half-brothers staged a boardroom coup and ousted Mr Chang as chairman, sending shares in listed subsidiaries of Evergreen Group southward. Now Mr Chang is getting his revenge by planning the launch of a rival third Taiwanese international carrier, called StarLux, in 2019. ■

labour is rife—hence widespread discontent with conditions.

Over time, new processing techniques have raised output, to 1.25m tons last year, but at the expense of quality. Tea leaves are now shredded into tiny bits, which generate lots of flavour but less of the subtlety for which Indian tea has been prized abroad (Indians boil rather than brew their tea and so tend to make do with lower-quality leaves). Improvised small-time growers, some of them with barely a few plants, have sprouted, further denting quality. With much lower costs, given they carry none of the social obligations of large plantations, these small producers now make up nearly half the market, from barely nothing at the turn of the century.

Traditional producers have tried to find ways to adapt. Giants like Hindustan Unilever or Tata have focused on marketing and selling the stuff to tea-drinkers rather than just growing it and selling it wholesale. Others have invested heavily abroad; McLeod Russel, the world’s biggest producer, last year made enough profits in Uganda, Vietnam and Rwanda to offset losses in India. Another large producer, Rossell India, has diversified into kebab shops and making military kit.

Many would like to use their tea land for other purposes, but this is forbidden by government regulation. The resulting overproduction of lower-quality tea has depressed prices and profits (though a bad harvest in Kenya has recently nudged up prices). It also bodes ill for future exports. According to ICRA, a credit-rating agency, the country’s nine biggest planters combined made no profit in the most recent financial year, ending in March 2017. Few producers are making the investments that are needed to raise productivity by uprooting old bushes and planting new ones.

Tea marketers’ hope is to nudge consumers both in India and abroad to slurp pricier brews, moving them from loose tea to tea bags, canned iced tea or premium blends. Their plan is in its early stages, and a short-term setback came this summer when a three-month agitation by local separatists in the Darjeeling area of West Bengal, which grows what is considered the country’s finest tea, resulted in perhaps 40% of the year’s revenue being lost.

Yet the biggest gripe in the industry is not to do with prices, quality or even heavy-handed regulation. Customers, especially millennials, increasingly lack the patience to make a proper cup of tea, laments Krishan Katyal, the boss of J Thomas. The leaves need at least three minutes to release their complex aromas, beyond an eternity for youngsters these days. Like a master distiller told of a single malt being mixed with Coca-Cola, he winces at the thought of drinkers squeezing their tea bag after merely a few seconds. “That poor thing,” he says. “It never got a chance.” ■

Tea in India

Strange brew

KOLKATA

The Indian tea industry is going through tepid times

BULK tea sales at the offices of J Thomas in Kolkata, which first started auctioning the stuff in 1861, lack the boisterousness of years past. Gone is the noisy trading pit, replaced by a handful of buyers sitting behind their laptops in a silent auditorium. Armed with tasting notes, they bid electronically on hundreds of lots drawn from the city’s hilly hinterlands in Assam and West Bengal. To passing visitors, it appears as if everyone in the room could do with a little caffeine. Yet within only three hours or so, enough tea changes hands to brew 24 Olympic-sized swimming pools.

If Indian tea delights those who get to drink the country’s finest blends, it frustrates all those who plant, pluck and peddle it. Archaic government regulations have in recent years pushed up production costs to around 175 rupees (\$2.70) per kilogram, well above average auction prices of 140 rupees, which makes large cultivators grumble. Pickers complain about working conditions. Marketers fret over whether young people around the world thirst for tea as their parents do.

For now, tea remains the most popular drink in the world after water. Around 40% of global production of black tea comes from India (China also grows the stuff but specialises in green tea, which uses the same species of plant but processes it differently). Many of the firms in the business can trace their heritage to well before Indian independence in 1947.

Back then four out of five lots used to end up abroad; now the same proportion is drunk locally. That is due as much to sluggish exports as to rising domestic demand. Tea drinking in India has grown by less than 3% a year since 2012, and foreign sales have barely risen in 70 years; in some rich export markets they are shrinking. On the

world scene India is behind Sri Lanka and Kenya, both relative newcomers.

Government meddling, in the form of onerous, outdated rules, is mostly to blame for the industry’s worsening fortunes (although producers do also benefit from protection from imports). Regulations from the 1950s have heaped paternalistic obligations onto owners of large tea plantations. These mandate the number of workers and provide their families with schools, health care, subsidised food, electricity and so on. Labour now accounts for around half of production costs, a figure which has grown by 12% a year over the past three years. Despite that, few workers make more than \$2 a day on top of their housing cost and other benefits, and child



Tasseography in progress

Schumpeter | BlackRock v Blackstone

Mirror, mirror on the wall, who is the mightiest finance tycoon of them all?



THE two most successful entrepreneurs on Wall Street of the past two decades work on opposite sides of Park Avenue. Larry Fink, 65, is a Democrat whose hand is glued to a Starbucks cup and who runs BlackRock from 52nd Street. Stephen Schwarzman, 70, is a Republican who wears striped shirts with plain collars and runs Blackstone from between 51st and 52nd. The two are ex-colleagues, but have sharply opposing views on investment and management. Their trajectories illustrate how finance is changing. Mr Fink, once the underdog, is on top.

His firm, BlackRock, is the world's largest asset manager, with \$6trn of assets. It stands for computing power, low fees and scale, and is booming. Mr Schwarzman's firm, Blackstone, is the largest "alternative" manager, focused on private equity and property, with \$387bn of assets. It stands for a time-honoured formula of brain power, high fees and specialisation. Lately, it has trod water.

When Mr Fink was a securities trader in his 30s he joined Blackstone, co-founded by Mr Schwarzman, to set up its bond-investment business. This was named BlackRock, and became a separate company in 1995. As late as 2007 the two firms had similar market values. Yet they have taken diametrically different approaches to investment and to their own control structures.

BlackRock mainly sells passive funds (including exchange-traded-funds, or ETFs) to institutions and to the masses. It has been a leader in the shift away from conventional asset managers. Its fees are wafer-thin: it makes 0.2 cents of revenue a year for every dollar it manages. Blackstone, meanwhile, uses leverage and changes the management of firms in order to try to outperform. Its fees are 1.8 cents. Its clients are institutions and the rich.

The structure of Mr Fink's firm is simple; one share, one vote. He owns only 0.66% of it (the largest shareholder is PNC, a bank, with a stake of 22%). This gave BlackRock the flexibility to issue shares to buy Barclays' fund-management arm in 2009. Mr Schwarzman, by contrast, has tightly hugged control of his partnership. Outside shareholders have no vote at Blackstone, and its accounting is as baffling as Kanye West or the works of Hegel.

Both firms pay out a handsome portion of their sales to staff—between 30% and 40%—but their cultures vary greatly. Blackstone's bill is spread over 2,240 workers, who earn on average \$1m a year, three times the average of BlackRock's 13,000 staff.

Which strategy has been the best route to world domination? Passive money run by a simple firm, or active money run by a complex one? Schumpeter has devised a five-part Wall Street "tycoon test". It gauges the firms' size, the bosses' personal wealth, the wealth created for clients and also for shareholders, and the influence the two men wield beyond their own companies.

Mr Schwarzman wins only one of the five tests (albeit hands down). His fortune is \$13bn, according to Bloomberg; Mr Fink is worth less than \$1bn. When it comes to size, BlackRock is ahead. Its market value of \$86bn is double that of its original parent. Measured by sales, profits and cash returns to shareholders, it is, on average, 31% larger. It has raised seven times the amount of net client money cumulatively over the past decade.

There is no very satisfactory way to compare how each firms' clients have done. But an extremely crude yardstick is that BlackRock's clients have made roughly \$2.9trn of profits over the past decade, compared with \$202bn for Blackstone's clients. For each firm the gain is equivalent to about 80% of average assets under management over the period. Both firms have benefited from soaring markets; it is not clear that Blackstone's active management and use of leverage have delivered much better results.

Both have created wealth for their shareholders, but, again, BlackRock is ahead, with a boost of \$50bn-70bn (depending on the method and including cash returned to shareholders) against \$32bn at Blackstone over the past decade. Mr Fink's achievement is in the same range as that of acclaimed entrepreneurs such as Reed Hastings at Netflix or Elon Musk at Tesla. BlackRock is valued on 25 times profits, versus 11 for Blackstone, suggesting that investors prefer its simple structure and think it will grow faster.

The final test is power. Mr Schwarzman has sway over a narrow group of businesses his firm controls, and he is a champion networker. But Mr Fink's firm probably has more overall clout: it owns 5-7% of most big listed companies in the Western world, giving it enormous influence. Mr Fink has used this platform to urge bosses to invest more. BlackRock votes against the advice of the managers of the firms it invests in about 10% of the time.

Scoring three or four out of five, Mr Fink comes out on top. And yet BlackRock has lots to worry about. A stockmarket dip might sour the public's love affair with passive funds, whose value would slump. A crash might destabilise the inner workings of ETFs, which operate a bit like giant derivatives. Fierce competition could push down fees. And the more BlackRock uses its power to influence other firms, the more regulators will scrutinise it.

Mr Schwarzman's firm, meanwhile, has a hidden strength: \$92bn of "dry powder", or unspent funds. But it will struggle to catch up. Although its funds have made internal rates of return (a performance measure) of about 15% since the 1990s, asset prices are high, making it hard to crank out good returns on new money invested. The best way for Mr Schwarzman to serve his shareholders would be to convert Blackstone from a fiddly partnership to a normal firm, which would command a higher valuation.

Slumming on Park Avenue

Great fortunes on Wall Street are the result of technology waves and investment trends as well as personal drive and charisma. Mr Fink has played a good hand very well. Yet the rise of both men is also evidence that Wall Street's pecking order is never stable. If Mr Schwarzman passes Mr Fink on Park Avenue he should congratulate his former colleague—and remind him that somewhere, someone young and hungry is plotting his downfall. ■



America's trade policies

Steel wars

President Donald Trump has no easy options for solving the world's steel problem

EVERY Tuesday, senior members of the administration gather in the White House to discuss trade. They are divided between hawks, who argue that America needs to be tougher in its defence against what they see as economic warfare waged by China, and doves, who worry about the costs of conflict. So far, against all expectations when President Donald Trump entered the White House, the doves have prevailed. The first of a series of legal deadlines could soon unleash the hawks.

Last April Wilbur Ross, the commerce secretary, initiated a probe into whether steel imports were a threat to America's national security. His department pointed to a "dramatic" increase in steel imports over the previous year and to the idling of nearly 30% of America's steel-production capacity, as imports feed a quarter of its consumption. If the report, due by January 15th, finds imports are a threat, Mr Trump, under Section 232 of the Trade Expansion Act of 1962, will have 90 days to respond.

The report's conclusion is not in much doubt. The government is likely to argue that steel is important for the defence industry. It is used to make navy ships and submarines; "exotic" high-strength, low-weight alloys are used for fighter jets. The armed forces use only a tiny fraction of domestic steel output, but some producers claim that to make the requisite high-end specialised steel, they rely on selling lower-quality stuff in volume to cover their fixed costs. The government can also consider

the importance of steel to America's "critical infrastructure", including chemical production, communications and dams.

In fact, a hefty chunk of America's steel imports come from long-standing allies, like Canada and the EU, rather than China, the hawks' real target. And an investigation into iron ore and semi-finished steel in 2001 found that on a broad definition, an upper limit for the fraction of domestic production required by critical industries was only 31%. It is unlikely to be very much higher now. But the law is so vague that the government can decide as it wants.

The national-security case may be precarious. But the Trump administration is right that the world has too much steel-making capacity. The industry has long been prone to bloating, because of state

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support that blunts price signals. This time, China is the main culprit. Its production bulged from 15% of the global total by volume in 2000 to 50% in 2016. When its domestic demand declined, exports rather than plant closures took the strain, and mills elsewhere were left idle. Excluding China, global capacity use fell from 86% in 2004 to 69% in 2016 (see left-hand chart).

Even so, it is hard to blame China for all the world's steel woes. A document seen by *The Economist*, produced in August by Mr Trump's Council of Economic Advisers, suggested that the surge of steel imports in the first half of 2017 was consistent with changing domestic demand, not dumping by foreigners (nor did it seem, as some suggested later, to have been fed by importers stockpiling steel in anticipation of tariffs).

The steel market's struggles may be abating. Analysts at the OECD, a think-tank, reckon global capacity stopped growing in 2017. Research from Bank of America Merrill Lynch (BAML) suggests that hefty cuts in China mean it is on track to use a full 88% of its capacity in 2018. Steel prices have rallied (see right-hand chart). There is further to go. Global capacity-utilisation rates need to be five to ten percentage points ►►

Rolling in it

Steel

Production-capacity utilisation rates, %



Sources: Bank of America Merrill Lynch; Bloomberg

Price, hot-rolled coil, \$ per tonne



*Estimate †Forecast

Peter Sutherland

A father of globalisation

The death of a former head of the GATT and the WTO

LIKE the showman he sometimes was, Peter Sutherland, on December 15th 1993, concluded seven years of torturous trade negotiations by banging a gavel. He received a standing ovation. Mr Sutherland, who died on January 7th, had an indispensable role in dragging the “Uruguay round” of trade talks to agreement. He did not know that this was to be the last such comprehensive, multilateral trade deal of his lifetime.

As director-general of the General Agreement on Tariffs and Trade and, on its founding, of the World Trade Organisation, the Irishman was the public face of bodies helping to integrate the global economy. The sobriquet “father of globalisation” was, at the time, a compliment. He remained proud of the WTO. In 2004 he wrote that “for the first time in history, the world can embrace a rules-based system for economic coexistence.”

Mr Sutherland, a lawyer by training, came to Geneva by way of the Irish attorney-general’s office and the European Union. Briefly in charge of the EU’s education policy, he founded the Erasmus student-exchange programme to promote European integration. As competition commissioner from 1985 to 1989, his activism drew Margaret Thatcher’s ire: he was “that awful man in Brussels”.

After leaving the WTO in 1995, his career embodied the globalisation he had championed. He chaired both leading multinationals (BP, Goldman Sachs International), and worthy intellectual enterprises (the Trilateral Commission, the London School of Economics). His career was enough to make enemies among those who saw globalisation as an elite conspiracy. He was seen as having both fostered the process and made a lucrative career out of it. But he did more to stoke the anti-globalists’ wrath, becoming, as a UN special representative, one of the most prominent advocates of the benefits of the free movement of people. He outraged nationalists in 2012 with remarks suggesting that undermining “homogenisation”—ie, smudging national identities—was not so much an unfortunate side-effect of migration, as the point of it.

So on his passing, Breitbart, the digital voice of the alt-right, excoriated him as a “notorious mass-migration and multiculturalism campaigner”. But he is much mourned by those, like this newspaper, sharing his hopes for “noble experiments in multilateralism”, and worrying like him that they have “not always been sustained or developed as their founding fathers intended”.

► higher to give steel mills sustained pricing power, says Michael Widmer, a metals strategist at BAML. And, unlike cutting subsidies, paring capacity by decree, as China has, will not stop the problem recurring.

Some in the Trump administration see steel as part of a much bigger problem of Chinese mercantilism. They worry that China plans to build enough capacity in strategic industries to weaken, and ultimately destroy, America’s. Even if this is alarmist, influencing China is extremely difficult. A multilateral initiative last year to curb excess capacity yielded some recommendations, such as limiting subsidies and sharing information. But action is voluntary, and the data self-reported. China’s recent cuts have been driven less by pressure from the West than by domestic imperatives such as cutting pollution.

The Trump administration may now lash out unilaterally. According to one person familiar with its internal debates, some argue for the hammer of a broad tariff, while others prefer the chisel of a narrower mix of tariffs and quotas directed at particular products. Others still favour doing nothing, arguing that trade measures

would complicate the handling of delicate international issues, such as North Korea’s nuclear programme.

The costs of severe trade restrictions would indeed be great. As a result of 48 existing defensive duties on steel imports from China, they represent a mere 3% of America’s total. Broad trade barriers would upset America’s allies, invite retaliation and raise costs for American steel consumers. A legal challenge would give the World Trade Organisation the dangerous task of arbitrating over America’s perceived national-security interests.

Narrower restrictions would hurt less, but raise the chances of imports leaking into America anyway. Using the report as a threat to trigger negotiations could be the least damaging option. But others might question whether the threat of tariffs is credible, given the self-harm they entail.

For a year Mr Trump has refrained from a big trade confrontation. This is the most serious test yet of the doves’ ability to keep him from scratching his tariff itch. Document on desk and pen in hand, he may feel he has to do something. When it comes to steel, there are no good options. ■

Crypto-currencies

Beyond bitcoin

Which could be the next digital coin to rule them all?

IT STARTED as a joke. Dogecoin was launched in 2013 as a bitcoin parody, using as its mascot a Japanese *shiba inu* dog, a popular internet meme. The crypto-currency was never really used, except for tipping online, and one of its founders has called it quits. But recently its price has soared: on January 7th the dollar value of all Dogecoins in circulation reached \$2bn, a sign of how crazy crypto-currency markets have become. It is also a reminder that, for all the focus on bitcoin, it is no longer the only game in town. Its market capitalisation now amounts to only about one-third of the crypto-market (see chart).

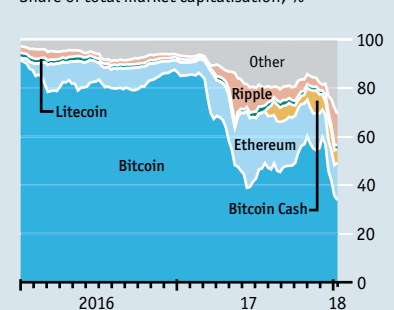
A new crypto-currency is born almost daily, often through an “initial coin offering” (ICO), a form of online crowdfunding. CoinMarketCap, a website, lists about 1,400 digital coins or tokens, including UFO Coin, PutinCoin, Sexcoin and InsaneCoin (worth \$7m). Most are no more than curiosities, but by January 10th, around 40 had a market capitalisation of more than \$1bn.

First on the list, after bitcoin, was Ethereum, whose coin, called ether, reached a market capitalisation of \$137bn. Ethereum’s claim to fame is that it is also a platform for “smart contracts”—business rules encapsulated in software. Most ICO tokens, for instance, are issued by such contracts. Its success has attracted crypto-copycats: Cardano (\$20bn) and NEO (\$8bn), a Chinese version.

Ripple, too, is defying gravity. It is all the rage in crypto-crazy South Korea, which this week roiled crypto-markets with plans to ban trading on exchanges. Ripple sells software to move money between countries; more than 100 banks have signed up to its technology, based on a coin called XRP. Its market capitalisation jumped by ►►

Tales from the crypto

Share of total market capitalisation, %



Source: CoinMarketCap

more than 40,000% in 2017, reaching nearly \$149bn on January 4th, before falling back to \$78bn. That still makes Chris Larsen, a Ripple co-founder, one of the world's richest people, at least on digital paper.

Less well-known coins have also taken wing. Monero (\$6bn) and zcash (\$2bn) focus on privacy. Stellar (\$9.8bn) has developed a system to transfer funds cheaply that is used by charities, particularly in poor countries. IOTA (\$10.1bn) allows connected machines to exchange information and payments securely. And then there is Bitcoin Cash (\$46bn), whose founders split from bitcoin in August 2017 because they

were unhappy with how it was run.

Might any of these one day replace bitcoin as crypto-land reserve currency, something insiders call the “flipping”? Given bitcoin’s governance problems (another “fork”, or split, may be in the offing) and limited capacity (a transaction now costs nearly \$30, on average, in fees), this cannot be excluded. But the others have problems, too. Ethereum’s user fees have soared and the system has again hit technical snags. As for Ripple, some question the extent to which XRP is actually used.

Come what may, the field will only get more crowded. Kodak, the archetypal vic-

tim of digital disruption, wants to jump on the crypto-wagon: on January 9th it announced that it will launch a coin to allow photographers to charge for their works. More ambitious will be the ICO of Telegram, a messaging service with 180m users: it aims to raise \$1.2bn and issue a token called Gram that can be used to pay for a range of services from online storage to virtual private networks. Even Facebook has reportedly started looking into creating a token. Should the world’s biggest social network ever make that move, bitcoin’s days as the leading crypto-currency would almost certainly be numbered. ■

Buttonwood | Analysts off the couch

New rules deal a further blow to an old profession

THEY are not extinct, nor even on the endangered-species list. But company analysts, once among the most prestigious professionals in the stockmarket, are being culled. New European rules, with the catchy name of MiFID2, have just dealt analysts another blow. A study by Greenwich Associates estimates that the budget for the research they perform may drop by 20% this year.

In their heyday in the late 1980s and early 1990s, analysts could make or break corporate reputations. A “buy” or “sell” recommendation from the leading two or three analysts in an industry could move a share price substantially. Fund managers, and many financial journalists, relied on analysts to spot those companies that were on a rising trajectory, and those where the accounts revealed signs of imminent trouble. And the best analysts were very well paid.

But that golden age was built on some rusty foundations. Analysts were well paid because they worked for the big investment banks. But those big banks made money not just by helping investors to trade but also by advising companies on new issues, and on mergers and acquisitions. In such circumstances, there was an implicit bargain that analysts would be positive about a company’s prospects. If they were not, the chief executive might take his business elsewhere. Over time, “buy” recommendations far exceeded “sell” suggestions. This looked less like dispassionate analysis than marketing.

A second problem came in the 2000s as regulators cracked down on the way that companies released news to the market. Information could no longer be selectively released to favoured analysts. By the same token, those “Sherlock-like” analysts who liked to spot trends through independent company visits faced difficul-



ties. Everything came to depend on the profits guidance issued by companies for the next quarter or year. And analysts dared not let their forecasts stray too far from what the companies suggested. The paradoxical result was that finance, an industry whose acolytes often trumpet the superiority of free-market economics, had created a poorly functioning market—one that was oversupplied with analysts who mostly offered the same product.

Why, then, did it survive at all? The conventional way that investors rewarded banks for good research was not to pay for it directly, but to funnel securities trades their way. This system of “soft” commissions created two conflict-of-interest questions. Were fund managers trading more than they needed to just to pay for their research? And were they getting the best terms available when they did that trade? In both cases, the client, not the fund manager, was in effect paying for the service. There was little incentive to change.

Under the new MiFID2 rules, banks will not be allowed to bundle research up with other products. Fund managers will have to pay for it separately. As a result, they are

expected to be much more selective. This recalls Dr Johnson’s response when Boswell asked whether the Giant’s Causeway in Northern Ireland was worth seeing. The great man replied: “Worth seeing, yes; but not worth going to see.” The suspicion is that, for many fund managers, the work of analysts is “worth having, but not worth paying to have”.

The rules may technically apply only to Europe but even American investment banks are expected to adjust their business models to cope with MiFID. The employment prospects of analysts had already been hit by index-tracking, or “passive” fund management, which simply buys all the shares in a benchmark, and by the growth of quantitative hedge funds, which use computer programs to select stocks.

But the best analysts need not despair completely. The biggest fund managers employ in-house research. Some may be willing to pay for analysis from independent boutiques (as has been the case in the world of economics).

The fear, however, is that something will be lost in the process. For all their faults, analysts acted as conduits for company information to be passed to investors who could not afford their own research (charities and small pension funds, for example) and, via the media, to the general public. A few heroic analysts (one thinks of Richard Hannah, a long-term Eurotunnel sceptic) proved adept at exposing corporate flimflam.

Alas, the industry generated far too few sceptics and far too many corporate cheerleaders. The baby is being thrown out with the bathwater—but in recent times it was a very small baby amid an awful lot of murky water.

Fruit and vegetables

Beneath the bruises

NEW YORK

An encouraging new market for old and ugly produce

NO ONE knows quite how much fruit and vegetable produce never reaches the grocery checkout till. A fifth perhaps—or maybe twice that—is judged to be beneath commercial standards. So it is put to use as animal-feed or compost, or simply thrown away in a landfill. This infuriates those appalled at waste. Their outrage, however, has not been enough to create for unwanted fruit and vegetable the kind of sophisticated market that exists for products with more obvious uses, such as securities, currencies, metals, oil and unsullied agriculture. That is starting to change.

At least two companies, Imperfect produce (whose logo is a misshapen potato that looks like a heart) and Hungry Harvest (whose slogan is “Rescued Produce. Delivered”), now provide boxes of subpar stuff directly to retail customers, one concentrating on the west coast of America, the other on the east. Another company, Full Harvest, has the wholesale market in its sights, linking farms to producers of food and beverages. In December, a new iPhone app, goMkt, launched. It currently alerts retail buyers to flash sales of surplus food by local shops and restaurants. That is intended to be the first step in a more sophisticated system designed to link up businesses via matching algorithms.

None of these companies is very big at the moment. Others are reportedly in their infancies. Many more will probably follow the emergence of clever web-based exchanges. All face formidable obstacles.

Conventional commodity exchanges favour bulk trading in undifferentiated products. Food shops mostly prefer the best quality fruit and vegetables, or slightly lower-quality goods sold for a bit less. After all, stocking shelves with unattractive items is rarely a good retail strategy. Even the most cost-conscious shopper might blanch at a shop full of rows of degraded food, and operating costs would be high because of the need to monitor the produce, which can lose value by the hour.

But as with much that is ugly, there is value in the products, particularly when the aesthetic flaws are the only ones. Berries can be too small, cucumbers crooked, bananas fat—and all can be bruised or blemished—without harming their taste or health benefits. A truly ugly tomato can still be perfect for a juice or a sauce.

The emerging companies have had to overcome four operational challenges, observes Elliot Rabinovich, a professor at Ari-



Multiple roots to success

zona State University who, with his colleague, Tim Richards, has received a grant from the Department of Agriculture (USDA) to study how to develop such businesses. The first is to systematise distinctions in quality that can allow useful pricing, since the deteriorating products must reach customers quickly and, as cost is an important aspect of their appeal, cheaply.

Third, liability must be sorted out. Products may arrive too old to be usable and even in some cases spoiled and dangerous. A routine mismatch in payment terms between suppliers and the ultimate users, Mr Rabinovich notes, can leave the intermediary responsible, at least on paper, for inventory, even if it never touches the products. That can have the odd consequence of inadvertently making the intermediary a food-seller, falling under the regulatory umbrella of the USDA.

Finally, there is profitability. Small growers have often found substandard produce too costly to handle. Some worry that even if they earn a bit on these kinds of produce, that may eat into the sales of their pretty stuff. Mr Rabinovich says such concerns are likely to be tackled as the market gains scale, enabling more variety (pleasing users) and more demand (pleasing providers). Slowly, ideas on better ways to run one of the world's oldest markets, the trade in food, are bearing fruit. ■

China's currency

Stable hands

How China won the battle of the yuan

“THE horse may be out of the proverbial barn.” So wrote Ben Bernanke, a former chairman of the Federal Reserve, in early 2016, arguing that capital controls might be powerless to save China from a run on its currency. He was far from alone at the time. As cash rushed out of the country, analysts debated whether the yuan would collapse, and some hedge funds bet that day was coming fast. But two years on, the horse is back in the barn: the government's defence of the yuan has succeeded, in part through tighter capital controls.

The latest evidence was an 11th consecutive monthly increase in foreign-exchange reserves in December. During that time China's stockpile of official reserves, the world's biggest, climbed by \$142bn, reaching \$3.14trn, roughly double the cushion usually regarded as needed to ensure financial stability. Another sign of China's success is the yuan itself. At the start of 2017 the consensus of forecasters was that the currency would continue to weaken; it finished the year up by 6% against the dollar.

Investors and analysts were not wrong in viewing Chinese capital controls as porous. Enterprising types had—and have—umpteen ways to sneak money out, from overpaying for imports to smuggling cash across the border in luggage. But there is a wide spectrum between a fully open and fully closed capital account, and China has showed over the past year that it can tilt towards closure, at least for a time.

Its measures were directed at actors big and small. Under more scrutiny from regulators, China's overseas acquisitions fell by more than a third, to \$140bn last year. Individuals were still permitted to convert up to \$50,000 a year, but they faced heavier disclosure burdens. The government is in ►►



▶ no hurry to relax these controls: a new, lower ceiling on withdrawals from ATMs abroad went into effect on January 1st.

Also crucial to China's defence of the yuan was an economic rebound. Housing prices soared and industrial firms' profits rose by 20% last year on the back of higher commodity prices. Here, Mr Bernanke can claim some vindication: in looking at China's options in 2016, he had suggested that a fiscal boost would support growth and so help keep cash at home. An unconventional policy mix—investment in low-income housing and closure of excess industrial capacity—did the trick.

China had a stroke of good luck, too. Many had thought that Donald Trump's presidency would initially add to dollar strength, which might have pulled cash

away from China. But America's political muddle instead weighed on the dollar. Not only did that boost the relative allure of Chinese assets, it also made its foreign-exchange reserves look more valuable in dollar terms, because roughly a third are held in other currencies. Over the past year, true inflows accounted for just about a third of the rise in China's reserves; valuation changes explained the rest (see chart on previous page). Other Asian economies with hefty foreign-currency reserves, from Japan to Taiwan, reaped similar gains.

As America cuts taxes and raises interest rates, the dollar may soon perk up. But China has less cause for concern than in 2016. Capital controls have reinforced the bolts on its barn door. And with growth holding up, the horse inside is well-fed. ■

Disaster insurance

Storm-tossed

Insured natural-catastrophe losses hit an all-time high in 2017

THAT 2017 suffered from more than its fair share of natural catastrophes was known at the time. In the wake of Hurricane Harvey, the streets of Houston, Texas, were submerged under brown floodwater; Hurricane Irma razed buildings to the ground on some Caribbean islands. That the destruction was great enough for insurance losses to reach record levels has only just been confirmed. According to figures released on January 4th by Munich Re, a reinsurer, global, inflation-adjusted insured catastrophe losses reached an all-time high of \$135bn in 2017 (see chart). Total losses (including uninsured ones) reached \$330bn, second only to losses of \$354bn in 2011.

A large portion of the losses in 2011 was caused by one catastrophe: the earthquake and tsunami in Japan. Losses in 2017 were largely traceable to extreme weather. Fully 97% were weather-related, well above the average since 1980 of 85%. If climate change brings more frequent extreme weather, as Munich Re and others expect, last year's loss levels may become depressingly familiar. Already, the data show many more frequent high-loss events since 2000—lots of them weather-related—than in the two preceding decades.

Last year's disasters were particularly concentrated in North America (including the Caribbean), with 83% of global losses; half of those were in America alone, hitting that country's insurers particularly hard. Fitch, a ratings agency, expects the "combined ratio" for American property-and-casualty insurers to rise from 100.7% in 2016, meaning costs and claim payouts just exceeded premium revenue, to 104.4% in 2017. That implies a substantial underwriting loss for the industry. Even Warren Buffett's Berkshire Hathaway looks poised for ▶▶

Accountancy in Afghanistan

Cultivating bean-counters

How to build a profession from scratch

WHEN Afghan lawmakers were debating rules of conduct for accountants, some were confounded by their strictness. Why should those found guilty of murder, asked one member of parliament, be struck off? That is a sign of the challenges facing the professional body for bean-counters, Certified Professional Accountants (CPA) Afghanistan, which was launched last month.

Attempts to establish a home-grown profession start from a low base. Back in 2009 Kabul, a city of around 4m, had fewer than 20 qualified accountants. Neither standards nor oversight for the profession were in place. Most local outfits were branches of firms from elsewhere in South Asia or farther afield.

Boring old accountancy might not seem a priority for a war-torn country. But in business it can foster trust and transparency—scarce commodities in a country where corruption is systemic. Because of the difficulty of verifying borrowers' financial positions and valuing their collateral, banks are extremely reluctant to lend to the private sector; credit amounted to only 3% of GDP as of August. The need for formal records, along with high interest rates, deter smaller firms from approaching banks altogether; in turn, they remain locked into the informal sector. Financial accounts prepared or audited by accountants could help to break that cycle.

Accounting norms could also ease the entry of foreign investors—which is why Muhammad Zarif Ludin, the chief executive of the CPA, wants to adopt international standards. Mr Ludin developed CPA Afghanistan as part of a World Bank-



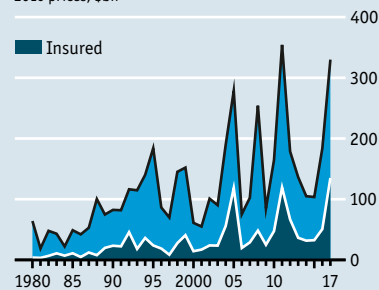
Waiting for the auditor

funded project, which is also tackling the shortage of accountants by offering scholarships to those studying for international qualifications. So far, more than 1,000 people have begun the process of qualifying—around a third of them women. That is encouraging in a country where less than a fifth of women over the age of 15 are in the workforce.

The potential gains are large, but will the budding profession thrive in a harsh climate? As lawmakers' attitudes suggest, establishing an accounting culture will take time. So far, though, demand has more than kept up with the supply of new accountants, says Mr Ludin, with interest from charities, government and big business in Kabul. If bean-counters do indeed manage to make access to funds easier and cheaper, then they might make a killing of their own in the local market.

Calamity pain

Worldwide catastrophe losses
2016 prices, \$bn



its first full-year underwriting loss in 15 years. It took a \$3bn hit from the three hurricanes and an earthquake in Mexico.

For all the gloom, the 2017 losses were also proof of the resilience of the reinsurance industry. Insurers have long spread catastrophe risk by taking out reinsurance policies. This time, reinsurers had such ample capital buffers that they are expected to suffer only a small dent, of around 5-7% of capital. And 2017 was also the biggest test so far of reinsurance provided directly by investors, whether through catastrophe bonds or “collateralised reinsurance”, where a fund manager puts up collateral to cover potential claims. These forms of “alternative capital”, which reached \$89bn in mid-2017, now make up around 14% of total

reinsurance capital, up from 4% in 2006, according to Aon, a broker.

Their performance has been remarkably smooth. Investor demand has held up; many asset managers in the field have raised new money since the losses. Demand may yet grow further, says Paul Schultz, head of Aon’s capital-markets arm, since the yields on alternative capital are poised to rise because of growth in reinsurance premiums. Mr Schultz’s concerns lie elsewhere: he laments that the proportion of all losses covered by insurance “is still too small”. Much risk is retained by governments, or uninsured. Offloading more to private markets would benefit governments, property owners and the insurance industry alike. ■

Automation and productivity

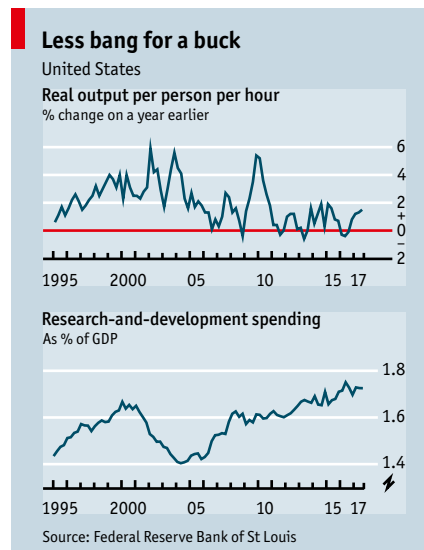
Producing ideas

PHILADELPHIA AND WASHINGTON, DC

Economists grapple with the future of the labour market

WHY is productivity growth low if information technology is advancing rapidly? Prominent in the 1980s and early 1990s, this question has in recent years again become one of the hottest in economics. Its salience has grown as techies have become convinced that machine learning and artificial intelligence will soon put hordes of workers out of work (among tech-moguls, Bill Gates has called for a robot tax to deter automation, and Elon Musk for a universal basic income). A lot of economists think that a surge in productivity that would leave millions on the scrapheap is unlikely soon, if at all. Yet this year’s meeting of the American Economic Association, which wound up in Philadelphia on January 7th, showed they are taking the tech believers seriously. A session on weak productivity growth was busy; the many covering the implications of automation were packed out.

Recent history seems to support productivity pessimism. From 1995 to 2004 output per hour worked grew at an annual average pace of 2.5%; from 2004 to 2016 the pace was just 1%. Elsewhere in the G7 group of rich countries, the pace has been slower still. An obvious explanation is that the financial crisis of 2007-08 led firms to defer productivity-boosting investment. Not so, say John Fernald, of the Federal Reserve Bank of San Francisco, and co-authors, who estimate that in America, the slowdown began in 2006. Its cause was decelerating “total factor productivity”—the residual that determines GDP after labour and capital have been accounted for. Productivity has stagnated despite swelling research



spending (see chart). This supports the popular idea that fewer transformative technologies are left to be discovered.

Others take almost the diametrically opposed view. A presentation by Erik Brynjolfsson of MIT pointed to recent sharp gains in machines’ ability to recognise patterns. They can, for instance, outperform humans at recognising most images—crucial to the technology behind driverless cars—and match dermatologists’ accuracy in diagnosing skin cancer. Mr Brynjolfsson and his co-authors forecast that such advances will eventually lead to a widespread reorganisation of jobs, affecting high- and low-skilled workers alike.

Productivity pessimism remains the

norm among official forecasters, but more academics are trying to understand how automation may affect the economy. In a series of papers, Daron Acemoglu of MIT and Pascual Restrepo of Boston University present new theoretical models of innovation. They propose that technological progress be divided into two categories: the sort that replaces labour with machines; and that which creates new, more complex tasks for humans. The first, automation, pushes down wages and employment. The second, the creation of new tasks, can restore workers’ fortunes. Historically, the authors argue, the two types of innovation seem to have been in balance, encouraged by market forces. If automation leads to a labour glut, wages fall, reducing the returns to further automation, so firms find new, more productive ways to put people to work instead. As a result, previous predictions of technology-induced joblessness have proved mostly wrong.

However, the two forces can, in theory, fall out of sync. For example, if capital is cheap relative to wages, the incentive to automate could prevail permanently, leading the economy to robotise completely. The authors speculate that, for now, biases towards capital in the tax code, or simply an “almost singular focus” on artificial intelligence, might be tilting firms towards automation, and away from thinking up new tasks for people. Another risk is that much of the workforce lacks the right skills to complete the new-economy tasks that innovators might dream up.

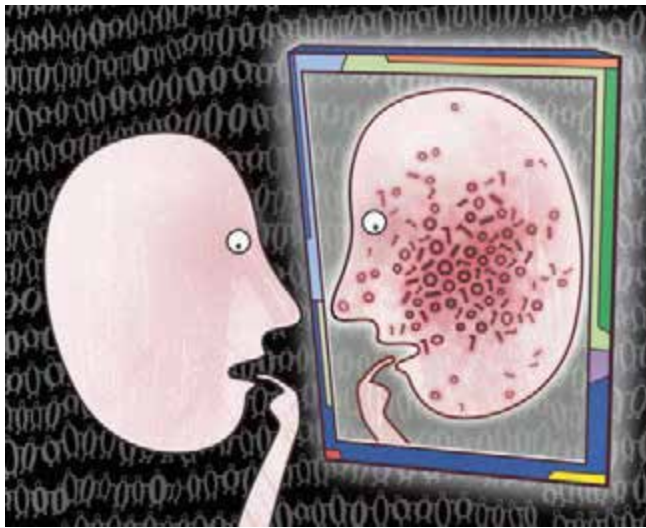
These ideas shed light on the productivity paradox. Mr Brynjolfsson and his co-authors argue that it can take years for the transformative effects of general-purpose technologies such as artificial intelligence to be fully felt. If firms are consumed by efforts to automate, and such investments take time to pay off, it makes sense that productivity growth would stall. Investment has not been unusually low relative to GDP in recent years, but it has shifted away from structures and equipment, towards research-and-development spending.

If research in automation does start yielding big pay-offs, the question is what will happen to the displaced workers. Recent trends suggest the economy can create unskilled jobs in sectors such as health care or food services where automation is relatively difficult. And if robots and algorithms become far cheaper than workers, their owners should become rich enough to consume much more of everything, creating more jobs for people.

The risk is that without sufficient investment in training, technology will relegate many more workers to the ranks of the low-skilled. To employ them all, pay or working conditions might have to deteriorate. If productivity optimists are right, the eventual problem may not be the quantity of available work, but its quality. ■

Free exchange | The digital proletariat

Economists propose a radical solution to the problems posed by artificial intelligence



YOU have multiple jobs, whether you know it or not. Most begin first thing in the morning, when you pick up your phone and begin generating the data that make up Silicon Valley's most important resource. That, at least, is how we ought to think about the role of data-creation in the economy, according to a fascinating new economics paper. We are all digital labourers, helping make possible the fortunes generated by firms like Google and Facebook, the authors argue. If the economy is to function properly in the future—and if a crisis of technological unemployment is to be avoided—we must take account of this, and change the relationship between big internet companies and their users.

Artificial intelligence (AI) is getting better all the time, and stands poised to transform a host of industries, say the authors (Imanol Arrieta Ibarra and Diego Jiménez Hernández, of Stanford University, Leonard Goff, of Columbia University, and Jaron Lanier and Glen Weyl, of Microsoft). But, in order to learn to drive a car or recognise a face, the algorithms that make clever machines tick must usually be trained on massive amounts of data. Internet firms gather these data from users every time they click on a Google search result, say, or issue a command to Alexa. They also Hoover up valuable data from users through the use of tools like reCAPTCHA, which ask visitors to solve problems that are easy for humans but hard for AIs, such as deciphering text from books that machines are unable to parse. That does not just screen out malicious bots, but also helps digitise books. People “pay” for useful free services by providing firms with the data they crave.

These data become part of the firms' capital, and, as such, a fearsome source of competitive advantage. Would-be startups that might challenge internet giants cannot train their AIs without access to the data only those giants possess. Their best hope is often to be acquired by those very same titans, adding to the problem of uncompetitive markets.

That, for now, AI's contributions to productivity growth are small, the authors say, is partly because of the free-data model, which limits the quality of data gathered. Firms trying to develop useful applications for AI must hope that the data they have are sufficient, or come up with ways to coax users into providing them with better information at no cost. For example, they must pester random people—like those blur-deciphering visitors to

websites—into labelling data, and hope that in their annoyance and haste they do not make mistakes.

Even so, as AI improves, the amount of work made vulnerable to displacement by technology grows, and ever more of the value generated in the economy accrues to profitable firms rather than workers. As the authors point out, the share of GDP paid out to workers in wages and salaries—once thought to be relatively stable—has already been declining over the past few decades.

To tackle these problems, they have a radical proposal. Rather than being regarded as capital, data should be treated as labour—and, more specifically, regarded as the property of those who generate such information, unless they agree to provide it to firms in exchange for payment. In such a world, user data might be sold multiple times, to multiple firms, reducing the extent to which data sets serve as barriers to entry. Payments to users for their data would help spread the wealth generated by AI. Firms could also potentially generate better data by paying. Rather than guess what a person is up to as they wander around a shopping centre, for example, firms could ask individuals to share information on which shops were visited and which items were viewed, in exchange for payment. Perhaps most ambitiously, the authors muse that data labour could come to be seen as useful work, conferring the same sort of dignity as paid employment: a desirable side-effect in a possible future of mass automation.

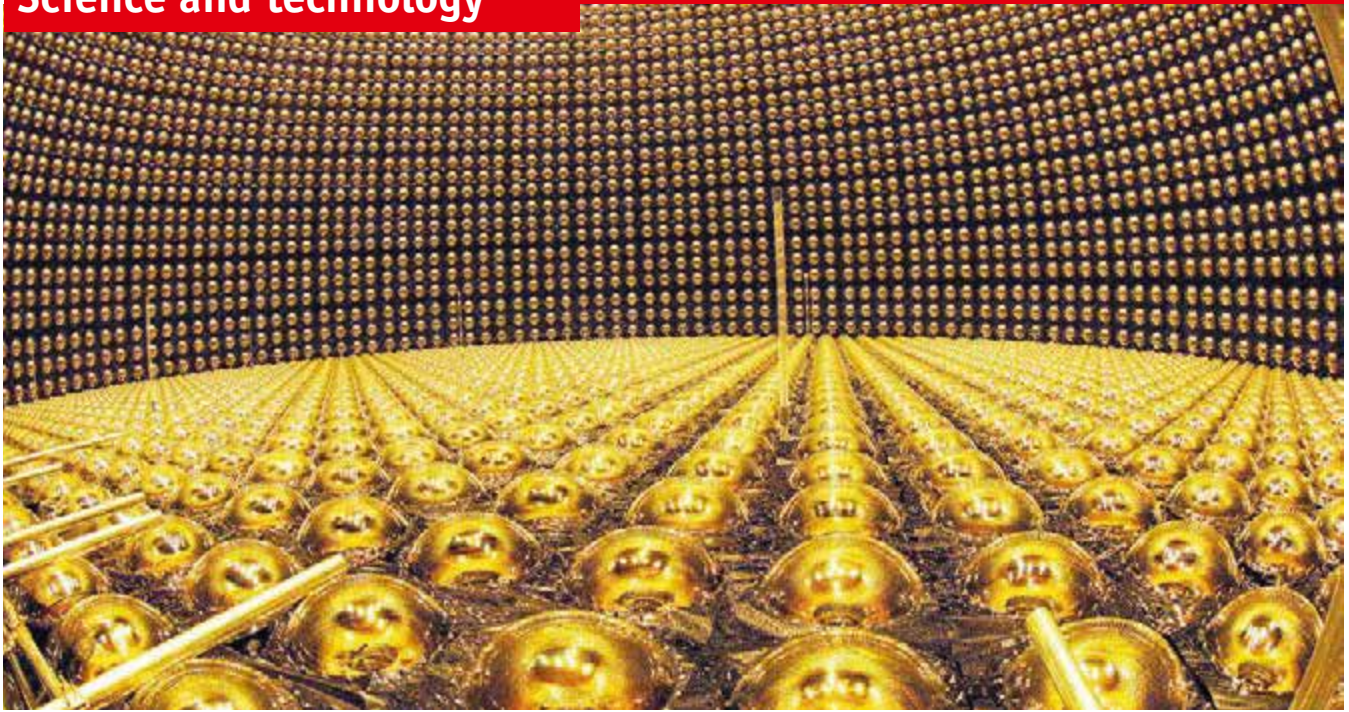
The authors' ideas need fleshing out; their paper, thought-provoking though it is, runs to only five pages. Parts of the envisioned scheme seem impractical. Would people really be interested in taking the time to describe their morning routine or office habits without a substantial monetary inducement (and would their data be valuable enough for firms to pay a substantial amount)? Might not such systems attract data mercenaries, spamming firms with useless junk data simply to make a quick buck?

Nothing to use but your brains

Still, the paper contains essential insights which should frame discussion of data's role in the economy. One concerns the imbalance of power in the market for data. That stems partly from concentration among big internet firms. But it is also because, though data may be extremely valuable in aggregate, an individual's personal data typically are not. For one Facebook user to threaten to deprive Facebook of his data is no threat at all. So effective negotiation with internet firms might require collective action: and the formation, perhaps, of a “data-labour union”.

This might have drawbacks. A union might demand too much in compensation for data, for example, impairing the development of useful AIs. It might make all user data freely available and extract compensation by demanding a share of firms' profits; that would rule out the pay-for-data labour model the authors see as vital to improving data quality. Still, a data union holds potential as a way of solidifying worker power at a time when conventional unions struggle to remain relevant.

Most important, the authors' proposal puts front and centre the collective nature of value in an AI world. Each person becomes something like an oil well, pumping out the fuel that makes the digital economy run. Both fairness and efficiency demand that the distribution of income generated by that fuel should be shared more evenly, according to our contributions. The tricky part is working out how. ■



Particle physics

No GUTs, no glory

Fundamental physics is frustrating physicists

DEEP in a disused zinc mine in Japan, 50,000 tonnes of purified water held in a vast cylindrical stainless-steel tank are quietly killing theories long cherished by physicists. Since 1996, the photomultiplier-tube detectors (pictured above) at Super-Kamiokande, an experiment under way a kilometre beneath Mount Ikeno, near Hida, have been looking for signs that one of the decillion (10^{33}) or so protons and neutrons within it (of which a water molecule contains ten and eight respectively) has decayed into lighter subatomic particles.

That those tubes have, in the more than 20 years the experiment has been running, failed to do so is a conundrum for physics, and one that is becoming more urgent with every passing month. Grand unified theories (GUTs), thought since their genesis in the 1970s to be the most promising route to understanding the fundamental forces that bind matter together, predict that protons and neutrons should occasionally disintegrate in a way that breaks what was previously regarded as an iron law of physics—namely that the number of baryons (a class of particle that includes both protons and neutrons) in the universe is constant.

The crucial word, though, is “occasionally”. If the GUT approach is right, the average decay time in question is far longer than the age of the universe itself. But by

corralling huge numbers of baryons together, the people behind Super-Kamiokande hoped to spot one decaying much sooner, in just a few years. Those hopes have been dashed. The detector’s most recent estimate, published in January 2017, now pegs the lifetime of a proton at more than 1.6×10^{34} years—and rising. That rules out simpler GUTs (including the first, called $SU(5)$, proposed by Howard Georgi and Sheldon Glashow in 1974). It also encroaches on the predictions of more recent, and more complex, varieties such as “flipped $SU(5)$ ”.

In the dark

GUTs are among several long-established theories that remain stubbornly unsupported by the big, costly experiments testing them. Supersymmetry, which posits that all known fundamental particles have a heavier supersymmetric partner, called a sparticle, is another creature of the seventies that remains in limbo. ADD, a relative newcomer (it is barely 20 years old), proposes the existence of extra dimensions beyond the familiar four: the three of space and the one of time. These other dimensions, if they exist, remain hidden from those searching for them.

Finally, theories that touch on the composition of dark matter (of which super-

symmetry is one, but not the only one) have also suffered blows in the past few years. The existence of this mysterious stuff, which is thought to make up almost 85% of the matter in the universe, can be inferred from its gravitational effects on the motion of galaxies. Yet no experiment has glimpsed any of the menagerie of hypothetical particles physicists have speculated might compose it.

Despite the dearth of data, the answers that all these theories offer to some of the most vexing questions in physics are so elegant that they populate postgraduate textbooks. As Peter Woit of Columbia University observes, “Over time, these ideas became institutionalised. People stopped thinking of them as speculative.” That is understandable, for they appear to have great explanatory power. GUTs, for example, seek to merge three of the four known fundamental forces: the strong, weak and electromagnetic interactions (gravity is the fourth). In the process, they explain, among other things, the overwhelming preponderance of matter over antimatter in the universe, a puzzling observation called matter-antimatter asymmetry.

The Standard Model, the current best theory in particle physics, cannot do this. GUTs, on the other hand, posit various mechanisms by which subatomic particles (of both matter and antimatter) can fall apart and thus, in some way, allow matter to gain the upper hand. Unfortunately, most of these are untestable with current technology. Recreating the incredibly high energies at which the fundamental forces are thought to merge (those encountered during the early moments of the Big Bang) would require a particle collider larger than the solar system. Of GUTs’ predic- ▶▶

► tions, only the proton and neutron decay being sought by Super-Kamiokande seems testable. And, so far, the tests are negative.

A similar story can be told for supersymmetry. This theory can, among other things, account for the value of the mass of the Higgs boson (a recently discovered particle that is responsible for imbuing other particles with mass) in a way that the Standard Model cannot. Nothing in that model gives a precise value for the Higgs's own mass, and calculations from first principles, based on quantum theory, suggest it should be enormous—roughly a hundred million billion times higher than its measured value. Physicists have therefore introduced an ugly fudge factor into their equations (a process called “fine-tuning”) to sidestep the problem. Supersymmetry resolves it more neatly.

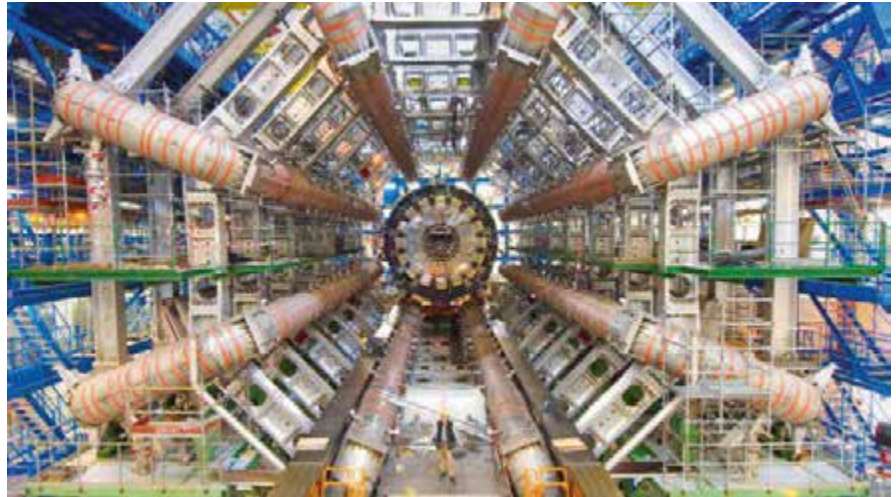
The problem arises because as a Higgs boson moves through space, it encounters “virtual” versions of Standard Model particles (like photons and electrons) that are constantly popping in and out of existence. According to the Standard Model, these interactions drive the mass of the Higgs up to improbable values. In supersymmetry, however, they are cancelled out by interactions with their sparticle equivalents.

Various flavours of supersymmetry predict that one or other of the sparticles should have popped up by now in the Large Hadron Collider. The LHC (one of the detectors of which is pictured above, under construction) is the principal machine at CERN, the world's biggest particle-physics laboratory, near Geneva. But of sparticles it has seen no sign.

The mass of the Higgs is one aspect of what is known as the hierarchy problem in physics. This is the riddle of why gravity is so much weaker than the other three fundamental interactions—as demonstrated by the fact that a fridge magnet can pick up a paper clip, and in so doing easily overcome the gravitational force of a whole planet. The connection with the Higgs-mass problem is that if the Higgs really was huge, that would also make other particles (protons, neutrons and so on) more massive, thus giving them much stronger gravitational fields. Whereas supersymmetry resolves the problem via sparticles, theories with extra dimensions (such as ADD) do so by allowing gravity, but not the other three fundamental forces, to spread through these dimensions. That dissipates gravity's strength in comparison with that of the other three.

This happens because gravitons (the hypothetical particles that carry the gravitational force) leak into those dimensions. If gravitons were created in the LHC, which some theories suggest is possible, then signs of such leakage could be sought. So far, though, no LHC-generated gravitons have turned up.

The dark-matter picture is more com-



Watching the detectors

plex still. There are plenty of lines of evidence indicating the stuff exists, and many theories that propose this or that particle to explain what it might actually be. As its name suggests, dark matter is difficult to spot. Though it participates in gravitational interactions, it does not interact electromagnetically. This means it neither emits nor absorbs light. Nor does it get involved with the strong force—the one that holds atomic nuclei together. One class of hypothetical objects that might be dark matter do interact via the weak force, a phenomenon that also controls some sorts of radioactive decay. These objects are called WIMPs (weakly interacting massive particles). Exactly what they are remains obscure. Some sparticles would fit the bill, but there are other candidates. Several possible WIMPs, though, should be detectable by experiments that, like Super-Kamiokande, involve large tanks of liquid.

Tank warfare

In those experiments the preferred fluid is not water but liquid xenon, and the phenomenon being sought is not a spontaneous decay but an interaction between a WIMP and an atomic nucleus, which will generate a flash of light that can be detected by arrays of photomultiplier tubes at the top and bottom of the tank. Xenon is the darling of dark-matter hunters because it is a heavy element with a large nucleus. It is thus more likely to get hit than lighter atoms. It is also reasonably cheap, unreactive and easy to purify. So far, however, the xenon-filled vats have remained as dark as the matter they hope to find. Two of the world's three most sensitive xenon-tank experiments reported their latest results in October 2017. Searches by XENON1T, under Gran Sasso, a mountain in Italy, and PandaX-II at China Jinping Underground Laboratory, in Sichuan, which contain 3,500kg and 500kg of xenon respectively, came up empty-handed. The third of the trio, 368kg of xenon in an experiment called LUX, in a

former gold mine in the Black Hills of South Dakota, also failed to find WIMPs before it was shut down in May 2016.

These WIMP searches have become progressively larger over the past two decades. XENON1T, for instance, was preceded by two detectors, XENON10 (15kg) and XENON100 (165kg), the first of which started work in 2006. LUX will be followed by LUX-ZEPLIN, which will use 7,000kg of the stuff. In China, PandaX-4T (4,000kg) is already being built and there are tentative plans for a whopping 30,000kg detector (PandaX-30T). Even something of that size, though, would not altogether rule out WIMP-based hypotheses were it to find no evidence of WIMPs. The nature of the models means that they can be tweaked almost endlessly.

The history of the search for proton decay, meanwhile, goes back even further. The first experiment to be built to look for it in the mine that now hosts Super-Kamiokande was called Kamiokande, and used a piddling 3,000 tonnes of water for the purposes of detection. That was in 1983. Hyper-Kamiokande, Super-Kamiokande's successor, should be ready to go in 2026. It will survey an astonishing 500,000 tonnes of water (ten times that of its predecessor) for 20 years or more, pushing the minimum average lifetime of a proton up to 10^{35} years if it fails to find one.

Persistence in the face of adversity is a virtue, of course. And, as all this effort shows, physicists have been nothing if not ►►

The Richard Casement internship

We invite applications for the 2018 Richard Casement internship. We are looking for a would-be journalist to spend three months of the summer working on the newspaper in London, writing about science and technology. Applicants should write a letter introducing themselves and an article of about 600 words that they think would be suitable for publication in the Science and Technology section. They should be prepared to come for an interview in London or New York. A stipend of £2,000 a month will be paid to the successful candidate. Applications must reach us by January 26th. These should be sent to: casement2018@economist.com

▶ persistent. Yet it is an uncomfortable fact that the relentless pursuit of ever bigger and better experiments in their field is driven as much by belief as by evidence.

The core of this belief is that Nature's rules should be mathematically elegant. So far, they have been, so it is not a belief without foundation. But the conviction that the truth must be mathematically elegant can easily lead to a false obverse: that what is mathematically elegant must be true. Hence the unwillingness to give up on GUTS and supersymmetry. New theories have been made by weaving together aspects of older ones. Flipped $SU(5)$, for example, combines GUT with supersymmetry to explain the Higgs mass, the hierarchy problem and matter-antimatter asymmetry—and provides dark-matter candidates to boot. With every fudge applied, though, what were once elegant theories get less so. Some researchers are therefore becoming open to the possibility that the truth-is-beauty argument is a trap, and that the universe is, in fact, fundamentally messy.

The beauty myth

One such is Sabine Hossenfelder of the Frankfurt Institute for Advanced Studies, in Germany. She argues that the appeal of GUTS, supersymmetry and the like rests on their ability to explain “numerological coincidences” that do not need to be explained. Perhaps, to take one example, the universe simply started out with more matter than antimatter in it, rather than this being a consequence of its subsequent evolution. As she points out, no theory precludes this possibility—it is just that it is not very elegant. Similarly, she says, “It’s not like anybody actually needs supersymmetry to explain anything. It’s an idea widely praised for its aesthetic appeal. Well, that’s nice, but it’s not science.”

Dr Hossenfelder’s remains a minority opinion, but other heterodox approaches, perhaps because they offer the possibility of experimental testing, are also gaining ground. Surjeet Rajendran of the University of California, Berkeley, for example, is using a “suck it and see” method that would have been familiar to 19th-century physicists, who did not yet have a huge body of theory to guide and constrain their experiments. He is searching for dark-matter particles outside the range of masses that conventional theories of what WIMPs are predict.

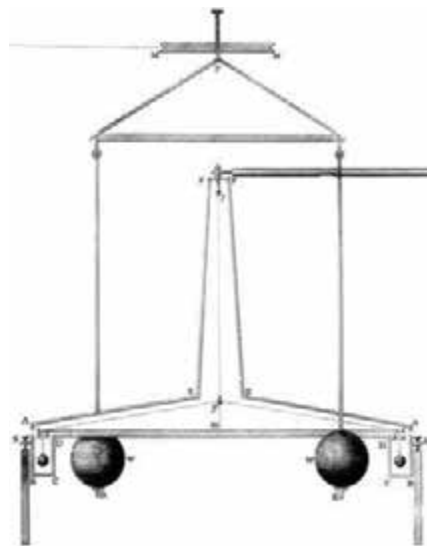
That he and his colleagues are able to do so is, in part, because their apparatus is small and cheap—and thus worth a punt by a grant committee. At its core lies a sensitive magnetometer, known as a SQUID. This should pick up the tiny magnetic fields that dark-matter particles would be expected to generate indirectly by weak-force interactions with atomic nuclei as they fly through the apparatus. As Dr Rajendran’s experiments are carefully shield-

ed, only such particles, with their extraordinarily weak interactions with normal matter, would be expected to enter the apparatus and be detected.

Other teams, working within the limits of conventional-but-as-yet-unproven theory, have similarly economical, collider-eschewing ideas. ADD and other, related, ideas predict that extra dimensions are populated by non-Standard Model particles. Tiny objects, held less than a tenth of a millimetre apart, should experience forces transmitted by these particles in ways detectable by bench-top apparatus. Such forces would, for instance, cause the gravitational attraction between the objects in question to deviate from Newton’s inverse-square law, which states that the gravitational force between two bodies is inversely proportional to the square of the distance between them.

Andrew Geraci and his team at the University of Nevada, in Reno, hope to find such deviations by tracking the movement of a glass bead just 300 billionths of a metre across, cradled in a network of laser light. Similarly, Eric Adelberger of the University of Washington, in Seattle, is employing a torsion balance, a piece of kit invented over 200 years ago for the purpose of measuring weak forces (Henry Cavendish, a British natural philosopher of the 18th century, used one, illustrated below, to work out the density, and therefore the mass, of Earth). A number of other groups are searching for the effects of these forces within molecules that consist of just two atoms. Any extradimensional forces experienced by the atoms will translate into minute differences between the energy levels of their electrons. Such differences can, in turn, be probed spectroscopically by using a laser to excite the electrons and measuring the wavelengths at which they then emit light.

Advances in laser physics of this sort



How they used to do it

are also behind ACME, an experiment occupying about 100 square metres of laboratory space at Harvard University. ACME is looking for the sparticles of supersymmetry. But it is doing so indirectly, by monitoring their putative effects on the properties of single electrons with incredible accuracy. The electrons being looked at are inside molecules of thorium monoxide, which has some unique properties that make it suited to the search.

According to the Standard Model, an electron’s charge is spherically distributed. Interactions with sparticles, however, would deform this sphere in a way that would create a slight positive charge in one place and an equal, negative charge opposite it. When placed in an electric field, this deformed electron would experience a force called a torque that would cause it to rotate. The stronger the field, the more torque there would be. There is a particular electron in a molecule of thorium monoxide that is exposed, by its location between the thorium and oxygen atoms, to an electric field of 100 gigavolts per centimetre—a million times greater than anything that can be produced in a laboratory. That would magnify the torque on a distorted electron to the point where it should be detectable with lasers.

In 2014 the group behind ACME published work showing that the electrons they were looking at had properties in line with those predicted by the Standard Model. At the sensitivities they were able to achieve, that ruled out interactions with the sorts of sparticles that might have been created at the LHC. ACME has been souped up since. David DeMille of Yale University, one of the physicists behind the project, says the collaboration will be publishing its next round of measurements within months, pushing into territory the LHC is not powerful enough to explore.

So far, though, the small-is-beautiful approach has been no more successful than the big colliders in coming up with new phenomena. Most physicists therefore want to double down, construct an even bigger collider and hope something interesting emerges from that. Whether politicians and taxpayers will be up for this remains to be seen. That fundamental physics has got as far as it has is, essentially, a legacy of its delivery to political leaders of the mid-20th century of the atom and hydrogen bombs. The consequence of this was that physicists were able to ask for expensive toys—for who knew what else they might come up with. That legacy has now been spent, though, and any privilege physics once had has evaporated. This risks leaving in permanent limbo not only the GUTS and their brethren, but also the sceptical idea of Dr Hossenfelder that the Standard Model really is all there is. And that would surely be the most depressing result of all. ■



The Trump administration

Wolff in the White House

Michael Wolff's new book confirms the dysfunction at the heart of the presidency

TO THE many ironies of Donald Trump's presidency can be added the fact that a man who does not read books has helped cause a publishing sensation. Four days after "Fire and Fury" went on sale on January 5th, despite Mr Trump having denounced Michael Wolff's caustic account of his administration as fiction and threatened both the author and the publisher with legal action, Henry Holt had received orders for a million copies of the book. Several hundred thousand e-books had also been sold, and readers as far away as Kenya claimed to be illegally circulating an electronic PDF version of Mr Wolff's tale of eye-watering haplessness and bloodletting. Not since Harry Potter has a new book caught fire in this way. No wonder Mr Wolff, who based his account on more than 200 interviews, including with Mr Trump and members of his inner circle, after he took up a "semi-permanent seat on a couch in the West Wing", revelled in the free publicity. "Thank you, Mr President," he tweeted.

The book's political impact is as dramatic. Just as Mr Trump was enjoying better relations with his party's congressional leaders, following the passage of tax cuts last month, they and much of the rest of Washington have spent a week gossiping over Mr Wolff's portrayal of the 45th president as an irascible, "semi-literate" man-

Fire and Fury: Inside the Trump White House. By Michael Wolff. *Henry Holt*; 336 pages; \$14.99. *Little, Brown*; £20

child, with "no ability to plan and organise and pay attention and switch focus". Mr Trump's feuding advisers, the author claims, were united in nothing except a conviction that he was incapable of being president. Some suspected he was losing his mind, Mr Wolff writes, which has in turn ignited a partisan yet halfway serious debate about Mr Trump's mental health. (In response, the president has claimed to be a "very stable genius".) Meanwhile, Mr Wolff's chief source, Mr Trump's bomb-throwing former chief strategist Stephen Bannon, has been denounced by the president, deserted by his benefactors and removed from the helm of the conservative website Breitbart News.

That Mr Wolff is responsible for this furore might also seem surprising. A purveyor of celebrity gossip and hatchet jobs, he has a reputation for being less than punctilious with the truth. And sure enough, some of his claims are tenuous or worse. He did not interview any member of Mr Trump's cabinet, so it is inconceivable that he should know, as he purports to, Attorney-General Jeff Sessions's precise reasons for recusing himself from the FBI's

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investigation into the Trump campaign and Russia. His description of Stephen Miller, a White House policy adviser, as an unlettered lightweight is inaccurate and mean. More errors may well emerge: where Mr Wolff heard conflicting accounts of the same event, he more or less admits to having picked his preferred version. Yet "Fire and Fury" gets too much right to be dismissed out of hand because of the mistakes it contains. It is indeed a significant achievement, which deserves much of the attention it has received.

Mr Wolff offers some valuable new snippets, including an on-the-record admission from Mr Bannon that a meeting between some senior members of the Trump campaign and Russian operatives was reckless, substantial and conceivably "treasonous". Mr Bannon has since claimed his criticism was aimed only at one person who attended the meeting, Paul Manafort, Mr Trump's then campaign chief, not at two others: the president's son, Donald Trump junior, and his son-in-law, Jared Kushner. But even if that made sense as anything other than a fruitless effort to placate Mr Trump, it would not alter Mr Bannon's damning characterisation of a meeting that the Trump team has sought to dismiss as a "nothingburger".

More often, the chaos Mr Wolff describes had already been exposed by journalists—testament to the eagerness of Mr Trump's feuding advisers to brief against one another. Yet the torrent of scandal stories this led to has tended to lessen their individual impact and, by extension, discredited those reporting them. By weaving the whole sorry tale into a single pacy narrative, Mr Wolff has reversed that. The effect of this panoramic exposure of the dysfunction at the heart of the administra- ►►

tion is cumulative, not diminishing.

Mr Wolff's muckraking skills, cattiness, cynicism and feel for human weakness, especially among the rich and famous, make him well-qualified for the job. His depiction of the jealousies between Mr Trump's advisers is merciless. His understanding of Mr Trump's needy relationship with the media, whose praise and attention he craves even as he rages against them, is acute. He conveys throughout an appropriate sense of disdain for Mr Trump's efforts, leavened by the fascination the president always elicits. Forget the tycoon's supposed populism, Mr Wolff suggests this "was the radical and transformational nature of the Trump presidency: it held everybody's attention". The same can be said for this book. It is not a great political chronicle. But it is the sort of treatment the Trump administration deserves. ■

Africa

Sticky fingers

Dictatorland: The Men Who Stole Africa. By Paul Kenyon. *Head of Zeus*; 480 pages; £25. To be published in America in autumn 2018

IF THERE is one thing Westerners remember about the Zaire of Mobutu Sese Seko, its longtime former dictator, it is the "Rumble in the Jungle", a heavyweight boxing match between George Foreman and Muhammad Ali which took place in Kinshasa in 1974. This pugilistic encounter feels not just as if it happened in a very different country from the one subsequently renamed the Democratic Republic of Congo (DRC), but almost in a different age.

The Zaire of the 1970s had already started a long, steady descent under Mobutu's misrule that led to its economic collapse and civil war two decades later. But viewed from the dictator's "Versailles of the jungle", an ornate palace he built in his ancestral village, nothing seemed impossible. Propped up by aid from America, which saw him as a useful ally in the cold war, Mobutu (pictured) ruled the country like a monarch, using the central bank's cash as if it were his own and indulging his every whim. When he wanted to fly to his remote mansion in a supersonic Concorde jet, he just ordered a runway long enough to accommodate one. When he decided to host an international boxing fight, he simply stumped up \$10m in prize money to attract one. When opponents became troublesome, he killed them.

The detail of Mobutu's depravity has been amply documented in a string of excellent books, so it might be thought that there could be little to add to them. But Paul

Kenyon, an accomplished broadcast journalist at the BBC, has managed to bring his misrule vividly to life in "Dictatorland", a book about some of Africa's more notorious rulers, by letting the reader glimpse them through the eyes of people who saw them at first hand. John Matadi, a taxi driver in Kinshasa, recalls how impishly he needled Ali outside his hotel, pretending he supported Mr Foreman, which prompted the boxer to spar playfully with him in front of a crowd gathered on the pavement. Further on, the reader comes across Mr Matadi again, this time talking about events a decade earlier when Mobutu was consolidating his grip on power. Mr Matadi, incongruously wearing slippers and worrying that they were the wrong footwear, gets caught up in a crowd gathering before a stage surrounded by soldiers. Looking to the side he sees an army truck arriving. Évariste Kimba, a former prime minister, is inside. Mr Matadi then watches as Kimba, wrists bound, is forced up a short ladder to the hastily erected gallows and hanged.

It is these minute observations that make Mr Kenyon's book so hard to put down. Yet, at the same time, they are not sufficient to overcome some of the major failings of "Dictatorland". Its origin, Mr Kenyon says, was a call from his agent when he was under siege in Crimea reporting on the conflict there, suggesting that he should write a book "about Africa and the men who had stolen its resources". But Mr Kenyon does his readers no service in reducing Africa's post-colonial history to its most burlesque brutes. His choice of villains is also odd. Mobutu fits in rather well, as does Robert Mugabe, Zimbabwe's long-



He never changed his spots

time president. But Félix Houphouët-Boigny, the first president of Ivory Coast, is a strange inclusion when far more brutal dictators, such as Uganda's Idi Amin or Jean-Bedel Bokassa of the Central African Republic, are left out. Most unsatisfying, perhaps, is that Mr Kenyon offers little to explain why Africa produced the thugs it did—a criticism one would not level, for example, at Martin Meredith's still extraordinary history, "The State of Africa". ■

The biology of inventiveness

Creative spark

The Origins of Creativity. By Edward Wilson. *Liveright*; 198 pages; \$24.95. Allen Lane; £20.

The Runaway Species. By Anthony Brandt and David Eagleman. *Catapult*; 287 pages \$28. *Canongate*; £20

DOES science spoil beauty? John Keats, an English Romantic poet, thought so. When Sir Isaac Newton separated white light into its prismatic colours, the effect, Keats wrote, was to "unweave a rainbow". By explaining how rainbows occurred, the mystery and the lustre were lost. The idea that science and the arts are distinct, incompatible cultures is an enduring one. Two new books seem to cut to the heart of the matter: human creativity.

Edward Wilson, 88 and the author of "The Origins of Creativity", is the grand old man of Harvard biology. His speciality is myrmecology—the study of ants. For a short book, "The Origins of Creativity" is brimming with ideas, many of which wander, as Mr Wilson's writing often does, beyond the brief of the title. Ultimately, though, everything in the book ties back to genetics and evolution—and a belief that culture and creativity have genetic roots.

Mr Wilson traces the source of creativity to human prehistory, on the African savannah. Man's ancestors were, for a time, dull, relatively asocial vegetarians. The crucial step, Mr Wilson argues, came with the switch to eating meat. This meant having to hunt in groups, and that meant becoming more social: people had to co-operate in the foray, and share the rewards. This change put an evolutionary premium on communication and social intelligence. Eventually, by way of natural selection, it gave rise to symbolic language. And thus the birth of the humanities came about, in storytelling and the "nocturnal firelight of the earliest human encampments".

This version of events is relatively straightforward. More controversial is where Mr Wilson tries to take the reader next. In his eyes the humanities today are ►►



▶ static and blinkered, hamstrung by their failure to acknowledge their evolutionary roots. The salvation of the humanities, he argues, lies in the “Big Five”: palaeontology, anthropology, psychology, evolutionary biology and neurobiology. By studying these different areas, scientists will be able to connect aesthetics and cultural evolution to the underlying genetic evolution that explains them. Thus Mr Wilson would expand the mantra of Theodosius Dobzhansky, a great geneticist: “Nothing in biology makes sense except in the light of evolution” to “Nothing in science and the humanities makes sense except in the light of evolution.”

Where Mr Wilson focuses on the origins of creativity, Anthony Brandt and David Eagleman, a composer and a neuroscientist, focus in “The Runaway Species” on the act of creation. The book makes a single argument, clearly and thoroughly: creativity is never the creation of something from nothing. Instead, consciously or not, people refashion things. They do this for the most part in three ways: by bending, breaking and blending. Bending involves taking something and altering a property. Breaking involves taking a whole apart and assembling something new from the fragments. And blending involves mixing multiple sources together in new ways.

“The Runaway Species” is not short of examples. For breaking, the authors cite Cubism, shotgun sequencing of DNA and photomontage in film. For blending, the minotaur and the mermaid, genetic splicing and creole languages. And for bending, the authors point to the artificial heart. At first, scientists copied the heart as closely as they could, beating and all. But beating led to wear and tear—and was unnecessary, as the heart simply needs to pump blood. Today transplant patients are given continuous-flow hearts. (It turns out that Dick Cheney, who had a heart trans-

plant at the age of 71, has not had a heart-beat since 2010.)

In a way, Keats was right: applying scientific scrutiny to the arts runs the risk of feeling like an autopsy. Both these books, though, skirt around that danger. Messrs Wilson and Eagleman themselves are both scientists and novelists—living embodiments of the fallacy that there are two distinct cultures. Both “The Origins of Creativity” and “The Runaway Species” approach creativity scientifically but sensitively, feeling its roots without pulling them out. ■

Literature and history

The shaping of words

The Written World: How Literature Shaped History. By Martin Puchner. *Random House*; 448 pages; \$32. *Granta*; £14.99

“IN THE beginning was the Word...” That stirring opening of the Gospel of St John could easily serve as the thesis of Martin Puchner’s “The Written World”, an episodic history of human civilisation as shaped by and told through its literature.

Mr Puchner, a professor at Harvard University, places the written word at the very heart of things, bringing scribes and scribblers out from the shadows and giving them their moment in the sun. When discussing Alexander’s astounding conquests, the author has far less to say about his innovative use of cavalry than about the fact that he carried around with him a text of Homer’s “Iliad”, a book that goaded the great Macedonian to surpass the achievements of his hero Achilles. Recounting the transformative impact of Buddha, Confucius, Socrates and Jesus, Mr

Puchner chooses to focus not on the ethical content of their words but on the way those words were broadcast to the world by disciples who wrote them down.

This approach is often instructive, allowing the reader to see familiar events through a different lens. Discussing the Protestant Reformation, Mr Puchner rightly places texts—and the relatively new (to Europe, at least) technology of printing—squarely at the centre: “Luther, the poor monk who was merely pointing out abuses, who was learning how to speak to and for common people, managed to acquire more authority than the pope because he was an author; the pope was only the pope,” he writes. He is also perceptive about the ways in which the explosive growth of texts in the real world looped back into literature, transforming the imaginative life of both writers and readers. Of Don Quixote, he observes: “Cervantes had realised that the proliferation of stories through print meant that more and more people saw the world through literature. In a way, everyone was a Don Quixote, their heads alive with plots and characters.”

Mr Puchner is a clear-eyed and helpful guide. Ironically for a book that is all about literature, he largely eschews literary flourishes, writing with a simplicity that is more serviceable than inspired. Accounts of his travels in search of literary origins—from the ruins of Troy to the Istanbul of Orhan Pamuk, from the jungles of southern Mexico in search of a Zapatista rebel called Subcomandante Marcos to the island of St Lucia to commune with Derek Walcott—provide local colour but rarely any piercing insights.

A larger problem is that the written word’s tentacles have reached so deeply into the collective consciousness of mankind that they have become almost synonymous with civilisation itself. Mr Puchner’s topic is at once so vast and so amorphous that at times it is hard to know exactly what this book is about.

Almost all the author’s discussions are illuminating but, in the end, they appear to be linked by no compelling idea or organising principle. Writing is so ingrained in human consciousness and so intertwined with people’s imaginative lives that any attempt to single out its impact on the course of history is bound either to end in bland generalities or to be marked by arbitrary selectivity. Mr Puchner shows an admirable breadth of interests, as comfortable discussing the Mayan Popol Vuh and *samizdat* (the underground press of the Soviet Union) as he is with the classics of the Western canon. But he never offers a unifying theme. “The Written World” works better as a series of interesting, if loosely connected, vignettes than as a revelation of literature’s uniquely transformative role. ■

The Vienna circle

Talking heads

Exact Thinking in Demented Times: The Vienna Circle and the Epic Quest for the Foundation of Science. By Karl Sigmund. Basic Books; 449 pages; \$32 and £25

ON OCTOBER 21st 1916 Friedrich Adler, a theoretical physicist turned socialist politician, went to a famous restaurant in Vienna and ate a three-course lunch. Having lingered over coffee, he went up to Karl von Stürgkh, the imperial prime minister, who was sitting at a nearby table, and shot him several times with a pistol, killing him. Adler, the son of the legendary founder of Austro-Hungarian social democracy, calmly waited to be arrested. Something had to be done to change the general way of thinking, he claimed, and he had done it. At first condemned to death, he was pardoned two years later.

When the Nazis came to power in Austria, Adler, by then the secretary of the Socialist Workers' International, held urgent meetings with other socialist politicians to work out a common strategy. During one of these meetings, an emotional Adler rambled on, seemingly unable to come to the point. "He shoots better than he talks," one French delegate remarked drily. "Exact Thinking in Demented Times", Karl Sigmund's fond and knowledgeable exploration of the ideas and members of the legendary Vienna circle between the two world wars, contains stark warnings not only about demented times, but also about the possible costs of exact thinking.

The Vienna circle was made up mainly of physicists, mathematicians and philosophers, whose fortnightly meetings were dedicated to investigating problems of logic, science, language and mathematics. Led by Moritz Schlick, a philosopher, the discussions attracted some brilliant intellectuals, including Kurt Gödel, a mathematician; Otto Neurath, an economist; three philosophers—Rudolf Carnap, Sir Karl Popper and Ludwig von Wittgenstein (pictured, whose work became the main focus of the discussions for a while)—as well as Albert Einstein and Bertrand Russell.

Debates about the possibility of a unified science, the dangerous vagaries of everyday language or the structures of mathematics and logic raged on for more than two decades. These arguments, which seemed so abstract, produced insights of vital importance for computing, astrophysics and cosmology, not to mention theory of science and philosophy. Mr Sigmund devotes a considerable part of the book to explaining some of these concepts. Readers unable to grasp them imme-

French fiction

The baby and the blade

The Perfect Nanny. By Leïla Slimani. Translated by Sam Taylor. Penguin; 240 pages; \$16. Published in Britain as "Lullaby". Faber and Faber; £12.99

LEÏLA SLIMANI is a young Moroccan-born journalist based in Paris. Her first novel, about a woman who becomes addicted to sex as relief from her stifling bourgeois life, was compared to "Anna Karenina" and "Madame Bovary". Her second won the Goncourt prize in 2016. This month it comes out in English.

Like her first work, inspired by the sex scandal that felled Dominique Strauss-Kahn, a French political grandee, "The Perfect Nanny" is also based on a true story, about a nanny who murders her small charges. Myriam Massé is a promising young lawyer who embraces motherhood but finds domesticity suffocating. Her husband, Paul, does not want his children brought up by immigrants. "Not too old, no veils and no smokers." The family lives in a handsome building in the tenth arrondissement in Paris, "where neighbours offer friendly greetings, even if they don't know each other".

Theirs is the smallest flat, though; they have to build a dividing wall in the living room when their second child is born.

The nanny they hire is Louise, who sets about lightening the atmosphere of the Massés' home with all the pre-natural sweetness of a supermarket air-freshener. She tirelessly repeats the children's favourite games, rearranges the apartment, cooks up a storm and even does the mending that Myriam has been endlessly putting off.

The novel opens with the crime, so its readability (helped by Sam Taylor's cool translation) comes from the back story: the transformation of Louise from good fairy to madwoman in the attic. The plot details are laid on ever more thickly. Louise's husband, it turns out, died after a long illness, leaving her huge debts. Their only child has run away. She turns out to be more than a little needy. A slim page-turner, "The Perfect Nanny" can be read in a single, shivery sitting. It satisfies every middle-class nightmare about the guilty relief of entrusting your screaming toddlers to other people's care. It will make a great film. Great literature it isn't.

diately are in good company. "Most scholars agree", he writes, "that neither Wittgenstein nor Russell ever really understood Gödel's ideas."

These rigorous discussions were at the outer edges of what could then be thought and calculated. This clever circle was marked by eccentricities, disagreements and rivalries, and other more serious pro-

blems. Two of its members committed suicide. Gödel, who was paranoid about being poisoned, eventually starved himself to death after he left for America.

In the end, the demented times prevailed over exact thinking, and Mr Sigmund's colourful panorama is neatly bookended by another murder, mirroring Adler's act. When Austria fell under home-grown fascist rule in 1933, the days of the Vienna circle were numbered. Even before the Anschluss in 1938, several of its members had to flee, carrying the debate into new contexts. Schlick, who was not Jewish, chose to remain in Vienna.

In 1936 he was gunned down on the philosophers' staircase of the university. His murderer was a paranoid former student who had stalked him for months, and who sympathised with fascism. The killer, who, it turned out, had acted out of misguided sexual jealousy, quickly became a hero of the nationalist right and was offered an amnesty 18 months later by the new National Socialist masters. Between the two crimes of (possibly demented) conscience, Mr Sigmund describes a world of intellectual endeavour. Barring the odd stylistic infelicity, he handles his material well. A Viennese physicist himself, he is as comfortable with local detail as he is with the grand picture. ■



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Interested eligible bidders may obtain further information from and inspect the bidding documents at the Project Management Unit of the Kaduna State Ministry of Health & Human Services at the address below from 9.00am - 4.00pm everyday with the exception of Saturday and Sunday.

A complete set of bidding documents in English Language may be purchased by interested bidders on the submission of a written application to the address below and upon payment of a nonrefundable fee of US\$450.00. The method of payment will be cash/draft.

Bids must be delivered to the address below on or before 12.00 noon of 15th March, 2018. All bids must be accompanied by a bid security of US\$2,500.00 for the Turn Key Lots and US\$2,000.00 for the other lot. Late bids will be rejected. Bids will be opened in the presence of bidders' representatives who choose to attend at the address below at 12.30pm on 15th March, 2018.

The Project Manager,
 Project Management Unit,
 Ministry of Health and Human Services, No. 18 Independence Way, Kaduna – Kaduna State, Nigeria.
 Email: musahayatuddini@yahoo.com, byuseef@yahoo.com
 or via Telephone: +2348037001891, +2348028919812



Request for Expression of Interest (EOI)
Pre-Qualification of Transaction Advisory Firms
 Enquiry # LED/222/Service Consultant/17

- Sui Northern Gas Pipelines Ltd (SNGPL) and Sui Southern Gas Company Limited (SSGC), the two gas utility companies operating in Pakistan, as procuring organization intend to engage the service of a Transaction Advisory (TA) Firm for Structural Reforms covering the present gas transmission and distribution arrangement in the Country into four province-wise gas distribution companies and one north-wide gas transmission company.
- The scope of the Transaction Advisory Firm will include but not limited to suggesting detailed Transaction Implementation Strategy and Roadmap with the minimum required changes to the organizational arrangements, corporate policies, and HR dispensation prevailing in SNGPL and SSGC. Transaction Advisory Firm will be responsible to execute all necessary Legal and Commercial arrangements including post-unbundling support. It is envisioned that a consulting firm, having extensive experience of carrying out comprehensive gas sector reforms will deploy several highly qualified and experienced experts for Due Diligence of Technical, HR, legal, Financial and Regulatory assignments with vast experience from the industry. The consulting firm will bring its specialized technical experts during project period as per project requirement to enhance the implementation capacity. The Transaction Advisory Firm will be responsible for end to end process as a single lead by looking after the legal and commercial processes required for demerger / incorporation / merger of new entities including issuance of necessary regulatory licenses and completion of all formalities for existing and new setups. Detailed scope of work expected from the Transaction Advisor and evaluation criteria for the prequalification process are set out in the EOI documents.
- Through this advertisement, Expression of Interest (EOI) is invited for the prequalification of The Consultant Firms having requisite experience in the matter. In case of local consulting firms they must be duly registered with Income Tax and Sales tax departments and are on Active Taxpayers List of the Federal Board of Revenue and possess valid professional tax clearance certificate. Foreign Consulting Firm(s) will be subject to local tax laws and regulations as applicable from time to time.
- The Consulting firms may associate to enhance their qualifications. The "Association" may take the form of either joint venture or sub-consultancy (mention clearly). After short listing through a separate tender enquiry, the Transaction Advisory firm will be asked to submit a detailed technical and financial proposal pursuant to quality and cost based method under single stage two envelope basis in accordance with the procedures as set out in PPRA Rules, 2004 and Procurement of Consultancy Services Regulation 2010.
- Expression of Interest (EOI) documents, containing detailed terms and conditions, etc. are available with General Manager (Procurement) Sui Northern Gas Pipelines Limited, 21 Kashmir Road, Lahore Pakistan and / or General Manager (Procurement) Sui Southern Gas Company Limited, St - 4 B Block 14, Sir Shah Sulaiman Road, Gulshan-e-Isal, Karachi, Pakistan. Price of the EOI documents is Rs. 10,000/-
- A pre bid meeting will be arranged to deliberate modalities of the assignment at 11 AM, January 31, 2018, at Sui Southern Gas Company Head Office, Karachi. Interested parties will be required to purchase Expression of Interest (EOI) documents and submit their queries by January 29, 2018 through email at the following address:
gmurchase@sngpl.com.pk
ali.khan@ssgc.com.pk
- The EOI, prepared in accordance with the given instructions, must reach in the office of General Manager (Procurement) Sui Northern Gas Pipelines Limited, 21 Kashmir Road, Lahore Pakistan on or before February 18, 2018 by 3 PM and same will be opened at 4 PM. No EOI will be accepted if submitted at SSGC's office.
- No profiles will be entertained after the time prescribed for submission as mentioned hereinabove in clause 7 and if submitted after the prescribed time the same shall be rejected and returned.
- This advertisement is also available on PPRA web site at www.ppra.org.pk and on SNGPL & SSGC website at www.sngpl.com.pk and www.ssgc.com.pk respectively.

General Manager (Procurement)

Sui Southern Gas Company Limited,
 Tender Room, CRO Building, Ground Floor
 SSGC Head Office Complex, Karachi
 Phone No: 0092-2199221024
 Fax No: 0092-2199231583
 Email: ali.khan@ssgc.com.pk

General manager (Procurement)

Sui Northern Gas Pipe Lines Limited,
 21-Kashmir Road, Lahore
 Phone No: 0092-4299201225
 Fax No: 0092-4299201275
 Email: gmurchase@sngpl.com.pk

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Request for Interest



EPC opportunity for large PV power plant

The investment company LRM NV, in collaboration with the City of Lommel, has developed a 97,9 MWp PV power plant in Lommel, Belgium ("the Project") through Kristal Solar Park, a SPV ("the Developer"). The ground-mounted East-West installation will occupy an area of 104 ha located on business park Kristalpark III ("the Site"). The electricity produced by the Project will not be injected into a public transmission or distribution system, but consumed locally. The project will be third party financed.

The Developer is currently soliciting for EPC candidates that are interested to build the Project on a turn-key basis. The EPC company will also be responsible for the operation and maintenance (O&M) of the Project during at least the first 24 months after commissioning. Construction works are planned to start in September 2018 with a maximum construction period of 9 months for the entire Project.

The present Request for Interest ("RFI") and subsequent Request for Proposal ("RFP") and award procedure are not subject to the Belgian public procurement legislation. The Developer will issue an RFP to engineer, procure, construct, test, commission and handover the Project. As part of its preparations to issue the RFP, the Developer would like, through this RFI, to pre-qualify potential firms/consortia for the Project who will receive the RFP documents. The Developer has established a Steering Committee with technical, financial and legal advisors who will make the RFI and RFP assessments independently.

In this RFI, participants are asked for their technical and financial references. The Developer guarantees an equal playing field for all candidates. For further information regarding LRM NV (activities, annual reports, ...) interested parties are invited to visit www.lrm.be.

Interested? Please contact Mr. Luc Driesen (l.driesen@lrm.be) to receive the RFI documents. RFI's must be submitted no later than **January 31st 2018 at 17h00 CET**.

Economic data

% change on year ago

	Gross domestic product			Industrial production latest	Consumer prices		Unemployment rate, %	Current-account balance		Budget balance % of GDP 2017 [†]	Interest rates, % 10-year gov't bonds, latest	Currency units, per \$	
	latest	qtr* 2017 [†]	2017 [†]		latest	2017 [†]		latest 12 months, \$bn	% of GDP 2017 [†]			Jan 10th	year ago
United States	+2.3 Q3	+3.2	+2.3	+3.4 Nov	+2.2 Nov	+2.1	4.1 Dec	-452.5 Q3	-2.4	-3.5	2.48	-	-
China	+6.8 Q3	+7.0	+6.8	+6.1 Nov	+1.8 Dec	+1.6	4.0 Q3 [§]	+121.6 Q3	+1.2	-4.3	3.85 ^{§§}	6.52	6.92
Japan	+2.1 Q3	+2.5	+1.7	+3.7 Nov	+0.5 Nov	+0.5	2.7 Nov	+198.8 Oct	+4.0	-4.4	0.05	111	115
Britain	+1.7 Q3	+1.6	+1.6	+2.5 Nov	+3.1 Nov	+2.7	4.3 Sep ^{††}	-118.1 Q3	-4.5	-2.9	1.29	0.74	0.82
Canada	+3.0 Q3	+1.7	+3.1	+4.6 Oct	+2.1 Nov	+1.5	5.7 Dec	-45.8 Q3	-3.0	-1.8	2.16	1.25	1.32
Euro area	+2.6 Q3	+2.4	+2.3	+3.7 Oct	+1.4 Dec	+1.5	8.7 Nov	+393.8 Oct	+3.2	-1.3	0.48	0.83	0.94
Austria	+3.2 Q3	+1.4	+2.8	+4.4 Oct	+2.3 Nov	+2.1	5.4 Nov	+8.5 Q3	+2.1	-1.0	0.58	0.83	0.94
Belgium	+1.7 Q3	+1.0	+1.7	+6.7 Oct	+2.1 Dec	+2.2	6.7 Nov	-3.9 Sep	-0.3	-2.1	0.74	0.83	0.94
France	+2.3 Q3	+2.3	+1.8	+2.5 Nov	+1.2 Dec	+1.2	9.2 Nov	-28.7 Nov	-1.4	-2.9	0.78	0.83	0.94
Germany	+2.8 Q3	+3.3	+2.5	+5.7 Nov	+1.7 Dec	+1.7	3.6 Nov [†]	+282.8 Nov	+7.9	+0.6	0.48	0.83	0.94
Greece	+1.3 Q3	+1.2	+1.3	+0.9 Nov	+1.1 Nov	+1.1	20.5 Sep	-1.2 Oct	-0.5	-0.7	3.72	0.83	0.94
Italy	+1.7 Q3	+1.4	+1.5	+3.1 Oct	+0.9 Dec	+1.3	11.0 Nov	+54.6 Oct	+2.7	-2.3	2.04	0.83	0.94
Netherlands	+3.0 Q3	+1.6	+3.2	+4.4 Nov	+1.3 Dec	+1.3	5.4 Nov	+80.7 Q3	+9.6	+0.7	0.55	0.83	0.94
Spain	+3.1 Q3	+3.1	+3.1	+7.0 Oct	+1.2 Dec	+2.1	16.7 Nov	+23.0 Oct	+1.7	-3.0	1.48	0.83	0.94
Czech Republic	+4.7 Q3	+1.9	+4.5	+8.5 Nov	+2.4 Dec	+2.5	2.5 Nov [†]	+9.0 Q3	+0.7	+0.7	1.71	21.3	25.5
Denmark	+1.4 Q3	-1.9	+2.2	+0.2 Oct	+1.0 Dec	+1.1	4.3 Nov	+26.2 Nov	+8.4	-0.6	0.55	6.22	7.02
Norway	+3.2 Q3	+3.0	+2.1	-4.1 Nov	+1.6 Dec	+1.9	4.0 Oct ^{††}	+21.1 Q3	+4.9	+5.2	1.62	8.06	8.58
Poland	+5.1 Q3	+4.9	+4.6	+9.0 Nov	+2.0 Dec	+2.0	6.5 Nov [§]	-1.4 Oct	+0.1	-3.3	3.34	3.49	4.13
Russia	+1.8 Q3	na	+1.8	-3.8 Nov	+2.5 Dec	+3.7	5.1 Nov [§]	+32.7 Q3	+2.5	-2.1	8.13	56.9	60.1
Sweden	+2.9 Q3	+3.1	+2.7	+6.5 Nov	+1.9 Nov	+1.9	5.8 Nov [§]	+21.1 Q3	+4.5	+1.0	0.77	8.18	9.04
Switzerland	+1.2 Q3	+2.5	+0.9	+8.7 Q3	+0.8 Dec	+0.5	3.0 Dec	+66.4 Q3	+9.6	+0.8	-0.07	0.98	1.01
Turkey	+11.1 Q3	na	+6.3	+6.9 Nov	+11.9 Dec	+11.0	10.6 Sep [§]	-41.9 Oct	-5.0	-2.0	11.77	3.80	3.77
Australia	+2.8 Q3	+2.4	+2.3	+3.5 Q3	+1.8 Q3	+2.0	5.4 Nov	-22.2 Q3	-1.7	-1.5	2.69	1.27	1.35
Hong Kong	+3.6 Q3	+2.0	+3.7	+0.3 Q3	+1.5 Nov	+1.5	3.0 Nov ^{††}	+14.8 Q3	+6.1	+3.2	2.01	7.82	7.75
India	+6.3 Q3	+8.7	+6.6	+2.2 Oct	+4.9 Nov	+3.5	5.0 2015	-33.6 Q3	-1.5	-3.1	7.44	63.6	68.2
Indonesia	+5.1 Q3	na	+5.1	+6.4 Oct	+3.6 Dec	+3.8	5.5 Q3 [§]	-13.3 Q3	-1.6	-2.8	6.30	13,435	13,315
Malaysia	+6.2 Q3	na	+5.8	+3.4 Oct	+3.4 Nov	+3.9	3.4 Oct [§]	+9.2 Q3	+2.5	-3.0	3.90	4.00	4.47
Pakistan	+5.7 2017**	na	+5.7	+8.7 Oct	+4.6 Dec	+4.1	5.9 2015	-14.5 Q3	-4.9	-5.9	7.93 ^{†††}	111	105
Philippines	+6.9 Q3	+5.3	+6.6	-8.1 Nov	+3.3 Dec	+3.2	5.0 Q4 [§]	-0.5 Sep	-0.3	-2.1	5.73	50.4	49.5
Singapore	+3.1 Q4	+2.8	+3.1	+5.3 Nov	+0.6 Nov	+0.6	2.2 Q3	+57.4 Q3	+18.3	-1.0	2.14	1.33	1.43
South Korea	+3.8 Q3	+6.3	+3.1	-1.6 Nov	+1.5 Dec	+2.0	3.3 Dec [§]	+81.3 Nov	+5.5	+0.8	2.64	1,072	1,195
Taiwan	+3.1 Q3	+6.8	+2.4	+0.9 Nov	+1.2 Dec	+0.6	3.7 Nov	+74.1 Q3	+13.2	-0.1	1.05	29.6	31.9
Thailand	+4.3 Q3	+4.0	+3.6	+4.2 Nov	+0.8 Dec	+0.7	1.1 Nov [§]	+47.4 Q3	+11.7	-2.4	2.27	32.1	35.6
Argentina	+4.2 Q3	+3.6	+2.9	-2.5 Oct	+22.3 Nov	+25.2	8.3 Q3 [§]	-26.6 Q3	-4.1	-6.1	4.10	18.8	15.9
Brazil	+1.4 Q3	+0.6	+0.9	+4.7 Nov	+2.9 Dec	+3.4	12.0 Nov [§]	-11.3 Nov	-0.7	-8.0	8.69	3.24	3.19
Chile	+2.2 Q3	+6.0	+1.4	+2.3 Nov	+2.3 Dec	+2.2	6.5 Nov ^{§††}	-4.6 Q3	-1.3	-2.7	4.52	611	671
Colombia	+2.0 Q3	+3.2	+1.6	-0.3 Oct	+4.1 Dec	+4.3	8.4 Nov [§]	-11.1 Q3	-3.6	-3.3	6.38	2,895	2,953
Mexico	+1.5 Q3	-1.2	+2.0	-1.1 Oct	+6.8 Dec	+6.0	3.5 Nov	-16.1 Q3	-1.7	-1.9	7.57	19.3	21.6
Venezuela	-8.8 Q4~	-6.2	-12.5	+0.8 Sep	na	+931	7.3 Apr [§]	-17.8 Q3~	-0.7	-19.4	8.24	10.1	9.99
Egypt	na	na	+4.2	+25.0 Oct	+21.9 Dec	+26.8	11.9 Q3 [§]	-12.2 Q3	-6.4	-10.8	na	17.7	18.7
Israel	+1.9 Q3	+3.5	+3.6	+2.5 Oct	+0.3 Nov	+0.3	4.3 Nov	+10.5 Q3	+2.7	-1.8	1.68	3.43	3.84
Saudi Arabia	-0.7 2017	na	-0.7	na	+0.1 Nov	-0.3	5.6 2016	+12.4 Q3	+3.3	-6.6	na	3.75	3.75
South Africa	+0.8 Q3	+2.0	+0.8	+1.1 Oct	+4.6 Nov	+5.4	27.7 Q3 [§]	-7.3 Q3	-2.5	-3.9	8.65	12.4	13.7

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. ^{††††}Dollar-denominated bonds.



Markets

	Index Jan 10th	% change on one week	% change on Dec 30th 2016	
			in local currency	in \$ terms
United States (DJIA)	25,369.1	+1.8	+28.4	+28.4
China (SSEA)	3,583.8	+1.6	+10.3	+17.6
Japan (Nikkei 225)	23,788.2	+4.5	+24.5	+30.4
Britain (FTSE 100)	7,748.5	+1.0	+8.5	+18.8
Canada (S&P/TSX)	16,248.0	-0.8	+6.3	+14.2
Euro area (FTSE Euro 100)	1,251.6	+3.1	+12.5	+27.8
Euro area (EURO STOXX 50)	3,609.8	+2.8	+9.7	+24.6
Austria (ATX)	3,596.1	+3.1	+37.3	+56.0
Belgium (Bel 20)	4,157.6	+3.8	+15.3	+31.0
France (CAC 40)	5,504.7	+3.3	+13.2	+28.6
Germany (DAX)*	13,281.3	+2.3	+15.7	+31.4
Greece (Athex Comp)	836.3	+2.3	+29.9	+47.6
Italy (FTSE/MIB)	23,157.4	+5.7	+20.4	+36.8
Netherlands (AEX)	560.4	+2.0	+16.0	+31.8
Spain (Madrid SE)	1,054.7	+3.3	+11.8	+27.0
Czech Republic (PX)	1,101.7	+1.4	+19.5	+43.5
Denmark (OMXC20)	945.9	+1.4	+18.4	+34.3
Hungary (BUX)	39,651.2	+0.1	+23.9	+40.5
Norway (OSEAX)	938.3	+2.8	+22.7	+31.1
Poland (WIG)	64,884.7	+1.5	+25.4	+50.1
Russia (RTS, \$ terms)	1,234.6	+4.4	+7.1	+7.1
Sweden (OMXS30)	1,629.3	+2.6	+7.4	+19.2
Switzerland (SMI)	9,525.0	+0.5	+15.9	+20.6
Turkey (BIST)	113,589.4	-2.1	+45.4	+34.5
Australia (All Ord.)	6,205.9	+0.5	+8.5	+17.9
Hong Kong (Hang Seng)	31,073.7	+1.7	+41.2	+40.0
India (BSE)	34,433.1	+1.9	+29.3	+38.0
Indonesia (JSX)	6,371.2	+1.9	+20.3	+20.6
Malaysia (KLSE)	1,822.9	+1.7	+11.0	+24.4
Pakistan (KSE)	43,630.7	+5.0	-8.7	-13.8
Singapore (STI)	3,520.5	+1.6	+22.2	+32.4
South Korea (KOSPI)	2,499.8	+0.5	+23.4	+39.0
Taiwan (TWI)	10,831.1	+0.3	+17.0	+27.5
Thailand (SET)	1,794.9	+0.9	+16.3	+29.6
Argentina (MERV)	31,632.4	+0.5	+87.0	+57.8
Brazil (BVSP)	78,200.6	+0.3	+29.8	+30.4
Chile (IGPA)	28,570.8	+1.2	+37.8	+51.2
Colombia (IGBC)	11,809.8	+2.2	+16.9	+21.2
Mexico (IPC)	48,785.3	-2.0	+6.9	+14.4
Venezuela (IBC)	1,327.5	+5.2	-95.8	na
Egypt (EGX 30)	15,192.6	+2.4	+23.1	+26.1
Israel (TA-125)	1,380.0	-0.2	+8.1	+21.4
Saudi Arabia (Tadawul)	7,300.4	+1.1	+0.9	+0.9
South Africa (JSE AS)	59,979.6	+0.6	+18.4	+30.1

The Economist poll of forecasters, January averages (previous month's, if changed)

	Real GDP, % change				Consumer prices		Current account	
	Low/high range		average		% change		% of GDP	
	2017	2018	2017	2018	2017	2018	2017	2018
Australia	2.2/2.7	2.2/3.2	2.3 (2.4)	2.8 (2.9)	2.0	2.1 (2.2)	-1.7 (-1.4)	-2.1 (-1.8)
Brazil	0.6/1.2	1.5/3.1	0.9 (0.8)	2.6 (2.5)	3.4	3.6 (3.8)	-0.7	-1.6 (-1.5)
Britain	1.5/1.8	1.0/1.8	1.6 (1.5)	1.4 (1.3)	2.7	2.5 (2.6)	-4.5 (-4.0)	-4.1 (-3.5)
Canada	2.9/3.6	1.9/2.7	3.1 (3.0)	2.2 (2.3)	1.5	1.9 (1.8)	-3.0 (-2.9)	-2.7 (-2.6)
China	6.6/6.8	5.8/6.9	6.8	6.5	1.6	2.3	1.2 (1.3)	1.2 (1.4)
France	1.8/1.9	1.7/2.4	1.8	2.0 (1.9)	1.2 (1.1)	1.4 (1.3)	-1.4 (-1.5)	-1.2 (-1.4)
Germany	2.2/2.6	1.9/2.9	2.5 (2.4)	2.5 (2.3)	1.7	1.7 (1.6)	7.9	7.8
India	6.2/7.0	6.9/7.7	6.6 (6.5)	7.3 (7.4)	3.5 (3.4)	4.6 (4.5)	-1.5	-1.8 (-1.7)
Italy	1.5/1.6	1.1/1.9	1.5	1.5 (1.4)	1.3 (1.4)	1.0	2.7 (2.6)	2.4 (2.2)
Japan	1.5/1.8	1.1/2.3	1.7 (1.5)	1.5 (1.3)	0.5	0.9	4.0 (3.5)	3.9 (3.5)
Russia	1.5/2.2	1.5/3.3	1.8 (1.9)	2.1	3.7 (3.8)	3.5 (3.7)	2.5 (2.3)	2.5 (2.0)
Spain	2.9/3.1	2.1/3.2	3.1	2.6	2.1 (2.0)	1.5 (1.4)	1.7 (1.4)	1.7 (1.4)
United States	2.1/2.6	2.2/3.3	2.3 (2.2)	2.6 (2.4)	2.1	2.1	-2.4 (-2.5)	-2.5
Euro area	1.9/2.5	1.8/2.7	2.3 (2.2)	2.3 (2.1)	1.5	1.4	3.2 (3.1)	3.1 (3.0)

Sources: Bank of America, Barclays, BNP Paribas, Citigroup, Commerzbank, Credit Suisse, Decision Economics, Deutsche Bank, EIU, Goldman Sachs, HSBC Securities, ING, Itaú BBA, JPMorgan, Morgan Stanley, RBS, Royal Bank of Canada, Schroders, Scotiabank, Société Générale, Standard Chartered, UBS. For more countries, go to: Economist.com/markets

Other markets

	Index Jan 10th	% change on Dec 30th 2016	
		one week	in local in \$ currency terms
United States (S&P 500)	2,748.2	+1.3	+22.8 +22.8
United States (NAScomp)	7,153.6	+1.2	+32.9 +32.9
China (SSEB, \$ terms)	345.6	nil	+1.1 +1.1
Japan (Topix)	1,892.1	+4.1	+24.6 +30.5
Europe (FTSEurofirst 300)	1,568.2	+2.3	+9.8 +24.7
World, dev'd (MSCI)	2,162.3	+1.7	+23.5 +23.5
Emerging markets (MSCI)	1,197.5	+1.1	+38.9 +38.9
World, all (MSCI)	527.7	+1.7	+25.1 +25.1
World bonds (Citigroup)	947.6	-0.2	+7.2 +7.2
EMBI+ (JPMorgan)	832.0	-0.6	+7.8 +7.8
Hedge funds (HFRX)	1,291.3 [§]	+0.5	+7.3 +7.3
Volatility, US (VIX)	9.8	+9.2	+14.0 (levels)
CDSs, Eur (iTRAXX) [†]	44.9	+1.3	-37.8 -29.4
CDSs, N Am (CDX) [†]	46.9	+0.1	-30.8 -30.8
Carbon trading (EU ETS) €	7.9	+1.5	+19.2 +35.4

Sources: IHS Markit; Thomson Reuters. [†]Total return index. [‡]Credit-default-swap spreads, basis points. [§]Jan 9th.

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

The Economist commodity-price index

2005=100

	Jan 2nd	Jan 9th*	% change on	
			one month	one year
Dollar Index				
All Items	150.9	149.6	+4.5	+3.4
Food	149.5	149.0	+2.5	-5.1
Industrials				
All	152.3	150.3	+6.6	+13.9
Nfa [†]	138.0	138.8	+5.2	-2.2
Metals	158.4	155.2	+7.1	+21.6
Sterling Index				
All items	202.1	201.2	+2.9	-6.9
Euro Index				
All items	155.8	155.9	+2.7	-8.2
Gold				
\$ per oz	1,313.1	1,311.4	+6.0	+10.4
West Texas Intermediate				
\$ per barrel	60.4	63.0	+10.2	+23.9

Sources: Bloomberg; CME Group; Cotlook; Darmann & Curt; FT; ICCO; ICO; ISO; Live Rice Index; LME; NZ Wool Services; Thompson Lloyd & Ewart; Thomson Reuters; Urner Barry; WSJ. ^{*}Provisional [†]Non-food agricultural.

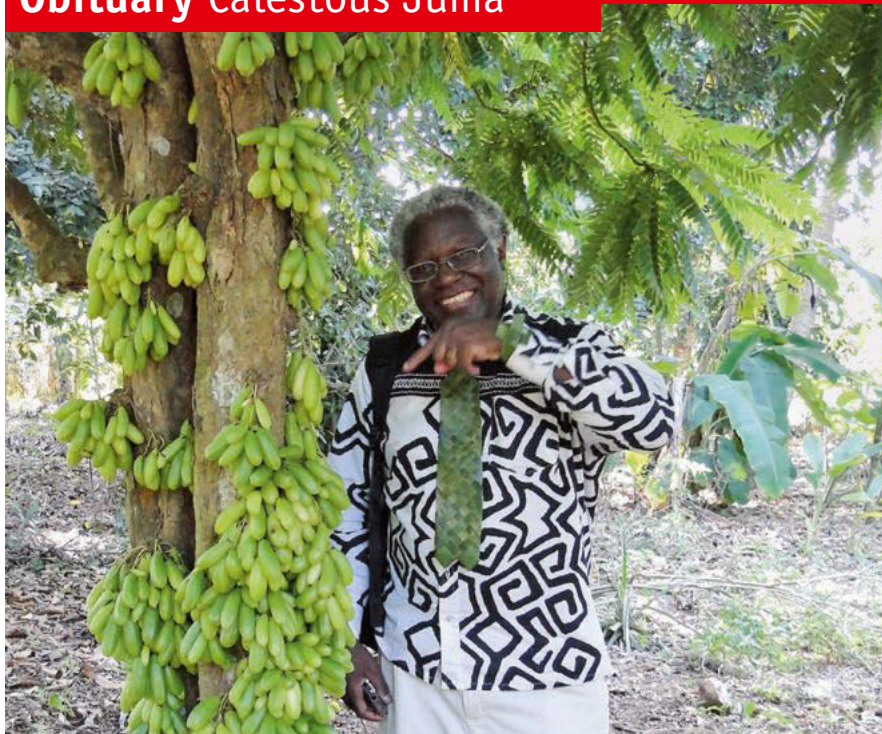
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Seeds of change

Calestous Juma, tireless advocate for innovation in Africa, died on December 15th, aged 64

COLLEAGUES said he tweeted more than any professor they knew, and Calestous Juma's tweets covered a swarm of things. Income inequality, and a free-trade area for Africa, you might expect. Those were the subjects he taught at Harvard: getting poorer countries, especially in Africa, to grow and thrive was the obsession of his life. But he also tweeted about a wheelchair that could climb stairs, the increasing size of steaks, and the maximum number of goats seen eating up in a tree. He was extra-delighted to send out a *New York Times* editorial, from 1878, about Thomas Edison's new "aerophone": "Something ought to be done about Mr Edison, and there is a growing conviction that it had better be done with a hemp rope."

Human beings always resisted change. He demonstrated this, on YouTube, by holding up a mug of coffee, opposed on safety grounds for around 200 years. Refrigeration had been fought against; margarine had been coloured pink, by law, so that consumers could reject it. Closer to his own life, in the remote litter of mud huts on Lake Victoria in Kenya where he had grown up one of 14 children, villagers had initially rejected the cassava cuttings his father had introduced, thinking the unknown tubers would breed demons. In fact, in that flood-prone corner, they en-

sured a stable food supply. Innovation in Africa, he had learned from that example, had to be "evolutionary". Everyone—smallholders, herders, merchants—had to be involved and convinced it would work.

Progress would come, he was sure. But his many books and papers showed how far there was to go. In 2011 "The New Harvest" noted that 75% of Africa's farmland, the mainspring of economic activity, was starved of nutrients. Only 4% of cropland was irrigated; fertiliser use was 10% of the world average. The crying need was for leadership, integration and innovation, in that order. Governments, scientists, entrepreneurs and farmers had to co-operate to improve crops and yields, build roads to get produce to markets, and generally invest. His favourite example was Bingu wa Mutharika, president of Malawi, who gave subsidies to farmers for improved seeds and fertiliser; yields rose so much that, in two years, Malawi was a net exporter of food. Why not do that everywhere?

He advised several African leaders, and found them receptive. In 2012, six of them were engineers—an encouraging fact for a man who had spent his boyhood Sundays mending villagers' radios, and called that the only real job he had ever done. It was government ministries, and their turf wars, that frustrated him. His African Cen-

tre for Technology Studies, set up in Nairobi, was among the first on the continent to bring researchers and policymakers together. He had been softening up Kenya for a while: as a young teacher in Mombasa he so bombarded the *Daily Nation* with wit and ideas that he became its first science correspondent, and went on proselytising, just as perkily, from there. His own progress, from a school without water or power to Sussex University, the United Nations and Harvard, surely showed what his continent could do, with effort and a push.

Africa was a laggard, outstripped by everywhere else. But laggards had advantages, too. They could take what others had invented and run with it—leapfrogging, as he called it. The story of mobile phones in Africa greatly fuelled his optimism. Here was an invention people loved rather than feared, so that Kenya (with his help) became one of the first countries to use smartphones for money transfer, and herders in Somalia now exchanged and tracked their goats by painting them with their mobile numbers. He enjoyed starting lectures with a picture of those goats; though proper leapfrogging, he insisted, still needed power-lines and roads.

As with phones, so with agricultural technology. Africa, he wrote, contained 60% of the world's available arable land. It also contained, in sharp contrast to monocultures elsewhere, a vast range of indigenous crops. Many of these, long adapted to arid conditions, could help feed the world despite climate change. Africa was a reservoir of biodiversity, and the next step was to ensure that the storing of seeds, and research into them, became the business of African governments, universities and farmers. Perhaps his most satisfying stint was as the first executive secretary of the UN convention on biodiversity of 1992—in effect an African safeguarder of that vast and endangered genetic library, still hardly catalogued and still largely unread.

What farmers need

Genetic modification held no fears for him. Modified seeds, resistant to drought and pests, were just what Africa needed. Gene research induced plants to release their secrets of success. If over-producing Europeans did not want this new tool, fine; but they had no right to limit farmers' choices in Africa. When GMOs were restricted by the Cartagena protocol, signed in 2000, he left the UN in protest at its pessimism and "technological intolerance".

There was plenty of that about, in the developed world as much as in Africa. His life was spent resisting it, grasping new inventions and initiatives joyously and with both hands. Lighthearted as he was, his constant message to Africa was also a stern one, and more succinct than most of his tweets: Innovate or perish. ■

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