

# The Economist

The new inheritocracy

Can Europe defend itself?

Nvidia's vulnerabilities

How to dodge tariffs

MARCH 1ST-7TH 2025



**THE DON'S  
NEW WORLD  
ORDER**



REACH FOR THE CROWN





THE DAY-DATE



ROLEX

The iconic Rolex crown logo is positioned above the brand name 'ROLEX' in a bold, sans-serif font. The word 'ROLEX' is written in all caps.

#ModernMBA



The business school of the future is here.

Mobile First. Selective. AI-supported. Space suit optional.

Quantic is built for the pace of progress. Join over 15,000 leaders in the radically affordable #ModernMBA.

Learn more at [quantic.edu](http://quantic.edu)



QUANTIC  
SCHOOL of  
BUSINESS &  
TECHNOLOGY

# Contents



## On the cover

A mafia-like struggle for global power has begun, with new rules that do not suit America: leader, page 9. The transactional world Donald Trump seeks: briefing, page 15. No, his Putin-wooing is not like Nixon going to China: The Telegram, page 54

**The new inheritocracy** Unearned bequests are becoming nearly as important as working. That is dangerous for capitalism and society: leader, page 10. To get rich, forget about your career, page 62

## Can Europe defend itself?

It will take years to build up an independent defence force, page 52. Does Britain's nuclear deterrent have a Trump-shaped problem? Page 19. Europe needs a single envoy for peace talks. Who? Charlemagne, page 30

## Nvidia's vulnerabilities

DeepSeek and Donald Trump pose a dual threat to America's chip-design champion, page 55. The American president still needs Taiwan, page 56

**How to dodge tariffs** A guide to avoiding Donald Trump's favourite taxes, page 57

## The world this week

7 A summary of political and business news

### Leaders

9 **Mafia diplomacy** Dealing with the Don  
10 **The new inheritocracy** Wealth v work

11 **German elections** Move fast, Merz

11 **Indonesia's budget** Musk man

12 **Gene editing** Second chances

### Letters

13 On America's defence spending, the *Exxon Valdez*, the Oxford-Cambridge Arc, scams, Latin, TikTok

### Briefing

15 **Geopolitics, Trump-style** Gangster's paradise

### Technology Quarterly: Gene editing

The age of CRISPR  
After page 40



**Bartleby** Another bulging postbag for Max Flannel, page 60



## Britain

- 19 The nuclear question  
20 Slashing foreign aid  
21 Welfare for teens  
21 Shareholder bureaucracy  
22 Unregulated therapists  
24 **Bagehot** The easiest job in British politics



## Europe

- 25 Germany's election  
26 John Parker, polymath  
27 Europe's defence budgets  
27 Ukraine's minerals  
28 Mobilisation in Ukraine  
29 Swedish gang violence  
30 **Charlemagne** Who should speak for Europe?



## United States

- 31 Budget maths  
32 Evaluating Medicaid  
34 DOGE days  
35 Gen Z has faith  
35 Competitive mariachi  
36 Edward Blum's crusade  
37 **Lexington** Anchormen



## The Americas

- 38 Ecuador's iron lady  
39 Mexico's border troops  
40 Colombia's last matadors



## Middle East & Africa

- 41 Gaza's wobbly ceasefire  
42 Jordan's wobbly monarchy  
43 A new Syrian constitution  
43 Business in the coup belt  
44 Sinking Sierra Leone



# Contents

## Asia

- 45 Indonesia's DOGE  
46 Tajik politics  
47 Ageing India  
48 Banyan Hip Hinduism



## China

- 49 The workers  
50 China and Ukraine  
51 Alice Weidel, the China years



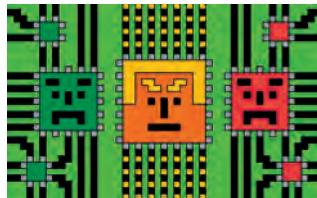
## International

- 52 European defence  
54 The Telegram Trump is no Nixon



## Business

- 55 Nvidia and Trump  
56 MAGA chipmaking  
57 How to dodge tariffs  
58 The Zyn buzz  
58 Airbus v Boeing  
59 Secondhand fashion  
60 Bartleby Our agony uncle returns  
61 Schumpeter Germany's new corporate stars



## Finance & economics

- 62 The inheritance boom  
64 Buttonwood Ultra-cheap investing  
65 Trump v the bond market  
66 Crypto's real craze  
67 Free exchange India ploughs its own furrow



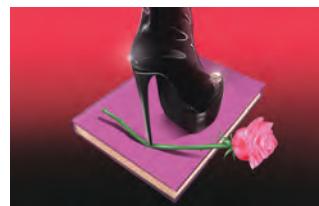
## Science & technology

- 68 Mining technology  
69 Sharper eyes in the sky  
70 AI and board games  
71 Well informed Do super shoes work?



## Culture

- 72 Fiction gets raunchier  
73 James Bond's new handler  
74 World in a dish Caviar  
75 First and last words  
75 Live albums are back  
76 Do you play pinball?



## Economic & financial indicators

- 77 Statistics on 42 economies

## Obituary

- 78 Muhsin Hendricks, the first openly gay imam

Volume 454 Number 9437

Published since September 1843

to take part in 'a severe contest between intelligence, which presses forward, and an unworthy, timid ignorance obstructing our progress.'

**Editorial offices in London and also:**

Amsterdam, Beijing, Berlin, Brussels, Cape Town, Chicago, Dubai, Lagos, Madrid, Mexico City, Montevideo, Mumbai, Nairobi, New Delhi, New York, Paris, San Francisco, São Paulo, Shanghai, Singapore, Taipei, Tokyo, Washington DC

### Subscription service

For our full range of subscription offers, including digital only or print and digital bundled, visit: [Economist.com/offers](http://Economist.com/offers)

If you are experiencing problems when trying to subscribe, please visit our Help pages at: [www.economist.com/help](http://www.economist.com/help) for troubleshooting advice.

To manage your account online, please visit [my.economist.com](http://my.economist.com) where you can also access our live chat service which is available 24/7. To call us, contact our dedicated service centre on 00800 771 12711 or +44 (0)203 868 6843.



PEFC certified

This copy of *The Economist* is printed on paper sourced from sustainably managed forests certified by PEFC [www.pefc.org](http://www.pefc.org)

## The world this week Politics



The conservative Christian Democratic Union (CDU) and its sister party, the Christian Social Union in Bavaria, won **Germany's election** with 29% of the vote. The hard-right Alternative for Germany (AfD) scored 21%, its best-ever result. The incumbent Social Democrats (SPD) took just 16% and the Greens 12%. Friedrich Merz, the probable next chancellor, has refused to work with the AfD so he will try to form a coalition with the SPD. After his victory Mr Merz said Europe could no longer rely on America for its defence and would have to take responsibility for its own security. He also ruled out a quick reform to Germany's "debt brake", which restricts government borrowing and spending, even on defence, saying that this required "a lot of difficult work".

Volodymyr Zelensky praised the "absolute heroism" of the Ukrainian people on the third anniversary of **Russia's invasion of Ukraine**. Earlier, Mr Zelensky said he would be willing to step down as Ukraine's president in exchange for NATO membership. On the eve of the anniversary Russia launched its biggest drone attack yet.

At the **United Nations**, meanwhile, America shocked European allies by joining Russia in voting against a resolution at the General Assembly condemning Russia's aggression in Ukraine. America then drafted a resolution at the Security Council calling for an end to the war, but containing no criticism of Russia. Its resolution passed, but Britain and France abstained.

Underlining his emphasis on **transactional diplomacy**, Donald Trump reached a deal with Ukraine to develop the country's large deposits of critical minerals and invited Mr Zelensky to Washington for "a very big agreement". Earlier, Vladimir Putin said he would allow "foreign partners" to develop Russia's store of rare minerals. He also scotched Mr Trump's optimism about reaching a peace deal, saying that Ukraine was only "touched on" in Russia's negotiations with America. Ukraine was not on the agenda for a second round of talks in Turkey.

### Europe on the back foot

Emmanuel Macron visited Mr Trump at the **White House**. The French and American presidents discussed sending European peacekeepers to Ukraine as part of a peace deal. Mr Trump's claim that Mr Putin would have "no problem" with the deployment was flatly contradicted by the Kremlin. Sir Keir Starmer, Britain's prime minister, pledged to increase British defence spending from 2.3% to 2.5% of GDP ahead of his trip to Washington.

Mr Trump sacked General Charles Brown as chairman of the **Joint Chiefs of Staff** with immediate effect, pulling Lieutenant-General Dan Caine out of retirement to replace him. General Caine has spent much of his military career in special operations.

America's **House of Representatives** passed a bill backed by Mr Trump that contains \$4.5trn in tax cuts and \$2trn in spending cuts. Most economists think that, if enacted, the bill will increase the deficit. The Senate now gets its say.

The ceasefire in **Gaza** looked shaky. Israel released hundreds of Palestinian prisoners, but delayed the handover because of Hamas's ill treatment of hostages during release ceremonies. The militant group returned the remains of four more dead captives. Israel

carried out DNA tests to check their identity; Hamas had earlier given the Israelis the body of a Palestinian woman instead of a hostage. It was the final exchange in the first phase of the ceasefire. Talks have not begun on the second stage. Meanwhile, Israel sent tanks into the **West Bank** for the first time in 20 years; around 40,000 Palestinians have fled their homes there in the past month.

**Sudan's** Rapid Support Forces announced the formation of a breakaway government in the areas under its control. The paramilitary group, which has been fighting the national army for two years and stands accused of genocide in Darfur, unveiled its "political charter" in Nairobi, the Kenyan capital. Sudan's military government, led by Abdel Fattah al-Burhan, denounced Kenya for hosting the event, declaring it "tantamount to an act of hostility".



M23, a militia backed by Rwanda, continued its advance on Uvira, a city in eastern **Democratic Republic of the Congo**. Soldiers from Burundi, which is allied with DRC, manoeuvred to fend off M23, which has already captured the Lake Kivu region and its two main cities. Britain paused most bilateral aid to Rwanda, with which it has hitherto had good relations. It said aid flows would remain suspended until "significant progress" had been made to end the fighting.

**Taiwan's** coast guard claimed that it had caught a Chinese-owned ship cutting undersea cables and had detained the vessel. Taiwan has previously accused China of several such

non-military "grey zone" actions against the island. China retorted that the episode was being "deliberately exaggerated" by Taiwan.

In **Pakistan** at least ten militants were killed in an operation by the security forces near the border with Afghanistan. The region is used as a base by the Pakistani Taliban.

**South Korea's** fertility rate rose last year for the first time since 2015. But the average number of children per woman among all reproductive females is still just 0.75, according to official statistics. The country has already declared a "national demographic crisis".

**Argentina's** president, Javier Milei, overrode opposition in the Senate to his two judicial nominations to the Supreme Court by appointing them temporarily by decree instead. Mr Milei says the constitution allows him to do this when Congress is in recess. Critics say he has weakened the court's independence.

The candidates running to replace Justin Trudeau as leader of **Canada's** Liberal Party, and thus prime minister, held a debate. Relations with America took up a large part of the proceedings. Chrystia Freeland, who is running second in the polls behind Mark Carney, described Donald Trump as "the greatest threat to Canada since world war two".

### That's not dandruff

It emerged that a Colombian man was arrested for trying to **smuggle cocaine** under his toupee onto a flight bound for Amsterdam. The drugs were valued at \$10,500. It is not the first time that drug-traffickers have used hair-raising schemes to smuggle their wares. In 2019 a man was caught at Barcelona's airport with half a kilo of cocaine under his wig. False buttocks, breast implants, nuns' habits and pineapples have all been used to traffick the drug.

# The world this week Business

**BP**'s chief executive, Murray Auchincloss, unveiled a new strategy that he said would "fundamentally reset" the company's direction away from green energy and back towards oil and gas. Investments in renewables will be cut by 70%. Mr Auchincloss said that BP had underestimated the resilience of demand for fossil fuels and overestimated the speed of the green-energy transition. He had been under pressure to switch direction from investors unhappy with BP's inert share price. Elliott Management, an activist fund manager, has taken a 5% stake. BP says it is still committed to its sustainability goals.

**Nvidia** produced another solid set of quarterly earnings. Revenue rose by 78%, year on year, to \$39bn, and quarterly net profit surged to \$22bn. Demand for its latest-generation Blackwell chips is "amazing", said Jensen Huang, Nvidia's chief executive.

A few weeks ago it was the hottest stock on Wall Street, but **Palantir**'s share price has fallen sharply of late, in part because of a new plan by Alex Karp, the boss of the software-analytics company, that will allow him to sell 10m shares over six months. Market speculation that cuts to defence spending in America will affect Palantir's bottom line also hurt the stock. The Pentagon is one of Palantir's biggest customers.

**Apple** announced that it would invest \$500bn in America over the next four years, create 20,000 jobs and open a new factory in Houston making AI servers. The announcement seemed to be aimed at seeking favour with the Trump administration. Apple has made similar declarations before, including in 2021, when it committed to spend \$430bn in America over five years. Meanwhile, Apple's shareholders voted against a proposal from a conservative investor to abolish the company's diversity, equity and inclusion programme.

Upping the ante in competition between America and China, **Alibaba** made its own big declaration and said it would invest 380 billion yuan (\$52bn) on AI and the cloud over three years, more than it has spent over the past decade.

## iSpy

In Britain Apple took the controversial decision to disable its **Advanced Data Protection** tool for iCloud services. ADP offers end-to-end encryption, which prevents anyone except the user, Apple included, from unscrambling the data. Britain's government had demanded Apple weaken the system to allow it access. Apple refused, and has instead withdrawn ADP from the British market.

In a surprise decision **Unilever** removed Hein Schumacher as chief executive after less than two years in the job, and replaced him with Fernando Fernandez, the chief financial officer. The consumer-goods conglomerate is under pressure from investors who want a faster pace of restructuring.

**Thames Water**, a utility in Britain that is drowning in debt, reportedly asked KKR, a private-equity firm, and Castle

Water, which provides water and sewage services to businesses and public bodies, to provide more details on their bids for the company. CK Infrastructure, which is based in Hong Kong, has offered to buy a majority stake in Thames Water, according to reports.

**Prosus**, a global tech-investment company, boosted its food-delivery portfolio by agreeing to buy **Just Eat Takeaway**, which operates mostly in Europe, for €4.1bn (\$4.3bn). Both companies have their headquarters in Amsterdam.

imposition of tariffs on even friendly trading partners is starting to worry consumers.

**Coinbase**, a crypto exchange, said that the Securities and Exchange Commission had dropped its lawsuit against the firm for allegedly allowing trading in tokens that should have been classified as securities. The SEC also reportedly ended its investigation into the crypto business of Robinhood, a trading platform. The news comes amid a slump in crypto markets, despite Mr Trump's crypto-friendliness.

## A recipe for disaster

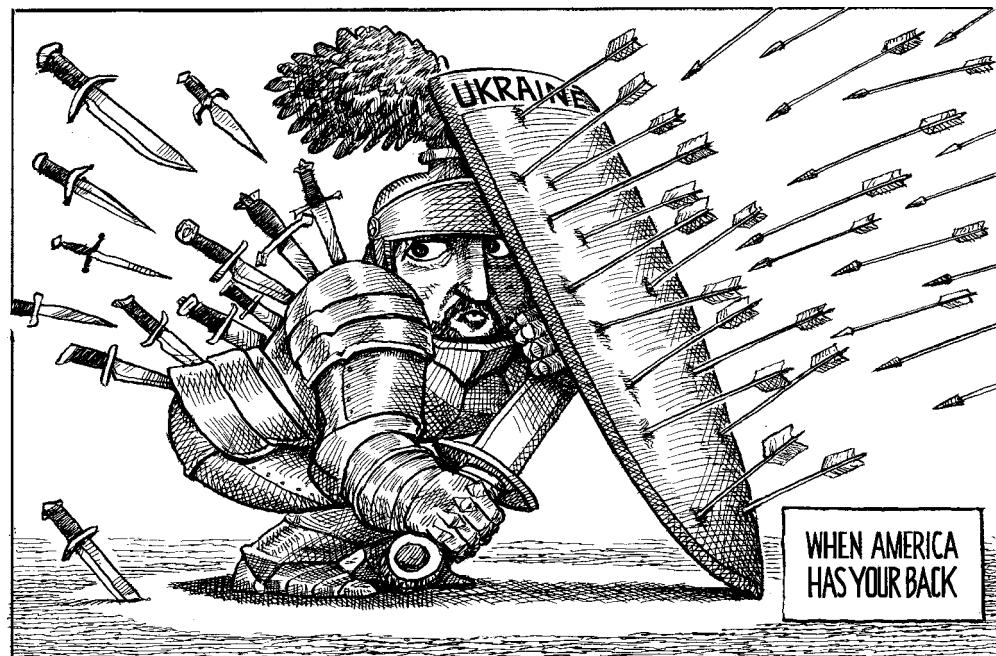
Five years ago Elon Musk warned that **Tesla**'s stock could be "crushed like a soufflé under a sledgehammer". The carmaker's share price has indeed tumbled this year, wiping out most of the gains it made after Donald Trump's victory in November. Its long-awaited update this week of its autopilot software in China left investors unimpressed. And Europeans are turning away from its vehicles in droves. Tesla's sales fell by half in Britain and the EU in January, year on year, according to the European Automobile Manufacturers' Association.

US, consumer-confidence index  
1985=100



Sources: LSEG Workspace;  
The Conference Board

American consumer confidence fell sharply in February, in part because of expectations that inflation will rise over the coming months and increasing pessimism about the economy. The data suggest that Donald Trump's trade war and his



# Dealing with the Don

A mafia-like struggle for global power has begun, with rules that do not suit America

**T**HE RUPTURE of the post-1945 order is gaining pace. In extraordinary scenes at the UN this week, America sided with Russia and North Korea against Ukraine and Europe. Germany's probable new chancellor, Friedrich Merz, warns that by June NATO may be dead. Fast approaching is a might-is-right world in which big powers cut deals and bully small ones. Team Trump claims that its dealmaking will bring peace and that, after 80 years of being taken for a ride, America will turn its superpower status into profit. Instead it will make the world more dangerous, and America weaker and poorer.

You may not be interested in the world order—but it is interested in you. America's Don Corleone approach has been on display in Ukraine. Having initially demanded \$500bn, American officials settled for a hazy deal for a joint state fund to develop Ukrainian minerals (see Europe section). It is unclear if America will offer security guarantees in return.

The administration is a swirl of ideas and egos but its people agree on one thing: under the post-1945 framework of rules and alliances, Americans have been suckered into unfair trade and paying for foreign wars. Mr Trump thinks he can pursue the national interest more effectively through hyperactive transactions. Everything is up for grabs: territory, technology, minerals and more (see Briefing). "My whole life is deals," he explained on February 24th, after talks on Ukraine with Emmanuel Macron, the French president. Trump confidants with business skills, such as Steve Witkoff, are jetting between capitals to explore deals that link up goals, from getting Saudi Arabia to recognise Israel to rehabilitating the Kremlin.

This new system has a new hierarchy. America is number one. Next are countries with resources to sell, threats to make and leaders unconstrained by democracy. Vladimir Putin wants to restore Russia as a great imperial power. Muhammad bin Salman wants to modernise the Middle East and fend off Iran. Xi Jinping is both a committed communist and a nationalist who wants a world fit for a strong China. In the third rank are America's allies, their dependence and loyalty seen as weaknesses to exploit.

Territory is up for negotiation, detonating the post-1945 rules. Ukraine's boundary may be set by a Trump-Putin handshake. The borders of Israel, Lebanon and Syria have been blurred by 17 months of war. Some outside powers are indifferent to this. Yet Mr Trump has eyed up Gaza, as well as Greenland and in any Sino-American talks, Mr Xi could bid for territory, too, for example offering to limit exports in return for concessions on Taiwan, the South China Sea or the Himalayas.

Haggling over the economy goes far beyond tariffs to embrace a fusion of state power and business. That signals a retreat from the idea that commerce is best governed by neutral rules. Bilateral discussions between America and Russia, Saudi Arabia, Taiwanese executives and Ukraine include oil output, construction contracts, sanctions, Intel plants, the use of Elon Musk's Starlink satellite service and a desert golf tournament. The new dealmakers claim their approach will benefit the

world. Mr Trump argues it is also in America's interest. Are they correct? Both Mr Trump and leaders in the global south are right to say that the post-1945 order had decayed. When diplomacy stagnates, unconventional ideas can work—think of the Abraham accords between Israel and some Arab states.

Yet it is a leap from there to using dealmaking as an organising principle. The complexity is overwhelming: Saudi Arabia wants a defence deal to deter Iran, which America may grant if it recognises Israel. But that requires Israel and the Palestinians to endorse a two-state future, which Mr Trump rejected in his plan to bring peace to Gaza. Russia wants oil sanctions lifted, but that could cut Saudi Arabia's income and increase India's bills. And so on. Meanwhile, when borders are contestable wars will follow. Even giants like India may feel insecure. Because Mr Trump views power as personal rather than anchored by America's institutions, he may find it hard to persuade his counterparts that agreements will endure—one reason he is no Henry Kissinger (see *The Telegram*).

The world will therefore suffer. What Mr Trump does not realise is that America will suffer, too. Its global role has imposed a military burden and an openness to trade that has hurt some American industries. Yet the gains have been much greater. Trade benefits consumers and importing industries.

Being the heart of the dollar financial system saves America over \$100bn a year in interest bills and allows it to run a high fiscal deficit. The foreign business of American firms is worth \$16trn. Those firms thrive abroad because of reasonably predictable and impartial global rules on commerce, rather than graft and transient special favours—an ethos that suits Chinese and Russian firms far better.

Mr Trump believes that America can partially or fully abandon Europe and perhaps its Asian allies, too. He says it has a "beautiful ocean as a separation". However, wars now involve space and cyberspace, so physical distance offers even less protection than it did in 1941, when Japan's attack on Pearl Harbor ended America's isolationism. What is more, when America wants to project hard power or defend the homeland, it depends on allied help, from the Ramstein airbase in Germany and Pine Gap signals station in Australia to missile-tracking in Canada's Arctic. In Mr Trump's world, America may no longer have free access to them.

Advocates of dealmaking assume that America can get what it wants by bargaining. Yet as Mr Trump exploits decades-old dependencies, America's leverage will rapidly fall away. Sensing betrayal, allies in Europe and beyond will turn to each other for security (see International section). If chaos spreads, America will have to deal with new threats even as it has fewer tools: think of an Asian nuclear-arms race in a system with weak American alliances and weaker, or broken, arms control. At a dangerous time, friends, credibility and rules are worth more than a quick buck. Congress, financial markets or voters could yet persuade Mr Trump to walk back. But the world has already started planning for a lawless era. ■



Wealth v work

# The new inheritocracy

Inheriting is becoming nearly as important as working. That is dangerous for capitalism and society

**W**ORK HARD, children are told, and you will succeed. In recent decades this advice served the talented and the diligent well. Many have made their own fortunes and live comfortably, regardless of how much money they inherited. Now, however, the importance of hereditary wealth is rising around the rich world, and that is a problem.

People in advanced economies stand to inherit around \$6trn this year—about 10% of GDP, up from around 5% on average in a selection of rich countries during the middle of the 20th century (see Finance & economics section). As a share of output, annual inheritance flows have doubled in France since the 1960s, and nearly trebled in Germany since the 1970s. Whether a young person can afford to buy a house and live in relative comfort is determined by inherited wealth nearly as much as it is by their own success at work. This shift has alarming economic and social consequences, because it imperils not just the meritocratic ideal, but capitalism itself.

In part, the inheritance boom is a reflection of a wealthier and ageing society. As economies have become richer, they have accumulated capital per worker—capital that someone has to own. But because the pace of economic growth has slackened and housing markets have boomed, the scale of this wealth relative to incomes has ballooned. Nowhere is this combination of towering wealth and enduring sclerosis more evident than in Europe, where productivity growth has been dismal.

More wealth means more inheritance for baby-boomers to pass on. And because wealth is far more unequally distributed than income, a new inheritocracy is being born.

You can see this in the shifting fortunes of the super-rich. For much of the 20th century vast estates were often broken up by bad investing, or by war and inflation. By one calculation, if America's rich families in 1900 had invested passively in the stockmarket, spent 2% of their wealth each year and had the usual number of children, there would be about 16,000 old-money billionaires in America today. In fact, there are fewer than 1,000 billionaires and the vast majority of them are self-made.

These trends are being overturned, however, perhaps because billionaires are both amassing wealth and are better at preserving their riches. In 2023, 53 people became billionaires thanks to inheritance, not far short of the 84 who made their own fortunes, according to UBS, a bank. That may be because it is now easy to park wealth in an index fund, and the principles of wealth management are better understood. Moreover, many governments have obligingly cut inheritance taxes.

The most striking thing about the inheritocracy, though, is that it is not just about the uber-rich. The typical heir is someone inheriting a normal house, or the proceeds from its sale, not a superyacht or a country pile. And housing wealth has rocketed in recent decades, especially in apex cities like London, New York and Paris. Those who were fortunate enough to buy property before the long boom have made lots of money, passing on a windfall to their heirs. As a consequence, bankers

and corporate lawyers now fight bidding wars over houses from the estates of deceased taxi drivers. As housing has become ever more unaffordable in places like New York and London, so a 90th-percentile income has become too small to pay for a 90th-percentile life. You must have significant capital, too—if not from your parents' estate, then from the Bank of Mum and Dad.

If you consider this as a whole, the growing importance of inheritance starts to become clear. In Britain one in six of those born in the 1960s is projected to receive an inheritance that exceeds ten years of average annual earnings for that generation. For those born in the 1980s, the ratio rises to one in three. The inequality of what people inherit, meanwhile, is startling. A fifth of 35- to 45-year-olds are expected to inherit less than £10,000 (\$13,000), whereas a quarter are expected to inherit more than £280,000.

For supporters of free markets, the rise of the new inheritocracy should be deeply disturbing. For a start, it creates a rentier class that faces a series of bad incentives. A loophole-ridden tax system means that the wealthy spend a lot of time gaming the rules; it would be better used to direct their capital to more productive uses instead. To protect their assets, homeowners become NIMBYs, blocking building and making housing unaffordable for those without inherited wealth. Knowing they can rely on their inheritance, moreover, the new rentiers may face little incentive to work or innovate.

More worrying still is how an underclass of non-beneficiaries is becoming increasingly left behind—and increasingly disaffected. If property becomes ever harder to buy, and a comfortable life harder to achieve, the incentive of young, aspirational workers to strive will be blunted. And when they believe that the system is stacked against them, their support for mainstream political parties withers.



## Family fortunes

That is why fixing the problem is urgent. It would be mad to wish that inflation and war destroy fortunes, as they did in the 20th century. This newspaper has long argued that inheritance taxes are the fairest tool to deal with inheritocracy. Yet the taxes are so unpopular that, instead of enforcing them, governments have introduced loophole after loophole, raised the threshold at which they apply, or dismantled them altogether.

Fortunately, there are other remedies. Building enough houses in the right place is the single biggest action governments can take to restore the link between work and wealth. Levying sufficient annual property taxes, especially those that target underlying land values, would also help, because the tax would be capitalised as a fall in house prices, bringing down house-price-to-income ratios. And anything that boosts economic growth, so desperately needed in Europe, would bring down wealth-to-GDP ratios. The heyday of meritocracy brought with it social mobility, growth and prosperity. With a little hard work, those days can return. ■

Germany

# Move fast and break things

Germany's election victor must ditch its debt rules—immediately

FRIEDRICH MERZ, who is likely to become Germany's next chancellor, used his victory in elections on February 23rd to issue a remarkable warning to his compatriots. This was not about the need to revive his country's ailing economy, nor to respond to the alarmingly strong performance of the hard-right Alternative for Germany (AfD). It was a blistering indictment of Germany's chief ally and its president, Donald Trump. "It is clear that the Americans, at least...this administration", he said, are "largely indifferent to the fate of Europe." He declared it his "absolute priority" to help Europe achieve "independence from the USA".

These are astonishing words from an incoming German chancellor, the leader of the Christian Democrats (CDU) and a lifelong Atlanticist. Unfortunately Mr Merz is right: Europe does indeed have to contemplate being able to defend itself without America fighting by its side. But saying so is easier than doing something about it.

Germany—like the rest of Europe—needs to spend money on defence, and a huge amount. But its public spending is held back by a "debt brake" that prohibits the government from running a structural deficit of more than a minuscule 0.35% of GDP. And therein lies the problem. Following the vote, parties that might want to alter or eliminate the rule will lack the strength to do so.

The two parties that have ruled Germany either in turns or in tandem since the second world war had a bad election. True, the CDU, together with its Bavarian ally, came top, meaning that Mr Merz will become chancellor unless coalition talks fail. However, they scored their second-worst result ever and the Social Democrats, who led the outgoing government, had their worst. But together they are the only feasible two-party co-



alition that could command a majority, and they will soon start formal coalition talks.

Relaxing or scrapping the debt brake needs a two-thirds majority in parliament. The mainstream parties had that before the election—and plenty of people, including this newspaper, urged them to act while they still could. When the new Bundestag convenes, that two-thirds majority will be gone, owing to the gains made by two radical parties, the AfD and the former communist Die Linke ("The Left"). The AfD will never vote to relax the debt brake. Die Linke wants to scrap it in principle, but says it will "never vote for rearmament".

A constitutional quirk offers a way out, but only if Germany moves fast. The new parliament will not convene until March 25th, and in the meantime the old lame-duck one can still act. Mr Merz's ranks, the SPD and the Greens should push forward an urgent reform to the debt brake while they still can.

Ideally, they would scrap it altogether, as Germany's debt allergy has starved not just defence but roads, railways, digital infrastructure, hospitals and much else. If eliminating it is too hard, then at the least an exemption must be made for defence spending—including for Ukraine.

Mr Merz, unfortunately, appears to have ruled this out as too difficult. He proposes instead another "special fund" of perhaps €200bn (\$210bn) to top up defence spending; a workaround used by his predecessor, Olaf Scholz. This also needs a two-thirds majority, as it is, technically, a constitutional change. It might be easier to swallow, but it is not nearly enough. If Germany is to boost defence spending at least to the 4% level we think is needed and keep it there, the special fund, like its predecessor, will run out in a few years. Disappointingly, Mr Merz is ducking his first big challenge. ■

Indonesia

# The man who would be Musk

Prabowo Subianto takes a chainsaw to his country's budget—to fund boondoggles

ON THE CAMPAIGN trail last year Prabowo Subianto, a former general with a sketchy human-rights record, pledged to give every Indonesian child a free lunch. Experts predicted this would cost \$28bn a year by 2029, or the equivalent of 2% of the country's GDP. Mr Prabowo refused to say how it would be paid for. Four months after he was sworn in as president, the answer, and much of his broader agenda, are becoming clear.

In January Mr Prabowo launched a cost-cutting drive unlike any the country has seen. He is seeking approximately \$19bn in savings from this year's budget, which comes to about 8.5% of Indonesia's public-sector spending. A proposed second series of cuts, about which he has offered no other details, could lift the savings to \$37bn.

Roughly \$6bn of the savings will fund the school-lunch programme, which is being implemented in phases. The remaining two-thirds, the president announced on February 24th, will finance a new sovereign-wealth fund. This will back 20 "strategic projects", such as mineral-processing plants to help Indonesia secure a more prominent place in the world's electric-vehicle (EV) supply chain.

Mr Prabowo's aims have something going for them. Cutting red tape is a good idea for Indonesia, just as it is for Elon Musk's Department of Government Efficiency, or DOGE, to make America more efficient. Free school meals are supposed to reduce childhood stunting. And although Indonesia's bid to muscle its way up the EV value chain via industrial policy is a ➤

▶ long shot, he does at least have a mandate for it from voters.

Unfortunately, as with DOGE, the closer you look, the worse his plans seem. Although civil servants cannot be fired to meet the new targets, contract employees can. The budget at the ministry of public works has been cut by 70%, forcing it to put on hold dozens of toll roads, ports and other investment projects. It has sacked over 18,000 contractors.

Other ministries are taking cuts of 30-50%. Departments are turning off the lights and air-conditioning at 4pm and sending staff home early, which may not help productivity. The meteorological and geophysical agency, handy in a country with at least 127 active volcanoes, had its budget slashed by half. It warns that delayed updates to tsunami sensors could extend the time needed to issue a warning from three minutes to five. That may not sound a lot, but every minute counts. A tsunami in 2004 killed more than 100,000 Indonesians.

The way to reduce stunting is to target children below the age of two, long before they arrive at school. Mr Prabowo's school programme seeks to increase eating. Yet Indonesian children are twice as likely to be overweight as underweight

and stunting is often caused by a lack of micronutrients, not calories. More lives would be improved with better health care and education, including teaching parents about nutrition.

The new sovereign-wealth fund risks being badly run (see Asia section). Its board, unlike that of Indonesia's first such fund, will report directly to the president. Its CEO is Rosan Roeslani, who chaired Mr Prabowo's election campaign. Worse, a law passed in February setting up the fund removed it from the jurisdiction of the government's auditors and anti-corruption cops, and immunised managers against legal liability for any losses. Mr Prabowo is cancelling a lot of growth-enhancing infrastructure projects to create a piggy bank he can use as he pleases.

### What could possibly go wrong?

Instead he should use the legislative process to enact smaller, more considered cuts to the state budget. That would be a more democratic way to fund his priorities, and more accountable than his sovereign-wealth fund. But for a president who loves flashy boondoggles, where would the fun be in that? ■

## Gene editing Second chances

**CRISPR technologies hold enormous promise for farming and medicine. Don't waste it**

OF THE MANY patients who need an organ from a donor, 90% go without. About 240m people live with rare genetic diseases, most of which cannot be treated. Each year poor diets cause more than 10m early deaths. Suffering on such an immense scale can appear hopeless. However, a technique called CRISPR gene editing promises to help deal with these issues and many more—and wise regulation can spur it on.

CRISPR is like an editor that can rewrite DNA letter by letter or gene by gene, to remove harmful mutations or add protective ones. Clinical trials will begin this summer on pig organs edited for transplanting into humans. Last year the first new therapy went on the market. It seemingly cures sickle-cell disease and beta-thalassemia, two blood disorders that afflict millions. If ongoing clinical trials succeed, a one-off therapy could provide lifelong protection against heart attacks. Farming will benefit, too: CRISPR could raise yields or protect crops from climate change. Consumers could soon get white bread with fibre-like starch or tastier varieties of healthy but unpopular foods, such as mustard greens.

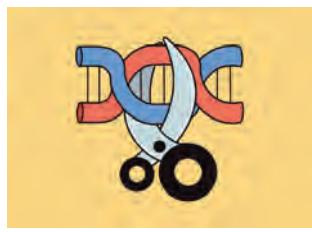
But as we report in our Technology Quarterly, now is a critical moment. Since CRISPR's discovery in 2012, it has begun supplanting old ideas that never reached their potential. Gene therapy, a different technique that uses viruses to insert genes into patients, can treat many rare genetic diseases but is and will remain costly to prepare. Genetically modified (GM) crops, which borrow genes from other species, have faced misguided opposition in Europe and elsewhere. CRISPR offers an alternative to both. But if, unlike them, it is to live up to its promise, it will need to attract a continuing flow of investment—which, in turn, means chalking up some real-life successes.

For that to happen, scientists must show that they can get

CRISPR into more types of cells in the body cheaply and easily. The technology would also be boosted if it could serve as a platform to create personalised therapies for people's individual mutations. That will require new science, but it would also be catalysed by a better system of regulation.

Regulations that govern drugs for rare diseases were not designed for an era of specialist medicines and will hinder patients from receiving new treatments. Developing drugs for a small group of people has always been difficult and many CRISPR companies are struggling, despite government help. But CRISPR is programmable, meaning that the same drug can be tweaked to target many different mutations. On-demand, small-batch drugs for rare diseases could be made more cheaply today if requirements on safety testing and manufacturing standards were loosened. For many desperately ill people who may die before a drug is approved, if it is developed at all, that is a worthwhile trade-off. In America the Food and Drug Administration has already taken some steps towards liberalisation.

Agriculture also badly needs reform. Gene-edited foods fall under GM regulation in many regions, including the European Union, despite being quite different: gene-edited plants have had their own genes tweaked rather than incorporating genes from other species. Mindful of the threat of climate change to food security, Britain is poised to implement new liberal laws governing gene-edited foods; the EU should follow. However, public trust in regulators and scientists could become a problem with the confirmation as health secretary of Robert F. Kennedy junior. He has invested in CRISPR therapies, but is also anti-GM. If America slows down or even goes into reverse, it will be a blow to progress—and humanity. ■



# Letters

## A new defence strategy

America's technological edge in defence is definitely eroding, and its overly centralised procurement ecosystem is surely its Achilles heel ("Supremacy in jeopardy", February 15th). A culture of conformity and complacency is not delivering value. Instead, the defence industry has persistently raised the costs for fewer exquisite platforms and undercut

American deterrence. Your briefing captured the plodding pace of acquisition and the losing game that the leaders of the Pentagon have struggled to change. Policymakers fail to grasp the urgency of the problem, and if the underfunded Replicator programme is an example, they also do not recognise the scale of the defence dilemma.

However, I strongly disagree with the statement in your leader ("Battle for the Pentagon", February 15th) that "America cannot focus on preparing for war in 2035 if that involves lowering its defences today." This kind of thinking retards strategic adaptation, particularly the divestiture of expensive platforms (aircraft-carriers, F-35 fighter aircraft and manned attack helicopters). If you realise that these systems do not really contribute much in 21st-century warfare, you could shift those resources without risk and accelerate the investment of capabilities for war in 2035.

Strategy is about trade-offs and risk. In an increasingly competitive strategic environment, America's defence strategists need to discipline themselves to make those trade-offs or accept the continued erosion of credibility.

DR FRANK HOFFMAN  
Fairfax, Virginia

Other areas ripe for reform are the National Security Act, which is in need of a major reorganisation to move the Pentagon from the 20th to the 21st century, and the National Defence Strategy. Technology alone will not fix the Pentagon. The starting-point must be

strategy. The NDS cannot be executed in its aims to contain, compete, deter and, if war comes, prevail over a number of adversaries. It is not affordable and even if uncontrolled annual cost growth of 7-10% is funded, a flawed strategy negates what that money will buy. Moreover, though recruiting seems to have improved, the long-term outlook is not good.

Strategy without technology is as fatal as technology without strategy. Will we ever learn?

DR HARLAN ULLMAN  
Senior adviser  
Atlantic Council  
Washington, DC

Whenever the subject of the defence-acquisition process arises, specifically the pork-barrel politics in Congress, I am reminded of the commissioning of the United States Navy's original six frigates. Completed between 1797 and 1800, these frigates were built at six separate shipyards along the Atlantic coast, which added considerable expense. James McHenry, the secretary of war in the administrations of George Washington and John Adams, acknowledged the increased costs but argued this was to expedite their construction and delivery. The more cynical observer could conclude that this was to spread out the contract dollars.

CHRIS GEAR  
Chicago

## A ship's history

Schumpeter (February 8th) stated that the *Exxon Valdez*, the tanker which caused the disastrous oil spill that fouled Alaska's coastline in 1989, sank. In fact the *Exxon Valdez* never sank. It ran aground on a reef in Prince William Sound, spilling its oil. After repairs the vessel sailed for many more years, through numerous owners and name changes. She was eventually beached and dismantled in 2012 in India for scrap as the *Oriental Nicety*.

ROBERT BERKLEY  
US Navy captain (retired)  
Lynchburg, Virginia

## Investing in Oxbridge

It was great to see your article on how connecting Oxford and Cambridge could add £14bn (\$18bn) a year to the British economy ("Build the Arc", February 8th). I have invested in more than 20 startups with the Oxford Seed Fund. Beyond infrastructure, we need to change two things to unlock growth. The first is the name: don't call it an Arc, call it a Flywheel. An arc is static, whereas encouraging risk and connectivity between these hubs will spill across Britain like a flywheel.

The second is intellectual property. If our IP practices are uncompetitive we will hold back or lose our most promising founders. Uncompetitive can mean university IP shares being too high or being prohibitively obscure. Walled gardens grow, but only so far. Opening up our walled gardens means taking a smaller and predictable slice, and changing how we speak about connecting the hubs to evoke cross-pollination across Britain.

MICHAEL HUTSON  
Oxford Seed Fund  
Associate fellow  
University of Oxford

## How to beat the scammers

Thank you for educating readers about the proliferation of online scams ("Industrial-scale swindle", February 8th). The best and least expensive way to beat scammers is to turn off your devices. Stay offline. Meet people in person. Invest or donate money to people and organisations that you meet only in person no matter what. We could do with an article looking at how to live a life without technological domination. For example, how to beat loneliness without a chatbot. We need more reports on groups and organisations—local, national and international—where people can meet people, volunteer and invest time to make value in their and other people's lives.

KORY SROCK  
Computer Life Skills  
Seattle

Poverty, lawlessness and war form the backbone of this criminal scamming corridor. A closely connected aspect is human trafficking. Indian software engineers duped by fraudulent online job offers in Cambodia and Laos have found themselves trapped in cybercrime compounds. Held hostage, these victims endured harrowing conditions and rescuing them became a significant challenge for Indian authorities.

India has also recently witnessed a massive scam known as "digital arrest". In this scheme fraudsters posing as state officials target individuals, falsely accusing them of receiving a drug-laden consignment or being involved in generating pornography. Similar incidents have involved scammers contacting victims' families and friends, demanding money to "absolve" their loved ones of crimes they never committed. Scammers have something for everyone.

A.R. KATTAMREDDY  
Kuopio, Finland

## Worshipping DEI

The wordplay in titles is what makes *The Economist* distinctive. The headline "Vox populi, vox DEI" (February 8th) is exemplary in this regard, but readers might have missed its potential theological significance. The three social virtues of diversity, equity and inclusion, when reduced to the initials of DEI, happen to form the genitive case of the Latin word for God. What Donald Trump treats as a whipping boy may actually be "of God."

PETER WYATT  
Magnetawan, Canada

## God and mammon

The article looking at how TikTok became a religious pulpit ("What the flock", February 8th) and the money that online ministers are charging reminded me of a quote from Lenny Bruce: "Never trust a preacher with more than two suits."

CHARLES UBELL  
San Francisco

LETTERS ARE WELCOME AND SHOULD BE ADDRESSED TO THE EDITOR AT:  
THE ECONOMIST, THE ADELPHI BUILDING, 1-11 JOHN ADAM STREET, LONDON WC2N 6HT  
EMAIL: LETTERS@ECONOMIST.COM. MORE LETTERS AVAILABLE AT: ECONOMIST.COM/LETTERS

# It's time to fight AI with AI.

Stop AI-generated threats in real time  
with Precision AI® by Palo Alto Networks.

It's not sci-fi,  
it's Precision AI®.



CYBERSECURITY  
PARTNER OF CHOICE

## Briefing Geopolitics, Trump-style



### Gangster's paradise

DUBAI, KYIV, TAIPEI AND WASHINGTON, DC

#### The transactional world Donald Trump seeks will harm, not help, America

**I**T MAY BE a holdover from his failure as a casino mogul or a reflection of a might-is-right worldview. Or perhaps America's president is simply feeling lucky. Whatever the reason, Donald Trump loves to describe geopolitics as a card game. Russian forces, he said of the war in Ukraine recently, have "taken a lot of territory, so they have the cards". Soon afterwards Mr Trump suggested that Ukraine's president, Volodymyr Zelensky, was refusing to accept the inevitable: "He has no cards."

China, Mexico, North Korea, even Tik-Tok, a short-video app—Mr Trump has described them all as players in a card game. America, needless to say, always has the better hand. Its military and economic might, he believes, should guarantee victory in every diplomatic dispute. It is only because of the weakness and stupidity of his predecessors that other countries have been able to exploit American consumers or shelter under America's security umbrella free of charge. No longer: Mr Trump

promises to extract proper recompense from such freeloaders. But even in a purely transactional world, in which America abandons principle and embraces coercion, Mr Trump may not find the game as simple or his cards as strong as he thinks.

#### The situation they got me facin'

Three pressing diplomatic concerns will put Trumpian foreign policy to the test in the coming months and years. The president has repeatedly suggested that he will find it easy to resolve all three through hard-nosed negotiation. He has already embarked on talks with Russia and Ukraine to end their war. With the first phase of the ceasefire between Israel and Hamas coming to an end, discussions about the future of Gaza and of the Middle East more broadly will soon acquire more urgency. And looming larger than any other foreign-policy debate are relations with China, which Mr Trump has promised to reset in a manner more favourable to

America. It is a daunting in-tray.

On the campaign trail, Mr Trump famously declared that he could end the war in Ukraine "in 24 hours". Certainly, America has enormous leverage. It can cripple Ukraine's armed forces, not only by halting donations of munitions, but also by cutting off battlefield communications, which are provided in large part by SpaceX, an American firm led by Mr Trump's buddy, Elon Musk. Although European countries have talked about boosting their aid to Ukraine, they would not be able to compensate completely for an American disengagement (see International section).

America's power over Russia is not as expansive, but it can hold out the prospect of relief from the sanctions that have hobbled Russia's economy and gratify the desire of Vladimir Putin, Russia's president, to have some say over events in Russia's near-abroad.

America this week used its clout to bully Ukraine into a deal to share its mineral  
►

wealth with America (see Europe section), which Mr Trump depicts as recompense for all the military assistance America has given Ukraine. Although Ukraine was the first to float this idea, it had offered it in exchange for American security guarantees, which were not forthcoming. And the peremptory behaviour of American negotiators made it clear that they were not asking their Ukrainian counterparts, but telling them. At one stage Mr Zelensky was given an hour to approve a draft of the agreement, or else.

### Me be treated like a punk

Yet Mr Zelensky refused in that instance, without triggering Armageddon. In fact, his domestic approval rating has recently risen, presumably because he has been seen to be standing up for his country. The final version of the deal did not specify a \$500bn payout for America, as originally demanded. Ukrainian negotiators are pleased: they hope the deal gives America enough of a stake in Ukraine's future stability and prosperity that Mr Trump will refrain from foisting any lopsided peace agreement on them.

With Russia, Mr Trump has been pure emollient, talking to Mr Putin above Mr Zelensky's head, opposing hostile resolutions at the UN and conceding in advance the notion that Russia will retain most of the territory it has seized and that Ukraine will not join NATO—big victories for Mr Putin. Yet Mr Putin seems in no rush to strike a deal: "I would be happy to meet with Donald...But we are in a position where it is not enough to meet to have tea, coffee, sit and talk about the future. We need to make sure that our teams prepare."

American officials' retreats and concessions could, of course, be clever negotiating tactics, allowing their interlocutors to believe they have salvaged a better deal than had initially seemed possible. But Ukrainians involved in talks with Mr Trump's team did not feel that they were witnessing a strategic chess game as much as a frantic search for anything the boss might accept. "I don't think Trump or his people were thinking things too far ahead," says one.

In particular, by siding with Russia against America's European allies, Mr Trump has created a damaging rift within NATO and reinforced the impression that America is fast becoming an unreliable partner. That may not concern him much, but in fact America relies on bases in Europe to oversee and supply lots of military operations in Africa and the Middle East. It also makes copious use of intelligence from European and Asian allies. Such mutually beneficial exchanges may be curbed if Mr Trump continues to ride roughshod over his allies' objections, complicating other foreign-policy goals.

And even if Mr Trump does manage to

end hostilities in Ukraine, there will be unforeseen consequences. Having mobilised lots of soldiers and stoked Russia's arms industry, Mr Putin is unlikely simply to send everyone home. The return of traumatised soldiers from the Soviet Union's invasion of Afghanistan caused great instability in the late 1980s, an episode Mr Putin will not have forgotten. An alternative idea said to be circulating in the Kremlin is to dispatch troops to Africa, to act as mercenaries. In effect, bloodshed might diminish in one part of the world while surging in another.

In the Middle East, Mr Trump's goal is to strike a series of deals that would end the region's various wars. Doing so would allow Mr Trump to declare himself a great statesman. It might also allow America to shift resources and attention to Asia: there would be less demand for aircraft-carriers in the Persian Gulf or frenetic shuttle diplomacy. Jared Kushner, the president's son-in-law, calls this a "liquid" moment in the Middle East. "The ability to reshape is unlimited," he declared last year.

But even the first step—steadying the ceasefire in Gaza—is proving tricky. Steve Witkoff, the president's Middle East envoy, is trying to coax Israel and Hamas into starting negotiations on the second phase of the deal, which would bring a permanent end to the war. Those talks were meant to begin on February 3rd but have been repeatedly delayed (see Middle East & Africa section).

Mr Trump's shocking suggestion of evicting Palestinians from the Gaza Strip to build resorts has served a useful purpose, impelling Arab states to draft an alternative plan for the enclave, to be presented at an Arab League summit scheduled for March 4th. The proposal envisages a five-year rebuilding effort, led by Egyptian firms and financed by Gulf states. Hamas would be excluded, but Gazans would not be expelled.

A peace-and-reconstruction deal in Gaza would allow Mr Trump to pursue more ambitious goals. He wants to persuade

Saudi Arabia to normalise ties with Israel, expanding the Abraham accords negotiated in his first term. He wants to broker a new nuclear deal with Iran in exchange for sanctions relief. He might also try again to solve the Israeli-Palestinian conflict, after the Palestinians rebuffed his so-called "deal of the century" during his first term.

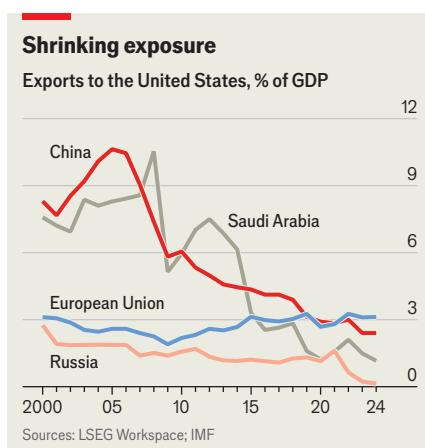
But not everyone in the Middle East shares this vision—and if they decide to test Mr Trump, he may again find that America's leverage is more limited than he thinks. Start with Israel. Binyamin Netanyahu, its prime minister, has goals of his own. Above all, he wants to stay in power and out of jail. That means pandering to the far-right elements of his coalition, who want to resume the war in Gaza. Beyond that, Mr Netanyahu is trying to impose a sort of Pax Hebraica on the region. He wants the Palestinians to remain weak and divided in any post-war settlement (his allies want to go further and annex Palestinian territory). He demands the "complete demilitarisation" of southern Syria. He is still determined to strike Iran's nuclear facilities, ideally with American help.

Much of this runs counter to Mr Trump's vision. Annexation would foreclose a normalisation deal with the Saudis; so would another round of war in Gaza. A strike on Iran would end all hope of a nuclear pact. The president is not without leverage over Israel: around 70% of its arms imports come from America, which also sent \$18bn in aid in the year after the October 7th massacre, equivalent to 10% of Israeli government spending. To use his leverage, however, Mr Trump would have to provoke a crisis in relations with Israel, and perhaps suffer a backlash from the otherwise supine Republican Party.

Better, then, to hunt for a deal that Mr Netanyahu can accept. In Gaza, that means neither Hamas nor the Palestinian Authority (PA) can run the enclave. But Hamas wants to retain de facto control, even if it might be willing to cede responsibility for day-to-day governance. Arab states insist they can cobble together a committee of Palestinian technocrats to oversee reconstruction. They are vague on how those technocrats might disarm a militia. Hamas can also sabotage any attempt to reach a broader peace agreement with Israel, as it has done for decades.

It will be equally difficult to satisfy Mr Netanyahu when it comes to Iran. For now, the Islamic Republic seems eager to cut a deal with America. Its regional power is at a low ebb after Israel battered Hamas and Hezbollah, two of its proxies. It feels vulnerable at home: two rounds of ballistic-missile strikes on Israel last year did little damage, whereas Israel's retaliatory strikes knocked out Iran's most sophisticated air defences. Its economy is a mess.

Still, a willingness to talk does not ➤



mean Iran is willing to make enormous concessions. Some of Mr Trump's advisers want an ambitious deal that limits not only Iran's nuclear programme but also its ballistic missiles and its support for proxy militias. As an opening position, that is sensible. But Iran is unlikely to accede. The president will have to decide whether to settle for a narrower deal, hardly better than the one he (at Mr Netanyahu's urging) abrogated in 2018, or to keep escalating the pressure and hope Iran caves.

On February 24th America's Treasury department announced sanctions on more than 30 brokers, tankers and firms involved in smuggling Iranian oil to China. To really squeeze Iran, America will need to go much further: imposing secondary sanctions on Chinese ports, for example, or threatening penalties for the United Arab Emirates, home to lots of dodgy middlemen. This will mean antagonising countries in Asia and the Gulf, again complicating other foreign-policy goals. It might also drive Iran to lash out at its neighbours—as it did in 2019, when Iranian drones and missiles temporarily knocked out half of Saudi Arabia's oil production.

All this makes the Saudis nervous. They want a formal defence treaty with America in return for normalisation with Israel. Ironically, they would be negotiating one at a moment when Mr Trump is devaluing American security guarantees. Moreover, there is a real contradiction in Mr Trump's goals. If he wants to show that he is serious about protecting the Gulf, he must cement rather than curtail America's military commitments in the Middle East. If he does not, then a combination of sanctions relief for Iran and hollow security guarantees for Saudi Arabia could actually make the region more volatile.

The Middle East is full of surprises. Post-Assad Syria could slip back into chaos. The death of Iran's ageing leader, Ali

Khamenei, could set off a power struggle. It is hard to find a stable equilibrium amid so many failed or failing states. There is also no shortage of hardened poker players who may be willing to call Mr Trump's bluff. Israel or Hamas (or both) could spoil plans for Gaza, leaving the enclave in a twilight world between war and peace. Iran's regime could defy his demands for a better deal, gambling that it could survive whatever military strikes or sanctions he might order in retaliation. The Saudis could stick to their principles and reject a one-sided normalisation deal.

Even if Middle East peace eludes him, Mr Trump may seek a deal with China. There are signs that he is angling for one. He invited Mr Xi, whom he considers "an amazing guy", to his inauguration and has mused on social media about all the problems the two of them will solve together.

At the same time, Mr Trump is as usual seeking to demonstrate the strength of his cards. The tariffs that he imposed in his first term and that Joe Biden, his successor, expanded, remain in place. Since returning to the White House, he has imposed an additional 10% across-the-board tariff on Chinese goods, proposed hefty docking fees for Chinese-made or -owned vessels, and signalled a tightening of rules on inbound and outbound investment to China. More tariffs are probably on their way after a review of trade policy due by April 1st.

But there are limits to how far Mr Trump can squeeze China economically. Tariffs raise prices in America and invite retaliation. China, America's third-biggest export market, has not only imposed reciprocal tariffs on American goods, but also restricted the export of various strategic minerals to America and initiated an antitrust investigation of Google.

China does not seem especially worried. Mr Xi did not show up to Mr Trump's inauguration. Nor did China honour the

trade agreement it struck with Mr Trump in 2020, albeit partly owing to covid-19. China's dependence on exports to America, although still substantial, has shrunk markedly in recent years (see chart on previous page). In general, although America's big trade deficits mean that it is likely to suffer less from a trade war than its main trading partners, it suffers all the same. And China has plenty of ways beyond tariffs to strike back at America, both economic and geopolitical.

#### Better watch how you talkin'

One option is to further menace Taiwan, which China considers part of its territory but which America helps to protect through arms sales, diplomatic support and its military presence in the western Pacific. Mr Trump appears conflicted over Taiwan which, he thinks, "stole" America's chip industry. Mr Trump told an interviewer in October, "They want protection. They don't pay us money for the protection, you know? The mob makes you pay money, right?"

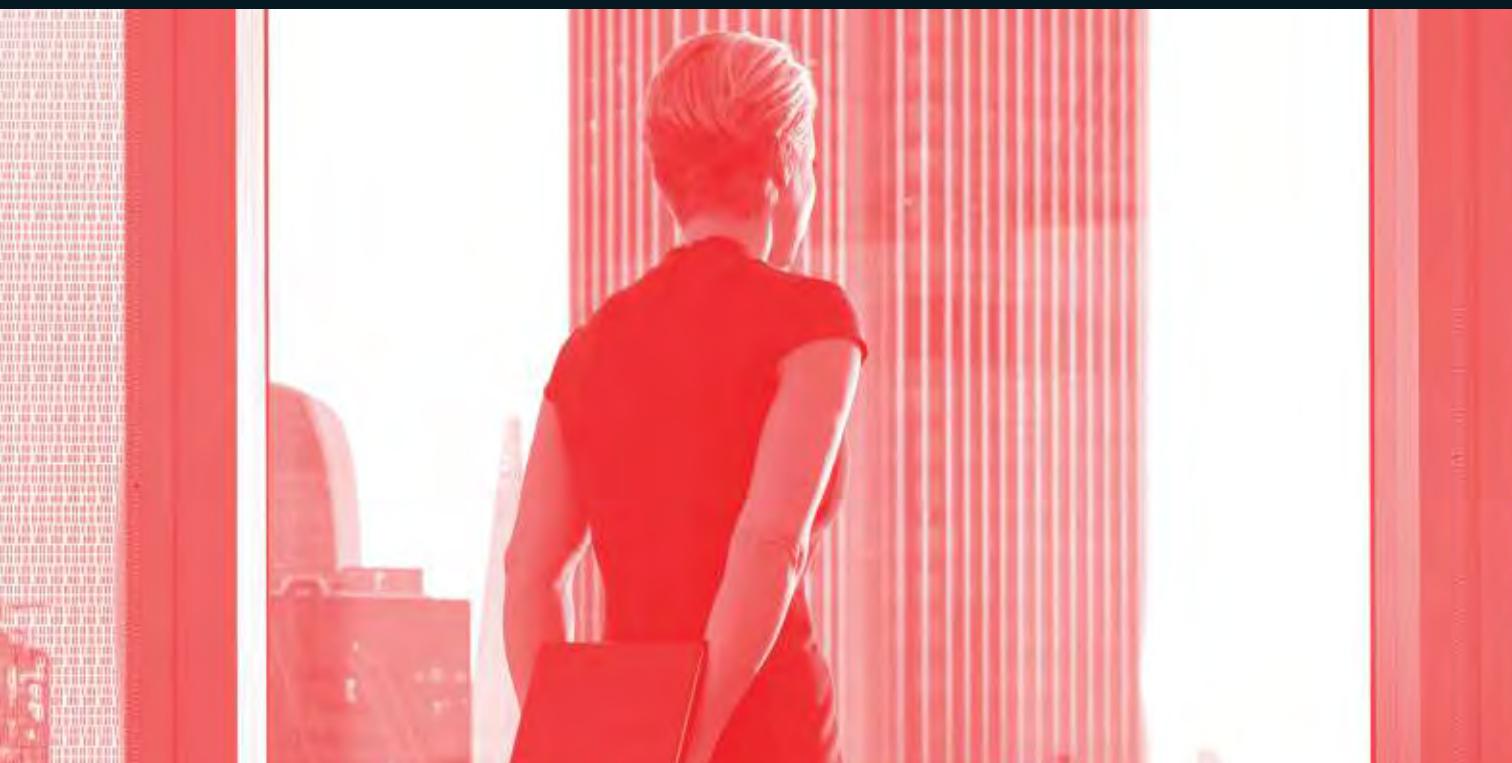
Mr Trump's equivocation over both Ukraine and Taiwan alarms America's other allies, who naturally wonder how reliable a friend it will be. If their doubts become severe enough, countries like Japan and South Korea might seek to develop their own nuclear deterrent, with unpredictable consequences. And even if things do not go that far, America's perceived faithlessness strengthens China's hand, as countries in the region seek to hedge their bets.

Mr Trump's card game, in short, has many complexities he does not acknowledge. The incentives of his adversaries are far from straightforward. Mr Xi's overarching goal is the survival of the Communist Party. Economic growth is one means to that end, but not too sacrosanct to be tempered for reasons of security. Likewise, no inducement can convince Gazans to leave Gaza voluntarily, or Ukraine to stop fighting to preserve its independence.

The players are also not fixed, with decisions in one dispute having ramifications for another. Thus if Mr Trump decides to impose tariffs on computer chips to strengthen domestic production, he weakens Taiwan, which produces some 90% of the world's most advanced microprocessors. That, in turn, adds to his difficulties with China. By the same token, the rehabilitation of Mr Putin is also likely to benefit China (see *Telegram*).

Perhaps most important, the game has infinite rounds. Mr Trump's bullying and bluster can be effective in the short run. But it is a wasting asset. As he alienates ever more friends, America's clout will diminish. As friends and foes alike call his bluff, his credibility will decline. Treating international relations as a card game does America more harm than good. ■





**NOW+NEXT**

## **She-suites**

### How more women can become CEOs

The latest in a series of films exploring  
the defining themes of the modern age



Watch the film:

[films.economist.com/nowandnext](https://films.economist.com/nowandnext)

Supported by

**Mishcon de Reya**

## Britain



### Defence

## The new nuclear question

**Does Britain's nuclear deterrent have a Trump-shaped problem?**

SIR KEIR STARMER'S announcement on February 25th that Britain will raise its defence spending from 2.3% of GDP to 2.5% by 2027, with the aim of hitting 3% after 2030 to meet a "generational" security challenge, was meant to grab attention—and not just in Britain. The prime minister was due to meet Donald Trump in the White House 48 hours later. He would now at least have something to show him.

Sir Keir is also hoping that he can reclaim Britain's role as a security heavyweight on the continent while signalling new purpose to voters at home. A group of European leaders are to meet in London on March 2nd to discuss defence. Whether the extra money, which has been found by ransacking the foreign-aid budget (see next story), will be enough to address the problems of what critics have described as Britain's "hollowed out" armed forces is doubtful. But it is a start.

It may not satisfy Mr Trump, who has

called on Europe to hike military spending to 5% of GDP. Britain has a uniquely close security relationship with America. The second coming of Mr Trump has cast doubt on once unassailable assumptions about the solidity of that relationship.

Nothing symbolises more powerfully how militarily joined at the hip the two countries are than the help America provides in keeping Britain in the nuclear-deterrant business. The British deterrent has also acquired a new significance for Euro-

pean allies fearful that Mr Trump could fold the American nuclear umbrella that has shielded them for more than 70 years. Before becoming Germany's presumptive next chancellor Friedrich Merz mused about Britain and France "sharing" their nuclear forces if America can no longer be relied upon (see International section).

Unlike France's nuclear deterrent, which is a wholly national endeavour, Britain's forces, while "operationally independent", rely on a 67-year-old agreement under which America shares its nuclear technology and infrastructure with Britain. What if Mr Trump concluded that the deal no longer met American interests?

The founding documents of the nuclear relationship are the 1958 Mutual Defence Agreement (MDA) and the 1963 Polaris Sales Agreement through which Britain was able to acquire the new American submarine-launched ballistic missile. While Britain would build and design its own submarines and warheads, it would lean heavily on American technology. Still, Britain's nuclear forces would be under the sole control of the British prime minister, who could order the missiles to be fired against targets in Russia without the permission of the American president.

It was clear what was in it for Britain. It would remain a nuclear power more cheaply than otherwise possible. For the Ameri- ►

#### → ALSO IN THIS SECTION

**20 Slashing foreign aid**

**21 Welfare for teens**

**21 Shareholder bureaucracy**

**22 Unregulated therapists**

**24 Bagehot: The easiest job in politics**

cans the benefits were more nuanced. Britain could spend more on its conventional forces in Europe and would make some contribution to America's costs. Sir Lawrence Freedman, a British strategist, says the Americans also appreciated the ingenuity of British nuclear scientists who would sometimes find cheaper ways of doing things. A further rationale was that a second nuclear decision-making centre would strengthen deterrence if the Russians (wrongly) questioned America's nuclear commitment to Europe.

Britain became somewhat more dependent on the Americans in the 1980s when the more powerful Trident missile succeeded Polaris. The Thatcher government decided that because the 58 Trident missiles that Britain was purchasing the rights to could stay in their launch tubes for longer than Polaris, they did not have to be stored in Britain as before. They would become part of a pool of missiles kept at the Kings Bay submarine base in Georgia.

Concerns about dependence were beaten away. Margaret Thatcher's cabinet secretary, Robert Armstrong, told her that "in the inconceivable case of a future US government deciding to cut off supplies of components", there would be "no sudden effect", though over "two or three years" the deterrent's effectiveness would "begin to fall off". In 2006 Commodore Tim Hare, a former nuclear-policy chief at the Ministry of Defence, told the Commons Defence Committee: "If, over a very long period, we became deeply estranged from the Americans and they decide to rat on their agreements, we would be in...great difficulty." But the risk was "very low".

Operational independence endures. James Jinks, author of "A Very British Bomb", to be published next year, says: "There is nothing in the Trident system, for example a kill switch or software, which would prevent a UK submarine commander launching missiles following authorisation from a British prime minister." Nor can the Americans turn off guidance systems, which are self-contained.

Britain has also recently taken some steps to grant itself more agency. As part of the renewal of the deterrent and the AUKUS nuclear-submarine deal with Australia and America, Britain announced a reinvigoration of its nuclear industrial base last year. In 2021 Britain took back control of the Atomic Weapons Establishment, which designs and manufactures the warheads, from a consortium led by Lockheed Martin, an American defence firm.

However, the British nuclear enterprise remains deeply entwined with America's. The missiles come from the pool at Kings Bay; missile testing is carried out under American supervision at Cape Canaveral; British submarines and warheads share designs with their American counterparts

and rely on spare parts made in America (Britain is also believed to send parts in the other direction). The MDA used to be renewable every ten years, but was amended last year to be an "enduring" agreement. Whether it could endure a decision by Mr Trump to end it is another matter.

Sir Lawrence reckons that were that to happen there would not be a "cliff-edge" loss of effectiveness, "but over time we would be scrambling to keep it going". The biggest problems would be replacing the

Kings Bay missile storage and running out of critical spare parts.

In the past such thoughts would not have been on the mind of a British prime minister visiting the White House. Ten years ago Malcolm Chalmers of RUSI, a think-tank, said: "If the US were to cut off nuclear aid now—after almost 60 years—it would be such an antagonistic act as to throw the wider alliance relationship into question. I see no prospect that this will happen." Those were different times. ■

### Foreign aid

## The last cut is the deepest

**Britain halves its foreign-aid budget. Which promises will Labour break?**

BRITAIN USED to pride itself on being a star among those helping poorer parts of the world. In 2020 it was one of only seven countries that told the OECD, a club of mostly rich countries, that it met the UN's target of spending 0.7% of gross national income (GNI) on aid. But its politicians keep reducing such aid. In 2021 the Conservatives controversially cut aid spending from 0.7% of GNI to 0.5%. Now Sir Keir Starmer has said that he is chopping it again in order to find extra cash for defence. The latest cut will be to the bone. Aid spending will be just 0.3% of GNI in 2027—not enough to cover everything diplomats have already promised to poor countries.

Since 2020 the biggest use of this money has been spending on asylum-seekers within Britain. By 2023, 28%

the aid budget was spent in Britain, compared with just 3% of it in 2016. A quirk of the OECD's rules for counting official aid lets countries include the cost of resettling those claiming asylum in the 12 months after they arrive. In 2023 asylum-seekers soaked up £4.3bn (\$5.3bn) of the £15bn total. Aid for war zones outside Ukraine was only £743m.

Asylum will probably continue to consume as much cash as before, if not more. It seems unlikely to be on the chopping block. In the year ending September 2024 the number of people who arrived in Britain seeking asylum rose by 1% against the same period the year before.

Instead, Britain's spending in poor countries will shrink. But how? Take a glance at what has already been promised in international agreements. The list is not short. It spans handouts worth £12bn to reduce emissions overseas between 2021 and 2026, most of which is yet to be spent; billions of pounds to rebuild Ukraine; and £2bn committed to the World Bank between 2025 and 2028. Along with spending on asylum, an average year of just these three expenditures would have used up 0.3% of 2023 GNI. Reneging on such promises would be embarrassing for the government.

That leaves aid given directly to poor countries. Schools, clinics and bilateral handouts to governments which have relied on British aid for decades to alleviate poverty could take the hit. Such spending has been the backbone of British aid since the 1960s. But there is no longer enough cash to do it all. Sir Keir may think that cutting foreign aid was the least painful way to make room for more defence spending. But he has left himself some nasty choices.



Going against the grain

**Welfare for teens**

## Reading, writing and arithmetic

Paying teenagers to stay in school turns out to have been a bad idea

ANDY BURNHAM was unhappy. The government was “kicking away the ladder of opportunity”, he argued in January 2011. Mr Burnham, who was then a Labour MP and is now mayor of Greater Manchester, accused the government of “stacking the odds” against young people. And he had a warning for the Tories, who were running Britain in coalition with the Liberal Democrats. If they did not relent, young people would never vote for them.

The policy that infuriated Mr Burnham was the abolition of the Education Maintenance Allowance (EMA) in England. This paid 16- to 19-year-olds up to £30 (\$38) a week if they stayed in full-time education. One in three teenagers received some cash, with the biggest payments going to those from the poorest households. Handouts continue in Northern Ireland, Scotland and Wales, although inflation has made them less generous. Labour MPs lamented the loss of the EMA for years; their party went into the 2019 general election promising to restore it. But it now looks as though the coalition government was right.

On February 26th the Institute of Fiscal Studies, a think-tank, released a report on how the EMA affected English teenagers who were entitled to free school meals because of their parents’ poverty. By comparing teenagers before and after the payments were rolled out nationwide in 2004, the researchers estimate that the EMA persuaded some to stay in school. Full-time

enrolment in Year 12, in which a pupil turns 17, rose by 2.5 percentage points. Those who had scored poorly in exams were especially motivated to stay on.

Unfortunately, it seems not to have helped them. Cash payments did not boost subsequent university attendance among poor teenagers. And the EMA appears to have pulled many young people into classrooms who would otherwise have been studying part-time or taking part in workplace training schemes such as apprenticeships. The loss of practical experience and training seems to have hurt. Not only did teenagers earn less from working as a result of the handouts, as you would expect. They also went on to earn less, and were more likely to receive unemployment benefits. Their earnings between the ages of 20 and 28 appear to have been suppressed by £1,660, adjusting for inflation.

Labour MPs were wrong to complain about the abolition of the EMA. But their warnings about the political consequences were astute. It was one of several youth-baiting measures introduced by the Conservative-led government. Shortly before Parliament voted to stop the payments, it allowed universities to charge much higher tuition fees. A few months later, it introduced a “triple lock” for the state pension, which has led to increases in that benefit. Young people did, indeed, abandon the Tories. Nobody likes to lose a treat, even if it is bad for you. ■

**Bureaucracy**

## The City’s war on paper

Calls are growing to modernise Britain’s shareholding system

**B**RITISH COMPANIES are drowning in unnecessary paperwork. An antiquated system, whereby a few listed shares are held in paper form and the holders are entitled to physical copies of documents, means custodian banks are sent an estimated two tonnes of paper on a typical day. Annual reports, prospectuses and shareholder guides must be printed and shipped, too. One large company said the paperwork generated by an acquisition required a forklift truck and filled two Royal Mail lorries.

Paper share certificates, proving ownership of a company, have been a blight on corporate Britain for years. Only a small minority of shares have not yet been digitised: roughly 1% of the FTSE 350, affecting up to 10m certificates. Yet they represent a disproportionate and costly part of the administrative burden. “It’s a deadweight loss that impacts everyone,” says Mike Coombes of PrimaryBid, a capital-markets technology platform.

Change is long overdue. In 2022 the Digitisation Taskforce, led by Sir Douglas Flint, chairman of Abrdn, an asset manager, set out to digitise the system after a paper shortage at Abrdn delayed a shareholder vote on a £1.5bn transaction. In July 2023 his review published provisional recommendations, including a proposal to stop the issuance of new paper certificates. The task-force’s final report is now said to be nearing completion.

Eradicating paper would make capital markets more efficient. Under one scenario proposed by Sir Douglas, Britain’s parallel systems of retail ownership—paper and digital—would be simplified by moving paper shares to the existing digital system, known as a central security depository (CSD). This would streamline the separate processes for creating new shares or communicating with shareholders.

Advocates for reform say a paperless system would also widen retail participation at a time when the Labour government wants to revive London’s stockmarket. Holding and trading shares electronically is cheaper, faster and more transparent; physical certificates risk getting damaged or going astray. A single CSD would mirror the successful model in Sweden, for instance, where 40% of household wealth is held in stocks and shares, compared with 11% for British households.

Not everyone agrees. Lobby groups ►

such as ShareSoc, which represents individual investors, fear Sir Douglas's recommendations would disenfranchise paper shareholders, who have direct relationships with companies. Unlike nominee shareholders whose stock is legally held by brokers or investment platforms such as Hargreaves Lansdown, paper shareholders can take part in company votes or attend annual general meetings. In theory, most platforms allow these rights, but their record on facilitating them is mixed.

Others are abolishing paper. India has scrapped paper certificates for public companies and most private ones. Japan has ended its paper trail for publicly listed firms. France and the Netherlands have also replaced paper records with electronic ones. With most shares in Britain now held electronically, the justification for sustaining a legacy system is paper-thin. ■

#### Unregulated therapists

## Caveat patient

**Anybody in Britain can call themselves a therapist. That opens the door to abuse**

FOR A THREE-HOUR session at his clinic in Belsize Park, in north London, Mike Lousada charged £750 (at the time equivalent to \$1,025). He branded himself a sexual therapist, claiming he had pioneered "a new approach". Ella Janneh went to him for help with trauma she had experienced after being sexually abused as a child. According to court documents, she alleged that during the session he raped and sexually assaulted her; he denied this and claimed she gave her consent. During the alleged assault, she said in court, he told her that his penis was like a "laser beam"—one that could "burn up" and "absorb" trauma. She reported the incident to the police in 2016, but the Crown Prosecution Service decided not to press charges, after which Ms Janneh brought a civil claim against Mr Lousada.

Last year, eight years after that fateful session, a judge ruled that he had "no doubt" Ms Janneh was suffering a "full-blown dissociative panic attack" and that she "entirely lacked capacity" to consent. He awarded her more than £200,000 in damages for "trespass to the person" and breach of contract. But there is nothing to stop Mr Lousada from calling himself a "therapist" in Britain today.

Anybody can. The title "therapist" is not protected by law. Nor are "psychologist" and "counsellor". Regulation is voluntary. Practitioners can opt in to accreditation by professional bodies such as the

British Association for Counselling and Psychotherapy (BACP), for example, but they are under no legal obligation to do so. Even if the BACP strikes someone off its register, it does not have the power to stop them using the title.

More than a million people are on the National Health Service's waiting list for mental-health services in England, and many are turning to the private sector. Only one in ten people are aware of the lack of statutory regulation, according to the BACP. The rise in online therapy and the growth of international apps (run by companies that in some cases are based outside Britain) further complicate accountability. Confusingly, a smattering of titles for mental-health practitioners, including "clinical psychologist" and "art therapist", are statutorily regulated in Britain. Consumers are left to navigate this messy landscape themselves.

Ms Janneh is leading a campaign for the statutory regulation of therapy. Vulnerable people are sharing their deepest traumas in rooms with a "one-way power dynamic", she says, noting that you are simultaneously expected "to be a detective and an expert on the industry". The absence of regulation means that patients are vulnerable to exploitation.

Thomas Plimmer, a former general practitioner, was struck off the medical register for "serious misconduct over several years, including non-consensual sexual touching and engaging in sexual activity whilst at work". Although it did not involve patients, Mr Plimmer's behaviour, said the General Medical Council, was "so egregious" that it was "fundamentally incompatible with continued registration". But that did not stop Mr Plimmer from using a different name and embarking on a second career as a therapist.

Catriona Rubens, a solicitor who repre-

sented Ms Janneh, says that she frequently gets inquiries from people who have suffered abuse by therapists and psychologists. Critics of proposed changes are against state regulation, fearing that it could stifle innovation and reduce the variety of practice available to patients. But the confusion that arises arguably poses a greater risk.

Clinical psychologists must undergo seven years of training to earn the right to use this title, says Professor Mike Wang, chair of the Association of Clinical Psychologists UK. Many of the association's members are unhappy that their profession risks being brought into disrepute by unqualified practitioners. Unregulated psychologists deployed to family courts as expert witnesses can be pivotal in custody cases involving children.

#### A patchwork of practice

Beyond Britain, the approach to regulation is mixed. Austria, Germany, Italy and Malta are among the countries that mandate statutory regulation of psychotherapy and psychology, with varying degrees of strictness. But in Albania, Greece and Portugal, for example, anyone can use the title "psychotherapist". America regulates it on a state-by-state basis.

The last time statutory regulation was seriously considered in Britain was under a previous Labour government. The idea of a health-professions regulator had momentum, despite strong opposition from groups of psychotherapists and counsellors. But discussion ground to a halt after the Conservative-led coalition government took over in 2010.

Successive governments have spoken of the parity between physical and mental health. Regulating those who offer mental-health services would seem a sensible place to start. ■



# RICHARD MILLE



## RM 17-02

Skeletonised manual winding tourbillon calibre  
70-hour power reserve ( $\pm 10\%$ )  
Baseplate and bridges in grade 5 titanium  
Power-reserve and function indicators  
Case in grade 5 titanium  
Torque-limiting crown

# A Racing Machine On The Wrist

## BAGEHOT

### *The easiest job in British politics*

*Brexit is bad! Not sure about that Elon Musk! Who likes Barbour jackets?*



**A**TYPICAL LIBERAL DEMOCRAT will be somebody who is good at fixing their church roof." What sounds like hammy dialogue from a party political broadcast by Britain's third party came from the lips of Kemi Badenoch, the Conservative leader of the opposition. "You know, the people in the community like them," she continued, in a podcast with Jordan Peterson, a psychologist-cum-Disney-symbolist. "They don't have much of an ideology, other than being nice," said Ms Badenoch, who always excels at the former and often struggles with the latter.

Running the Liberal Democrats is supposed to be a miserable gig. The 72 seats it won at the last election are simultaneously a once-in-a-century achievement and an irrelevance thanks to Labour's giant majority. Sir Ed Davey, its hitherto over-serious leader, is reduced to gimmicks to guarantee any coverage of policy proposals that will, in any case, almost never come into being. If all goes well, at the next election a few million voters will resentfully back the party to stop someone else winning power.

Forget all that. For now, Sir Ed has the easiest job in British politics. Swathes of British political debate are the sole preserve of the Liberal Democrats. Both Labour and the Conservatives, never mind Nigel Farage's Reform UK, recoil from a closer relationship with the European Union. Labour tiptoes towards a youth-mobility scheme with the club. The idea commands wide support, yet only the Lib Dems cheer it. Others are paralysed by a politics frozen in 2016, as if Mr Farage would again caption a horde of arriving Danish 20-somethings with the slogan "Breaking Point".

Sometimes the caution is damaging. The Liberal Democrats are the only major party to support a customs union. It is a costless policy that would almost instantly boost growth. Only lack of political courage stands in the way of Labour's move to a closer relationship with the EU. Labour has a Meat Loaf strategy when it comes to the EU and the economy: it would do anything for growth, but it won't do that.

When it comes to international affairs, the Lib Dems can take the easy, popular and right option. Donald Trump is reviled in Britain. Labour MPs are hemmed in by diplomatic niceties of government. Conservatism has evolved into brain-dead contrarian-

ism to the point where Elon Musk, one of Mr Trump's wingmen, calling for Sir Keir Starmer to be jailed over his handling of grooming gangs attracted little condemnation from the party's MPs. Sir Ed was one of the few British politicians able to say that a megalomaniac billionaire demanding the prime minister be sent to jail was, in fact, not on.

If certain policy areas are overlooked, it is because certain voters are ignored. The 2024 general election saw prosperous parts of the country revolt against the Tories. Oxfordshire, home to the Barbour-jacket brigade, now has zero Conservative MPs. When voters turfed Labour MPs out of post-industrial constituencies at the previous election in 2019, a cottage industry of hacks and wonks set about examining why. This time there has been no such introspection, least of all from the Conservative Party's leadership. "The Conservatives have almost given up," says Sir Ed, with the feigned sadness of a man who cannot believe his luck.

When only certain types of voter count, it means only certain electoral contests matter. Local elections this May are framed almost entirely by how much Reform UK will damage the Tories in places such as Lincolnshire on England's reactionary east coast. Yet the story of the morning after is most likely to be Lib Dems delivering a *coup de grâce* to the remaining Tory councillors—and crucial envelope-stuffers for party leaflets—in Barbour Britain. For all the focus on the threat from Reform UK, the Lib Dems could, with a light tailwind, surpass the Conservatives regardless. Sir Ed has the smallest hill to climb at the next general election. A mere 25 Lib Dem gains from the Conservatives would relegate the party to third for the first time in its existence.

All parties face political dilemmas, yet Sir Ed's is easier to solve. Labour, for instance, must manage a threat from Reform UK without losing more votes to the Greens or the Lib Dems, or whichever pro-Palestine party has popped up in inner Birmingham. By contrast, Sir Ed has to offer only more of the same. Practically all the Lib Dems' targets are found in the south, in places such as Salisbury. Parts of the Conservative Party still understand this corner of England. Jeremy Hunt, a former chancellor who narrowly hung on to his Surrey seat, addressed the concerns of people with fat salaries and fat mortgages. Mercifully for Sir Ed, Mr Hunt and his ilk are far from power in their party.

#### Go back to your constituencies and prepare for opposition

Being far from power in the country at large brings Sir Ed other advantages. Opposition can be a luxury. Unserious policies can be floated, with little opprobrium. Why not have a special pensioner carve-out from the recent increase in the energy price cap, ask the Lib Dems. The Lib Dems are still a party of protest, with more in common with their rivals Reform UK than either party would ever like to admit. Each offers a home for voters who want none of the above and each is happy to pledge the impossible or the implausible to win them over.

Politics often happens by default rather than direct action. What the Lib Dems do themselves matters less than the paths other parties choose. While Reform stalks the Conservatives, the main opposition will only drift farther right. An insane Conservative Party is one that will not win back the likes of Oxfordshire. Likewise, if Labour governs well there is little risk in giving another vote to the Lib Dems. The future of the Lib Dems is out of the party's hands. If Sir Ed has the easiest job in politics, it is mainly because the other parties are doing it for him. ■

## Europe



**Germany**

### It could have been worse

BERLIN

After an unconvincing election win, Friedrich Merz makes a panicked bid to raise military spending

THERE HAVE been sweeter victories. As expected, Friedrich Merz's opposition Christian Democrats (CDU) won Germany's federal election on February 23rd, in tandem with their Bavarian sister party, the Christian Social Union (CSU). But the conservative parties' result of just 28.6%—their second-worst in the history of the republic—muted celebrations at Konrad Adenauer House, the CDU's Berlin headquarters. With the outgoing government led by Olaf Scholz regularly plumbing new depths of unpopularity, many in Mr Merz's ranks had hoped for far better. The wound was deepened by the capture of close to a quarter of the seats in the Bundestag by the hard-right Alternative for Germany (AfD), a party harbouring extremists that was the night's big winner. The AfD now dominates Germany's east, and made big gains in the west, too.

Relief came in the form of the failure of two smaller parties, the Free Democrats and the Sahra Wagenknecht Alliance, to

meet the 5% threshold needed to enter parliament. That meant more seats for the bigger parties, enabling Mr Merz to form a coalition with Mr Scholz's Social Democrats (SPD) alone rather than seek two partners. Talks should begin next week.

Mr Merz and his confidants will lead their early phase, though regional CDU barons will want a say. The SPD's pointman will be its co-chief, Lars Klingbeil. He has quickly cemented his grip on the party, this week adding leadership of its shrunken

group of MPs to his portfolio. A wily 47-year-old centrist who has helped negotiate coalition deals before, Mr Klingbeil is also said to be eyeing the vice-chancellorship. (Mr Scholz will remain in office until Mr Merz takes his place, but the outgoing chancellor will play no part in the talks.)

That Mr Merz has no alternative partner—his party, like all others, shuns the AfD—hands the SPD leverage in the talks to come. The CDU/CSU is unlikely to win much backing for most of the unfunded tax cuts it has proposed; for its part the SPD may have to give ground on *Bürgergeld*, a welfare payment which Mr Merz thinks coddles the workshy. The parties differ on investment, energy, the minimum wage and some weapons deliveries to Ukraine. There will be squabbles over how to divvy up the big ministries, especially finance, and the parties must also draw up a budget for the rest of 2025. But none of these hurdles looks insurmountable.

On migration, a trickier area, Mr Merz may have to break his rash vow before the election not to compromise on proposals that plainly violate German and European law, such as rejecting asylum-seekers at the border. New EU asylum rules due to take effect next year may offer a face-saving way out. More broadly, if Mr Merz gets his wish for a skimpy coalition agreement in place of the door-stoppers of recent years, he may manage to wrap up talks by Easter. ►

---

→ ALSO IN THIS SECTION

**26 John Parker, polymathic journalist**

**27 Europe's defence budgets**

**27 Ukraine's minerals**

**28 Mobilisation problems in Ukraine**

**29 Swedish gang violence**

**30 Charlemagne: Speaking for Europe**

Meanwhile, a more pressing demand has emerged. A third smaller party, the socialist Die Linke (The Left), which months ago looked close to extinction, enjoyed a late surge to win 8.8% of the vote. This was powered largely by young voters in western cities angered by Mr Merz's decision to vote with the AfD on immigration, alienated by the centrism of the SPD and Greens, and open to Die Linke's bread-and-butter campaign on housing and wages.

Die Linke's success means that it, along with the AfD, will hold just over a third of the seats in the next Bundestag, which convenes in late March. That threatens any plans that the CDU/CSU, SPD and the Greens might have to push through constitutional changes, which require two-thirds majorities. Crucially, that includes amending Germany's increasingly obsolete debt brake, which limits the federal government's structural deficit to 0.35% of GDP.

The easiest way to secure backing for debt above these levels from Mr Merz's fiscally hawkish ranks will be to devote it to defence spending, especially since America's underwriting of European security now looks distinctly shaky. Germany needs at least €30bn (\$31bn) a year from 2028 simply to meet the NATO floor of 2% of GDP. But while Die Linke detests the debt brake, it holds military spending in equal disdain. "They will need to negotiate with us if they want to reform it, and I will not make that cheap, I can tell you," warns Ines Schwardtner, its co-leader.

That has driven Mr Merz to consider an unorthodox alternative: recalling the outgoing Bundestag, in which the three mainstream parties hold 71% of the seats, to push through a debt-brake-circumventing special fund for defence, reportedly worth €200bn-250bn. The parliament remains in place until the next one is convened, so the manoeuvre seems legally sound if politically dubious. "To be called back for an emergency session would be bizarre," says Jens Zimmermann, one of 87 SPD MPs who

lost their seats. "The question is how much this would damage democracy."

Thus has Germany's lame-duck period, usually defined by cautious shadow-boxing, become an occasion for high-stakes intrigue. Having first proposed using the old parliament themselves, the Greens are raising their price, calling for a debt-brake reform to enable investment in infrastructure, schools and climate policy as well as defence. The SPD is mulling its position.

Perhaps the SPD and Greens could back the special fund now in exchange for a CDU/CSU commitment to loosen the debt brake in a fashion that could pass muster with Die Linke later. But such machinations risk getting bogged down in politics just when Germany has to show its European partners it has a credible path to rearmament and a response to Donald Trump, says Moritz Schularick, head of the Kiel Institute, a research outfit. Either way, momentous decisions may come within

weeks: lightning speed for a democracy that usually moves at a snail's pace. As Mr Merz said on election night: "The world will not wait for us." He has already raised eyebrows by calling for Europe to "achieve independence" from America.

A deeper question is whether Germany's next parties of government are convincing agents of change. The CDU/CSU and the SPD have become clubs for the elderly; had the election been confined to voters under 60 they would not have commanded a majority. Neither party has had much to say about reforming Germany's public pensions, now gobbling up 23% of the federal budget; rebalancing the flatlining economy away from exports towards domestic consumption; or getting a grip on Germany's woeful record on digitalisation. Germans have known considerable upheaval in the past few years, much of it redounding to the benefit of the AfD. Is Mr Merz ready to deliver more? ■

## Polymath journalism

# Mr Global

One of our finest correspondents, John Parker, died on February 25th, aged 70

**O**LDER COLLEAGUES at this newspaper recall when Monday-morning meetings involved squeezing into the editor's office at The Economist Tower. Standing by the doorway, stooped in thought, would be a modest man gently ready to pipe up to challenge conventional wisdom. And to offer big ideas.

John Parker had lots of them. He wrote sweepingly about the post-communist transformation of Europe and how China's reforms would change history. He was an early observer of American polarisation. He had a genius for highlighting demographic megatrends: how to feed 9bn people by 2050, how cities keep reinventing themselves. He had a twinkly talent for capturing the zeitgeist, explaining, for example, why 2019 would be the year of the vegan.

As well as big ideas, he had big jobs, over a 45-year career that included an interlude as op-ed-page editor at the *Financial Times*. He opened The Economist's Moscow bureau (covering Mikhail Gorbachev's revolution), was our Washington bureau chief at the time of the attacks of September 11th 2001, and became Beijing bureau chief to explain the dramatic changes under Xi Jinping. Between front-line reporting were stints as editor for Europe, business, books, the environment and globalisation.

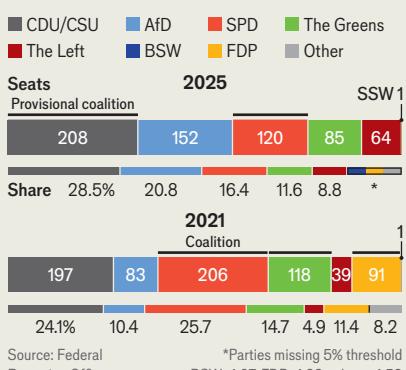
Lately, John was an editor-at-large, living in Dorset with his wife Kerry, whom he met 37 years ago on the New York subway. He wrote—and eagerly rewrote—a course on international relations for Economist Education. At a time of global upheaval the world has, sadly, lost one of the people best able to interpret momentous change.



## Right shift

### Germany, federal election results

Number of seats and vote share



## Euro-defence

# The price of security

**Europe will need to pull all possible levers to up its defence spending**

THE REALISATION is sinking in. Europe needs to become able to defend itself without America's help. From Friedrich Merz, Germany's probable next chancellor, to Emmanuel Macron, the president of France and longtime advocate of "strategic autonomy", politicians are calling for higher defence spending. The calls are welcome, indeed long overdue. The problem is that, so far, neither politician has offered much in the way of ideas on where the money for it is supposed to come from.

Currently, the EU's member states spend some €325bn (\$340bn) a year on defence, which comes to about 1.8% of the bloc's GDP. That is still, three years into the war in Ukraine, less than the 2% target that NATO set its members in 2014 after Russia had illegally annexed Crimea and occupied the eastern Donbas region. Guntram Wolff of Bruegel, a think-tank in Brussels, and Alex Burilkov of Leuphana University Lüneburg calculate the immediate requirement at 3.5% of GDP for Europe to be able to defend itself without the Americans—and in the longer term *The Economist* thinks expenditures will need to be more like 4-5%. Even the 3.5% figure leaves a gap of 1.7% of GDP to be filled.

Europe's spending to support Ukraine is equally underwhelming. Since January 2022 the EU and its member states have spent €113bn in financial, military and humanitarian help, the equivalent of just above 0.2% of their GDP during each of those three years, according to data from the Kiel Institute, a think-tank, and additional calculations by *The Economist*. For Europe to replace America's support, were it withdrawn, the EU would need to raise its contribution by roughly the same again. The combined 0.4% of GDP that would need to be spent on Ukraine each year is only half the level at which Denmark spends already on the embattled country, and about the same as Finland does (see chart). This shows it is possible, and that backing Ukraine is only a small part of the much larger task of beefing up Europe's own defence spending.

There are three ways to find the extra 1.9% of GDP that would be needed both to boost defence spending to 3.5% of GDP a year and, in addition, replace American support for Ukraine. The first is by cutting spending elsewhere and/or raising taxes. But global rankings of the highest-tax countries in the world are dominated by

European countries, so further increases seem a bad (and unpopular) idea. Euro-zone economies spend about 20% of their GDP on welfare, pensions and social protections, but cuts to social spending would be equally unpopular. Many countries are already under pressure to cut spending or raise taxes to reduce their deficits. France, with some of the highest social spending in Europe, has already pledged to cut its deficit from 6.1% in 2024 to 4% by 2027. In Germany, a coalition government collapsed last year because it could not agree on sufficient cuts, and the incoming one is sure to struggle in the same way. Squeezing national budgets yet further to boost defence will be politically painful.

The second option is to borrow. Countries could widen their deficits for a while and agree to adjust the bloc's fiscal rules. Ursula von der Leyen, the president of the European Commission, has suggested an "escape clause" for defence investments. But the rules have no such provision, so would need another contentious reform. "The mindset is still some emergency exception that takes away the guardrails," argues Lucas Guttenberg of Bertelsmann Foundation, a think-tank. Germany has already hinted that any exception to the rules can apply only to those countries that spend more than 2% of GDP on defence. That would exclude Italy and Spain. "I cannot imagine Spain spending more than 2% on defence," says Luis Garicano of the London School of Economics. "Spaniards, far from Russian aggression, remain unconcerned about war."

The third option would be to fund defence spending through the EU. After the pandemic struck, the bloc's €806bn recovery fund pioneered that concept. The EU would take on debt, to be serviced and later repaid from the EU budget. But there are snags. Setting up such a fund requires unanimity, and pro-Russia countries like Hungary and Slovakia would probably object, though they might be pressured into it. It

would raise the debt burden of the bloc as a whole, even if such debt did not count towards national figures. And the EU would need to agree what to spend it on and for whose benefit. This would take time.

To close the gap of 1.9% of GDP, consider all options. For example, national governments could tighten their budgets and cut other outlays to lift defence spending plus support to Ukraine by, say, 0.3% of GDP a year. That would leave a gap of "only" some €850bn between now and 2030, which would need come from a combination of higher national deficits and more EU debt, with a big impact on the EU's next seven-year budget cycle. High time, then, for fans of Europe's autonomy, such as Mr Macron and Mr Merz, to make the case for cuts to welfare spending and farm subsidies, and prepare the ground for more fiscal integration in the EU. Until then, their calls for strategic autonomy are so much hot air. ■

## Ukraine's minerals

# A tentative bargain with America

KYIV

**A framework agreement is vague but softer than was feared**

FTER A PAINFUL negotiation, Ukraine is set to approve a deal with America to jointly exploit the beleaguered country's minerals. Donald Trump and Volodymyr Zelensky, Ukraine's president, are due to sign a document—and pull back from a damaging war of words—when they meet in Washington on February 28th. Mr Trump is sure to declare it a victory for America. What it means for Ukraine is fuzzier.

The agreement is only the first step. Much of the detail is yet to be sorted out. But Ukraine appears to have softened Mr Trump's first brazenly extractive demand into something closer to a joint investment venture. This looks far short of the \$500bn "payback" Mr Trump had demanded for past military and financial aid from America, which independent analysts put at around \$120bn.

The draft text removes the most contentious American demands. At one point the Ukrainians were apparently told they had "an hour to sign"; at another juncture, just six minutes. The latest text outlines a joint investment fund for Ukraine, which is to contribute half of the pot. This will be sourced through state-owned projects in minerals, oil, gas, LNG terminals and ports. Crucially this will not include current operations, such as the oil and gas that already contribute hugely to Ukraine's budget.

Mr Trump's \$500bn figure is unmen-

**Distance lends indifference**

Total allocated aid to Ukraine, % of 2022-24 GDP



Sources: Kiel Institute; Eurostat; ONS; Statistics Norway; *The Economist*

tioned. And America's demand for 100% ownership of the investment fund has been dropped. Instead, ownership will be "proportional" to the sums invested by each side, raising the prospect of continuing American support. A clause that required the Ukrainians to pay twice the amount of any future aid into the fund has gone, too; Mr Zelensky had likened it to a debt on "ten generations of Ukrainians".

A lot is still hazy, including the extent to which America will control the fund and how it will be managed. This is where contradictions may arise. One clause says America will control "the maximum amount" allowable under its own laws. Yet that might clash with the clause indicating proportionality.

This may be clarified in subsequent negotiations, along with Mr Zelensky's initial demand, in September, for an American security guarantee as his quid pro quo for offering up his country's resources. So far the framework mentions only a vague promise to "protect mutual investments". But a preamble refers to a broader "architecture" of agreements and support for efforts to "obtain security guarantees". A well-informed government source says Mr Zelensky does not intend to sign an overall agreement without broader assurances on security. The initial framework document will not require ratification by parliament, but a future full agreement will.

Though the framework deal is sketchy, Ukraine may feel it has avoided a bare-knuckle fight. Besides, the true extent of its wealth in natural resources is unknown. Modern technology has not yet been used to assess its mineral deposits. Many of them are deep down, or in concentrations that are too low to be profitable. And perhaps 40% of the metal resources are in Russian-occupied territory. Nor does the framework offer details on processing and refining, which will add much of the value.

Yet by agreeing to something, Ukraine has given Mr Trump a result—and has bought time. In the country's battered condition, that counts for a lot. ■



### Ukraine's soldiers

## Pluses and minuses

KYIV

**A heavy-handed mobilisation campaign is unable to fill gaps in the front lines**

FOR OLEKSANDR SIKALCHUK it was a routine mission, far from the front line. The 39-year-old draft officer had been escorting a group of conscripts when, during a midnight stop for petrol in Poltava province, a man with a hunting rifle stepped out from the dark. He asked for Mr Sikalchuk's weapons. The soldier refused, and the man shot him dead. The killer escaped with one of the conscripts, someone he seemed to know. The incident was the first in a shocking spate of attacks on draft officers in the first week of February. Ukraine's security services blamed the events on Russian infiltrators. Soldiers suspect the Poltava attack was home-grown. "It'd be nice to blame Russia," said Roman Istomin, a colleague of the slain soldier. "But perhaps it's something far worse."

The attacks on Ukraine's draft system could hardly come at a worse time. Though movement on the eastern front lines has slowed during the past few weeks, as Russian forces regroup ahead of a possible new push, the fighting remains bloody. Potential recruits see this, and many prefer to hide, or run. So Ukraine's draft officers have responded by turning up the dial of coercion. Their excesses are captured on film, and amplified gleefully by Russian social-media networks. "We botched mobilisation," says "Artem", an officer from the 46th brigade, who argues that political

constraints have got in the way of military need. He saw his unit pushed out of Kurakove, a stronghold in eastern Ukraine, in early January when it ran out of men. "Ten Russians to one Ukrainian. A group of four soldiers with responsibility for holding multiple high-rises, each with three or four entrances. It wasn't even close."

Russia's manpower superiority isn't immediately obvious from the overall numbers. Ukraine's president, Volodymyr Zelensky, says his country's army is 880,000-strong. Russia's grouping in and around Ukraine is thought to be 720,000, including reserves and security forces. That seems a reasonable ratio, given the fact Ukraine is largely defending home ground.

But the raw comparison is misleading. Where it matters—on the front line, in the trenches—Russia is replacing its losses much faster than Ukraine. It is able to throw men forward, often with the incentive of Russian rifles pointing at their backs, in a way Ukraine is not. In 2024 Russia added 430,000 men without reverting to general mobilisation. Even after staggering losses the headcount grew by about 140,000, and it is planned to increase by about the same amount this year. Russia's Ukraine grouping is also supported by other elements of its wider, officially 1.5m-strong army. "I guarantee at least 1m Russian soldiers are involved in the war against" ►

us," says a senior Ukrainian official.

To close the gap, Ukraine faces tough choices. One way would be to lower its mobilisation age from 25 to 18. The idea would be very unpopular in the country and does not even sit well with all its commanders. Artem, from the 46th, is one of the doubtful ones. "Many fathers are fighting precisely so their sons don't have to," he says. But Western advisers appear fixated on it, arguing that it would provide the quickest boost in combat strength.

Even Mr Zelensky's officials admit that Ukraine will have to expand its mobilisation if it is to stay in the fight. Officially the government is prioritising the war effort over everything else. Unofficially it is keeping a trickier balance: reconciling the front-line needs with those of an economy under pressure. Right now, the government protects just under 1m "critical" workers from the draft. But the contradictions of the policy, which takes into account factors like tax revenue, are demonstrated by the fact that some workers in one well-known chain of perfume stores are protected, but many drone manufacturers are not. "Zelensky is trying to have it both ways," argues one European official. "But he may need to risk his economy more if he is to have a country at all."

Anticipating pressure from Western allies, Mr Zelensky has already announced his own programme to boost voluntary recruitment, starting with 18-24-year-olds. The programme in some ways mirrors the Russian recruitment scheme: large sign-up bonuses, competitive pay and the opportunity to leave after a year. Mr Zelensky's adviser insists that is where the similarity ends. The young recruits will not be "cannon fodder", he says, but trained to the highest standards in one of half a dozen of Ukraine's elite brigades. The goal is at least 4,000 young recruits per month, another official says. Andriy Zagorodnyuk, a former defence minister, says that manpower alone cannot stop a slow retreat. Ukraine must also change the way it fights so that its operations are cleverer, hit Russians deeper and require fewer people. "We cannot win if we continue to play Russia's attrition games," he says.

Mr Trump guarantees one thing if nothing else: tomorrow will be different. Perhaps, amid the chaos and ultimatums, he will engineer a ceasefire on reasonable terms. A month into his second presidency it is looking more likely that he won't. If the war indeed carries on, and Russia continues to recruit as it has done, Ukraine's mobilisation will have to get even tougher. "The tightening will continue," says the Ukrainian official, "because no one has come up with a better solution." That prospect risks cracking open divisions in an already exhausted nation, and spurring more violence against draft officers. ■

## Sweden

# Blowing up the store

STOCKHOLM

## Gangs are using bomb attacks to extort businesses

**O**DAKRA, A SLEEPY village in southern Sweden, offers little excitement on a typical weeknight. But at 3am on January 28th residents awoke to a bang: an improvised explosive device had detonated. An hour later another bomb went off in Karrtorp, a Stockholm suburb. Within a day four more had rocked the capital.

Swedish gangs have been setting off bombs for years, but the scale of recent attacks is unprecedented. There were over 30 in January, and police say they foiled at least as many. Now gang violence is spilling out into the business community. According to Hampus Nygård, a national police official, most recent bombings have been "strategic acts aimed at companies, often for the purpose of extortion".

Sweden's entrepreneurs are being shaken down. Gangs like the "Foxtrot" group single out vulnerable businesses to threaten. If they do not pay, a bomb may be placed at a workplace or home. Houses have been levelled, but most explosions do not kill. They serve as a warning: pay up or blow up. Daniel Gazett, a police spokesperson, says small firms are usually targeted by gangs "collecting on made-up or real debts". The hospitality and construction industries are particularly exposed, says Lena Nitz, a security expert at Svenskt Näringsliv, an employers' association. Restaurants and hotels are useful for money-laundering. Building sites are good sources for

explosives, supplementing gangs' supplies of grenades from the Balkans.

The shift may be driven partly by more effective law enforcement. Police have cracked down on gangs engaged in the drug trade, says Casio Dahir, a social worker, making extortion a better bet. Sweden's open approach to digital data makes it easier: Tobias Adielsson, a crime expert, says criminals can easily find out "where I live, my phone number, the model of my car, even whether I have a dog". They scrape public data to identify fast-growing companies, then threaten the owners.

Police have arrested dozens of suspects recently, but say the supply is "inexhaustible". Gangs used to recruit on football pitches; now they do so online. Fifteen-year-olds at one Stockholm high school speak of "million-krona" (\$94,000) bombing jobs posted on Telegram and Snapchat.

The violence has added fuel to an already fierce immigration debate in Sweden. In 2024 the proportion of foreign-born people living in the country stood at around 20% of its population. In September the national police chief, Petra Lundh, warned that mass migration and failed integration policies were at the root of serious gang crime. Though there is much debate over the figures, data suggests she may be right. First and second-generation migrants are over-represented in violent-crime figures, and a recent police survey found that around 600 mid- and high-tier gang members were running criminal operations in Sweden from abroad.

Meanwhile businesses are spending ever more on safety. Sales of reinforced doors doubled in January, says Prodoor, a security-door firm. "Four in ten companies we talk to don't file police reports," says Mr Adielsson, the crime expert. "They don't believe that anyone is going to come." ■



Pay up or blow up

# CHARLEMAGNE

## *Who you gonna call?*

*Europe needs a single envoy for peace talks. Who should it be?*



**A**SIDE FROM his gravelly baritone and his attempts at rearranging the world like Tetris pieces, Henry Kissinger is perhaps best known for something he probably never said: that he could never figure out who to call to speak to Europe. A question that was first (not) posed in the rotary-phone era remains unanswered in the age of Zoom. The time for Europe to put forward a single interlocutor for the outside world has come. Soon, under as-yet-unclear circumstances, peace talks over the war in Ukraine may take place. Given what is at stake, Europe desperately—and justifiably—wants a seat at the table. But to be included it will have to put someone up who can stand for photo-ops with Vladimir Putin (representing the interests of his despotic Russian regime) and Donald Trump (representing those of Donald Trump), and perhaps Volodymyr Zelensky (Ukraine). Working out who can't sit in the European chair, in the eyes of some faction or other, is easy. Coming up with the name of someone who could is tricky.

With 40-odd countries that seldom agree on much, the usual answer is for Europe to send multiple people to represent its interests. That will not be an option this time. For better or for worse (mostly for worse), Mr Trump is the guiding force of the talks, the early throes of which have started—without any input or representation from Ukraine and Europe—in Saudi Arabia. If he chooses to include Europe at all, he is unlikely to give it more than one seat at the table. Ukraine has asked Europe to find a single name, but stopped short of saying who it might be.

The least contentious answer might be to turn to the top brass of the European Union. One of its “presidents” (there are many), that of the European Council, is meant to represent the EU at head-of-state level. But nominating António Costa, the newish incumbent, would isolate Britain, a major source of Ukrainian support whose views could hardly be represented by an EU grandee. A former Portuguese prime minister, Mr Costa is a backroom operator by nature. Taking on the envoy job would hinder his day-job chairing meetings of EU leaders, an emergency one of which is planned for March 6th. It does not help that Trumpians hold the EU institutions in contempt, thinking them a supranational deep-state blob ripe for DOGE. This also rules out Ursula von der Leyen,

another EU president (of the European Commission).

An obvious candidate for the Euro-mantle would be one of its national leaders. Once the job would have fallen to Angela Merkel, chancellor of Europe's richest country and broker of its thorniest compromises for over a decade. But it will take months for her probable successor, Friedrich Merz, to cobble together a coalition after elections on February 23rd, and he has lots on his plate.

Europe's next-biggest country is France. Emmanuel Macron has a strong claim to the Mr Europe job. He dealt with Mr Trump during his first term and, in a meeting with him at the White House on February 24th, showed there was a decent rapport. Like Russia and America, France is a nuclear-armed power with a permanent seat on the UN Security Council. Mr Macron's vision that Europe needs “strategic autonomy”, ie, from America, looks prescient given recent events. Political chaos at home paradoxically gives Mr Macron more time to focus on foreign affairs. His major flaw is that hawks in northern and central Europe do not trust him much, least of all on Russia, with which he wanted to open a “strategic dialogue” on security before 2022. Mr Macron has made efforts to engage those countries, and has at times sounded just as hawkish as them—for example by being among the first to suggest that European troops should be sent to Ukraine.

Those who oppose Mr Macron might plump for Donald Tusk, Poland's prime minister and former president of the European Council. His country grasps the Russian threat acutely; it spends the most (as a share of GDP) on defence of any NATO country, which plays well with Trumpians. But Poland has ruled out sending troops to Ukraine, and has a sometimes tetchy relationship with its leadership. Mr Tusk unwisely disparaged Mr Trump while he was out of office. He shares foreign-policy oversight with the Polish president, who will be replaced in June and might not share Mr Tusk's views. The Pole has the opposite problem to Mr Macron's: western Europeans do not want to give their most hawkish member carte blanche to act on their behalf.

What of other big-country leaders? Spain is far from Ukraine and its prime minister, Pedro Sánchez, is not among its most vocal supporters. Sir Keir Starmer thinks Britain can be a “bridge” with America, but Brexit has left it isolated in Europe. Giorgia Meloni is an ideological ally of the American president. But she has yet to resolve how to be both pro-Ukraine and pro-Trump. Sending a respected leader from a smaller country, like Petr Pavel, a retired general turned Czech president, would once have been a typical Euro-compromise. Mr Trump would no doubt start proceedings by belittling the consensus pick. (“Who is this guy anyway?”)

### Arise, Mr Europe

Mr Macron appears the sensible choice. He wants the job, and has convened groups of European leaders in Paris already. He made a point of consulting his fellow bigwigs widely ahead of his three-hour chat with Mr Trump this week. Those unsure of his geopolitical instincts could suggest underlings to balance them out. Kaja Kallas, the hawkish Estonian who heads the EU's foreign-policy arm, would make a fine representative facing the American secretary of state in preparatory talks, say. It is part of Europe's history and its charm that it cannot easily put forward one person to act for all. But that is the sort of luxury that comes from being primarily a soft power, and these are hard-power times. Europeans must understand that having a single envoy at the negotiating table who flusters some is better than squabbling far away from it. ■

## United States



### Medicaid

## Under the knife

LITTLETON, NEW HAMPSHIRE

To make their numbers work, House Republicans have to slash health spending

STEPHEN NOYES has heard a new worry from his patients and parishioners. Both a therapist and the local deacon, he is counselling an increasing number who fear they will lose their health care. Mr Noyes is a social worker at an Ammonoosuc Community Health Services clinic in rural New Hampshire where people trundle over three mountain passes for a session. A fifth of patients at Ammonoosuc receive treatment at least partly thanks to Medicaid, which provides health cover for the poor or disabled. It is not only patients who are concerned. “I don’t know what we’d do without Medicaid,” says Nicole Fischler, a nurse and manager at the clinic. “When you cut that, you cut a lifeline.” It is not a phantom pain: an obscure state law could lead New Hampshire to chuck a third of enrollees off Medicaid within six months of a federal budget passing.

On February 25th the House of Representatives narrowly passed a budget blueprint charging the committee which oversees Medicaid with finding savings worth at least \$880bn over ten years. Republicans are searching for savings to fund \$4.5trn of tax cuts and Donald Trump has declared Social Security and Medicare, benefits programs for the elderly, off-lim-

its. Elon Musk’s DOGE will barely scratch the surface, leaving Medicaid set to bear the brunt of cuts sought by deficit hawks. Yet Mr Trump has also promised to “love and cherish” Medicaid. In recent years the programme has grown and any reductions will hit conservative states and voters. Working out whether—and how—to cut Medicaid crosses one of the fault lines in the Republican Party, between fiscal hardliners and a working-class electorate.

Medicaid was originally intended to cover only poor parents and disabled people, but 2010 Affordable Care Act expanded its remit. Since then 40 states have chosen to extend the scheme to cover anyone earning less than around \$21,000. As a result, Medicaid now covers 72m people in America. It runs from cradle to grave, paying for two-fifths of births and three-fifths of nursing-home residents. It has markedly reduced the share of uninsured Americans but it costs a lot. Medicaid is funded by a mixture of state and federal dollars. The Treasury’s share of the bill is \$682bn a year, or 2.3% of GDP.

The House budget plan has no specifics on the cuts, just targets. Mike Johnson, the speaker, has pledged that cutting fraud and waste alone would save “a huge amount of money”. But hunting down ➤

#### → ALSO IN THIS SECTION

**32 Evaluating Medicaid**

**34 DOGE days**

**35 Believe it**

**35 Competitive mariachi**

**36 Edward Blum’s crusade**

**37 Lexington: Anchormen**

abuse will be a challenge. Patients have to provide copious paperwork to qualify, listing all their assets, right down to the mileage on their car and any burial plots they own, explains Genevieve Doyle-Fox, who helps patients at Ammonoosuc sign up for coverage. Faced with this bureaucracy, some patients give up.

Fraud is more likely to be found at health-care providers. But it can be hard for the federal government to identify, given that states administer Medicaid. Each year the federal government produces a report estimating the number of payments that were wrongly sent through Medicaid. The average for the past three years was just 5%, many of which were due to missing paperwork, says Robin Rudowitz of KFF, a health-research group, adding "That is not fraud. Those are potential errors." Even if those mistakes could be entirely stopped, the total amount of such payments was \$31bn in 2024, well shy of the sums Republicans are hunting for.

So a menu of deeper cuts is currently being debated and familiar health-care fights have returned. One likely change would require Medicaid recipients to work—or have a good excuse not to, with Mr Johnson rightly saying that "work is good for you, you find dignity in work". However, just 8% of working-age, able-bodied Medicaid recipients are unemployed without an excuse (see chart). Cutting that sliver off is unlikely to save much: \$100bn over ten years, according to House Repub-

licans' own estimates. There would still be an impact on policy, though. When Arkansas imposed work requirements for Medicaid under Mr Trump's first administration, more than 18,000 people lost coverage largely because they were unaware or confused about how to fill out the paperwork.

To find bigger cuts, House Republicans would have to get more wonky. The federal government matches states' Medicaid spending at different rates according to the type of patient. One sweetener to encourage states to expand the programme was to match every dollar spent on new recipients with \$9 from Washington. One of the most aggressive cuts would lower this to meet the match-rate for the original population of Medicaid. House Republicans reckon this would save \$561bn over ten years, and it is the preferred option of Brian Blase, who advised Mr Trump on health care during the transition. He says it would "protect Medicaid for those who it was meant to serve".

The impact would be large. A dozen states, including New Hampshire, have trigger laws that swiftly roll back Medicaid expansion if the federal match-rate is reduced (see map), leaving over 4m adults without coverage, according to KFF. Of those 12 states, eight voted for Mr Trump in the 2024 election. Many would have little time to respond. Arkansas' expansion would undo Medicaid expansion within four months of a federal funding drop. It's the "nuclear scenario", says Camille Richoux of Arkansas Advocates, which campaigns to protect Medicaid in the state. Other states could also repeal expansion when forced to stump up more cash. If every state followed suit, 30m people would lose health insurance.

Another option would establish a limit on annual Medicaid spending per person. But if that were implemented, governors would face some cross voters. In one way or another, each of these plans involves sending less money to states. Mr Blase explains that "states can maintain the exact same programmes, they just would need to spend more of their own money". Trigger laws could be repealed, he says; states "can make those trade-offs".

Those states might well be the most effective campaigners against any Medicaid cuts, says Tom Scully, who ran Medicaid under George W. Bush and faced his own struggles to reform it. Congressmen "talk about a lot—until the first Republican governor figures out and goes 'Holy cow! You can't do this,'" he says. They will be backed up by powerful health-care lobbies. Campaigners have a useful advantage. Gone are the days when enraged constituents filled town halls to complain about Obamacare. Instead, three-quarters of Americans have a favourable view of Medicaid, including a majority of Republicans. ■

## Studying Medicaid

### Oregone

CAMBRIDGE, MASSACHUSETTS

#### How effective is Medicaid?

**A**MONG THE many Americans who find Medicaid confusing is Robert F. Kennedy junior, whose department oversees it. At his confirmation hearing last month he estimated the programme insures 30m babies (the number is closer to 1.5m), that Medicaid premiums and deductibles are too high (Medicaid recipients typically do not pay either) and that recipients are unhappy (89% say they are satisfied).

Just over a fifth of Americans are now insured under Medicaid. Mr Kennedy contrasts its rising cost with Americans' ailing health. "Everybody here says Medicaid is sacrosanct," he said. But "nobody's admitted that Medicaid is not producing positive health outcomes." Is he right?

Studying the effect of Medicaid is hard. For ethical reasons researchers cannot usually use randomised control trials. And the health benefits that insurance schemes might offer accrue over the course of a lifetime. Critics of Medicaid often point to a rigorous, influential study from Oregon published in 2010. This experiment studied a 2008 lottery for access to the state's then-limited Medicaid expansion.

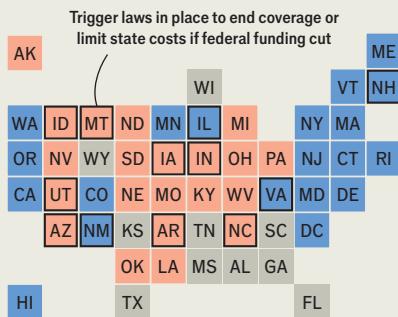
While depression and subjective health measures improved among the 6,000 Oregon lottery winners, objective measures like hypertension and cholesterol didn't budge. Donald Trump's former head of Medicaid wrote in 2017 that the Oregon study and others called "into question" the "effectiveness" of the programme. But the 6,000 sample size was too small to measure the effect on diseases like cancer and may have prohibited other statistically significant findings.

"Everybody took what they wanted from the experiment," says Heidi Allen, one of the study's lead investigators. Katherine Baicker, another lead researcher in the Oregon experiment, notes that "both the black and white pictures of the programme are not supported by the study." Medicaid is not a silver bullet. But it is better than being uninsured. Subsequent studies on Medicaid and mortality rates provide "really compelling evidence that if it is substantially cut we should expect to see some people die", says Ms Allen.

#### Growing pains

##### US states that adopted Medicaid expansion

Vote in 2024   ■ Trump   ■ Did not adopt  
                  ■ Harris    expansion



##### Adult Medicaid recipients\*, 2023, % of total

Employed	Unemployed due to
■ Full-time	■ Caregiving
■ Part-time	■ Illness/disability ■ In school ■ Other†

44      20      12      10      7      8

\*Aged 19–64 not receiving social-security income or disability insurance and not covered by Medicare

†Includes retirees and people unable to find work

Source: KFF

2nd annual

# Energy Transition Summit

Catalysing climate innovation to green the grid

March 10th 2025 · London

Part of the 10th annual Sustainability Week

More than: 500 attendees | 70 speakers | 30 sessions | 10 topics

Net zero requires new energy. Examine how renewables, electrification and advanced energy storage can transform today's energy system and drive profitability.



**Charles Oppenheimer**  
Founder  
Oppenheimer Project



**Max Beverton-Palmer**  
Head of public policy, UK  
NVIDIA



**Nancy Mahon**  
Chief sustainability  
and ESG officer  
Estée Lauder Companies



**Greg Jackson**  
Chief executive  
Octopus Energy Group



**Gry Möger Poulsen**  
Vice-president, head of ESG  
strategy and intelligence  
Novo Nordisk



**Dipjay Sanchania**  
Director, climate  
and energy  
Adidas



**The Economist** readers save 20% with code ECON20  
[energytransitionsummit.economist.com](http://energytransitionsummit.economist.com)

Diamond sponsors



Platinum sponsors



Gold sponsors



Associate sponsor





Governing

## DOGE days

CHICAGO

**Elon Musk's outfit is running into opposition from Donald Trump's appointees**

ON FEBRUARY 22ND Elon Musk posted 158 times on X, his social-media platform. But that was not his only communication. That afternoon, a Saturday, all civilian federal employees—some 2.3m people—were sent an email from the Office of Personnel Management (OPM) telling them to reply by midnight on February 24th with “approx” five bullet points listing “what you accomplished last week”, leaving out any classified information. Mr Musk reckons some government employees are doing so little work that “they are not checking their email at all”. He suggested that some government workers are not even real people. In his X posts, he warned that any employee who did not reply would be considered to have resigned.

As the deadline approached, resistance surfaced in major departments, including from Trump loyalists like Kash Patel, the FBI director. At his bureau, in the Department of Defence and at the State Department, bosses told workers not to respond. At the Treasury, an email from John York, an adviser to the secretary, instructed all workers to reply. On deadline day, OPM issued a new memo capitulating to frustrated cabinet secretaries and agency heads. They could allow employees to ignore Musk’s email “at their discretion”. John Thune, the Republican Senate majority leader, suggested the cabinet could take over DOGE’s work. “They’re now in position to make those decisions,” he said.

The power struggle is the latest way in which Mr Musk’s war on waste and fraud in government risks coming off the rails. Two days before sending his email, he appeared at the Conservative Political Action Conference with Javier Milei, the president of Argentina, who gave him a modified chainsaw. The Department of Government Efficiency, or “DOGE”, is named after a different meme, that of a Shiba Inu dog overlaid with cutesy phrases. The tone is jokey, yet DOGE’s disruptions are real. And, like the guardless chainsaw Mr Musk wielded, it risks kicking back on its operator.

### Meme boys

So far, Mr Musk’s saw has not cut much into the federal government. A “deferred resignation” scheme offered to employees has been taken up by 75,000 workers, or about 3% of the total. More consequential has been the mass firing of an unclear number of the 200,000 workers on probationary contracts. The results have already been messy. At the National Nuclear Security Administration, which oversees America’s atomic-weapons stockpile, the government had to scramble to unfire some 300 workers it had apparently dispatched mistakenly the day before.

Trimming headcount is unlikely to save much money. Civilian payroll costs account for just 4% of the \$7trn the federal government spends each year, the bulk of which goes on retirement benefits, health

care and the like. Contracts add more. But DOGE appears to be doing little to cut these dramatically, either. Earlier in the week, DOGE posted a “wall of receipts” on its website that it claimed revealed \$55bn in cancelled contracts. In fact, what was posted came to a tiny fraction of that. Later the website was updated to say the list was just “a subset” of contracts cancelled. It now claimed about \$65bn in savings, without documenting that figure.

Dozens of the priciest contracts listed were in fact ongoing purchase agreements, and so the cost figures that were claimed were hypothetical maximums. That the government has an option to buy billions of something doesn’t mean it already has. Second, many of the contracts have been cancelled “for convenience”. This is a clause that gives the government the freedom to cancel halfway through, says Jessica Tillipman, an expert in procurement law at George Washington University. But it doesn’t come cheap. The government still has “to pay for the work that’s already been performed, plus a whole bunch of other costs”, she says.

What is being cut also appears to include things that the government obviously needs. For example, lawyers at the Securities and Exchange Commission are agog that their subscription to Westlaw, a legal research database, has been cancelled. Westlaw is a service almost all commercial lawyers depend on. Much of what else is on the chopping board appears to be research, rather than DEI initiatives or fraud.

If it is not meaningfully shrinking the deficit, what is DOGE actually up to? Part of it seems to be putting into effect the aspiration of Russell Vought, the director of the Office of Management and Budget, who said last year that he wanted bureaucrats to be “traumatically affected”. Civil servants opposed to President Donald Trump, he and Mr Musk may hope, will eventually leave, allowing more pliable loyalists to be put in place.

Yet the cuts may already be seeding a backlash. Republican congressmen as far afield as Oshkosh, Wisconsin, and Roswell, Georgia, have been booed and shouted down by constituents who point out that nobody voted for Mr Musk. The billionaire retains Mr Trump’s backing, however; on February 26th the president invited him to address his first cabinet meeting. “He’s getting a lot of praise,” Mr Trump noted, “but he’s also getting hit.” Mr Musk wore a black T-shirt and black MAGA hat to the august cabinet room. He said his work was needed to prevent America from going bankrupt. When a reporter asked about tensions between him and the cabinet, Mr Trump jumped in to support DOGE and asked if anyone in the cabinet was “unhappy with Elon? If you are, we’ll throw them out of here”. Nobody spoke up. ■

## Believe it

## Gen Z has faith

CAMBRIDGE, MASSACHUSETTS

## A long decline in the number of Christians has levelled off

THE MEETING houses of the First Church in Cambridge, founded by Puritans, have been around for 400 years. George Washington worshipped in one; the Massachusetts Constitution was debated in another. Like other venerable churches in America its pews have thinned out as religiosity has declined.

On a cold New England morning last Sunday young congregants at First Church told your correspondent that few of their friends are religious. But recent data shows they are part of a pause in trend. The share of Americans who identify as religious has levelled off, and this faith resilience has a surprising source: Gen Z.

In 1972 some 90% of Americans said they were Christian, compared to a mere 5% saying they had no religious affiliation (researchers call them "the Nones"). By 2021 the Nones had swelled to 29%, a rise that was mostly consistent across lines of race, sex, income and education. On average, each successive birth cohort has been 10% less Christian than its predecessors.

But new data from the Pew Research Centre shows that Gen Z is about as religious as older peers. If Americans born between 2000 and 2006—a cohort at the heart of Gen Z—followed their predecessors, about 41% would identify as Christian. Instead Pew's data shows that 46% do.

Nearly three-quarters of Gen Z reports feeling lonely. Having just emerged from a service at First Church in Cambridge, 20-year-old Julia LaGrand says that she takes comfort in the fact that while friends may come and go "people in church don't get to reject you." For some of this isolated generation, church offers solace. ■

## Nones on the run

United States, % identifying as not religious

By generation

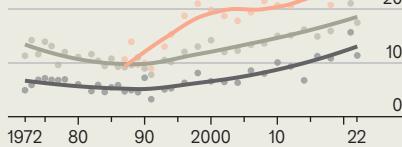
Gen Z (1997-2006)

Millennial (1981-96)

Gen X (1965-80)

Boomer (1946-64)

Silent (1929-45)



Sources: General Social Survey; The Economist

## Bands

## Some energy

SEGUIN, TEXAS

## The spread of mariachi tells a very American story

AS MAGA HEARS it, the sound of the border is the trill of gunfire and the cry of trafficking victims. For others, it is a lot more heartwarming: the toot of the trumpet, the strum of the *guitarrón*, the yelp of the *grito*, the stomp of patent-leather boots. It is the sound of a bunch of Texan high-school students playing mariachi, for love and for course credit.

Instruction in mariachi—the most Mexican of genres—is popular and getting more so in border states. Over 120 public schools in Texas teach it. The best ensembles come from the Rio Grande valley. Interest is growing in other places with big latino populations, too. In Nevada the number of students taking mariachi class in the Clark County school district, which encompasses Las Vegas, is 8,200, up 40-fold in 20 years.

Mariachi's popularity is a story of migration and diaspora: a third of Texans have Mexican heritage, and one in four of them were born outside America. Jalen from Lubbock practises her *vihuela* (a stringed instrument) for five hours a day and says that through it she expresses her culture, "which is Hispanic, Mexican and all that".

Not all players see it this way—some just love the music. Nithila, who was born in India, and Chloe, who is black and from Georgia, got into mariachi at their school near Houston because they found orchestra "monotonous". Judges at competitions, such as a recent one in Seguin, note the diversity that the girls bring to their troupe. Daniel, a trumpeter, gets called *güero*, or white boy. He is from the border city of El Paso; playing mariachi "brings me home", he says.

The uptake reflects a very American tendency: to take extracurriculars to the next level and get fiercely competitive about them, even when few students plan to go professional. This happened long ago with what school music directors call the "big three" (band, orchestra, choir), not to mention sports such as American football.

In mariachi's case, it is also the result of a decades-long and distinctly American effort to formalise its teaching in academic settings, says Lauryn Salazar of Tarleton State University. Now there is a pipeline of licensed mariachi teachers who graduate university, then get

jobs in schools. In Mexico, by contrast, instruction tends to be vocational and at specialised institutes. "Our mariachis are learned; they have degrees," says Dahlia Guerra, who started a university programme in Texas in 1989. Americans say Mexicans see the scene north of the border and wish they could match its resources and calibre in their schools.

That a folkloric tradition has become so popular among American teenagers is sweet and amusing. The repertoire calls for a wide vibrato and is full of ballads about homeland, beautiful women and life on the ranch. Rural concerns are common themes, such as that feeling when your cow runs away or your vegetable cart breaks down. Pablo, a high-school senior with frosted tips, appreciates that mariachi channels all emotions. "You could cry, you could laugh," he says. "You could dedicate a song to someone. Like an ex." Whereas musicians in a symphony orchestra focus on their sheet music or their conductor, says Dr Guerra, mariachis "look into the eyes of their audience".

Still, the genre is undeniably old-fashioned. Asked about her favourite mariachi style, Azucena, who plays the *guitarra de golpe* in her school's varsity ensemble, mishears the question and answers: reggaeton.



See you at practice

## Race and diversity

# Man of the moment

For three decades Edward Blum has battled race-conscious policies. He is winning

**I**F NOTHING IS so powerful as an idea whose time has come, it is also true that ideas merchants can wait aeons for that moment. Even those eventually hailed as prophets risk being dismissed as cranks. Edward Blum has courted such disdain in the decades he has dedicated to opposing race-conscious policies in America. “I’m a one-trick pony,” he says of his mission.

Mr Blum’s story is a parable of America’s evolving debate on diversity. Over the years he won court battles over universities and voting rules. Heather Mac Donald, a conservative campaigner, recently said he “has done more to eradicate racial preferences from our body politic than any other human being alive today”. He has also faced setbacks and criticism. Now the federal government has joined his cause with a vengeance. Mr Blum’s time has come.

He is not a lawyer, though on civil-rights issues “he might as well be”, says Adam Mortara, who has pleaded some of his cases. Mr Blum grew up in a liberal Jewish household in Texas but moved right in the 1980s (he was “the first Republican my mother ever met”). Since no Republican was running in his district, he stood for Congress in Houston in 1992. He lost—but, after hiring a real-estate lawyer from Louisiana, challenged what he saw as the racial gerrymandering of Texan districts. The Supreme Court struck them down.

So began a legal crusade, by turns quixotic and triumphant, which, says Wendy Weiser of the Brennan Centre for Justice, a think-tank, “has had a significant impact on the law and on our culture”. Mr Blum likens his role to that of Yente, the matchmaker in “Fiddler on the Roof”. Perceiving an injustice, he finds suitable plaintiffs, willing lawyers and donors to pay them.

His next big win came in 2013. He orchestrated a challenge to the parts of the Voting Rights Act of 1965 that obliged states with records of racial discrimination to clear election-rule changes with the government or a federal court. Since America had “changed dramatically”, ruled the Supreme Court, those bits of the act were outdated. A rush of new regulations followed (on voter-ID and the like); the gap between black and white turnout has since widened, reports Ms Weiser, especially in places affected by the judgment.

But Mr Blum’s most spectacular coup came in 2023. For 15 years he contested the use of race in college admissions, first pur-

suing his alma mater, the University of Texas, then, through a group called Students for Fair Admissions, going after Harvard and the University of North Carolina for allegedly discriminating against Asian-Americans. Ruling on those cases, the Supreme Court nixed affirmative action by universities. It is hard to disentangle the effects of these decisions from those of other measures, but overall, predicts Bryan Cook of the Urban Institute, a think-tank, campuses will become less diverse.

This campaign has had personal costs. In the 1990s Mr Blum tried (and failed) to get the city of Houston to ditch affirmative action; his employers, he recalls, forced him to choose between his investment job and his activism. In the past few years he has received a dozen death threats, he says, along with umpteen allegations of racism, abuse often tinged with antisemitism.

He isn’t a racist, maintains Mr Mortara, noting that “he’s probably been hugged by 10,000 Chinese moms.” For all his steely patience, Mr Blum is nobody’s idea of a fanatic. Even courtroom adversaries acknowledge his winsome civility. One serial opponent, Jon Greenbaum, calls him “soft-spoken” and “even-keeled”. Mr Mortara says he “has not an ounce of malice in his heart”, but rather “passionately believes in the ethos of colour-blindness”.

Motives for dedication like his can be “a bit of a mystery”, reflects Mr Blum, but he

points to family chats about the civil-rights struggle of the 1960s—a struggle he believes his efforts are furthering. His work is a reminder that shared premises—in this case, the principle of equal opportunity—can be interpreted in wildly disparate ways. “Every day, I feel like I’m contributing,” he says, “to making the United States a more fair and just country.”

Mr Blum remembers seeing Willie Mays, a baseball great, stumbling in the outfield as he aged. Now 73, he will retire one day, but not yet. In America’s culture wars, he has claimed, the college rulings of 2023 were “like the Allied landing at Normandy beach”. He is braced for skirmishes over the use of mapping tools and census data as proxies for race in admissions.

Today’s fiercest clashes, however, are over alleged discrimination in the world of work (in hiring, internships, tendering and so on), which has spiked, avers Mr Blum, amid the racial-justice fervour of recent years. The American Alliance for Equal Rights, another of his pet groups, has already sued airlines, law firms, the Smithsonian museum and McDonald’s. It also sued a venture-capital outfit in Atlanta over a grant contest for black female entrepreneurs. Was that fight really worth picking? Imagine, retorts Mr Blum, if the contest had been open only to white men.

All this bespeaks an essentialist concept of identity—“Your skin colour tells me nothing about who you are as an individual”—and a sanguine, even blithe perspective on American laws and society. Yes, some people are bigoted, Mr Blum acknowledges. But in his rose-tinted judgment, civil-rights reforms mean that “there is no structural racism left in America.”

There is, in fact, plenty of evidence that discrimination still scars American lives. Mr Blum is on firmer ground in arguing that there hasn’t been a consensus in favour of “the use of race and ethnicity in public policy”, and that affirmative action has been an activist cause more than a popular one. In any event, since Donald Trump’s election—and the ensuing fusillade of orders on diversity, equity and inclusion—Mr Blum’s view, in which affirmative action is the real menace, is rampant. Race-consciousness in all forms faces a legal onslaught, not least from the government. “It’s a different kind of atmosphere,” Mr Blum observes. People are less nervous about backing him openly.

He used to drive a minivan with the number plate “1FRSTNE”, an abbreviation of the Supreme Court’s address in Washington, DC (“I am such a goofball”). His new plate reads “20TH ME”, a reference to the 20th Maine infantry regiment, which launched a heroic counterattack at Gettysburg. “I take great inspiration from impossible fights,” Mr Blum says. His seem less impossible by the day. ■



Blum's day

## LEXINGTON

### Anchormen

*Donald Trump and Elon Musk are revolutionising presidential communication*



WHEN ELON MUSK recently declared, “I am become meme,” he was selling himself short. He and his doings have indeed become endlessly shared bits of cultural influence, but, through his ownership of X, he also controls the principal means of sending those signals. On top of that, he is the second-most-powerful official, at least, of the American government. He is the message, the medium and The Man, all in one.

For that reason, something else Mr Musk said then, at the Conservative Political Action Conference on February 20th, was less accurate and also behind the times and thus a little off-brand. Describing his findings at the Department of Government Efficiency, or DOGE, he said “a massive amount of your tax dollars is going to legacy media companies,” a reference to government-paid subscriptions to publications (including this one). That explained, he said, “why the legacy media all says the same thing at the same time”. It has become, he said, a mouthpiece “for the state”.

Huh. Surely there has never been, in America, a louder and more enthusiastic cheerleader for the state than the X feed of state cadre (and contractor) Mr Musk—not even in the days of “mainstream” media before the downgrade to “legacy”. Back in the 1970s, when the network newscasts reached perhaps one in three viewers, they did not celebrate and promote any president’s priorities as Mr Musk does Donald Trump’s, to 219m followers on X in dozens of tweets a day. If there is a comparable state mouthpiece, it is that of the president himself, in the form not just of his X feed (102m followers), but of the media company of which he is the largest shareholder, Trump Media & Technology Group. It controls Truth Social, the social-media platform where this president makes some of his most important pronouncements.

Calvin Coolidge started the practice of using radio to speak to Americans in the 1920s, John F. Kennedy pioneered the use of live television for press conferences in the 1960s and Barack Obama began communicating directly with Americans via social media in the aughts. But Mr Trump is narrating his presidency for the public as they never could. He is fusing America’s media and its state like no president before him, and as a result his administration seems to be talking about everything everywhere all at once.

Mr Trump has appointed people to top posts who may lack management or other relevant experience but can fluently communicate via new and old forms of media. On February 23rd he picked at least the 20th serving or former Fox News personality for a senior position when he named Dan Bongino, a conservative podcaster and former Secret Service officer, to be the deputy director of the FBI. Vice-president J.D. Vance, a former blogger, is so at home contending on X that he recently jumped into the fray to challenge a tweet from the defence editor of *The Economist* about the relative strength of Russian and Ukrainian forces.

Mr Trump himself soaks Americans with what seems a ceaseless stream of announcements, commentary, insults, jokes and complaints. When he is not declaiming on Truth Social he is summoning reporters to televise him signing executive orders or meeting tycoons, potentates or politicians. His delight in fielding questions lends weight to his aides’ claim that he is “the most transparent president in history”. But in truth ubiquity and even accessibility are not the same as transparency: Mr Trump’s posting on Truth Social is an act of “transparency” that lines his pockets in ways that may never be known. And to know what Mr Trump says or even thinks in one moment is of ephemeral value, because it is not to know what he will say or think in the next. Rather than proving a political liability, that changeability keeps Mr Trump’s always-on show perpetually newsworthy, his next emission even more important to policymakers than his previous one, and all of it interesting or entertaining to millions of others.

As Joe Biden’s success in masking the effects of his ageing demonstrated, the White House press corps has often been better at supplying the appearance than the reality of presidential accountability to the truth. Even the appearance is now fading. Like Mr Musk, under whom X has at times suspended journalists’ accounts for mysterious reasons while reportedly boosting his own posts, Mr Trump seems to love free speech as long as it sounds good to him. He is trying to dictate the very words journalists use, blocking access for reporters from the Associated Press, among the fairest of news organisations, because it won’t use only his chosen name, “Gulf of America”, for the Gulf of Mexico.

#### Meme, myself and I

Since no restoration of a mainstream news media is in the offing, one of the challenges facing Democrats is how to “become meme” themselves. Often crude or cruel, the wit of Messrs Trump and Musk is lost on their opponents but central to their appeal. These days Democrats lack much sense of humour, though Kamala Harris’s fleeting “brat summer”, remembered now with some embarrassment within the party, pointed one way to a warmer and more humane use of social media.

The challenge to civic society is deeper. Visions that the internet would promote understanding and truth by democratising the news media went dark years ago. Users’ experience, confirmed by social-science studies, has shown that, in a bewildering media landscape, social media promotes lies and antipathy more effectively than truth and empathy. The result is “an information environment conducive to authoritarian movements and cults of personality”, writes Nicholas Carr in “Superbloom”, a lucid new book about the effects of communication technology. “A strong populist leader becomes a totem of group identity, a human meme.” New media is more vulnerable to state control and manipulation than legacy media ever was. ■

## The Americas



### Justice in Ecuador

## Meet the iron lady

QUITO

Diana Salazar has been fighting to halt Ecuador's downward slide

**I**T IS NOT unusual for Diana Salazar, Ecuador's attorney-general, to be followed by unfriendly compatriots. Her security retinue—a squad of soldiers armed to the teeth and encased in Kevlar—recently spotted a motorbike tailing her car. Its driver was the sister of a drug lord whom Ms Salazar is investigating. She discusses the incident as you might speak of missing the bus. Such irritations are now routine.

Drug gangs have overwhelmed Ecuador over the past five years, turning it from a peaceful oasis into mainland Latin America's most violent country. Ms Salazar is a target because she is investigating links between Ecuador's politicians, its judges and the transnational crime groups that have caused that change. On April 13th Ecuadorians will choose a new president in a run-off vote between the country's current leader, Daniel Noboa, and Luisa González, a leftist lawyer whose mentor is Rafael

Correa, a powerful former president. They will also, in effect, be choosing whether Ms Salazar's investigations continue. Her six-year term ends on April 8th. Mr Correa and his allies hate her, and want to shut her up.

She lays out the scenario. In 2022 a drug financier, Leandro Norero, was killed in prison. Prosecutors seized his mobile phones and found much more than they bargained for. Thousands of encrypted messages showed that he had paid the police to tamper with evidence, and judges to release drug-traffickers from jail. The messages also suggested that his confidants had paid a judge \$250,000 to free Jorge Glas, Mr Correa's former vice-president,

→ ALSO IN THIS SECTION

**39 Mexico's border troops**

**40 Colombia's last matadors**

who had been jailed for corruption. The messages said the confidants hoped the "little favour" would be repaid if Mr Glas became president. Mr Norero's cellmate has said that Mr Norero called Mr Correa from prison, and that they discussed Mr Glas's release. Mr Correa denies this.

Mr Norero's phone offered the "first glimpse of what was happening in society", says Ms Salazar. Eyefuls would follow. Since December 2023 she and her team have pressed charges against 76 people, including former legislators, judges, policemen and officials from high up in the prison system; 44 have been sentenced to jail. Two dozen were given reduced sentences after admitting their guilt and ratting on their fellows. Trials are continuing.

Mr Correa has not been helpful. He has published posts on X warning of raids hours before Ms Salazar's team carried them out. Several *correistas* were implicated in the investigations. Some fled the country. One former lawmaker, Ronny Aleaga, is thought to be living in Venezuela. Mr Glas was hiding in the Mexican embassy in Quito until police raided it last April and arrested him (the violation of the embassy was widely condemned).

Last year Mr Correa told *The Economist* Ms Salazar was "a puppet" of unnamed businessmen and said her investigations ➤

were politically motivated. She was the attorney-general in 2020 when Mr Correa was sentenced to eight years in prison for corruption. He says he is being persecuted; he now lives in Belgium, which granted him political asylum in 2022. Interpol has refused to issue a red notice for his arrest.

Mr Correa said he had never met Ms Salazar in person, called her "corrupt" and said right-wing politicians had "put her there" to "protect each other and go after us". He noted that the murder rate was among the lowest in the region when he was in office and that his successors cut prison budgets and weakened the justice ministry. He listed reasonable initiatives to fight crime, including increasing the number of scanners in ports, co-operating with international actors and strengthening intelligence capabilities.

His portrayal of his time in office is incomplete. Mr Correa closed a military base run by the United States on Ecuador's coast which used to monitor drug shipments. Former leaders of the FARC, a Colombian guerrilla group that ran cocaine through Ecuador until it disbanded in 2017, have said they gave money to Mr Correa's first presidential campaign. Mr Correa did not respond to a request for comment before publication. Instead, on February 26th, he said on X that an article would appear in *The Economist* the following day.

*Correistas* in Congress have twice tried to impeach Ms Salazar. When a vote was postponed because she revealed that she was in the middle of a high-risk pregnancy, they suggested she was lying; Ms González called the pregnancy "a show" because Ms Salazar kept working throughout and "wore high heels". (Ms Salazar recently gave birth to a daughter; both impeachment motions failed.) The *correistas* call her "the 10/20 prosecutor", a reference to her marks in one part of the national exam for the profession. They omit that she got the highest overall marks in the country. She wonders if such attacks have anything to do with her being a black woman, rare in Ecuador's halls of power.

She rebuts charges of bias, pointing out that she has also gone after senior officials from the administration of Guillermo Lasso, a right-wing former president, as well as his brother-in-law, for alleged corruption and links to gangs. Another investigation is looking into whether Lenin Moreno, Mr Correa's successor, accepted kickbacks. She has a record of taking on the powerful of all stripes. In 2016 she helped send the football federation's head to jail as part of an investigation into corruption at FIFA.

But accusations of favouritism still swirl. Last year two left-wing media outlets, *Intercept Brazil* and *Drop Site News*, published screenshots which purportedly show text-message conversations between Ms Salazar and Mr Aleaga. The messages

appear to show her admitting to delaying investigations in order to favour right-wing candidates in the 2023 presidential election. Ms Salazar says the messages are "false" and part of a "smear campaign".

Corruption "does not have a white, yellow, green or red flag", she says, referring to the colours of Ecuador's political parties. If officials who have been involved in corruption are linked to a political group, "that is not the fault of the prosecutor, but of the officials committing the crimes," she says. "We have no choice but to carry out the investigations. And whoever has to go down, should go down."

Plain talk like this has won Ms Salazar respect in Ecuador. "She is a national treasure, almost more important than whoever is in power," says a businessman in Quito. But she bats away the idea of running for political office: "The judiciary should not be in politics. And politicians should keep their hands out of judicial matters."

Her team is still sifting through evidence. She says there is time to stop narco's irreversibly embedding themselves in Ecuador. "We are not like Mexico and we are not going to get there," she adds, warning that cartels in that country operate like "a para-state". Her investigations, and the purge they have led to are about leaving a message that "impunity cannot last forever." Her successor will have the power to uphold that principle, or bury it. ■

### Border politics, again

## Opioids in a haystack

NOGALES AND NOGALES

**Mexico has sent 10,000 troops to the border, but the drugs keep flowing**

ON THE MEXICAN side of the border that runs between Nogales, Sonora and Nogales, Arizona, a dozen soldiers stand guard. They flag down some of the north-bound cars for checks, waving others through. Nogales is the busiest crossing-point between Sonora and Arizona. Some 10.6m crossings were made through it into the United States in 2024.

It is also the primary route by which fentanyl is smuggled in. Of the ten tonnes of the synthetic opioid seized by US Customs and Border Protection (CPB) in 2024, some 60% was found at Nogales and other smaller Arizona-Sonora crossings. Luis Arturo Corrales Ley, the public-safety commissioner in Nogales, Sonora, calls his state "a springboard for drugs".

Mexico's president, Claudia Sheinbaum, hopes to break that springboard by seizing much more fentanyl on her side of the border, thereby reducing the amount

### Past the peak

United States, synthetic opioids deaths\* and south-west border fentanyl seizures



\*Excluding methadone; 12-month moving total  
Sources: CDC; US Customs and Border Protection

that the CBP finds and appeasing America's president, Donald Trump. On February 4th she promised to send 10,000 additional members of Mexico's National Guard to the border to help with this, a gesture which led Mr Trump to postpone his threat to impose tariffs on Mexican imports until early March.

The other side of the border has been beefed up too. The US Department of Defence has ordered 1,500 additional active-duty troops there to tackle the national emergency declared by Mr Trump. Airborne surveillance has been ramped up to monitor Mexican gangs.

But it is not clear that all this military muscle will have much impact on the flow of fentanyl. A US Drug Enforcement Administration (DEA) officer, who wanted his name not to be used, says he welcomes any support at the border, but that more manpower is "not a panacea". "The cartels are ingenious," he says. "They move drugs through cars, trucks, planes, people, tunnels, whatever."

That ingenuity is on display in social-media posts made by Michael Humphries, the CBP official who runs the Nogales crossing-point in Arizona. They offer some sense of what the border authorities are up against. Mr Humphries documents the discovery of drugs concealed in petrol tanks and spare tyres, hidden inside hollowed-out stacks of tortillas and slotted within the axles of lorries.

Added to fentanyl's versatility in transit is the ease with which it is produced. "It can be done in any kitchen," says Guillermo Valdés Castellanos, the former director of Mexico's national intelligence agency. More than 90% of the fentanyl seized in the United States is found at official entry points like Nogales. And it is primarily carried into the country by citizens of the United States, not migrants. These factors, taken together, mean that focusing on borders is necessary but insufficient to stop the drug's flow.

That is not to say that curbing the flow ►

► of fentanyl is impossible. After increasing for years, the amount of the drug seized at the southern border of the United States fell at last in 2024, by 21% from 12 tonnes in 2023 (see chart on previous page). The number of deaths attributed to synthetic opioid overdoses in the United States dropped in 2024 too, for the first time in over a decade, down by 30% from 2023. Carlos Matienzo of DataInt, a security consultancy, says these declines are not explained by any military deployment: rather they are the result of changes in health policies, increasing government efforts to curb production, and the grim reality that many fentanyl addicts have already died.

Ms Sheinbaum's military deployments

are more about "signalling to Americans that we're willing to help", says Mr Matienzo. Mr Corrales, the public-safety commissioner, agrees. He says that Mexico has not yet done anything to change its strategy for combating fentanyl. To do more than signalling, the United States and Mexico would need to work together to undermine the drug gangs, while enacting policies to further reduce the demand for fentanyl in the United States.

David Hathaway, the sheriff of Santa Cruz County, of which Nogales is the seat, says he thinks an increased military presence is both unnecessary and disruptive. Instead, "people need a change of heart", he says. "We cannot legislate morality." ■

trends. Julián Coy, president of Colombia's main animal-rights group, was brought up watching Mr Rincón on television. As a child he thought bullfighting barbaric, but started to protest against it only after seeing anti-bullfighting campaigns bear fruit in Spain; separatist Catalonia banned it in 2011. Mr Coy says Colombia's abolitionists are at a disadvantage, as the taurine lobby is part of the establishment. In 2019 Spain's King Felipe awarded Mr Negret the Royal Order of Isabella the Catholic for defending Spanish tradition.

Just before midnight on January 9th, a nervous Mr Negret was ringside in Manizales. He crossed himself as his son, a trainee lawyer, walked out to face a young bull in front of a sold-out audience. Danger is never absent in the bullring. Mr Santana is in intensive care after a vicious goring. Youngsters hoping to forge a career often take crazy risks. Life-threatening injuries are referred to as "baptisms of blood". (Mr Bolívar was 13 when he was first gored in public.) It is increasingly the wealthy who undergo this rite of passage. As local bullfighting schools close, talent is drawn from families that can afford trips to Spain.

Poorer Colombians are more likely to join itinerant troupes featuring dwarf bullfighters (recently banned in Spain), or become hired hands in amateur bullfighting festivals known as *corralejas*, where the audience is encouraged to take part. YouTube is awash with clips of stands collapsing and bulls goring their tormentors. It is unclear whether *corralejas*, where more humans than bulls tend to die, will fall under the new laws. In any case, well-heeled Colombians are loth to attend such events. Aficionados still hope the ban will be lifted if Mr Petro loses next year's election. But since most Colombians no longer care for the *corrida*, Spain's "national fiesta" may simply be on the wrong side of history. ■

## Bullfighting

# Colombia's last matadors

CALI

An ancient tradition is probably on the way out

**B**ULLFIGHTING, like boxing, once offered young men a path out of poverty. Take César Rincón, Colombia's champion matador. From humble beginnings in Bogotá, the capital, he became a millionaire thanks to his bravery and skill with the cape. In 1991, at the peak of his career, he was carried out of the world's premier bullring in Madrid on shoulders (the matador's highest honour) a record four times.

But in Colombia the *corrida*'s days seem numbered. Most people there are either indifferent or actively opposed to it. When a statue of Mr Rincón was toppled in the town of Duitama last year, the matador-turned-breeder was perplexed: "Colombia's current president is a former guerrilla fighter—and I'm the murderer?"

That president, Gustavo Petro, Colombia's first left-wing leader, banned bullfighting in Bogotá when he was mayor between 2012 and 2015. A lawyer, Felipe Negret, got the ban overturned by arguing that it was a cultural activity that fell under national rather than local jurisdiction. But after Mr Petro's victory in the general election in 2022, Mr Negret's argument was turned against him: Colombia's Congress passed a blanket prohibition on bullfighting that comes into effect in 2027.

With the exception of Manizales, a rich provincial town with strong ties to Spain, bullfighting in Colombia is already on its knees. Few of the million-and-a-half revellers who attended the Cali Fair in December mourn its disappearance. A local matador, Luis Bolívar, used his contacts to bring in a number of famous matadors, the type who used to draw a crowd. But the main

*corrida*, starting nearly two hours late in torrential rain, was a flop. The bulls, provided by Mr Rincón, simply refused to charge. Sections of the crowd chanted "*Hay que matar*" ("You've got to kill"), jeering Mr Bolívar for pardoning a bull two days earlier. (This honour, traditionally reserved for exceptionally brave bulls, has become more common in Colombia.) Mr Bolívar's assistant bullfighter, Ricardo Santana, a local hero, was applauded for his brilliance with the bull. But as his taurine contracts dwindle, he now also has to work with computers in the United States.

The rich Colombians who attend *corridas* tend to be quick to follow Spanish



A lonely olé matador

## Middle East & Africa



Gaza's wobbly ceasefire

### Running out of road

RIYADH

**Israel and Hamas must stall for time to preserve their truce**

DIPLOMACY IS OFTEN the art of kicking the can down the road. That was always the case with the truce between Israel and Hamas, which took effect on January 19th. The first phase of the deal paused the war for six weeks and promised the release of 33 of the 98 Israeli hostages being held in Gaza. A permanent ceasefire would not come until phase two, the details of which still had to be negotiated.

The agreement was meant to create its own momentum. The release of some hostages would galvanise Israeli support for a deal to free the rest. After six weeks of calm in Gaza, Israel and Hamas would be under enormous pressure not to resume fighting. Negotiations over phase two would be hard—but they would happen.

That was the idea, at least. Things have not gone quite to plan. The deal has largely held up, despite some delays and violations on both sides. But the first phase ends on March 1st. Talks over the second

should have begun by February 3rd and concluded by February 22nd. They have yet to start. Binyamin Netanyahu, the Israeli prime minister, would be happy if they never do. Whether the wobbly ceasefire survives will now depend largely on whether Donald Trump wants it to.

As *The Economist* went to press, it was possible to imagine three broad scenarios for the coming days. The first is that negotiators manage to finish the phase-two talks in record time. That seems implausible. Steve Witkoff, Mr Trump's Middle East envoy, had been due in the region on

February 26th. He postponed his visit (officially because he was busy with Russia-Ukraine diplomacy) and is unlikely to arrive before March 2nd. The first phase might thus end before Israel and Hamas even start negotiations on the second, let alone finish them.

A second scenario is that the ceasefire collapses altogether: Israel or Hamas might accuse the other of violating the deal and resume fighting. That seems unlikely, too. Hamas would prefer to keep Gaza calm during the Ramadan period, which will run through most of March. Mr Netanyahu and his right-wing allies might wish to restart the war, but they would have little support in Israel or in Washington. Most Israelis back the ceasefire. Mr Trump says he does as well.

That leaves a third option: keep kicking the can. The deal allows Israel and Hamas to extend phase one indefinitely, so long as they are negotiating over phase two. Mr Netanyahu supports an extension. So does America. Hamas officials outside Gaza say they may be willing to release a few more tranches of hostages to prolong the truce. That would buy at least several weeks for negotiations over what comes next.

But that offers only a temporary reprieve. Mr Netanyahu is desperate to keep the deal in limbo, lest his far-right allies, who oppose a permanent ceasefire, bolt ➤

→ ALSO IN THIS SECTION

**42 Jordan's wobbly monarchy**

**43 Syria's new constitution**

**43 Making cash in the coup belt**

**44 Sierra Leone's sinking feeling**

from the coalition. He removed the heads of Israel's security services from the negotiating team; leading the talks instead will be Ron Dermer, his confidant, who also opposes ending the war. The prime minister would be content to extend phase one until all the hostages are released. Naturally, that is a non-starter for Hamas: the group would be left with no leverage over Israel and no agreement to end the war.

The messages from Washington are ever more muddled. Mr Witkoff says he is optimistic about getting to phase two. But he told CBS, an American TV network, on February 23rd that Hamas would have to accept exile as part of a permanent truce: "Hamas has to go, they've gotta leave."

Perhaps this was just posturing to gain leverage. If it is a serious demand, though, Hamas is unlikely to accede. Nor is it clear which country in the region might be willing to accept a group of battle-hardened radicals: the exile of Palestinian militants to Beirut in the 1970s helped fuel the Lebanese civil war.

Then there is the question of what happens after a permanent ceasefire. Mr Trump continues to insist on his ludicrous plan to depopulate Gaza and build a resort. He recently shared an AI-generated video on social media that envisioned the enclave as a gaudier version of Dubai. It showed Elon Musk noshing on hummus, a topless Mr Netanyahu sunbathing by the pool and a golden statue of Mr Trump towering over a city square. There were even some bearded women belly-dancing on a beach, an unexpectedly woke flourish.

Back in the real world, a group of Arab states met in Riyadh on February 21st to discuss their own post-war plan. It calls for a committee of Palestinian technocrats to oversee reconstruction. Hamas would be excluded. The group might be willing to go along with such a scheme—but it does not want to relinquish its weapons, which means Israel is unlikely to assent.

Yair Lapid, the Israeli opposition leader, offered his own fanciful plan to a hawkish Washington think-tank. He called for Egypt to take ownership of Gaza for at least eight years. In exchange, its foreign debts would be paid off. Mr Lapid admitted he did not ask the Egyptians if they wanted to control Gaza, which they do not (they had their own unhappy experience running the enclave from 1949 to 1967). Nor did he explain who would cover Egypt's \$155bn in external debt: it is always easier to negotiate with other people's money.

Whether any of these plans are realistic will be a moot point if the truce falls apart. Mr Netanyahu, a chronic procrastinator, will seek to drag out the first phase until Hamas gives him an excuse to terminate it. Mr Trump played a vital role in forcing him to accept the initial deal. He will have to decide if he wants to do so again. ■

### Jordan's monarchy

## Beset on all sides

AMMAN

### Resurgent Islamists and chaos in the West Bank threaten Jordan's king

JORDANIANS CAME out in their tens of thousands to hail their king as a hero. On February 13th state television broadcast their cheers for King Abdullah on his return from Washington, where he defied American and Israeli pressure to accept waves of Gazan refugees. "Jordan is Jordan, not Palestine," rang out their cry.

Yet the government-sponsored buses idling by the roadside belied official claims that the rally was spontaneous. And the press conference that Donald Trump, America's president, sprang on King Abdullah during his visit saw Jordan's monarch in nervous form. He twitched when Mr Trump publicly pressed him to welcome displaced Gazans. "It was a disaster," says a Jordanian commentator. "He was mocked across social media."

In recent months Lebanon and Syria have undergone political earthquakes. Jordanians are wondering whether their country will be next. The kingdom is already bracing for the fallout from the latest advance of Israeli tanks into the occupied West Bank. Around 40,000 Palestinians have fled their homes in the territory in the past month. Jordanians fear that chaos there will trigger an exodus. Hundreds of thousands of the West Bank's 3m Palestinians hold Jordanian passports. Their purchase of homes ("just in case") keeps the kingdom's construction industry afloat. Jordan's native "East Bankers", who are a

minority, worry the incomers will at last turn their kingdom into Palestine.

Even if Palestinians in the West Bank stay put, 17 months of war in Gaza are reshaping the kingdom's politics. Hamas has been smashed in Gaza, but still holds sway on Jordan's streets. The Muslim Brotherhood, which spawned Hamas, surprised many by trouncing pro-government parties in the election last September. It has not flexed its power of late. Diplomats say arrests of rabble-rousers keep it at bay. But others suspect it is merely biding its time.

Regime change next door is stiffening the Islamists' resolve. After a decade on the margins, the ousting of Syria's president, Bashar al-Assad, has brought Sunni Islamists back to power in the Arab world. Jordanians remember that when Ahmed al-Sharaa, Syria's new president, was an al-Qaeda leader, his ranks consisted largely of foreign fighters, many from Jordan. Some Jordanian jihadists are still on the scene, including the newly appointed head of the presidential guard. "Islamists across Jordan are asking, 'If they can take over, why not us?'" says Hassan Abu Haniyeh, a Jordan-based expert on the kingdom's Islamists. Mr Sharaa's visit on February 26th was kept deliberately low-key.

Jordan could once have looked abroad for support. But over the past 25 years King Abdullah has lost most of his regional friends. Unlike previous Israeli prime ministers, Binyamin Netanyahu treats him with contempt. Smuggling of weapons, drugs and fighters across Jordan's border with Israel has ticked up. Saudi Arabia's crown prince, Muhammad bin Salman, has stolen the king's thunder as a regional leader. When America's new secretary of state visited the Middle East this month, he skipped Jordan.

The regional winds of change would have been easier to weather had Jordan's economy been stronger. Since the Arab spring in 2011, income per person has stubbornly stagnated. Many Jordanians, like their country, are struggling with debt.

Syria's reconstruction may yet bolster demand for Jordan's excess cement, or even reopen its trade route to Europe. And regional peace may yield dividends, including the supply of desalinated water from Israel, tourists and an elusive Middle Eastern railway line linking the Gulf to the Mediterranean. But pessimists worry that if Mr Trump's demands are rejected, America will cut off the direct budget and military aid on which the king depends.

In the past he would address his subjects' grievances by blaming prime ministers or security chiefs, dismissing the former and locking up the latter. But that no longer seems sufficient. The confluence of so many challenges is unusual. And rarely have so many Jordanians openly asked whether their rulers are up to the job. ■



Please don't tell anyone you were here

## Syria

# Talking the talk

BEIRUT

**Syrians discuss a new constitution in their former dictator's palace**

**H**UNDREDS OF SYRIANS gathered on February 25th in the opulent reception hall of what is now called the People's Palace in Damascus. They had come to discuss a new constitution. Islamists, communists, feminists, even a celebrated actress, all rushed to greet and be photographed with Ahmed al-Sharaa, Syria's jihadist-turned-president. It was a scene unimaginable under the former regime.

Three months ago the palace, perched on the mountains above the Syrian capital, was the hideout of Bashar al-Assad, off-limits to all but the former dictator's inner circle. This week it hosted a "national dialogue conference", where 600 delegates debated how a transitional government should deal with the economy, justice and a new constitution.

The conference had been hyped for months yet was repeatedly delayed. Some attending complained about the rushed timing. Many had only a few hours' notice, leaving them unable to attend. It was also short, taking just a day, hardly enough to discuss the finer details of constitution-drafting. "I have doubts about whether everyone can fully engage in meaningful discussions," said a delegate.

The closing statement offered little in the way of solid proposals. It did not clarify whether Syria would adopt a presidential or parliamentary system, nor did it settle the question of the role of religion in the country's laws. But it struck the right rhetorical notes, said a European diplomat in Damascus. There was talk of human rights, a rejection of sectarian enmity, and no suggestion that sharia (Islamic law) would prevail. The statement also mentioned "supporting women in all fields" and "peaceful coexistence" of all Syrians. Western governments will welcome such buzzwords; then they will call for action.

Drafting a new constitution is only part of Syria's transition from dictatorship. Mr Sharaa's predecessor exposed the limits of such documents. The constitution under the Assad family was not on paper deficient. The problem was its implementation—or lack thereof.

In recent weeks, Mr Sharaa has come under mounting international pressure to meet his own deadlines. He had pledged to announce a transitional government and launch the national dialogue within three months of Mr Assad's fall. His allies appear to grasp that the survival of this new re-

gime depends on an easing of sanctions. Syria's economy is dire. The euphoria at the fall of Mr Assad is already giving way to frustration, as Syrians queue for hours each morning for bread or cash from the few working ATMs. Relief will come only if Mr Sharaa proves to the region and the West that he is serious about including all communities in his government.

This weekend Mr Sharaa may, at long last, announce a transitional government. It is meant to steer the country towards elections in the coming years. It would be a pivotal moment. Until now he has ruled by decree from Damascus, concentrating power around himself. Many believe that, despite his moderate words, he remains an extremist at heart. His appointments will test his commitment to sharing power. If this is all a charade, he will not be able to fool Syrians for much longer. ■

## Resource nationalism in Africa

# Making cash in the coup belt

BAMAKO AND CAPE TOWN

**Mining multinationals are learning to do business with Sahelian juntas**

**T**HE BOSS of Barrick Gold, a Canadian mega-miner and the world's second-largest gold producer, is no stranger to bust-ups with African governments. Earlier this month, in Cape Town, Mark Bristow recalled past wrangles with leaders in Tanzania and Congo like a retiring boxer reminiscing over old bouts. He shrugged off an arrest warrant, issued by the government of Mali in December and accusing him of money-laundering and violating financial regulations (allegations he denies), as the cost of doing business in exceptionally tough places. "Mining is a long-term game," says Mr Bristow. "The best way to resolve misunderstandings or disagreements is through dialogue."

His optimism seems to have paid off. On February 19th Reuters reported that Barrick and Mali had agreed to end a dispute that had lasted almost two years and

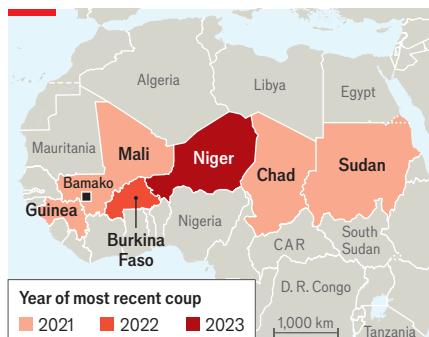
led to the suspension of mining operations accounting for between 5% and 10% of Mali's GDP. The Malian government had demanded \$500m in back taxes—a sum the finance ministry recently bumped up to a gigantic \$5.5bn. According to the new agreement, Barrick will pay \$438m. In return, the government is to release four senior local employees in prison on charges of money-laundering and financing terrorism (charges that Barrick has maintained are "unfounded"). It will also return hundreds of millions of dollars' worth of gold ore, which the state began seizing last year.

The saga, however amicable its conclusion, illustrates the growing challenges facing Western miners in the region. African governments, from Ivory Coast to Zambia, are revising mining codes in pursuit of higher rents and bigger ownership stakes. They have been prompted by surging global demand for minerals ranging from gold—the price of which is at an all-time high—to copper and lithium, which are critical for the green transition.

The trend towards resource nationalism is most advanced in Mali, Burkina Faso and Niger, the heart of Africa's "coup belt" and a zone increasingly aligned with Russia and hostile to the West. These Sahelian states are among the continent's richest in minerals, especially gold and uranium. But because of the capricious and heavy-handed approach military governments have taken to squeezing foreign investors, the Sahel is also where the nationalist turn is most likely to backfire.

Mali's junta, which took power in 2020, is the pioneer. A state-commissioned audit of the mining sector, which Mr Bristow brushes off as "incorrect", claimed the government was missing out on revenues of nearly \$1bn. The revised mining code, introduced in 2023, removed tax and customs exemptions and increased the share of a project the state can own from 10% to 30%. Controversially, the junta insisted on applying it retroactively to current operations, rather than just future ones. To enforce compliance, it has "incrementally increased demands and procedural pressure", notes Beverly Ochieng of Control Risks, a consultancy. Even before the deal with Barrick, Mali had received or been promised over \$635m in additional tax payments, according to Reuters.

Mali's neighbours have taken note. Last year Niger's government cancelled the mining licence held by Orano, a state-owned French nuclear-fuel company. In the face of legal proceedings it has blocked uranium exports and promised to return the mines "to the public domain of the state". The government of Burkina Faso has nationalised two mines and seized gold extracted by a Canadian firm. Sarama Resources, an Australia-based gold miner, has embarked on an arbitration battle in ➤



► protest against the withdrawal of one of its exploration permits.

Some fret that the juntas are motivated mainly by hostility to the West. In the past few years the trio have all expelled Western—primarily French—troops, and instead hired Russian mercenaries to help them fight jihadists. Niger's showdown with Orano, in particular, is clearly driven by geopolitics. Russia, China and Turkey stand to benefit from the new orientation in Mali and Burkina Faso. "We see partners being preferred on the basis of nationality," complains a Western diplomat in Bamako, Mali's capital. In December Ganfeng Lithium, China's largest lithium producer, opened a giant mine in Mali.

But there are limits to the geopolitical shift. Of the three countries, only Burkina Faso has a Russian-owned industrial mine. "I don't think they actually want to break the relationship with Western multinationals," says Ulf Laessing of Germany's Konrad Adenauer Foundation in Bamako.

Money seems to be more important than ideology. The economies of all three states are in the doldrums. Four mines in Burkina Faso have closed since the army took power in 2022. Mali's junta is reportedly struggling to pay for the services of Wagner Group, a Russian mercenary outfit it hired in 2021. The quest for more revenue is not limited to Western miners. This month the government began taxing phone calls and mobile-money transactions. Last year it made Maroc Telecom pay a fee of \$272m to renew its licence.

Local businesspeople in Bamako complain about increasingly onerous tax demands. "Everything has gone up," grumbles Yusuf Diarra, a water-tank salesman. The shakedown of foreign companies, by contrast, appears broadly popular. Even Malians critical of the junta agree that previous mining codes were too generous to miners. "Changing the 2019 code took guts, and had to be done," says Modibo Mao Makalou, a prominent economist.

But the government's approach seems likely to jeopardise Mali's economy in the long run. Annual gold production fell by nearly a quarter in 2024, according to the country's mines ministry. Even if big miners like Barrick—one of the country's largest private employers—stay put in Mali, they may think twice before committing more capital. "Mining is by far the foundation of that economy, and you can destroy it in a heartbeat," Mr Bristow warns.

For now few Western mining firms are rushing to leave the Sahel. Mr Bristow suggests Barrick would refuse any demands which might threaten the economic viability of its projects in Mali. But he also says he is "very happy to search for ways for the state to get more of the [tax] take". Governments and mining companies still have powerful incentives to get along. ■

## Climate adaptation in Africa

# Sink and swim

FREETOWN AND NYANGAI

### Sierra Leone illustrates the continent's struggle to adapt to climate change

**S**TANDING ON THE shores of Nyangai, a small island off the coast of Sierra Leone, Melvin Kargbo points to his old football field, now below an expanse of sea-water. Never large, Nyangai has shrunk from around 700 metres in length a decade ago to about 90 metres now. Most of its mango and coconut trees have been felled by the waves. The remaining residents live in a tight cluster of houses that flood frequently. Even so, they want to stay put. "We cannot leave this land," says Mr Kargbo, a 35-year-old teacher. "I do not think there is a better life for us anywhere else."

He will probably be forced to find one. Global sea levels are rising as glaciers melt in the warming climate. Storms are becoming more erratic, accelerating coastal erosion. Some 15 years from now, Nyangai is likely to be under water.

It is not just Nyangai. Africa has contributed just 3% to global carbon-dioxide emissions since the industrial revolution, but it will be hit harder than other places by the effects of the warming climate: longer droughts, deadlier heatwaves and less predictable storms and floods. With no power to slow warming, adapting is the only option. But money is short.

For Mr Kargbo and his family, adapting will mean moving. The UN estimates that climate change may compel up to 113m Africans, 5% of the continent's population, to leave their homes by 2050. Many will end

up in cities such as Freetown, Sierra Leone's capital. Yvonne Aki-Sawyerr, the mayor, says politicians need to "buckle up" to ensure cities remain habitable.

Ms Aki-Sawyerr has made a start. Her team has installed cooling covers on Freetown's busiest and sweatiest markets. They have planted mangrove trees on the edges of flood-prone slums to serve as buffers against the rising sea. Earlier this month, Ms Aki-Sawyerr held a "heat summit" for mayors from six cities across west Africa to discuss how to keep their residents cool, for instance by planting more trees and installing cooling roofs on public buildings.

How they will pay for it is not clear. Adapting to climate change in Africa will cost between \$30bn and \$50bn a year over the next decade, estimates the UN, around 2-3% of the continent's GDP. African governments do not have the money. Most of the funds for Freetown's adaptation efforts come from bilateral aid and aid-funded multilateral organisations. As America and other rich countries continue to cut aid, especially for projects responding to climate change, nobody else is likely to step in.

That will ultimately make adaptation more expensive. The earlier it happens, the more money it saves by reducing damage to crops and infrastructure. According to one estimate by the World Bank, every dollar invested in infrastructure saves \$4 in reconstruction costs. Effective adaptation, the UN reckons, could also shrink by about a third the number of people forced from their homes by climate change.

For some, it is already too late. The sandbags that Mr Kargbo wants the government to ship to Nyangai will not keep the sea at bay for long. But money to move and rebuild on the mainland could help him keep his head above water, even as the island is swallowed by the sea. ■



Is the puddle getting bigger?

# Asia



**Indonesia**

## DOGE days in Jakarta

JAKARTA AND SINGAPORE

**Prabowo Subianto is drastically cutting down the budget. Who will benefit?**

ON FEBRUARY 24TH Prabowo Subianto, Indonesia's president, launched Danantara, a sovereign-wealth fund. At his disposal will immediately be the largest businesses in Indonesia's sizeable portfolio of state-owned enterprises, which have been transferred to Danantara and are worth around \$900bn. Unlike an older sovereign-wealth fund, its management will report directly to the president, bypassing the conservative ministry of finance. Dividends from state-owned enterprises will flow into Danantara, not the ministry's coffers. Never before has so much of Indonesia's wealth been placed at the discretion of one man.

Soon Danantara will get a further infusion of cash. Last month, with no warning, Mr Prabowo ordered a one-off cut of \$19bn, or 8.5%, of the annual state budget. Even Sri Mulyani Indrawati, the veteran finance minister long trusted by markets for her reputation for fiscal discipline, was tak-

en by surprise, according to *Tempo*, an investigative magazine. For weeks Mr Prabowo's administration left Indonesians in suspense as to what would be done with the unspent funds. In February, he said that most would go to Danantara.

The cuts have been deep and immediate. The public-works ministry was slashed by 70%, leading it to suspend or cancel dozens of roads, dams and bridges across the country, along with the maintenance of 47,000km (29,000 miles) of roads. The meteorological and geophysical agency, a critical resource in a country regularly afflicted by earthquakes and dotted with

around 127 active volcanoes, lost half its budget. Its head says the cuts will affect its ability to warn Indonesians of tsunamis and other natural disasters to give them enough time to evacuate, potentially putting many hundreds of lives at risk.

Other ministries are turning off lights and air-conditioners at 4pm and telling civil servants to go home early. One official focused on children's welfare says that he can bear the material inconveniences of the cuts, but he worries about children who are victims of bullying or child pornography. His agency can no longer visit them to provide support because there are no funds to do so. This month, tens of thousands of students came out to protest against the cuts in cities across Indonesia.

### Make Indonesia Great Again?

The speed and scope of the cuts have prompted comparisons to Elon Musk's DOGE efforts in America. "It doesn't look like very well-planned policy. Some of these initiatives seem more like a knee-jerk reaction," says Arianto Patunru at the Australian National University in Canberra. At the end of a speech on February 15th, Mr Prabowo mentioned, almost as an afterthought, that he might seek a second round of cuts as large as the first. If so, the savings would total 2.3% of GDP annually.

Some of the cuts have reflected a lack ➤

#### → ALSO IN THIS SECTION

**46 Politics in Tajikistan**

**47 India's elderly**

**48 Banyan: How Hinduism became cool**

of understanding of how parts of the government work. Mr Prabowo ordered that social-welfare programmes and civil servants' salaries were not to be touched. In practice, however, civil servants depend upon stipends to supplement their salaries, many of which have been eliminated. Contractors, too, have been fired—18,000 of them in the public-works ministry alone.

Mr Prabowo says the savings from his cuts will go to 20 priority projects. The biggest of these, his signature pledge on the campaign trail last year, is a free school-lunch programme, priced at \$28bn annually by 2029 (or the equivalent of 2% of the country's GDP). To serve it up, he has called upon his former brothers-in-arms in the armed forces to staff kitchens and deliver food. Experts say it risks doing more harm than good by focusing on calories, not nutrition. Only one in ten children in Indonesia are underweight, while two in ten are overweight. Mr Prabowo often argues that the meals are needed to tackle childhood stunting, but this condition is irreversible after the age of two, so the lunch programme cannot fix it.

Other projects to be funded by Danan-tara include new smelters to process Indonesia's natural resources. These, officials hope, will help the country capture a greater share of the value of finished products made out of them. But Indonesia was already investing in such projects before Danan-tara was launched. Jokowi, Mr Prabowo's predecessor, had championed "down-streaming", or boosting higher-value activity, partly through economic nationalism. This has led Indonesia to have a near monopoly on one mineral: it produces nearly half the world's refined nickel and two-thirds of its mined nickel.

Why the new fund, then? One possible answer can be found in its governance. Rosan Roeslani, a businessman who served as chairman of Mr Prabowo's presidential campaign, will run it. The law establishing Danan-tara passed by the legislature in early February took it out of the jurisdiction of the country's audit agency and corruption commission. Mr Roeslani has said that the two agencies will still play a supervisory role, but how this will work remains to be seen. Critics complain that this gives Mr Prabowo a freer hand than any of his predecessors to distribute patronage and carry out populist policies.

For now, Mr Prabowo's plans face little resistance. Indonesia's legislature has held hearings on the "efficiency" drive, as his administration calls it. Some tweaks have been made following questions from lawmakers. But no broader opposition to the cuts has come out of the body. That could yet change. Mr Prabowo has co-opted all but one of Indonesia's political parties by naming their leaders to Indonesia's largest cabinet in decades. If they start to lose out

on funds they expected to control through those posts, opposition may gather force.

Instead, most of the pushback to the cuts is online and in the streets. Right now, the student protesters are a vocal minority. A survey in January suggested that Mr Prabowo's support was at nearly 81%. But if the cuts begin to slow economic growth, opposition from ordinary Indonesians could build up. That is what brought down Mr Prabowo's father-in-law, the strongman Suharto, in 1998.

The protests earlier this month were

mostly peaceful. When some demonstrators in Jakarta, the capital, began throwing concrete at police on February 20th, the authorities responded with restraint. It will be important that they continue to do so. As a special-forces commander in the late 1990s, Mr Prabowo kidnapped some student activists demonstrating against Suharto's regime. He claims that he returned all of them unharmed, but some alleged torture and others remain missing. Indonesia has changed markedly since those dark days. It should not turn back the clock. ■

## Tajikistan

# Keeping it in the family

ALMATY

An election is merely an excuse for Emomali Rahmon to cement his rule

**O**N MARCH 2ND Tajiks will vote in a general election. The exercise is unlikely to be a democratic process; rather, it will probably cement the eradication of political opposition by Emomali Rahmon, the president. His ruling People's Democratic Party of Tajikistan, which holds three-quarters of seats in the outgoing parliament, is on track to win a large majority. But the size of that majority is immaterial to Mr Rahmon, since the other five parties running for seats in the rubber-stamp parliament support the Founder of Peace and National Unity and Leader of the Nation, as Mr Rahmon's official title goes.

As head of state for 33 years, Mr Rahmon is the longest-ruling leader in the former Soviet Union and one of the longest-reigning in the world. Ahead of the election, the Social Democratic Party

of Tajikistan, the country's sole official opposition party, did not field any candidates (it won just 0.3% of votes in the last poll). Last year its leader, Rahmatullo Zoirov, died, while his deputy, Shokirjon Hakimov, was arrested and imprisoned for 18 years on treason charges, all of which he denies. That was part of a closed trial which also delivered long prison sentences on spurious-sounding charges of coup-planning to figures who had appeared to be regime loyalists.

Mr Rahmon began rooting out any political opposition over a decade ago. In 2014 the government banned an alliance of dissenters called Group 24, whose leader, Umarali Quvvatov, was subsequently killed in Istanbul. In 2015 the authorities also banned the most popular opposition party, the Islamic Renaissance Party of Tajikistan. It had been in a power-sharing agreement struck with Mr Rahmon to end a civil war in the 1990s, until he tore up the deal to entrench his one-man rule.

After clinging to power for decades by rigging elections and ruthlessly crushing dissent, Mr Rahmon now appears to be priming Tajikistan for a dynastic succession. The leader is 72 and thought to be in bad health. He seems to be grooming his eldest son, Rustam Emomali, to take over. Mr Emomali is already mayor of Dushanbe, the capital, and chairs the upper house of parliament. His father's presidential term runs until 2027, and Mr Rahmon is keeping Tajiks guessing about his intentions. But, with political opposition thoroughly crushed, the patriarch has set the stage for a dynastic transfer of the presidency that will keep power firmly within the ruling family.



A very stable strongman

## Demography

# Ancient Indians

VENDALI, MAHARASHTRA

### The country is rapidly ageing and woefully unprepared

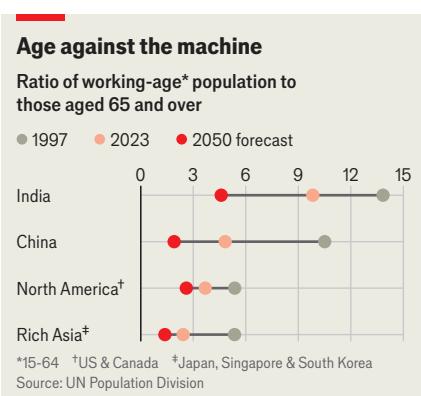
**A**BABY BORN on the same day as the Indian republic—January 26th 1950, when the constitution went into effect—probably would not have lived to see the 75th-anniversary celebrations last month. That year, life expectancy at birth was 41.2 years, half a decade less than the global average. But progress has been dramatic. By 2023 life expectancy had reached 72, just one year below the world average.

India's achievement is all the more impressive given its huge and diverse populace. Public-health success brings opportunities. Half of India's population of 1.4bn is under the age of 29. This big and expanding workforce boosts economic growth, creating a "demographic dividend" that the McKinsey Global Institute (MGI), a think-tank, calculates has added an extra 0.7 percentage points annually to GDP-per-person growth in the past 25 years.

Yet success has brought a new challenge, too: for the first time in its history, India has a large and growing cohort of old people. Around 150m people are aged 60 or above. By 2050 the share will double to nearly 21%, or about 350m—more people than live in America today. Over the next quarter-century the demographic dividend will shrink, adding only an additional 0.2 percentage points to GDP growth every year. "We have just one generation" to get rich, says Anu Madgavkar of MGI. After that, "You will have a country with an age structure that looks...like North America, but at a fraction of GDP per capita."

An India that grows old before it gets rich would be a long way from dreams of it becoming a developed country. But it would be harsher still for those adults as they retire. India's fertility rate has dropped below replacement, to less than 2.0. Today, there are 9.8 people of working age for each old person. That number will fall by half by 2050 to somewhat above the level of present-day Europe, and plummet to 1.9 by the end of the century, about the same as today's Japan (see chart).

With fewer working-age adults to support the elderly, and little by way of savings, India's old may face a straitened, lonely retirement. Public services such as health care may be stretched. Moreover, as a larger share of personal and state income is diverted to look after the elderly, a generation of young people will have to face the prospect of deferred consumption and lower savings and investment.



Women, who tend to outlive men, may suffer more. Widows in conservative parts of India are expected to live austere lives, dressing only in white and excluded from social life. A deceased husband's assets are meant to be divided among the wife and children, but it is common for widows to be deprived of their share. Few women have any savings of their own and most have never worked for a wage.

The government has plenty of policies aimed at India's fast-growing elderly population. But many exist only on paper, says Himanshu Rath of AgeWell, an NGO. Those that exist often fall short. The state provides pensions to widows and the elderly below the poverty line. But these are insufficient to live independently, says Sonalde Desai of the National Council of Ap-

plied Economic Research, a think-tank in Delhi. And the paperwork involved can be maddening. Because India's birth-and-death registration system is weak, pensioners must submit a "life certificate" every year to prove they are still alive. Many older people are unable to navigate such a needlessly bureaucratic system.

Last year the government announced free and universal health insurance for those aged 70 and above. Though welcome, it is a bare-bones scheme that does not cover preventive or outpatient care, even as India's rates of non-communicable diseases such as diabetes and heart ailments soar. Nor do India's middle classes have much cause for cheer. Private health-insurance for the elderly does exist, but at steep premiums, and comes with lots of restrictions and meagre cover. "You had better start saving," suggests one insurance adviser. Few have that option.

Adding to the pressure is the changing structure of society. Sprawling multigenerational households are giving way to nuclear families. Many working-age people move from their villages for better prospects, leaving parents alone. Yet Indian culture has not yet accepted the idea of assisted living or care homes. Pensioners are left to deal with loneliness, isolation and depression. "Unlike malnutrition or TB, which you find in certain sections of society, this is a challenge you're going to see across the board," says Saraswathi Padmanabhan of EdelGive Foundation, a charity based in Mumbai.

### Old wives' tales

In India, as elsewhere, the long-term solution will require faster economic growth, more formal jobs and later retirement. But creative thinking is needed in the short term as well. One model can be found in Vendali, a village of 1,136 people in the ➤



middle of India, of whom 154 (or 14%) are senior citizens. Every afternoon except Sunday, the old women of the village gather for three hours at a temple by the river. There they sing songs, do yoga and some light exercise, and spend time on activities such as colouring or games. They also spend plenty of time gossiping.

This elder day-care, set up by Janseva, an NGO, is one of 15 in the district and costs about 100,000 rupees (\$1,150) per year to run. But the benefits for its members are

undoubtedly far greater. Of the 16 women present one recent afternoon, eight were widows, only one was literate and none possessed a mobile phone. If they watched television, it was whatever the family had on. The day-care routine has given them a social life. "Earlier we had nowhere to gather," says Laxmibai, 90, who like most of the other women lives in a small room in a relative's house. "Here we feel heard, and the physical activity has made a difference." She demonstrates by doing some

stretches. Volunteers routinely monitor the women's blood pressure and sugar levels, catching problems early.

The women have also started to take part in village celebrations more often, and occasionally organise trips to temples. The benefits extend to their family members too: "Now I feel more welcome at home," says Girijabai, 67. "My daughter-in-law is also calmer." India has done an impressive job of extending lifespans. Now it must try to ensure those lives are well lived. ■

## BANYAN

### *How tradition became trendy*

*What the world's largest gathering says about India*

**N**EXT MONTH I'm planning to spend a couple of weeks in London." It is commonplace for such declarations to be made in Delhi's posh clubs and cafés. Banyan, however, overheard this plan on a packed flight from Delhi to Prayagraj. His fellow passengers, adorned with designer jewellery and carrying Louis Vuitton bags, were heading to the city in the northern state of Uttar Pradesh for the *Maha Kumbh Mela*, a massive Hindu gathering (before, presumably, travelling to London).

The festival marks an auspicious alignment of the planets every 12 years, during which taking a dip at the confluence of the Ganga and Yamuna rivers is believed to wash away one's sins. The prospect of salvation has always drawn millions of pilgrims from across India. But the latest edition of the *Maha Kumbh*, which came to a close on February 26th, captured the country's imagination in new and interesting ways.

The journey, which has traditionally been perceived as the preserve of India's poor, is now embraced by elites. Where once they may have balked at dipping in polluted waters (Indian regulators said there was faecal matter in it) and jostling alongside millions (a stampede on January 29th claimed dozens of lives), this time they delighted in it. Actors, cricketers and business honchos all took the plunge. Tour operators offered luxury packages, promising a "seamless fusion of opulence and cultural richness". Faith has never been so fashionable.

Some of the zeitgeist reflects enduring belief mixing with increasing wealth. According to one survey, around 80% of Indians consider religion an important part of their daily lives—a share that has hardly wavered even as the country has modernised. Indeed economic growth

has opened up new ways for Indians to practise their faith.

Religious travel, for instance, has surged in recent years, propelled by a boom in civil aviation. All India's big airlines laid out special daily flights for the *Maha Kumbh*. Similarly, rising car ownership allowed thousands to drive to Prayagraj (and clog up its roads). On his boat to the confluence, Banyan met a family of eight who had driven 1,200km in an SUV from the western city of Surat to take part in the *mela*.

But while growth has helped make Hindu celebrations grander, other factors have made them aspirational. The confluence in Prayagraj had the air of both temple and theme park. Some devotees performed the dip in solemn reverence, a few splashed about in revelry, and, inevitably, nearly everyone recorded the moment on their phones. The family from Surat said they felt compelled to make the pilgrimage after seeing images on social media.

The ultimate influencers, though, are India's political leaders. The ruling Bharatiya Janata Party (BJP) has assumed the

role of Hinduism's custodian. Promoting Hindu causes is a public-policy priority. Living in this era, many Indians believe that piety is no longer merely a sign of faith, but a symbol of patriotism and progress. In 2021 nearly two-thirds of Hindus, who make up around 80% of the population, said they believed that being truly Indian means being Hindu, according to a survey by Pew Research Centre, an international pollster.

For a party that champions Hindu nationalism, the *Maha Kumbh Mela* was the perfect stage to flex muscle. Politicians have always used the festival to demonstrate their Hindu credentials to voters, but this time the BJP co-opted the event. Throughout Prayagraj, and indeed India, posters extolling the virtues of the *mela* featured towering images of Narendra Modi, the prime minister, and Yogi Adityanath, the monk-turned-leader of Uttar Pradesh.

The government fuelled the hype by boasting of an estimated attendance of 400m; that projection has since been bumped up to 700m, implying implausibly that half of all Indians made the pilgrimage. In other *Kumbh*-related matters, however, counting has remained more conservative. Officials said 30 people had died in the stampede last month; other sources suggest the real number was much higher. The cordoning-off of huge areas for elites did not help with managing the crowds.

Despite the tragedy, the BJP is trumpeting the event as a triumph. And by one measure it will be. After taking the dip, Banyan's fellow boat-riders were basking in positive vibes. Credit for some of that joy, they said, must go to Mr Modi and Yogi for organising such a wonderful event. For the BJP that, perhaps, is what salvation looks like.



# China



## The labour market

### A nation of shopkeepers

BEIJING AND HONG KONG

**A new census shows that unfashionable, unfavoured industries provide most of China's employment**

CHINA'S TECH bros, including Jack Ma of Alibaba and Liang Wenfeng of DeepSeek, stole all the attention at the high-profile symposium of entrepreneurs held by China's leader, Xi Jinping, in Beijing on February 17th. Amid all the hoopla, one guest passed almost unnoticed, but his presence may say a lot more about the actual state of China's economy than the superstars of online commerce and AI.

Liu Yonghao is the boss of New Hope Liuhe, a breeder of poultry and pigs and manufacturer of animal feed. Banished to the countryside during the Cultural Revolution in the 1960s, he is now known as China's "richest chicken farmer". His firm represents the unfashionable "primary sector" of agriculture, which attracts little hype but employs a vast chunk of the workforce: about 22% in 2023, according to China's annual labour-force survey.

The symposium helped lift the mood—and the stockmarket—ahead of the annual

gathering of the National People's Congress (NPC), China's rubber-stamp legislature, which opens on March 5th. At the NPC the government will probably unveil an ambitious target for this year's growth (about 5%) and job creation (above 12m new urban jobs). Officials will be hoping that tech-fuelled optimism will help them achieve their broader economic aims. But there is an obvious problem: not everyone can work for firms like DeepSeek.

China's unfathomable economy employs over 740m people. Official job statistics are patchy, closed to international scrutiny, and hard to reconcile with each other. But the most detailed guide to who works where is the twice-a-decade eco-

→ ALSO IN THIS SECTION

50 China and Ukraine

51 Alice Weidel, the China years

nomic census. The latest edition, covering everything except agriculture, was released in December. It says the number of workers in software, internet services, information and communication was 16.7m in 2023. That is a sharp increase from the 10.6m recorded in the previous census, five years before (see chart 1). But it still represents only 2% of total employment. DeepSeek itself has only about 200 staff.

As the symposium's guest-list made clear, China embraces technology yet clings to agriculture. Both set it apart from other middle-income countries. For its stage of development, it boasts an unusually impressive cohort of cutting-edge firms. But agriculture still occupies an unusually large share of the workforce. In Mexico, for example, the proportion of workers in farming is only 12%. In Brazil, an agribusiness powerhouse, it is only 8%.

An optimist might argue that China's agricultural workforce represents a vast reservoir of labour, which will eventually flow to more productive jobs in industry and services, turning the wheels of the economy for another decade or two. But rural employment acts as a sink as well as a reservoir. Many people who tend a plot of land in China's countryside would probably have retired from the workforce in countries with more generous pension arrangements. China's "migrant" workers are ➤

no longer nimble-fingered youngsters. More than 30% are now over 50 years of age. Those who do not migrate are often older still. Agriculture also absorbs leftover workers when urban jobs dry up.

China's other big, traditional employer is manufacturing. Mr Xi wants to build a "complete" industrial system that makes every part of the supply chain. His vision is causing consternation among China's trading partners, who fear the workshop of the world is leaving too little work for them. At last year's NPC, "striving to modernise the industrial system" was listed as the first of ten "major tasks" for the year.

The economic census shows that even China cannot entirely resist deindustrialisation. Manufacturing employed over 123m people in 2023, accounting for roughly 16% of employment. That is a big number: the equivalent figure in America is only 12.8m (8%). But the Chinese figure has barely changed since the previous census five years earlier. For all the ballyhoo about China's manifest industrial destiny, manufacturing has generated little of the country's job growth in recent years.

Indeed, a rapidly diminishing share of China's workers now makes "things" of any kind. The census shows that fewer than 194m people work in the "secondary sector" of the economy, which spans manufacturing, mining, utilities and construction. That is 21m fewer than previously estimated by the government's annual labour-force survey. The most dramatic decline has been in construction, which shed almost 7m workers from 2018 to 2023.

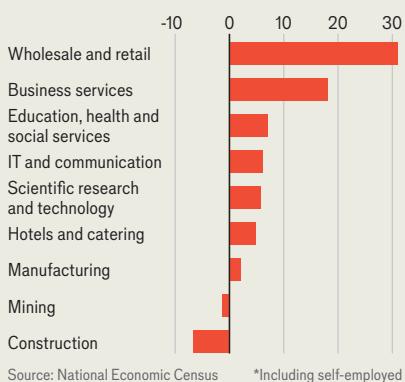
One of these departing workers was Chen Hong, a 38-year-old from central China. He spent most of his working life in construction, finding jobs in his home province of Henan, then moving to Beijing. He could make about 9,000 yuan a month (\$1,240 at today's exchange rate), 80% more than the average migrant worker.

But his fortunes changed when the property crisis struck in 2021. Jobs became

### Retail therapy

China, change in employment\*, 2018-23, m

Selected sectors

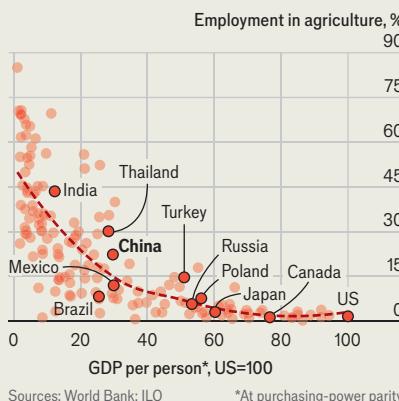


Source: National Economic Census

### Hoe down

161 countries, 2023

2



harder to find and pay declined. Although he still works in the capital, he has migrated from one occupational category to another, accepting a relative's offer of a job at a fruit stall in a Beijing market. He now earns no more than 7,000 yuan per month. But he has no regrets about abandoning construction. "It's very strenuous," he says.

Like Mr Chen, many workers now provide services rather than making things. According to the census, services of all kinds employ 411m people. That is many more than previously estimated by annual surveys of the labour force, and more than twice as many as work in manufacturing, construction and utilities combined. Services also account for all the job growth over the five years between censuses.

The sector Mr Chen migrated into is a popular destination: wholesale and retail now employs 135m people, 12m more than manufacturing. Many of them work for themselves or family members. The census belies the popular stereotype of Chinese labour as cogs in an industrial machine. Almost 180m people outside agriculture are now self-employed. And many others work for low-headcount service firms, rather than vast smokestacks with legions of workers. Companies now employ an average of 12 people each, down from 17 in the previous census.

So the past five years have changed the complexion of China's workforce. The property bust turfed many out of construction jobs. And even the pandemic-era lockdowns and export boom did not prevent the remorseless rise of services.

What lies ahead? China's government has already resolved to become a "moderately" developed country by 2035. Economists have speculated that leaders have in mind a national income per person of about \$20,000 at today's prices and exchange rates. That is equivalent to eastern European nations like Croatia or Poland.

But if that is the goal, China has a lot of work to do. The employment mix in econ-

omies at that income level looks quite different from China's. Less than 8% of Poland's workers are in agriculture (see chart 2). In more distant benchmarks like Japan and America, the share is smaller still (3% in Japan; under 2% in America). As economies grow richer and more sophisticated, jobs tend to migrate to the more cerebral service industries. In America, business services such as law and accountancy make up over 8% of employment.

The occupational mix is also a moving target. By the time 2035 arrives many service industries may have changed beyond recognition. About a quarter of the tasks now carried out by American workers could be automated by AI, according to Goldman Sachs, a bank. In financial operations, it is 35%, and in administrative support 46%. The advent of cheaper, home-grown AI models by firms like DeepSeek will accelerate the diffusion of AI across China's economy. As it becomes ready for mass adoption, "the number of displaced workers may jump", Goldman Sachs warns.

Not only do the cutting-edge tech firms celebrated at Mr Xi's symposium provide little employment themselves, their inventions could also disrupt the employment offered by others. At the meeting, Mr Xi urged his guests to pursue innovation and "harmonious labour relations". He may get one without the other. ■

### China and Ukraine

## Watching and waiting

China's leaders talk a good game, but still bide their time

SINCE RUSSIA's invasion of Ukraine three years ago, China has been a stalwart supporter of its giant neighbour, and has mostly ignored Ukraine. While professing neutrality, it has aided Russia by buying oil and gas and selling technology for weapons. Now, as America and Russia explore talks about ending the war, China sees possible rewards. Despite close ties with the aggressor, it hopes that offers to help resolve the conflict will nurture the image it seeks as a benign great power.

On February 20th, at a meeting in South Africa of foreign ministers from G20 countries, China's top diplomat, Wang Yi, noted that a "window of opportunity for peace" was opening in Ukraine. "China will continue playing a constructive role in the political settlement of the crisis," he said. So far, it has stayed on the sidelines. No Chinese diplomats were present two days earlier when America's secretary of state, Marco Rubio, and his Russian coun-

►

terpart, Sergei Lavrov, met in Saudi Arabia. No mention was made by either side of a possible Chinese role in peace efforts.

On Chinese social media, some commenters worry about a “reverse Nixon” moment, referring to the American president’s trip to China in 1972 that led to Sino-American alignment in the cold war against the Soviet Union. But their fears that Russia and America may now jointly turn against China are misplaced (see *The Telegram*). It is more likely that China senses an opportunity as President Donald Trump upends his country’s security relationship with its NATO allies, blames Ukraine for the war and makes sweeping concessions to Russia. China may hope to capitalise on the transatlantic rift by repairing its battered relations with Europe.

On February 14th, at the annual Munich Security Conference, America’s vice-president, J.D. Vance, shocked delegates by all but ignoring Ukraine. “The threat that I worry the most about vis-à-vis Europe is not Russia, it’s not China...what I worry about is the threat from within,” he said, referring to efforts to stifle hard-right views. The next speaker was Mr Wang, whose words, though less abrasive, were clearly aimed at American actions. “The world today is witnessing incessant chaos and confusion,” he said, “and one important reason is that some countries believe might makes right and have opened a Pandora’s box marked ‘the law of the jungle.’” As one delegate, Steven Everts of the EU Institute for Security Studies, put it: “Such is the world today that some Europeans found that reasonable in comparison.”

China is fishing for propaganda wins. Soon after the war began, China’s leader, Xi Jinping, announced a “global security initiative” that presented his country as a peacemaker. In 2023 China issued a 12-point peace plan for Ukraine that seemed designed to achieve the same, with no clear roadmap for ending the war. The plan went nowhere. There are signs that Ukraine, at least, is keen that China do more. “As a global player, China has a crucial role to play in achieving peace,” gushed the chief of staff of Ukraine’s president, Volodymyr Zelensky, after a meeting between the Chinese and Ukrainian foreign ministers at the Munich conference.

Yet China still appears content to remain on the margins. It does not want to have to express views that are clearly different from Russia’s, though it has not recognised Russian claims to sovereignty over parts of Ukraine. (In a call with Mr Putin on February 24th, Mr Xi said the two countries were “true friends.”) But China does

not want to complicate its already fraught relations with America either. Zhou Bo, a former senior colonel in the Chinese armed forces who is now at Tsinghua University in Beijing, suggests that Chinese troops could lead a UN-mandated peace-keeping operation in Ukraine if one is launched. But China is clearly waiting for the dust to settle before making such an offer public. Before then, it may be cautious, not least given the sensitivities of some European governments about Chinese troops being deployed on the continent.

If a durable agreement on ending hostilities is reached, China will encourage firms to hunt for potential profit in Ukraine’s reconstruction, reckons Helena Legarda of the Mercator Institute for Chinese Studies, a Berlin-based think-tank. “They see this as a potential way out of the difficult position that they put themselves in by supporting Russia,” she says. At a news conference in Kyiv on February 23rd, Mr Zelensky seemed keen, too, offering business opportunities. China, for its part, sees little to lose by waiting. ■

### A German connection

## Alice Weidel, the China years

**The leader of Germany’s AfD spent six years living in China**

THERE ARE many things that make Alice Weidel an unconventional leader for a German political party on the hard right. Though her marriage to a Sri Lankan-born woman draws most attention, many in government and business circles are equally intrigued by the time she spent in China before entering politics. Ms Weidel lived there for about six years from around 2006, and learned to speak Mandarin before moving home and joining the Alternative for Germany (AfD) party in 2013.

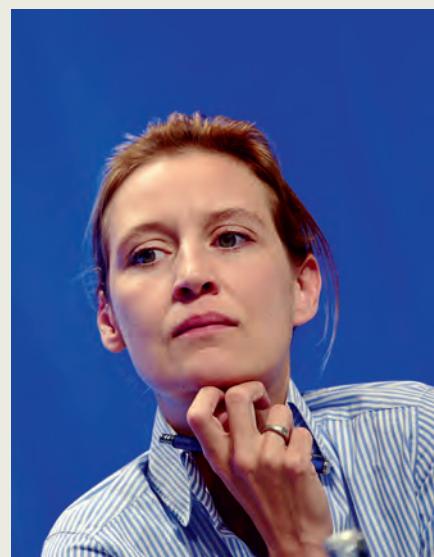
She started out in China on a German government scholarship and stayed to write a doctoral thesis on its pension system, entitled “Reform options from a regulatory-theory perspective to increase risk resistance”. Even more unusually for a German politician, she is also reported to have worked for the state-owned Bank of China. And, though there are few public details about what exactly she did in that job, she has said that she learned much from her experience in China and wants to improve bilateral ties.

Such comments have made her a celebrity on Chinese social media, where many call her “The Iron Lady”—a nickname also given to Margaret Thatcher—and express admiration for AfD policies (despite its hostility to immigration). Chinese state media have also noted with approval Ms Weidel’s pragmatic attitude towards China. The Chinese embassy in Germany even quotes her on its website saying that she found “many things worthy of praise” in China, and had noted China’s “leading position in patents and innovation”.

That has raised eyebrows among some Western security officials who monitor China’s efforts to influence

politics in Europe. They note the AfD’s aversion to criticising China, for instance on its position on Ukraine. Such concerns burst into public view last year when German authorities arrested an assistant to a senior AfD leader on suspicion of spying for China.

None of that seems to have cost the AfD votes in Germany’s election on February 23rd. But it does raise questions about its links to the American right, most of which is far more hawkish on China. Those links became visible in mid-February when America’s vice-president, J.D. Vance, voiced support for the AfD and met Ms Weidel. Perhaps he should have looked more closely at the AfD’s election platform, which says it wants to “expand our economic, scientific and cultural contacts with China”.



Journey to the east

## International



**Europe's post-American future**

### Very well—alone

**But it will take years to build up an independent defence force**

WITHIN HOURS of his party winning national elections, Friedrich Merz, Germany's presumptive next leader, dropped a bombshell. Donald Trump "does not care much about the fate of Europe", he said. The priority was to "step by step...achieve independence from the USA". This was not some distant aim. He was unsure, he said, whether NATO would still exist "in its current form" in June, when leaders are due to meet in the Netherlands, "or whether we will have to establish an independent European defence capability much more quickly".

If anyone thought Mr Merz was being alarmist, they were swiftly disabused. On February 24th, on a UN resolution that blamed Russia for invading Ukraine, America voted against its European allies and sided with Russia and North Korea.

Mr Merz is not the only staunch trans-

atlanticist worried about Donald Trump's assault on NATO, the alliance that kept the peace in Europe for nearly eight decades. "The security architecture that Europe has relied on for generations is gone and is not coming back," writes Anders Fogh Rasmussen, a former secretary-general of NATO, in an essay for *The Economist*. "Europe must come to terms with the fact that we are not only existentially vulnerable, but also seemingly alone."

In truth, it could take a decade before Europe is able to defend itself without America's help. The enormity of the challenge can be seen in Ukraine. European countries are currently discussing the

prospect of a military deployment there to enforce any future peace deal. The talks, which are being led by France and Britain, envisage sending a relatively modest force, of perhaps low tens of thousands of troops. They would not be deployed in the east at the front line, but to Ukrainian cities, ports and other critical infrastructure, according to a Western official.

Any such deployment would, however, expose three serious weaknesses. One is that it would stretch European forces thin. There are approximately 230 Russian and Ukrainian brigades in Ukraine, though most are under-strength. Many European countries would struggle to produce a single combat-capable brigade each. Second, it would open up serious gaps in Europe's own defences. A British deployment to Ukraine, for instance, would probably swallow up units already earmarked for NATO, leaving holes in the alliance's war plans. Above all, the Europeans acknowledge that any deployment would need significant American support, not only in the form of specific "enablers", such as intelligence and air-defence assets, but also the promise of back-up, should Russia attack.

The fact that Europe would struggle to generate an independent division-size force for Ukraine exposes the scale of the ➤

→ ALSO IN THIS SECTION

**54 The Telegram: A "reverse Kissinger"**

task involved in Mr Merz's vision. Meeting NATO's existing war plans—with America present—would require Europe to spend 3% of GDP on defence, far above existing levels for most countries. Britain took a step in that direction on February 25th, announcing a plan to spend 2.5% of GDP by 2027, but even that may not be enough. Mark Rutte, the secretary-general of NATO, is said to be proposing a target of 3.7%. Yet making good American shortfalls would require a figure well above 4%.

Paying for that would be hard enough (see Europe section). Translating cash into capability is also harder than it looks. Europe would need to form 50 new brigades, calculates Bruegel, a Brussels-based think-tank, many of them "heavy" units with armour, to replace the 300,000 American troops that it estimates would be deployed to the continent in a war. The manpower requirements would be forbidding.

### Ranks of tanks

These figures are guesstimates. Bruegel's suggestion that Europe would need 1,400 tanks to prevent a Russian breakthrough in the Baltic states reflects traditional planning assumptions and is probably on the high side. In any case, this sort of bean-counting tells only half the story. Europe has impressive air forces, with a lot of modern jets. But those jets do not have a meaningful stockpile of munitions capable of destroying enemy air defences or striking distant targets on land or in the air, explains Justin Bronk of the Royal United Services Institute (RUSI), a think-tank in London, in a forthcoming paper.

Only some air forces, like Sweden's, have trained enough for high-intensity aerial warfare. Moreover, airborne electronic warfare and intelligence, surveillance, target acquisition and reconnaissance (ISTAR), or the ability to find and assess targets, "are almost exclusively provided by the US", notes Mr Bronk.

Another glaring problem is command and control, or the institutions and individuals that co-ordinate and lead large military formations in war. NATO has a sprawling set of headquarters across Europe, with the Supreme Headquarters Allied Powers Europe in Mons, Belgium, at the top, led by General Chris Cavoli who, like every Supreme Allied Commander Europe before him, is an American. "NATO co-ordination is often a euphemism for US staff officers," says Matthew Savill, a former British defence official now at RUSI.

European expertise in running big formations is overwhelmingly concentrated in British and French officers—both countries oversee two reserve "corps", which are very high-level headquarters. But Britain would probably be incapable of running a complex air operation on the scale and intensity of Israel's air war in Gaza and Leba-

non. "There is nothing that I'm aware of that Europe has that actually approaches the scale of what the Israelis have allegedly done," Mr Savill says.

If Europeans are able to generate and command their own forces, the next question is whether they could be kept fed with munitions. Europe's artillery production has rocketed over the past three years, though Russia, aided by North Korea, remains ahead. Europe also has missile-makers: MBDA, a pan-European company with headquarters in France, makes one of the world's best air-to-air missiles, the Meteor. France, Norway and Germany make excellent air-defence systems. Turkey is turning into a serious defence-industrial power.

Between February 2022 and September 2024 European NATO states procured 52% of new systems from within Europe and bought just 34% from America, according to a recent paper by the International Institute for Strategic Studies (IISS), another think-tank. But that 34% is often vital. Europe needs America for rocket artillery, longer-range air defence and stealthy aircraft. Even for simpler weapons, demand far outstrips capacity, one reason why European countries have turned to Brazil, Israel and South Korea.

The level of dependence on America is not uniform across the continent. Britain, for instance, is uniquely intertwined with America's armed forces, intelligence machinery and industry. If America were to cut off access to satellite imagery and other geospatial information, such as terrain maps, the consequences would be profound. Perhaps the main reason that Britain required America's assent to let Ukraine fire British Storm Shadow cruise missiles into Russia last year is that the missiles relied on American geospatial data for effective targeting. Britain would have to spend billions to buy replacement images, says Mr Savill, or turn to France. On the other hand, British entanglement with America can also provide leverage. Around 15% of components in the F-35 jet used by America are made in Britain, including

tricky-to-replace parts like the ejector seat.

As if the task of building independent conventional forces were not daunting enough, Europe faces another challenge. For 80 years it has sheltered under America's nuclear umbrella. If Europe is really "alone", as Mr Rasmussen claims, then the issue is not just that American troops would not fight for it, but that American nuclear weapons might also be absent.

"We need to have discussions with both the British and the French—the two European nuclear powers," Mr Merz said on February 21st, "about whether nuclear sharing, or at least nuclear security...could also apply to us." In practice Britain and France cannot replicate America's nuclear shield over Europe with their relatively small arsenals—around 400 warheads in all, compared with more than 1,700 deployed Russian warheads. American insiders sniff at the idea that this is adequate for deterrence, since they believe that Russia would be able to limit the damage to itself (never mind that Moscow might be gone) while inflicting worse on Europe. Doubling or tripling the size of the Anglo-French arsenals would probably take years and cannibalise money needed to build up conventional forces; Britain's deterrent already consumes a fifth of defence spending.

### Strategic thinking

Another issue is that although France has nuclear weapons aboard submarines and planes, Britain has only the former, which limits its ability to engage in nuclear "signalling" in a crisis, for instance by using low-yield nuclear weapons, since doing so would risk exposing the position of its submarines and thereby put its strategic deterrent at risk. Moreover, although Britain can fire its nuclear weapons without American permission, it leases the missiles from America—those not aboard submarines are held in a joint pool in the state of Georgia—and relies on American co-operation for key components.

These need not be insurmountable problems. Quiet conversations on European nuclear deterrence among European defence ministers have picked up in recent months. "The German debate is maturing at warp speed," notes Bruno Tertrais, who is one of Europe's leading thinkers on nuclear matters. "The British and the French will need to rise to the challenge."

Nuclear deterrence is not just a numbers game, he says, but a question of will. Mr Putin might take more seriously nuclear threats coming from Britain or France, which have more at stake than America. These are the questions that preoccupied European thinkers throughout the cold war; their return marks a new and dark period for the continent. "This", pronounced Mr Merz on February 24th, "is really five minutes to midnight for Europe." ■



## THE TELEGRAM

### *America's self-isolating president*

*No, Donald Trump's Putin-wooing is not like Nixon going to China*



**I**F AMERICA MUST be ruthless, at least let it be brilliant. That is the prayer that defenders of President Donald Trump must murmur, as he blames Ukraine for being invaded and sides with Russia at the UN. Mr Trump's admirers need to believe that cold yet clever gambits explain his concessions to Russia's leader, Vladimir Putin. One popular theory involves China. It is claimed that Mr Trump is wooing Russia to prise it from the arms of China, the superpower that is America's most daunting rival. Some call this a "reverse Kissinger".

The tag makes superficial sense. In the depths of the cold war, Henry Kissinger served as diplomatic counsellor to Richard Nixon, a president of large talents, weakly constrained by principle. Starting in 1970 the two men pulled off a masterstroke. They opened secret channels of communication with Chairman Mao Zedong, China's Communist Party leader. Embracing Mao was not for the squeamish: the ageing tyrant had much blood on his hands. Mao's great ambition was to end American support for Taiwan, the Nationalist-held island he considered a rebel province to be retaken by China. Declassified transcripts show Kissinger hinting on missions to Beijing that America would not block Taiwan's conquest, going far beyond his government's public line.

A mix of motives inspired Nixon's outreach, leading to his visit to China in 1972. Some involved selfish national interests, notably his (forlorn) hope that China might help him end America's war in Vietnam. Some, though, reflected Nixon's belief in America's responsibilities as guardian of a stable world order. Sounding quite the globalist, he wrote in 1967: "We simply cannot afford to leave China forever outside the family of nations, there to nurture its fantasies, cherish its hates and threaten its neighbours."

Nixon's and Kissinger's original intention was not to play a "China card" to contain the USSR. The pair hoped to stop China from backing Maoist insurgencies in the developing world. They talked, too, about usefully unsettling Soviet leaders, to prod them into arms-control pacts and other forms of detente with America. Only later would China and America forge an anti-Soviet partnership, including, astonishingly, CIA listening posts in Xinjiang, in China's far west, to spy on Soviet missile launches. Over the next

two decades China relied on the West, not the Soviet Union, for its modernisation.

Today, members of Mr Trump's inner circle offer various justifications for ending Ukraine's war and bringing Mr Putin in from the cold. Most involve China. Explaining America's waning interest in Europe's security, the defence secretary, Pete Hegseth, says "the United States is prioritising deterring war with China in the Pacific." Vice-president J.D. Vance calls it "ridiculous" for America to "push Russia into the hands of the Chinese", and also "ridiculous" for Russia to be "junior partner to the Chinese". In Trump-world a reverse-Kissinger play is an America First move. Alas, it is bad history and a still worse analysis of the present.

Most important, America did not drive China and the Soviet Union apart. By the late 1960s the former allies were on the brink of war. Emboldened by Maoist fervour and dreams of global revolution (and a hefty dose of nationalism), China accused the USSR of "socialist imperialism", calling that worse than America's capitalist imperialism. At one point 45 Soviet army divisions massed on China's border. Artillery duels raised fears of nuclear strikes.

Now China is the vastly stronger power, dominating Russia, its former "Big Brother". Signs abound of Russian ambivalence about that dependence on China. After its invasion of Ukraine triggered sanctions in the West, Russia has increasingly relied on Chinese buyers of its commodities, and on Chinese suppliers for tools and components that keep its factories humming, especially those churning out drones, missiles and tanks. Mr Putin has hinted at the hard bargains driven by China when buying his country's energy. But now that commerce is booming, the two countries can see how well their economies fit together (see China section).

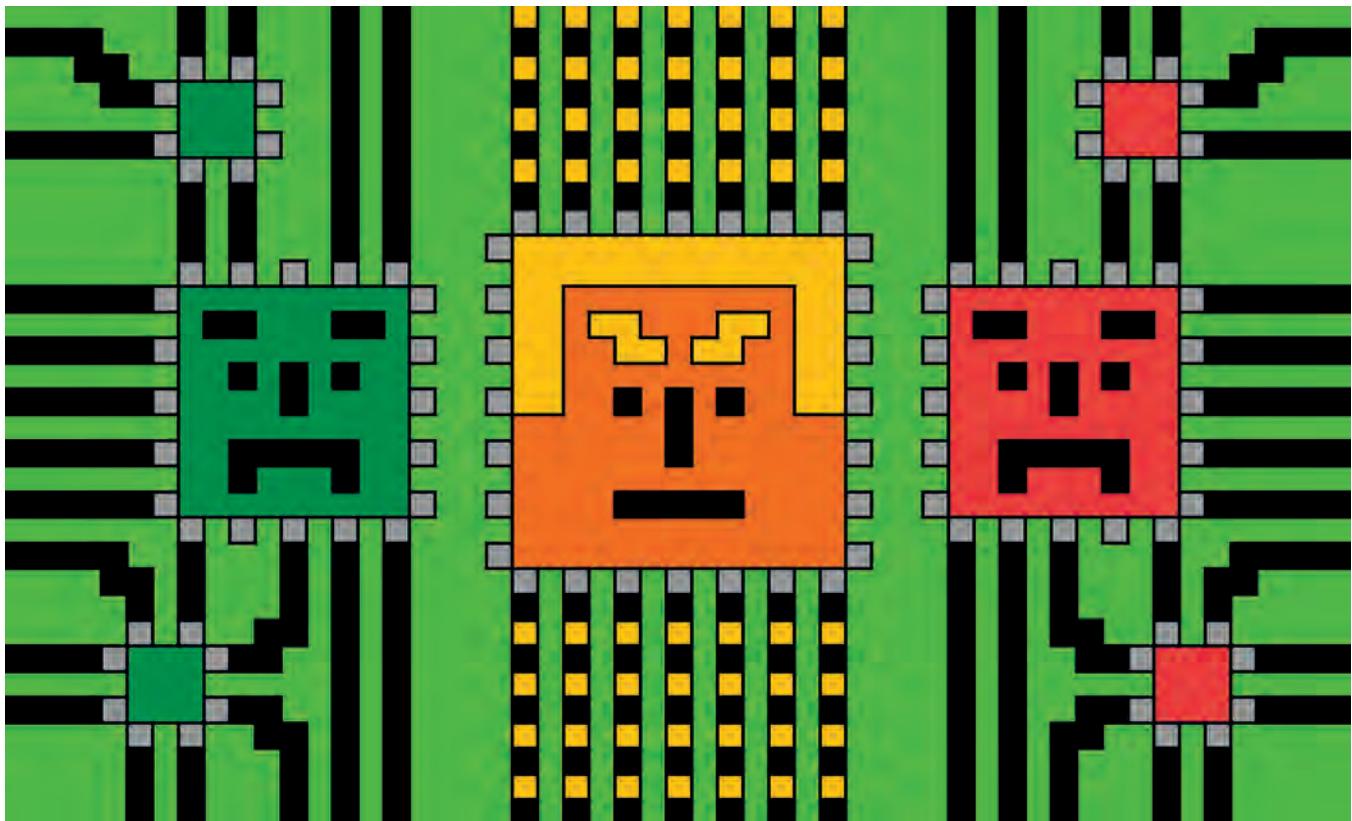
It is also true that the neighbours' diplomatic and security interests are not perfectly aligned. On the Chinese side, well-connected scholars say European governments are being unfair when they accuse China of backing Russia in its war with Ukraine. They admit, though, that the perception of support for Russia has gravely damaged Chinese interests in Europe. The same Chinese scholars grumble about Russia's ever-closer ties with North Korea, their country's troublesome neighbour and supposed ally. They express fears that North Korea might be repaid for sending troops to Ukraine with high-tech weaponry that destabilises the region. China and Russia are scratchy, suspicious partners, in other words. But this is not 1969. Russia is not frightened of China, and China is not frightened of Russia. Rather, the two countries are convinced that they are locked in a long-term contest for primacy with America, one which will outlast Donald Trump.

#### **Selfishness and ruthlessness are not the same thing**

Those portraying Mr Trump as a master strategist have one last problem. It is not even clear that Mr Trump believes he is walking in the footsteps of Nixon and Kissinger. He often seems impatient with geopolitics, and indeed with the notion that foreigners have history and core beliefs of their own. Instead, he seems to see ideology as an irritating obstacle to cutting business deals. In contrast, Mr Xi and Mr Putin are obsessed with history. They are masters at using geopolitical tensions and ideological differences to accrue power. Both leaders have stoked fears of external threats and of Western infiltration to impose harsh repression at home.

If Mr Trump is isolating any country it is his own, as he divides America from allies in Europe and the wider West. Admirers can call that ruthless if they must. Kissingerian cunning it is not. ■

## Business



### Chip diplomacy (1)

## Ground control to Jensen Huang

**Donald Trump could pose a more immediate threat to Nvidia than DeepSeek**

ONE HONOURABLE exception to the roster of tech billionaires standing behind Donald Trump at the president's inauguration on January 20th was Jensen Huang, the chief executive of Nvidia. He took a quieter approach, instead meeting Mr Trump at the White House just over ten days later. Earlier that week his company, the dominant supplier of artificial-intelligence (AI) chips, had lost \$600bn in market value during a sell-off precipitated by the release of the latest AI models from DeepSeek, a Chinese firm. Mr Trump's plans to respond to the upstart model-maker may have been as much on Mr Huang's mind as DeepSeek itself.

Nvidia's shares later made up much of the ground they lost after DeepSeek's thrifty approach to model-building raised questions over demand for the chipmaker's top-of-the-range graphics processing units (GPUs). On February 26th it reported strong results for the quarter ending in

January. Its sales grew by a sizzling 78%, year on year, to \$39bn. Profits also beat expectations, though gross margins fell.

The American government's response to DeepSeek is the next shoe to drop. The Biden administration sought to slow China's AI efforts by curbing exports of the most advanced chips and chipmaking tools, as well as by curtailing American

investment in Chinese AI firms. Reports swirl that the Trump administration is weighing tightening export controls. In his confirmation hearing Howard Lutnick, now commerce secretary, threatened to take a hard line on technology sales to China, pointing out that Nvidia's chips were used by DeepSeek. "It's got to end," he thundered. Sales to China make up about 15% of Nvidia's total. The firm did not comment on the likelihood of further restrictions, but they are expected. "We feel that there will be some incremental export controls in the wake of DeepSeek," says Joseph Moore of Morgan Stanley, an investment bank.

There are two trade-stifling levers the government may pull that would deal a blow to Nvidia. The first is to further limit the sale of GPUs directly to China. When the earlier chip controls took effect, Nvidia produced a scaled-down GPU for sale to the Chinese market, called the H20. The Trump administration is now said to be considering restricting sales of that chip, too. Dylan Patel of SemiAnalysis, a consultancy, believes Nvidia is suspending production of H20s in response to the threat (he says it produced over 1m of them in the nine months to the end of January). The chipmaker is quietly explaining to the American government that the H20 has no more processing power to help China ➤

#### → ALSO IN THIS SECTION

**56 MAGA's chipmaking dreams**

**57 How to dodge tariffs**

**58 The Zyn buzz**

**58 Airbus v Boeing**

**59 Secondhand fashion takes off**

**60 Bartleby: Our agony uncle returns**

**61 Schumpeter: Germany's new stars**

► achieve its AI dreams than commonplace gaming chips it sells in the country. That said, the chip's use in China for AI is reportedly soaring.

The American government's second lever would prevent Chinese firms from getting access to GPUs via third countries, which is the intention of the Framework for AI Diffusion, an interim rule introduced just days before Joe Biden left office. It aims to halt the illegal smuggling of GPUs to China and stop Chinese firms from getting access to American AI infrastructure via other countries' server farms. It will take effect in mid-May, unless ditched beforehand.

As it stands, the rule would limit the access of many countries to the most advanced GPUs, tethering them to American regulatory oversight and pushing them to ally with American cloud-computing giants such as Alphabet, Amazon and Microsoft. Nvidia hates it. It publicly lambasted the Biden administration when the rule was announced, calling it a "misguided" morass of overregulation that would weaken American competitiveness and undermine growth. Behind the scenes, it argues that restricting access to American AI technology for more than 150 countries risks alienating allies and pushing them into the arms of Huawei, a Chinese tech titan that is developing AI chips of its own. Even so, Gregory Allen of CSIS, a think-tank in Washington, says he believes the Trump administration will endorse the rule's "basic architecture", though it will put its own stamp on it.

Mr Huang may still hope to change the president's mind. Although he is not part of the tech "broligarchy" surrounding Mr Trump, he has good connections. In the run-up to the election Nvidia's boss lavished praise on Elon Musk, a pal of the president's, for the speed with which the entrepreneur-turned-hell-raiser built an enormous data centre in Memphis for xAI, his GPU-hungry startup. Even if hawks in the Trump administration want to bludgeon sales of AI chips to China, Mr Huang may hope that Mr Musk uses his power in the White House to soften the blow.

Geopolitics has already made life difficult for Nvidia in China. American sanctions on Huawei have kneecapped the chipmaker's strongest competitor in the country, but trade restrictions have hurt the American firm, too. Sales to China as a share of Nvidia's total are already down from more than a fifth two years ago. Efforts by the Chinese government to stimulate demand for home-grown chips have not helped.

By and large Nvidia has tried to remain in China's good books, which may be one reason it so openly criticises American export controls. That has not spared it from being used as a geopolitical football.

In December the Chinese government said it was investigating the American firm over alleged breaches of its anti-monopoly law, which was widely interpreted as a retaliatory response to curbs on American chips.

Uncertainty over Nvidia's business in China makes its continued growth all the more dependent on sales elsewhere. The chipmaker retains a dominant position in the rest of the world, and continues to outrun its competitors by frequently upgrading its hardware and software offerings. Sales of its new Blackwell AI architecture surged in the latest quarter.

The recovery in Nvidia's share price over the past month suggests that investors believe Mr Huang and others who argue that DeepSeek's breakthroughs, by making models cheaper, will mean more demand for the hardware powering AI, not less, by encouraging adoption of the technology. Since the DeepSeek rout, America's cloud-computing giants have signalled that they plan to continue ramping up spending on data centres. Yet a note published by analysts at TD Cowen, an investment bank, on February 21st claimed that Microsoft has recently cancelled some data-centre leases in America (the tech giant insists it is still committed to spending \$80bn on infrastructure this year). For all Nvidia's strengths, Mr Huang still faces trouble at home and abroad. ■

### Chip diplomacy (2)

## Making America fab again

### The trouble with MAGA's chipmaking dreams

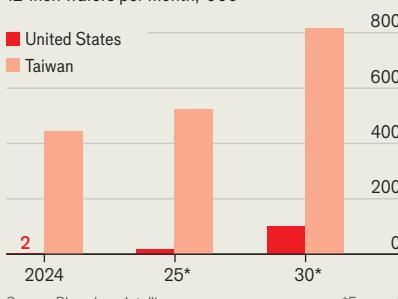
DURING A RECENT summit in Paris, J.D. Vance, America's vice-president, declared that the world's most powerful artificial-intelligence (AI) systems would be developed in America with "American-designed and manufactured chips". That is a lofty ambition, for although America leads the world when it comes to designing AI chips (see previous article), it long ago ceded its position as the global centre of chip manufacturing to Taiwan.

Today that island accounts for two-thirds of the world's production of leading-edge semiconductors—to the chagrin of American politicians on both sides of the political aisle. Donald Trump, Mr Vance's boss, has accused Taiwan of stealing America's semiconductor industry, and floated the idea of imposing duties of 25% on foreign-made chips. Yet no matter what Mr Trump does, the situation is unlikely to change much over the course of his term.

At first glance, American chip manufac-

### Raising Arizona

TSMC, leading-edge semiconductor manufacturing capacity, selected countries  
12-inch wafers per month, '000



Source: Bloomberg Intelligence

\*Forecast

turing looks to be experiencing a renaissance. The CHIPS Act, a \$50bn package of subsidies and tax breaks introduced by the Biden administration, has encouraged a flurry of investment. Intel, a once-mighty American semiconductor firm, plans to spend \$100bn on chipmaking factories (known as fabs) across four states. Samsung, a South Korean electronics giant, is likewise pouring \$37bn into semiconductor facilities in Texas. And TSMC, Taiwan's chipmaking champion, is investing \$65bn in three leading-edge fabs in Arizona, the first of which is already producing chips.

Look closer, though, and progress is shakier. Samsung has delayed the opening of its new Texas fab from late 2024 to some time next year. The firm reportedly plans to cut global investment in chip manufacturing by more than half in 2025 as it struggles to compete with TSMC in the production of advanced chips.

Intel is in an even worse position. Analysts worry that it is falling behind on rolling out its "18A" production process, which it was relying on to close the gap with TSMC in leading-edge chipmaking. Profits have evaporated, debts are piling up and speculation is growing that the firm could be broken up. Broadcom, a fabless chip firm, is said to be interested in Intel's design division, while Mr Trump has reportedly sounded out TSMC for a possible joint venture to salvage Intel's manufacturing operations.

That leaves the Taiwanese firm as the lynchpin of America's effort to produce advanced chips domestically. It is increasingly in a league of its own. SemiAnalysis, a research firm, forecasts that the chipmaker's revenue will rise by 25% this year, compared with growth in the single digits for the industry as a whole. Sales of its AI chips are expected to double. The firm continues to upgrade its manufacturing technology every two to three years and churn out ever smaller chips, while also expanding capacity. It is planning up to \$42bn of capital expenditures in 2025, a 41% jump from last year. Claus Aasholm, a



► semiconductor analyst, reckons TSMC has the capacity to “carry this AI revolution for the next two years alone”.

Yet on current projections nearly all of TSMC’s production of advanced chips will remain in Taiwan until well after the end of Mr Trump’s second term. Bloomberg Intelligence, a research group, estimates that around 3.5% of the firm’s leading-edge capacity will be in America by the end of this year. Even by 2030, when all of TSMC’s American fabs are operational, the figure will be only around a tenth (see chart on previous page).

Mr Trump has derided the CHIPS Act as wasteful, but the stick of tariffs—which he prefers over the carrot of subsidies—may not have much effect. Few chips are sent directly to America. Last year semiconductor exports to the country amounted to just \$82bn, according to Bernstein, a broker, compared with total global sales of \$628bn. Instead, most chips destined for America travel elsewhere first, to be fitted into server racks or smartphones. Even if elaborate measures were taken to apply levies to semiconductors embedded in other products, customers of leading-edge chips tend to focus less on cost than capability, which may make them willing to bear higher tariffs.

Another Trumpian tactic could be to encourage TSMC to produce more in America as part of a wider deal with Taiwan’s government. Taiwan has long viewed its semiconductor industry as a “silicon shield”, guaranteeing protection from America and its allies against a Chinese invasion. That is why in the past it has required TSMC to keep production of its most advanced semiconductors at home. This year the company will begin manufacturing two-nanometre (nm) chips in Taiwan, even whizzier than the 4nm ones it is making in Arizona.

Recently, perhaps in an effort to appease Mr Trump, Taiwan’s government has eased those restrictions. TSMC for its part may well announce more investments in America, and could even go along with Mr Trump’s plan to help resuscitate Intel.

#### Crossed wires

Even then, any additional production would be a long time coming. Exyte, an engineering firm, estimates that a fab in America takes around 38 months to be ready for production—about twice as long as in Taiwan. C.C. Wei, TSMC’s boss, has complained about the sluggish pace, saying that when building a fab in America, “every step requires a permit.”

Building new fabs is also costly. TSMC has been awarded \$6.6bn in grants and \$5bn in loans under the CHIPS Act, but setting up just one fab is far more expensive than that. Brian Potter of the Institute for Progress, an American think-tank, esti-

mates that in the late 1960s they cost about \$30m in today’s money to build and equip. TSMC’s newest fabs in Arizona will cost around \$20bn each.

A further problem is that AI chips require advanced packaging to integrate several components, known as chiplets. Although TSMC plans to build an advanced-packaging facility in Arizona, for now nearly all of its capacity for this is in Taiwan. That means that AI chips made in America will have to be shipped back to Taiwan for packaging. No matter how much American politicians yearn for semiconductor self-sufficiency, their AI ambitions will continue to depend on Taiwan and its chipmaking champion. ■

becoming “existential” for companies, says Edward Steiner of Sandler, Travis & Rosenberg, a law firm. For many, moving production to America—as Mr Trump would like—remains prohibitively expensive. Companies are therefore likely to explore more creative approaches instead.

Those hoping to dust off their playbooks from Mr Trump’s first term will probably be disappointed. Exemptions from duties, such as the one that Apple, maker of the iPhone, was granted in 2019, may be harder to get this time; Mr Trump has promised “no exceptions”. Likewise, moving production from China, on whose goods Mr Trump has imposed an additional 10% tariff, to places such as South-East Asia may not do much to shield firms from duties, particularly if Mr Trump follows through with his threat of applying reciprocal levies. Companies could move operations to Thailand or Malaysia but end up having the same conversations in 18 months, says Dave Townsend of Dorsey & Whitney, another law firm.

Some bosses may look instead at wily workarounds. One of these is known as “tariff engineering”, which includes tweaking products to change their official classification, as the sugar manufacturer did. Duties can vary significantly even when merchandise appears similar, and “therein lies the opportunity,” notes Lawrence Friedman of Barnes, Richardson & Colburn, one more law firm.

Companies may take inspiration from Converse, a footwear brand which over a decade ago altered the design of various models of its Chuck Taylor All Star shoes, which are imported from countries such as Vietnam, to change their classification. Simply by adding a layer of fabric on about half the insole, Converse was able to cut the duties it pays on the canvas trainers to ►

#### Tariffs

## Skipping duties

#### A guide to dodging Donald Trump’s tariffs

**I**N 1881 AMERICAN customs officials stopped a suspicious shipment of sugar, believing its colour had been deliberately altered. Under the prevailing tariff code, the darker the colour, the lower the grade and the lighter the levy. A chemical test confirmed the officials were correct. The case went all the way to the Supreme Court, which determined that the importer could in fact alter merchandise so as to lower the duty rate, and therefore had done nothing wrong.

Not a week goes by without new threats from Donald Trump to slap fresh duties on imports into America. Sweeping tariffs risk



Sneaky

as low as 7.5%, compared with tariffs of up to 48% for other footwear. Clothing manufacturers such as Columbia Sportswear have similarly added pockets below the waist on shirts, T-shirts and blouses to move them into a product category for which tariffs are lower.

Another form of tariff engineering involves fiddling with where a product ostensibly comes from. Consider the cable harnesses in Hyundai's cars, made up of wires, plastic coverings and connectors. American customs officials have deemed these to be made in South Korea, where the carmaker hails from. Yet although the raw material is manufactured there, most of the production process happens in China,

with the finished harness then sent back to South Korea for testing and packaging. Designing supply chains so that just enough production happens in a place that benefits from lower tariffs is cheaper than shifting manufacturing in its entirety, and allows firms to be more nimble when new levies come in.

Even if none of this is possible, there are other clever ways companies can lessen the burden of tariffs. The "first-sale" provision, created by a court ruling in 1988, allows importers to value goods based on the price charged by the manufacturer, rather than the higher ones charged by middlemen along the way. To preserve cash, companies can also delay the pay-

ment of duties. In a note sent to clients this month, Maersk, a shipping giant, advised using "bonded warehouses" that allow companies to store goods without paying duties until they are sold, as well as "temporary import bonds" for goods that are set to be re-exported.

Of course Mr Trump may eventually stop these manoeuvres, too. In 2008 America's customs agency proposed scrapping the first-sale rule, though lawyers fended off the threat. Yet even if some loopholes are closed, companies are bound to find others. Ultimately, says a trade lawyer, "people want stuff, and they'll get it one way or another." Expect plenty of ingenuity in the years ahead. ■

### Big tobacco

## Gummed up

Nicotine pouches are giving investors a buzz, at least for now

**W**HEN TUCKED between lip and gum, a small white pouch of Zyn is intended to give the user a pleasant nicotine hit. Its maker is getting a lift, too. Shares in Philip Morris International (PMI), the world's largest publicly traded tobacco company, are at record highs. Investors' enthusiasm, which has surged since a bumper earnings report in early February, has little to do with sales of Marlboro or PMI's other cigarettes. It is fuelled by the firm's booming "smoke-free" products (broadly, anything but burning tobacco)—and chiefly by Zyn.

In 2024 shipments of Zyn rose to 644m cans (of 15-20 nicotine pouches each), up by more than half from the year before. In America, where Zyn has become something of a MAGA favourite, PMI has struggled to keep up with demand. It plans to expand a factory in Kentucky and to build a new one in Colorado. In January America's Food and Drug Administration (FDA) permitted Zyn to be marketed as being safer than cigarettes (though not risk-free).

There is much for investors to like about smoke-free products. Margins are fatter than for cigarettes, and widening. They also offer protection against an existential threat to tobacco companies: falling demand for their core product. Globally, tobacco use has plunged by about a quarter since 2010, thanks to health campaigns and stricter government policies. Some rich countries are even flirting with all-out bans. The attraction of alternatives that consumers like and regulators tolerate is clear.

Few tobacco companies have been as vocal as PMI in pursuing smoke-free products. Jacek Olczak, its chief executive, is full of bad things to say about smoking. He once recounted telling a hopeful suitor to ditch smoking or "you will never date my daughter." The company has pledged to make two-thirds of its revenues from smoke-free sources by 2030. It chose to stay largely out of vapes, the industry's main alternative to cigarettes, but says it has spent billions developing IQOS, a device that heats rather than burns tobacco. And in 2022 it spent \$16bn on a majority stake in Swedish Match, Zyn's inventor.

Might Zyn's success become a source of trouble? Nicotine pouches are growing in popularity among teenagers. The latest National Youth Tobacco Survey reports that 1.8% of American middle- and high-school children (aged 11-18) have taken up the habit; only vaping, at 5.9%, was a more popular source of nicotine. "Zynfluencers" post videos of themselves using the pouches on TikTok. For now, the FDA seems relaxed. In January it said the risk to children using pouches did not outweigh the benefit to adults switching from cigarettes.

Yet smoke-free products have brought big tobacco headaches before. In 2018 Altria, another big tobacco firm, snapped up a stake in Juul, then a leading vape-maker, for \$12.8bn. Within four years Juul was nearly bankrupted by lawsuits blaming it for adding to the craze in vaping among the young. That should serve as a cautionary tale.

### Planemakers

## Cruising

Airbus has not taken full advantage of Boeing's troubles

**B**OEING MIGHT have hoped that coughing up \$1m for Donald Trump's inauguration fund would ease relations with America's incoming president. Yet "not happy" was the verdict he delivered on February 20th. His displeasure concerns a contract that the American aerospace giant signed during his first term to replace the twin planes that serve as Air Force One. The new jets, which should have arrived in time for Mr Trump's second term, may no longer be delivered during his current stint in the White House, after difficulties with supply chains, the customisations required and a shortage of workers with the right security clearance. Mr Trump has said he is considering buying secondhand instead.

The only consolation for Boeing is that the president confirmed he "would not consider Airbus". It is a rare victory for the ►

### Breaking formation

Share price, January 3rd 2022=100  
\$ terms



American planemaker over its European archrival, which in recent years has raced ahead in production and deliveries of passenger jets, the main business for both firms. Even so, Airbus has not taken full advantage of Boeing's troubles. That could leave the duopoly open to a new entrant.

Recent annual results from the planemakers confirmed Airbus's ascendancy, with revenue of €69bn (\$72bn) and an operating profit of €5.4bn last year, compared with \$66bn of revenue and a \$10.7bn loss for Boeing. Airbus delivered 766 planes in 2024; Boeing managed just 348.

The growing disparity between the two is largely a result of Boeing's travails manufacturing commercial jets. Regulators have intervened to monitor quality control after a mid-flight blowout of a panel from a 737 MAX, Boeing's flagship narrow-body jet, at the start of 2024. That incident followed the crashes of two such planes six years ago, linked to faulty flight-control software, which resulted in the grounding of the entire MAX fleet for 20 months, huge costs and a battered reputation. A strike by 33,000 workers at the end of last year that halted production of most planes for nearly eight weeks has only made matters worse for the planemaker.

Even if Boeing can restore its reputation and ramp up production, Airbus will maintain its lead in narrow-body jets for some time. The American firm hopes to raise the rate of 737 MAX production to around 38 planes a month later this year. Airbus already makes around 50 a month of its competing A320 family, and hopes to increase that to around 75 by 2027.

Yet both firms are weighed down by supply chains struggling to recover after severe cutbacks during the pandemic. And Airbus's lead in narrow-body jets is not mirrored in wide-body ones. In 2024 Boeing delivered 83 twin-aisle planes, only six fewer than Airbus. The A220, a smaller passenger jet, remains unprofitable and A320 production hardly grew at all in 2024. Both firms may also be distracted by difficulties in other divisions. Boeing's defence-and-space arm has lost money for three years. Airbus's space business took charges of €1.3bn last year amid troubles at its satellite unit.

With the duopoly's combined backlog now up to 14,000 orders, would-be competitors are looking to cut in. One is COMAC, China's state-owned planemaker. Its C919 narrow-body jet will not constitute much of a threat for some time—just 30 deliveries are planned for 2025—but could eventually take market share in China and elsewhere. Rumours that Embraer, a Brazilian maker of smaller regional jets, is considering taking on the Airbus-Boeing duopoly are growing louder. But even if it does, it will be a while before Mr Trump can look elsewhere for a new ride. ■

## Fashion

# Re-commerce

### Used clothing is becoming big business

**S**ECONDHAND FASHION, once relegated to charity shops, is now in style. Vestiaire Collective, a luxury resale site, featured in an episode of the latest season of "Emily in Paris", a Netflix drama known for its designer costumes. eBay, an online marketplace, has partnered with "Love Island", a cult British reality show, to kit contestants out in used clothes. At London Fashion Week last year Vinted, a Lithuanian resale site, and Oxfam, a charity, showcased secondhand outfits.

The global market for used clothes and accessories is now worth some \$100bn, according to research from Lombard Odier, a bank, up from \$30bn-40bn in 2020. McKinsey, a consultancy, reckons the American resale market grew 15 times faster than clothing retail more broadly in 2023, and that secondhand sales will account for 10% of the global apparel market this year. Some 30,000 items are now newly listed on Vestiaire every day. At a time when many fashion brands are struggling, resale sites are booming. How much bigger will they get?

Some shoppers buy secondhand for environmental reasons. The fashion industry is responsible for about 10% of global carbon-dioxide emissions, more than shipping and air travel combined. It uses a lot of water, too.

Yet as Maximilian Bittner, Vestiaire's chief executive, notes, "by far the domi-

nant driver is price." Stretched consumers are increasingly turning to used goods to save money. Vestiaire has calculated that secondhand designer gear bought on its site is 33% cheaper on average than first-hand fast fashion from firms such as H&M, rising to 64% for coats and 72% for dresses, measured by cost per wear (calculated as the price of an item minus its resale value, divided by the amount of times it's worn).

There is plenty more growth to be had. Analysts at Wells Fargo, a bank, reckon there are \$200bn-worth of luxury goods sitting in people's wardrobes that are ripe for resale, of which only 3% make it onto the market each year.

To entice more people to part with their "pre-loved" outfits, resale platforms are looking to make the process cheaper and easier. Vinted scrapped listing fees for sellers back in 2016 (it charges a fee of around 5% to buyers instead). Last year Depop, a London-based social commerce firm, and eBay followed suit in Britain. For many would-be sellers, though, the hassle remains a bigger barrier. Mr Bittner recently spent about half an hour putting four of his own items up for sale on Vestiaire. He says that is still too long. A number of resale platforms are now investing in artificial-intelligence tools to help sellers fill in product descriptions and advise on pricing.

Resale platforms are using technology to improve the experience for buyers, too. Shoppers want to know that branded goods are authentic, particularly when it comes to pricier designer fare. Hiring experts to manually check products is costly and slow. But there are a growing number of whizzy alternatives. Osmo, one startup, uses sensors to authenticate shoes by their odour. Ordre, another startup, helps brands create a "digital fingerprint" of their products by photographing parts ►



A show of thrift

► of an item during the production process. Growth is one thing. Profit is another. Investors have become impatient with loss-making resale platforms. Shares in The RealReal, an American luxury-resale platform, have lost three-quarters of their value since the company listed in 2019. Those of thredUp, another online-resale firm, have dropped by almost 90% since its listing in 2021. Neither firm is in the black. Vestiaire, founded in 2009 and still privately held, promises that it will become

profitable in the coming quarters.

Vinted, which also remains private, is a rare exception, having turned a profit in 2023. The firm has invested in its own logistics and payments arms, and has its own servers and security software. Thomas Plantenga, the firm's boss, says doing this "unsexy stuff" keeps costs down, though he acknowledges the strategy makes the business "more complex".

Perhaps the biggest threat to profits, though, is competition. Charity shops and

online marketplaces are not the only place to buy used clothes. Brands including Lululemon and The North Face are getting into resale themselves. A growing number of shoppers are buying secondhand clothes through social-media platforms like TikTok. As the industry grows, others may take an interest. Mr Plantenga of Vinted worries his firm could one day be crushed by a Silicon Valley tech giant. For now, though, there are plenty of wardrobes still to be cleaned out. ■

## BARTLEBY

### *The Economist's office agony uncle is back*

*Another bulging postbag for Max Flannel*

DEAR MAX, I am hiring for an open position on my team. We are having trouble finding good candidates, and my boss just came in to tell me that we shouldn't waste time looking for a purple squirrel. I had absolutely no idea what he meant but did not want to let on, and said that we probably shouldn't hold out for a crimson gerbil either. He paused for what seemed like a year, then nodded and agreed with me. What the hell is going on?

*A purple squirrel is a piece of jargon for a candidate that meets every criterion on a job application: they have this nickname because they don't exist. Your boss presumably now thinks that a crimson gerbil is another term for the same thing. Neither of you should admit your ignorance. Neither of you will.*

I have just been on a business trip to America and have a question. What is going on with the toilets over there? The cubicles have this absolutely enormous gap at the bottom, deep enough that a pig could trot underneath and join you. I can just about understand why you might want to leave a small gap. But this is basically like camping in the open.

*I am told that smaller doors cost less and that a bigger gap means easier access in case of an emergency. I doubt that helps ease your sense of discomfort. But I'm also not sure this really counts as a workplace dilemma. Or that you have many options.*

I am often blamed for things going wrong at my workplace. For all intensive purposes, I am the office escape goat. Even when my work clearly passes mustard, I am told that I need to shake up. Can you help?

*There is literally nothing I can do to help you, I'm afraid.*

I occasionally have to take and make personal calls at work but I sit in an

open-plan office. I could take them at my desk, as others do: the person next to me has been grappling loudly with a fungal infection for months. But I detest her as a result. Where do you advise I go?

*Lots of people write to me about this problem, and the fact that it is so common explains why there is no good answer. Meeting rooms and phone booths are already full of people managing kitchen renovations. The stairwells are rammed with colleagues trying not to have their kids excluded from school or having whispered arguments with their spouses. My best advice is to head outside or not to have a personal life.*

My manager has started requiring that we play something called the statue game in order to introduce more "fun" into the workplace. He picks some poor soul, who has to freeze in position at some point during the day. Everyone who notices that this person has become a statue has to freeze, too. The last person to notice loses. Should I refuse to play or grin and bear it?

*You should probably join in but also urgently start looking for other work. In the meantime, if you have been asked to freeze*

*first, make sure you do it at a point that suits you: when you have been asked where that overdue report is, say, or when you are having a coffee outside.*

I was recently at an in-person meeting with a group of colleagues. I asked one of them for their point of view on something, and he asked me to come back to him later because he was in another meeting. It was only then that I noticed his ear buds and realised that his tablet was a sea of faces. Was he being very productive or very rude?

*Definitely not productive and definitely discourteous but also much less rude than would once have been the case. The pandemic made it acceptable to do other things while in meetings. Just watch people on Zoom. The ones with poor eyesight are particularly revealing: you can literally see their expense claim reflecting off their glasses. It might help to put in place an explicit "one meeting at a time" rule. And to ask yourself whether your organisation needs so many meetings in the first place.*

My team gave me a "world's best boss" mug as a gift last week. I was a bit surprised at first, because I think they are all completely useless. But then I realised that they must appreciate my relentlessly high standards and uncompromisingly candid approach to management. My wife, however, happened to see it last night and instantly said that the mug could only be sarcastic. What should I do?

*Take it to work and carry it around. If the gift was sincere, everyone will be happy. If the gift was not meant in good faith, members of your team will get a small kick out of seeing you drinking from it. In the meantime, my sympathies to your wife. If she, or anyone else, wants to write to me with an office problem, I'll be back with another postbag in the spring.*



## SCHUMPETER

### *At your service*

*German business is no longer all about industry*



GERMANS ARE a brooding bunch. After all, their language gave the world “angst”. After five years of trouble some may even be feeling a sense of *Niedergeschlagenheit* (literally, beaten-downness). Covid-19 was followed in 2022 by war in Ukraine, soaring energy prices and cooling Chinese demand for German wares. Europe’s biggest economy last grew year on year in the first quarter of 2023—and then only by a downbeat 0.2%.

Now Donald Trump may end up drawing down the American troops who have guaranteed German security for 80 years and slapping tariffs on the country’s exports. Although an election held on February 23rd will probably result in a centrist coalition taking power under the leadership of the conservative Friedrich Merz. But German voters have handed parties on the far left and far right enough seats in the Bundestag to block the constitutional reforms necessary to unshackle spending on defence and other much-needed public investments.

Amid this gloom one group has been feeling the opposite of *niedergeschlagen*: investors in German blue-chip companies. The DAX 30 index, which tracks the bluest of them, is up by nearly half over the past two years. Across the Atlantic, the Dow Jones Industrial Average has risen by just a third in that period.

The divergence between Germany’s economy and its big businesses is not that mysterious. DAX companies generate around 80% of their revenues abroad, including 24% in go-getting America. More intriguing in a country renowned for its engineers is the source of the DAX’s rise. Forget industrial giants like BMW and BASF. From Adidas and Allianz to Zalando, the beaming new face of Deutschland AG is its service and consumer firms.

A decade ago the DAX was dominated by makers of things that roll or spill over your foot. Car and chemicals firms made up 30% of the index by value. Today their combined share is down to around 10%. Technology, telecoms and finance represent nearly half, up from less than a third. SAP, a business-software firm with a market value of \$350bn, is worth more than half as much again as Mercedes-Benz, Porsche, BMW and Volkswagen put together. Only one of the five biggest firms in the DAX, Siemens, represents Germany’s old-school industrial strengths. And even that engi-

neering giant derives a good chunk of its revenue from services.

To be sure, the string of calamities that has beset Germany since 2020 has been particularly disastrous for its industrial champions. Their energy-intensive products became costlier to make after Russia tightened the natural-gas taps in response to European sanctions over its assault on Ukraine. The slowing Chinese economy needs fewer of their capital goods, and electrically inclined Chinese motorists want fewer of their internal combustion engines. Peddlars of more intangible wares are less exposed to these headwinds, whether they provide software (SAP), telephony (Deutsche Telekom), insurance policies (Allianz and Munich Re), loans (Deutsche Bank and Commerzbank), e-commerce (Zalando) or three-striped street cred (Adidas).

Yet heavy industry’s relative decline is only part of the story. For the new stars of Germany’s corporate firmament have outshone not just their old-economy rivals at home but also direct competitors abroad. SAP is now worth more than Salesforce, an American business-software titan, and is closing in on Oracle, another Silicon Valley rival. The share price of Deutsche Bank has risen twice as much since early 2020 as that of JPMorgan Chase, America’s biggest bank, and Commerzbank’s nearly three times as much. In terms of value creation, Adidas is running rings around Nike. Deutsche Telekom has generated greater returns for investors in the past two years than any other firm in its sector, including the most valuable, T-Mobile, an American giant it majority-owns. On February 26th the German firm announced a record dividend after reporting strong annual results.

Some of this is a bounce off a low floor. Earlier this century Deutsche Bank first tried too hard to become a global banking powerhouse and then lived through years of negative interest rates at home that made it hard for German lenders to make money. By early 2020 its share price had plummeted by more than 90% from its peak in 2007. The firm’s recent run of good fortune has a lot to do with the fact that it “is no longer crap”, sums up one analyst. SAP, too, was falling behind its American rivals, especially in cloud computing, until Christian Klein, its CEO, orchestrated a bold turnaround in late 2020. That initially caused a sell-off that wiped \$40bn from its market value in a day. Yet it was necessary to ensure future growth, recalls Sebastian Steinhaeuser, who was then Mr Klein’s chief of staff and is now chief operating officer.

#### Trump und Drang

Mr Trump’s antagonistic stance towards Europe may force more German corporate reinvention. “Germany needed to be kicked out of its funk,” observes a DAX executive. And the Trump doctrine is a right kick in the backside.

Investors seem to be concluding as much. If Trumpism is meant to be a blessing for America’s stockmarket, it looks like a godsend for Germany’s. Since the American election in November, which coincided with the collapse of the centre-left coalition in Berlin that triggered last week’s poll, the DAX is up by 20%. It has handily outperformed not just the Dow, whose equal weighting of constituents can conceal the surging values of multitrillion-dollar tech titans like Apple, Microsoft and Nvidia, but also the S&P 500, which accounts for market capitalisation.

The mood has rubbed off on Germany’s industrial stragglers. Volkswagen’s share price has also risen by 20% since November. Rheinmetall, an armaments maker, has almost doubled in value. Still, it will be a while before they eclipse Germany’s new service stars. ■

## Finance & economics



### Wealth transfer

## The bequest boom

SAN FRANCISCO

To get rich, forget about your career. Today an inheritance is what matters

**A**S A SINGLE MAN of large fortune; four or five thousand a year. What a fine thing for our girls!" In "Pride and Prejudice" Jane Austen did not have to explain to the 19th-century reader what Mr Bingley's "four or five thousand a year" meant, or why it excited Mrs Bennet. It was obvious. Mr Bingley was an heir. And the surest way to get rich was not by working hard but by marrying the right person.

Fast-forward to today, and rich countries are starting to look like Austen's world. In ways that will upend the economy and society, inheritance is back.

Government statistical offices publish almost no data on inheritances, since their surveys are ill-equipped to track huge, one-off payments. So *The Economist* has gathered academic estimates on the annual "inheritance flow"—the value of what people pass on to heirs in art, cash, properties and the like—for a range of countries (see chart 1 on next page). In 1900 inheritances were

worth over 20% of GDP in some countries, as people passed on vast stock portfolios and estates. The value of inheritances then fell in the 20th century, before more recently roaring back. By the end of the 2010s inheritances were worth, on average, 10% of GDP. This year people across the rich world will inherit on the order of \$6trn.

In many countries the share of wealth that comes from inheritance is also rising. UBS, a bank, suggests that in 2023 53 people became billionaires by inheriting money, not far short of the 84 who did so by working. As a share of national output, an-

nual French inheritances have doubled since the 1960s. Germany's have almost tripled since the 1970s. In Britain they are twice as important, relative to earnings, for those born in the 1980s as for the generation before. Inheritances in Italy are now worth more than 15% of GDP—enough, perhaps, to get the modern Mrs Bennet to ship her daughters to parties in the palazzi of Rome. Only Ireland seems to buck the trend of becoming an inheritocracy: there, at least, bequests are modest and have not grown much in recent years.

In America today, for every \$100 employers pay a year in wages, the dead leave behind \$20. And such figures, striking though they are, underestimate the shift to an inheritocracy. The average family size has fallen sharply in recent years. A given inheritance is therefore spread over fewer people. Using British data, we estimate that in recent decades falling birth rates have raised the amount going to the average heir by some £60,000 (\$75,000), or 24%. Having a brother or sister might be nice, but they come at a price.

Falling inheritance taxes also increase the share of a bequest that an heir can keep. In the early 20th century, revenues from death duties accounted for a sizeable chunk of the total tax take in America and Britain (see chart 2). But in the latter part of the century, politicians turned against the ➤

#### → ALSO IN THIS SECTION

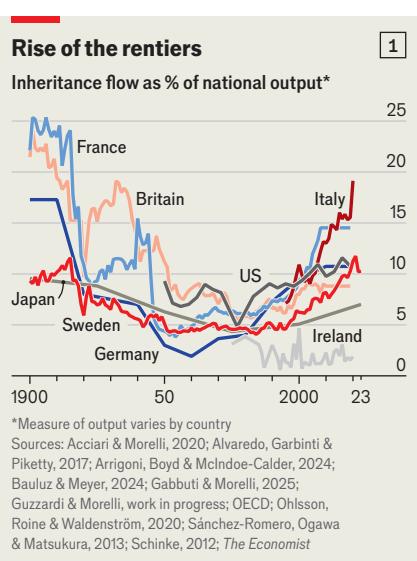
- 64 Buttonwood: Ultra-cheap investing**
- 65 Trump v the bond market**
- 66 Crypto's real craze**
- 67 Free exchange: Indian poverty**

taxes. Some were swayed by lobbying. Others feared that, in a globalised world, taxes on wealth would prompt rich folk to up sticks. Today death duties account for well under 1% of government revenues across rich countries. Several places, including Australia, Canada, India, Norway and Russia, have abolished them entirely. Many in America would surely like their government to do the same. More than 20 American states binned their wealth-transfer taxes between 1976 and 2000.

Popular culture hints at the growing importance of inheritance. "Succession", a TV series, focuses on the wranglings of a set of siblings who hope to gain control of their father's media empire. "Crazy Rich Asians" follows the trials and tribulations of a woman marrying into a Singaporean dynasty. Popular fiction, from "The Nest" by Cynthia D'Aprix Sweeney to John Lanchester's "Capital", deals with the questions raised when people inherit vast sums. In the latter, a character receives a house in London: "The equation was too plain and too depressing. In the debit column, she had lost her mother; in the credit column, she now had a gigantic pile of cash."

The rise of the inheritocracy reflects three factors: increasing wealth, changing demography and slower economic growth. After the first and second world wars, the value of wealth, relative to national income, collapsed. Many of Europe's buildings were destroyed. High inflation eroded the value of cash and government bonds. Politicians developed a taste for heavy wealth taxes and nationalisation. Many wealthy families, including the Vanderbilts, squandered their fortunes.

Since then housing, in particular, has become more valuable, partly owing to restrictive planning policies, which constrain supply. The value of buildings owned by Britons has risen from just over £1trn (130% of GDP) in the mid-1990s to just under £7trn (270% of GDP) in recent years. Wealth taxes are out of favour, stockmarkets have performed fantastically, while inflation, at least until recently, has been low.



Because of the rise of wealth managers and index funds, the rich have become better at avoiding the fate of the Vanderbilts.

The second factor is demography. Baby-boomers have soaked up wealth, having come of age just at the point when house prices and stockmarkets started soaring. Germans aged over 65, who make up a fifth of the population, own a third of the country's wealth. American baby-boomers, also a fifth of their country's population, own half of its net wealth, or \$82trn (see chart 3). Now the boomers are starting to die, leaving large estates to their heirs.

### Lucky Irish

Economic growth is the third factor. In 2014 Thomas Piketty of the Paris School of Economics and Gabriel Zucman, then of the London School of Economics, presented evidence that slow-growing countries accumulate more wealth, measured in relation to national income. People add to savings at a fairly consistent rate, but GDP rises less quickly. In recent years, owing to weak growth in both populations and productivity, rich-world GDP growth has slowed markedly. According to our data, the fastest-growing countries, such as America and Ireland, appear to be less afflicted by inheritocracy compared with the slowest, such as Germany and Italy.

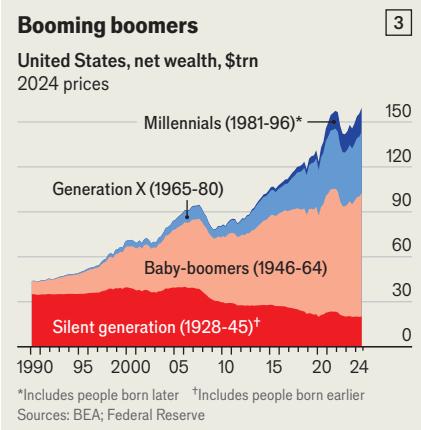
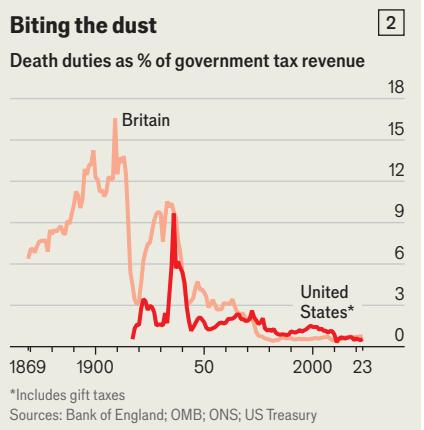
The inheritance boom may, in turn, reinforce the trend towards slower economic growth. Just as in Honoré de Balzac's time, the best way to get rich is increasingly not to work hard, but to marry well. "You will need to suffer ten years of misery...and lick the courthouse floor with your tongue," says a character in "Père Goriot", as he lectures another about how only an idiot would choose a salary over an inheritance. In the 21st century, the incomes of the top 1% of French inheritors are once again higher than those of the top 1% of workers. The economic implications may be big. If

people focus on matchmaking, rather than starting a company, innovation will suffer. Already, across the rich world, entrepreneurship is in long-term decline.

Surging inheritances are likely to have even larger social effects. They widen the gap between people at the top and bottom. Data from the Federal Reserve suggest the average American in the top 5% of earners has received well over \$50,000 in inheritance, compared with about \$5,000 for someone in the middle. Hero Ashman of the University of California, Berkeley, and Seth Neumuller of Wellesley College estimate that intergenerational wealth transfers explain a quarter of the wealth gap between black and white Americans.

The inheritance boom will create particular inequalities in the housing market, whether wealth transfers are made at death or during life. Research on America by Legal & General, a financial-services firm, suggests that if the "Bank of Mum and Dad" were a business, it would be among the ten biggest mortgage lenders. Generous support from relatives, in turn, raises the homeownership rate among the young—by perhaps a third or more, according to a paper by Eirik Eylands Brandaas of the Fed. At the same time, people without benefactors lose out.

These findings have important implications for the marriage market. Our advice is clear: you should find a modern-day Mr Bingley with "four or five thousand a year", rather than someone who is clever or hard-working. Consider two millennials, "Inheriting Isabel" and "Nonbeneficiary Nancy", who both live in London and earn more than 90% of people in the city (£100,000, or \$126,000, a year). Given their pay, they both might expect to buy a 90th-percentile home in the capital. But that house costs on the order of £1.2m. Fortunately for Isabel, her parents have given her such a home. Nancy has no such luck. Although she works hard and puts away half her post-tax salary, she may never be able to pay off the mortgage on a house that pricing. Whom would you rather marry? ▶



Indeed, the inheritance boom is already upending the marriage market. In wealthier parts of America, people in their 20s and 30s openly talk about the need to marry rich. Economists discuss the phenomenon of "assortative mating", where people exchange vows with those who are similar to themselves. Most research focuses on education or income, yet newer work suggests heirs are also likely to marry each other. Etienne Pasteau, formerly of the Paris School of Economics, and Junyi Zhu of the

Bundesbank estimate that inheritance is two-and-a-half times more influential than income from work in explaining German marriage choices. Another paper, focusing on Denmark, finds that over time inheritance is becoming ever more important in explaining people's choice of spouse.

The inheritance boom is set to continue for a while yet. According to our calculations, baby-boomer deaths will rise until 2036, when in America 1.5m of them will pop their clogs. The value of housing and

stocks will probably also rise, increasing the size of the pile to be passed on. In a world of higher interest rates, someone who inherits and puts the money in the bank or buys government bonds can do pretty well as a pure rentier. Meanwhile, governments keep cutting, rather than raising, inheritance taxes. Over the coming years, the world could see the emergence of an inheritor class that is even more enduring than the gentry of Austen's day. What a fine thing—for some. ■

## BUTTONWOOD *In praise of vanilla*

*How cheap can investing get?*

THE BATTLE between the world's two largest exchange-traded funds has reached a pivotal moment. On February 18th VOO, an ETF tracking the S&P 500 that is managed by Vanguard, a giant passive-investing firm, took the crown as the world's largest. Days later SPY, an ETF managed by State Street Global Advisors, another giant, reclaimed it. Both funds boast assets of over \$620bn.

For retail investors, exchange-traded funds, and the index-tracking investment they facilitate, are the greatest development in modern financial history. ETFs emerged in the 1990s and provide a way to circumvent expensive fund managers. Liquid and low-fee vehicles have saved investors trillions of dollars. SPY was America's first ETF and charges fees on assets of just 0.09% a year. VOO, which was set up in 2010, has undercut its rival with fees of 0.03%.

While the Godzilla and King Kong of the ETF universe duke it out, offering ever lower fees, investors looking at more recent offerings have cause for concern. New American ETFs advertise fees just 0.2 percentage points below more expensive mutual funds, down from 0.7 percentage points in 2014, according to Morningstar, a data provider. And fees on new ETFs are rising, rather than falling, as had been the trend for decades. Most funds established in the past few years have fees of 0.5% or higher.

So is the party over for retail investors? The answer will depend on their tastes. If they still prize the cheapness and exposure to big markets first offered by the ETF industry, there is no reason their fees cannot keep falling. A handful of the very largest vehicles have gathered an extraordinary quantity of investor funds: the largest 15 equity-focused ETFs contain \$3.9trn in assets, more than the

next 100 combined, which in turn hold more than the next 1,000 combined. This scale lowers fees. The larger a fund, the more it can spread fixed costs for trading, management, and legal and regulatory matters. According to Citigroup, a bank, half of American ETFs probably lose money for their issuers because they are not large enough to cover these sorts of costs.

The new generation of funds do not charge hefty fees just because they lack scale. Although most traditional funds are straightforward, often tracking a single broad index of stocks such as the S&P 500 or NASDAQ Composite, recently created versions tend to be a little more esoteric. Some of the most popular put money into environmentally friendly industries, or stocks with specific characteristics, such as lots of free cashflow. Many are actively managed, rather than passively tracking indices. Others are ludicrous. How about a three-times leveraged bet on Nvidia? Such complexity comes at a cost, and not just to an investor's sanity.

Investors would be better off avoiding many of the new funds altogether, which

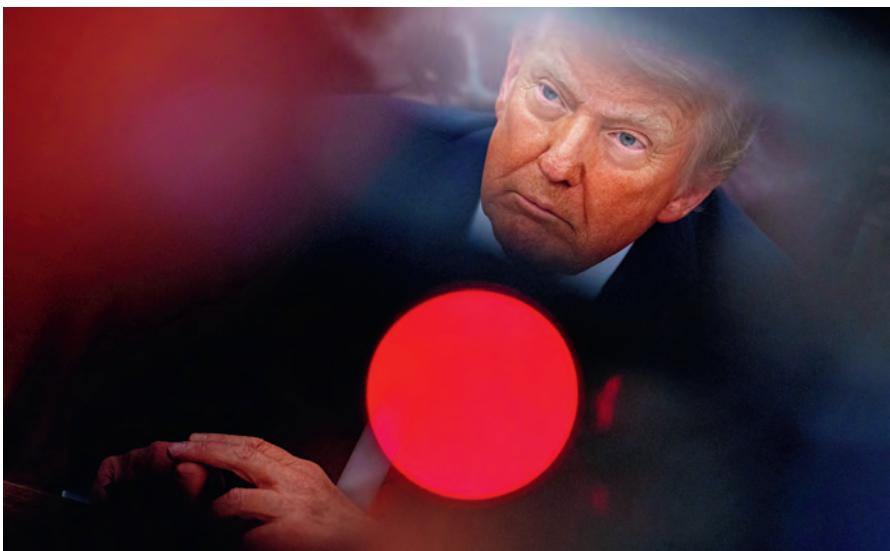
would be true even if their fees were not so elevated. Some semi-transparent vehicles, which rarely report assets and come with much higher fees, stretch the logic of an ETF to breaking-point. Heavily leveraged and single-stock funds are better options for traders than long-term investors. Thematic funds tend to follow fads that ought to be eschewed.

Yet investors unable to resist their appeal, thereby encouraging higher fees, hardly undermine the broader industry's model. On February 1st Vanguard, the apex predator of the low-fee approach, cut expenses on 87 of its funds, reducing its average fee from 0.08% to 0.07%. With \$10trn in assets under management—a figure that has doubled since 2018—the company has immense scale. Unlike many of its competitors, it sticks to the sort of bread-and-butter funds that require little management.

Indeed, the megafunds and the new, higher-fee variants are strangely symbiotic. When investors can shift lots of their portfolio into diversified stocks at extremely low fees, they reduce their overall expense ratio, which is what matters for returns. This gives room to invest in pricier, more adventurous options, should they wish to gamble. The lower the very largest group of vanilla ETFs are able to push their fees, the more investors can allocate to novel bets.

If average fees start to plateau, therefore, it will not be because the limits of such funds have been reached. Rather, it will reflect the fact that a growing number of investors are opting for products that are less mainstream. If they instead stick to the more vanilla offerings, and avoid the range of increasingly zany ETF flavours, there may still be trillions of dollars in savings to be made in the years to come.





**Trading politics**

## Vigilante justice

WASHINGTON, DC

**Trump's team has made the bond market its fiercest opponent**

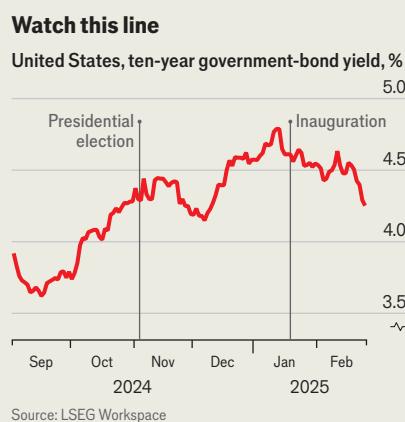
ONE OF THE biggest fears about Donald Trump's approach to the economy was that he might try to undermine the Federal Reserve's independence and press it to cut interest rates. Instead, the president has set himself an even more difficult challenge: persuading investors that market-determined rates should come down. Specifically, Mr Trump and senior members of his administration would like to bring down the yield on ten-year Treasury bonds. On February 26th it fell to its lowest level since early December (see chart). All going to plan? Not quite.

The Trump administration's logic is straightforward. When the Fed decides to lower rates, what it is actually doing is reducing its target for overnight borrowing costs. But for many actors in the economy, the ten-year yield is more important and tangible, because it serves as a benchmark for everything from corporate bonds to mortgages. And long-term yields respond to economic conditions more broadly—not just to the Fed's short-term target.

For Mr Trump's team the focus on long-term yields raises two questions. The first is whether the White House has the ability to influence such yields. A range of variables feeds into bond pricing: long-run growth and inflation expectations, the economy's productive potential and the government's fiscal trajectory, which helps dictate the supply of and demand for its bonds. All are slow-moving. Scott Bessent, the treasury secretary, has argued that the

Trump administration can bring down yields by lowering energy prices and streamlining regulation. In reality, any such changes will be incremental.

The second question may matter more: will Mr Trump's emphasis on yields make the bond market more potent as a check on his agenda? Much has been made of Mr Trump's sensitivity to the stockmarket: a brief swoon in equities earlier in February probably contributed to his decision to delay tariffs on imports from Canada and Mexico. Now, though, he appears to have also elevated the status of the bond market. Elon Musk, Mr Trump's disrupter-in-chief, has done the same, saying that long-term yields will fall as his cost-cutting campaign bears fruit (a dubious claim).



Yields were always going to restrain Mr Trump, as they have done other leaders. James Carville, a strategist for Bill Clinton, famously quipped that he wanted to be reincarnated as the bond market so he could "intimidate everybody". Yet the extra lip service paid to yields by Messrs Trump, Bessent and Musk has only cemented the market's clout. Michael Medeiros of Wellington, an asset manager, says that he has "a lot more conviction" than he did before Mr Trump's victory that the bond market will help discipline his policies.

There is circumstantial evidence bonds may already be having this sort of effect. In the two months after Mr Trump won, ten-year yields rose by half a percentage point to 4.8%, the highest in over a year. Optimism about growth was one driver; so was concern about the fiscal deficit. Were Mr Trump to deliver his promised tax cuts, he could shrink federal revenue by as much as \$11trn over the next decade, or 3% of GDP, according to the Committee for a Responsible Federal Budget, a non-partisan group. That would exacerbate America's already severe fiscal problems.

As Congress gets down to crafting tax laws, it has become evident that cuts will instead be curtailed. On February 19th Mr Trump voiced support for a "big beautiful bill" proposed by Republican leaders in the House of Representatives, which would cap cuts at \$4.5trn over a decade. Although wrangling is still needed for legislation to make it through Congress and onto the president's desk, the parameters are clear enough at this stage: Mr Trump's tax-slashing plans are being watered down.

The bond market may also rebuff the wildest ideas batted about in Trumpworld. Stephen Miran, the president's nominee to chair his Council of Economic Advisers, wrote a paper in November in which he suggested that America could compel other governments to swap shorter-term Treasuries for century bonds as a way to alleviate its debt burden. If such a policy were pursued, it would amount to a forced restructuring of American bonds. Sonal Desai of Franklin Templeton, another asset manager, says that even a hint that Mr Trump was seriously entertaining the proposal would bring out bond vigilantes. Until then, she dismisses the idea as "somewhere between clickbait and hysteria".

For now, the most pressing concern for investors and Mr Trump himself is why yields have fallen in the past month, and sharply in the past week. The president had hoped to achieve robust growth and disinflation—a mixture that could help push up stocks and bring down yields. Instead, signs of economic weakness have emerged, with consumers worried about the threat of tariffs, and enormous tax cuts now look unlikely. That is very much not what Mr Trump had in mind. ■

## Cryptocurrency

# Hard cash, soft rules

ISTANBUL

**Stablecoins are taking over the world, and policymakers are struggling to catch up**

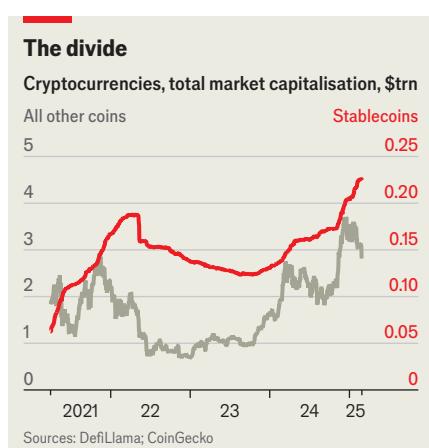
BEHIND THE vaulted arches of Istanbul's Grand Bazaar, above the haggling and the crush, a quieter trade unfolds. In dimly lit corridors, men slip in and out of back rooms, clutching bundles of dollars. Amid the shadows, a trader says that he deals in millions daily, mostly swapped for stablecoins—cryptocurrencies pegged to other assets, usually the greenback.

Stablecoins are typically backed by cash or government bonds and run on public blockchains. Unlike bitcoin, the uncryptocurrency, their price barely fluctuates: tether, the biggest (whose issuer bears the same name), fetches a flat \$1, within a few hundredths of a cent. They are mostly used to trade other cryptocurrencies, providing a stable bridge between wobblier digital assets. According to Chainalysis, a data firm, trading, payments and transfers in stablecoins hit \$27.6trn last year, or two-fifths of all value settled on public blockchains, up from a fifth in 2020.

In part, this reflects a broader rise in crypto prices over the period—but stablecoins are increasingly used for real-world purposes, too. Migrants send remittances with them, replacing a correspondent-banking system beset by high fees and delays. The Turkish trader says that shopkeepers in the Grand Bazaar pay suppliers with the coins as they are the fastest option. In countries where inflation erodes savings and dollars are scarce, they are catching on as a store of value. A survey of stablecoin-holders in Turkey and four other emerging markets by Castle Island Ventures, which invests in crypto startups, and Visa, a payments giant, finds that nearly half use them for this purpose.

As stablecoins have gained real-world traction, notes Bernstein, a broker, their market capitalisation has decoupled from that of cryptocurrencies more broadly (see chart). America, where stablecoins are central to crypto trading, remains the world's biggest market, according to Chainalysis. Relative to economic size, though, Turkey is now the home of stablecoin transactions: in the year to March 2024 purchases alone were worth 4.3% of GDP. In the year to June, Ethiopia saw the fastest growth—almost a tripling—in transactions of less than \$10,000, most of which were probably remittances and everyday payments.

Tether, the dominant stablecoin, accounts for 70% of activity. Tether, the company, makes money by investing its re-



serves. It says it has \$113bn, or 72% of its assets, in mostly short-duration Treasuries, which rising yields have turned into a cash cow. But dominance brings risks. A loss of confidence in tether could shake the market, as the fall of Terra-Luna, an algorithmic stablecoin system, did in 2022. If Tether was forced to fire-sell its Treasuries and other holdings, that could also have consequences for mainstream financial markets.

Tether insists its model is secure. It has proved resilient: during the Terra-Luna collapse, the firm made more than \$10bn in redemptions in a fortnight while maintaining its peg to the dollar. Yet Tether's opacity means that future difficulties cannot be ruled out, says Rajeev Bamra of Moody's, a

rating agency. Unlike Circle, its main rival, Tether does not undergo independent audits, making it hard to know whether its assets—which besides Treasuries include riskier things, such as bitcoin—match its liabilities. Nor does it disclose where its reserves are held. S&P, another rating agency, assigns tether a risk rating (in terms of its ability to keep its dollar peg) of four out of five. Circle's USDC gets a two.

Many governments are becoming stricter. In January European exchanges delisted tether for failing to comply with new EU laws. Paolo Ardoino, Tether's boss, is critical of the rules, especially a requirement that stablecoins must hold 60% of reserves in bank deposits. "If a bank fails, the stablecoin fails with it," he argues. Still, he says, emerging markets are his real focus.

Yet their governments are growing uneasy, too. Tether is registered in El Salvador, whose president, Nayib Bukele, is eager to make his country a hub for digital assets. Before that, it was based in the British Virgin Islands. Neither place is noted for over-intrusive regulation. In 2023 a study by TRM Labs, a blockchain-intelligence company, found that a relatively high share of tether transactions were part of criminal activity. Iran and Russia have used the coin to evade sanctions. A UN report called it the "preferred choice" for South-East Asian money-launderers. Tether says that it works closely with law enforcement, freezing wallets linked to illicit activity and complying with official requests.

On February 25th Turkey began to require crypto exchanges to be licensed, enforce anti-money-laundering controls and verify users' identities. Platforms such as Binance and KuCoin have scaled back their presence in the country in response. In Nigeria stablecoin volumes fell by 38% in the year to July after authorities revoked the licences of over 4,000 exchanges, blaming them for the naira's decline.

At the same time, America may move in a different direction. In January Donald Trump signed an order directing officials to draft a regulatory framework for digital assets within six months. He declared that America would be "the crypto capital of the planet". The order backed "lawful and legitimate dollar-backed stablecoins" to bolster the greenback's dominance among conventional currencies.

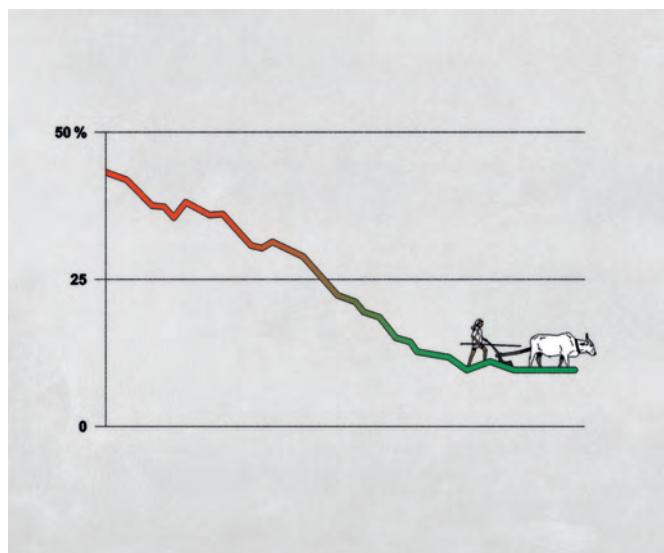
Oversight is not all bad for stablecoins, facilitating interest from mainstream finance. Stripe, a payments firm, has bought Bridge, a stablecoin-infrastructure startup. Visa has built a platform to help lenders issue coins; BBVA, Spain's second-largest bank, will be among the first to use it, perhaps for money transfers. Stablecoins have shown their value in the backrooms of the Grand Bazaar. Their next task is to do so in the regulators' offices and boardrooms of Washington and Wall Street. ■



## FREE EXCHANGE

### *Ploughing its own furrow*

*How India escaped extreme poverty without an industrial miracle*



THIRTY YEARS ago Siddharth Dube, a writer, visited a small village in northern India near the site of a historic peasants' revolt. He found plenty that remained enraging: mud huts, primitive ploughs, "barefoot old men" and "bone-thin children". One older villager, Ram Dass, recalled the bitter deprivation of his younger years, when he would work long days on someone else's land for the meagre reward of 1.5kg of grain. On cold nights, the poor stuffed rice stalks into old clothes to keep warm. "What did we know what a quilt was?" A man was lucky to own a single pair of shoes from his wedding to his death.

At the time of Mr Dube's visit in 1995 almost half of India's population still lived below the international poverty line, according to the World Bank. Mr Dube lamented India's lack of progress: the number of poor people in the mid-1990s exceeded India's entire population when it escaped British rule five decades before.

How has India done in the three decades since? The last official survey incorporated into World Bank reports was for the year ending in June 2012. A survey taken in 2018 was never officially released. But after a long wait the detailed results of two surveys have come all at once, released in June 2024 and January 2025.

The most recent survey, which covers the year to July, shows that only 1% of India's households fell below the international poverty line in 2024, according to an analysis of the data by Surjit Bhalla, a former executive director of the IMF, and Karan Bhasin of the State University of New York, Albany. Heir to the famous "dollar a day" poverty line, the international poverty line now stands at \$2.15 a day at purchasing-power parity. India has, therefore, all but eliminated the most extreme forms of poverty.

This is wonderful news in its own right. But India's success also calls into question a common assumption about development: that the eradication of poverty requires a manufacturing miracle, drawing masses of peasants out of the farms and into the factories. More than 40% of India's workers are still employed in agriculture. Perhaps people can leave poverty without leaving the land. That is also one conclusion of a new paper by Vincent Armentano, Paul Niehaus and Tom Vogl, all of the University of California, San Diego, which examines some of the paths out of pov-

erty taken by five big emerging economies—China, Indonesia, Mexico and South Africa, as well as India—from 1984 to 2017.

Their paper is distinctive in its focus not on time periods (such as the 1980s) or age groups (such as the elderly), but on generations (such as people who were young in the 1980s and are now elderly). The trio are interested in how particular cohorts, all born in the same year, fared over the course of their life, as well as the progress a country makes as older cohorts give way to their successors. They track these groups by taking advantage of the simple, immutable law that people get a year older with each year that passes. Thus they can confidently predict that anyone who was 40 in a 1990 survey will be 50 in a survey taken ten years later.

The economists find that people become better off as they get older, since they acquire, say, land and experience. Their paper also confirms that today's young are better off than yesterday's young, perhaps because they have benefited from better education and nutrition. The researchers then show that these two trends tend to offset each other, so that in any given year, young and old adults have similar rates of poverty. Each generation has a better life than their parents did at the same age. But they do not have a better life than their parents do in the same year.

Mr Dass, for example, improved his lot by moving to Mumbai, where he worked sweeping coal ash from a rail engine ("we would look like black ghosts") and then in dyeing factories (it was so noisy, "we would communicate by gestures"). When he returned to his village, he bought some land. Meanwhile, his eldest son finished school, albeit a few years late, and landed a job as a state-school teacher earning a steady wage in his village. Poverty fell over the course of Mr Dass's life. It also fell from father to son.

Surveys that follow the same people over time show that many were able to escape destitution without leaving agriculture. Of the people who left poverty in the Chinese surveys, some 37% moved from farming into something else. That figure was only 13% for Indonesia, 10% for Mexico and 7% for South Africa. Part of the reason is that the \$2.15 line is so low that a modest improvement in landholdings, crop yields or rural wages can be enough to clear it. Migration to the cities may also have helped indirectly by increasing the scarcity value of rural labour, raising wages for the people who remained in the countryside.

#### Started from the bottom, now we're here

Messrs Bhalla and Bhasin argue that, in India's case, the lowest international poverty line of \$2.15 has now outlived its use. Since almost everyone is now above it, the measure will fail to capture future progress. India has plenty of scope to grow and develop, but not much room to reduce poverty below 1%. Messrs Bhalla and Bhasin therefore recommend a new poverty line set high enough to capture the bottom quarter or third of the population.

Although the poor, by this definition, might have shoes, quilts and enough to eat, they would not be free from deprivation. Mr Dass and his son escaped extreme poverty in their lifetimes. Still, they did not escape financial hardship. "Money is a kind of obsession," his son told Mr Dube. "One's desires are endless, however much one gets." He borrowed money for his wife's medical treatment and his daughter's marriage. He also paid for his own son (Mr Dass's grandson) to go to university. "I've tried to ensure that the children develop as much as they can," he said. "Their future should be better than what I have lived." Such dreams are ultimately what produce prosperity, even in the absence of industry. ■

## Science & technology



### Mining

## Dig it

RIYADH

### The skyrocketing demand for minerals will require new technologies

DONALD TRUMP's quest for critical minerals has taken him from Greenland to Ukraine. He is not alone in wanting more metals, which will be needed for everything from increased electrification to more and bigger artificial-intelligence (AI) data centres and sturdier power grids. According to BCG, a consultancy, about a fifth of the minerals thought to be required by 2035 have yet to be found (see chart 1 on next page). Billions of dollars are being invested in trying to find new deposits, but few people know where all the required minerals will come from.

A host of problems with existing projects are only making matters worse. Ore quality—the amount of valuable metal in a sample of rock—is declining, forcing miners to dig deeper; mining permits can take years, if not decades, to finalise (see chart 2 on next page); and protectionism and protests are shutting down projects from Chile to Panama and Serbia.

Mining companies are therefore “desperate for new technologies to boost production”, according to Andrew Southam, the boss of KAZ Minerals, a copper miner in central Asia, who spoke at a recent gathering of industry bosses in Riyadh. Fortunately for Mr Southam and his beleaguered colleagues, a suite of new ideas—from better drills and power systems to cleverer uses of data and AI—aim to tackle their most pressing problems.

One set of innovations is focused on mining's everyday operations such as drilling and processing ore. Miners are borrowing from the oil-and-gas industry, which

underwent its own revolution in recent decades with the advent of hydraulic fracturing (fracking). That brought huge gains to the American economy by shrinking consumers' bills and the country's reliance on foreign energy.

With this in mind, XtremeX Mining Technology (XMT) has developed a drilling machine adapted from the ones used by big oil companies. Once mines are operational, drilling is the most capital-expensive and time-consuming part for miners, says Govind Friedland, an investor in XMT and a mining entrepreneur. XMT's rig uses a coil tube—a long, seamless and flexible metal pipe—with a motor driven by alternating current (AC) to drill continuously, more precisely and faster.

The machine could replace the more traditional rotary drilling, a hydraulic-powered process that uses a turning and hammering motion to bore holes and which has been used in the industry for about 60 years. XMT's drill could help miners go 50% deeper into the ground and use 20% less fuel in the process, because the AC motors are far more efficient than their hydraulic counterparts.

Power is another challenge. Mines require complex energy arrangements in remote areas, often becoming dependent on diesel generators that are dirty, expensive and hard to replenish. The absence of ➤

#### → ALSO IN THIS SECTION

##### 69 Sharper eyes in the sky

##### 70 AI and board games

##### 71 Well informed: Super shoes

► stable supply and grid connectivity also leaves miners vulnerable to intermittent power. Huawei, a Chinese company, has therefore developed the FusionSolar Smart Mine microgrid, a standalone power plant composed of a battery, solar panels and inverters, with a smart energy-management system that allows miners to use as much or as little power they need to run their operations, at a stable frequency and voltage.

A six megawatt-hour (MWh) version of the technology has been installed at an altitude of more than 4,200 metres at an off-grid mine in Argentina. A 90MWh system has been deployed in Mongolia where temperatures can drop to -40°C. The microgrid also uses AI to check on the battery health, predict any faults in the system and release the right amount of energy as needed. All that ends up cutting miners' operational costs by about a third, says a Huawei executive.

As mines age, companies are also looking for better ways to get more value out of the dirt they dig up. BHP, the world's largest mining company, and Rio Tinto, the second-largest, are testing new ways of leaching, a chemical process to extract more metal (in their case, copper) from a mineral ore. Because metals are found in different forms on Earth—oxides, sulphides, mixed together or in waste tailings—miners have to use different methods to extract them. Oxides require acids, and sulphides need a bacterial component to dissolve the extra material or oxidise minerals. *Acidithiobacillus ferrooxidans*, for instance, is used for oxidising ferrous iron and sulphur. Rio Tinto has also developed "Nuton", its process of infusing crushed rock with proprietary additives and cultivated microorganisms that results in a high-purity copper.

The second group of innovations focuses on better collection of data to make exploring for minerals faster. This means finding higher-grade ores and better assessing and mapping deposits. Daoyun Tech, a Chinese company, makes software that allows companies to collect geological



data of a prospective digging site via a drone, survey mining areas and come up with three-dimensional designs and plans. Ivanhoe Electric, a technology-focused exploration company, uses electric currents, which it shoots down to around 1.5km below the ground, to scope out deposits, map subsurface areas and detect sulphide minerals that contain copper, nickel, gold and silver. The precision of the system, which is used by BHP among others, means that less digging is required before deposits are located. It also means that less damage is done to surrounding land.

Freeport-McMoRan, a copper miner, is using sensors on trucks, shovels and machinery to collect data in real time about not just the quality of ore being dug out but the speed of its operations and the performance of its equipment. That information is then fed into AI models that direct Freeport's machines more precisely and effectively, says Bert Odinet, the firm's chief innovation officer.

At Freeport's operations in Indonesia AI models also help predict wet muck spills, where water mixed with ore can rush into mines and endanger equipment and people. The company's software crunches video and sensor data about water content, rainfall, and the distribution of mud deposits and particle size of the mud in and around the mine, to build its risk-weighted prediction algorithms.

Mining companies aren't the only ones ratcheting up prospecting efforts through technology. In January, the United States Geological Survey (USGS) and America's Defence Advanced Research Projects Agency (DARPA) launched a project to develop AI-infused tools to collect and assess the quality of critical-mineral data. The plan includes extracting geospatial data from a vast store of sources, such as about 100,000 old maps and geological surveys; and mapping minerals by georeferencing, a cartography technique used to align latitude and longitude map data with the real world. Only about a tenth of the USGS catalogue has been georeferenced; the rest

are in the form of scanned images of maps. (The absence of such domestic data is perhaps why Mr Trump is venturing far and wide in his own search for minerals.)

All this has sped up the otherwise labour-intensive geological surveying process that can take years and is mostly manual. After collecting, integrating and organising various sets of geoscientific data, the researchers apply machine-learning techniques to extract patterns, predict and forecast where minerals are likely to be buried across America. The goal is "to be able to characterise what we have, know what we have and source what we need domestically", says Erica Briscoe, a DARPA programme manager.

How quickly mining and drilling companies will invest in all these new technologies, though, is unclear. They are already under pressure from rising labour costs, difficulties in accessing power and long delays in permitting. Then there are the unexpected hitches—according to McKinsey, a consultancy, for mines valued at more than \$1bn, costs tend to end up being 80% higher than initial estimates.

To make matters more tricky, it will be years before many of these mining innovations become widely used and budget-friendly. Nevertheless, says Mr Friedland, the industry must start experimenting. "We have to change the way we work." ■

## Earth observation

### Sharp eyes in the sky

An American startup wants to sell spy-satellite-grade images commercially

IT STARTED with a tweet. In 2019, during his first term as president, Donald Trump posted a surveillance photo of an Iranian missile site in the aftermath of an explosion. The quality of the image, the angle it had been taken from and some amateur orbital tracking led technically minded users to conclude, with a mixture of horror and bemusement, that the president had posted a highly classified image from one of America's sophisticated, ultra-secret spy satellites.

The most striking thing was how sharp the photo was. Most commercial satellite imagery, of the sort offered by firms like Maxar or European Space Imaging, can achieve a resolution of about 30cm per pixel. The image tweeted by Mr Trump seemed closer to 10cm per pixel. (Because images are two-dimensional objects, that works out to a picture about nine times sharper.) "Part of the conversation was how amazing it would be if you could get



► that sort of resolution commercially," says Topher Haddad, an engineer who was working on satellites at Lockheed Martin, a big arms firm, at the time. But the price, everyone assumed, would be prohibitive. America's spy satellites are thought to cost several billion dollars each.

Mr Haddad was not so sure. In 2020, along with two colleagues, he founded a company called Albedo Space. Just over four years and nearly \$130m in funding later, "Clarity-1", the firm's first satellite, is due to launch in March. Albedo wants to build up to 24 such satellites, with the aim of making 10cm-resolution images of nearly anywhere on Earth available to everyone from insurance companies and utilities to farmers and even governments.

Spy satellites are essentially flying telescopes that look down rather than up. The sharpness of their images depends mostly on two things: the size of the mirror that gathers the light, and the telescope's distance from its target. Albedo is focused on the second of those factors. Its satellites (which also sport infra-red sensors) are designed to fly at around 274km up, lower than anyone else's, in what is prosaically called "Very Low Earth Orbit" (VLEO).

Since resolution scales with the square of distance, moving closer to the ground means big improvements in image quality. But VLEO is an unfriendly place. The biggest drawback is that, though the atmosphere at such altitudes is thin, there is still enough gas to cause significant drag. Left to its own devices, a satellite in VLEO would fall back to Earth within months.

Albedo's satellites use electric engines, which produce only a smidgeon of thrust but are very fuel-efficient, to help maintain their altitude. They are designed with aerodynamics in mind: standard solar panels held away from the satellite are a no-no,

since they cause too much drag. Instead, they must be built flush with the satellite's body, which makes them less efficient. The constant drag makes pointing the satellite in different directions—necessary to take photos—trickier too, since a change in orientation can mean a big change in the forces the satellite experiences.

Objects in low orbits also move faster than those in high ones. That complicates photography further. The wispy atmosphere is, in addition, full of corrosive atomic oxygen, thus requiring protective coatings and materials on the satellite.

Careful engineering means that Albedo expects its satellites to last, on average, about five years, although that number will vary by a factor of two depending on when in the 11-year solar cycle a particular satellite is launched. (An active Sun puffs up the upper atmosphere, making drag worse.) One factor that Mr Haddad hopes will make his business viable is the fall in the cost of rocket launches, making it cheaper to get replacement satellites into orbit.

For now at least, business is brisk: Mr Haddad says that all of Clarity-1's capacity for the next two years has already been sold, to companies including a gas-pipeline operator, a firm that supplies imagery to the mining industry, and ScaleAI, which uses AI to analyse satellite imagery automatically. Satellite imagery is widely used by all sorts of businesses that have nothing to do with space directly. Insurance firms use it to assess claims after natural disasters, and increasingly to examine risks before them. Agriculture companies use it to monitor crops. Counting cars in a retailer's car parks, or checking how full an oil firm's storage tanks are, are staples of hedge-fund strategy.

Albedo hopes its uniquely high resolution will help it expand into new markets, too. Utility companies, says Mr Haddad, use such imagery from drones or aircraft to monitor power lines. Doing the same from orbit, he says, should be significantly cheaper. The same is true of oil pipelines, mines, solar farms, or other bits of infrastructure in remote places. And, he says, once the firm has more satellites in space it will be able to generate several images per day, a frequency that aircraft or drones would find difficult to compete with.

Some of the keenest customers may turn out to be governments—indeed part of Clarity-1's capacity is reserved for America's authorities. But recent changes in export regulations mean that Albedo should be able to offer its services to many (though not all) other countries as well, giving them capabilities they would struggle to develop domestically. Though if the Americans are now happy to have this sort of imagery exported, it makes you wonder how much better their newest secret technology must be. ■



It's down here somewhere



### Artificial intelligence

## Your move

### How AI can make board games better

**B**OARD GAMES have long fascinated artificial-intelligence (AI) researchers. They have clear rules, well-defined playing fields and objective winners and losers. This makes them perfect "sandpits" for training AI software. Sometimes, though, their rules contain glitches. Aficionados of Go will be familiar with ko fights—situations in which the basic rule set would permit a game to carry on for ever, and for which an exception had to be created. Avoiding similar problems in newly invented games is something AI can help with.

That, at least, is the experience of Alan Wallat, a board-game designer from London. His latest offering is *Sirius Smugglers*, in which interstellar merchants try to make an illicit profit. In the olden days, checking its rules would have involved lots of tests by human players, who would probably have wanted to be paid—in beer, perhaps, if not in cash.

Instead, he took his brainchild to Tabletop R&D, an AI startup, where a game-playing algorithm allowed him to play thousands of times in the blink of an eye. He was then able to scan the results for irregularities, statistical biases and any features that were under- or over-used.

It was here he discovered a problem. A quirk in the rules meant the decision to end the game rested with the losing player. Whoever was ahead, and therefore had the greatest incentive to bring matters to a close, was unable, alone, to trigger the con-

dition which would finish the game. Like Go without the ko-fight exception, Sirius Smugglers could thus go on indefinitely.

The minds behind Tabletop, Diego Pérez-Liebana and Raluca Gaina, are computer scientists at Queen Mary, a college of the University of London, who wanted to build a general games-playing AI platform on the cheap. The approach which built the AI models that could play Go well enough to beat world champions involved a system playing itself, over and over again, and learning from its victories and defeats until it reached superhuman potential.

But that requires a lot of computing time. Instead, they chose to use a less resource-intensive approach called a Monte Carlo tree search, to look forward to possible future positions and choose appropriate play from among them. It was intended as an academic exercise, says Dr Pérez-Liebana, but in the process of doing it they realised they had accidentally developed a tool that had value in its own right as an aid for game designers seeking to perfect their creations.

#### Thinking caps on

For this to happen, the AI must be taught to play like a human. Unless told otherwise, AIs are liable to chase victory single-mindedly but without strategic vision, like a chess player who refuses to sacrifice pieces for a stronger long-term position. This training can be subtle. In games where players are assigned information hidden from their opponents (for example, in card games like bridge or poker, where others cannot see a player's hand), designers must decide whether to give the AI the ability to memorise play so far and to count the pack perfectly, or else to act in a sloppier—and more humanlike—manner.

Giving the AI more time to think, and so plan for a wider range of outcomes, is equivalent to adjusting the skill with which it plays. To simulate beginners, it can be set to act as if on instinct, after less than a tenth of a second. To mimic competence it is allowed to think for as long as five seconds per move, and is therefore able to plan many moves ahead.

When they're good, they're good, says Dr Gaina of the resulting models. Testing the approach with a copy of *Terraforming Mars*, a famously weighty strategy title, she admits she found the system was more than capable of defeating her.

A game-run provides enough detailed data to let designers tweak the parameters they care about, from ensuring proceedings are fair to avoiding long periods of dull gameplay. At least, that is the plan. Mr Wallat is Tabletop's first customer. More may soon be tempted. Fun is hard to measure, says Dr Gaina, but things that make a game bad, never-endingness among them, are easier to spot. ■

#### Well informed

## Do better shoes help you run faster?

#### Yes, but the benefits won't last

**M**ODERN COMPETITIVE running entered a new era in 2016, when Nike began distributing a prototype trainer to elite runners. The new shoes were designed to look like Nike's top publicly available model, the Zoom Streak 6, but the soles featured a revolutionary new design. Athletes wearing the prototype shoes took home all three medals at the men's Olympic marathon in Rio de Janeiro that year. Regular runners were able to get their hands on them in 2017 when the company unveiled the Zoom Vaporfly 4% (the figure refers to efficiency gains measured in lab tests), the first true super shoe.

"Most super shoes follow the same pattern," explains Jens Jakob Andersen, founder of RunRepeat.com, a website that road-tests trainers and dissects them to reveal their secrets. They typically have curved soles made of a stiff carbon plate sandwiched between layers of specially engineered springy foam. The result is often very thick—up to 40mm tall at the heel, the maximum allowed for competitive racing (regular trainers are usually around 25–35mm tall).

These features make running easier. Lab tests have shown that recreational runners use less oxygen and report feeling less tired while jogging in premium trainers compared with regular ones. Platformed soles encourage a slightly

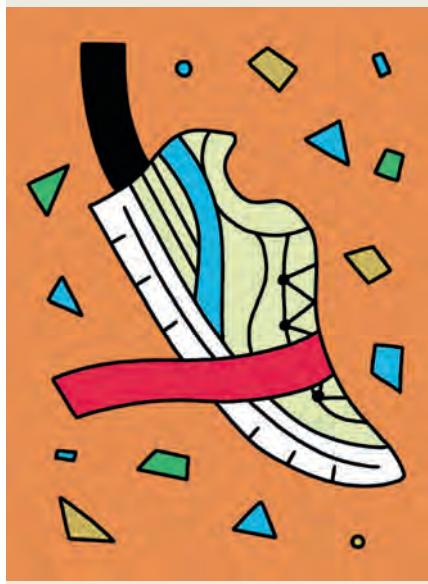
longer stride, which means fewer steps per kilometre. And a squishy base, which absorbs impact before bouncing back up, eases the strain on leg muscles. By reducing the energy needed to maintain normal pace, super shoes allow runners to put more effort into going faster.

The results are clear. Our analysis shows that, of the 50 fastest men's marathon times, only nine predate 2017; the figure for women is just three. In the eight years since the launch of the Nike Vaporfly, more than three times as many men's marathons were completed in under two hours and five minutes than in the eight preceding years. Before super shoes, only 26 women's races had been run in less than 2:20. In 2024 alone there were 35. High-tech trainers have been estimated to shave between one and four minutes off elite marathon times.

Regular runners benefit too. In 2019 the *New York Times* analysed real-world marathon times to measure the speed gains attributable to Nike's Vaporfly or Next%—the leading shoes at the time. Using data from Strava, a fitness app where users post details of their workouts, they found that runners wearing super shoes completed races 4–5% faster than those in average trainers, even after controlling for ability and training. Their analysis also showed that wearing the premium shoes gave runners a 73% chance of setting a personal best.

This extra speed doesn't come cheap. Adidas's top model, the Pro Evo 1—worn by Ethiopia's Tigst Assefa during her record-breaking Berlin marathon in 2023—cost \$500 and are marketed as a single-race shoe. As the miles add up, most super shoes quickly lose grip and the foam in the sole deteriorates, dampening their signature springiness.

So, with a big race approaching, and money to spend on new kicks, runners may wonder about the best sneaker strategy. In Mr Andersen's opinion, super shoes should be broken in a little: he suggests around 20–50km of pre-race use to reduce the risk of blisters and improve race-day performance (some foams get bouncier after a small amount of wear). Buying a new pair of shoes for every race makes for an expensive habit, but it could be worth it for those desperately chasing a personal best.



## Culture



### Sex in fiction

## Full steam ahead

### Erotic writing is becoming more explicit

**S**TART WITH the nipples. The lover does S in “Mistress and Mother”, a steamy romantic novel from the 1990s. Though, since it was written three decades ago, they are not always called “nipples”. Instead, the author also discreetly describes them as “little buds”.

Other erotica from this era has a similarly hearty, horticultural air: in another novel, the paramour enjoys his lover’s “rosebuds”; in a third, he moves lower to her enfolding “petals”. In other books there is swelling, blooming and, of course, “seed”. The aim is oblique eroticism. The overall effect is of an unexpectedly energetic gardening catalogue.

But eroticism is changing. Open “Onyx Storm”, the latest romantasy book (a genre that blends romance and fantasy) by Rebecca Yarros, and things are rather clearer. Hardy perennials are out. Words like “hard” are in—as too are words including

“cock”, “fuck” and “straddle”. And people are buying it. Sales of erotica are booming: thanks to pre-orders, “Onyx Storm” had already been on Amazon’s bestseller list for 19 weeks by the time it was published in January. After release, it shifted almost 3m copies in a week. It sold faster than any novel in America in the past 20 years.

There is now a vast variety of erotica available, including cosy erotica (knitwear is torn off), Austen erotica (Mr Darcy has

assets even more impressive than £10,000 a year) and fairy erotica. There is even erotica featuring—readers may wish to brace themselves—physicists. These titles contain such explicit lines as, “Your dissertation on liquid crystals’ static distortions in biaxial nematics was brilliant, Elsie.”

Sex is not entirely novel for the novel, as readers of E.L. James and Alan Hollinghurst will know. But it is more frank and frequent. “The spiciness seems to be increasing,” says James Daunt, chief executive of Barnes & Noble and Waterstones, two bookshop chains. Look at the corpus of English fiction and the word “nipples” has doubled in frequency since the year 2000, while “orgasm” has quintupled; use of the word “clit” is 14 times higher (see chart on next page).

In some ways this is unexpected. It was once assumed that erotica was a male pursuit and that its appeal was not merely the sex but the sin. Obscenity was legally defined in Britain in 1868 by a judge called—in a detail no novelist would dare attempt—Justice Cockburn. “Nine-tenths of the appeal of pornography”, wrote Bertrand Russell, a philosopher, “is due to the indecent feelings concerning sex which moralists inculcate in the young.” Obscenity laws were relaxed in Britain in the 1960s in the wake of the “Lady Chatterley’s ➤

#### → ALSO IN THIS SECTION

**73 James Bond's new handler**

**74 World in a dish: caviar**

**75 First and last words**

**75 Live albums are back**

**76 Do you play pinball?**

► Lover" trial, but the illicit thrill remained. The world has changed since then. The moralists have faded. Whatever hold the patriarchy had on publishing has waned. Yet the sex remains, and it is women who are driving it. Most of these books are being written, edited and published by women. They are bought, in vast numbers, by women. The novels are promoted by women on social-media platforms, particularly TikTok, using hashtags such as #Spicybooks and #Steamyreads, then appear on Amazon with the phrase "TikTok made me buy it!", which sounds less like an endorsement than a defence.

As the interest in #Darkromance shows, this sex is not all nice. In Ms Yarros's books, the hero pins the heroine violently to the floor in wrestling matches; in the romantasy novels of Sarah J. Maas, who has sold almost 40m copies, faeries do things that would make Tinker Bell blush.

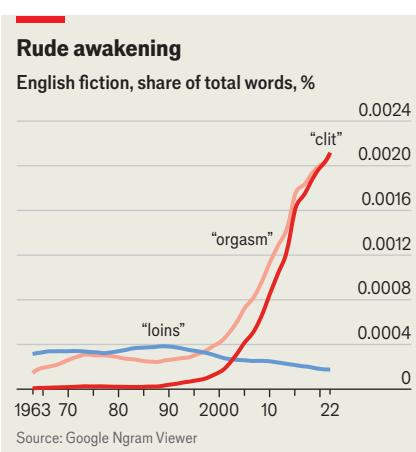
What has driven this is new digital formats, such as audiobooks. (Ms Yarros and Ms Maas dominate those charts, too.) The e-book has been especially consequential. It is discreet—no one can see what you are reading on a tablet. And it lets authors self-publish cheaply, as Ms James did in 2011 with "Fifty Shades of Grey", a story of sadomasochism. It was later republished by Vintage, but romance lovers retained the habit of reading books digitally.

Authorial autonomy online means it is "impossible to police" what goes into books, says Hal Gladfelder of the University of Manchester. The ubiquity of internet pornography means that even to try to do so would feel "ridiculous".

In one sense this new generation of erotic prose is more realistic than what came before. Floral analogies are out; proper body parts are in. But in another sense, it is not remotely realistic. Everyone is gorgeous; names like "Xaden" and "Aetos" dominate; most characters have remarkable powers, if not superpowers.

In Ms Yarros's books, the hero and heroine, who are long-term lovers, can creep into each other's minds, where they find each other thinking hot thoughts in an italic font, such as "*How do you want me to take you?*" and "*You're astounding*" rather than, as might be the fear, "*Did I switch the tumble dryer on?*" or "*It was definitely your turn to take the bins out.*"

It is easy to smirk, but writing about sex is tricky—as a trawl through the back catalogue of the Bad Sex in Fiction Awards shows. The now-defunct prize, which ended during the pandemic, was set up in 1993 by Britain's *Literary Review* to "highlight and gently discourage redundant, poorly written or unnecessarily pornographic descriptions of sex in fiction". Given that the contenders in its final years included such phrases as she "offer[ed] her moist parts to my triumphant phallus" and her



vagina was "slowly chugging my organ as a boa constrictor swallows its prey", perhaps the discouragement was too gentle.

Part of the difficulty in writing about sex is what Julian Barnes, an English writer, called "the naming of parts": "At the basic level, he put his what into her—or indeed his—what?" "Boa constrictor" is probably best avoided, but, as Mr Barnes observed, almost all terms are tricky. "Where between the Latinate and the Anglo-Saxon do you pitch it?"

Being biological can be as bad as being too oblique, as a contender for the Bad Sex award in 2019 clearly showed. "I have 8,000 nerves in my clitoris," explained one character. "Your penis gets by on 4,000." (Such a pronouncement would leave most lovers unsure whether to take notes or take flight.) At times characters seem to be enjoying sex as little as the reader. In a nominated work of 2019 a character, in a moment of high passion, "screamed as though [she] were being run over by a train". The reader can only sympathise.

Most winners of the prize were, unsurprisingly, men: the male gaze does not always improve male prose. But the internet is changing the balance of power in fictional sex, just as it has in actual sex. Male misbehaviour is called out by such things as the "menwritingwomen" Reddit thread. (John Updike—the "penis with a thesaurus"—features heavily.) A popular parody pokes fun at a man writing a woman's morning: "Cassandra...breasted boobily to the stairs, and titted downwards."

Eroticism always "reflects what is going on in society at the time", says Sharon Kendrick, a popular British romantic author. In the liberal 1970s, literary lotharios were in fashion. The arrival of the AIDS pandemic in the 1980s brought on a period of "sexual fastidiousness" and heroes who had one true love (and a condom).

The new generation of erotic prose may be easy to mock. But it is reflecting a society in which women can often get precisely what they want. That should give any feminist a bit of a thrill. ■

## Film franchises

# 007's new handler

In James Bond, Amazon gains a thrilling new asset

AFTER DECADES of thwarting muscular billionaires bent on world domination, James Bond has at last been captured by one. On February 20th the secretive global organisation known as Amazon announced that it had acquired creative control of the spy-film franchise from Barbara Broccoli and Michael Wilson, the daughter and stepson of Cubby Broccoli, who first brought Bond to the silver screen in 1962. To buy control of the double-o agent, Amazon is said to be paying a nine-o figure.

The Bond film franchise is still bankable after 60 years. It has grossed around \$21bn in today's money. "No Time to Die" (2021), the latest movie in the series, came out at a time when going to a cinema often meant wearing a face mask; it went on to make \$900m. But the series seems creatively stuck. Whereas a new Bond film used to come out every couple of years, six years passed between "No Time to Die" and its predecessor, "Spectre". The wait for the next film may be even longer: after four years there is still no script, nor an actor to play the leading role.

The Broccolis are admired by fans for their protectiveness of the Bond brand. Daniel Craig, the latest actor to play the spy, has praised their resistance to the "many people and organisations [that] have tried to put their own footprint on Bond", not naming Amazon. Yet for the tech giant, which paid \$8.5bn in 2022 for MGM, the studio that holds the right to ►



A toast to his new boss?

distribute Bond films, working with the Broccolis has sometimes felt like dealing with "Dr No". Amazon's only new Bond release since the pricey MGM transaction has been a forgettable gameshow called "007: Road to a Million".

Amazon will now be free to exploit the franchise. The obvious model to follow is Disney's cultivation of the "Star Wars" universe, which it acquired from George Lucas in 2012 as part of a deal worth \$4bn. Disney has since reaped five films, more than a dozen TV spin-offs and incorporated the franchise into its theme parks. But Amazon is no Disney when it comes to adapting intellectual property (IP). Its take on "The Lord of the Rings" won viewers but did not live up to its record-breaking price tag. Fans worry that Bond's new handlers will spoil the brand. "Citadel", Amazon's expensive but wooden spy series, directs viewers to related products on the company's e-commerce site. The casting of Bond is usually a guarded secret; Jeff Bezos, Amazon's founder, has asked users of X who they think should take on the role.

What made the Broccolis surrender their spy to such a fate? Mr Wilson is 83 and plans to retire. Ms Broccoli is 64 and still making movies; she may simply have had enough of fighting with Amazon, whose streaming business model is radically different from the blockbuster theatrical approach that has sustained Bond for 27 movies.

A longer-term reason for selling is a force even stronger than Bond's foes at SPECTRE: copyright law. America's strict IP rules will keep 007 locked up until 2049, 95 years after the publication of Ian Fleming's first Bond novel. But elsewhere Bond is slipping into the public domain. In Japan the books have been out of copyright since 2015, 50 years after Fleming's death. The country has already seen a stage adaptation of "Casino Royale" (in which Bond was played by a woman). In Britain, where Bond-mania is strongest, they will become public property in 2035. New interpretations will surely follow.

Features that are unique to the films will remain under copyright, such as the gun-barrel opening sequence and the theme tune. But the novels contain the core material. "Casino Royale" features M, Q Branch and vodka martinis that are shaken, not stirred: everything, in other words, that makes a Bond film a Bond film.

Amazon has time to fortify its asset against imitators. It can build up a Bond cinematic universe, establishing actors in the key roles—or even adding new, copy-rightable characters—so that future rival productions feel like they are outside the true canon. Whatever it does with the franchise, James Bond will eventually be a free agent, ready to slip through the fingers of another frustrated billionaire. ■



### World in a dish

## Eat like a king

### Russian tsars loved caviar. Now TikTok does, too

**W**ELOCOME TO THE caviar class you guys didn't know you needed!" says Danielle Zaslavsky, smiling at the camera. Her family owns Marky's, an American caviar company; she shows off its products on TikTok by dolloping glossy sturgeon eggs on everything from tortilla chips to ice cream.

She is not the only caviar connoisseur taking the rarefied foodstuff to the online masses. Videos tagged #Caviar have 4.7bn views on TikTok. "Caviar bumps"—which involve slurping roe off your hand—have become a social-media trend. Restaurants have added them to their menus.

Demand for caviar is voracious. Caviar Russe, an American retailer, says the volume of sales has quadrupled since 2019. (Their 50g tins start at \$115 and go up to \$1,000 for the rare Almas Osetra.) The Business Research Company predicts that the global caviar market, currently worth \$3.1bn, will grow to \$4.6bn by 2029.

Caviar has long been synonymous with opulence. It was a favourite foodstuff of Russian tsars. By the 19th century caviar was served in fine-dining establishments across Europe; it later symbolised the glamour of the Gilded Age in America. Soon high demand led to overfishing and reduced supply, which drove prices up.

Why is this delicacy fashionable again? One reason is that restaurants are making the most of its unique texture and salty versatility. Some serve it with fried chicken and crème fraîche. Caviar Kaspia, a chain

of restaurants, tops fluffy baked potatoes with buttery caviar. The dish makes up 70% of orders at its London branch.

Gen Z gourmets, always alert to new trends, have taken notice. Viral videos "played a huge part" in caviar's resurgence, argues Ms Zaslavsky, as they presented it as "relatable and attainable". Novices learn how to open a jar and which variety to try for a less fishy taste (Kaluga).

Yet the caviar industry is changing, thanks to a series of bans and restrictions on wild caviar. Today almost all caviar is farmed. Russia and Iran were once the largest exporters, but now China is the world's leading distributor; around 15% of the global supply comes from the city of Ya'an. Caviar prices remain high because of the time it takes for a female sturgeon to reach maturity. The Beluga species, for instance, can take more than 20 years.

In the future, cheaper "cultured caviar" may be widespread, as firms are experimenting with making it in a laboratory. The methods vary, but Caviar Biotech, a British company, takes stem cells from sturgeon roe, grows them, then induces the cells to differentiate into eggs. (It is a process used in other kinds of lab-grown meat.) It could drastically reduce the amount of time it takes to retrieve eggs.

Such methods, if successful, could one day make caviar much less expensive. But that could undermine its allure. How many TikTokers will want to show off that they are eating cheap fish eggs? ■

## Language

## The babble and the beyond

**Bye Bye I Love You.** By Michael Erard.  
MIT Press; 344 pages; \$32.95 and £30

BABIES COME into the world seeking out comfort, so their first word is often “mama”. It is easy to say and reflects the bond of mother and child. Meanwhile those leaving this world often make a philosophical statement, reveal a long-hidden truth or even utter a witticism. “Either those curtains go or I do,” Oscar Wilde supposedly said on his deathbed.

All this, including Wilde’s quip, is dubious, argues Michael Erard, an American journalist who has written several books about language. In “Bye Bye I Love You” he dismantles many long-held beliefs about utterances at both the beginning and end of life. He finds first and last words to be similar in many ways—such as how they are created by expectant listeners as much as by their speakers.

Sounds like *mama* and *dada* or *papa* recur in many of the world’s words for “mother” and “father”. But about as many parental words lack these common sounds; in some languages the word for “mother” features rare consonants that children master only later. “Mama” is what Mr Erard calls a “cultural first word”, fussed over by those who have learned to look out for it or even elicit it from little ones.

Things are very different elsewhere. Among the Beng people of Ivory Coast, a baby is not supposed to utter his first word too precociously. To do so is a bad omen, involving a “cosmic rebalancing”, and a grandparent might die in compensation. Among speakers of Tayap in Papua New Guinea babies are expected to be defiant; people listen out for “oki” and “aiata”, meaning “I’m getting out of here” and “stop it”. A similar belief holds among Samoans, for whom “tae” is expected to be many babies’ first word, short for “ai tae” (“eat shit”).

In industrialised societies early linguistic development is big business. Unusual and varied early words are meant to be a sign of a gifted child who will reap the rewards of being brainy later on. Baby books encouraging parents to report on their children’s first words made their appearance in the late 19th century along with an increasingly professional, managerial approach to parenting—child-rearing as optimisation. Rich-world parents are thus keen to elicit speech from their children as early as they can.

Mr Erard is not the first to point out that industrialisation has changed not only childhood, but old age, too. Medical advances in wealthy countries have led to more protracted declines and deaths at older ages; in earlier centuries violence, accidents and catastrophic illnesses claimed many young, otherwise healthy people.

That has had an effect on last words. Popular culture has conditioned loved ones to expect some final truth or profundity in the last utterance of the dying. But moments of sudden lucidity, with clear, meaningful and memorable last words, are very much the exception in those who die today (and offer reason to be sceptical of many of the famous last words collected in anthologies). By far the most common process by which people die in the modern rich world is a slow breakdown of physical and mental faculties, “neurochemical comotion” that gradually robs people of the ability to say anything at all.

Indeed, in another link between first and last words, Mr Erard argues that dying people lose their verbal faculties in a way resembling the child’s language learning but in reverse. Though language acquisition is well studied, language attrition is not. Mr Erard is elegiac as he describes glances, hand squeezes and gestures, and the sometimes upsetting cries, moans and delirious talk that are often the final communication of the dying. This is why some cultures—many Hindus and Muslims among them—prepare and practise declarations for the moment of death long before it arrives. (Christians once did so, too.)

A book ending with so much death may sound like a hard read. Instead, it is a beautiful and even strangely comforting one, with Mr Erard as a pensive, patient guide. (He is training to be an end-of-life doula.) The end must come; unrealistic expectations about final messages need not. ■



## Music

## Been there, heard that

Why are live albums back in fashion?

THE CURE. Dua Lipa. Ed Sheeran. Iggy Pop. Interpol. Katie Melua. Niall Horan. The National. On the face of it, these musical artists have little in common. But all have recently released a live album, a format whose glory days were thought to be long gone. The studio album—for which new work is carefully recorded in controlled conditions—is the big thing. The live album, usually a record of a particular concert or tour, is an afterthought.

That was not always the case. In the 1970s and 1980s, when rock music was at its peak, the live album afforded artists an opportunity to bottle the lightning that struck when they performed in front of a crowd. Kiss, Motörhead and Thin Lizzy all released successful live albums which showed off their frenetic style. Yet as pop and hip-hop became more influential, the live album became less so. (Both genres are heavily produced, meaning the best results generally come in the studio.)

So why the slew of live-album releases? A few artists claim artistic reasons. “A live album is edgier than studio work,” Ms Melua, a British singer-songwriter, says. “You only get one shot to deliver a performance.” For pop stars, sometimes accused of using autotune to polish their vocals, live performance is a way to prove their talent. On “Dua Lipa Live from the Royal Albert Hall”, the British singer showed her range by reimagining songs from her hit “Radical Optimism” album with orchestral arrangements.

Ms Melua suggests the pandemic has also played a role in the revival of live albums. For months, musicians were forced to cancel gigs; now that they are back on the schedule, both artists and their fans have a keener appreciation of live music.

Concerts are occasions that fans want to remember—think of how many ticket stubs and zoomed-in videos are kept in drawers and on phones long after the event. A live album is a collector’s item in the same way. As such, the format benefits both fans and record labels. Acolytes get a means to relive the (probably expensive) experience. Record labels get the chance to charge them again for the pleasure.

## Arcade games

# Playing the silver ball

WOOD RIVER, ILLINOIS

Competitive pinball is increasingly popular and lucrative

WHEN MOST people think of pinball, if they think of it at all, they probably imagine an old, unloved machine, starved of coins and gathering dust in the back of a bar or pizza parlour as its lights and bells plead futilely for attention. Sure, pinball has fans: so do record players, British sports cars and tweed jackets with elbow patches. Some people simply appreciate bygone eras. Others enjoy being out of step with the times.

Yet in recent years pinball has quietly grown not just increasingly popular, but also lucrative. Some \$55,000 will be handed out in prizes at the North American Pinball Championship on March 6th: far from football- or basketball-player money, but enough to justify modest hopes and hours of practice. The money comes from event fees and sponsorships; along with bragging rights, the winner gets a new machine from Stern Pinball worth \$10,000.

The growth of competitive pinball is part of a broader revival of the game. The number of people playing in tournaments sanctioned by the International Flipper Pinball Association (IFPA), the governing body, more than doubled between 2015 and 2024, from 16,500 to almost 40,000. The number of companies making pinball machines has also grown, from just one—Stern, which stood alone for more than a decade—to about 20 firms around the world. Behind this renaissance lies a strategic change: after decades of being scared

by video games, pinball manufacturers have worked out how to imitate them.

Pinball evolved from bagatelle, an 18th-century French tabletop game in which players used sticks to shoot balls around obstacles and into holes. American firms mechanised it in the 1930s, covering the playfield with glass, adding bumpers and requiring coins to play. Flippers were introduced in 1947 to keep the ball in action.

Not everyone saw pinball as a bit of harmless fun. In the 1940s several cities, including New York, banned it. Fiorello La Guardia, the mayor, believed the game led to juvenile delinquency, emptying the “pockets of schoolchildren in the form of nickels and dimes given them as lunch money”. He also worried about its ties to organised crime. The ban endured until 1976, when a player named Roger Sharpe persuaded the city council that pinball was a game of skill; he did so by flipping the ball precisely where he said he would.

For most people, pinball remains a game of chance and reaction. They pull the plunger back to send the silver ball rocketing into the playfield, following it with their eyes as it caroms off bumpers, sails up ramps and flies down chutes. When it approaches the bottom, they flail at the flippers to save it. (Your correspondent, despite playing avocationally for around 40 years, remains a flailer.)

For skilled players, such as the 123 who competed at the IFPA’s Winter Bash, held

in December at an arcade near St Louis, pinball is a game of dexterity akin to a fast-paced form of billiards. It requires precision, timing and planning.

When Keith Elwin, who ranks 31st in the world, stands over a machine, his concentration is absolute: the dozens of other games bleeping and bleating all around him may as well not exist. “I’m going to shoot for the castle,” he explains, the silver ball nestled in the corner of a raised flipper. “But if I miss, I’m going to hit either of those two targets, and it’s going to come flying back at me...It’s all about playing defensive, trying to read where the ball is going to go, and then predicting your miss.”

Mr Elwin was playing “Medieval Madness”, made by Williams in 1997. Formerly a pinball titan, Williams stopped production in 1999 to focus on slot machines; Bally, another big firm, was bought by Williams in 1988 and also halted pinball production. Stern became, and remains, the market leader, releasing around three games each year. That is testimony to how complex and time-consuming pinball manufacture is, especially as new games often include multiple levels, video displays and internet connectivity.

As games have grown more sophisticated in design, how people play pinball has also changed. The machines were once a mainstay of bars; today Stern sells 70% of its games to homes, according to Seth Davis, its chief executive. (The arcade gaming market, worth an estimated \$13.7bn, is expected to grow to \$16.3bn by 2029.) “It’s as exciting as an Xbox,” Mr Davis explains, “but those sit under your TV. You can’t show it off. Today, the 45-year-old with a home says, ‘I want to enjoy it with my kids; I have the space and the money.’”

And like Xbox games, modern pinball games are narrative-driven: people do not get high scores just by keeping the ball alive, but by shooting targets in the proper order—hence Mr Elwin’s intent to shoot the castle—and advancing through the levels. Also like modern video games, internet-connected pinball machines let players take on anyone in the world and store their high scores in the cloud for others to see. These changes have made pinball more competitive and international, with boasting no longer limited to an individual pizza parlour or arcade. The IFPA’s rankings include players from America, Australia, Belgium, Germany, Italy and Sweden.

Despite such developments, pinball remains relatively niche: the number of committed players is a fraction of the 3bn people who play video games. Still, the number of tournaments and players keeps growing. When asked what draws people to pinball, Mr Elwin hints at a pleasure that is nostalgic but enduring: “You’ll have to ask the eight-year-old me. There’s just something about it.” ■



On the flipper side

## Economic & financial indicators

	Gross domestic product % change on year ago latest quarter*		Consumer prices % change on year ago latest 2024†		Unemployment rate %	Current-account balance % of GDP, 2024‡	Budget balance % of GDP, 2024‡	Interest rates 10-yr govt bonds change on latest, %	Currency units per \$ Feb 26th	% change on year ago
United States	2.5	Q4	2.2	2.8	3.0 Jan	2.9	4.0 Jan	-3.4	-6.6	4.2
China	5.4	Q4	6.6	5.0	0.5 Jan	0.2	5.2 Jan <sup>§§</sup>	2.1	-5.0	1.6 §§
Japan	1.2	Q4	2.8	-0.2	4.0 Jan	2.7	2.4 Dec	4.2	-4.7	1.4
Britain	1.4	Q4	0.4	0.8	3.0 Jan	3.3	4.4 Nov <sup>††</sup>	-2.8	-4.5	4.5
Canada	1.5	Q3	1.0	1.3	1.9 Jan	2.4	6.6 Jan	-0.5	-2.3	3.0
Euro area	0.9	Q4	0.2	0.7	2.5 Jan	2.4	6.3 Dec	3.2	-3.2	2.4
Austria	-0.6	Q3	-0.5 <sup>‡</sup>	-1.0	3.4 Jan	2.9	5.3 Dec	2.3	-3.7	2.8
Belgium	1.1	Q4	0.8	1.0	4.4 Jan	4.3	5.8 Dec	-0.3	-4.5	3.0
France	0.7	Q4	-0.3	1.1	1.8 Jan	2.3	7.8 Dec	-0.4	-6.1	3.1
Germany	-0.2	Q4	-0.8	-0.2	2.8 Jan	2.5	3.4 Dec	5.8	-1.8	2.4
Greece	2.5	Q3	1.1	2.2	3.1 Jan	3.0	9.4 Dec	-6.7	-1.4	3.3
Italy	0.5	Q4	-0.1	0.6	1.7 Jan	1.1	6.2 Dec	1.3	-4.2	3.5
Netherlands	1.8	Q4	1.6	0.9	3.0 Jan	3.2	3.8 Jan	9.5	-0.7	2.6
Spain	3.5	Q4	3.1	3.0	2.9 Jan	2.9	10.6 Dec	3.1	-3.2	3.1
Czech Republic	2.1	Q3	2.1	1.0	2.8 Jan	2.4	2.7 Dec <sup>‡</sup>	1.6	-2.4	4.1
Denmark	3.6	Q4	6.5	3.6	1.5 Jan	14	2.9 Dec	12.5	1.9	2.2
Norway	-0.3	Q4	-2.5	1.7	2.3 Jan	2.2	3.9 Dec <sup>‡</sup>	17.3	12.5	3.9
Poland	3.2	Q4	5.3	2.9	5.3 Jan	3.8	5.4 Jan <sup>§</sup>	0.1	-5.7	5.8
Russia	3.1	Q3	2.7	3.7	9.9 Jan	8.4	2.3 Dec <sup>§</sup>	2.5	-1.7	15.5
Sweden	1.0	Q4	0.8	0.5	0.9 Jan	1.9	10.4 Jan <sup>§</sup>	6.6	-1.2	2.3
Switzerland	2.0	Q3	1.7	1.2	0.4 Jan	11	2.7 Jan	7.0	-0.9	0.5
Turkey	2.1	Q3	-0.8	3.1	42.1 Jan	58.5	8.7 Dec <sup>§</sup>	-1.1	-4.8	26.1
Australia	0.8	Q3	1.3	1.0	2.4 Q4	3.2	4.1 Jan	-2.1	-1.0	4.5
Hong Kong	2.4	Q4	3.2	2.6	2.0 Jan	1.7	3.1 Jan <sup>‡‡</sup>	12.0	-3.2	3.7
India	5.4	Q3	3.0	6.3	4.3 Jan	5.0	7.9 Jan	-0.5	-4.8	6.7
Indonesia	5.0	Q4	5.5	5.0	0.8 Jan	2.3	4.9 Aug <sup>§</sup>	-0.2	-2.5	6.8
Malaysia	5.0	Q4	2.2	5.1	1.7 Jan	1.8	3.1 Dec <sup>§</sup>	1.6	-4.4	3.8
Pakistan	3.2	2024**	na	3.2	2.4 Jan	12.6	6.3 2021	0.2	-6.8	12.3 ***
Philippines	5.2	Q4	7.4	5.6	2.9 Jan	3.2	3.9 Q4 <sup>§</sup>	-2.4	-5.6	6.1
Singapore	5.0	Q4	2.0	4.0	1.2 Jan	2.4	1.9 Q4	19.7	0.2	2.8
South Korea	1.3	Q4	0.4	2.1	2.2 Jan	2.3	3.7 Jan <sup>§</sup>	5.5	-1.8	2.8
Taiwan	2.9	Q4	6.6	5.0	2.7 Jan	2.2	3.4 Jan	13.5	0.5	1.6
Thailand	3.2	Q4	1.5	2.6	1.3 Jan	0.4	0.8 Dec <sup>§</sup>	2.4	-5.7	2.2
Argentina	-2.1	Q3	16.4	-2.4	84.5 Jan	219.9	6.9 Q3 <sup>§</sup>	0.4	0.3	na
Brazil	4.0	Q3	3.7	3.4	4.6 Jan	4.4	6.2 Dec <sup>***</sup>	-2.6	-7.5	14.9
Chile	2.3	Q3	2.7	2.3	4.9 Jan	3.9	8.1 Dec <sup>***</sup>	-2.6	-2.9	5.9
Colombia	2.4	Q4	2.5	1.6	5.2 Jan	6.6	9.1 Dec <sup>§</sup>	-2.8	-5.7	11.1
Mexico	0.5	Q4	-2.5	1.5	3.6 Jan	4.7	2.6 Dec	-1.1	-4.9	9.6
Peru	4.2	Q4	2.0	3.1	1.9 Jan	2.4	7.8 Jan <sup>§</sup>	1.8	-3.6	6.5
Egypt	3.5	Q3	38.0	2.4	23.9 Jan	28.3	6.4 Q4 <sup>§</sup>	-6.3	-3.7	na
Israel	6.8	Q4	2.5	1.0	3.8 Jan	3.1	2.6 Jan	4.1	-6.8	4.3
Saudi Arabia	1.3	2024	na	1.3	2.0 Jan	1.7	3.7 Q3	-0.5	-2.5	na
South Africa	0.3	Q3	-1.4	0.8	3.1 Jan	4.4	31.9 Q4 <sup>§</sup>	-2.1	-5.3	10.4
										20.0
										18.4
										5.1

\*% change on previous quarter, annual rate. †The Economist Intelligence Unit estimate/forecast. §Not seasonally adjusted. ¶New series. \*\*Year ending June. ‡Latest 3 months. ‡‡3-month moving average. §§5-year yield.

\*\*\*Dollar-denominated bonds. Source: Haver Analytics Note: Euro area consumer prices are harmonised. Data downloaded at mobilism dot org

### Markets

	% change on:			% change on:		
	Index Feb 26th	one week	Dec 31st 2024	Index Feb 26th	one week	Dec 31st 2024
In local currency						
United States S&P 500	5,956.1	-3.1	1.3	113,862.3	0.5	-1.1
United States NAS Comp	19,075.3	-4.9	-1.2	3,908.1	-0.7	3.2
China Shanghai Comp	3,380.2	0.9	0.8	2,641.1	-1.1	10.1
China Shenzhen Comp	2,097.1	2.5	7.1	23,402.6	-0.9	1.6
Japan Nikkei 225	38,142.4	-2.6	-4.4	1,231.1	-2.5	-12.1
Japan Topix	2,716.4	-1.8	-2.5	2,275,037.0	-5.3	-10.2
Britain FTSE 100	8,731.5	0.2	6.8	124,768.7	-2.0	3.7
Canada S&P TSX	25,328.4	-1.2	2.4	53,296.7	-1.5	7.6
Euro area EURO STOXX 50	5,528.0	1.2	12.9	30,632.0	-0.8	3.0
France CAC 40	8,143.9	0.4	10.3	2,542.5	-2.3	4.8
Germany DAX*	22,794.1	1.6	14.5	12,232.7	-0.7	1.6
Italy FTSE/MIB	39,224.7	2.3	14.7	88,321.8	nil	5.0
Netherlands AEX	932.1	-1.1	6.1	3,821.0	-2.2	3.1
Spain IBEX 35	13,332.0	3.1	15.0	1,135.4	-0.1	5.6
Poland WIG	93,267.3	-0.2	17.2			
Russia RTS, \$ terms	1,201.0	5.4	34.5			
Switzerland SMI	13,042.5	1.9	12.4			
Turkey BIST	9,573.2	-2.0	-2.6			
Australia All Ord.	8,477.3	-2.5	0.7			
Hong Kong Hang Seng	23,787.9	3.7	18.6			
India BSE	74,602.1	-1.8	-4.5			
Indonesia IDX	6,606.2	-2.8	-6.7			
Malaysia KLSE	1,588.7	0.5	-3.3			

Sources: LSEG Workspace; Moscow Exchange; Standard &amp; Poor's Global Fixed Income Research. \*Total return index.

### Commodities

The Economist commodity-price index 2020=100	% change on		
	Feb 18th	Feb 25th*	month year
Dollar Index	143.0	140.8	1.9
All items	163.0	156.5	-0.6
Food			17.7
Industrial			
All	126.5	127.7	4.6
Non-food agriculturals	139.6	140.7	6.5
Metals	123.2	124.4	4.1
Sterling Index			
All items	145.7	143.0	0.1
Euro Index			
All items	156.2	153.2	1.2
Gold	\$ per oz	2,928.2	2,899.3
Brent	\$ per barrel	76.3	73.1
		-5.8	-12.2
Sources: Bloomberg; CME Group; FT; LSEG Workspace; NZ Wool Services; S&P Global Commodity Insights; Thompson Lloyd & Ewart; USDA; WSJ. *Provisional.			
For historical indicators data, visit <a href="http://economist.com/economic-and-financial-indicators">economist.com/economic-and-financial-indicators</a>			

## OBITUARY

### Muhsin Hendricks

*The world's first openly gay imam was shot dead on February 15th, aged 57*



**H**IS MOTHER could not end the sentence. "I heard you were divorced," she had begun, "because you're—" A long pause. "Gay," he finished for her.

He had dreaded saying it for years. Not to his wife, because she had known it before they married. Not to colleagues, or even to the conservative imams he often mixed with. Telling his mother was always going to be the hardest part. For 80 days he had fasted and prayed about it. In the end, at peace and assured that Allah embraced him as he was, he was ready to talk to her. But at the very word, she collapsed in front of him.

She had known him for 29 years; but not who he was. He had disguised it well, obediently following the rules of the household where his imam grandfather had preached fiercely and often, and had tied his small left arm behind his back to make him eat with his correct, right, hand. He had gone to Karachi in Pakistan to study Arabic and Islamic jurisprudence, a holy training, and had become an Arabic teacher in Cape Town, where they lived. He seemed on a straight road to imamhood, especially when he married (as imams had to) and produced three children. Given all that, he should have been the joy of any mother.

But from the age of five Muhsin knew he was different. He was teased for being girlish, and by puberty he was clearly attracted to boys. This terrified him. Under sharia law he would be stoned; according to the scholars he would go to hell. Silently, because it was impossible to tell a soul, he fasted on Tuesdays and Thursdays and agonised over how Allah, the all-compassionate, the all-merciful, could send him to the fire. The real reason he went to Karachi to study was to see what the Koran truly said about homosexuality. He also discovered there that, though it was illegal, men strolled hand in hand with their boyfriends, as he soon strolled with his.

Those were the foundations of Muhsin Hendricks's 30-year ministry, which over time provided meeting places, a mosque, constant reassurance and two human-rights foundations to defend Muslims torn between their faith and their sexuality. It became famous well beyond Cape Town. Two documentaries helped; so did his lively TikTok presence, dancing and lip-synching to Bollywood love songs. But he was also famous because he

was the world's first openly gay imam, and very few followed.

Coming out to his mother allowed him to start work. In 1998 he put down a carpet in his garage and invited like-minded people to this "Inner Circle" for tea and chat. Not only LGBT Muslims were welcomed, but anyone who felt ostracised within Islam. Later he founded "The People's Mosque" in Wynberg, near Cape Town, a small, calm space with blue prayer-mats and no gender separation. On Fridays women sometimes led the prayers and preached the sermons, as they could not do elsewhere. Afterwards their Imam Muhsin, strikingly robed (he had worked for a while as a fashion designer, and once hand-sewed a dress for his daughter to wear to a gala), served up a storm of his signature biryani.

He had not wanted to be an imam, and he gave himself no holy airs. The word just meant a chosen leader, and his community had picked him to protect them and advance their cause. Therefore he had to teach the sacred texts, but in his own way. He already had mystical, Sufi tendencies. Now both he and his congregation set out to read his beloved Koran afresh, with queer eyes.

His fundamental premise was that Islam was a religion of love and peace. Allah was not an angry ruler but a loving energy, a compassionate light: the fount of the whole diversity of creation. Homosexuality was thus divinely intended. The Koran said that Allah had created partners for human beings, not specifying their sex, in order to foster tranquillity, as much as to procreate. It was not God who condemned non-heterosexual sex, but the patriarchy that underpinned Islam. The Koran itself was a tolerant voice. His favourite quotation was Surah 17:84: "Everyone acts according to his own disposition." As he to his.

Critics thought they could trip him with the parable of Sodom and Gomorrah. But God blasted those cities because their people were rapists, robbers and inhospitable to strangers. Homosexuality was not specifically mentioned in the Koran and only hinted at in the *hadith*, or acts of the Prophet Muhammad (which were unreliable anyway). Elsewhere in the *hadith* the Prophet appeared to easily accept effeminate men in the household of his wives. And when he was asked to condemn to death a man who had hennaed his feet and hands, like a woman, he refused, saying "I have been forbidden to kill those who pray."

All his exegesis was partly aimed at the local Muslim Judicial Council, the keepers of hardline tradition. That patriarchy was not swayed. As soon as he came out he was fired from one of his teaching jobs in Cape Town, and quickly resigned from two more before he was pushed. Other local imams pointedly called him "Mr Hendricks". In 2007 the council declared him "out of the fold of Islam" for appearing in a documentary called "A Jihad for Love". In 2011 he scandalised them again by marrying his Hindu boyfriend at a ceremony conducted by a woman. He mocked when, just last year, the council issued a "short fatwa" against gay lifestyles. Short because so little thought had gone into it.

Even secular South Africa, the first country in Africa to legalise gay marriage, was not a safe place to be so defiantly different. He did not care. Friends told him to get bodyguards, but he said he would rather be killed than be untrue to himself. To be shot to death on the road was therefore always a possibility.

And he did not fear it. Nothing could be more fearful or difficult than coming out to his mother. It took her ten years to accept it. In the end, though, they had "a beautiful connection". It would be even more beautiful, he felt, to meet God fearlessly, entirely as the person he was. ■



## GAMBIA RIVER BASIN DEVELOPMENT ORGANISATION

### PREQUALIFICATION FOR THE COMMERCIALISATION OF THE EXCESS OPTICAL FIBER CAPACITY OF THE OMVG'S 225 KV INTERCONNECTION NETWORK

#### Invitation for Prequalification N°: 009/OMVG/PE-OMVG/UGP/02-2025

1. The Gambia River Basin Development Organisation (OMVG) intends to pre-qualify operators with proven experience and capacity for the operation and commercialisation of part of the optical fibers of its 225 kV interconnection network, covering The Gambia, Guinea, Guinea-Bissau and Senegal over a distance of more than 1,750 km. This new network forms a loop, providing security for both the electricity and the optical fiber network, while also servicing the Brikama (Gambia) and Bissau (Guinea-Bissau) stations.
2. To this end, the Gambia River Basin Development Organisation (OMVG) acting on behalf of the Management Company of the Sambangalou Dam and the Transmission Network (SOGESART) is hereby issuing this international invitation for prequalification to interested companies (the "Bidders") willing to participate in the prequalification process of Bidders in connection with the commercialisation of the excess optical fiber capacity of the OMVG's 225 kV interconnection network.
3. Bidders will be selected through a two-stage tendering process. It is therefore required that Bidders first prequalify in order to participate in the final bidding stage. Only prequalified Bidders will be able to participate in this second stage. The list of pre-qualification criteria, including the required statements and necessary documents, is included in the pre-qualification file (the "File") to which this notice is subject.
4. Interested Bidders may obtain the File by sending their request in the form of a signed letter by post or e-mail to the addresses below, with the subject line: "*Request for a Pre-Qualification File for the commercialisation of surplus optical fiber capacity of the OMVG's 225 kV interconnection network*". The File will be sent by e-mail to each Bidder who makes the request.

#### Name of project owner:

Gambia River Basin Development Organisation (OMVG)

#### Name of person in charge and address:

Mr Demba JALLOW, OMVG High Commissioner

Immeuble CTIMM Serigne Bassirou Mbacké -5ème Étage - Route de Ouakam, BP 2353 - CP : 18524 - Dakar R.P - Sénégal

Phone: + 221 33 859 28 80 - Fax: + 221 33 864 29 88

Email: omvg@omvg.org, ldanso@omvg.org with a copy to stephanedevaucelles@cadmos.eu, gmuini.ext@gauff.net

#### Title and reference:

Commercialisation of surplus optical fiber capacity of the OMVG's 225 kV interconnection network

5. Application documents for prequalification should be submitted by email in pdf format to the four e-mail addresses indicated above no later than **12 April 2025 at 3:00 pm (Dakar time)**, with the subject line "**Offre de pré-qualification pour la commercialisation de la capacité excédentaire de fibres optiques de réseau d'interconnexion 225 kV de l'OMVG**" ("Pre-qualification offer for the commercialisation of surplus optical fiber capacity of the OMVG's 225 kV interconnection network"). The application file size must not exceed ten megabytes.

The OMVG reserves the right to accept or reject any application received after the specified deadline.

Bidders will be informed of the outcome of their application in accordance with the terms and conditions set out in the File.

## APPOINTMENTS

### Planning a New Career Challenge?



### Unique Access to Confidential Opportunities

InterExec is the global leader in assisting Top Executives earning \$250k and above with their next career move.

We have almost 50 years of experience in discreetly leveraging our relationships with 15,000 Search Executives across the world to maximise our clients' career prospects.

Whatever your next challenge may be, we offer you a free of charge, mutually exploratory initial meeting to see if we can be of assistance.

[london@interexec.net](mailto:london@interexec.net) [www.interexec.net](http://www.interexec.net) +44 (0)20 7256 5085

ESTABLISHED 1976  
**Inter Exec**  
 UNIQUE NETWORK • OUTSTANDING TALENT



# Profit through purpose: how Net Positive builds resilient companies

In an increasingly unpredictable and fragmented world, business leaders striving to build profitable and resilient companies are turning away from sustainability in an attempt to minimise potential detrimental effects on their balance sheets. They see tensions between positive environmental and social impacts and financial targets.

A Net Positive approach shows that growth, profitability, resilience and sustainability can all be achieved at the same time. It goes beyond minimising a company's footprint to also create meaningful benefits for people and the environment and, in doing so, positions companies at the forefront of environmental, social and technological advances.

Net Positive companies track their competitors on revenue and profit goals, while outperforming on investor confidence. A commitment to Net Positive though requires a mindset shift for most businesses. It necessitates leadership and collaboration—among industry peers and other key actors—to drive profit and growth with purpose and to position the private sector as a critical part of the solution.

To support this transformation, Fujitsu commissioned Economist Impact to develop the Advancing Net Positive Agenda, a first-of-its-kind toolkit to help business leaders understand and progress towards Net Positive. It includes the Net Positive Index, which evaluates how companies within five industries are working to achieve Net Positive outcomes.

Very few companies have completed the full transformation to Net Positive, but the Index found that businesses anticipate tangible benefits from adopting the approach.





## The view from Fujitsu

The launch of the Advancing Net Positive Agenda provides the first comprehensive framework for measuring and driving Net Positive practices, helping businesses embrace new ambitions and innovation.

The initiative is grounded in critical new research, making clear that while many companies recognise the benefits of becoming Net Positive, too few have embraced this transformative approach, misreading its impact on profitability. Fujitsu is determined to outline a new path forward.

"As Fujitsu strives towards becoming Net Positive, we anticipate our early investment converting to success in both sustainability impact and business growth," says Takashi Yamanishi, Fujitsu's Corporate Executive Officer, EVP, CSSO (Chief Sustainability & Supply Chain Officer). "A Net Positive approach allows us to invest in driving efficiency across our business operations, contributing to a regenerative approach to planet and communities."

Two-thirds believe that it will create cost-savings through increased efficiency and decreased climate risk, and almost three-in-five believe it will increase their regulatory compliance and risk management.

Companies have made strides in reducing their negative impacts, but have not yet taken similar action to proactive support positive outcomes. They also have found embracing Net Positive in their value chains challenging, although increased consumer scrutiny is driving progress in worker protections across the value chain in the Retail sector. Better data collection and employing technology to support sustainability efforts are also helping companies to reduce their negative impacts and meet revenue and profit goals.

### Where is your company on the Net Positive journey?



Use the Net Positive Assessment Tool to find out how your company scores. Learn how to drive resilience and profitability while building a better world.

[economistimpact.com/advancing-net-positive](http://economistimpact.com/advancing-net-positive)

Independently developed  
and researched by

ECONOMIST  
IMPACT



**LOUIS VUITTON**  
LA FABRIQUE DU TEMPS

# TECHNOLOGY QUARTERLY

*Gene editing*

- MARCH 1ST 2025
- 3 From yogurt to everything
- 4 Not yet a cure-all
- 6 Epigenetic editing
- 7 Accelerating research
- 8 Engineering crops
- 10 Editing animals
- 12 Designing babies
- 14 Seizing the promise



**The age  
of CRISPR**

# From AI to ROI

5th annual Business Innovation Summit

March 26th 2025 · London

More than: 600 attendees | 80 speakers | 20 sessions | 200 companies

How do you measure AI's impact and value—and avoid its pitfalls? Can “agentic AI” simplify your job—or, alas, make you redundant? Stay at the forefront of AI innovation and meet industry leaders who have successfully used AI for business growth.



**Brian Higgins**  
Chief customer experience officer  
Verizon Consumer



**Loretta Franks**  
Chief data and analytics officer  
Kellanova



**Aneesh Raman**  
Chief economic opportunity officer  
LinkedIn



**Giovanni D'Aniello**  
Group chief information officer  
AXA



**Jessica Hall**  
Chief product officer  
Just Eat Takeaway.com

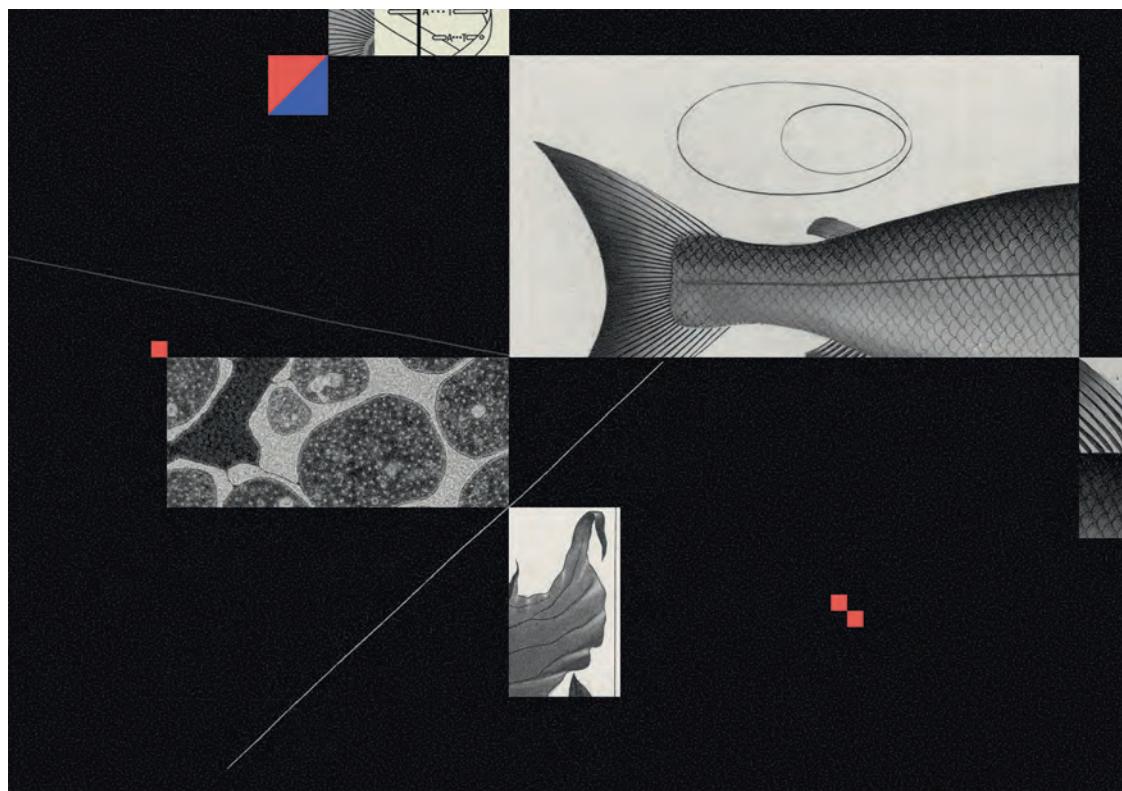


**Chris Blatchford**  
Group chief technology officer  
Kingfisher



Save 30% with the code ECONOMIST30

[businessinnovationsummit.economist.com](http://businessinnovationsummit.economist.com)



## Genetics

# The age of CRISPR

**Gene editing has arrived. Ida Emilie Steinmark explores whether it can deliver on its promise**

**I**N EARLY 2005 Rodolphe Barrangou and Philippe Horvath were staring at some very odd bits of repeating genetic code on a computer screen in France. The sequences came from *Streptococcus thermophilus*, a bacterium that, like other bacteria, often skirmishes with viruses. Rumour had it that these sequences of DNA might help bacteria gain the upper hand in the fight. If they did, the researchers wanted to know all about it. *S. thermophilus* is one of the microbes used to make yogurt. Stopping it from falling prey to viruses would save Danisco, the foodmaker they both worked for at the time, millions of euros.

They compared the strange sequences from varying strains of *S. thermophilus* which were resistant to different viruses. In every case, the bits of DNA between the repeated sequences were identical to DNA from the virus to which that strain of bacterium was resistant. The researchers then took bits of DNA from a specific virus and stuck them in between the repeats in a non-resistant strain of *S. thermophilus*. Remark-

ably, the strain became resistant. It seemed as if bacteria which survived a viral attack kept chunks of the attacking virus's DNA in their own genomes. These functioned as a rogues' gallery in preparation for future fisticuffs: if the same piece of DNA were seen again, the cell would know it was under attack.

The discovery of this bacterial immune system was big news for the dairy industry, which suddenly had a new way to select bacteria based on desired immunity. Such strains are now the norm in most yogurt and cheese production, a nice commercial pay-off for microbiology. But in 2012 Emmanuelle Charpentier at the Max Planck Institute in Germany and Jennifer Doudna at the University of California in Berkeley took the practical implications of the work much further. The strangely Clustered, Regularly Interspaced, Short Palindromic Repeats, or CRISPR, could be hacked to make cuts at precise sequences in the genome of any organism: yeast, fish, pigs. Or humans.

Their technique worked by introducing into cells the means of making a protein called Cas9—responsible for making cuts in DNA—and a piece of CRISPR-like RNA that tells it which bit to cut. RNA, like DNA, carries a sequence of “bases”, and if you know a particular sequence of DNA you can easily design a “complementary” sequence of RNA to put at the end of a piece of CRISPR RNA to which Cas9 will attach itself. When the RNA-plus-protein mechanism finds the matching piece of DNA in the cell’s genome, Cas9 makes its cut.

### The beauty of imperfection

From there CRISPR takes advantage of the cell’s DNA-repair mechanisms. Because cells usually fix damaged sequences imperfectly, the repair process often “knocks out” the targeted gene. This ability to knock out genes sits behind the first wave of CRISPR med- ►

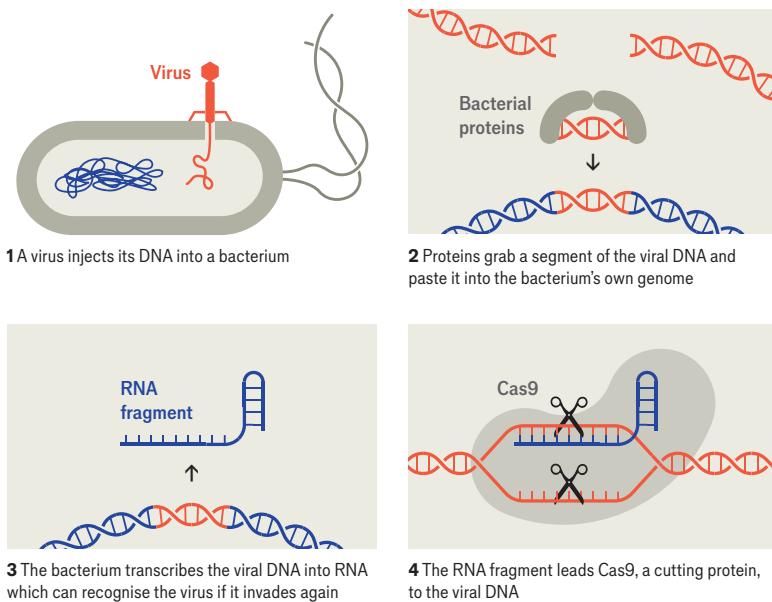
► icines advancing towards clinics. More sophisticated techniques which make precise edits, or insert new sequences, are now commonplace in labs, and will migrate into clinics as well as seed companies and farms.

Manipulating genes to correct diseases or improve crops are not new ideas. But (especially in medicine) earlier technologies struggled due to being unsafe or prohibitively cumbersome. Building a gene editor took months. With CRISPR even high-schoolers can get hold of editing systems in the time it takes to order RNA sequences online and have them shipped by FedEx. In a short while this technology has been adopted by pharmaceutical giants and become ubiquitous in

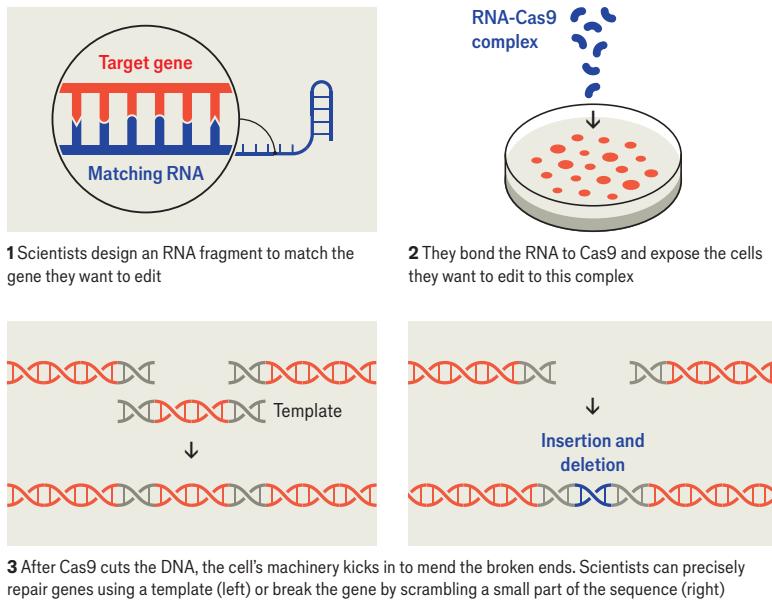
laboratories, spawning biotechs and inspiring innovations that may prove still more powerful. Governments are tweaking regulations to exploit its potential.

Everything about the technology screams “world-changing”. CRISPR offers ways to achieve biological goals—not just medical goals like curbing heart disease, but also agricultural and environmental goals—in ways never before dreamed possible. As yet, though, the world seems largely unchanged. Might CRISPR fall prey to the same pitfalls and disappointments as its predecessor technologies? Or is the transformation it promised within scientists’ grasp? This Technology Quarterly will offer answers to these questions. ■

### CRISPR is part of a bacterium's immune system



### In the lab, scientists use CRISPR to edit genes



### Next-generation medicine

## Not yet a cure-all

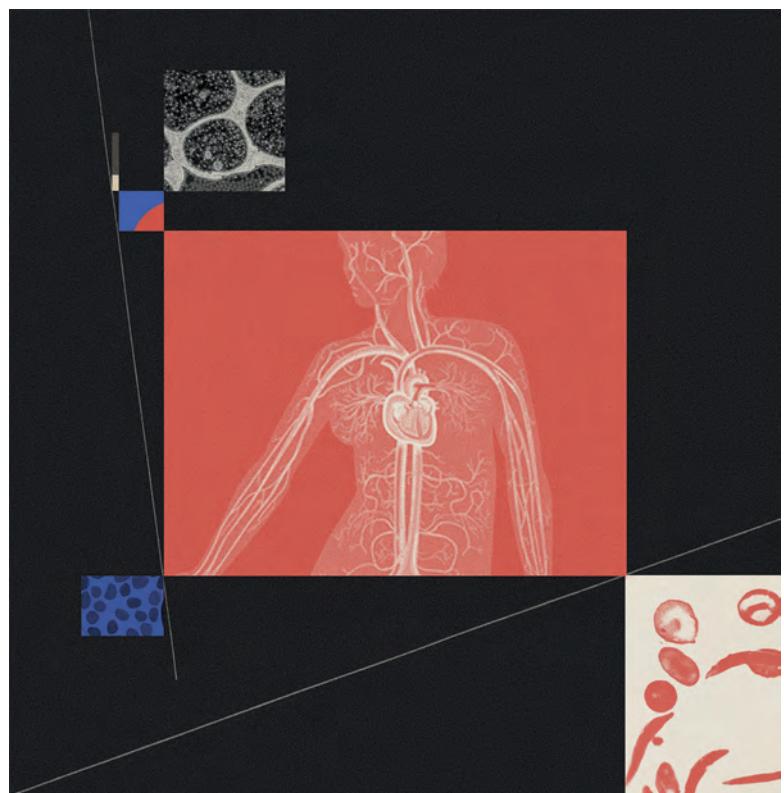
### CRISPR treatments face cost and safety concerns. But there is cause for optimism

FOR 20 YEARS Tamani Harris lived a life of pain. She was born with sickle-cell disease. Her red blood cells, made flat and stiff by a mutant version of haemoglobin, struggled to move smoothly through her blood vessels. Several times a month she would have a “crisis” where her cells got stuck somewhere in her body, causing excruciating pain. She needed strong opioids and often blood transfusions to recover. She had accepted that she might die young.

Her parents encouraged her to partake in a trial for a CRISPR-based therapy for sickle-cell disease and beta-thalassemia, another debilitating genetic blood disorder. The therapy, Casgevy, was made by Vertex Pharmaceuticals, a pharmaceutical firm in Boston, and CRISPR Therapeutics, a Swiss biotech co-founded by Emmanuelle Charpentier, one of the inventors of CRISPR. In May 2021 Ms Harris travelled to New York from college in Florida to have her DNA edited.

### Out with the old, in with the new

Sickle-cell disease can be treated by a bone-marrow transplant containing stem cells which lack the faulty haemoglobin gene and thus produce healthy red blood cells. But without a well-matched donor—and even siblings might not be similar enough—the transplant will fail or attack the recipient’s body. What Casgevy does is turn a patient’s own cells, already a perfect match, into a transplant. Doctors harvest stem cells from the patient’s bone marrow and then send them off to a lab, where CRISPR is used to turn up the production of another, functional version of haemoglobin. This version is used during fetal development but is turned down at birth. The patient—having had his or her old cells destroyed first by a brutal chemotherapy regime that often kills fertility—then receives their own edited cells as a transplant. ►



► The treatment seems to have cured Ms Harris; she has not had a crisis in three years. It appears to have worked in 39 of 42 participants in her trial. The beta-thalassemia patients who received Casgevy have had a similar turnaround. In 2023 Casgevy became the first CRISPR treatment to win approval from regulators, first in Britain and then in America, and reach the clinic. It has a list price of \$2.2m in America.

Casgevy delivers on CRISPR's original promise that diseases can be genetically cured. In the late 2010s and early 2020s that promise spawned huge excitement and investment; gene-editing biotechs shot up, pulling in hundreds of millions of dollars despite having little clinical data. When the covid pandemic broke out, the idea that biotechnology was going to save the world only fuelled more hype.

Then interest rates spiked, dampening investor interest. And when the whole industry seized up CRISPR still had a lot to prove. Could it ever be anything other than a gruelling bone-marrow transplant? Would health-care systems pay the high price for a one-and-done cure? What was more, too many companies were going after the same diseases in the same ways.

Hard years followed. Companies discarded drugs for rare genetic diseases in favour of "high-value" diseases with more patients. One biotech firm, Editas, stopped work on its therapy against inherited retinal diseases despite good results in early trials, then shut down its successful programme for a rival to Casgevy. Prime Medicine, another biotech, slashed its pipeline from eighteen therapy programmes to five. Tome Biosciences, which had entered the field with more than \$200m in funding, closed shop. It was a harsh reckoning. "So much for the Nobel prize-winning promise of CRISPR as a panacea," says Fyodor Urnov, a geneticist at the University of California, Berkeley.

### CRISPR has spawned new editors that can fix mutations

And yet. The fact that Casgevy works matters. So does the emergence of tools that can enable more precise edits than CRISPR. Base editing, invented in 2016 by David Liu at the Broad Institute in Massachusetts, in effect swaps out one base pair in DNA for another. Base editors first entered human trials in 2022, and preliminary data look promising. Prime editing, Dr Liu's next invention, can rewrite anything from one base to whole sections of DNA by copying from a custom template. That began human trials in 2024.

And markets are being established. More than 50 people have begun the process to get Casgevy (not counting trial participants). That is only a tiny fraction of the 8m people with sickle-cell disease, but at current prices Vertex believes Casgevy to be a multi-billion-dollar prospect. Analysts agree, citing public-payer deals in America and England and a coming expansion into the Middle East, which has a high prevalence of both sickle-cell disease and beta-thalassemia.

### In vivo veritas

But for CRISPR to transform medicine it will have to expand beyond ruinously expensive cures for diseases that require gruelling bone-marrow transplants. It will need to cure ailments in gentler ways at lower costs. Sending away cells for editing is pricey. A number of companies are working on *in vivo* treatments, which work by doing all the editing inside the body rather than via transplant. These medicines would be cheaper and kinder on patients, and would allow companies to treat more common diseases. But it has been a challenge to deliver them to the right places in the body.

To attack this problem the field has bet heavily on lipid nanoparticles (LNPs). These tiny bubbles of fat, which are given as an infusion, proved they could be produced at scale when they delivered mRNA vaccines against covid. Each nanoparticle would contain both a CRISPR guidance system and an mRNA molecule that would produce the editing protein. Verve Therapeutics, a biotech firm in Cambridge, Massachusetts, has a nanoparticle-delivered base-editing system in clinical trials that would treat heart disease by silencing a cholesterol-regulating gene called PCSK9. The editor showed good early results, but the firm had to pause a trial in 2024 because one of the participants had an adverse reaction to the LNPs. Another trial with a different LNP formulation is under way.

If Verve can work out the kinks in delivery, the prize would be big. The LNP trial is aimed at treating premature coronary-artery disease and people with familial hypercholesterolemia, a genetic condition that affects millions globally, causing high cholesterol and a serious risk of atherosclerotic cardiovascular disease (ASCVD). But the company's ultimate goal is to treat anyone with ASCVD—a patient pool of more than 300m people—and, one day, those merely at risk of it.

And if LNPs can be made to deliver editors safely, the next big leap would be making versions that could be delivered to organs besides the liver, where LNPs naturally accumulate (and which works for treating heart disease). If LNPs—or an alternative vehicle—could be made that could reach, say, the brain, gene editors could work on a host of brain diseases currently beyond the reach of CRISPR. Some researchers have turned to virus-like particles, which are capsules that exploit viral proteins to get taken up by cells but without a viral genome to cause infection. Jennifer Doudna, who co-invented CRISPR, is working on a ver- ►

► sion she calls “enveloped delivery vehicles”, which can be manufactured like LNPs but are decorated with molecules recognised by specific cell types.

Updates are expected in the first half of 2025 for trials run by Verve and by another Cambridge firm, Intellia Therapeutics, which has an *in vivo* therapy for hereditary angioedema, a swelling disease. Conditions for investment are also looking better. Interest rates are down. And America’s Food and Drug Administration (FDA) has agreed to lower its stringent regulation standards so that companies can re-use therapy components, such as editors or delivery vehicles, for different treatments without having to re-test them.

Dr Urnov welcomes the news from the FDA, but he is worried that for-profit companies have nonetheless abandoned people with rare genetic diseases. He fears that most of those potential patients will wait in vain for a biotech-developed treatment. To address this Dr Urnov, Dr Doudna and colleagues at the University of California in both San Francisco and Los Angeles have

entered into a non-profit partnership with Danaher, a global conglomerate and a CRISPR manufacturer, in hopes of dosing patients with rare genetic diseases through a large, “umbrella”-style clinical trial. (It is not unlike personalised cancer-vaccine trials run by Merck, a pharmaceutical giant, where each vaccine is unique to the participant’s particular mutation.)

CRISPR is still a long way from becoming the standard of care for all genetic diseases, as Dr Doudna envisions. For some there may be better alternatives that do not rely on editing DNA, such as protein-targeting drugs for cystic fibrosis (for which CRISPR cures are also in development), or “antisense” therapeutics which can block the output of genes by binding to mRNA before it is translated into proteins. However, as scientists begin to understand more about how genetics underpin or shape all kinds of diseases both rare and common, the space in which CRISPR can be useful continues to grow. To take full advantage, gene-editing’s practitioners cannot afford to let up. ■

## Level unlocked

### Epigenetic editors are a powerful, yet gentler, offshoot of gene editing

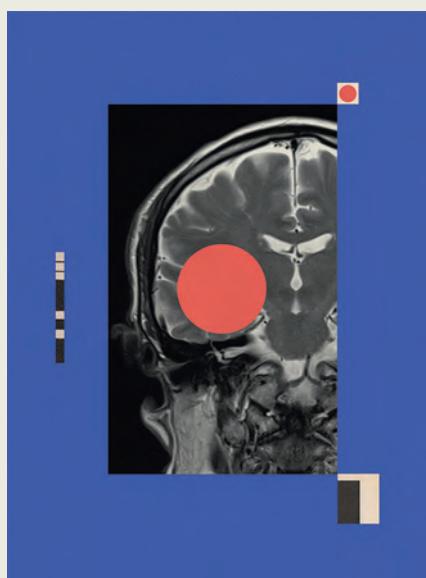
MORE THAN a decade ago Sonia Vallabh, a lawyer, and her husband, an engineer, decided to retrain as molecular biologists. They had an urgent motivation. Dr Vallabh’s mother had died suddenly of a mysterious dementia. An autopsy had revealed the cause to be prion disease, in which the prion protein, the normal function of which is unclear, changes form and spontaneously clumps together and causes the brain to die. Most prion disease is infectious, set off by exposure to an already clumping protein. In this case, it was genetic. “I learned that I’d inherited her mutation,” Dr Vallabh says. They needed to find a cure before the disease came for her, too.

They now run a lab at the Broad Institute in Boston. By 2024 they had created an editor that, in mice, turns off the prion gene in the brain, preventing the disease from taking hold. Next up is making it work in humans. Their editor, however, does not touch the gene at all.

No cell makes all the proteins for which it has genes. A blood cell does not need the same proteins as a neuron. One way cells turn off unneeded genes is by putting locks on them. These locks are chemical changes to the bases that make up DNA or to proteins that store DNA inside the cell. They are known as “epigenetic” marks since the changes are “on top of” the genome, not in the genome itself. What Dr Vallabh and her husband

did was put a lock on the prion gene, using what they call an epigenetic editor.

Gene editing (see main piece) can be tough on the genome. Epigenetic editing is gentler. Rather than chopping the DNA in two, it uses an enzyme that installs or removes a chemical lock at a specific place in the genome. Chroma Medicine, an epigenetic editing company in Boston (now nChroma Bio after a merger), examined CAR-T cells, a type of



manipulated immune cell showing promise in treating cancer and other diseases. Adding more edits to them could make them more effective. To achieve that several genes must be switched off, a multi-edit which kills off a lot of cells if you use CRISPR-Cas9. But doing the job by epigenetic editing, says Luke Gilbert, who co-founded Chroma Medicine, is “basically non-toxic”.

Although edits are not permanent, they are long-lasting. And because the changes are more easily reversible in theory, epigenetic editing may feel less radical to the public than gene editing. Benjamin Oakes, the boss of Scribe Therapeutics, a Californian biotech firm, sees a future in which epigenetic editing becomes like getting a flu shot, but for protection against heart attacks and obesity instead of viruses. Scribe’s epigenetic editor can block a gene causing unhealthy cholesterol in monkeys. “We can essentially modify your genome so you’re no longer producing risk factors for cardiometabolic disease. And maybe every five years, or every ten years, you need to come back for a booster dose.”

Looking further into the future, epigenetic editing could undo damage accrued during life. Ageing, disease, chemical exposure and emotional trauma all influence the body’s epigenetic marks. Editing might be able to erase such scars. In 2022 researchers from the University of Illinois at Chicago targeted epigenetic patterns, acquired during teenage binge drinking, which are linked to anxiety and drinking problems. They could reverse the changes in alcohol-exposed rats, with the result that they drank less and became less anxious.

Drugs that remove the scars of life, though, are a long way off.

**Research**

# Science superstar

**Gene editing has put biological research on a much speedier and loftier trajectory**

**I**N THE LATE 2010s eight macaque monkeys were born at a laboratory in Shanghai. At first they seemed much like the other infants in the colony, but differences soon became obvious. They were much more active at night than their peers. Their hormones were unusual, too. Melatonin, which typically oscillates with the day-night cycle and aids sleep, was all over the place. Cortisol, a stress hormone, was perpetually high. Then their behaviour took a turn: they sat frozen in corners for long periods of time, fled in fear from their caretakers, and began burying their little heads in their hands—all signs of mental illness.

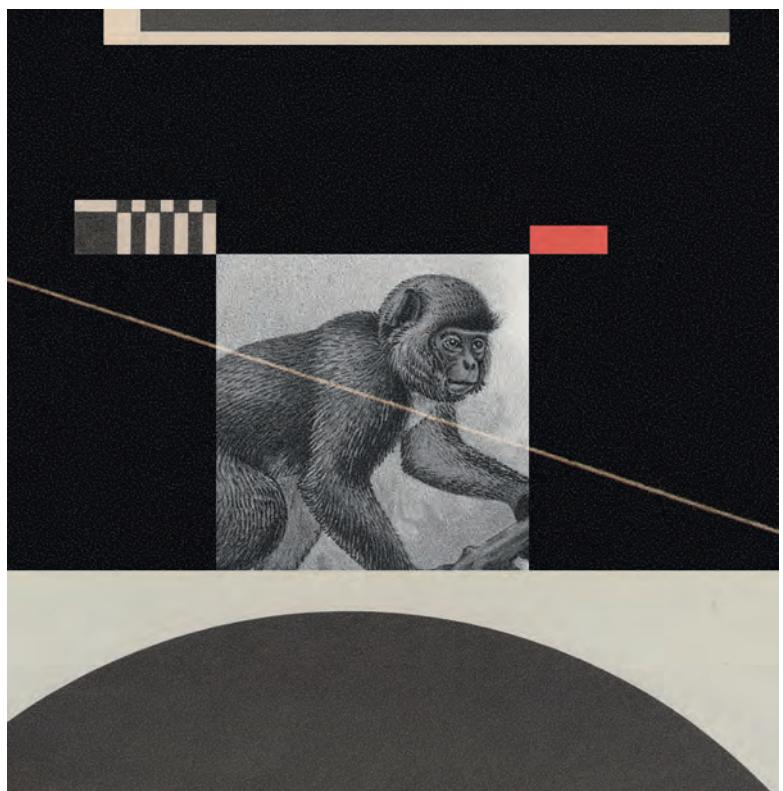
The root of their malaise was a genetic experiment. When the monkeys were single-celled embryos, scientists had used CRISPR editing tools to silence, or “knock out”, a gene that helps regulate the body’s internal clock. Its disruption is linked to psychiatric conditions, such as bipolar disorder, which are notoriously difficult to study on the genetic and molecular levels. The deeply unpleasant lives of Shanghai macaques are part of a push to understand how genes shape brain disorders and to devise drugs for them.

This could have been done with old technology, but it would have been laborious. Scientists can breed knock-outs using “gene targeting”, a hugely inefficient process that first inserts DNA into stem cells and then into embryos. For mice, it takes a year. CRISPR can do the job in a month. The same is true for adding, or “knocking in”, genetic mutations. Manipulations in both animals and cells have become so quick and easy that scientists can model a host of diseases in the lab, tease apart intricate genetic mechanisms and create huge studies linking genes with diseases.

## Hold the anchovies

CRISPR might be on the cusp of transforming medicine and agriculture, but in research things have already changed. Almost 9,000 scientific papers mentioned CRISPR tools in their abstracts in 2024, up from 300 in 2013. Since 2012 Addgene, a non-profit repository of DNA reagents, has shipped more than 300,000 CRISPR preparations to 5,000 organisations in around 100 countries. “You can just simply order everything you need,” says Robin Lovell-Badge, a developmental biologist at the Francis Crick Institute in London. CRISPR RNA is about as hard to get as the pizzas researchers order when working on gene editors into the night.

That is a serious time-saver for scientists interested in fundamental biology, such as Dr Lovell-Badge, whose work concerns sexual development. In the 1990s he discovered that a gene on the Y chromosome called SRY acted as a switch that turned embryos,



which by default develop as female, onto the path of male development. But it was not until the arrival of CRISPR in the 2010s that he and others figured out how it actually works. Through knock-out experiments in mice they showed that SRY, via an “enhancer” gene, activates another gene called SOX9, which ultimately drives the development of the testes.

Knock out that activation of SOX9 with CRISPR and “you now get XY females,” he says. This sometimes happens naturally in humans. Other scientists recently checked the genomes of a handful of people who had developed the opposite sexual characteristics of their chromosomal sex. Their mutations were almost exactly the same as those Dr Lovell-Badge had put into his mouse embryos with CRISPR. Those people now know the genetic cause of their unusual development.

Everyone carries their own genetic variants, usually where one base has been swapped for another. Though all these variants can be easily found with genome sequencing, it is often not known which are benign and which are harmful. But in recent years CRISPR has sped up the task of telling them apart. Greg Findlay, a colleague of Dr Lovell-Badge at the Crick Institute, is using the tool to tackle a gargantuan task: he wants to understand every single variation in the human genome that is associated with disease.

Counting only mutations in genes which are implicated in disease, this would mean knocking in 30m DNA variants, Dr Findlay says. Using CRISPR and a new type of gene editing called prime editing, he now runs massive, high-throughput screening experiments, in which thousands of variants are knocked into cells and analysed. “We’ve gone from testing these variants in genetics one at a time to testing large pools,” he says. “Now we’re trying to do experiments that are close to 100,000 variants.”

**It is often not known which variants are benign and which are not**

His results have begun to explain previously baffling symptoms. In 2024 he published a paper going through 2,268 base-swap variants of VHL, a gene involved with suppressing tumours, and showed how particular variants led to different forms and severities of kidney cancer. More such CRISPR-enabled mass screens might help doctors check for variants and tweak treatment accordingly.

But even if Dr Findlay is able to scale up his experiments, the job is probably too big. There are substantial parts of the genome that are poorly understood, and which may host large numbers of disease-causing variants. And multiple variations in the same gene—or different ones—can interact. “Even if we could test a million variants, it’s still nowhere near the 10bn or whatever that are possible,” he says.

To lessen the load, he plans to feed his data to an artificial intelligence (AI) model. If the model trains on all the information he has already generated, he hopes that it will make increasingly accurate predictions about mutations he has not yet tested. DeepMind, Google’s AI company, put out a model in 2023 called Alpha Missense that does this kind of prediction. It was benchmarked against an experimental data set which took ten years to generate, but with the massive gene-editing screens now possible, a data set of that size could be made in a couple months, he says.

#### I am the one who knocks

He is not the only one energised by CRISPR’s potential to create big genetic screens. Silvana Konermann, the director and co-founder of the Arc Institute, a non-profit research institute in California, has pioneered a CRISPR screen using a tool that can systematically switch genes on or increase their activity—what one might call “knocking up”. Such powers mean she can flip the traditional CRISPR screen on its head. Rather than start with a genetic variant and see what its outcome is, she can take an event, like exposure to a drug or a pathogen, and see which genes do and do not influence how the body responds.

Take SARS-CoV-2. In 2022 Dr Konermann and her Arc co-founder Patrick Hsu developed a CRISPR screen in which human lung cells had genes either knocked out by classic CRISPR or knocked up using the activation tool. The cells were then infected with SARS-CoV-2, and the team were able to say which genes in the human cells helped or hindered the virus. The virus struggled to infect the cells in which the genes responsible for making mucus proteins were more activated. Such variation in gene activity could help explain why some people suffered greatly from covid while others got through the pandemic unscathed. Some probably had very active mucus genes.

The next stage in screening is to target not the genes, but their products. The cell reads genes and copies them into RNA strands. Some of those strands become mRNA that is used to make proteins, but most remain RNA molecules, acting in ways that remain poorly understood. There are CRISPR systems that target RNA instead of DNA, including some developed by Dr Konermann and Dr Hsu. Scientists are now using them to find out what these molecules do. Many of these strange RNAs have been linked to disease, including psychiatric conditions like bipolar disorder. If one turns out to be a suitable drug target, no doubt a group of CRISPRed macaques on the east coast of China will be ready to test it out. ■

#### Agriculture

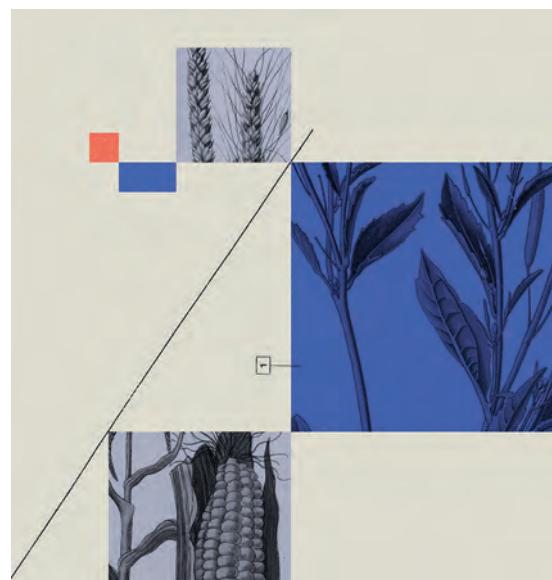
## Eat your GE-greens

**Former sceptics have come around to gene-edited crops. For the moment**

THE SLIGHTLY soggy ziplock bags are labelled “Red Giant” and “Southern Giant Curl”. Bunches of green leaves, not unlike watercress, strain the plastic. They are about seven days from full maturity, the person who sent them stressed in an email, so they will not have achieved their optimal flavour profile. Somewhat gingerly your correspondent tastes one, then the other, making sure to give them a proper chew and plenty of time with the taste buds.

They are gene-edited mustard greens. Usually mustard greens produce a sharp-tasting molecule called allyl isothiocyanate, but in these leaves, the responsible gene has been switched off using a version of CRISPR. The result is a mild taste and a pleasant umami scent; both work nicely in a cheese sandwich. They were grown by Bayer, a multinational pharmaceutical and biotech firm, but were developed by Pairwise, one of a handful of biotechs bringing gene editing to agriculture. It has also developed a seedless blackberry and is working on corn, wheat, soy and rapeseed that are resistant to disease and adapted to some of the effects of global warming.

Such goals may sound familiar. Proponents of genetically modified (GM) crops made similar promises 30 years ago about seeds which had new genes added to them. And they had successes. Most American corn is genetically modified; for the most part it has a gene for herbicide resistance added which means that ►



► fields can be sprayed with weed-killer without the crops being bothered. Almost half of arable land in Latin America yields similarly modified produce.

This is good for companies which sell weedkiller and weedkiller-resistant seed, and it is good for farmers who use their wares to increase their yields. But it has also proved controversial. By 2013 there were worldwide protests against Monsanto, then a massive producer of GM seeds, and widespread public scepticism towards the GM concept itself. Europe has never warmed to the idea, and its fierce regulatory standards have damped the technology's use in developing countries which want to sell into European markets.

### This time it's...different

Keen to avoid a rerun, companies and scientists hope to persuade consumers and officials that gene-edited food is altogether different from the GM sort: gene editing is its own distinct technology and, if allowed to, it will bring benefits to consumers, society and the climate in a way that GM never managed to.

Scientifically, gene editing is indeed different. For a GM plant, a gene from another species has been inserted into its genome—such as, in some GM corn, a gene from a microbe which bestows resistance to corn-eating insects. Because the gene comes from a foreign organism, GM plants are known as “transgenic”, literally genes from “the other side”. With gene-edited plants, scientists can tweak the plants' own genes by editing in small mutations, in effect creating changes that could have happened naturally. That means they can improve plants without DNA from other organisms.

Gene editing can thus be thought of as equivalent to fantastically fortuitous breeding. Plants can have complicated genetics: where humans have one genome, common wheat, for example, has three. That means that a beneficial mutation often has to happen in all three genomes to have an impact. In nature that rarely happens; CRISPR can do it all at once.

Cristobal Uauy, a geneticist, grows such gene-edited wheat at the John Innes Centre, a research institute in England. He is growing several strains in buildings where he adjusts temperature and humidity to simulate different climate conditions. Some are optimised for yield, with more grains on the same plant; some are edited to have healthier, fibre-like starch; and some are tweaked to have higher amounts of accessible iron.

The centre, funded primarily by the British government, operates on the thesis that editing the foods that people already eat will improve public health. People love white bread—why not make it better for them? The same goes for tomatoes. Cathie Martin, another geneticist at the centre, makes a CRISPR edit that enables a precursor to vitamin D to build up in tomatoes. Once the fruit are exposed to sunlight the precursor transforms into the real vitamin, ready to be consumed in a soup, salad or pasta sauce.

Pairwise takes a different tack, that of making healthier foods more enticing—hence the less pungent mustard greens. This approach also shows up in the handful of gene-edited products already developed by others, which include a variety of non-browning fruits and vegetables, such as a non-browning avocado, sure to delight brunch-goers everywhere.

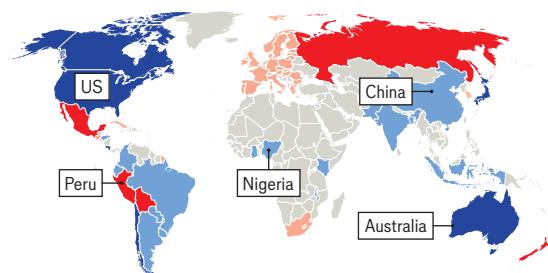
Gene-edited crops may also help adaptation to climate change. Take rice. Scientists from the Innovative Genomics Institute at the University of California, Berkeley, used CRISPR to limit the pores through

**Gene-edited crops may help adaptation to climate change**

### Seeds of change

Regulation of gene-edited crops, May 2024

- Restricted
- Under debate
- Unclear
- Case-by-case
- No restrictions



Sources: Global Gene Editing Regulation Tracker; Russian federal assembly

which rice loses water, making it more drought-resistant. They are also editing rice to better capture carbon from the atmosphere and store it in the ground. Others at the institute hope to edit the methane-making microbes that live in rice paddies, generating 10% of the world's methane emissions. And gene-editing biotechs are working on less resource-intensive versions of soy, potatoes, bananas and more.

What will consumers and politicians make of GE crops? A decade after the Monsanto protests, some governments appear ready to embrace the new technology. In 2023 the British Parliament passed the Precision Breeding Act which will give gene-edited crops streamlined access to the English market. EU lawmakers, previously known for their GM-scepticism, may follow. Though the EU strictly regulates plants made through gene technology, a proposal is under consideration to exclude edited plants with only simple modifications from those rules. Similar steps are being taken in America, Brazil, Japan and India (see map).

### Slow down, you move too fast

Not everyone is keen. In Europe some national authorities are alarmed at the EU proposal. “Any reference to ‘naturalness’ [of edited crops] is misleading and not a proxy for reduced risk,” Germany’s Federal Agency for Nature Conservation argued in a policy brief in 2024. The agencies want an assessment of risks from edited plants, such as for insects or other plants. A more drought-resistant plant, for example, might outcompete its native “natural” counterparts. Edited microbes will face more scrutiny, owing to their propensity to share their genes with other microbes, possibly spreading edits further than intended.

To some opponents, edited plants are just another chapter of the GM book. There is overlap in cast. The boss of Pairwise, Tom Adams, spent 20 years at Monsanto before the company was bought by Bayer. In fact Monsanto was an original investor in Pairwise. Many researchers now working on gene editing either used to or still dabble in GM plant-making themselves. Such connections, along with the novelty of the science, may fuel critiques from populist political figures.

But the key question for editing will not be whether it is a rerun of GM. It will be whether gene-edited crops can help crack challenges in public health and the climate? Judging by the recent enthusiasm, some policymakers seem to be coming round. ■

**Editing animals**

# Rare breeds

## Efforts to tame other organisms may save lives, but with possible pitfalls

**O**N MARCH 15TH 2024, a dark brown, gene-edited pig was driven from its home in the Midwest to a medical facility on the outskirts of Boston, Massachusetts. It had never before been outside the clean room in which it had spent its year-long life. The next day the pig had its kidneys removed. One was for research; the other was transplanted into a man called Richard Slayman. It was the first pig-to-human kidney transplant with a living patient. In the operating theatre at Mass General Hospital, after the surgical team were finished, invited attendees spontaneously clapped.

Xenotransplantation has been a dream for decades; now six people in America, so sick they were granted special permission, have received kidneys and hearts from pigs carefully crafted for their role as organ donors: a few porcine genes had been switched off, and several human genes added, to avoid the human body rejecting the organs. Only the two most recent recipients are still living; owing to their dire condition the first four, including Slayman, died within months. But clinical trials with healthier recipients are set to start this year. With more than 100,000 Americans waiting on a new organ, xenotransplantation is a leading example of how editing animals could benefit human society. But it is far from the only one.

It makes sense that the agriculture industry would toy with gene-edited animals; it is long-held practice to breed livestock that grow better and faster. CRISPR

editing follows the same path. Japanese regulators have approved several CRISPRED fish; in America the Food and Drug Administration (FDA) has given the nod to cattle that grow better in hot temperatures. But many scientists are focused more on improving health than increasing meat. Beyond giving people new organs, gene-edited animals could prevent the spread of diseases and possibly eradicate some of them.

This work is well under way for animal infections, probably because there is an obvious market for harder livestock breeds. In 2023 Recombinetics, a gene-editing company in Minnesota, created a calf in a lab in Iowa which had been edited for protection against bovine diarrhoea virus, a pathogen dangerous to cows (and costly to farmers). Then in 2024 Genus, a genetics company outside London, established a line of gene-edited pigs immune to a virus sometimes referred to as "pig AIDS", which is responsible for as much as \$1.2bn per year in production losses in America.

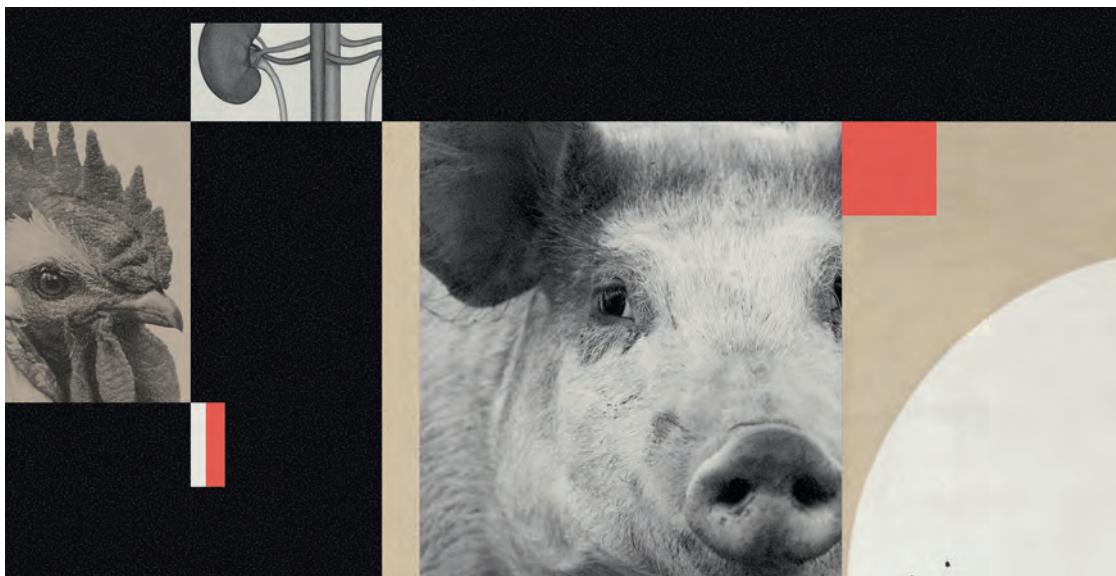
Animals can also be edited to protect humans. Take bird flu, a virus with obvious pandemic potential. If the spread in poultry could be stopped, it would limit human exposure and give the virus fewer opportunities to mutate. In 2023 Helen Sang, a biologist at the Roslin Institute in Scotland, used CRISPR in an attempt to edit protection against bird flu into chickens.

### Fowl play

To replicate in a host cell, bird flu hijacks a protein belonging to a family of three, where the two other proteins are inactive. Switching off the gene responsible for making that protein should give the chickens immunity. That is exactly what Dr Sang's team did.

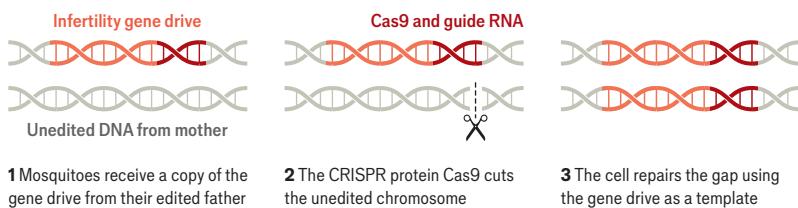
But things did not go quite to plan. Although the chickens seemed protected at first, the virus quickly mutated so that it could exploit the other proteins that had previously been useless to it. In the end, the team had to knock out all three genes to shut down infection, and it is unclear if the chickens can thrive when thus diminished. It was a lesson to scientists, says Dr Sang, to be careful about entering an arms race with a pathogen that humans might lose.

Scientists are thus trying to make sure that they win. Parts of New England are blighted by Lyme ►



## Mosquito toast

How a CRISPR gene drive can suppress a mosquito population

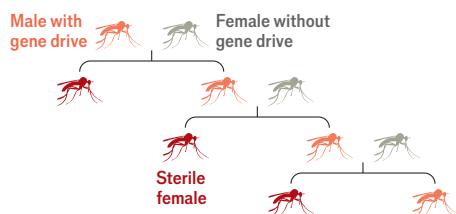


1 Mosquitoes receive a copy of the gene drive from their edited father

2 The CRISPR protein Cas9 cuts the unedited chromosome

3 The cell repairs the gap using the gene drive as a template

Source: *The Economist*



4 Now there are two copies of the gene drive, nearly all offspring will inherit it. Females are sterile, while males are merely carriers

► disease, a bacterial infection. People contract it from ticks that pick it up from white-footed mice. Kevin Esvelt, a bioengineer at MIT, has long wanted to release (initially on an uninhabited island) edited mice which cannot carry Lyme, and so lower the risk to humans. But it is not straightforward to prevent the Lyme bacterium from developing resistance.

Dr Esvelt begins by exposing mice to a protein from the bacterium's surface—think something like the coronavirus's spike protein. He waits for them to produce antibodies against it, then edits a new generation of mice to produce those antibodies from birth. He has previously edited one kind of antibody into normal lab mice, and says he has figured out how to edit white-footed mice, too. But he needs to edit in multiple antibodies to insure against resistance long-term. “To resist, [the Lyme disease bacterium] would need to acquire, presumably, at least four separate mutations all at once,” he says. “Which, by my calculations, is pretty unlikely to occur for at least 100 years.”

While compelling, his approach is limited to smaller animal populations. To be effective the immune animals must largely replace the original population. That simply cannot be achieved if the original population amounts to millions and millions of individuals—as is the case with the malaria mosquito.

Malaria tops the list of infectious diseases that scientists want to get rid of. It infects more than 250m annually around the world and in 2023 killed 600,000. It is caused by a parasite carried by the Anopheles mosquito. Even if scientists edited and released tens of thousands of such mosquitoes, it would hardly make a dent in the global population, says Alekos Simoni from Target Malaria, a research non-profit group with headquarters at Imperial College London.

Instead some scientists are working on another weapon, something called a gene drive: a bit of DNA that propagates through the generations at higher-than-normal rates. The idea goes back decades but the advent of CRISPR made it seem much more doable. To make a gene drive, scientists put the desired edit—say, one that makes offspring infertile—into a gene, alongside the code for CRISPR itself. Animals have two copies of each gene and when they reproduce, their offspring gets one of them. If only one copy is edited, there is an even chance the edit is passed on. But if CRISPR is installed next to the edit, it copies itself to the other gene copy right away. When the organism reproduces, the edit (and the CRISPR) is then certain to be passed on. Within just a few generations, the majority of individuals in a population will carry it.

There are two sorts of malaria drives: one that makes mosquitoes immune to the parasite and one

that makes second-generation mosquitoes infertile, something which, in lab experiments, can sink a population (see chart). Target Malaria has bet on the latter kind. The former is the focus of Transmission Zero, a programme also run out of Imperial College London.

Activists have repeatedly called for a United Nations moratorium on gene drives (so far unsuccessfully). The most obvious concern is unintended effects on the ecosystem, such as the drive accidentally spreading to other populations. Though researchers try hard to minimise ecological harms, ultimately the consequences will not be known until the edited animals are released. The issue of resistance (in the mosquito or the pathogen, depending on the drive) remains, too. That means organisations may have to put in multiple drive edits at once or build an arsenal of back-up drives. Target Malaria postponed field trials, initially expected in 2026, to prepare for exactly this. Dr Simoni now expects trials to start within five years.

### Some pigs are more equal than others

If any of the anti-malaria gene drives get off the ground, it will be the biggest gene-editing intervention in animals so far. But the most complex sort, outside of custom-made lab animals, will probably remain the organ-donor pigs. Donor pigs from the xenotransplantation company Revivicor, which is behind the first xenotransplantation trial, receive about ten edits all in all. eGenesis, the company behind Slayman's transplant, has gone further. Its co-founder George Church, a biologist at Harvard University best known for wanting to edit elephants into mammoths, believes the pig organs can be made immune to viruses. Already he has removed a kind of virus built into the pig genome (which may or may not pose a threat to humans) with a whopping 59 additional edits. In future he is hoping to build in even more protection.

Judging by the sum of those ambitions, animal editing will find wider use—first in agriculture, then in medicine, then possibly in the wild. Genus expects their virus-resistant pigs to gain approval from the FDA this year and hit the market in 2026. eGenesis hopes to start its own pig-organ trial. But elsewhere producers of gene-edited animals will have to wait. In England market approval for edited plants is expected to be streamlined from this year under the Precision Breeding Act—but not yet for animals. That cheers some who worry the technology could be misused, for example by propping up factory farms, on which resistant animals might be used as an excuse not to improve conditions. Scientists are even discussing whether to edit livestock animals to feel less pain. Many more uncomfortable questions will no doubt spring up. ■

**Be careful about entering an arms race with a pathogen**

**Reproductive science**

# Designing babies

## Will tinkering with human embryos ever be worth the risks?

ONE OF THE greatest scandals in modern science began with a late-2010s advertisement for HIV-positive couples looking to have children through *in-vitro* fertilisation (IVF). The ad had been put out by a scientist named He Jiankui, a biologist then at the Southern University of Science and Technology in China. Several pairs responded. For each couple, Dr He and his team harvested their sperm and eggs and created embryos through IVF. He edited a gene in each embryo using CRISPR, then did something that had never been done before: had the edited embryos implanted into the women's wombs.

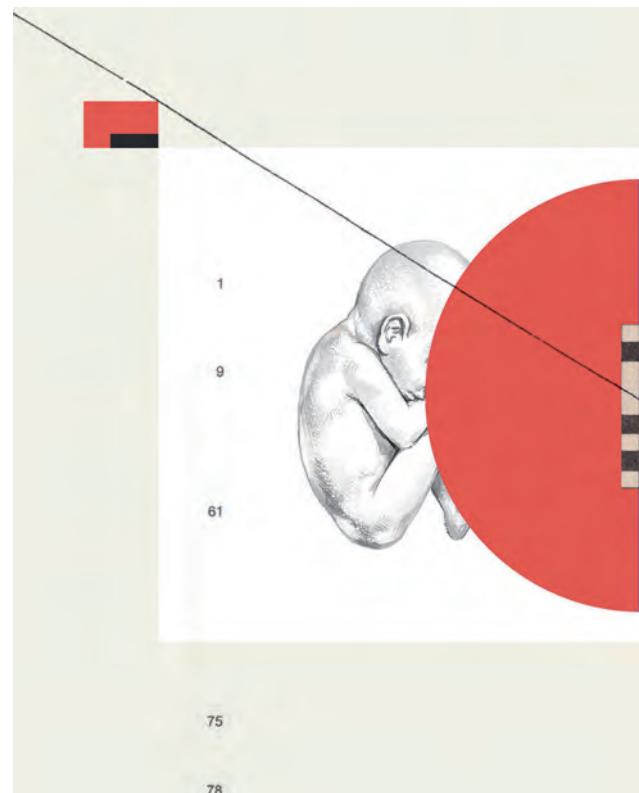
The gene, CCR5, is responsible for a cell-surface protein which plays a key role in HIV infection. A natural variant of CCR5 blocks production of the protein and confers protection against HIV. It was this protection that Dr He sought to give the embryos. In November 2018, just before the second International Summit on Human Genome Editing, *MIT Technology Review* reported both that the experiments had taken place and that two of the embryos had, when implanted in the womb, resulted in successful births. As a result there were now two little girls with edited genomes.

### Science friction

At the summit, Dr He appeared unprepared for the uproar that followed. His colleagues, who considered such experimentation premature and unsafe, were outraged. Slowly it became clear that not only did Dr He's work have technical failings, but also he had broken the rules within which scientists must operate. The informed consent of the parents seemed questionable; according to Chinese news reports, he had forged approval documents from an ethics review board. On top of all that, China forbids gene editing in human reproduction, and Dr He was not licensed to practice medicine. Dr He was detained by Chinese authorities and eventually sentenced to three years in prison for the illegal practice of medicine.

The condemnation of Dr He's work reflected in part a judgment of his careless approach to the lives of the people he "treated". The world knows nothing about the twins and the state of their health, nor about a possible third CRISPR child which was reported to have been born to another couple shortly after the twins. Questions about the quality of the edits themselves and what repercussions they might have on the children thus remain unanswered.

But underneath the outrage lay long-running concerns about the fundamental concept of editing embryos. Edits which take place that early in the developmental process are passed on to every other cell as the



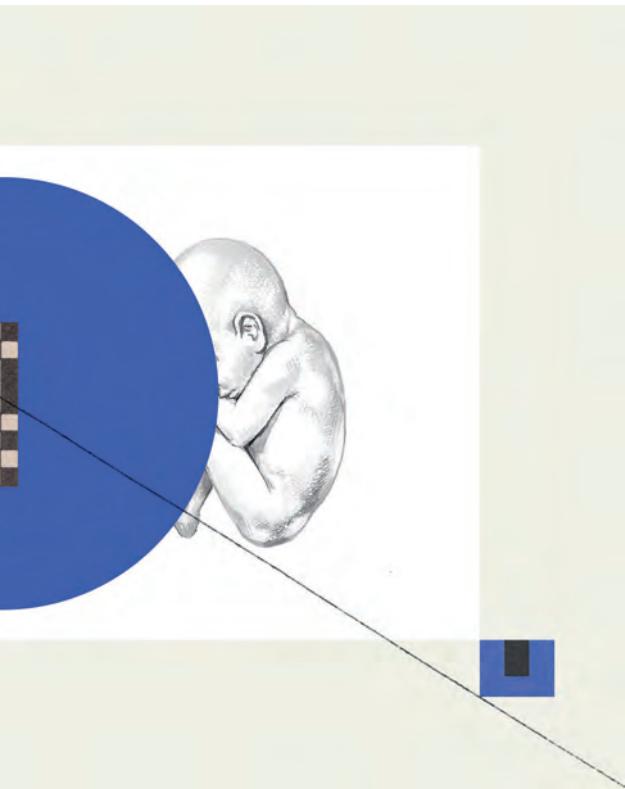
embryo grows, including the "germline" cells that will eventually produce sperm or eggs. If nothing is done later to reverse them, they will thus be passed on down the generations—unlike the sort of CRISPR edit that cures a disease in someone already born. By definition future generations cannot give their informed consent to a procedure that takes place long before they are conceived. For that reason embryo editing is in effect banned in 27 EU member states under the Oviedo Convention. (Many other countries, including Britain and Canada, also legally forbid the practice.)

The main attraction of embryo editing is that it allows edits which are very difficult or impossible later on. When editing a person who has already been born, some tissues, such as the brain, are very hard to reach. Embryo editing does not have that problem, as all the cells that go on to form the organs will in theory carry the edit. There are also people who think passing on an edit is not such a bad thing. Families in which successive generations have battled the same genetic disease often wish to spare their descendants the same fate, says Dagan Wells, a reproductive biologist at the University of Oxford (he is agnostic on the procedure).

### Tailored genes

In January 2025 a paper appeared in *Nature* discussing the societal benefit of polygenic embryo editing—that is, making several edits in the same embryo. Rather than just curing genetic diseases, it could tweak multiple genes that together alter the risk of conditions like Alzheimer's disease or diabetes. The authors, led by Julian Savulescu, an Australian philosopher, acknowledged that the concept is speculative but suggested that it could dramatically benefit those who are edited. But what about those who are not edited?

The question of precisely who gets edited, and ►►



► for what purpose, cuts to the heart of concerns around germline editing. Families struck by a genetic disease probably would benefit but they are in relative terms a fairly small group. Many will be interested in enhancements that polygenic embryo editing could offer. At first that might mean adding protection for preventable disease. But eventually it could mean tweaking traits like appearance and intelligence—in other words, creating designer babies. Some worry the rich would edit their offspring “better” and that people with disabilities or who are simply average would be put at greater disadvantage. “Gene-editing techniques applied to non-disease traits may deepen inequalities and raise the spectre of eugenics,” argued Dr Savulescu and his team in their paper.

Others think it is far from clear that edited people will indeed benefit. A genetic variant that is advantageous in one context may be bad in another. The variant of *CCR5* that protects against HIV, for example, has been linked to an increased risk of complications and even death during other infections. These unknowns are worth worrying about, argues Hank Greely, a lawyer at Stanford University and the author of the book “CRISPR People: The Science and Ethics of Editing Humans”. His main objection to Dr He’s *CCR5* project was that its risk-benefit ratio was unacceptable: the benefits, if there were any, would be limited, and the risks, both any which were known and those yet to be understood, were potentially substantial. Dr He, who is out of prison and apparently back in a laboratory—the sources of his funding as yet unclear—is unfazed by this ignorance. His new germline project focuses on a rare variant found in Icelanders which protects against Alzheimer’s, though he has promised not to create any more pregnancies.

There are also signs that editing embryos might in

itself be unsafe. Like regular gene editing, germline editing depends on natural repair mechanisms stepping in after an editor has made its cut. But when Dr Wells and Nada Kubikova, another Oxford scientist, used CRISPR to make 53 double-stranded breaks in human embryos, 21 of them remained unfixed (the embryos had been donated to science and were never going to be implanted). Dr Wells reckons the problem stems from the biology of the early embryo. For the first two to three days, the embryo mostly relies on proteins and mRNA from the egg instead of its own genome. During that time it struggles to repair injuries to its DNA, and any cuts left as the embryo develops could prove deleterious. With such bad odds, couples would need many embryos to ensure success.

#### Fetal attraction

With so many outstanding concerns, Dr Greely does not see germline editing taking off in the next few decades. But a less ethically fraught option may be on the way. Several groups are working on *in utero* genome editing. Done late enough in development it would not alter germline cells, but would still give doctors a chance to repair a genetic mutation before the baby is born. Like embryo editing it might be able to reach otherwise hard-to-access cells.

Early results have been encouraging. At the Children’s Hospital of Philadelphia, William Peranteau has averted disease in mice using fetal editing, and successfully edited fetal monkeys. A group led by Panicos Shangaris at King’s College London is working specifically on fixing the sickle-cell mutation this way. In sickle-cell disease scientists must fix the stem cells that go on to make blood. During the fetal stage of development these all reside in the liver, which is easy to reach with an injection into the umbilical cord. The approach could be especially useful for when the pathology starts early. Lysosomal storage diseases, in which cells fail to break down waste properly, begin in the womb. “You miss your window treating it if you wait till after birth,” says Dr Peranteau. It might even be possible for fetal edits to reach the brain.

All conditions that become more difficult to treat after birth could be candidates for such editing. Epidermolysis bullosa is a terrible blistering disease that affects all skin and the oesophagus. Researchers led by Joanna Jackow at King’s College London are working on developing a “gene cream” that fixes the genetic mutation directly in the skin’s stem cells, but administering it is a massive challenge because children with the condition are covered in open wounds. Fetal editing might be able to reach those cells more easily.

The lure of germline editing, though, is unlikely to go away. Dr He’s return to the lab suggests that the scientific establishment’s condemnation was not as powerful as it first appeared. Rogues like him could well find patrons among the super wealthy. Billionaires with interests in reproductive technology and human enhancement—of whom there are several—might see both personal and business opportunities in embryo editing. People opposed to abortion might see germline editing as a way to avoid discarding or terminating embryos; Dr He has himself referred to editing an embryo as “saving a life”. (Conversely, fundamentalist Christians may find the idea of editing embryos to be sacrilegious.) Whether CRISPR babies become a near-future reality may depend on whether such powerful interests become invested in the prospect. ■

**Many will be interested in enhancements that polygenic embryo editing could offer**

## The way forward

# Seizing the promise

**Gene editing can still change the world. Scientists first must learn to master it**

AT A NOW famous conference in 1975, a group of biologists met at Asilomar State Beach in California to discuss a new technology called recombinant DNA. For the first time, scientists could stitch together genes from different species: bacterial DNA could be put into a plant, say, or a human gene put into a fungus. The Asilomar conference agreed on a set of guidelines to ensure responsible research, and (after a few years of heated debates) a new era of biology eventually blossomed. Human insulin made by bacteria and yeast helped millions with diabetes. Doctors got tests for infectious diseases through genetic probes that bound to the DNA of dangerous germs. And agricultural companies began producing genetically modified plants with built-in pest protection.

A similar step-change is under way now. Like recombinant DNA before it, gene editing has the potential to transform medicine, agriculture and more. CRISPR is now used by thousands of biologists in labs across the globe. A revolution in food crops could be around the corner. People with horrible diseases have been cured through alterations to their genes. With more CRISPR-based medicines in trials, some of which could benefit many millions of people, the number of edited people could soon increase.

Especially for therapies, hurdles remain. One is cost. Casgevy, the CRISPR cure for sickle-cell disease and beta-thalassemia, is expensive to make and to buy. Health-care systems in America and Britain have secured discounts and rebates to pay for it. Most people with these conditions live in African and Asian countries with much less buying and negotiating power. Another hurdle is old-fashioned regulation: many

CRISPR medicines use the same components, but so far companies have been forced to test each component every time, limiting how many medicines they can invest in bringing to market. There are technical challenges, too: current methods can only send CRISPR to a subset of the body's tissues, leaving brain and muscle diseases off the table for now.

All of this has resulted in a sour business mood, and a number of gene-editing therapy companies are struggling to stay afloat. Some have dramatically narrowed their pipelines and laid off staff. Others have gone under. Five years ago, there was a frenzy of investment into CRISPR and the next-generation tools that followed. Recently those same investors have wondered just how much time and money it will take to turn these tools into actual therapies.

But you do not become a successful artist when someone first hands you a paintbrush. Scientists first saw the potential of CRISPR just 13 years ago. They have had not just to learn how to use it, but also find the right subjects on which to lavish their skills. In medicine, that means finding the right genetic switch to flick to get a therapeutic outcome. In agriculture, it can mean editing three genomes at once while accounting for the influence of a changing climate. In disease prevention, it is about working out how to withstand resistance from pathogens. When considering this learning curve, the fact that there is a CRISPR cure on the market, pig organs going into clinical trials and non-browning avocados coming to a taqueria near you is testament to pretty fast progress.

## A wealth of patients

The early hubris of the gene-editing therapy companies has hurt them, and they will have to learn from it before biotech fully re-emerges from its slump. It may yet turn out that venture-funded startups and pharmaceutical giants are poorly suited to developing and producing high-cost CRISPR therapies for the rarest of genetic diseases. Non-profits and public institutions may have to step in to fill a void should the economics of such therapies continue to be formidable.

At the same time, new doors have opened. Regulators seem willing to make it easier to bring more CRISPR medicines to market, not just because of keen advocates (one of whom describes himself as "a soldier" for Jennifer Doudna, a co-inventor of the technology) but also thanks to CRISPR's sheer potential. It just is better than what came before.

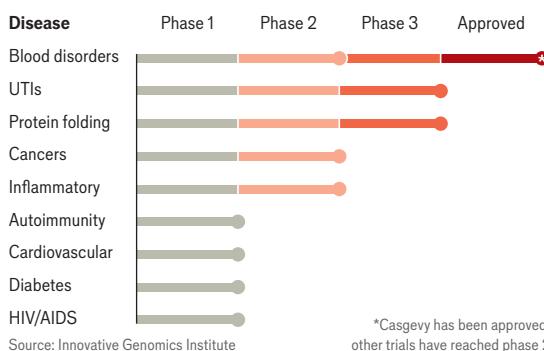
The deals between Vertex and public-payer health-care systems in America and Britain reflect a willingness to bring cures to under-served groups, and new collaborations between the private and public sector aim to bring cures to rare diseases at a fraction of the cost of Casgevy. Outside of medicine, legislation to treat GE foods as different from GMO foods means the world might be able to turn a corner on a topic that had become needlessly contentious.

CRISPR has given scientists the means to get to know the biological world as never before. It has already carried research into a new, more productive era. That, alongside the work into delivery of ever-more-sophisticated editors, is what will fuel the next wave of CRISPR therapies, future-proof the world's food supply and lead to new scientific breakthroughs. So, while scientists and companies cannot afford to be complacent, the world should not lose hope for the age of gene editing. The best may yet be to come. ■

**CRISPR just is better than what came before**

## I want a new drug

### CRISPR in clinical trials



**Acknowledgments** A list of acknowledgments and sources is included in the online version of this Technology Quarterly

**Licensing our content**  
For information on reusing the articles featured in this Technology Quarterly, or for copyright queries, contact The Economist Syndication and Licensing Team.  
Tel: +44 (0)20 7576 8000; email: rights@economist.com

**More special reports**  
Previous TQs can be found at Economist.com/technology-quarterly