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Trump and the world

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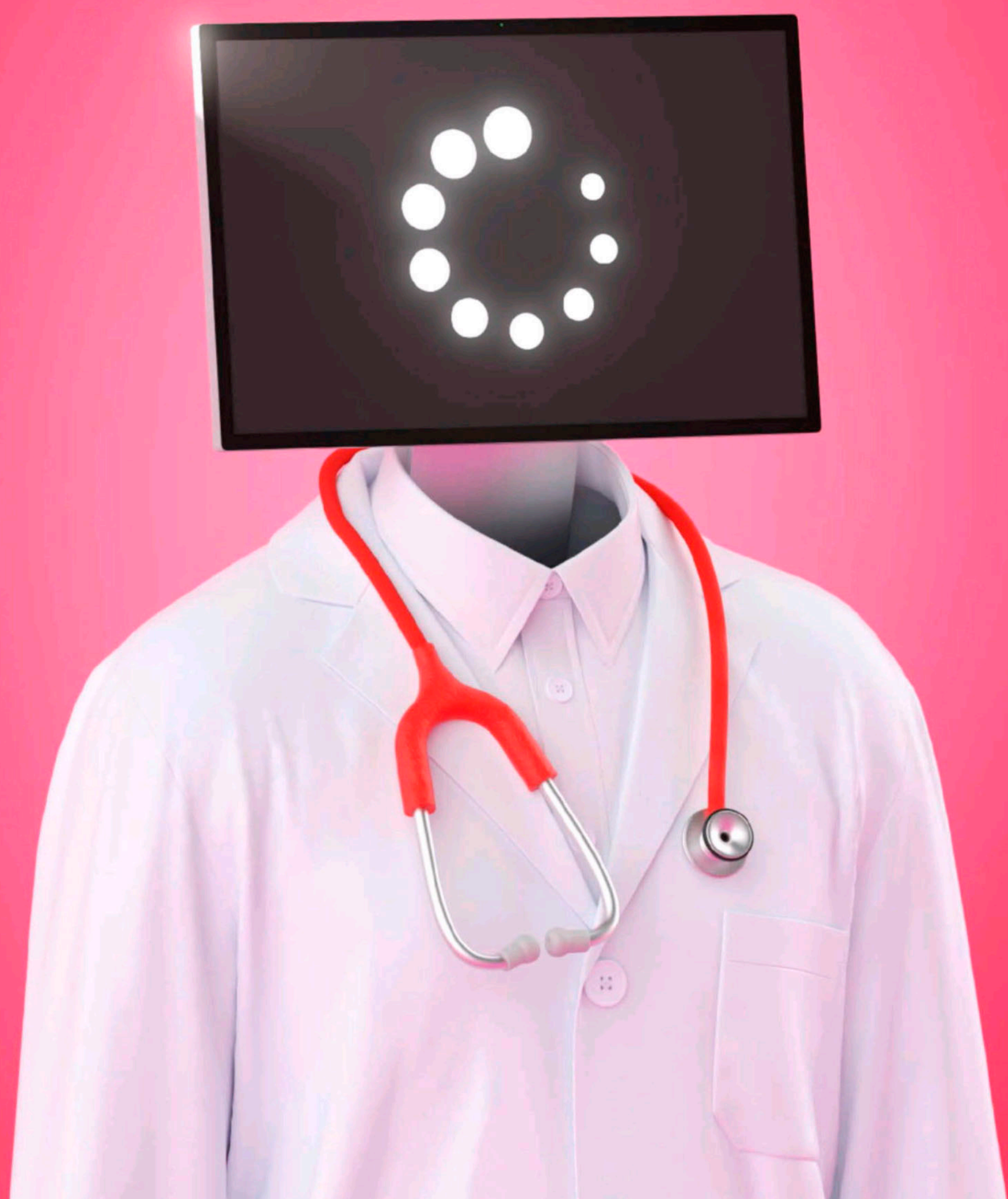
MARCH 30TH–APRIL 5TH 2024

The AI doctor will see you ...eventually



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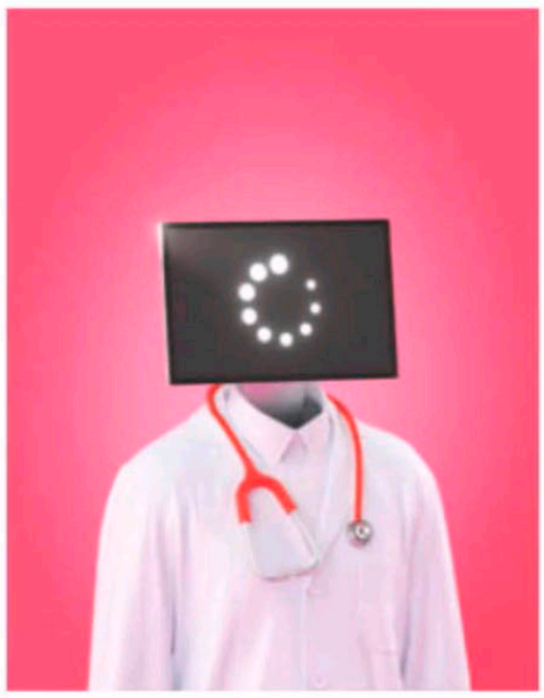

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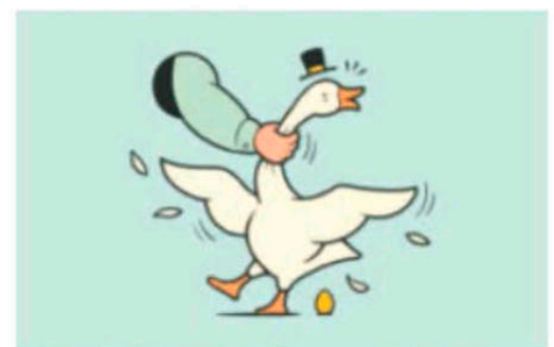

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to take part in *"a severe contest between intelligence, which presses forward, and an unworthy, timid ignorance obstructing our progress."*

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"THERE IS A BEAUTY THAT REMAINS WITH US AFTER WE'VE STOPPED LOOKING." | CORY RICHARDS, PHOTOGRAPHER AND EXPLORER, WEARS THE VACHERON CONSTANTIN OVERSEAS.

VACHERON CONSTANTIN
GENÈVE

ONE OF NOT MANY.

The world this week Politics

Gunmen attacked a concert hall near Moscow, killing at least 139 people. It was **Russia's** deadliest terrorist incident since the Beslan school siege in 2004. An affiliate of Islamic State in Central Asia claimed responsibility. Four of the alleged attackers appeared in court, severely bruised and beaten, to face charges of terrorism. The authorities say the men are from Tajikistan. The American embassy in Moscow had warned of an attack in early March, telling its citizens to avoid large gatherings. Russia ignored the warning. Vladimir Putin and Russian media have instead brazenly tried to link the attack to Ukraine. One television channel aired fake video clips of a Ukrainian official crowing over the incident.

Russia intensified its drone and missile assaults on **Ukraine**, stepping them up shortly before the IS attack in Moscow. Kyiv, the capital, was hit and energy infrastructure targeted across the country. Poland scrambled fighter jets when a Russian missile strayed into its air space.

Bulgaria seemed to be heading towards another election, its sixth in three years, as the country's political parties failed to agree on a "unity" government, threatening Bulgaria's attempt to adopt the euro as its currency in early 2025. Far-right and pro-Russian parties are gaining ground.

Simon Harris was chosen as the new leader of Fine Gael in **Ireland** and is set to become the country's prime minister following the resignation of Leo Varadkar. Aged 37, Mr Harris will be the youngest person to hold the position.

It's all about the symbolism

The UN Security Council passed a resolution demanding a temporary ceasefire between **Israel** and Hamas for the remainder of Ramadan, aided by the abstention of America, which had used its veto to block three earlier resolutions calling for a halt to the fighting in Gaza. Angered by America's abstention, Israel cancelled a planned visit by a delegation to Washington and said it would not halt operations while Hamas still holds Israeli hostages.

Voters in **Senegal** turned out in large numbers to elect Bassirou Diomaye Faye, the opposition candidate, as president. Macky Sall, the outgoing president, had tried to postpone the election, causing a protracted constitutional crisis.

A court in **South Africa** ruled that a party backed by Jacob Zuma, a former president, can be on the ballot in the general election scheduled for the end of May. The uMkhonto we Sizwe party may get more than 10% of the vote, according to recent polls, which could push the ruling African National Congress to around 40%, forcing it to seek a coalition if it wishes to form a government.

America, Britain and New Zealand blamed China for a **cyber-espionage campaign** aimed at a variety of targets, including Britain's Electoral Commission, New Zealand's Parliament and critics of the Chinese Communist Party. America and Britain placed sanctions on an alleged front company for one group of Chinese hackers. They also placed sanctions on two alleged members of the group, while America brought criminal charges against them and five other men.

The High Court in Britain gave **Julian Assange** more time to fight against his extradition to America to face espionage charges, ruling that the American government had to provide more assurances about the fairness of a trial there, among other things. Mr Assange leaked a trove of classified information on his WikiLeaks site that the Americans say put lives in danger.

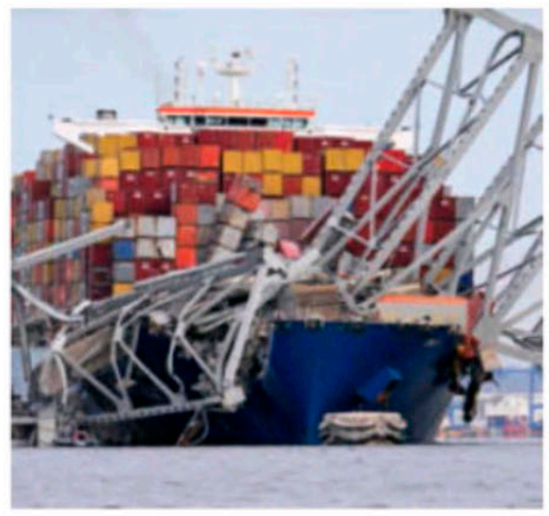
The candidate of **Venezuela's** main opposition coalition was blocked from registering for July's presidential election and missed the deadline. Corina Yoris, an 80-year-old philosopher, had been drafted in at the last minute following the arrest of senior opposition figures. María Corina Machado won the opposition primary last year by a landslide, but was prohibited from running by the Supreme Court.

America's State Department said it was tracking legal developments in **India** after the arrest of Arvind Kejriwal, the chief minister of Delhi and a senior opposition politician. Mr Kejriwal's arrest comes just weeks before the start of a general election. He was taken into custody for questioning over a corruption case relating to Delhi's alcohol policy, which he says is "fabricated".

America and **Japan** are preparing to strengthen their military alliance, the details of which will be announced when Kishida Fumio, Japan's prime minister, visits the White House on April 10th. The plan includes a restructuring of the command chain that will smooth defence planning. Meanwhile, the Japanese cabinet sealed a deal to sell fighter jets that are being developed with Britain and Italy to other countries, further eroding Japan's pacifist stance.

The lower house of **Thailand's** parliament voted overwhelmingly to legalise same-sex marriage and equalise rights on inheritance and so on. The bill is a priority for the government. If, as expected, the upper house and the king approve the law it will come into force by the end of the year, making Thailand the first country in South-East Asia to legalise gay nuptials.

Joe Biden signed a $1.2trn package of **spending measures** into law, after Republicans and Democrats yet again reached a last-minute deal to avoid a government shutdown. The legislation should have been passed six months ago. Rebellious Republicans in the House of Representatives yet again raised the possibility of ousting the speaker.



The Francis Scott Key Bridge in **Baltimore** collapsed after a container ship collided with one of its support columns. Six workers who were on the bridge died after falling into the water below. The port of Baltimore, a hub for trade on America's east coast, will be disrupted for months.

Even a cat has only nine lives

An appeals court agreed to **Donald Trump's** request to pay just a portion of the $454m penalty awarded against him in a civil fraud trial. The court told Mr Trump he could post a bond of $175m while he appeals against the original judgment. Mr Trump's relief was short-lived, however. Soon after, a judge denied his plea to delay his criminal trial over hush-money payments to a porn star. The trial starts on April 15th.

Mr Trump may be able to scrape some cash from the sale of stock in his social-media company on the Nasdaq exchange. **Truth Social's** share price rose by 16% on its first day of trading, making Mr Trump's stake worth around $4.6bn.

The world this week Business

The top ranks of **Boeing's** management were overhauled amid investor unease about safety checks on its airliners. In January a panel fell from a 737 Max 9 passenger jet soon after take-off. Several incidents have been reported since then, including a 777 that lost a landing-gear tyre when it was taking off. Boeing safety has become a meme on TikTok. Dave Calhoun is to step down as chief executive by the end of the year and Larry Kellner departs as chairman. The head of the commercial-aircraft division has been replaced with immediate effect.

America's Justice Department lodged an antitrust lawsuit against **Apple**, accusing the tech giant of making it harder for customers to switch phones, undermining innovation in apps, and imposing "extraordinary costs" on developers, businesses and consumers. The complaint in effect attempts to stop Apple locking users into its ecosystem. Apple said the suit "threatens who we are" as a company and sets "a dangerous precedent, empowering government to take a heavy hand in designing people's technology". The case will take years to wind its way through the courts.

Meanwhile, the European Union opened investigations into Alphabet and Apple over competition practices at their app stores, and Meta over its use of personal information in advertising. It is the first official scrutiny of tech companies under the EU's new **Digital Markets Act**. Had the issues been resolved with the companies by "mere discussion, they would have been solved by now", said the EU's antitrust commissioner.

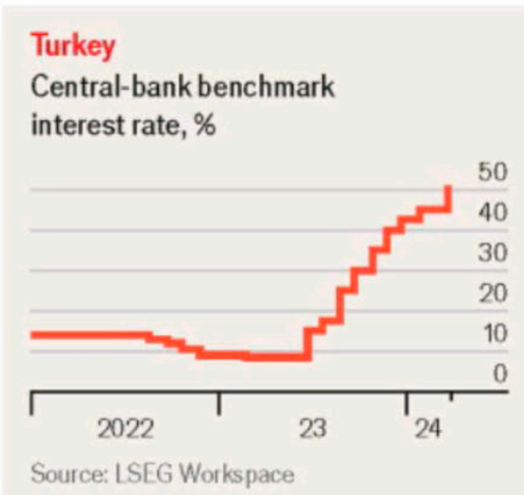
Alibaba abandoned a planned IPO for its logistics division, instead offering to buy out minority shareholders in the business. A year ago the Chinese tech giant announced its intention to split into six parts, with the potential for each to pursue a stockmarket listing. But the plan hasn't excited investors. Late last year Alibaba decided not to spin off its cloud unit and suspended the IPO of its supermarket arm.

Reddit's share price held on to most of the gains reaped from its successful flotation on the New York Stock Exchange. The social-media platform's stock soared by 48% on the first day of trading.

The **yen** fell to a 34-year low against the dollar, triggering warnings from Japanese officials that they might intervene in the currency markets. The Bank of Japan raised interest rates recently for the first time since 2007, which would normally cause the yen to strengthen, but its monetary policy remains comparatively loose.

Trussed up in debt

The director of the nonpartisan Congressional Budget Office in Washington repeated his warning that America faced a looming crisis on its **federal debt**, which stood at $26trn, or 97% of GDP, at the end of 2023. Phillip Swagel raised the possibility that markets could lose confidence in America's ability to repay debt, similar to the situation that the government of Liz Truss faced in Britain in October 2022. Earlier this year Mr Swagel said that America had entered "a slow spiral" of rising debt and concurrent debt payments.



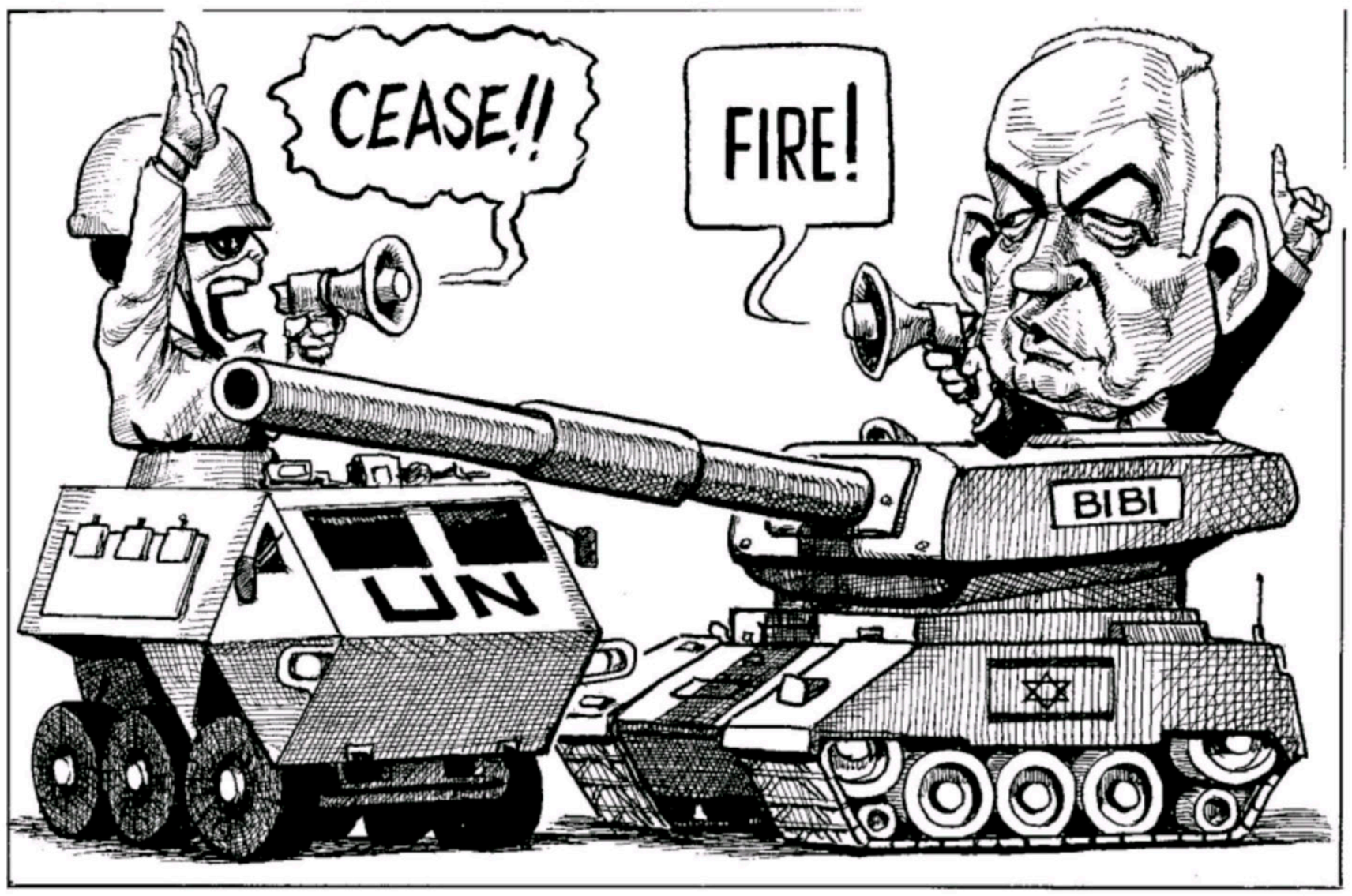
Turkey's central bank surprised markets by lifting its main interest rate by five percentage points, to 50%. The rate was 8.5% a year ago. With inflation nearing 70% on an annual basis, the bank said it would retain a tight monetary policy until a "significant and sustained decline" in price rises was observed.

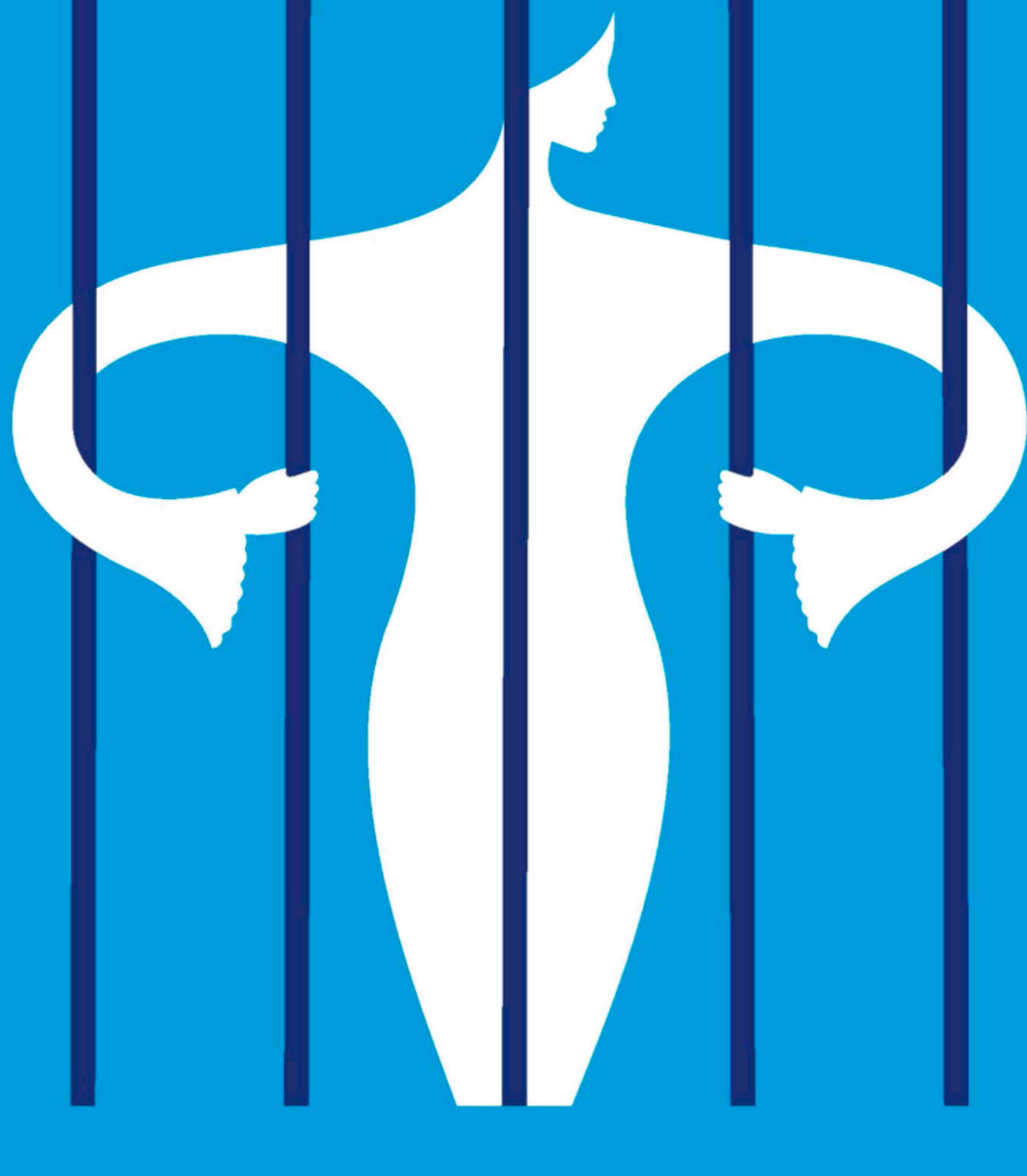
The British government is no longer the controlling shareholder in NatWest Group, having reduced its stake to just below the 30% threshold that would define it as such. During the financial crisis of 2008 the government bailed out **Royal Bank of Scotland** to save it from collapse. In 2020 RBS was renamed NatWest Group (providing retail banking under the RBS and NatWest brands). Sixteen years after the crisis, the government still doesn't expect NatWest Group to be fully private until 2026.

Visa and **Mastercard** agreed to cap credit-card swipe fees in America, ending a two-decade battle with retailers and potentially saving merchants $30bn over five years. The deal also allows retailers to charge customers for using the credit cards at tills while guiding them towards cheaper options.

Free-speech advocate

A judge threw out a lawsuit brought by X against the Centre for Countering Digital Hate for allegedly conducting a campaign to drive advertisers away from the platform. CCDH published a report purporting to show a rise in **hate speech on Twitter**, as it then was, which Elon Musk, its owner, described as scaremongering. But in a scathing decision, the judge found that the case had been all about "punishing the defendants for their speech".





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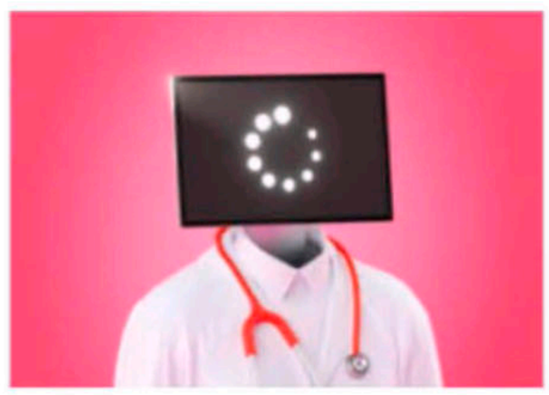
The AI doctor will see you...eventually

Artificial intelligence holds huge promise in health care. But it also faces massive barriers

BETTER DIAGNOSES. Personalised support for patients. Faster drug discovery. Greater efficiency. Artificial intelligence (AI) is generating excitement and hyperbole everywhere, but in the field of health care it has the potential to be transformational. In Europe analysts predict that deploying AI could save hundreds of thousands of lives each year; in America, they say, it could also save money, shaving $200bn-360bn from overall annual medical spending, now $4.5trn a year (or 17% of GDP). From smart stethoscopes and robot surgeons to the analysis of large data sets or the ability to chat to a medical AI with a human face, opportunities abound.

There is already evidence that AI systems can enhance diagnostic accuracy and disease tracking, improve the prediction of patients' outcomes and suggest better treatments. It can also boost efficiency in hospitals and surgeries by taking on tasks such as medical transcription and monitoring patients, and by streamlining administration. It may already be speeding the time it takes for new drugs to reach clinical trials. New tools, including generative AI, could supercharge these abilities. Yet as our Technology Quarterly this week shows, although AI has been used in health care for many years, integration has been slow and the results have often been mediocre.

There are good and bad reasons for this. The good reasons are that health care demands high evidentiary barriers when introducing new tools, to protect patients' safety. The bad reasons involve data, regulation and incentives. Overcoming them could hold lessons for AI in other fields.



AI systems learn by processing huge volumes of data, something health-care providers have in abundance. But health data is highly fragmented; strict rules control its use. Governments recognise that patients want their medical privacy protected. But patients also want better and more personalised care. Each year roughly 800,000 Americans suffer from poor medical decision-making.

Improving accuracy and reducing bias in AI tools requires them to be trained on large data sets that reflect patients' full diversity. Finding secure ways to allow health data to move more freely would help. But it could benefit patients, too: they should be given the right to access their own records in a portable, digital format. Consumer-health firms are already making use of data from wearables, with varying success. Portable patients' records would let people make fuller use of their data and take more responsibility for their health.

Another problem is managing and regulating these innovations. In many countries the governance of AI in health, as in other areas, is struggling to keep up with the rapid pace of innovation. Regulatory authorities may be slow to approve new AI tools or may lack capacity and expertise. Governments need to equip regulators to assess new AI tools. They also need to fill regulatory gaps in the surveillance of adverse events, and in the continuous monitoring of algorithms to ensure they remain accurate, safe, effective and transparent.

That will be hard. One solution would be for countries to work together, to learn from each other and create minimum global standards. A less complex international regulatory system would also help create a market in which small companies can innovate. Poorer countries, with less developed health infrastructure, have much to gain from introducing new tools, such as an AI-powered portable ultrasound device for obstetrics. Because the alternative to an AI tool is often no treatment at all, they may even be able to leapfrog the entrenched health systems of rich countries—though a lack of data, connectivity and computing power will get in the way.

A final problem involves institutions and incentives. AI promises to cut medical costs by assisting or replacing workers, improving productivity, reducing errors and flattening or reducing spending, all while improving care. That is desperately needed. The world could lack 10m health-care workers by 2030, around 15% of today's workforce. And administration accounted for about 30% of America's excess health-care costs, compared with other countries, in 2022.

Yet saving money using innovation is tricky. Health systems are set up to use it to improve care, not cut costs. New technology may account for as much as half of the annual growth in health spending. Layering on new systems will increase costs and complexity. But redesigning processes to make efficient use of AI is likely to be resisted by patients and medics. Though AI may be able to triage them over the phone or provide routine results, patients may demand to be seen in person.

Worse, many health systems, such as America's, are set up to reward the volume of work. They have little reason to adopt technologies that cut the number of visits, tests or procedures. And even publicly run health-care systems may lack incentives to adopt technologies that reduce costs rather than improve outcomes, perhaps because saving money may lead to a smaller budget next year. Unless governments can change these incentives, so that AI combines better treatment with new efficiencies, innovation will increase costs. Accordingly, governments and health authorities will need to fund schemes dedicated to testing and deploying new AI technologies. Countries including America, Britain and Canada are pointing the way.

AI, MD

Much of the burden for boosting AI in health care falls on governments and regulators. However, companies have a part to play, too. Insurers have already used AI tools to deny care unfairly; firms have mis-sold or overstated the abilities of health AI; algorithms have made mistakes. Firms have a duty to ensure that their products are safe, reliable and accountable, and that humans, however flawed, remain in control.

These obstacles are formidable but the potential benefits of using AI in health care are so vast that the case for overcoming them should be obvious. And if AI can be made to work in medicine, it could provide a prescription for the adoption of the technology in other fields. ■

Europe's economy

Triple shock

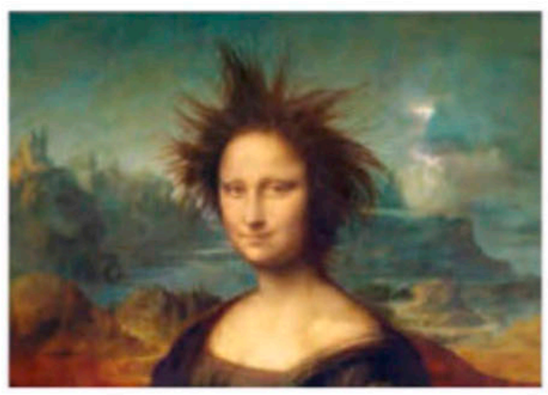
After the energy crisis, Europe faces surging Chinese imports and the threat of Trump tariffs

EUROPE IS NOT known for its dynamism, but today it looks stagnant by any standard. Frazzled by the energy shock that followed Russia's invasion of Ukraine in 2022, the European Union's economy has grown by only 4% this decade, compared with 8% in America; since the end of 2022, neither it nor Britain has grown at all. If that were not bad enough, Europe faces a surge of cheap imports from China which, while benefiting consumers, could harm manufacturers and increase social and industrial strife. And within a year Donald Trump could be back in the White House, slapping huge tariffs on Europe's exports (see Finance & economics section).

The timing of Europe's misfortune is bad. The continent needs strong growth in order to help fund more defence spending, especially since American support for Ukraine has dried up, and to meet its green-energy goals. Its voters are increasingly disillusioned and liable to back hard-right parties such as the Alternative for Germany. And long-standing drags on growth—a fast-ageing population, overbearing regulators and inadequate market integration—have not gone away.

There is a frenzy of activity in European capitals as governments try to respond. They must take care. Although the shocks facing Europe originate abroad, errors from Europe's own policymakers could greatly aggravate the damage.

The good news is that the energy shock is past the moment of maximum pain: gas prices have fallen far from their peak. Unfortunately the others are just beginning. Faced with a deflationary slowdown, China's government should be stimulating the country's paltry household consumption, which could replace property investment as a source of demand. Instead President Xi Jinping is using subsidies to supercharge Chinese manufacturing, which already accounts for about a third of global goods production. He is relying on foreign consumers to prop up growth.



China's focus is on green goods, most significantly electric vehicles, for which its global market share could double, to a third, by 2030. That would end the dominance of Europe's national champions like Volkswagen and Stellantis (whose largest shareholder, Exor, part-owns *The Economist*'s parent company). From wind turbines to railway equipment, Europe's manufacturers are nervously looking eastward.

After November manufacturers might look westward, too. Last time he was in office Mr Trump imposed tariffs on steel and aluminium imports, eventually including those from Europe, leading the EU to retaliate against motorbikes and whiskey until an uneasy truce was struck under President Joe Biden in 2021. Today Mr Trump threatens a 10% blanket tariff on all imports; his advisers talk of going further.

Another round of the trade war threatens Europe's exporters, which had €500bn ($540bn) of sales in America in 2023. Mr Trump is obsessed with bilateral trade balances, meaning that the 20 (of 27) EU member states with a goods-trade surplus are natural targets. His team is also aggrieved by Europe's digital levies, its carbon border tax and its value-added taxes.

What should Europe do? The path ahead is littered with traps. One error would be to keep economic policy too tight at a moment of vulnerability—a mistake the European Central Bank has made before. In recent years the bank has rightly fought inflation with interest-rate increases. But in contrast to free-spending America, Europe's governments are bringing their budgets into better balance, which should cool the economy, while cheap Chinese goods will bring down inflation directly. That gives Europe's central banks room to cut interest rates to support growth. It will be easier to cope with disruption from outside if central banks keep the economy out of a slump that would stop displaced workers finding new jobs.

Another trap would be to copy America's and China's protectionism by unleashing vast subsidies on favoured industries. Subsidy wars are zero-sum and squander scarce resources—within Europe, countries have already started an intra-continental race to the bottom. China's recent economic woes demonstrate the flaws, not the virtues, of excessive government planning; America's industrial policy has not wowed voters in the way President Biden had hoped, and tariffs have cost more jobs than they have produced.

By contrast, trade makes economies richer even when their trading partners are protectionist. A manufacturing boom in America is a chance for European producers to supply parts; cheap imports from China will make the green-energy transition easier and provide relief to consumers who suffered during the energy crisis. Selective and proportional retaliation against protectionism may be justified in an attempt to dissuade America and China from further disrupting global trade flows. But it would come at a cost to Europe's economy, as well as hurting its intended targets.

Instead Europe should forge its own economic policy fit for the moment. As America showers industry with public money, Europe should spend on infrastructure, education, and research and development. Instead of emulating China's interventionism, Europe should note the benefit Chinese firms derive from a vast domestic market. Integrating Europe's market for services, where trade remains difficult, would help firms grow, reward innovation and replace some lost manufacturing jobs. The EU should reform its burdensome and fragmented regulation, which also holds back service industries. Unifying capital markets—including those in London—would have the same effect. European diplomats should sign trade deals wherever they are still on offer, rather than letting farmers hold them up, as in several recent negotiations. Linking electricity grids would make the economy more resilient to energy shocks and smooth the green transition.

Don't double down

Such an open agenda in a protectionist age may seem naive. But it is deep, open markets that have the potential to boost Europe's growth as the world changes around it. As the shocks strike, policymakers must stay grounded in that reality. ■

Ukraine

Standing alone

Russia is gearing up for a big new push along a long front line. Ukraine must prepare

THE ARRIVAL of spring in Ukraine brings two kinds of respite. Warmer weather means that Russia's frenzied missile and drone attacks on electrical and gas infrastructure will not be quite so unbearable. And with new warmth comes mud, and a month or so in which military movement grows difficult. That should hinder the wave of Russian attacks along the front line that stretches across eastern and southern Ukraine. But it will not last. As spring turns to summer, the fear is that Russia will mount a big new offensive, as it did last year. And Ukraine's ability to hold it off this time looks much less sure now than it did then. That is why it urgently needs to mobilise more troops and build more robust front-line defences.

Ukrainians understandably blame the world's politicians for their plight. Busy with the Middle East, forthcoming elections and their own economic woes, Ukraine's Western allies are distracted. As we report (see Europe section), the decision by Trump-supporting Republicans in Congress to block the Biden administration's $61bn military package for Ukraine is having an effect at the front line and above Ukraine's cities. Ukraine's soldiers are being forced to ration their shells, while Russia outguns them in some places by five to one. More than 150 drones and missiles were launched against Ukraine on just one night last week, but Ukraine is running out of interceptors—especially the ones that can take out the deadliest intruders.

America's deadlock risks letting Russia break through Ukraine's inadequate defensive lines. And the Europeans are not doing much better, despite fighting talk from France's president, Emmanuel Macron—who insists that Russia must be defeated but sends little in the way of hardware to help that happen—or Germany's lacklustre chancellor, Olaf Scholz, who is refusing to supply powerful Taurus long-range missiles. Europe has failed to meet its target of getting 1m shells to Ukraine by this month, though the Czechs have been scouring the world to make up the shortfall. Money is also a problem; Europe should be helping with that, too. But Poland and France, among others, are trying to block Ukraine's vital agricultural exports so as to protect their own farmers.

Yet Ukraine cannot simply blame its allies. It is guilty of mistakes too. One has been its failure on manpower. Russia is gearing up for another wave of mobilisation, with an eye to its next big push. The terrorist attack on a Moscow concert hall on March 22nd may actually make this easier for Vladimir Putin, who is using it to claim that Russia needs to be strong in the face of bloodthirsty enemies. But in Ukraine attempts to raise fresh recruits are still stuck in the coils of the democratic process; more than 1,000 amendments have reportedly been tabled to a bill in Parliament that would give the government more scope to raise the army it needs. Short of cash and fearing unpopularity, President Volodymyr Zelensky has not tried hard enough to get his way.

Ukraine has also been very late in reinforcing its own defensive positions. In a way, this is understandable. The government still dreams of a new counter-offensive, and dreads the idea that the current front line may harden into something very like a border, one that lops off a fifth of the country and deprives it of most of its sea access. The idea that this line might become the basis for a future peace negotiation is exactly what Mr Zelensky has wanted to avoid. But the dangers are now so great that it is the least bad option. In recent weeks the diggers have started moving, and the dragon's teeth are being sown. It should have started much earlier. Pray that it is not too late. ■

Antarctic science and climate change

It's not just about the penguins

Goings on at the far end of the Earth need a lot more attention

THE ARCTIC and Antarctic are, fittingly, polar opposites. The first is an ocean surrounded by continents, the second a continent surrounded by an ocean. In the one, communities of indigenous people and settlers; in the other, only transients, there for a season or two. Nuclear-armed powers have faced off across the Arctic since the cold war; the same conflict saw a governance regime of peaceful scientific collaboration created for Antarctica that is more utopian in its conception than any other agreement in the annals of diplomacy. The north has the majesty of polar bears, the south the pathos of penguins. The two are united in facing profound upheaval because of global warming. But compared with the changes affecting the Arctic, those threatening the Antarctic are greatly underappreciated.

In part that lack of attention is because of Antarctica's remoteness; the biggest base there, America's McMurdo, is almost 4,000km from the nearest city (Christchurch, in New Zealand). Visits are for the most part made only by scientists, adventurers and support staff. In part, too, there is seeming stasis. Change in Antarctica is not like that in Alaska, where melting permafrost buckles roads and topples buildings; or in Siberia, where the smoke from burning tundra paints the skies and sears the lungs. Indeed, for a long time scientists tended to see Antarctica as relatively stable, at least over the short to medium term. Yes, its ice sheets contain enough water to raise the seas by 60 metres—but any collapse would take centuries.

That turns out to have been complacent. Earth's largest re- ▸▸

frigerator is, as we describe in this week's Science and technology pages, showing alarming signs of a big thaw, one which will have consequences for the rest of the planet. Extreme events like the disappearance of an area of sea ice the size of Greenland during last year's austral winter are a symptom of a quickening underlying instability. Glaciologists are talking of a "regime shift". Parts of one of the enormous ice sheets that cover 98% of the continent are sliding towards the seas.

Water shifting from Antarctica's continental bedrock into the Southern Ocean contributed just 4% to global sea-level rise 20 years ago. Today its share is 12%, and it will rise relentlessly in the decades ahead. This effect has an underappreciated corollary. As Antarctica melts, the gravitational attraction its shrinking ice exerts on the neighbouring seas weakens. That causes sea levels elsewhere to rise even faster. Sea-level rise originating from Antarctica will affect Australia and Oceania, but it will also disproportionately affect North America.

Melting ice sheets do more than raise sea levels. They also bring shifts in atmospheric circulation that stretch to the equator and beyond, changing weather in the Sahel and Amazonia. And the Southern Ocean is one of the world's largest carbon sinks, responsible for absorbing 40% of all the climate-changing carbon dioxide that the oceans as a whole suck up every year. If it warms, it will absorb less—an effect that may be aggravated when trillions of tonnes of fresh water come off the great frozen South and alter ocean currents.

Despite all this, some countries are cutting their budgets for Antarctic research. This flies in the face of reason. The measurement and modelling of ice sheets lags well behind the study of the atmosphere and of ocean currents; if the implications of the worsening situation are to be properly appreciated and planned for, this needs fixing fast.

Debates over what needs doing most urgently, and how best to co-operate to get it done, should be galvanising the 56 countries that are signatories to the Antarctic treaty. They may not be able to protect the Antarctic environment, a duty to which the treaty's environmental protocol commits them. They can at least increase their efforts to learn what the changes being forced on the empty continent in their charge mean for the rest of the world. ■

The business of advice

Consulted

The corporate world's know-it-alls need some counsel of their own

DEAR CHIEF STRATEGY ARCHITECT—As the corporate philosopher behind one of the world's most illustrious consultancies, you well know how tough business has been lately. Only two years ago you were reaching for the stars. Clients jolted by the covid-19 pandemic sought you out as a supply-chain savant and a doyen of digital businesses. The craze over environmental, social and governance (ESG) considerations turbocharged your bottom line. Unfortunately, you went on a hiring binge.

Now the good times are over (see Business section). Growth has slowed as clients have cut back on splashy projects. Workforce optimisation has been widespread—though at least you gave something back by hiring extra security staff to see the ex-partners off the premises! This month an anonymous memo, purportedly written by McKinsey ex-partners, scolded the Firm's "unchecked and unmanaged growth" and "lack of strategic focus".

Those are harsh words for a business built on telling companies how to manage their affairs. You might go so far as to say the consultants need some wise counsel. That is where my firm—the premier consultant to the world's consultancies—comes in. I append a 367-slide presentation that goes into the detail, but my diagnosis is simple: you are all too big. The combined revenue of the eight leading firms in your industry is now double what it was a decade ago. Partly that reflects growing demand. But it is also middle-age spread: you are bloated, my friend.

You used to be in the advice business, but you have lost your focus and your strategic alignment is out of kilter. Bain, BCG and McKinsey, the best-of-breed strategy advisers, increasingly string out a contract for guidance into months or years of work helping clients to implement their brainy ideas—an incentive to make their advice even harder to understand. The "big four" accounting giants, Deloitte, EY, KPMG and PwC, are taking this a step further by running activities from supply-chain management to cybersecurity on clients' behalf. They call this "managed services"; to me it seems like outsourcing on steroids, and about as good for you.

By now you'll be protesting that you had a sound business case. I know—I have read your pitches. Oceans of experience, alongside massive economies of scale in areas like technology, make you more productive than your clients at many things. Companies have been backing out of back-office ops like payroll management for decades.

Yet the blurring of responsibilities between client and consultant raises awkward questions. It was bad enough when a top-dollar executive team could not work out their own strategy. Now they have delegated running the business, too. What is left to do?

A fuzzier definition of consulting also carries two risks for you. The first is that clients begin to question the value of all those pimply 20-somethings you are billing them for (be assured, our team is staffed exclusively with jaded 50-somethings). The second is that, at a time of disruption, you take your eyes off your core business of providing advice.

For now, artificial intelligence looks like a godsend, as clients turn to you again for help. In time, it could up-end your industry. That is why we have a new transformation programme for firms like yours. You know how this works: I'm not going to tell you what it involves until you sign the contract. But if you commit to be with us for a few years, I am confident you can overcome these challenges.

Yours, BILL FOLD. Chief Growth Hacker, PDQ Consult. ■

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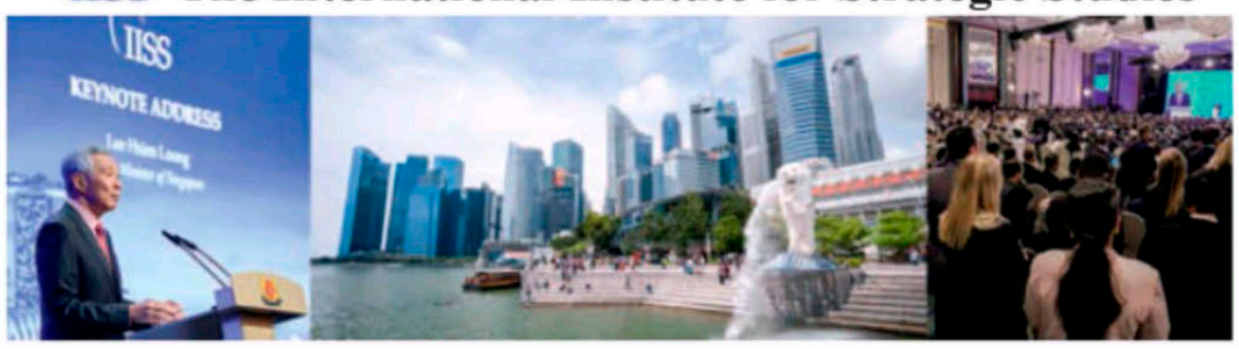


Senior Fellow for Nuclear Arms Control, Non-Proliferation and Disarmament, IISS-Asia

Hours: Full-time
Contract: Fixed-term
Location: Singapore

The International Institute for Strategic Studies (IISS) intends to hire a full-time Senior Fellow for Nuclear Arms Control, Non-Proliferation and Disarmament, based at IISS-Asia in Singapore. The selected candidate will report to the Executive Director of IISS-Asia and will lead the Institute's research on Nuclear Arms Control, Non-Proliferation and Disarmament.

The IISS is the world's leading authority on international conflict and geopolitical trends. It is international in its composition, perspective and reach. The Institute provides objective facts and independent analysis for its core audiences in government, the private sector, and the expert and opinion-forming communities. Summits convened by the IISS facilitate intergovernmental consultations, while its research helps companies to understand political risk and its publications shape the international strategic debate.

Responsibilities:

- Conducting policy-relevant research on global nuclear disarmament, non-proliferation and arms-control issues, and contributing analysis to and working closely with other relevant IISS regional and thematic research programmes.
- Devising a programme of work on global nuclear disarmament, non-proliferation and arms-control and fundraising to support that work in Singapore and internationally.
- Briefing IISS corporate partners, governments, and the expert and opinion forming communities on global nuclear disarmament, non-proliferation and arms-control issues in the region and beyond.
- Engaging other relevant international experts as part of the programme.
- Contributing generally to an informed international strategic debate on global nuclear disarmament, non-proliferation and arms-control policies.

Requirements:
The successful candidate:

- Will be a dynamic individual, with an entrepreneurial bent, able to take on a wide variety of tasks with tact and efficiency.
- Will be a person with strong intellectual qualifications, with a background in policy-relevant research.
- Will have professional writing skills, an international outlook and an established record of accomplishment in government, the 'think tank' community and/or business.
- Must have proven specialist knowledge of global nuclear disarmament, non-proliferation and arms-control policies.
- May have professional knowledge of regional languages.

Remuneration:
The post will be available from summer 2024 and offered on a full-time, fixed-term contract initially for a period of 3 years. Salary will be competitive and commensurate with knowledge and skills, accompanied with mandatory contributions and a private medical benefits package.

Application:
Applications should include a cover letter, stating the skills the candidate would bring to the IISS, and a CV with a list of references, to be submitted by Tuesday 16th April 2024 via our website **www.iiss.org/careers**.

Shortlisted candidates will be asked to provide a writing sample and to make a presentation as part of the selection process.

Due to the expected volume of applications, only those applicants selected for interview will receive a reply following the acknowledgement email.

The IISS is an equal opportunities employer.

Letters

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

You should get out of Russia

"Divestment dilemmas" (March 2nd) gave an impression of Western companies being stuck in Russia, facing "no pretty choices". Such framing removes any agency and responsibility from the Western businesses that chose to remain in a country that shows no respect for human or investor rights. Companies that are willing to leave the Russian market do indeed face mounting risks, but it is imperative to understand how they allowed themselves to be in this precarious situation in the first place.

Russia's war on Ukraine began in 2014 with the annexation of Crimea and the occupation of parts of Donbas, so foreign companies still operating in Russia have had ten years to make decisions based on sound risk assessment. Because of its lawlessness, the Russian government already de facto controls the assets of all remaining businesses. The list of companies expropriated by the Kremlin extends far beyond the cases of Danone and Carlsberg, to include firms such as Uniper and Fortum, as well as attempts to arrest the assets of the Russian subsidiaries of Deutsche Bank, Credit Suisse and others. As of November 2023, the Russian courts imposed 93 seizures on the assets of foreign firms.

Values matter too. It has been two years since the invasion of Ukraine and 125,000 war crimes have since been committed by the Russians. The remaining Western firms are facing the consequences of their short-sightedness and greed. Foreign companies in Russia have always had a choice and they still do now. Instead of trying to remain and navigate Russia's state-controlled chaos, they should drop their keys and leave, writing off the losses and maybe taking their cases to international arbitration. Fortum, a Finnish utility, has done this.

NATALIIA POPOVYCH
Co-founder
B4Ukraine Coalition
Copenhagen

America's Republicans have floated the idea of converting economic assistance to Ukraine into a loan (the idea came from Donald Trump). Overloading Ukraine with more debt would jeopardise the IMF's Extended Fund Facility stabilisation programme, which is a loan. An American loan in lieu of direct economic assistance would significantly burden Ukraine's precarious fiscal outlook, complicating the IMF's debt-ratio guidelines for further lending.

Moreover, this idea sends the wrong signal to other donors to Ukraine, who might follow the American example of offering more loans and fewer grants. If America and Ukraine's allies are serious about "unlocking the value" of nearly $300bn in Russia's frozen assets (Free exchange, March 2nd) they should abandon this unhelpful loan option and accelerate efforts to confiscate the assets in order to help Ukraine before it's too late. Congress should pass the REPO for Ukrainians Act now.

GREG WILSON
Former deputy assistant secretary at the US Treasury Department
Estero, Florida

The forms of bitcoin

You tried to make sense of bitcoin's price appreciation, but only referenced the BitcoinCore version of the protocol ("Back to the moon", March 9th). BitcoinCore is the most popular bitcoin but there are in fact three functioning versions, each with a limited supply of coins.

BitcoinCash and BitcoinSatoshiVision are both more functional payment protocols. BitcoinCash is focused more narrowly on "privacy". BitcoinSatoshiVision has restored the original protocol and targets that the pseudonymous Satoshi Nakamoto wanted for an efficient payment system for small casual transactions on the internet, and also the smart contracts alluded to in his white paper from 2008 and later writings.

Although the media still largely follow the *ad populum* fallacy of only referring to the degenerate protocol as "bitcoin", lawyers for BlackRock did note these issues in the prospectus for its bitcoin exchange-traded fund. The lawyers suggest that at some point the ETF's sponsors may be obliged to disagree with the crowd and switch protocols.

DR NEIL SMITH
Head of research
Altus Investment
London

Choice words

Mohammad Mustafa, the new prime minister of the Palestinian Authority, offered some nice words (By Invitation, March 17th). But there was no criticism of the Hamas rampage on October 7th, or the continued holding of hostages, or the rocket attacks on Israeli civilians. Without this, why should Israel bother thinking about a two-state solution?

NEIL ALEXANDER
Ottawa

Greek sex gods

The Economist's list of what to read to understand God and sex (The Economist reads, March 14th) suggests that Catullus and Sappho, two poets, are reliable guides to Greek and Roman attitudes about sex before Christianity. Perhaps, but there was no mention of the Stoics, or Socrates, or the later Platonists. As in the history of Christendom, popular attitudes and sex practices in ancient Greek and Roman culture often diverged from the more ascetic philosophical views that recommended self-control over dangerous passions.

Your reading recommendations were also silent about the extensive literary deposit of Jewish engagement with Hellenistic culture, which can also be understood to include the canonical Gospels and the letters of St Paul. These reveal an age-old philosophical and theological tension between the created beauty of sexuality and the human tendency to indulge passion without reason. This fundamental tension between sociability and exploitation was not invented by prudish Christians, nor can it be erased by modern excesses of the appetite.

DR DAVID OPDERBECK
Professor of law
Seton Hall University School of Law
Newark, New Jersey

Economics thinking

Free exchange (March 23rd) covered my podcast interview with Steve Levitt. It captures the great applied-economics battle between reduced-form economists (like Mr Levitt) and structural economists (like Jim Heckman). One of the great things about empirical economics research is that the methods continue to improve along with the robustness of results, as any science should.

JON HARTLEY
Host of the "Capitalism and Freedom in the 21st Century" podcast
Stanford, California

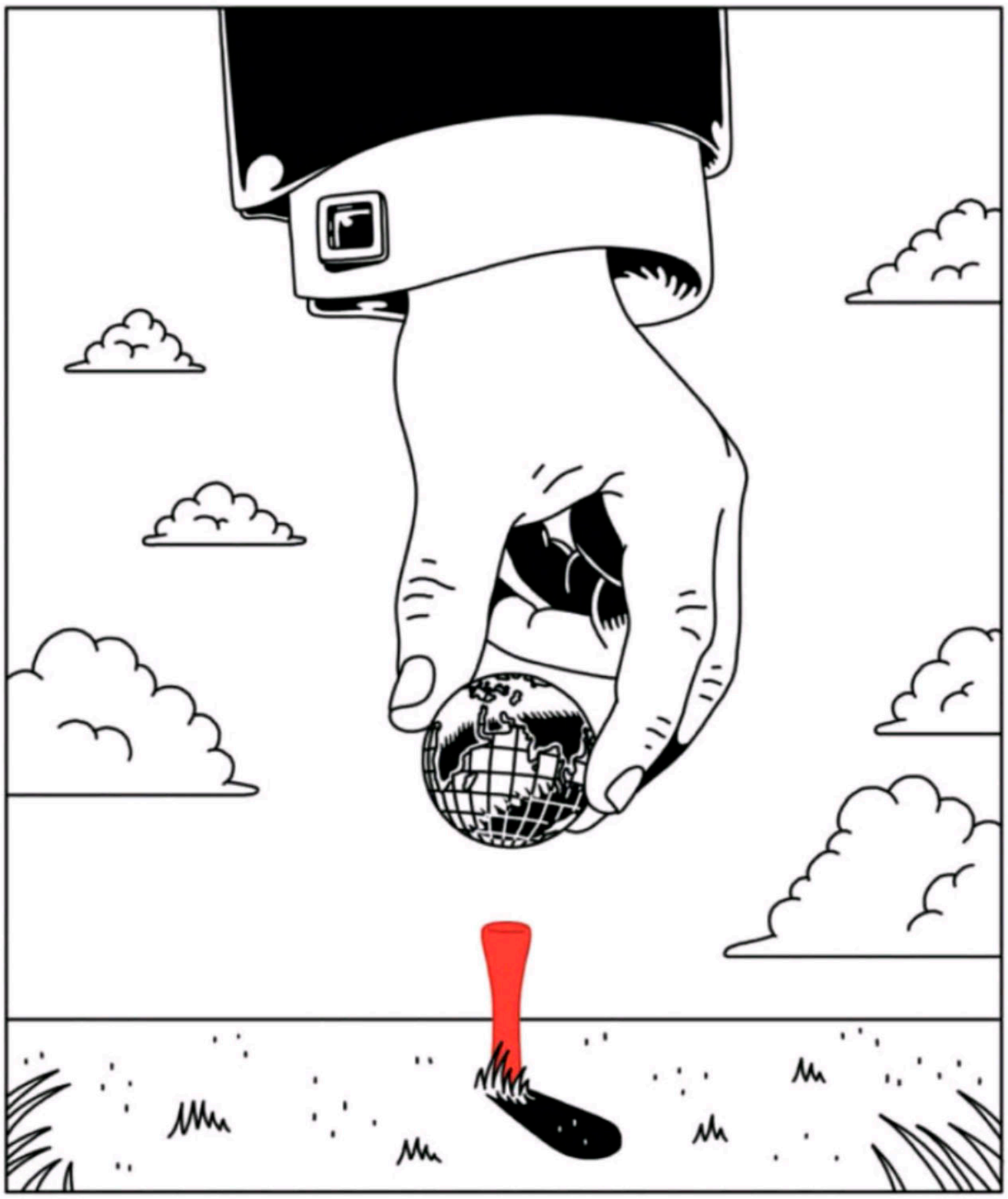
Power and The People

Henry Biggs enthused about the boots theory of inequality as expounded by Sam Vimes, a character in Terry Pratchett's Discworld series (Letters, March 2nd). The boots theory is often trotted out as a pithy justification of left-wing calls for redistribution. Less well-known is Vimes's "swing theory", from "Night Watch".

In that book Vimes is disgusted by left-wing activists who are intoxicated by their own narcissistic sense of virtue and who see humans only as pawns to the imposition of ideology: "People on the side of The People always ended up disappointed...they found that The People tended not to be grateful or appreciative or forward-thinking or obedient". The revolutionaries were faced with the age-old problem: "it wasn't that you had the wrong kind of government, which was obvious, but that you had the wrong kind of people."

ROBERT FRAZER
Salford

Briefing Donald Trump's foreign policy



Stranger danger

WASHINGTON, DC

How to predict what policies the former president would adopt in a second term

JOHN BOLTON, Donald Trump's national security adviser in 2018-19, has simple advice for anyone trying to understand his former boss's philosophy on foreign policy: don't bother. Mr Bolton, who fell out with Mr Trump, says the former president has no consistent principles, only moods, grudges and an obsession with his image. Thus he could both threaten North Korea with "fire and fury" and hold two chummy summits with Kim Jong Un, for example, or both talk about leaving the NATO alliance and then reinforce its eastern flank.

Mr Trump's current acolytes retort that "America First" is a perfectly coherent ideology, which was never properly adopted owing to obstructive advisers like Mr Bolton and the inexperience of the ex-president's true devotees. Anyway, enthuses Fred Fleitz of the America First Policy Institute (AFPI), a Trumpist think-tank, "You forget how good things were when Trump was in office." There were no big wars, four peace deals between Israel and Arab states, a successful renegotiation of the NAFTA free-trade agreement with Canada and Mexico and a partial trade deal with China—not to mention low inflation and a less permeable southern border. If Mr Trump regains the White House, he will reverse President Joe Biden's "weakness" which, in the Trumpists' telling, encouraged Russia's full-scale invasion of Ukraine, Hamas's attack on Israel and China's bullying of Taiwan. By sheer force of character, Mr Trump will restore American power, deter foes and impose order.

Admirers and detractors alike, however, struggle to predict specific policies Mr Trump might adopt. Even those close to him admit that, until he is in the room with the likes of Vladimir Putin, Xi Jinping or Prince Muhammad bin Salman, he may not know himself what he wants to do. The art of the deal, they claim, lies in personal dynamics. Yet both the critics and the true believers argue that those around Mr Trump play a part in channelling his urges, whether muddled or masterful. To understand what Mr Trump might do around the world, therefore, it pays to look at the competing ideologies of his advisers.

Make America Inchoate Again

Republicans have now splintered into at least three distinct schools of foreign policy, to borrow the taxonomy of the European Council on Foreign Relations, a think-tank: primacists, restrainers and prioritisers. At least a few members of each group are likely to have Mr Trump's ear if he becomes president again. Where these groups all align, it is relatively easy to predict policy. Where they are at odds with each other, or with Mr Trump's impulses, expect erratic policymaking.

The primacists, the heirs of Ronald Reagan, want to preserve America's global hegemony. They include many "never-Trumpers" who have been largely sidelined within the conservative movement. Also weeded out of Mr Trump's inner circle is the "axis of adults" that once held him in check, such as John Kelly, his former chief of staff, James Mattis and Mark Esper, both former defence secretaries, and Mr Bolton and another former national security adviser, H.R. McMaster.

Some Reaganites have nonetheless stayed on Mr Trump's good side by kowtowing and, when necessary, suppressing their beliefs. They include Mike Pompeo and Robert O'Brien, Mr Trump's last secretary of state and national security adviser respectively, who may again have big jobs in a second term. In the Senate Marco Rubio, Lindsey Graham and Tom Cotton—all hawkish primacists—remain in favour.

Against them are ranged the "restrainers", akin to the isolationists of yesteryear. They believe America should not attempt to police the world but instead focus on troubles at home, notably the border with Mexico. Outright isolationists, such as Vivek Ramaswamy, who ran for the Republi- ▸▸

can presidential nomination, are probably a minority in the party elite. But they increasingly capture the mood of the Republican electorate. The Chicago Council on Foreign Affairs finds, for the first time in half a century of its polls, that a majority of Republicans—particularly Mr Trump's most ardent supporters—think America should stay out of world affairs.

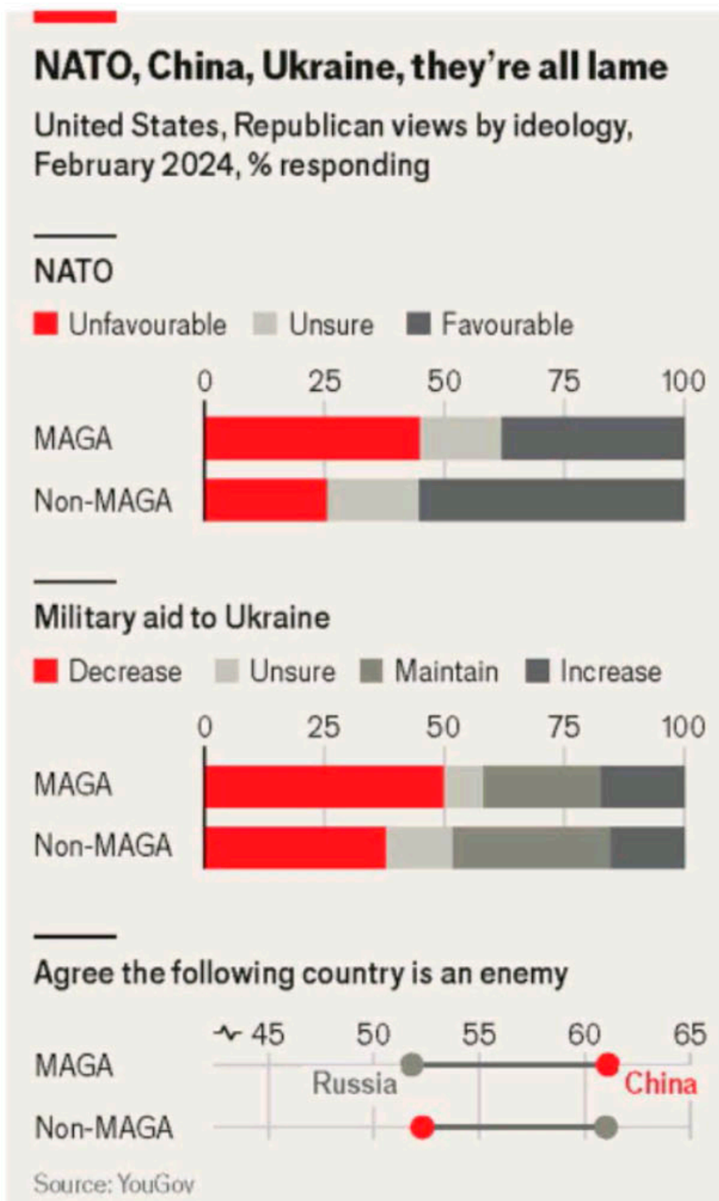
Between the primacists and the restrainers stand the prioritisers, who want America to do less in Europe and the Middle East in order to concentrate resources in Asia to confront China. Elbridge Colby, a former Pentagon official under Mr Trump, has become the prioritisers' high priest. He argues that most Americans are neither ready to pay for the high defence spending needed to try to preserve America's primacy, nor willing to yield Asia to China. Instead America must adjust priorities, just as imperial Britain reset relations with France and Japan to confront a rising Germany at the turn of the 20th century.

But prioritisers are a broad group (the Biden administration, for example, also says it wants to focus on China). They include China hawks like Mr Colby and figures who prefer to spend money at home than abroad, such as J.D. Vance, a senator from Ohio. Sceptics wonder whether the emphasis on China is really just disguised isolationism. Would those who do not even want to confront Russia indirectly in Ukraine really be prepared to fight a war with China over Taiwan?

Mr Trump bestrides all three groups. Restrainers see him as one of their own. He shares their desire to reduce military commitments, especially in the broader Middle East. "By destroying the Republican establishment, and by reconfiguring the electoral base of the Republican Party, Trump opened the space for restrainers more radical than he is to gain positions of prominence and influence," says Matthew Continetti of the American Enterprise Institute, another think-tank.

Yet Mr Trump also has plenty of primacist moments. He believes in strong military forces, echoing Reagan's call for "peace through strength". He bombed Syria over its use of chemical weapons and ordered the assassination of Qassem Suleimani, who co-ordinated the foreign militias that act as proxies for Iran. And in true prioritiser fashion, he devoted far more attention as president to China than to Europe or the Middle East.

In part, that may be because Mr Trump thinks of foreign affairs in business terms, as a source of profit and loss. He believes trade deficits are the result of "unfair" practices (most economists see them as a reflection of different levels of saving and investment in different countries). Mr Trump used to ask aides before meeting the leader of a foreign country, "What's the trade deficit?" He also takes umbrage at allies that skimp on defence while benefiting from American security guarantees, claiming, "The world is laughing at us."



Like primacists and prioritisers, Mr Trump will favour muscular defence. Arms control is liable to be further eroded, since none of the three factions will champion it. A Trump administration will probably not renew the New START treaty, which limits long-range nukes and expires in 2026, partly because Russia has abandoned many of its provisions, and mostly because China is rapidly expanding its stockpile.

Make Russia Great Again

America First has come to mean, in effect, "Europe last"—a view shared by both restrainers and prioritisers. YouGov polls find that more Trumpist, Make America Great Again (MAGA) Republicans regard NATO unfavourably than favourably. Among other Republicans the pattern is reversed. Similarly, MAGA Republicans are less likely than non-MAGA ones to regard Russia as an "enemy" (see chart).

The Senate, where primacists still hold sway, recently passed a bipartisan bill to provide more military aid to Ukraine (as well as Israel and Taiwan). But the House of Representatives, where MAGA types have more clout, has for months blocked the assistance. They argue America must first adopt strict curbs on migration across America's southern border (even though, at Mr Trump's urging, they rejected a bipartisan Senate bid to do just that).

As a result, ammunition-starved Ukrainian forces are under pressure. Mr Trump professes concern at the bloodshed and promises to resolve the conflict in a day. How? General Keith Kellogg of AFPI, mooted as a possible national security adviser to Mr Trump, argues for a carrot-and-stick approach: tell Ukraine it will lose American support if it refuses to negotiate a deal, and warn Russia America will give Ukraine more and better weapons if the Kremlin does not agree to reasonable terms. Others such as Viktor Orban, the Hungarian prime minister and a darling of American ultra-conservatives, think Mr Trump would simply abandon Ukraine. Either way, the primacists alone will not have the clout to maintain the Biden administration's generous assistance.

Beyond Ukraine, Mr Trump says he will not defend "delinquent" NATO allies (those that do not spend at least 2% of GDP on defence) from Russia: "In fact, I would encourage [the Russians] to do whatever the hell they want." Messrs Bolton and Esper think Mr Trump may leave NATO entirely. Mr Rubio dismisses the risk. Primacists see advantage in scaring Europeans into doing more, but would draw the line at abandoning NATO. Indeed, Mr Rubio helped push through legislation that requires the Senate to approve a withdrawal from the alliance. Yet Congress could not stop Mr Trump from undermining NATO so thoroughly—by withdrawing American forces from Europe, say—that it would be tantamount to leaving.

Mr Kellogg, for one, says countries that do not meet the spending target are violating Article 3 of NATO's treaty, requiring allies to have the "capacity to resist armed attack", so should not benefit from Article 5, which holds that an attack on one is an attack on all. "We are not quitting on them; they are quitting on us," he says. Meanwhile, the Centre for Renewing America, another Trumpist think-tank, has published articles advocating a "dormant" NATO, in which America would withdraw ground forces from Europe, while preserving the nuclear umbrella. It is not clear how far a second Trump administration will go, given these divisions, but upheaval for NATO seems inevitable.

Though increasingly sceptical of Ukraine, Republicans are avidly pro-Israel. According to the latest YouGov survey for *The Economist*, just 20% of Republicans considered Ukraine an "ally"; for Israel the share was 59%. As with Ukraine, Mr Trump claims he could quickly settle the crisis in Gaza but does not say how. He may also seek to renew the effort to crown the Abraham accords with an Israel-Saudi peace deal. There is broad Republican agreement on giving Israel a freer hand in its war with Hamas, on cutting off funds to the United Nations Relief and Works Agency, which helps Palestinian refugees, and on reimposing "maximum pressure" against Iran and its network of proxy militias.

But there are some cross-currents, too. Scarred by long conflicts in the region, restrainers and prioritisers alike want to avoid war with Iran, so may not be as energetic as Mr Biden in warding off pro-Iranian militias. And they dislike Saudi Arabia's price for ties with Israel: a formal defence treaty with America. In Congress, moreover, attempts at an Israel-only aid package foundered partly because Republican fiscal hawks demanded measures to pay for it, such as a cut to the Internal Revenue Service, America's tax-collection agency.

As for Mr Trump, he holds a grudge against Binyamin Netanyahu, Israel's prime minister, because he embraced Mr Biden's election victory in 2020. But more recently Mr Trump has declared, "Any Jewish person that votes for Democrats hates their religion." And in his love of risky, unorthodox summitry, Mr Trump came close to meeting Iran's then-president, Hassan Rouhani, on the margins of a G7 meeting in Biarritz in 2019. With restrainers, prioritisers and primacists all pulling in different directions, and Mr Trump himself inconsistent in his views, confusion beckons.

When it comes to Asia, there is broad consensus about the threat that China poses, but not necessarily about what to do about it. A majority of Republicans—especially those of a MAGA bent—define China as an "enemy", according to YouGov.

Hawkish prioritisers want to focus on ensuring Taiwan is sufficiently armed to defend itself against a Chinese invasion, and America has the forces to help it. On this front, though, Mr Trump looks like a restrainer. In the Oval office, Mr Bolton recounts, the ex-president would point to the tip of his Sharpie, likening it to Taiwan. Then he would point to the huge Resolute desk and say, "This is China." Mr Trump has also accused Taiwan of, in effect, stealing America's semiconductor industry.

The ex-president is keener on trade wars than shooting ones. Although he may again face internal opposition from Reaganites worried about the economic damage, Mr Trump overcame resistance from economic advisers in his first term to bombard friends and foes alike with higher tariffs. He is likely to resort to even heavier guns the second time around. He proposes a uniform 10% levy on all imports. Robert Lighthizer, his former trade representative, seemingly in line for a top job, thinks tariffs should keep rising until America's trade deficit is eliminated. He wants a 60% tariff on Chinese goods, up from 19% now. That said, insiders say Mr Trump still seeks an eye-catching trade deal with Xi Jinping, China's leader. He also wants to renegotiate terms with the European Union, which he detests as "worse than China, only smaller" (see Europe section).

America's immediate neighbours and biggest trading partners, Canada and Mexico, also have much to worry about. A universal tariff would violate USMCA, the tweaked version of NAFTA that Mr Trump hailed as an "amazing deal". Trade is not the only source of friction, however: Republicans denounce Mexico as a transit country for migrants and a source of drugs, notably fentanyl. Mr Trump once mused about shooting missiles at Mexican drug labs. Others suggest deploying the navy to intercept chemicals used to make fentanyl on their way to Mexico, or even sending special forces to fight drug gangs. It seems safe to assume that relations with Mexico, at least, will suffer.

Adjudicating among his advisers will not be Mr Trump's only difficulty in crafting foreign policy. He may also face resistance from the bureaucracy. Trumpist think-tanks are busy vetting candidates to fill the 4,000-odd jobs in the president's gift, about 1,200 of which require the Senate's approval, too.

Some fear Mr Trump may purge some or all of America's top generals, whom he considers too woke. He has spoken of using troops against rioters or protesters. The generals, says Mr Esper, one of Mr Trump's estranged former defence secretaries, may be given orders that are "awful but lawful", as well as a distraction from the main military task of deterring and fighting foreign foes.

The make-up of Congress will shape Mr Trump's team, too. If, against the odds, the Democrats retain the Senate, only reasonably moderate nominees for senior jobs will win its approval. If Republicans secure a majority in the chamber, more controversial figures may get the nod. In any case, officials appointed by Mr Trump in an acting capacity can serve for months without Senate confirmation.

Those close to Mr Trump predict much turbulence. "He's going to say a lot of things that make people nervous but that's because he'll be telling the truth or negotiating to clean up a lot of mess," says one.

What should America's friends do? "Listen to him, treat him with respect and look for compromises," insiders advise. Many governments are indeed seeking to befriend biddable members of his entourage. Others will look for allies among American businesses and in states that risk being harmed in any trade war. Still others will try to stroke his ego. Britain wowed him with the royal family; France with military parades.

The diverging experiences of Germany and Japan are instructive. In Mr Trump's first term both had large trade surpluses with America and spent woefully little on defence. Mr Trump, got on terribly with Angela Merkel yet surprisingly well with Abe Shinzo, their respective leaders at the time. Why? Partly because Japan made some trade concessions and Mr Abe was known as a defence hawk, whereas Ms Merkel was a "block of stone".

Declare America Great Again

Mr Abe also understood Mr Trump's weakness for flattery. His posthumous memoirs are packed with tips: craft meetings with Mr Trump to include activities he likes (lots of golf, once with a Japanese pro), his favourite food (burgers), bling (a gold-plated club), pomp (meeting the emperor) and entertainment (ringside sumo). "It was important to create an environment where we could talk," wrote Mr Abe. Mr Trump was "cautious about anything that costs money, and thinks about diplomacy and security through an economic lens". A nervous ambassador in Washington suggests a completely different tactic: "Do you know how to pray?" ■

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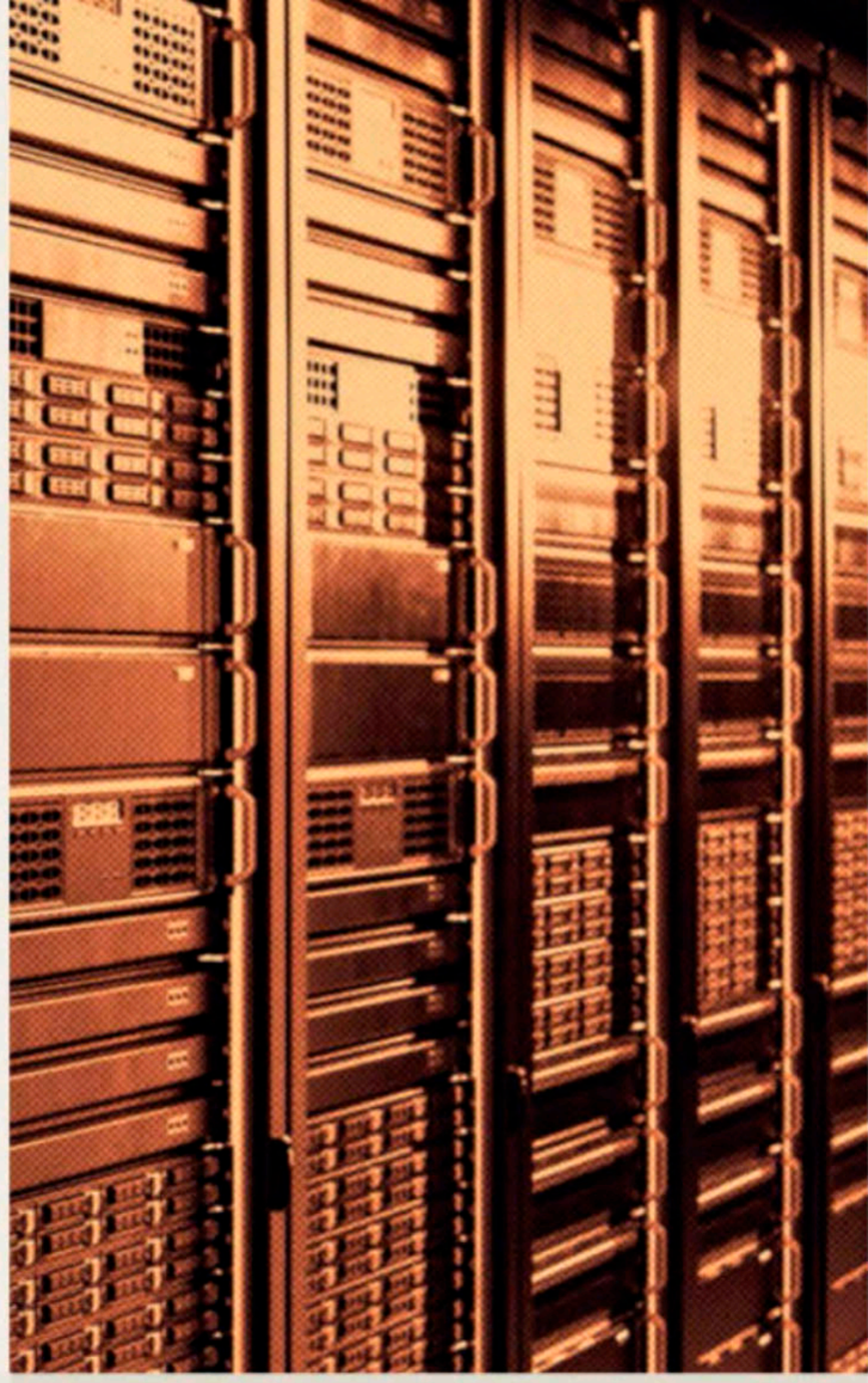

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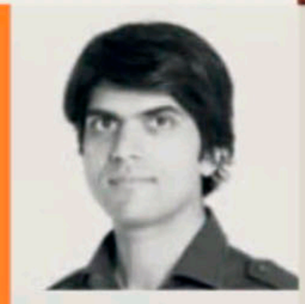

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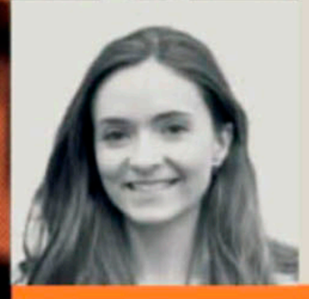

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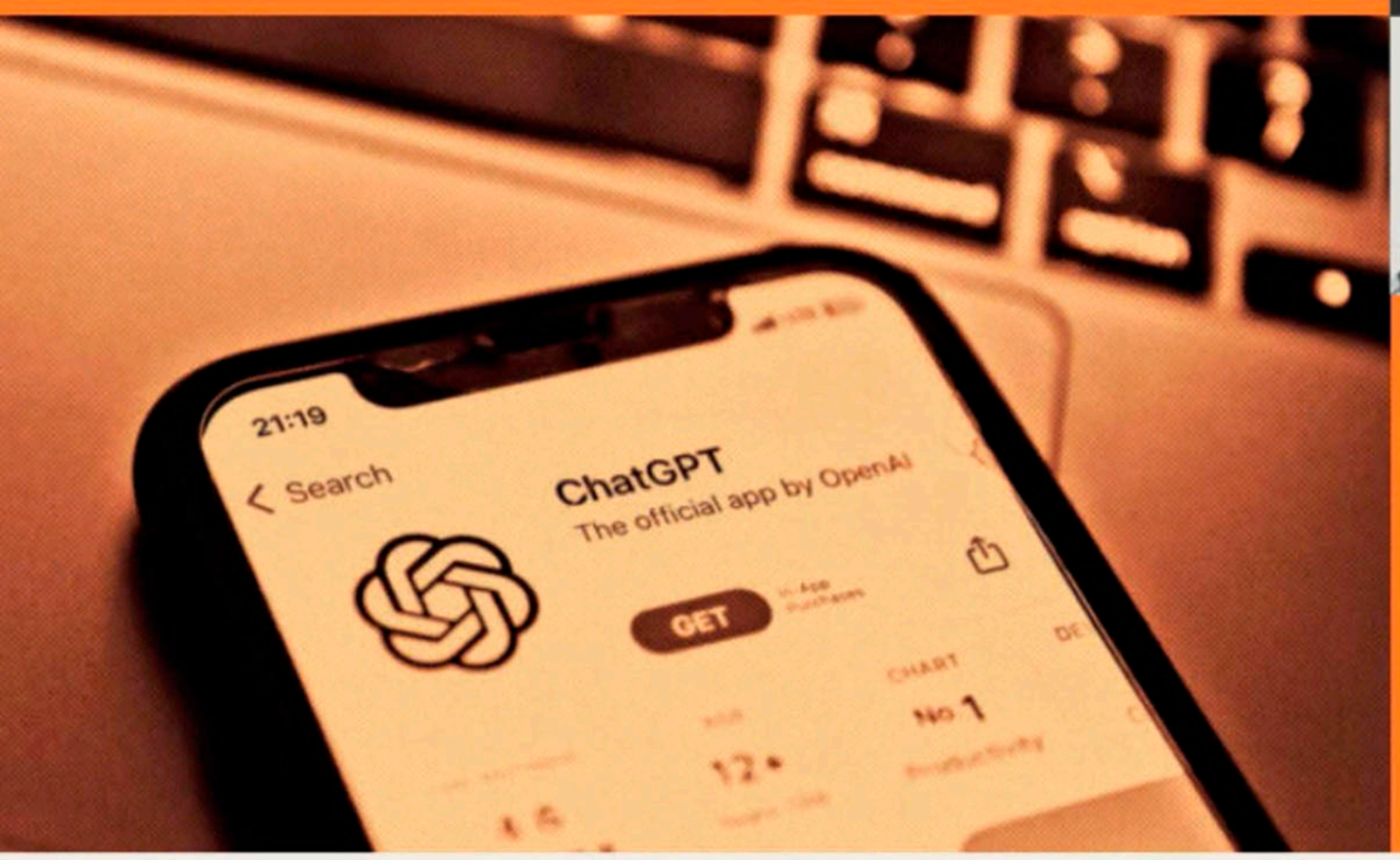

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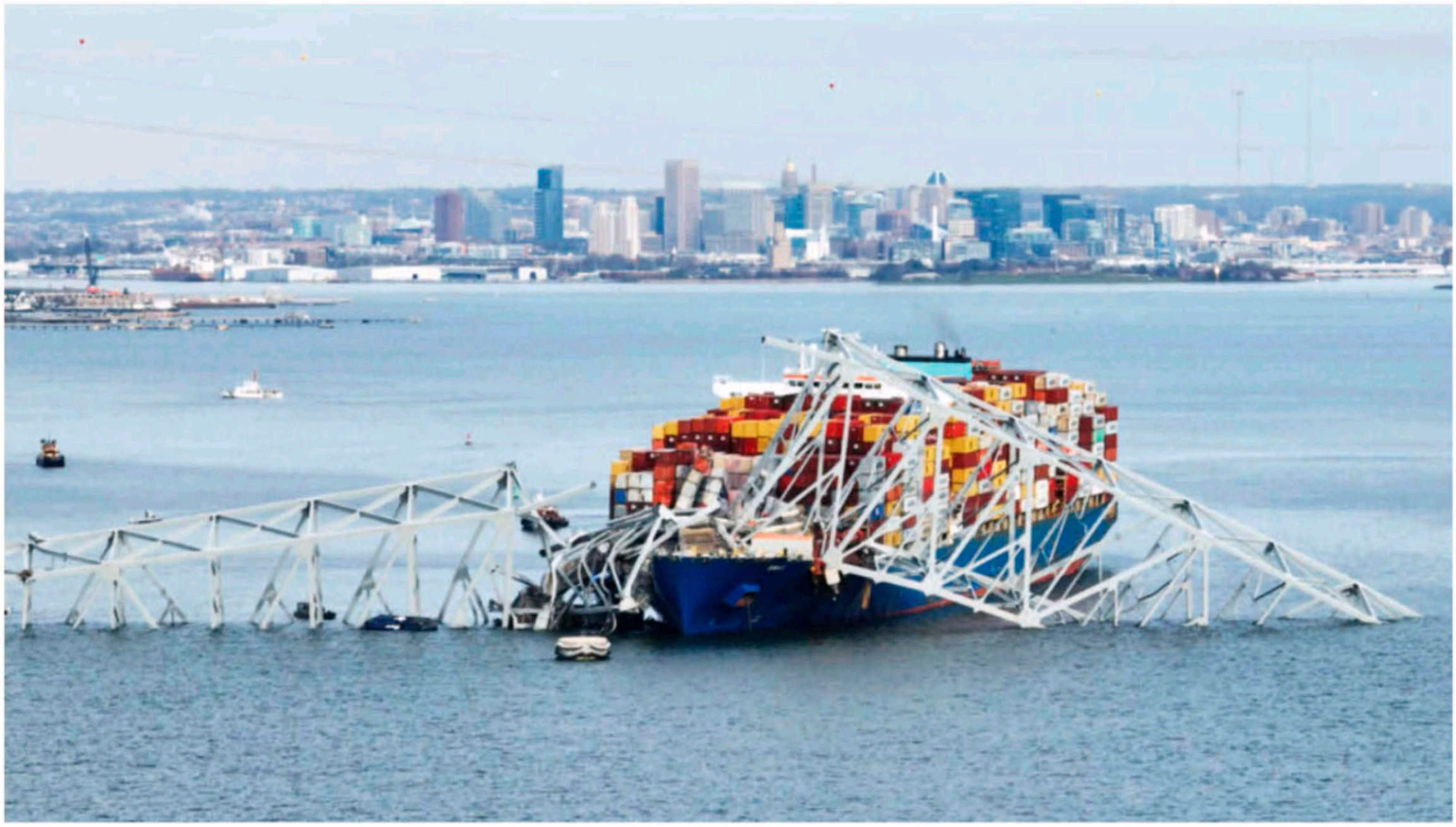
United States



The Baltimore bridge disaster

O say can you see

BALTIMORE

The collapse of the Francis Scott Key Bridge will hurt the city, but highlight its resilience, too

THE VIDEO footage of the collapse of Baltimore's Francis Scott Key Bridge was shocking. At around 1.30am on March 26th, when a container ship rammed into one of its support columns, the central section of the 1.6-mile (2.6km) structure collapsed into the Patapsco river below, sending people and vehicles into the water. Workers repairing potholes were on the bridge at the time. "Never would you think that you would see...the Key Bridge tumble down like that," Baltimore's mayor, Brandon Scott, told reporters. "It looked like something out of an action movie."

Maryland's governor declared a state of emergency. Six people are thought to have drowned. Beyond the human toll, the immediate questions concerned the causes and consequences of the disaster—one of the most significant in America for decades, according to Jerry Hajjar, president of the Structural Engineering Institute of the American Society of Civil Engineers (ASCE). The FBI has said that terrorism was unlikely to have been behind it.

The 300-metre-long ship, the *Dali*, was heading from Baltimore to Colombo, in Sri Lanka, when it "lost propulsion", according to an unclassified Cybersecurity and Infrastructure Security Agency report. The crew reportedly notified officials that a bridge collision was likely. Eyewitnesses say the ship's lights flickered just before impact. Locals heard a loud thunder-like rumble in the middle of the night. "The house started shaking," says Cyrus Gilbert, a resident of Locust Point, directly across the harbour.

Investigators will want to know why the *Dali* lost control. Nada Sanders of Northeastern University, an expert on the global supply chain, says that the ship had an inspection issue last June. According to Equasis, a shipping database, Chilean authorities gave it a "deficiency" for propulsion and auxiliary machinery (though no deficiencies were recorded in a follow-up inspection in New York).

The bridge could have been structurally sound. A report by the ASCE gave Maryland a B for its bridges and a B- for ports in 2020. "Bridges are not designed to withstand lateral loads from ships on their columns," said Masoud Hayatdavoodi, of the University of Dundee's School of Science and Engineering. "There is no question that the bridge would collapse due to the impact on the columns."

President Joe Biden promises to foot the bill to get the bridge rebuilt as soon as possible. But the impact on the city is already being felt. The port is closed until further notice, causing ripples beyond the harbour. The port supports over 15,000 direct jobs, and roughly 140,000 jobs are linked to it in some way. Daraius Irani, of the Regional Economic Studies Institute at Maryland's Towson University, says the port closure alone will probably cost roughly $50m a day in lost activity.

The harbour is an important link in America's supply chain. More than 50 ocean carriers make nearly 1,800 annual visits. It is especially important in the automotive world. Its private and public termi- ▸▸

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nals handled nearly 850,000 cars and light trucks in 2023, the most of any American port. It also ranked first in the country in handling farm and construction machinery, as well as imported sugar and gypsum, and ranks second for coal exports.

If another port experienced a hiccup (because of labour disputes, say, or cyberattacks), the toll on the American economy could be severe. For now, though, the national impact is likely to be limited. Other ports, such as New York-New Jersey and Virginia, should be able to pick up the slack. Mark Zandi, chief economist at Moody's, a ratings agency, says the national economy will be OK, but Baltimore will suffer. Commuters and lorry drivers will face disruption. Last year the bridge served 34,000 commercial and passenger vehicles a day, about 15% of traffic in the area.

The harbour has long been a symbol of resilience. In the war of 1812 against the British, the Americans successfully defended Fort McHenry in Baltimore Harbour, an event immortalised by Francis Scott Key in his 19th-century poem that became the national anthem. The tragedy will give the city and port time to implement upgrades that would be harder when the port is active. Baltimore may emerge with a better bridge and harbour. ■

The 2024 congressional elections

Double flip-flopping

WASHINGTON, DC

Control of both the House and the Senate could change after November

AMERICANS WILL elect 471 federal officials in November: 435 members of the House of Representatives, 34 senators, a vice-president and a president. These contests are overshadowed by the impending rematch between President Joe Biden and Donald Trump, his predecessor, which will be pitched as a struggle between democracy and autocracy (and amplified by a projected $3bn in campaign spending). Seven months of this promises to be wearing.

Cast your eye down the ballot, however, and something exotic is in the offing. At the moment, Washington is divided by the thinnest of margins. Democrats control the Senate by just two seats out of 100. Republicans control the House of Representatives by five out of 435 (a margin that will shrink to four once Mike Gallagher of Wisconsin retires next month).

After the election, control of both chambers could flip. In the Senate, the seats contested this year are in extremely favourable states for Republicans. In the House, by contrast, Democrats campaigning against the chaos of Republican leadership may wrest back control. A double flip would be quite a feat of political gymnastics: it has never happened before.

Senate terms last six years, and only one-third are contested every two years. The mix this year is unkind to Democrats. Joe Manchin, the West Virginia senator who managed to remain the Democratic representative of his Trump-loving state, is retiring. His seat will almost certainly be filled by a Republican, leaving the starting-point for the race at, in essence, 50-50.

Of the seven competitive Senate races this cycle, all are now held by Democrats. Five are in presidential battleground states (Arizona, Michigan, Nevada, Pennsylvania and Wisconsin). They are winnable by Democrats, but none comfortably (see chart on next page). In Montana and Ohio Mr Biden is likely to lose, but the incumbent Democratic senators, Jon Tester and Sherrod Brown, must prevail if the party is to retain control of the chamber. They are the last remaining Democrats holding statewide office in their respective states. Adding to the Democrats' headaches, Larry Hogan, a popular Republican ex-governor of ordinarily deep-Democratic Maryland, plans to run for its Senate seat.

Republican incumbents, meanwhile, look comfortable. The two that Democrats have the slightest chance of upsetting are Ted Cruz of Texas and Rick Scott of Florida—neither of whom represents states that Mr Biden will be seriously contesting. Overall, then, the maths look troubling for Democrats. They will need to play perfect defence to get to a 50-50 Senate (and hope that Kamala Harris remains vice-president to break ties in their favour).

True, the Democrats managed this feat in the midterms of 2022 (actually gaining one seat, in Pennsylvania). They expect to retain their fundraising advantages. And the candidate-quality issues that hurt Republicans in previous elections may recur. In Arizona, for example, Kari Lake, an election-denying demagogue who in 2022 lost her bid for governor against a weak Democratic challenger, will probably be the party's Senate candidate. In Pennsylvania Dave McCormick, the presumptive Republican nominee who lost an expensive Senate primary in 2022 to a celebrity doctor, Mehmet Oz, is dogged by allegations of carpet-bagging over his private-jet travel to his mansion in Connecticut.

The House elections are not so tilted against the Republicans as the Senate elections are against the Democrats. But Democrats have a more credible case for taking the chamber than the Republicans do for keeping it, for a number of reasons.

First, Republican stewardship of the House has been chaotic, even by the low standards of Congress. Last year, for the first time in American history, Republican hardliners deposed their speaker. Last week one of their ranks, Marjorie Taylor Greene, introduced a motion to depose the current speaker. More ordinary forces also militate against Republicans. Democrats are expected to outspend them. And there are over a dozen Republicans in districts that voted for Mr Biden; there are only five Democrats in Trump-friendly districts.

The possible flip-flopping of the chambers may seem odd when American politics are so nationalised and polarised. Split-ticket voting—in which people vote for presidential candidates of one party and congressional candidates of another—has gone from common to exceptional. In roughly one-third of the Senate races held in the presidential-election years of 1992, 1996 and 2000, voters opted for a presidential candidate of one party and a senator of the other. In 2016 there were no such cases. And in the 33 elections held in 2020 the sole exception was in Maine.

Split congressional districts have also declined precipitously. Before 2000 well over 100 districts typically had representatives belonging to a different party from ▸▸

the voters' presidential preference. By 2020 this had declined to a record low of 16.

But as American politics have calcified into two mutually loathing teams of nearly equal size, legislative majorities that were once enduring have become narrow and unstable. Between 1932 and 1994, Democrats controlled the House for all but four years. Since then the chamber has flipped party control five times. Minor fluctuations—small shifts in turnout, the entry of a third-party candidate—can be decisive.

A double flip would matter for more than just novelty. Republican control of the Senate would mean that Mr Trump, if he regains the White House, would have a far easier time confirming his most outlandish potential nominees. Mr Biden, if re-elected, could find that his nominees to fill judicial vacancies were refused.

Republican senators are, for the moment, more internationalist than their House colleagues, so aid for Ukraine could pass through a differently divided government. But on the whole, divided government tends to be inimical to serious legislating—as experienced in the tug-of-war between President Barack Obama and the Republican-controlled Senate after 2015.

The competition for Capitol Hill has not yet attracted a great deal of public interest. Perhaps it should. For all the attention that Americans pay to the question of their next president, they devote surprisingly little to whether or not he will be able to do much from his perch. ■

In the balance

United States Senate, win likelihood of seats up for election in 2024, at March 25th 2024

*Independents that caucus with Democrats are counted as such
†Likely Democratic, but Larry Hogan ahead in recent polls
Source: *Cook Political Report*

The Second Amendment and foreigners

Grin and bear it

CHICAGO

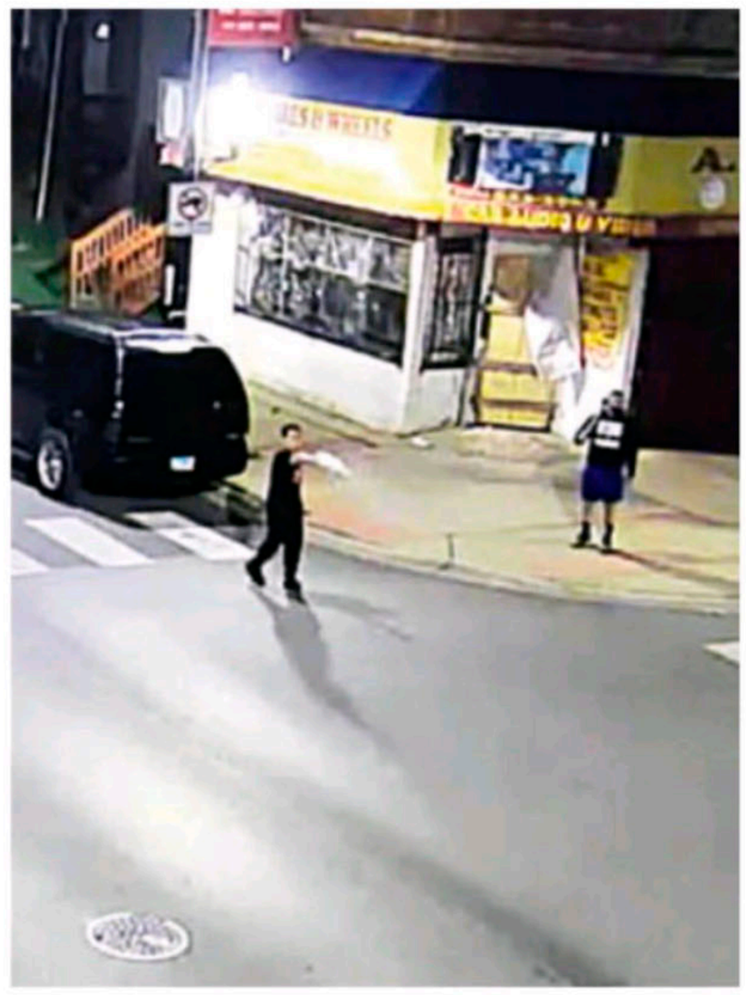
Do undocumented immigrants have the right to own guns?

THE NIGHT of June 1st 2020 was a chaotic one in Chicago. A week earlier, George Floyd had been murdered by a Minneapolis police officer, and protests against police brutality had spread all over the world. A day before, the then mayor, Lori Lightfoot, had requested help from the National Guard for the first time since the riots of 1968. Such was the situation when Heriberto Carbajal-Flores, a then-28-year-old carpenter, borrowed a gun and joined a group of men defending a tyre shop in Little Village, a Mexican neighbourhood, from would-be looters. At around 11pm, in full view of a camera, Mr Carbajal-Flores shot seven times in the direction of a white car that was speeding past. Forty minutes later, he was arrested.

So far, just another story of madness on that hot summer night. But Mr Carbajal-Flores's rather reckless defence of property may yet change America. In early March the last of the charges originally filed against him was dismissed by a federal judge in Chicago. Mr Carbajal-Flores, a Mexican citizen who arrived illegally in America as a child, was accused of breaking the federal law which bans undocumented immigrants (as well as foreigners on temporary visas) from owning guns. The judge, Sharon Johnson Coleman, ruled that, as applied to him, the law was unconstitutional. Citing cases of former British loyalists in the revolutionary war who were allowed guns, she argued that Mr Carbajal-Flores was entitled to an "individualised assessment" about whether he had a right to own a gun; and in his case, he did.

In effect, Ms Coleman ruled that some undocumented immigrants are allowed to have guns. Though it will almost certainly be appealed, the ruling has already set off a storm among Republicans. Marco Rubio, a Republican senator from Florida, wondered if the ruling was "being done to sort of mock both gun laws and also the whole...understanding of the value of being a citizen of the United States". It shows how one conservative priority, the right to gun ownership with few restrictions, may be about to crash into another: a strong dislike of undocumented migrants.

A generation ago the idea that a Mexican illegally in America could have a constitutional right to carry a gun would have been considered absurd. Yet the question has arisen thanks to conservative rulings at the Supreme Court that have widened the



A shot heard around the country

scope of the Second Amendment, which gives Americans the right to bear arms.

First, in 2008 there was *District of Columbia v Heller*, which ruled that a ban on handguns in the nation's capital was unconstitutional. Then, in 2022, came *New York State Rifle & Pistol Association Inc. v Bruen*, which ruled that requiring individuals to show "proper cause" to get a concealed-carry permit was also unconstitutional, along with any gun-control law lacking an analogue in 1791. Now the Second Amendment is, in the words of Justice Clarence Thomas, no longer "a second-class right" to be given at the discretion of officials. Rather, it is comparable to, say, the First Amendment, which protects freedom of speech and religion.

Yet the constitution says that the right to bear arms is held by "the people", and not merely by citizens. Mr Carbajal-Flores's lawyers argue that their client is a member of "the people" by virtue of his ties to the United States. Though he entered America illegally, he is eligible for protection from deportation under DACA, an executive order signed into effect by Barack Obama. The weekend after he was arrested he got married to his longtime girlfriend, who is an American citizen. His children are citizens. They also argue that his specific use of a weapon, to deter looters, was exactly the sort of behaviour that many conservatives admire. Mr Carbajal-Flores says he was instructed by the police to go armed, and the shots he fired were warning shots. "Our client is a legitimate hero," says Ross Cassingham, one of Mr Carbajal-Flores's lawyers. "He's the proverbial good guy with a gun."

At appeal the government's lawyers are likely to say otherwise. In their response to the defence's first motion to dismiss, they noted that Mr Carbajal-Flores armed him- ▸▸

self before he even spoke to the police and suggested his gunfire was not obviously intended only to warn, so he was not acting in legitimate self-defence. They also argued that the law banning undocumented migrants from owning guns is constitutional, on the basis that the *Heller* decision still allowed the government to restrict classes of people from owning firearms. And they contended that restrictions on non-citizens are legitimate, on the basis that people who have already broken the law in moving to the country cannot be trusted with firearms. That argument was initially accepted.

But that came before *Bruen*, which in effect established a test that gun laws must be in line with the laws of the early republic. Hence Judge Coleman's consideration of how British loyalists were treated after the revolutionary war. In the late 18th century, notes Adam Winkler, of the University of California, Los Angeles, School of Law, the concept of illegal immigration hardly existed, and so "the people" included everybody inside the United States. "It is clear that undocumented immigrants have a right to free speech and free religion," says Mr Winkler. "So for purposes of consistency, one would imagine they would have Second Amendment rights."

What happens next? Another case in the Supreme Court will soon decide whether domestic abusers under restraining orders can be restricted from owning guns; that may give some hints as to how the Carbajal-Flores case could be resolved. A final decision could have big implications. At the moment, for example, the state of Illinois requires anyone who wants a gun to apply for a licence, and bans foreigners without green cards from applying. If upheld, this ruling could force the state to consider almost anyone. Hence the outrage of people like Mr Rubio.

Yet as Mr Winkler notes, there is an irony to the backlash. Conservatives usually argue that gun-control laws do not stop criminals from buying guns anyway. But then conservatives have not always been so keen on widespread gun rights—at least when people they dislike start exercising them. In 1967 California banned the carrying of loaded guns, in an attempt to disarm the rifle-carrying Black Panther Party. The governor who signed the law was none other than Ronald Reagan. Views on guns can change, even among Republicans. ■

Should I own a gun?

One of our Washington correspondents heads to Spanish Fork, Utah, to explore whether teachers should bring guns into their classrooms. Listen to our Weekend Intelligence podcast to learn why her conclusion surprises her: **economist.com/gunpod**

Gun safety

Glock, stock and barrel

WASHINGTON, DC

Chicago is suing Glock to stop handguns being turned into machineguns

"THAT PUNK pulled a Glock," says Bruce Willis's character in the action-packed 1990s Christmas classic "Die Hard 2". "You know what that is?" You may well do. That gun on the hip of a police officer? It's probably a pistol made by Glock, an Austrian manufacturer. That weapon in John Wick's hands during a heart-thumping scene? One of them is definitely a Glock. From law enforcement to Hollywood lawbreakers, Glocks are everywhere in pop culture. They are also the gun of choice for real-life criminals. Which makes the fact that they can so easily be turned into machineguns that much more worrying.

On March 19th the city of Chicago filed a lawsuit against Glock. Using cheap add-ons, criminals are transforming Glock pistols into machineguns. The illegal device is called an auto sear, but it is also known as a "Glock switch", though Glock does not make them. They are the size of a large coin, and they can be bought for less than a hardback book, or made at home by anyone with a 3D printer for much less.

The lawsuit, filed together with Everytown Law, a group of litigators specialising in gun reform, claims that Glock knows about the problem but has failed to prevent it anyway. "No other pistol design is so easily converted to a machinegun," says Eric Tirschwell, the executive director of Everytown Law. "So why haven't they fixed theirs?"

Chicago is notorious for its street violence, and the pandemic only made things worse. Though shootings fell by 13% in 2023 compared with 2022, the city is still facing a wave of gun violence. Last year more than 600 people were murdered, though not all by guns, and there were over 2,400 non-fatal shootings. The city of Chicago claims that Glock is making a bad situation worse. The lawsuit states that between 2021 and 2023, 1,100 modified Glocks were recovered by Chicago's police.

The National Rifle Association, America's gun lobby, disagrees with blaming Glock. "Chicago's focus ought to be on the criminals," says Andrew Arulanandam, the group's interim CEO. "Without criminals, there is less crime."

The Windy City is not alone in facing a barrage of bullets. The District of Columbia and others have also reported problems with these illegal add-ons. Chicago is the first city to sue over the devices. The lawsuit is made possible by the Illinois Firearms Industry Responsibility Act, a state law passed last year that allows gun manufacturers to be sued for public harm, but it also rests on a federal law prohibiting machineguns. This suit may be the first of its kind, but it probably won't be the last.

Harnessing AI for sustainability progress and business growth

Shelly Blackburn is vice-president of the Cross Solutions Area at Microsoft, where she helps organisations apply data and AI solutions to advance sustainability progress.

How are leaders prioritising sustainability and what are the challenges?

A United Nations Global Compact and Accenture study found that sustainability is a top issue for 98% of chief executives. Tackling sustainability across an organisation is complex, but we often see a few common challenges.

First, the sheer volume and complexity of sustainability data is overwhelming. Organisations need help managing sources and readying data for regulators.

Second, while leaders are feeling increased pressure to make progress on their sustainability goals, they are uncertain about what steps to take.

And third, we're seeing organisations look for ways to leverage their sustainability progress for strategic business evolution.

How are leaders navigating uncertainty and making sustainability progress?

The essential first step is to bring together all of your environmental, social and governance (ESG) data so you can use it effectively—both for reporting and driving change. We help customers set up a single source of truth for ESG data in Microsoft Fabric, an AI-powered analytics platform.

Next, organisations can use advanced analytics and AI-powered solutions to drive sustainability initiatives. With Copilot in Microsoft Sustainability Manager, users can ask questions to help build calculation models, create custom reports and get answers quickly.

I encourage leaders to use this moment to think deeply about the transformation ahead and what's possible at the intersection of sustainability and AI.

How can data and AI help leaders build resilient, responsible businesses?

AI can predict, measure and optimise systems that are too complex for traditional computational methods. For example, AI sensors can help reduce the 25-30% of water lost every year from sprawling and outdated urban water systems.

Data and AI can accelerate solutions such as low-carbon materials, renewable-energy production and climate-resilient crops. Organisations are using AI to speed up the development of solar power materials that are more efficient and less costly to manufacture.

AI can also empower the workforce with faster access to data to make better-informed decisions. With Microsoft Sustainability Manager, teams gain faster insight into trends and anomalies in their data.

> "I encourage leaders to think deeply about the transformation ahead and what's possible at the intersection of sustainability and AI."

To deliver this innovation, our data-centre investments focus on reducing carbon emissions, water usage and waste, as well as protecting ecosystems. We're continuously working to build energy-efficient and water-efficient systems within our data centres and to establish additional efficiencies through code.

What are you most excited about in the year ahead?

I'm inspired by so many of the organisations we work with, from manufacturing companies reducing the carbon footprint of their products to retail companies innovating with suppliers to improve transparency in sourcing.

Our customers are making remarkable strides in using their sustainability data to drive progress and empower their teams. I'm excited to watch these efforts accelerate in the year ahead and see how the convergence of AI and sustainability will continue to drive business transformation.

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Microsoft

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Georgia

Biden's blacklash

ATLANTA

Georgia's black Republicans have a battle plan for 2024

ON THE LAST Sunday of Black History Month there was real energy in Atlanta's Ebenezer Baptist Church. Between gospel songs that made even your agnostic correspondent feel something spiritual, a trio of children reminded the congregation of the church's political prominence. Martin Luther King junior was baptised there and preached there until he died. Over the years church members became lawmakers, and today a little girl told parishioners, with a grin, that Georgia's first black senator is their pastor. Sitting behind her Raphael Warnock, one of two Peach State Democrats who helped flip control of the Senate in early 2021, reached out for a fist-bump as cheers erupted in the pews.

The night before a very different set of black Georgians had come together. In a converted downtown warehouse the Georgia Black Republican Council held its first-ever masquerade ball. Ranchers and representatives took to the stage to give Trumpian speeches. Women dressed in red sequinned gowns and fur stoles nibbled at fried chicken while chatting about their plans to get friends to break with tradition and vote Republican in November.

At roughly 30%, Georgia has the highest share of black voters of any battleground state. Over the past two decades an influx of black people into metro-Atlanta made Georgia the only Deep South state that Democrats can compete in. In 2020 Joe Biden became the first Democratic presidential candidate to win there since 1992. But with a Biden-Trump rematch looming, Democrats fear they are losing ground with their most loyal voting bloc.

In the decade to 2023 the share of black men who identified as Democrats fell from 80% to 62% nationwide. For women it dropped from 84% to 74%. Black youngsters are particularly unenthused about Mr Biden. Republicans in Georgia see an opportunity. The governor's race in 2022 was the first time that both candidates actively chased black voters. Stacey Abrams spent $100m courting them while Brian Kemp, who ultimately beat her, deployed black surrogates, campaigned at black-owned businesses and stressed his record of appointing black judges. In December a group of Democratic strategists published a report warning that even the slightest drop in black turnout this year could hand Donald Trump a victory in the state.

Georgia's black Republicans think three issues can sway their brethren: education, crime and immigration. Mesha Mainor, a state representative who left the Democratic Party in July to become a Republican, says that black pupils suffer disproportionately from failing public schools. Last year Atlanta's white high-school graduation rate was 12 percentage points above the black one. On March 20th the state Senate passed a bill to give families $6,500 vouchers for private-school tuition. She thinks Republicans' crusade for school choice should help them pick up voters of all political stripes.

Angry about the border

On crime black communities tend not to favour liberal policies—and Georgia Republicans plan to capitalise on that. For the past year Atlanta has been divided over a plan to build a $90m police-training facility dubbed "cop city" by protesters. Notably, a black councilwoman proposed it, the city's black mayor has endorsed it and an Emory University survey from last year found that a minority of black residents opposed it. Jalen Johnson, a deputy sheriff and city commissioner in Albany, Georgia, says he can't remember a single time he has delivered a death notification to a white family. Republican tough-on-crime policies, he says, resonate more when it's always "black boys getting shot". He notes that during Mr Trump's presidency there was also real progress on prison reform.

Days after a Venezuelan immigrant was arrested for killing a nursing student in Athens in late February, Kelly Loeffler, who lost her Senate seat to Mr Warnock three years ago, convened a meeting at a renowned Atlanta soul-food restaurant. Over dinner black panellists spoke about how resentful they feel about Mr Biden's policies towards people who cross the southern border illegally. Black Georgians have watched loved ones go to jail for dealing marijuana, one said, while migrants who break the law by sneaking into America walk free and are even rewarded with government and non-profit aid. They hope to drum up that same anger in black Democrats in this cycle.

The swing state's black electorate still leans overwhelmingly left. But the young black Georgians who have converted to the conservative cause are bent on evangelising. A band of college women at the masquerade ball said they will no longer tolerate candidates taking their votes for granted. For some it was Ms Abrams, a prominent black Democrat who ran for Georgia's governor twice, who taught them that they, too, have a voice in politics. When they thought about it, they realised they were being played by their party.

"A lot of times it started with a brother," says Michaelah Montgomery, a 25-year-old who grew up during Barack Obama's presidency and now runs the Atlanta chapter of an organisation called BLEXIT. "We all trusted him because he looked like us and spoke at our church." But that is no longer enough. If there is one thing that she and the Democratic strategists worried about losing Georgia can agree on, it is that Mr Biden will have to spend bigger and work harder to get the black vote this year. The days of the token fish fry are over. ■

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LEXINGTON

Sex, lies and presidents

Echoes from past scandals should make all involved in the case of Stormy Daniels check their righteousness

ALMOST 30 YEARS ago, in May 1994, a former Arkansas state clerk, Paula Jones, filed a sexual-harassment suit against President Bill Clinton. She said that in 1991, as governor of Arkansas, he lured her to a hotel room in Little Rock, pushed down his trousers and urged her to perform a sex act, but she rebuffed him.

Mr Clinton denied the story, and his lawyers said he was immune to civil litigation while in office. A federal judge eventually threw out Ms Jones's claim, but not before the Supreme Court rejected Mr Clinton's argument about immunity, finding—hilariously—that the suit would be a minimal distraction. In fact, information was secretly passing between the investigation by Ken Starr, the independent counsel in the ever-branching inquiry known as Whitewater, and Ms Jones's lawyers.

Those lawyers asked during Mr Clinton's deposition in the Jones case whether he had been involved with a White House intern, Monica Lewinsky, and his denial led to the charges of perjury and obstruction for which the Republican House of Representatives impeached him. The Senate acquitted him in 1999 in a bipartisan vote. For anyone, like Lexington, who slogged through the sexual, political and legal muck of those years, then looked up on the bright clear morning of September 11th 2001 to wonder if they had always had their priorities just right, it is hard not to watch a new documentary about Stephanie Clifford, "Stormy", without some sense of déjà vu.

Ms Clifford, who performed under the name Stormy Daniels as a stripper and porn actress, has said Donald Trump had sex with her during a celebrity golf tournament in 2006. On the eve of the presidential election in 2016 Mr Trump's lawyer, Michael Cohen, paid Ms Clifford $130,000 to sign a non-disclosure agreement. Mr Trump has denied Ms Clifford's story but acknowledged he reimbursed Mr Cohen, to stifle her "false and extortionist accusations". That reimbursement is the basis for what will be the first-ever criminal trial of an American president, if it starts as scheduled next month. The Manhattan district attorney, Alvin Bragg, has accused Mr Trump of falsifying business records in order to commit another crime he has not specified, but which appears to be violating federal election law.

Probably because this episode involves Mr Trump and has played out in the social-media era, the drama seems even tawdrier and the price paid by the woman at the centre seems even greater than in the saga of Ms Jones. Ms Clifford now owes Mr Trump more than $600,000 because she lost a defamation suit against him and is liable for his lawyer's fees. She has said her lawyer filed the suit against her wishes.

Like Ms Jones, Ms Clifford, who grew up poor in Baton Rouge, Louisiana, was assailed as trailer trash, a gold-digger and a slut. Like Ms Jones, Ms Clifford, a registered Republican, said she had no political agenda. Both were exploited by some seeming allies. Also like Ms Jones, Ms Clifford was buoyed by (and attacked for) her new celebrity. After the *Wall Street Journal* revealed her claims about Mr Trump in January 2018, she embarked on a "Making America Horny Again" strip tour and discovered older women and gay men crowding her venues. "This is going to be the best day of my life," she says in "Stormy", with touching sincerity, as she prepares to appear on "Saturday Night Live".

But the picture, never bright, steadily darkens during the documentary. Ms Clifford stays on the road not only to pay her bills but to protect her daughter from the uproar. Her marriage disintegrates. The lawyer who filed the defamation suit, Michael Avenatti, turns out to have embezzled from her (he is serving 19 years for crimes against her and other clients). Her book royalties dry up as fans realise their money might go to Mr Trump. Then Mr Bragg files his charges, and the insults on social media turn to death threats. Ms Clifford is shown, near tears, reading some aloud: "Kill yourself" and "You just signed your death warrant."

Not just for the right but for the left it can seem as if history started anew with Mr Trump. In the documentary the precedent of the Clinton era goes unexplored. It ought to make just about everyone squirm. The establishment news media was less fascinated by Ms Jones at first than it was by Ms Clifford. Back then it was Republicans who were scandalised by the president, while Democrats, including many feminists, were scandalised by the women who accused him. Then it was a conservative prosecutor who seemed determined to whipsaw a civil complaint into criminal charges; now it is a progressive prosecutor electing to test a novel legal theory against a former president, after federal prosecutors chose not to pursue a similar case. Back then the accused claimed to be the victim and turned the prosecutor's choice to his political advantage. So far that history is repeating itself.

Eye of the Stormy

Poignantly, the one person in "Stormy" heard questioning their choices is Ms Clifford. She has said she is not a victim, and that when Mr Trump surprised her by seeking sex during what she thought was an appointment for dinner, she complied. She says Mr Trump "wasn't wrong" when he was overheard saying, on the infamous "Access Hollywood" tape, that women would let him do what he wanted. "The hardest part about all of this is I feel like I'm partially responsible for every woman that could have come after me," she says, in an act of brutal self-examination one longs for others in this sad story to perform instead.

Even allowing for the documentary's sympathetic viewpoint, Ms Clifford's courage is unmistakable. She says she will not give up "because I'm telling the truth". But she offers a devastating coda for the furore that has consumed her life. "This is just pointless," she says. "I have no hope at all, any more." ■

The Americas

Venezuela's elections

A regrettable sequel

CARACAS

Nicolás Maduro's regime is reusing its script from his last sham election

FOR THOSE few who did not know, it was a convincing show. On March 25th President Nicolás Maduro appeared jubilant at the headquarters of the national electoral council in Caracas to present himself as a candidate for Venezuela's presidential elections, which are scheduled for July 28th.

Outside, a large, purportedly spontaneous crowd of supporters gathered—the convoy of buses that brought them into the city was hidden from the state-run television broadcast. Inside, *el candidato*, in a white tracksuit top bearing the colours of the Venezuelan flag, greeted beaming election officials before delivering a fiery speech, portraying his opposition as a group of nepotistic oligarchs. His wife and son, both influential politicians, sat in the front row. "The people have the power!" declared the president.

They do not. If they did Mr Maduro would be out of office. The unpopular autocrat has overseen a disastrous recession that has led to the emigration of around a quarter of the population over the past decade. His rule continues only because he has trampled over Venezuela's democracy. His previous re-election, in 2018, was a sham, central to which was barring many opposition leaders from running. This year's contest will be a repeat.

In a fair fight, the president would be facing María Corina Machado. A conservative and a long-standing critic of the government, she won an overwhelming 93% of the votes in opposition primaries in October. One poll last year showed 70% support for her, to Mr Maduro's 8.3%. But Ms Machado has been banned from political office for 15 years by the Supreme Court, which is controlled by the regime. To overcome that obstacle, on March 22nd the former congresswoman and the coalition of parties backing her put forward an alternative candidate to stand in her place.

Their nominee was Corina Yoris, 80, a distinguished professor of philosophy. A grandmother of seven, with three emigrant children, her story could resonate with almost everyone in the country. And there was another reason why she seemed an inspired choice: surely even the Maduro regime, with its reputation for cruelty, would hesitate to jail an affable grandmother?

Instead, it blocked Mrs Yoris by preventing the political parties that backed her from registering her candidacy on the electoral council's computer before midnight on March 25th—the same day that Mr Maduro celebrated his effortless inscription. The following day the electoral authority confirmed the registration of 12 other candidates. Most can be categorised either as loyal to the regime or entirely non-threatening faux opposition.

The only person with the faintest chance of mounting a challenge and who—perhaps suspiciously—did manage to register minutes before the deadline ex- ▸▸

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pired, is the governor of the state of Zulia, Manuel Rosales. He had previously stood for the presidency in 2006 and lost to the late Hugo Chávez. This time he did not even take part in the opposition primaries. His party describes him as a "man of dialogue". Plenty in the opposition fear he might be a stooge, sneaked in to lend a veneer of legitimacy to a rigged election which Mr Maduro will clearly win. "He dropped his trousers ages ago," says one Zulia resident. Mrs Yoris calls him a "Judas". Ms Machado is declining to back him. "The regime has chosen its candidates," was her response.

The real opposition does seem to have managed to register one candidate, despite Mrs Yoris being blocked. Edmundo González, a former ambassador, is reportedly a placeholder candidate, who can be substituted for someone else up until April 20th.

Amid this chaos, some weary Venezuelans are resorting to sardonic humour. After the initial list of candidates, all male, was released, an image appeared on social media in which they all sported identical, Maduro-like moustaches. But for those in the vanguard of the resistance against a regime that is in the process of consolidating its dictatorial power, the events of recent months are no joke.

On March 20th the attorney-general issued arrest warrants for Ms Machado's campaign manager and eight other members of her team. One, a political adviser named Dignora Hernández, was filmed screaming "Help! Please, no!" as she was forced into the back of a car by state-security police in Caracas. She has not been heard from since. Many staffers who have not yet been arrested are understood to be seeking refuge in the Argentine embassy. On March 26th the regime cut power to the ambassador's residence, prompting Argentina to lodge an official complaint.

Mr Maduro's pretended belief in democracy is becoming more preposterous by the day. He hailed the election victory of Vladimir Putin, Russia's president, as "a flawless electoral process" that "demonstrated democracy in an exemplary manner". Mr Maduro's authoritarianism has even drawn rebukes from the usually sympathetic left-wing governments of Brazil and Colombia. On March 26th Colombia's foreign ministry expressed concern about "difficulties faced by majority opposition sectors" when registering candidates. Brazil said it was following the electoral process with concern. The regime swiftly accused both governments of "gross interference" in Venezuelan affairs.

The enduring problem is that, for Mr Maduro, the price of losing power is too high for him to risk an even remotely fair election. One of his key preoccupations is the International Criminal Court, which is looking into human-rights abuses in Venezuela. But abandoning democracy is not without its costs either.

Last October Mr Maduro's representatives and the main opposition alliance signed an agreement designed to pave the way for competitive elections this year. The deal covered issues such as media access and guaranteeing that any prospective presidential candidates can stand for office if legally entitled to do so. The day after that deal was agreed, and alongside the release of some prisoners held in Venezuela, the United States government agreed to a temporary lifting of its sanctions on much of the Venezuelan oil, mining and financial sectors for six months. The date for renewal of the lift, or reimposition of the sanctions, is April 18th.

Without sanctions, Venezuela's oil profits surged: on course for $20bn this year, up from $12bn in 2023, according to Ecoanalítica, a Caracas-based consultancy. All that is now at risk. On March 22nd the White House's national-security communications adviser, John Kirby, said the arrests of those on Ms Machado's campaign team "give us pause to think about how serious" the regime is about its commitments. Mr Kirby added that his government was "still willing to consider sanctions relief" if the regime changes its tune. After the past week, that seems less likely than ever. Mr Maduro appears ready to be president until 2031, at least. ■

Security in Haiti

Hanging by a thread

MIAMI

Can Haiti's police hold on?

HAITI IS WAITING. Gangs control large parts of the capital, Port-au-Prince. The government of Kenya, which has proposed leading a UN-approved mission to secure Haiti, has said it will not send any forces until a transitional government is in place to take over from Ariel Henry, the exiled prime minister. More than two weeks after Mr Henry said he would step down, a newly formed transitional council has not been able to agree on who would lead it in order to form that government. Two of its members have already dropped out.

Although an outside force could be decisive in the struggle against the gangs, the politics of its arrangement are made fraught by Haiti's unhappy history of external intervention. In the meantime it is left to Haiti's ragtag police force to prevent gangs taking complete control of the country. That is not going well. The main port is all but closed, as is the capital's airport. Aid agencies say that no food has arrived for two weeks. Fuel is running low.

The thinning blue line

Gangs have spread into the wealthy suburb of Pétion-Ville, perched in the hills overlooking the capital. Its residents now wake up to the sound of gunfire and find dead bodies lying in the streets. One of the country's most prominent journalists, Lucien Jura, a former presidential spokesman, was kidnapped on March 18th by armed men who broke into his house (he has since been released).

Residents in many parts of the country have taken matters into their own hands, barricading streets and setting up patrols. In a number of cases they have lynched suspected gang members. "The situation is evolving in the wrong direction," says Arnaud Royer, who runs the UN's human-rights office in Haiti. "It's nearly over for the police. They are on the edge."

Most of the international efforts to date have focused on the evacuation of foreign citizens and non-essential diplomatic personnel. But many Haitians are calling on the United States to do more. "Instead of addressing the situation, we are seeing embassies evacuate people," says Reginald Delva, a Haitian security consultant and former interior minister.

"There are things that could be done tomorrow to strengthen the police," says Jake Johnston of the Centre for Economic and Policy Research, a think-tank based in Washington. "But instead we're talking about this Kenya-led multi-national security mission."

All is not lost. The US State Department says it has provided support, equipment, ammunition and training to the Haitian National Police's SWAT units, in which it has embedded a number of advisers. "The specialised units are very effective," says an official. "They're well trained, they have better esprit de corps and they are ▸▸

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AI Has Potential to Create Paradigm Shift in Healthcare

Artificial Intelligence (AI) has the potential to upend every industry, and the $9 trillion global healthcare sector[1] is no exception. From automating drug discovery and speeding up clinical decision making to reducing administration and improving record keeping, AI applications hold the promise to improve standards of care while reducing waste.

ADMINISTRATION & ENGAGEMENT – Almost a quarter of all US healthcare spending is estimated to go towards administration.[2] Comprising tasks including prior authorization, patient intake, and billing and coding, among others, such workflows are ripe for improvement. Widespread AI adoption in everything from appointment scheduling to post-encounter engagement could save the US healthcare industry 5-10% a year, or as much as $360 billion in 2019 dollars, according to the National Bureau of Economic Research.[3]

CLINICAL CARE – There is also an opportunity to use AI to improve clinical decision making – both in diagnostics and clinical response times. Reducing the administrative burden on clinicians could help alleviate shortages of physicians, pharmacists, nurses and workers in support roles. Today, AI can improve workflows such as clinical documentation, for example by using AI to transcribe a patient encounter into an electronic health record.

RISK & REGULATORY – Guardrails and regulation are critical when considering the transmission of patient health information and the requirements of laws such as the US Health Insurance Portability and Accountability Act of 1996. Some health systems are trialing secure data repositories when testing AI use cases,[4] though work remains to be done. As AI gets closer to clinical decision making, it is critical to ensure that information is accurate.

As an example of the emphasis being placed on data privacy and security, a bill was introduced in the US Congress on June 20, 2023, to create a national commission that will "review the nation's current approach to AI regulation."[5] Also, President Joe Biden issued an Executive Order on Oct. 30, 2023, that "establishes new standards for AI safety and security."[6]

PHARMACEUTICALS – On average, the US drug approval process costs more than $2 billion,[7] takes over 10 years,[8] and more than 90% of applications fail.[9] There is therefore a clear opportunity to utilize AI and machine learning to aid in drug discovery, clinical and non-clinical research, post-market surveillance and advanced pharmaceutical manufacturing.

We believe AI has the potential to improve quality of care and drug discovery while reducing costs. The impact of AI in healthcare, and the investible opportunities it creates, are likely a once-in-a-lifetime paradigm shift.

– **Jeff Diehl,** Managing Partner & Head of Investments, Adams Street Partners

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able to take on the gangs."

Those specialised police units have killed at least five gang members in gun battles over the past week, including Ernst Julme, a prominent gang leader known as "Ti Greg", an associate of the warlord Jimmy "Barbeque" Cherizier.

Even with these pockets of training and resources, Haiti's police remain woefully outmatched by the gangs overall. The UN estimates that only 600-700 officers are working in Port-au-Prince. Nationwide police numbers have dwindled to around 9,000, which amounts to one officer for every 1,250 inhabitants. That is about a third the level recommended by the UN.

It does not help that the Haitian police are widely distrusted, thanks to their corruption and the fact that gang members sometimes wear their uniforms. They communicate little with the public. After the house of the police chief, Frantz Elbé, was attacked and burned on March 14th, he issued a brief statement, claiming several successful operations against the gangs and declaring the police "the last rampart against anarchy".

Mr Elbé's statement is true. But his personal circumstances demonstrate what a weak rampart Haiti's police make. "Clearly if the house of a police chief can't be protected, there is nobody who can be protected any more," says Mr Royer. "There is nobody who is safe now in this city." ■

Cocaine in the Caribbean

Keeping it in the family

European territories in the Caribbean have become drug-smuggling hotspots

BACK WHEN the United States was the world's hottest market for cocaine, the drug was flown into places like Puerto Rico and the Bahamas, then taken to Florida by boat. Today the fiercest demand for cocaine comes from Europe, where its wholesale price is some 40% higher than in the United States. To meet this demand, smugglers have woven a different set of Caribbean islands into their supply chains: Europe's overseas territories.

The French departments of Martinique, Guadeloupe and French Guiana are particularly useful because they are part of the European Union, thus easing access to Europe. Getting into them, particularly French Guiana, is easy too. Smugglers passing through Suriname, a former Dutch colony, can bypass corrupt police at the Maroni river on the border with French Guiana, according to InSight Crime, an investigative outfit in Washington.

Finding mules to take cocaine on to Europe is not hard either. French Guiana is poor compared with metropolitan France. Bagging €7,000 ($7,600) for a 17-hour round trip is tempting, even though the odds of detection are fairly high. French police denied boarding to almost 10,000 passengers suspected of being mules in the year to November 2023.

But most of Europe's cocaine comes by sea. A seizure on March 18th by authorities at the French port of Le Havre—2.7 tonnes of cocaine shipped from Guadeloupe—was typical. Over half the cocaine seized in metropolitan France in 2022 came from its Caribbean territories.

The picture is similar in other European territories. Britain's Caribbean possessions, including the British Virgin Islands (BVI), are a launchpad for coke-laden yachts heading to both sides of the Atlantic. Arrivals from Curaçao, a poor island in the Dutch Caribbean, and Suriname, whose Dutch community makes up roughly half the population, accounted for 63% of all cocaine seized from passengers at Amsterdam's Schiphol airport in 2023. The Dutch authorities will spend €61m this year patrolling their Caribbean territories.

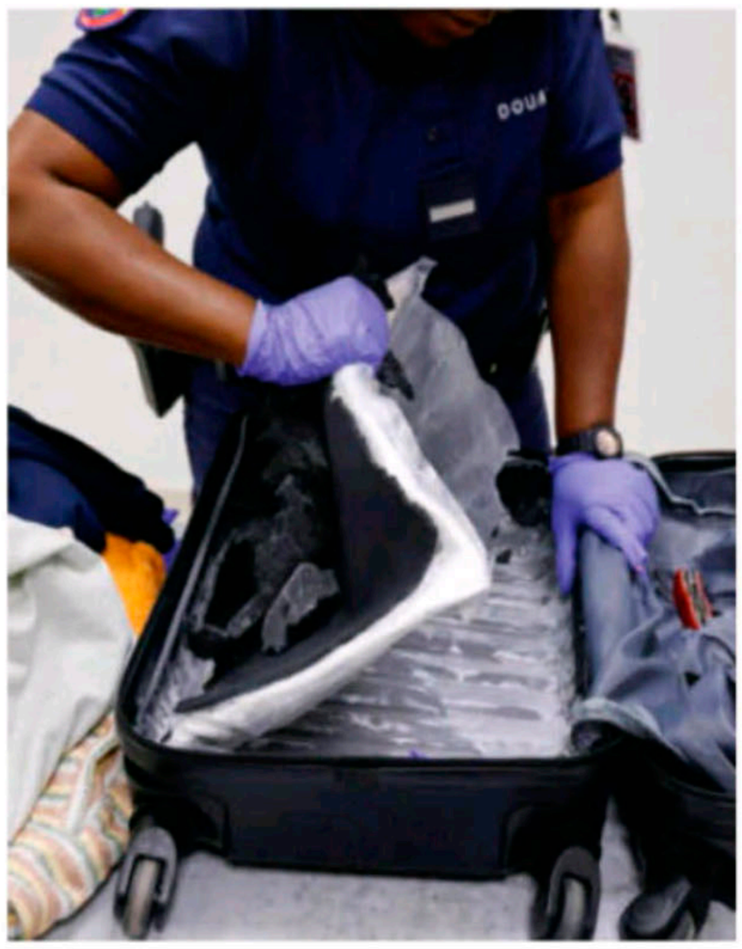
This growing trade has had dire consequences. The prison population in France's overseas territories rose by 47% between 2013 and 2023, in part because of drug arrests. The Caribbean now has one of the world's highest proportions of people in drug treatment from cocaine use. Several mules have died after ingested cocaine pellets burst in their guts. Drug-related violence troubles weak island states. Drugs feed corruption, too. In February a court in Miami found a former premier of the BVI guilty of drug trafficking.

What to do? Efforts to boost port security can go only so far without hurting commerce, says David Caunter of Interpol. Less than 2% of shipping containers worldwide are inspected. Identity checks on travellers from French Guiana have reduced the amount of cocaine reaching mainland France, but they have also raised concerns about racial profiling. In any case, traffickers tend merely to shift traffic to Martinique and Guadeloupe. That is not surprising. French Guiana's mule traffic took off only after the Dutch tightened screening procedures for passengers travelling from Suriname to Amsterdam, says Thierry Nicolas of the University of French Guiana.

The United States is by far the most powerful drug-buster in the Caribbean, but the European territories lack muscle. CARICOM-IMPACS, a regional security body, struggles to get funds. Limited co-operation from poor Caribbean states weakens international security operations. "It is extremely difficult to get help and accurate facts in investigations from other Caribbean states," Clarisse Taron, the public prosecutor at Martinique's main port, told the French Senate in December.

European countries where most of the cocaine ends up could benefit from putting more resources into the region. The EU is estimated to spend only around a third as much as the United States on supply-side reduction. During his visit to French Guiana on March 25th, his first in more than six years, Emmanuel Macron, France's president, faced renewed criticism for his government's insufficient funding of security.

At the same time European governments must tread carefully. Their directives can seem arrogant to their Caribbean residents. Local premiers expressed "alarm" in January when the unelected representative of the British government in the BVI sought extended powers in order to implement governance reforms. Yet without Europe's help the Caribbean will continue to suffer the consequences of being a conduit for the world's most voracious cocaine market. ■



Packing powder

Asia

Imran Khan in prison

What next for Pakistan?

ISLAMABAD

The new government faces polarised politics, a faltering economy and terrorist threats

A STINT IN jail is a rite of passage for civilian Pakistani leaders bold enough to challenge the country's generals. Imran Khan is doing his penance these days in Rawalpindi's Adiala jail. Judges sentenced the 71-year-old former cricketer turned populist politician to 31 years earlier this year after convictions on religious, corruption and national-security charges. Because candidates allied with his party, Pakistan Tehreek-e-Insaf (PTI), managed nonetheless to win more national-assembly seats in February's election than any rival party, Mr Khan is in "extremely high spirits", says his sister Aleema, a regular visitor. He passes his time reading and keeping fit on a stationary bike in his cell.

The image of Mr Khan pedalling furiously while stuck in place seems an apt metaphor for Pakistan's post-election politics. PTI's unexpected success at the polls demonstrated the party's resilience under pressure. Yet while it has managed to form one provincial government, in Khyber Pakhtunkhwa, PTI's leaders are otherwise marginalised. Shehbaz Sharif, the prime minister, enjoys firm backing from "the establishment", as Pakistan's armed forces are euphemistically known. He now leads a minority national administration anchored in his family's dynastic party, the Pakistan Muslim League-Nawaz (PML-N). Mr Sharif recently put the finishing touches to a cabinet of technocrats and traditional politicians. After two tumultuous years, he could be forgiven for hoping for calm.

But he is likely to find it elusive. Mr Sharif's government faces three challenges in the coming months. The first is that Mr Khan is determined to overturn the status quo, even from prison. Outraged by allegations of vote-rigging during the February vote, PTI leaders say they will seek redress in parliament, the courts and through peaceful street protests. Their goals include a new election and liberty for Mr Khan and other jailed leaders. "I have no doubt—and I think the party feels very confident—the so-called result of this election will be overturned," says Taimur Jhagra, a former PTI provincial minister, referring to the evidence of vote fraud that the party is submitting to the courts.

Yet Pakistan's judges rarely defy the army's preferences on big political matters. And since February, the government has used social-media blackouts and overwhelming shows of force by police to suppress PTI's attempts to stage public demonstrations. General Asim Munir, the powerful army chief, is not signalling room for compromise. In a recent statement following a conference of top generals, the military denounced those in Pakistan who are "creating political instability and uncertainty" by resorting to "emotional outbursts", a transparent reference to PTI.

Even if he overcomes Mr Khan's pressure campaign, Mr Sharif has a second big problem: Pakistan's volatile economy, which is in the middle of a multi-year crisis. GDP shrank slightly in 2023 amid high debt, a balance-of-payments crisis and inflation that peaked at near 40% before falling back to its current rate of 23%. Before the election, while heading a government that lasted 16 months, Mr Sharif staved off ▸▸

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disaster by securing a $3bn stand-by emergency loan from the IMF. That arrangement expires in April. Mr Sharif and a successor caretaker administration earned credit for delivering a primary fiscal surplus. But they were unable to advance the deep reforms that Pakistan has long needed, such as privatisation of state-owned enterprises saddled with zombie debt or an expansion of the tax net.

The new government is expected to return to the IMF for a larger and longer-term package. If agreed it would be the 25th IMF bail-out in Pakistan's 77-year history, placing the country among the most profligate of fund borrowers. There seems little doubt that a new multi-year arrangement is attainable, perhaps in the range of $6bn. "Even our enemies don't want us to fail or default," notes Miftah Ismail, who served as finance minister during 2022. A new IMF programme will seek to reduce Pakistan's staggering debt levels, which some analysts now regard as unsustainable.

As a nuclear-armed nation of 242m, Pakistan is indeed too big to fail. Yet this has only entrenched complacency and corruption, encouraging its leaders to rely on emergency external finance and temporary fiscal adjustments rather than stomach economic restructuring.

First as tragedy

Will this time be different? Mr Sharif has raised hopes by recruiting Muhammad Aurangzeb, a Wharton-educated CEO of one of Pakistan's largest private banks, as his finance minister. Mr Aurangzeb has pledged to carry out ambitious reforms and declared after his appointment that he would tolerate "no debates, no waste of time: just a steadfast commitment to implementation". But whether Mr Sharif will give him the backing to follow through is uncertain.

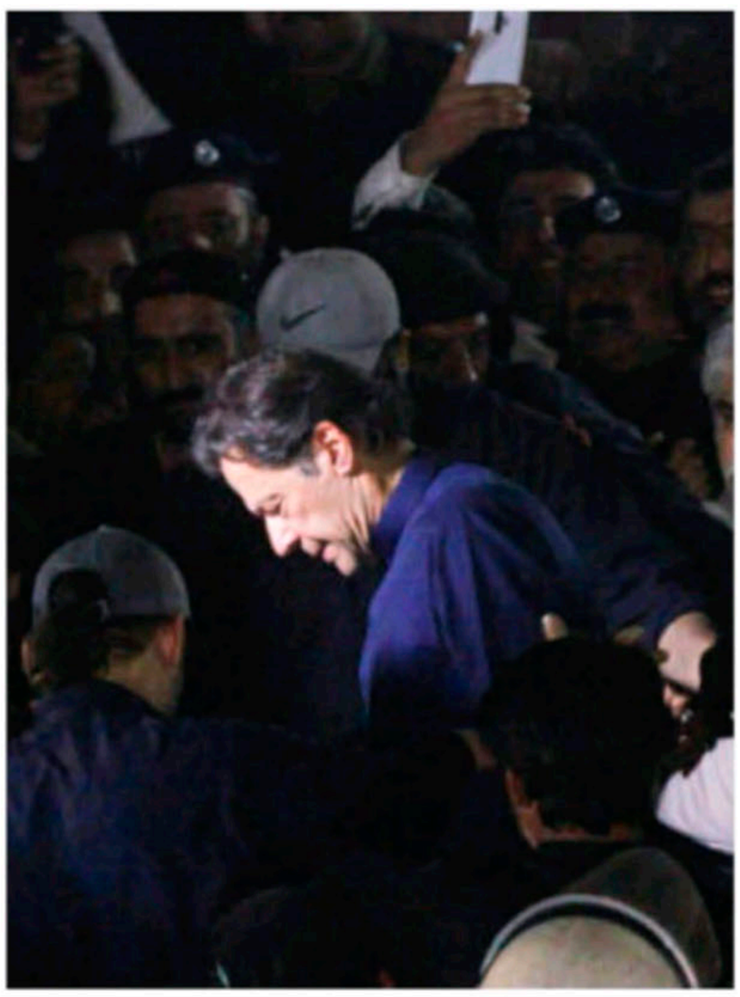
A plan to sell off debt-ridden Pakistan International Airlines (PIA) will provide an early test. Forty years ago PIA offered service superior to its state-owned counterparts in India. But during the 1990s, the rise of formidable Gulf competitors like Emirates, and competition stimulated by an open-skies policy, caused the carrier's market share to crumble. By 2017 PIA had 550 employees for every aircraft, more than two-and-a-half times its target. The airline now staggers under more than $3bn-worth of rupee debts. Mr Sharif has initiated a scheme to erase PIA's debts and split the company into two parts, so that core operations could be offered for sale.

The PIA case hints at some of the problems that have long bedevilled would-be modernisers in the country. Privatisation of state-owned firms hits workers, their families and unions: groups that are politically well-connected and which have in effect vetoed even the most common-sense divestments of state assets. Other reforms hit many more citizens and thus are even more politically sensitive. These ideas include stopping the government fixing prices; taxing retail and agriculture, previously exempt sectors; or withdrawing expensive fuel subsidies. Whenever such changes are attempted, however, they provoke huge protests amplified by social media and only partially free broadcasters.

Pakistan's military-managed, constrained democratic set-up also prevents civilian leaders from taking bold action. Mr Khan's rise and fall is a case in point: the armed forces were widely seen as his backers in 2018. Four years later, they were seen as being behind Mr Khan's sacking.

A third test for the new government comes in the form of a campaign of terror mounted by the Tehreek-e-Taliban (TTP), the Pakistani branch of the Taliban movement. Since the Afghan Taliban's takeover of Kabul in 2021, TTP-linked attacks in Pakistan have surged, claiming more than 2,200 lives, according to the government. Many victims have been members of the security forces. The latest TTP attack took place on March 16th when suicide-bombers hit an army base on the Afghan frontier, killing at least seven soldiers. Pakistani jets launched a retaliatory strike against alleged TTP targets inside Afghanistan.

There exists a serious risk of escalation. Pakistan accuses Afghanistan's Taliban regime of providing aid and sanctuary to the TTP. "Terrorism against us is mostly being conducted from Afghanistan," Khawaja Asif, Pakistan's defence minister, said after the latest attack. During the past two years, Pakistan has tried many forms of persuasion and coercion to influence the Taliban's restored regime in Kabul. The efforts have included diplomatic negotiations, halting cross-border trade, expelling Afghan refugees from Pakistan and military action. None of this has worked. Although the Afghan Taliban have issued decrees banning Afghans from fighting inside Pakistan, the attacks and accusations of Kabul's complicity persist.



Mr Khan in better times

Mr Sharif has long accommodated the armed forces. Decisions about how to handle the Taliban regime in Kabul will fall to General Munir. The army chief is a more reticent figure than some of his predecessors. Well-connected analysts say the general seems mainly interested in shoring up Pakistan's bedrock alliance with China and its historical ties to Gulf states, particularly Saudi Arabia, where the general paid a visit on March 20th.

General Munir also visited America late last year, hosted by Central Command, the military force responsible for Afghanistan and Pakistan. Pakistan's correct if largely transactional relations with Washington these days offer a modest hedge against its dependency on China and help to ease its dealings at the IMF.

Second as farce

General Munir may also want more influence over the country's economy. Last year he touted a new body, the Special Investment Facilitation Council, on which he sits, that he said would create "an investor-friendly system that avoids unnecessary delays and provides easy terms and conditions for business", particularly in mining and agriculture. The apparent purpose is to attract direct investment from Gulf sovereign-wealth funds and elsewhere. Yet it will be hard for Pakistan to advertise itself as a stable destination for investment as long as its most popular politician is locked up on dubious charges and his supporters clamour for redress.

Pakistan's tragedy has been its inability to sustain a workable political consensus. "The reason our economy stinks is that every three years we press a self-destruct button and start from zero again," says Mr Jhagra, the former PTI provincial minister. But it is one thing to be aware of the problem and another to solve it. The reality is that if Mr Khan wishes to achieve political rehabilitation, he would probably require either General Munir's blessing or a reconciliation pact with other major civilian parties. Neither seems likely.

Mr Khan's charisma and defiance has delivered a rollercoaster ride to his party and his country. During his sojourn in prison, he recently told his sister, "I'm really busy getting knowledge" by reading about history, politics and Sufism. Perhaps Mr Khan can help overcome his country's dysfunction by sharing new-found insights with generals and rival politicians. He might start with Rumi, the best-known Sufi poet: "Yesterday I was so clever, so I wanted to change the world. Today I am wise, so I am changing myself." ■

Terrorism

Holier than thou

ISLAMABAD

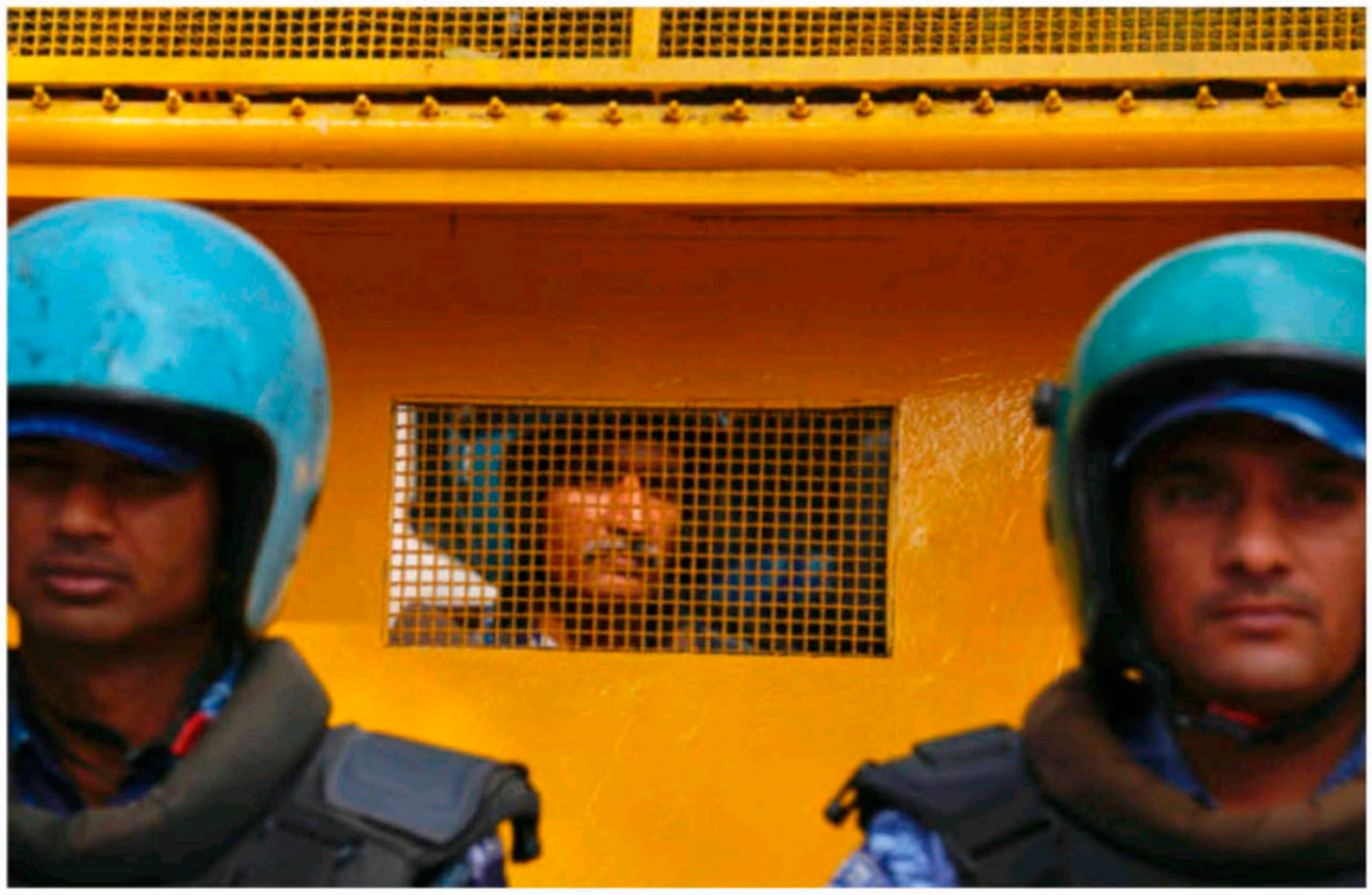
The Islamic State's branch in Afghanistan is at war with the world

NO GOVERNMENT FORMALLY recognises the Taliban regime in Afghanistan, partly because its restrictions on female education are the world's most oppressive. Yet even the Taliban are not radical enough for the Islamic State Khorasan Province (ISKP), an offshoot in Afghanistan of the group that established a "caliphate" in Iraq and Syria in 2014. ISKP propagandists rubbish the Taliban as sell-outs to the West because, among other sins, they meet non-Islamic diplomats and allow unbelievers to supply aid.

During its nine-year existence, ISKP has mainly killed Afghans. The group's global ambitions burst into view on March 22nd, when at least four gunmen killed 139 people at a concert in Moscow. American officials blamed ISKP for the attack; Russia later arrested suspects from Tajikistan. If the charges are proved they will underscore the group's expanding record of strikes beyond Afghanistan. It cultivates a long list of enemies, including America and China. In January its recruits hit a church in Turkey and carried out the deadliest terrorist attack in Iran in decades. Two of the suspects spent time in Turkey before travelling to Russia. The Turkish government says that it has made a wave of arrests.

Russia is in ISKP's crosshairs because it maintains an embassy in Kabul and has accepted a Taliban military attaché in Moscow. It also provides aid to Syria, where Bashar al-Assad's regime helped dismantle ISKP's parent organisation. The attack in Moscow may also reflect ISKP's recruiting among Tajiks, Uzbeks and Kazakhs. The group's in-house media arm, al-Azaim, distributes content in Central Asian languages. Until his arrest last year, Abu Miskin, a Tajik militant, was among its "most active propagandists and high-ranking recruiters", according to the UN.

Estimates of the ISKP's strength vary from fewer than 2,000 to 5,000. Taliban offensives have taken back territory the group once held in Afghanistan. According to Riccardo Valle, director of research at Khorasan Diary, an Islamabad-based group, ISKP's strength these days is "its ability to find and connect with small numbers of disaffected people". The current leader is believed to be Shahab al-Muhajir, a 29-year-old of Arab descent. He is rarely heard from, but he can be certain that his disparate organisation will now be at the centre of global attention. ■



India's opposition

No country for critics?

DELHI

The arrest of Arvind Kejriwal is a stain on Indian democracy

WITH JUST over three weeks to go until the start of a general election Narendra Modi, India's prime minister, has little reason to worry about the outcome. His popularity is at an all-time high both at home and abroad (see International section). His ruling Bharatiya Janata Party (BJP) is expected to win re-election comfortably. But the government is not resting easy. It appears to have stepped up a campaign to quash dissent. That makes many concerned that, were Mr Modi to win a third term, he may become even less tolerant of the opposition.

On March 21st the Enforcement Directorate (ED), one of two main Indian agencies tasked with investigating financial crimes, arrested Arvind Kejriwal, the chief minister of Delhi and the leader of the opposition Aam Aadmi Party (AAP), as part of a corruption probe. He is the third opposition leader to be arrested this year and the first sitting chief minister to be arrested in India's history. The ED accuses him of failing to co-operate with the probe after he ignored nine summons to be questioned by investigators. The AAP leader denies wrongdoing and says he is the victim of a political vendetta. On March 26th members of his party who were attempting to march to Mr Modi's home in protest were arrested. A big rally by the opposition is planned for March 31st.

This crackdown unfortunately appears to be part of a broader pattern. The same day as Mr Kejriwal's arrest Congress, the main national opposition party, claimed that tax authorities had frozen its bank accounts over alleged undeclared cash income in the 2017-18 financial year, leaving it unable to cover campaign expenses. On March 26th a court in Delhi also extended the pre-trial custody for an opposition lawmaker from the southern state of Telangana, who was arrested earlier this month in connection with the same probe that snagged Mr Kejriwal.

Meanwhile the courts have also continued to defer pleas for bail from two other senior AAP leaders who have been in jail as part of the probe for six and 13 months, respectively. None has been put on trial. In January the ED also arrested the chief minister of Jharkhand, an opposition-run eastern state, on allegations of money-laundering. He resigned hours before his arrest. All deny wrongdoing. They will not be able to campaign in the upcoming election.

The BJP says that law-enforcement agencies are independent of the government, and are merely doing their job in rooting out corruption. It says that opposi- ▸▸

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tion politicians who allege a political conspiracy are trying to find excuses for their "imminent and miserable defeat" in the election. Even so, some 95% of financial-crime probes since Mr Modi took power in 2014 have targeted the opposition. By contrast few BJP politicians have found themselves in the crosshairs of law enforcement. Opposition politicians troubled by anti-corruption officials have seen their legal problems shelved or postponed as soon as they defected to the BJP.

Increasingly it looks as if the BJP is unable to brook any dissent. NGOs and think-tanks that are critical of the government have found themselves subject to close attention by the authorities. The media is broadly pro-BJP, while the judiciary is increasingly selective about how it chooses to challenge the government.

Despite the questionable timing of the moves against Mr Kejriwal and others, the probes are still likely to inflict considerable damage on the opposition, while posing little electoral risk to Mr Modi's government. Disclosures earlier this month of controversial corporate donations through "electoral bonds", which the Supreme Court ordered in February, have not roused voters or anti-corruption officials, despite the fact they were largely to the BJP. Mr Modi remains incredibly popular, with fully 78% of those polled in a recent survey approving of him. He would easily win a democratic election, even without the recent crackdown. ■

BANYAN

Catching rats and breaking pots

Investors should worry about the state of Vietnamese politics

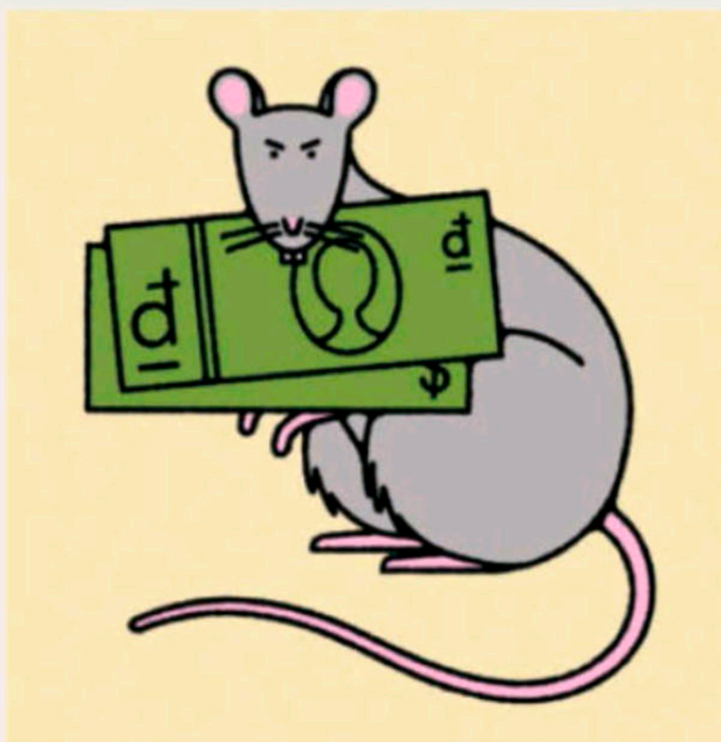
THE COMMUNIST PARTY of Vietnam is among the most secretive bodies on Earth. The façade it presents to its own people and to the world is one of circumspection, conformity and consensual order. So to lose one head of state early last year, departing under a cloud of corruption, was careless. To lose a second, Vo Van Thuong, in late March is downright disconcerting. It is not just ordinary Vietnamese who should care. So, too, should foreign investors, who have bet big on Vietnam as the hottest economy in South-East Asia.

Mr Thuong, in his early 50s, was the youngest-ever president. A propaganda whizz, he thought he was going places. He succeeded Nguyen Xuan Phuc, who resigned in January last year after taking responsibility for a scam involving pandemic testing kits (he insists neither he nor his family were involved). Mr Thuong relished his public role. But a planned visit to Vietnam by the king and queen of the Netherlands was abruptly cancelled at Vietnam's request. Then, on March 20th, the party's central committee said Mr Thuong had resigned from all posts. His "violations and shortcomings" had left "a bad mark" on the party's reputation. The vice-president, Vo Thi Anh Xuan, a rare woman in the upper echelons, is standing in for now. Mr Thuong has not been heard of since.

To be sure, the presidency is only one of four key positions. Authority is usually spread among four "pillars": the general secretary of the party (the most important post), the prime minister (running the government), the president and the speaker of the National Assembly. The current general secretary is Nguyen Phu Trong. He has, exceptionally, been in the post since 2011. He is nearly 80 and will surely step down at the next party congress in 2026—if rumoured ill health allows him that long. Any ructions behind the façade must be viewed in the context of who succeeds him.

Mr Trong's key tenet is that the party cannot survive without going after widening corruption. His "blazing furnace" campaign had already floored ministers, a deputy prime minister and a string of senior leaders in Ho Chi Minh City, Hanoi and the provinces. To complicate things, powerful party figures use Mr Trong's campaign as a pretext to jockey for power.

Mr Thuong was a protégé of the general secretary's—but in the end that did not help him. According to Le Hong Hiep of the ISEAS-Yusof Ishak Institute, a research body in Singapore, Mr Thuong's supposed wrongdoings relate to his time as party secretary of Quang Ngai province from 2011 to 2014. The investigation of corruption at a local developer has already brought down a handful of provincial officials. The powerful and ambitious minister for public security, To Lam, who is at the heart of the anti-corruption campaign, may have been involved in Mr Thuong's fall. Certainly, Mr Lam will be keen to position himself for a grab at the top job in 2026.



A delegation of 60 American businesses, including Boeing and Meta, has just been in the country. To those and others with an interest in Vietnam's development, Mr Thuong's fall presents a conundrum. On the one hand it confirms that the effects of corruption reach to the very top of the party. The national extent of corruption is huge, if the trial under way of an alleged fraud of $12bn at the Saigon Joint Stock Commercial Bank is any measure. The amount alleged to have been bilked is well over twice the notorious fraud at 1MDB, Malaysia's now-insolvent sovereign fund.

That is one uncertainty for those who have turned to Vietnam as a hedge against putting all business bets on China in an age of great-power rivalry between China and America. Annual foreign direct investment has been flooding in to Vietnam, rising by over a third last year, to $36.6bn.

On the other hand, multinationals know how to navigate somewhat corrupt economies. Corruption, for all its costs, can grease the wheels of commerce by getting deals done. Besides, in Vietnam the foreign-invested manufacturing sector is much less riven with graft than are state-directed sectors.

Worse is when reform stalls—and that, analysts say, is happening now, as officials terrified that the blazing furnace will come for them lack the nerve to open up the economy further and encourage investment. Mr Trong once said that going after corruption while ensuring stability was like "catching a rat without breaking the pot". Rats are being caught, but can the pot remain intact? Vietnam is about to find out.

China

Economic policymaking

The men with Xi's ear

BEIJING AND HONG KONG

Who is up and who is down on China's economic team

ON MARCH 27TH, when Xi Jinping met American business executives in Beijing, it was a rare opportunity for these corporate bigwigs to interact with China's leader on his home turf. The meeting followed the China Development Forum, an annual economic conference held amid the lakes and willows of a tranquil state guesthouse in the capital. The economic backdrop to the meeting was less serene, thanks to a faltering economy, depressed stockmarket and sporadic regulatory crackdowns. Foreign direct investment has slumped (see chart on next page).

In the past, such meetings were entrusted not to China's president, but to its prime minister, who has traditionally held sway over economic policy. Li Qiang (pictured, right) was still new in the job when he met businessmen, including Tim Cook, the chief executive of Apple, on the sidelines of last year's forum. Hoping to restore optimism after the pandemic, Mr Li urged his visitors to look up at the metaphorical rainbow after the rain, rather than down at the mud under their feet.

This year, however, Mr Li's thunder has been stolen by his boss. The prime minister also missed a high-profile chance to communicate to the outside world earlier this month, when the annual meeting of China's parliament dispensed with his closing press conference.

This reticence is becoming a pattern. Compared with his predecessor, Mr Li has held fewer meetings with foreign officials and business leaders in his first year: only two-thirds as many, according to the *South China Morning Post* in Hong Kong. He has travelled to only half as many meetings abroad. And when he has taken to the skies, he has flown on chartered flights rather than a government plane.

There is a swirling debate inside China about what explains these changes. One view is that Mr Li is adroitly signalling his deference to Mr Xi, even as he retains substantial influence on policymaking. Another view is that he has been in effect demoted. Either way, the prime minister's economic purview seems to have narrowed, focusing on new domestic growth engines not international exchanges. Mr Li has spent more time than his predecessor on inspection tours around the country, the *Post* points out. Economics has also lost ground to national security in the leadership's priorities. Regardless of whether his influence has slipped, Mr Li holds sway over a diminished portfolio.

The power of China's leaders derives not from their position in the government, but from their standing in the Communist Party, including its 24-person Politburo. By the time the party picks its next Politburo in 2027, Mr Li will be above the customary retirement age of 68. He might then step down as prime minister after one term.

If so, a plausible successor would be Ding Xuexiang. The youngest member of ▸▸

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— Chaguan is away

the Politburo's seven-man Standing Committee, Mr Ding was a close aide to Mr Xi in Shanghai in 2007. He then followed him to Beijing and accompanied him on many of his foreign trips during his first term as president, including a visit to Donald Trump's Mar-a-Lago resort in Florida.

Mr Ding is the highest-ranked of four deputy prime ministers on the State Council, China's cabinet. But he does not hold a position on the most powerful party commission handling the economy: the sweeping Central Comprehensively Deepening Reforms Commission (known for its less-than-comprehensive reforms of everything from pensions to football).

Similar party commissions have proliferated under Mr Xi. Compared with government bodies, these groups have fewer constraints on their action and no awkward age limits on their members. A prominent example is the Central Financial and Economic Affairs Commission (CFEAC). One of its meetings in 2021 signalled the start of Mr Xi's "common prosperity" campaign (which aimed to chasten billionaires and reduce inequality). A meeting in February gave the nod to China's version of a "cash for clunkers" scheme, which provides households and firms an incentive to trade in old appliances and equipment for new gear. On economic policymaking, these commissions have crowded out the influence of the State Council. Since a tweak in rules last year, the council's executives meet only two or three times a month, rather than every week.

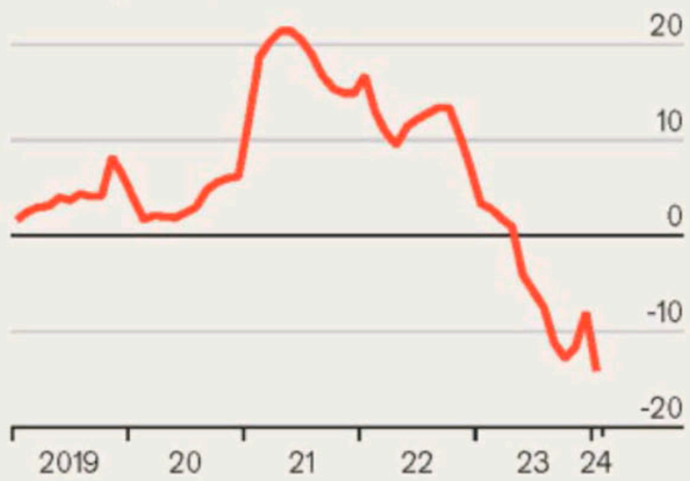
If Mr Li has lost clout, who has gained it? The obvious answer is He Lifeng, another deputy prime minister, who has become Mr Xi's economic tsar. Mr He (pictured on previous page, left) hails from the province of Fujian, where Mr Xi spent 17 years of his career. In Xiamen, a port city, they became friends and colleagues. Mr He was even a guest at the future president's second wedding.

Mr He holds a position on three of the party's financial commissions, notes Macropolo, a think-tank in America. He is the office director of CFEAC. He also sits on two lower commissions that oversee the financial system and its regulators. The commissions' vision was summed up in an article in *Qiushi*, the party's main theoretical journal, in December. It insisted that finance serve the "real" economy, warned about the dangers of "pseudo-innovation" in the sector, and emphasised that financial risks can be infectious, hidden and destructive. "Xi Jinping, at some level, does not like finance people with fancy suits and nice shoes," says one economist.

Mr He last year oversaw the appointment of Li Yunze as the head of China's new financial super-regulator, which covers both banking and insurance. This new body has also taken on some of the supervisory responsibilities previously held by the People's Bank of China. The central bank has never enjoyed the autonomy or stature granted to monetary authorities elsewhere. Its governor, Pan Gongsheng, holds a PhD and is probably a better economist than any of the policymakers above him. But the bank nonetheless appears to be losing staff and status.

Spitting the hook

China, inflows of foreign direct investment*, % change on a year earlier



*12-month moving average. Jan-Feb combined
Sources: Ministry of Commerce; Wind; Haver Analytics

According to "Decoding Chinese Politics", a project of the Asia Society Policy Institute, another think-tank in America, Mr He has personal links with officials across China's economic-policymaking apparatus. Liu Kun, his classmate at Xiamen University in Fujian, served as finance minister until 2023 and helped pick the current holder of that office, Lan Fo'an. The head of China's anti-monopoly agency, Luo Wen, spent a year as Mr He's deputy when he was head of the National Development and Reform Commission (NDRC), China's main planning agency.

The current head of the NDRC, Zheng Shanjie, also comes from Fujian province and worked under Mr He in Xiamen. He once criticised local officials in another coastal city for their complacency. "If you don't make progress, you are regressing; if you progress slowly, you are regressing." His own progress has been impressive. In 1997, he was the manager of a cod-liver-oil factory, having risen up the ranks from a job in equipment maintenance.

At this year's China Development Forum, both Mr Zheng and his mentor, Mr He, urged foreign businesspeople to invest in China's "new productive forces", dangling the opportunities offered by the country's vast market and ambitious programme of innovation. A smiling Mr He was pictured shaking hands with bosses from Blackstone, Pfizer, Corning and Siemens outside a guesthouse on the site, near where an emperor used to fish. If foreign businesses want to know what line China's leaders are casting, Mr He is the person to see. Now, will they bite? ■

Cyber-attacks

Spooks in the machine

LONDON

Western countries accuse China of a big cyber-espionage campaign

WHEN CALLING out China, Western governments sometimes like to stand together. On March 25th and 26th America, Britain and New Zealand did so in a co-ordinated blast against Chinese cyber-espionage. American federal prosecutors accused China's cyber-spooks of waging a campaign for years against a wide range of targets in the West, including critics of the Chinese Communist Party. Britain's deputy prime minister, Oliver Dowden, said China showed "ongoing patterns of hostile activity targeting our collective democracies". New Zealand blamed state-linked hackers in China for a cyber-attack on the country's parliament.

Both America and Britain placed sanctions on an alleged front company for one group of Chinese hackers, which they called APT31. They also imposed sanctions on two of the group's alleged members, while America laid criminal charges against them and five other men. These actions are unlikely to have much impact on China's efforts. The letters APT stand for "advanced persistent threat". This is technical jargon for an attack that involves lurking undetected in a target's network. The words also happen to convey the West's gloomy view of China's cyber-onslaught.

Spotting a cyber-intrusion, let alone identifying those responsible, can take time. The incidents revealed by the three Western countries mostly occurred two or three years ago. Mr Dowden told Parliament that "Chinese state-affiliated actors" had penetrated the Electoral Commission's email and file-sharing systems in 2021. The breach was first publicly declared in August 2023, when officials revealed that suspicious activity had not been identified until October 2022—more than a year after the hackers had broken in. The perpetrators would have had access to the addresses of Britain's voters. Mr Dowden did not specify the group involved in

Mr Dowden goes APT hunting

that attack. But he said APT31 was "almost certain" to have been behind "reconnaissance activity" aimed at MPs' email accounts in 2021. Most of those targeted were prominent critics of China.

The indictment filed in a New York court against the alleged seven members of APT31 offered rich detail of this team's activities. The 27-page document said the group operated under the Hubei provincial branch of China's Ministry of State Security (MSS), the country's main civilian spy agency. Its front company, Wuhan Xiaoruizhi Science & Technology, was set up around 2010. Since then it has allegedly targeted thousands of politicians in America and elsewhere, as well as academics, journalists and pro-democracy activists. According to the document, it has also taken aim at people and companies in American industries deemed of "national importance", including those relating to defence, IT and telecommunications.

The British played down the impact of the Chinese hacking it had detected—no elections had been affected and the targeting of MPs' emails had been "blocked by Parliament's cyber-security measures". New Zealand said another MSS-linked group, known as APT40, had been involved in the cyber-attack on its parliament in 2021, but this had not caused the leak of sensitive information. The American indictment, however, said APT31's activities had "resulted in the confirmed and potential compromise of work and personal email accounts, cloud-storage accounts and telephone-call records belonging to millions of Americans, including at least some information that could be released in support of malign influence targeting democratic processes and institutions".

Mark Kelly of Recorded Future, a cyber-security firm, says his company is aware of about 50 hacking groups in China, including private firms working for the MSS or People's Liberation Army. There are undoubtedly many more. Mr Kelly describes China's cyber-espionage efforts as "orders of magnitude" greater in scale than those mounted by Russia or North Korea.

As the indictment shows, they are surprisingly devolved. Some of them specialise in spying on different parts of the world, says Nigel Inkster, a former deputy head of Britain's spy agency, MI6. They have considerable leeway to do as they wish, he says: "I'm not even sure that there is any kind of formal political clearance mechanism." Much of their work is subcontracted to private firms. Last month a huge online dump of documents from one such company, I-Soon, showed its involvement in large-scale cyber-snooping on behalf of a variety of government agencies.

The West's anxieties, not least about the hackers' theft of corporate data, are becoming increasingly manifest. In January the head of the FBI, Christopher Wray, said that China's state-sponsored hackers outnumbered his agency's cyber-personnel by "at least 50 to one". He added that China's hackers are laying the groundwork for a possible Chinese strike, "positioning on American infrastructure in preparation to wreak havoc and cause real-world harm to American citizens and communities."

Chinese diplomats have dismissed such accusations. A Chinese embassy spokesperson in London called Britain's allegations "fabricated and malicious slanders". If the West hopes that naming, shaming and sanctions will dissuade the Chinese spooks, it is likely to be disappointed. As Mr Inkster puts it: "I don't think Beijing is particularly concerned about the political ramifications of getting caught with their fingers in the till any more." ■

Crime and punishment

Spare the rod?

BEIJING

A gruesome murder sparks a debate about juvenile justice

IN ONE OF the best-known commentaries attributed to him, Confucius said that at the age of 15 he set his mind on studying. At the ages of 30, 40, 50 and 60 he reached successive new levels of maturity and understanding. But it was only at the age of 70 that he had learnt how to follow his heart's desires without overstepping boundaries. Today, 2,500 years since the great sage held forth, Chinese society continues to grapple with ethical questions about the appropriate balance between leniency and accountability for juvenile transgressors of the law.

A horrific murder has spurred a new round of debate about how to treat young criminals. The case involves three middle-school students in the rural outskirts of Handan, a city in northern China. They are alleged to have bullied a classmate over a long period of time. Then, on March 10th, they killed him. His body was buried in an abandoned greenhouse. Some Chinese media outlets are reporting that the suspects began digging the grave a day before the murder, indicating that the crime was premeditated. The alleged killers are all said to be in custody. Like the victim, they are all under the age of 14.

That is significant because China amended its criminal code in 2021, lowering the age at which murder suspects can be prosecuted from 14 to 12. The Handan case appears to be the first in which the new age standards will apply.

The Chinese justice system does not, in general, have a reputation for leniency—or fairness and independence, for that matter. Police, prosecutors and judges are all controlled by the Communist Party. Acquittals in criminal cases are exceedingly rare. But in the field of juvenile justice, China has been moving in a more merciful direction, say observers. The number of convictions of those aged 14 to 18 fell from 55,817 in 2013 to 27,757 in 2022. Officials are also increasingly open to the idea of sealing the criminal records of juveniles so that they don't haunt them in adulthood, says John Kamm, an American rights activist. His Dui Hua Foundation, based in San Francisco, has worked with Chinese officials to improve the treatment of young detainees.

Not everyone is happy with these changes, though. "In China you certainly encounter a 'do the crime, do the time' sort of attitude, regardless of an offender's age," says Mr Kamm. Such opinions have ▸▸

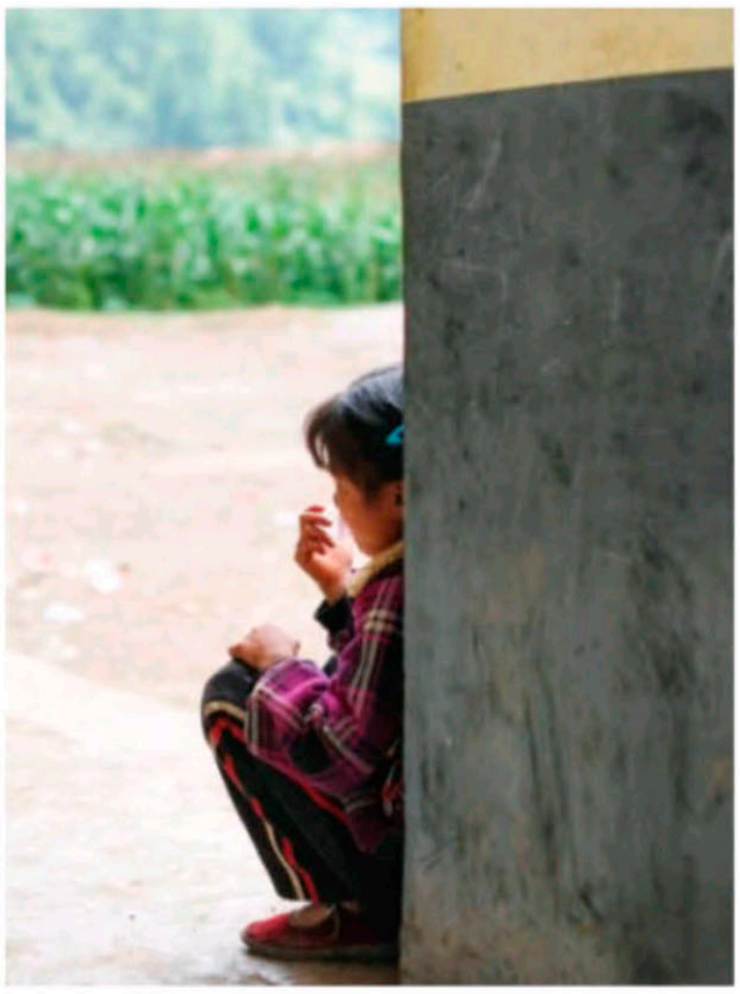
been expressed in response to the murder in Handan. One expert told *Chongqing Daily*, a local newspaper, that the bloody episode demanded a harsh response in order to deter "little demons". Luo Xiang, a well-known legal scholar, posted a statement online saying the appropriate handling of the case "could only be achieved through punishment".

In another grisly case from earlier this year a four-year-old girl was reportedly murdered by a boy under the age of 12 in the central province of Hubei. Because of his age, the boy could not be prosecuted and was instead referred for psychiatric treatment. But some expressed outrage on social media. One commenter said age-based prohibitions on criminal prosecutions only serve to embolden bullies and that the perpetrator "should not be allowed to grow up".

A tough way to grow up

There is one facet of the Handan case that has elicited more sympathy. That is the plight of "left-behind children", or those whose parents have left their villages to look for work in cities. According to the most recent census, in 2020, there are 67m such children in China (out of a total population of 1.4bn). Many live in rural boarding schools far from their homes, a result of the government's attempt to improve educational standards in the countryside. These boys and girls have higher rates of depression, substance abuse and bad behaviour than their peers.

According to reports, the victim and the perpetrators in Handan were left-behind children. That has led to calls for better support in schools and communities. Confucius, who made much of the connection between well-managed families and well-governed states, would surely agree. ■



Left behind. Too often forgotten

Entertainment

Three-body shaming

BEIJING

Chinese nationalists complain about a successful cultural export

THE BOOK is full of technical jargon, with copious references to particle accelerators and nanotechnology. The story, about Earth preparing for an alien invasion, is dark. Nevertheless, "The Three-Body Problem" by Liu Cixin has been a huge hit in China since it was published in 2008. It was translated into English in 2014 and quickly gathered awards and fans in the West, too. Most readers rejoiced when Netflix, an American streaming giant, announced in 2020 that it was turning the novel into a big-budget television series.

The series, called "3 Body Problem", launched on March 21st to positive reviews in America. Netflix is blocked in China. But many in the country managed to watch the show using pirate sites or software that can bypass official internet controls. It became one of the hottest-trending topics on Weibo, a social-media platform. Many commenters seemed to like this version (a previous adaptation was produced in China). Nationalists, however, did not.

Quick to take offence, the nationalists were unhappy that Netflix dropped some of the Chinese elements of the novel. In the series, much of the action takes place in London and Oxford, whereas in the book Beijing features more heavily. Similarly, in the show some Chinese characters have been replaced with English-speaking Westerners.

But the main reason nationalists are upset has to do with something that Netflix left in the show. The first episode begins in the 1960s, during the Cultural Revolution. A young character called Ye Wenjie (pictured) witnesses her father, a physics professor, getting beaten to death by Red Guards (Maoist youth gangs) for refusing to renounce science in favour of Marxism. The experience causes her to lose faith in humanity.

The scene is inspired by grim historical facts—many academics were killed by their students during that period. It is also an important part of the novel. Mr Liu had to bury it in the middle in order to placate Chinese censors. But it comes at the beginning of the English translation. The nationalists do not care. "Why should China's mistakes be remembered for ever?" complained one online. Netflix "made a batch of dumplings just as an excuse for using this vinegar", said another, suggesting that the series was produced only to make China look bad.

China's nationalists, mind you, are not opposed to all adaptations of Mr Liu's work. They tended to like "The Wandering Earth", a Chinese-language film released in 2019 that was based on a different novel. As in "3 Body Problem", the stakes are high. A group of astronauts has to stop Earth from colliding with Jupiter. But the heroes are all Chinese and the film is set in the future.

TECHNOLOGY QUARTERLY

Health and AI

→ MARCH 30TH 2024

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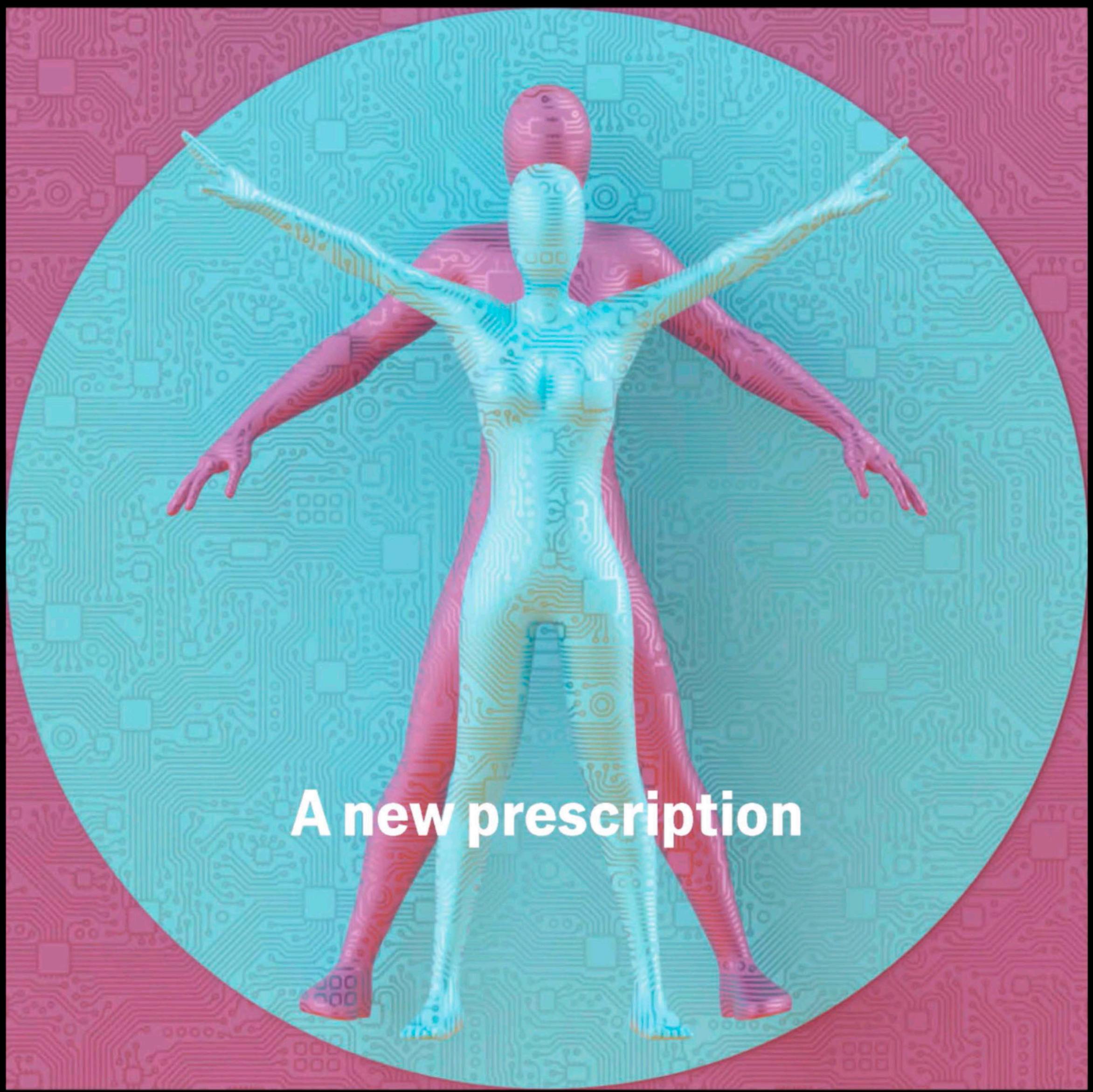

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Health and AI

Self-programming panaceas

AIs will make health care safer and better, reports Natasha Loder. It may even get cheaper, too

WHEN PEOPLE set goals which are sky-high to the point of silliness, the sensible scoff. They are normally right to do so. Sometimes, though, it is worth entertaining the possibility that even the most startling aspiration might be achievable.

In 2015 Priscilla Chan, a paediatrician, and her husband Mark Zuckerberg, a founder of Facebook, set up the Chan Zuckerberg Initiative (CZI) with the aim of helping science bring about a world in which all disease could be prevented, cured or managed. Unsurprisingly there was a tech-centric feeling to the undertaking. But it was not until 2020 that the Chan-Zuckerberg's annual updates started to talk about the potential of artificial intelligence (AI). Four years later it is hard to imagine anyone pursuing their goals not putting it front and centre.

The proportion of biomedical research papers which invoke artificial intelligence was climbing exponentially well before the field started dazzling the world with "foundation models" like OpenAI's various GPTs (generative pre-trained transformers), Meta's Llama and Gemini from Google (see chart on next page). Given the vast amounts of data that biomedical research produces, AI's early application there is hardly a surprise. That past progress and promise, though, is a mere prelude to what is now under way.

Artificial-intelligence systems of similar power to the foundation models and large language models that generate cogent text in all manner of styles, answer complex questions quite convincingly and helpfully, and create images that capture the ideas expressed in verbal prompts are becoming a part of health care. They have applications for almost every part of it. They can improve the choices researchers make about how exactly to edit genes; they are phenomenally good at making sense of big data from disparate sources; they can suggest new targets for drug development and help invent molecules large and small that might work as drugs against them. The CZI itself is now working on building an AI-powered "virtual cell" with which it hopes to revolutionise all manner of biomedical research.

The effects are not restricted to the lab. Various sorts of diagnosis in which AI is playing a role look ready to be transformed. Robot surgeons are taking on an expanding range of operations. The way that patients access health information and motivate themselves to follow treatment regimes looks ripe for reimagining as chatbots and wearable health monitors learn to work together. The productivity of health-care systems seems likely to be improved significantly.

Poorer countries may have the most to gain. An earlier generation of AI is already making itself felt in health care there. One advantage is that it can make quite modest equipment much more capable, allowing it to be used more widely and beyond the clinic. Smart stethoscopes can help users pick out salient details, phones can be turned into "tricorders" that measure heart rate, temperature, respiration and blood oxy- ▸▸

gen saturation all at once. Delivering reliable guidance for health-care workers over the world in their native language offers an advance both straightforward and game changing.

If such tools can become widespread, and if health-care systems are reshaped to get the most out of them, they should make it possible to deliver much better care. That represents an opportunity to improve the lives of hundreds of millions, even billions.

Some see not just a humanitarian breakthrough, but an epistemological one: a whole new sort of knowledge. Artificial intelligence can find associations and connections in bodies of disparate data too vast and knotted for humans to unpick without needing pre-existing models of what sorts of cause have what sorts of effect. Demis Hassabis, one of the founders of DeepMind, an AI powerhouse that is now part of Google, thinks that ability will change the way humans understand life itself.

There are caveats. The foundation models that power "generative" applications like ChatGPT have some serious drawbacks. Whether you call it hallucinating, as researchers used to, or confabulating, as they now prefer to, they make stuff up. As with most AI, if you train them on poor or patchy data the results will not be all they should be. If the data are biased, as health data frequently are (good data on minorities, low-income groups and marginalised populations is often harder to come by) the results will not serve the population as a whole as well as they should and may do harm in the underrepresented groups. The models' "non-deterministic" nature (they will not always respond in the same way to the same stimulus) raises philosophical and practical problems for those who regulate medical devices. Blood-pressure cuffs and thermometers reflect reality more straightforwardly.

None of this is stopping the market for products and services in health-care AI from growing apace. Big AI companies have been keen on buying health-care specialists; health-care companies are buying AI. Research and Markets, a firm of analysts, estimates that in 2023 the health-care world spent about $13bn on AI-related hardware (such as specialised processing chips and devices that include them) and software providing diagnostics, image analysis, remote monitoring of patients and more. It sees that number reaching $47bn by 2028. Analysts at CB Insights reckon investors transferred a whopping $31.5bn in equity funding into health-care-related AI between 2019 and 2022. Of the 1,500 vendors in health AI over half were founded in the past seven years.

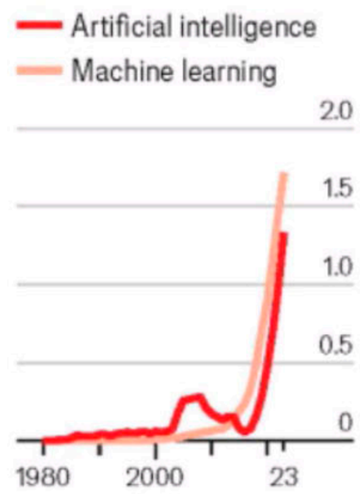
Of the 1,500 vendors in health AI, over half were founded in the past seven years

The digitisation of health care has seen its fair share of expensive disappointments. But there is a real possibility that AI will live up to some of the hope being placed in it. Simpler and more forgiving interfaces should make AI-based systems for handling data and helping with time-management more congenial to doctors, patients and health-care providers than those of yore. And health-care systems sorely need a productivity boost if they are to adapt and improve in a world of high costs and older populations. The shortage of health-care workers is predicted to reach nearly 10m by 2030—about 15% of today's entire global health workforce. Artificial intelligence will not solve that problem on its own. But it may help.

This report will look at four of the forms in which this help looks likely to come. There is the help already being provided to doctors making diagnoses—help they sorely need, given that 800,000 Americans are killed or disabled by bad medical decisions every year. There is the help provided to patients who want to understand their symptoms, or need assistance and motivation to stay healthy. There is the help that AI research tools and data wrangling provide to companies trying to develop new treatments more quickly and reliably. And there is the help to the system as a whole.

Today's health systems are heavily constrained by the scarcity of workers and knowledge. Artificial intelligence can provide significant support on both fronts; it may be the case that it can offer transformational amounts of it. Would such transformation mean that, by 2100, all diseases will be prevented, cured or managed? Not in itself. But it is making that apparently hubristic goal look more likely. Discussions of the impact of AI are larded with fear and unease, sometimes appropriately. What it offers for health all around the world represents a radical potential for good. ■

Words of power
PubMed articles with keyword in abstract, %



Source: PubMed

Diagnostics

Picture this

Artificial intelligence was improving diagnoses long before the field's recent explosion

BARBARA HAD a routine mammogram in January 2023. A few weeks later she was asked to visit her doctor in the Aberdeen Royal Infirmary, in Scotland. The mammogram had looked fine to two doctors, but an AI system called Mia had seen something amiss: a six-millimetre patch of subtly-off shades of grey. It was stage 2 cancer. Had it not been spotted at that point and removed, it would not have been caught until Barbara came in for her next routine screen—or until it made its presence known in some other way.

If such tales give a visceral sense of AI's ability to improve diagnosis, statistics show the scale of the good it could attain. The British government says that analysis of brain scans by e-Stroke, a system developed by Brainomix, a startup spun out of Oxford University, has reduced the time between hospital admission and treatment for stroke patients by more than an hour. It points to as-yet-unpublished data saying that the system's speed has tripled the number of people achieving functional independence after a stroke from 16% to 48%.

Artificial intelligence has been applied to diagnosis for longer than to any other part of health care, and it shows. But the transformation it offers is far from complete. The AI systems used so far have often been what seem now like quite simple uses of pattern recognition. The foundation models which have so wowed the world since the advent of ChatGPT in 2022 have barely begun to make their mark.

The revolution began in radiology, the first sort ▸▸

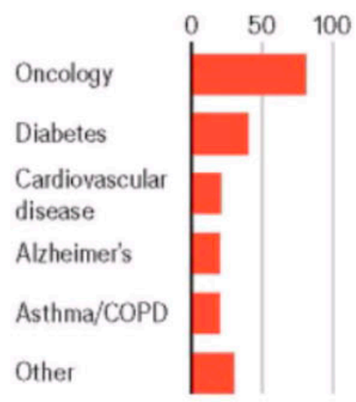
of medical imaging to go fully digital. The transition made storing and sharing images easier; it also produced images which could be read by machines. In 2012, when a neural network called AlexNet beat all comers in the annual "ImageNet challenge", the machines started to come into their own.

Neural networks, inspired by the structure of the brain's visual cortex, are systems in which information flows through layers of "neurons" stacked one on top of the other. In early neural networks all the neurons in one layer were connected to all the neurons in the next. AlexNet was a "convolutional" neural network—one in which the connections were more sparse, something that allows more discriminate forms of analysis. Combining that architecture with new processors of what was then prodigious power allowed AlexNet to revolutionise the science of computer vision, and with it the potential of automated radiology and, later on, of dermatology, ophthalmology and more.

Don't die in December

Treatments benefiting most from early AI detection, 2024*

% of US payers responding



Source: MMIT *Feb-Mar

A sight worth seeing

AlexNet's descendants are increasingly being used to complement, and sometimes replace, human radiologists. Capio Saint Göran Hospital in Stockholm, Sweden, for example, uses an AI system from Lunit, a South Korean company, as the "second pair of eyes" in its radiography department, instead of having mammograms looked at independently by two radiographers. In Denmark Transpara, a product provided by ScreenPoint Medical, a Dutch company, is used as a first reader of mammograms in low-risk cases.

Being able to do more diagnosis with fewer doctors will be helpful everywhere, but it promises to be a godsend in poor countries. Fujifilm, a Japanese company, has built a 3.5kg, battery-powered X-ray machine which, paired with AI algorithms from Qure.ai, an Indian firm, is being used to screen for tuberculosis in rural Nigeria. It can also assess a host of other diseases including pneumonia, chronic obstructive pulmonary disease (COPD) and heart failure. More ambitiously, Darlington Akogo of MinoHealth Labs in Ghana is building a radiology model trained on images from across Africa. Is it too ambitious to expect a diagnostic tool from this process? "Let's say we are aiming for the stars," says Dr Akogo. "Even if we miss it what we end up with is radiology assistance."

Some AI systems can interpret images made with less radiation than normal, thus reducing not just the number of doctors needed to interpret an X-ray but also the dose needed to make it, which is good for patients. They can also look for things doctors would not check for. In "opportunistic screening" an X-ray taken to look for a specific problem is scanned for signs of other trouble as well. Most of the 80m CT scans done in America each year are undertaken to look for a problem in some specific part of the body, but they almost always contain information about other parts, too. Doctors have no interest in passing images taken to look for one thing around their colleagues on the off chance it reveals something else. Machines have no problem multitasking, and can become experts in identifying many different types of disease.

Ultrasound systems provide another opportunity for AI. Butterfly, an American company, produces a hand-held ultrasound system which, thanks to built-in AI, can be used to assess high-risk pregnancies and to estimate due dates, fetal weights and the amount of amniotic fluid. Such measurements are not otherwise possible outside a clinic, and they normally require a range of instruments. The Bill & Melinda Gates Foundation sees Butterfly's scanners as a way of bringing down stubbornly high maternal mortality in sub-Saharan Africa. Such AI-enhanced systems—Philips and GE Healthcare are also in the market—have contributions to make beyond maternal care, for example in cardiology, emergency medicine and orthopaedics. Hundreds of Butterfly's systems are being used in Ukraine to help first responders assess the wounds of war.

Other instruments are also getting an AI make-over. Doctors in primary care in London are evaluating an AI-enabled stethoscope to see if it can improve the diagnosis of some sorts of heart disease. Trials in Oxford are comparing measurements of lung function made using an AI-driven spirometer with previous techniques for picking up COPD.

Jonathan Rothberg, the scientist, engineer and entrepreneur who founded Butterfly, is also one of the founders of Hyperfine, the maker of an innovative portable magnetic-resonance-imaging (MRI) machine called Swoop. Its AI capabilities allow it to assess what is going on using data gathered with the use of comparatively weak magnetic fields. Because low fields are easier to generate, Swoop can be taken to the patient's bedside, rather than having to sit in a room of its own like high-field MRI machines.

At the other end of the scale EZRA, a firm based in New York, is using AI to drive down the cost of full-body MRI as a cancer-screening tool. Using high-field magnets and proprietary AI it has made scans quicker and thus cheaper; it offers a 30-minute scan for $1,350 and is aiming to bring the cost down to $500. A plain language AI-produced account of what has been found is part of the service.

One of the advantages of AI systems is that they

can be trained on far more data than a medical student can. Microsoft is collaborating with Paige, a firm that develops AI for pathologists, to build an image-based AI tool for diagnosing cancer that will be fed billions of images; a pathologist looking at one slide a second for a hundred lifetimes would not amass the same amount of experience.

As a paediatric neurologist, Sharief Taraman says he can expect to see thousands of children; but the AI which his Silicon Valley based company, Cognoa, has built to assess children for autism has been trained on footage of hundreds of thousands. As a result it can use video uploaded by parents, along with a questionnaire, to reach an assessment of their condition.

It is not important simply to be able to reach an assessment; getting the assessment right matters too. With AI there is the opportunity to match or exceed human performance. For example, AIs seem likely to be able to exceed the ability of human pathologists to "grade" prostate cancers as to whether they are benign or malignant. But showing that a system is good enough takes time, and at the moment algorithms are being generated faster than it is possible to test and regulate them. Hugh Harvey, the boss of Hardian Health, a British firm that assesses medical devices, says that it currently takes at least two years for a medical device to get regulatory approval from scratch.

A sight worth seeing, a vision of you

Looking at the British government's plans to speed up the use of AIs in the diagnosis of lung cancer, David Baldwin, an honorary professor of medicine at Nottingham University, points out that two recent assessments could not confirm the accuracy and clinical impact of the tools being touted. "This is an example of the pace of development being faster than that of evaluation, and there is much work needed to ensure safe deployment," he says.

In 2019 a systematic review of the diagnostic accuracy of 82 algorithms in medical imaging found that the ways in which they had been assessed were often sub par. A particular worry was a lack of "prospective" trials which look at outcomes after an intervention, as opposed to retrospective trials which begin with outcomes and go back to look at what went before.

One of the reasons this matters is that prospective trials are better at picking up on "false positives"—cases where a system said something was wrong but it wasn't. Gerald Lip, a consultant radiologist at NHS Grampian in Scotland, has found that some algorithms, like Mia, which are as good or better than humans at finding breast cancers still do this at the expense of more false positives, in part because they work off images alone whereas doctors have other sources of information. False positives are a problem for patients because they lead to worry and potentially painful, even dangerous, follow ups. They are a problem for health systems because they drive up costs.

If AI is to lead to an increase in "opportunistic screening" for other things when an image is made for a specific purpose then false positives will need to be particularly low. Indeed the same is true for all approaches which screen those who are symptom free. When Eric Topol, director of the Scripps Research Translational Institute, in San Diego looks at systems like EZRA, which does full-body scans on people who are normally healthy, he worries about the potential for incidental findings and "rabbit-hole extensive workups with risk and cost" only to discover that there is no cancer. Daniel Sodickson, EZRA's chief scientific adviser, says the proper response to incidental findings is follow-up imaging to see if anything is changing. There will have to be a lot of good evidence for that doubling-down approach if sceptics like Dr Topol are to be convinced.

Unsurprisingly there are entrepreneurs chafing at assessment processes that cost them and their patients time

The situation seems to be improving. As AI gets more mainstream those paying for its use are seeking reliable data to decide what is worth their while. Good prospective studies take time, so it is unsurprising that there are not so many of them early on. Other problems seen in the 2019 study—there were some tests which used the data the system was trained on, rather than data it had not seen before—should become less common as the field matures. Unsurprisingly there are entrepreneurs chafing at assessment processes that cost them and their patients time. Dr Taraman worries that hesitancy about the wider use of tests that offer early diagnosis of autism has clear costs: kids are "missing a window of opportunity and are going to have lifelong consequences."

A total portrait, with no omissions

A new generation of foundation models that are trained on an assortment of data sources, not just images and vast bodies of text, looks likely to expand the toolbox further. These models do not require the huge quantities of data on which they are trained to be labelled. They have a capacity for "self-supervised" learning, and this can be applied to images, genomic data, gene-expression data, metabolic data, electronic health records, blood tests, and questionnaires on lifestyle and family history.

Foundation models should not just provide the wherewithal for better diagnoses of conditions already present. They could also provide better early warning of conditions yet to come, such as cancer, heart disease or diabetes (see chart on previous page). In 2022 Chinese researchers showed that this sort of model could predict the risk of severe disease in covid patients. That said, this sort of application of AI needs particular care and attention to make sure the models do not introduce or amplify bias.

This new technology has barely begun to permeate medicine. In 2023 a paper in *Nature* put that down to the recency of this development and the fact that, while copious text and video are available on the internet (especially if you are not too fussy about copyright) accessing large, diverse sets of medical data is hard. This offers an advantage to companies with big resources; hence the excitement about Microsoft's collaboration with Paige on a cancer-diagnosis model.

Researchers at Moorfields Eye Hospital in London have been applying AI to ophthalmology since 2016. In September last year Pearse Keane and colleagues at Moorfields and University College London published a foundation model for retinal images produced with Google DeepMind. RETFound, which was pre-trained on over a million images before being shown labelled images of conditions such as diabetic retinopathy and glaucoma, can match the performance of experts when making decisions to refer patients for a number of eye diseases. By picking up tiny changes in the eye's blood vessels it also appears to predict health conditions such as Parkinson's disease and stroke. Dr Keane says the technology should be widely available on an open-source basis within two or three years. ■

Bedside manners and more

Talking things through

Medical AIs with human faces are on their way

ASKED ABOUT the future of artificially intelligent avatars in medicine, Nova is optimistic, as well she might be. As a "brand ambassador" for Soul Machines, based in Auckland, the hub of New Zealand's visual-effects industry, it is her job to play up the "personalised and interactive" experiences such avatars will provide as they help with virtual consultations and assist with post-operative rehabilitation. As she explains this to your correspondent online she looks me in the eye and responds to what I say with approving nods and smiles. Told I have been off colour since my last meal, she says "Oh no!" with a concerned frown before suggesting ginger tea or some over-the-counter medication. The wide blue ribbon she wears over her right shoulder, she tells me, is a "symbol of my existence as a digital person and my connection to Soul Machines, the company that created me".

Greg Cross, Nova's boss at Soul Machines, says Nova's ability to respond appropriately comes from ten years of research into cognitive modelling that seeks to capture functions such as learning and emotional response. Her face conveys those responses by means of software descended from that used for computer-generated characters in movies. What she says comes in part from a version of OpenAI's ChatGPT, a system powered by a large language model, or LLM. Mr Cross thinks such avatars are going to be an increasingly important way for companies to communicate with people—and that they are going to prove irresistibly useful for health systems, where the need for something like the human touch increasingly outstrips the number of trained humans available to do the professionally appropriate touching.

Tell it where it hurts

People have long been keen to ask questions about their health on the internet. Google's search engine handles about a billion of them a day. Medical charities, patient groups, drugmakers and health-care providers put up scads of information for it to serve up, but this is hardly a guarantee that those who consult "Dr Google" will come away well informed.

An interest in trustworthy evidence has led to the development of bespoke chatbots designed to teach patients about public health issues and help them work out what their symptoms might mean. Florence was created by the World Health Organisation (WHO), Google and Amazon Web Services during the covid-19 pandemic to combat mis- and disinformation. Since then her knowledge base has expanded to include smoking, mental health and eating sensibly. But she is no one's idea of good company.

Ada Health, a German firm, offers a text-based symptom-checking chatbot that navigates a carefully structured database containing thousands of pieces of medical data carefully curated by doctors. It uses the patient's responses to generate and work through a sequence of questions, and then provides a list of possible diagnoses with the likelihood of each. Launched in 2016 it has 13m users, about one-third of them in India, Asia and Africa.

Ada's central "probabilistic reasoning engine" is nothing like as complex as the LLMs recently unleashed on the world. Using it is a bit plodding. But it is also reliable—no hallucinations—and, crucially, "explainable": when Ada assigns probabilities to diagnoses it is possible to work out exactly how it has calculated them. This reliability and explainability has allowed it to gain regulatory approval as a medical device in Germany and many other countries. Anyone trying to get a ChatGPT-like system based on an LLM approved in the same way would face daunting hurdles based on its source data, its reliability, the reproducibility of its answers and the explainability of its process. As Hugh Harvey of Hardian Health asks, "If the inputs are essentially infinite and the outputs are essentially infinite, how do you prove is safe?"

That does not mean that LLMs have nothing to say about health. Quite the contrary. The internet is awash with claims about ChatGPT's ability to diagnose perplexing medical dilemmas, analyse blood tests or figure out what a specialist doctor is testing for. Because the huge bodies of information on which they are trained include medical texts, LLMs can respond to quite recondite medical queries convincingly even though not deliberately trained with that in mind. In 2023 researchers rated Chat GPT's performance in ▸▸

the United States Medical Licensing exam as equivalent to that of a third-year medical student. For a piece of software to do that well would have been more or less unthinkable five years ago. In a recent study a version of ChatGPT based on the GPT4, OpenAI's biggest publicly accessible model, outperformed the responses human candidates give in a neurology board exam. Even when the model answered incorrectly it did so with a great deal of confidence, which is bad for a medical device but not unheard of among consultants.

Given such facility there is no doubt that the medical advice people get from LLMs can be accurate and appropriate. But that does not mean it will always be so; some is likely to be wrong and potentially dangerous. The regulatory challenges implicit in the opaque way LLMs work have led many to conclude that they are currently unregulatable in areas where mistakes can be lethal, such as diagnostics.

Some in the industry are looking for middle ways in which at least some of their attributes can be safely put to other sorts of work. Claire Novorol, the founder of Ada Health, says that the strength of LLMs is their ability to take everyday speech as an input; it allows them to get more information out of patients than a questionnaire can. This is one of the reasons she and her colleagues are trying to augment Ada's probabilistic approach with an LLM. When applied in the right context, she says, its abilities enable better, broader and more granular assessments of symptoms and health needs. One technique which they and others are trying out is "retrieval-augmented generation", which allows LLMs to extract answers from a verified source of external data.

Another approach is to use LLMs drawing from verified medical sources as advisers to health-care professionals, rather than to the public at large. Google has developed an LLM that has been fine-tuned on medical data to provide diagnostic support for clinicians in difficult cases. Hippocratic AI, a Silicon Valley startup, is devoted to building new LLMs specific to health care. It says they outperform GPT4 on all sorts of medical exams and certification tests, and it recently raised $50m in new money—despite prominently displaying on its website its unvarnished belief that "LLMs today are not safe enough for clinical diagnosis". Investors seem to see its plans to support trained staff and provide advice to patients either as promising enough on their own or as a path to something better.

It's a little embarrassing

There is also some optimism about the relationship-like connections people form with LLMs. They might prove useful in the management of long-lasting ailments or in providing psychological support for some mental-health conditions. In Nigeria the health-care firm mDoc has created a ChatGPT-powered service for mobile phones to offer health coaching for people living with chronic conditions such as diabetes or high blood pressure.

No such systems offer the real empathy of a human interlocutor. But at least one study has found that ChatGPT's responses to real-world health questions were preferred over those of licensed professionals both for their quality and empathy. Accounts of the relationships some people form with AI services like Replika, a chatbot made by Luka, of San Francisco, make it possible to imagine a future in which friendbots and healthbots converge. Chatbots originally built to provide relationships that have subsequently been given an added ability to provide health advice might compete with chatbots built for medicine whose designers are improving their social skills.

People seem to find it easier to disclose their sexual history to a chatbot than to a nurse

There are also some human qualities that AI systems may be well rid of. One is moral judgment. When it comes to sexual health people often fail to seek help because they do not want the conversation that would enable it. Caroline Govathson, a researcher at Wits University in South Africa, is running trials of a chatbot to improve the accuracy of HIV risk assessments. She found that people seem to find it easier to disclose their sexual history to a chatbot than to a nurse. Alain Labrique, the director of digital health and innovation at the WHO, sees in follow-ons to Florence "the opportunity to create a realistic interface where you could further reduce the barrier to people seeking information, whether adolescents looking for guidance on safer sex or family planning, or folks looking for information about respiratory illnesses".

That said, Dr Labrique and others worry about the technology's abuse; the thought of what sophisticated AI could do to spread public-health disinformation, he says, keeps him "up at night". As well as worries about the quality of information going out, there are also worries about what might happen to information going in, both in terms of having training data suitably anonymised and ensuring that chats with chatbots stay confidential. ■

Discovery by machine

Intelligent design

Artificial intelligence is taking over drug development

THE MOST striking evidence that artificial intelligence can provide profound scientific breakthroughs came with the unveiling of a program called AlphaFold by Google DeepMind. In 2016 researchers at the company had scored a big success with AlphaGo, an AI system which, having essentially taught itself the rules of Go, went on to beat the most highly rated human players of the game, sometimes by using tactics no one had ever foreseen. This emboldened the company to build a system that would work out a far more complex set of rules: those through which the sequence of amino acids which defines a particular protein leads to the shape that sequence folds into when that protein is actually made. AlphaFold found those rules and applied them with astonishing success.

The achievement was both remarkable and useful. Remarkable because a lot of clever humans had been trying hard to create computer models of the processes which fold chains of amino acids into proteins ▸▸

for decades. AlphaFold bested their best efforts almost as thoroughly as the system that inspired it trounces human Go players. Useful because the shape of a protein is of immense practical importance: it determines what the protein does and what other molecules can do to it. All the basic processes of life depend on what specific proteins do. Finding molecules that do desirable things to proteins (sometimes blocking their action, sometimes encouraging it) is the aim of the vast majority of the world's drug development programmes.

Because of the importance of proteins' three-dimensional structure there is an entire sub-discipline largely devoted to it: structural biology. It makes use of all sorts of technology to look at proteins through nuclear-magnetic-resonance techniques or by getting them to crystallise (which can be very hard) and blasting them with X-rays. Before AlphaFold over half a century of structural biology had produced a couple of hundred thousand reliable protein structures through these means. AlphaFold and its rivals (most notably a program made by Meta) have now provided detailed predictions of the shapes of more than 600m.

As a way of leaving scientists gobsmacked it is a hard act to follow. But if AlphaFold's products have wowed the world, the basics of how it made them are fairly typical of the sort of things deep learning and generative AI can offer biology. Trained on two different types of data (amino-acid sequences and three-dimensional descriptions of the shapes they fold into) AlphaFold found patterns that allowed it to use the first sort of data to predict the second. The predictions are not all perfect. Chris Gibson, the boss of Recursion Pharmaceuticals, an AI-intensive drug-discovery start-up based in Utah, says that his company treats AlphaFold's outputs as hypotheses to be tested and validated experimentally. Not all of them pan out. But Dr Gibson also says the model is quickly getting better.

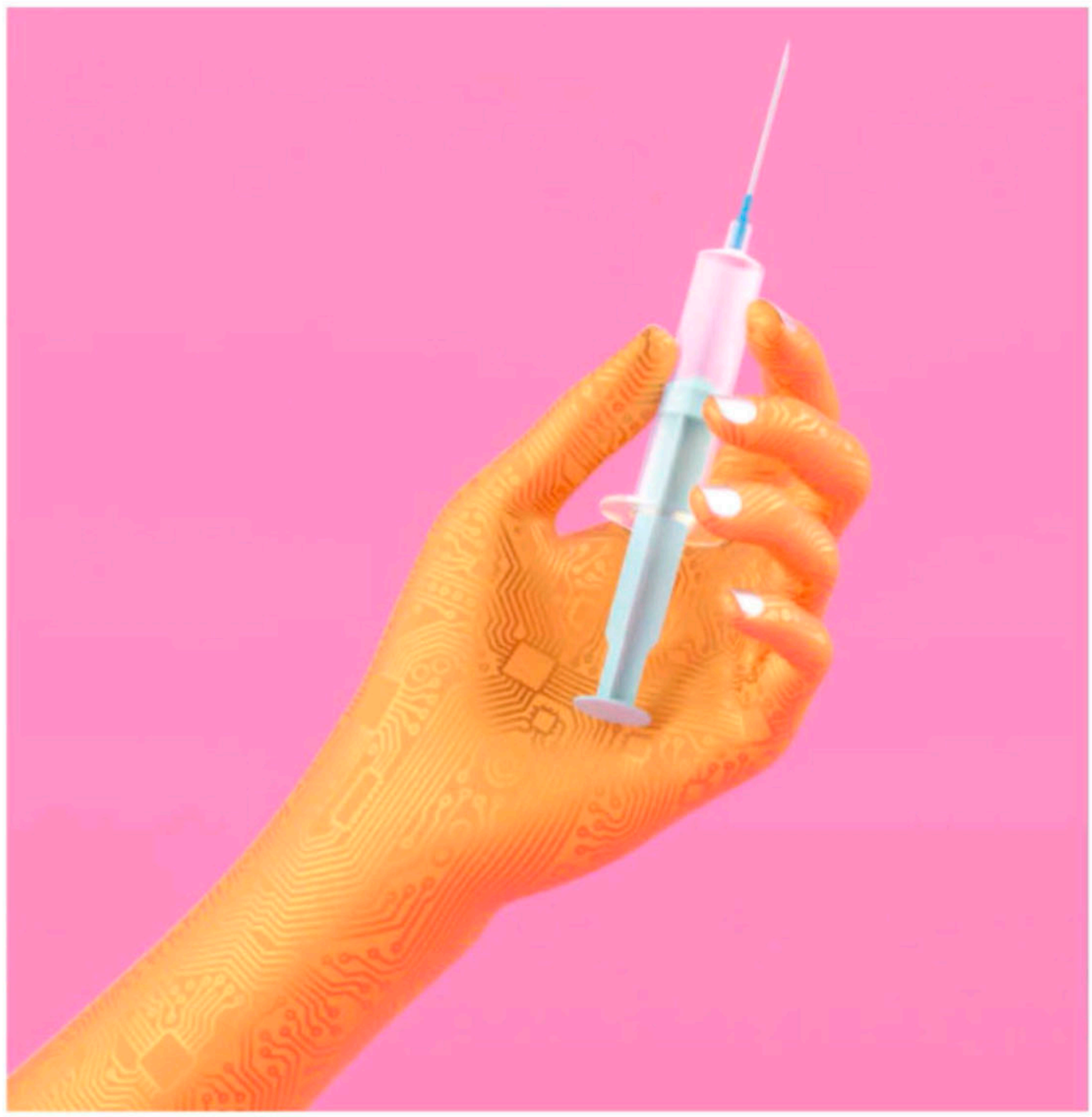
Crystal dreams

This is what a whole range of AIs are now doing in the world of biomedicine and, specifically, drug research: making suggestions about the way the world is that scientists could or would not come up with on their own. Trained to find patterns that extend across large bodies of disparate data, AI systems can discover relationships within those data that have implications for human biology and disease. Presented with new data they can use those patterns of implication to produce new hypotheses which can then be tested.

The ability of AI to generate new ideas provides users with insights that can help to identify drug targets and to predict the behaviour of novel compounds, sometimes never previously imagined, that might act as drugs. It is also being used to find new applications for old drugs, to predict the side effects of new drugs, and to find ways of telling those patients whom a drug might help from those it might harm.

Such computational ambitions are not new. Large-scale computing, machine learning and drug design were already coming together in the 2000s, says Vijay Pande, who was a researcher at Stanford University at the time. This was in part a response to biology's fire hose of new findings: there are now more than a million biomedical research papers published every year.

One of the early ways in which AI was seen to help with this was through "knowledge graphs", which allowed all that information to be read by machines and mined for insights about, say, which proteins in the blood might be used as biomarkers revealing the presence or severity of a disease. In 2020 BenevolentAI, based in London, used this method to see the potential which baricitnib, sold by Eli Lilly as a treatment for rheumatoid arthritis, had for treating covid-19.



Biology can be thought of as "an information processing system, albeit an extraordinarily complex one"

This January, research published in *Science* described how AI algorithms of a different sort had accelerated efforts to find biomarkers of long covid in the blood. Statistical approaches to the discovery of such biomarkers can be challenging given the complexity of the data. AIs offer a way of cutting through this noise and advancing the discovery process in diseases both new, like long covid, and hard to diagnose, like the early stages of Alzheimer's.

The time is right

But despite this past progress, Dr Pande, now at Andreessen Horowitz, a venture-capital firm that is big on AI, thinks that more recent advances mark a step change. Biomedical research, particularly in biotech and pharma, was steadily increasing its reliance on automation and engineering before the new foundation models came into their own; now that has happened, the two seem to reinforce each other. The new foundation models do not just provide a way to cope with big bodies of data; they demand them. The scads of reliable data highly automated labs can produce in abundance are just the sort of thing for training foundation models. And biomedical researchers need all the help they can get to understand the torrents of data they are now capable of generating.

By finding patterns humans had not thought to look for, or had no hope of finding unaided, AI offers researchers new ways to explore and understand the mysteries of life. Some talk of AIs mastering the

"language of biology", learning to make sense of what evolution has wrought directly from the data in the same way that, trained on lots of real language, they can fluently generate meaningful sentences never uttered before.

Demis Hassabis, the boss of DeepMind, points out that biology itself can be thought of as "an information processing system, albeit an extraordinarily complex and dynamic one". In a post on Medium, Serafim Batzoglou, the chief data officer at Seer Bio, a Silicon Valley company that specialises in looking at how proteins behave, predicts the emergence of open foundation models that will integrate data spanning from genome sequences to medical histories. These, he argues, will vastly accelerate innovation and advance precision medicine.

Like many of the enthusiasts piling into AI Dr Pande talks of an "industrial revolution...changing everything". But his understanding of the time taken so far leads him to caution that achievements that justify that long-term enthusiasm change will not come overnight: "We are in a transitory period where people can see the difference but there is still work to do."

All the data from everywhere all at once

A lot of pharma firms have made significant investments in the development of foundation models in recent years. Alongside this has been a rise in AI-centred startups such as Recursion, Genesis Therapeutics, based in Silicon Valley, Insilico, based in Hong Kong and New York and Relay Therapeutics, in Cambridge, Massachusetts. Daphne Koller, the boss of Insitro, an AI-heavy biotech in South San Francisco, says one sign of the times is that she no longer needs to explain large language models and self-supervised learning. And Nvidia—which makes the graphics-processing units that are essential for powering foundation models—has shown a keen interest. In the past year, it has invested or made partnership deals with at least six different AI-focused biotech firms including Schrodinger, another New York based firm, Genesis, Recursion and Genentech, an independent subsidiary of Roche, a big Swiss pharmaceutical company.

The drug-discovery models many of the companies are working with can learn from a wide variety of biological data including gene sequences, pictures of cells and tissues, the structures of relevant proteins, biomarkers in the blood, the proteins being made in specific cells and clinical data on the course of disease and effect of treatments in patients. Once trained, the AIs can be fine tuned with labelled data to enhance their capabilities.

The use of patient data is particularly interesting. For fairly obvious reasons it is often not possible to discover the exact workings of a disease in humans through experiment. So drug development typically relies a lot on animal models, even though they can be misleading. AIs that are trained on, and better attuned to, human biology may help avoid some of the blind alleys that stymie drug development.

Insitro, for example, trains its models on pathology slides, gene sequences, MRI data and blood proteins. One of its models is able to connect changes in what cells look like under the microscope with underlying mutations in the genome and with clinical outcomes across various different diseases. The company hopes to use these and similar techniques to find ways to identify sub-groups of cancer patients that will do particularly well on specific courses of treatment.

Recursion says it can use laboratory robotics to conduct 2.2m experiments each week

Sometimes finding out what aspect of the data an AI is responding to is useful in and of itself. In 2019 Owkin, a Paris based "AI biotech", published details of a deep neural network trained to predict survival in patients with malignant mesothelioma, a cancer of the tissue surrounding the lung, on the basis of tissue samples mounted on slides. It found that the cells most germane to the AI's predictions were not the cancer cells themselves but non-cancerous cells nearby. The Owkin team brought extra cellular and molecular data into the picture and discovered a new drug target. In August last year a team of scientists from Indiana University Bloomington trained a model on data about how cancer cells respond to drugs (including genetic information) and the chemical structures of drugs, allowing it to predict how effective a drug would be in treating a specific cancer.

Many of the companies using AI need such great volumes of high quality data they are generating it themselves as part of their drug development programmes rather than waiting for it to be published elsewhere. One variation on this theme comes from a new computational sciences unit at Genentech which uses a "lab in the loop" approach to train their AI. The system's predictions are tested at a large scale by means of experiments run with automated lab systems. The results of those experiments are then used to retrain the AI and enhance its accuracy. Recursion, which is using a similar strategy, says it can use automated laboratory robotics to conduct 2.2m experiments each week.

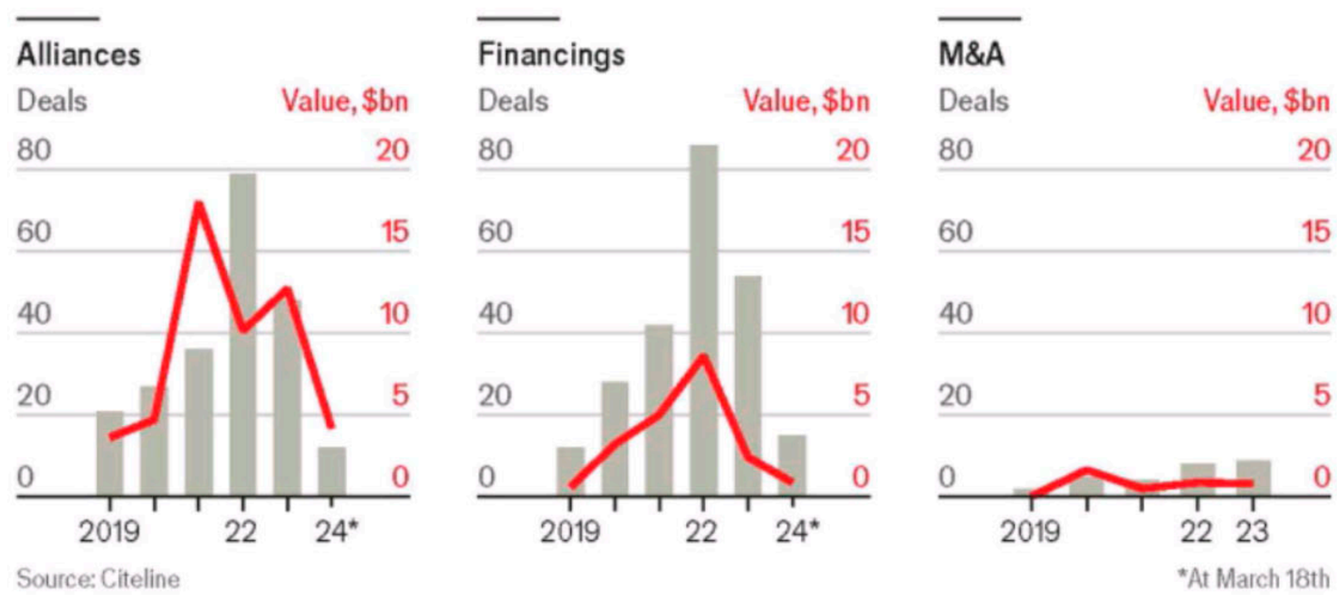
The point is to change it

As pharma firms become increasingly hungry for data, concerns about the privacy of patient data are becoming more prominent. One way of dealing with the problem, used by Owkin among others, is "federated learning", in which the training data it needs to build an atlas of cancer cell types never leaves the hospital where the tissue samples required are stored: what the data can offer in terms of training is taken away. The data themselves remain.

The implications of AI go beyond understanding disease and on into figuring out how to intervene. Generative AI models, such as ProteinSGM from the University of Toronto, are now powerful tools in protein design because they are not merely able to picture existing proteins but also to design new ones—

Reaching for their AlphaBillfolds

Global AI pharmaceutical deals



Source: Citeline

*At March 18th

with desired characteristics—that do not currently exist in nature but which are possible ways of embodying a desired function. Other systems allow chemists to design small molecules that might be useful as drugs as they interact with a target in a desired way.

At every stage the AI hypotheses need to be checked against reality. Even so, such an approach seems to speed up discovery. A recent analysis of drugs from "AI-intensive" firms carried out by BCG, a consulting group, found that of eight drugs for which information was available, five had reached clinical trials in less than the typical time for doing so. Other work suggests AI could yield time and cost savings of 25% to 50% in the preclinical stage of drug development, which can take four to seven years. Given the cost in time and money of the whole process, which can be several billions of dollars for a single drug, improvements could transform the industry's productivity. But it will take time to know for sure. Drug pipelines are still slow; none of these promised new drugs has yet got to market.

Insilico Medicine is one of the companies hoping for that to change. It uses a range of models in its drug development process. One identifies the proteins that might be targeted to influence a disease. Another can design potential new drug compounds. Using this approach it identified a drug candidate which might be useful against pulmonary fibrosis in less than 18 months and at a cost of $3m—a fraction of the normal cost. The drug recently started Phase 2 trials.

A lot of pharma firms in China are doing deals with AI-driven companies like Insilico in the hope of seeing more of the same. Some hope that such deals might be able to boost China's relatively slow-growing drug-development businesses. China's contract research organisations are already feeling the benefits of AI fuelled interest in new molecules from around the world. Investment in AI-assisted drug discovery in China was more than $1.26bn in 2021.

The world has seen a number of ground breaking new drugs and treatments in the past decade: the drugs targeting GLP-1 that are transforming the treatment of diabetes and obesity; the CAR-T therapies enlisting the immune system against cancer; the first clinical applications of genome editing. But the long haul of drug development, from discerning the biological processes that matter to identifying druggable targets to developing candidate molecules to putting them through preclinical tests and then clinical trials, remains generally slow and frustrating work. Approximately 86% of all drug candidates developed between 2000 and 2015 failed to meet their primary endpoints in clinical trials. Some argue that drug development has picked off most of biology's low-hanging fruit, leaving diseases which are intractable and drug targets that are "undruggable".

The next few years will demonstrate conclusively if AI is able to materially shift that picture. If it offers merely incremental improvements that could still be a real boon. If it allows biology to be deciphered in a whole new way, as the most boosterish suggest, it could make the whole process far more successful and efficient—and drug the undruggable very rapidly indeed. The analysts at BCG see signs of a fast-approaching AI-enabled wave of new drugs. Dr Pande warns that drug regulators will need to up their game to meet the challenge. It would be a good problem for the world to have. ■

Health-care systems

The AIs have it

Technology has rarely made health care more efficient. Can this time be different?

IF YOU WANT to see a spiffy new protein structure, ask an AI. If you really need a fax machine, try a doctor's office. It will be somewhere in the corner under a clipboard with a variety of paper forms attached to it. Not true for all doctors, or all health-care systems, but true enough for a wry grin in many; the sector's digital transformation has been patchy at best.

Economists think technology has been responsible for between 25% and 50% of growth in health expenditure in OECD countries over the past 50 years, growth which has seen the sector's share of GDP grow relentlessly. In many of those countries it has achieved much. And yet, after decades of costly effort, stories still abound of incompatible IT systems, confidentiality breaches and paper records that need to be held on to in parallel to electronic health records. Is there any reason to think that AI can really sort this out?

There is. And it is offered, in part, by the sheer size of the problem. America spent $4.5 trillion on ▸▸

health care in 2022, with administrative costs accounting for about 30% of the total. Trillion-dollar opportunities can attract the attention of very large companies, such as America's tech giants. And those companies think their large language models (LLMs) and other big self-supervised-learning systems offer new tools particularly well suited to the job. The fact that the biggest companies in AI see health care as a place to compete is a genuine cause for optimism.

Among Google's health-care ventures is Med-PaLM2, a health-specific LLM being developed to answer health-care questions and summarise information during patient handoffs or staff shift changes. Amazon's investment in Anthropic, which provides an AI assistant called Claude, was in part intended to bolster what the company can offer in health care. Chinese giants are interested too. In 2022, a report by McKinsey, a management consulting firm, argued that using AI to predict diagnostic outcomes and support clinical decisions could create about $5 billion in economic value in China.

Then there is Microsoft, the tech company keenest on growth through acquisition. In 2021 it paid $19.7bn for Nuance, based in Burlington, Massachusetts, a company which makes AI that helps doctors with administrative tasks such as creating clinical notes and electronic health records.

The AI-backed voice transcription offered by Nuance and others, such as Amazon's Healthscribe, is a big deal. Harpreet Sood, a doctor who used to be NHS England's Associate Chief Clinical Information Officer, says the technology has been game changing for him. It saves him four to six minutes per patient, which means two to three hours a day. His patients have noticed that he is looking at them more and his screen less; he and they both like it that way.

Endless evolution

Other roads to better efficiency abound—especially in America, which is not just the world's biggest health-care market but also a peculiarly inefficient one. One currently popular way of trying to improve efficiency and outcomes is the creation of hospital "command centres". The idea is something like an air-traffic-control system in which a wall of screens gives up-to-date information about key metrics such as bed availability, resource use and the status of patients across the hospital. Parts of that ensemble are replicated on tablets and mobile devices used by staff on the wards. Not only can such systems see problems as they happen, they can anticipate bottlenecks to come.

These systems are now found at more than 200 hospitals around the world. The command centre at Johns Hopkins Hospital in Baltimore has made transferring patients between locations 60% faster, cut the waiting times for emergency treatment by 25% and reduced the time in post-surgical beds by 70%. Tampa General Hospital has reported a gain in efficiency worth $40m since launching a command centre using 20 AI applications.

Another AI-led vision of the future involves keeping people out of hospital—or looked at in another way, taking hospitals to the people. Britain, which has a relatively low number of hospital beds, is an eager adopter of "virtual wards", which allow patients to be transferred from hospital to recover in their own homes with the aid of monitoring devices such as a tablet or a blood pressure cuff. In 2023 Britain reached 10,000 virtual ward beds. As yet, these systems are not showing as much benefit as they might. A recent study of one such scheme found them more expensive than hospital treatment. But AIs might help.

Doccla, one of a number of British virtual-ward tech firms, says it is working towards integrating LLMs into its clinical workflow. The vision is to bring together data from wearable devices, patient records and call transcripts into a system that provides a "co-pilot" which can keep the health-care provider abreast of what is happening among the patients. Such capacities will help not just in virtual wards, but across the system. They should let doctors get to grips with vital health information that can be buried in plain sight.

If this is to come about, though, systems will have to adapt, and that can prove hard. Robert Wachter of the University of California, San Francisco, and Erik Brynjolfsson, at Stanford, have recently argued that humans are generally unable to implement the profound changes in "organisational structure, leadership, workforce or workflow needed to take full advantages of new technologies, at least at first."

Take the decentralisation of care. To the extent that AI supports good decision making, its tendency will probably be to move care away from the centre and towards the edge: to allow more diagnosis in general-practice, perhaps through smarter instruments; to move other decisions to pharmacies; to increase the access patients have to advice and monitoring in the home. But patients often have set expectations about seeing a doctor in person, or having a nearby hospital.

It may be that countries which are still developing their health systems have a better chance at "reimagining the work" than those where institutions and patients are already set in their ways. Dr Sood thinks countries with less established health infrastructure but good digital connectivity may lead the AI way—he points to India, Kenya and Indonesia. These nations may be better able to build their systems around the technology patients are already using, for example by providing care on platforms such as WhatsApp.

No one should think that what AI offers in terms of greater efficiency can be taken as a given. There will doubtless be schemes that overpromise and overcharge. There will be a constant need for evaluation, supervision and updating. It is not just that AIs can "drift". Some of the advantages companies want their systems to offer, such as keeping abreast of research in a way doctors often cannot, require the systems to change over time, and this means retraining and recertification to ensure efficacy and safety.

But if constant updating and change bring challenges, their upside is clear. And the changes institutions need to make when adapting to new technologies should be made easier if those technologies can change too. That ability to both drive change and make it easier to cope with is one of the prizes that AI should, at its best, be able to offer.

None of those prizes will be won easily. Getting the most out of AI will require institutions which find change hard to undertake a lot of it. It will find regulators under proper pressure to ensure safety facing new challenges in terms of the scope of the technology and the speed at which it changes. And it will need economic incentives that realise the technology's potential to save costs and lives. But if people can bring these shifts and reforms about, the machines will pay them back bountifully. ■

Countries with less established health infrastructure but good digital connectivity may lead the AI way

Acknowledgments A list of acknowledgments and sources is included in the online version of this Technology Quarterly

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Middle East & Africa

Rwanda 30 years on

Where the past is ever-present

KIGALI

Paul Kagame sees himself as indispensable to a still fragile country. Many in the West agree

EVERY YEAR on April 7th Paul Kagame, Rwanda's president, commemorates the start of the most abominable event of the late 20th century, the Rwandan genocide. Over 100 days in 1994 masses of the majority Hutu population slaughtered hundreds of thousands of their countrymen, mostly from the minority Tutsi group. In these annual speeches Mr Kagame offers glimpses of why he is Africa's most polarising leader. In one breath there is the official narrative: Rwanda is now a miracle of peace, unity and prosperity—a beacon of progress lit from the embers of the genocide. In the next there are hints of the more sinister figure his critics decry, for instance in his disdain for those who challenge him. They also point out his brutal repression and his warmongering in neighbouring Congo.

Ahead of the 30th anniversary of the genocide some observers in Kigali, the capital, hope that Mr Kagame will use the event to move beyond the question of whether Rwanda is Africa's Singapore or Africa's North Korea. About two-thirds of Rwanda's population are under 30. Some diplomats and businessmen wonder whether the 66-year-old president, who has, in effect, run the country since 1994, might speak of the next 30 years, loosen the grip of his authoritarian state and even suggest when he might plan to step aside.

That is unlikely. In the "land of a thousand hills" only one man can have the moral high ground. On July 15th Mr Kagame will almost certainly be re-elected as president with a margin that would make even Vladimir Putin blush, in a ballot neither free nor fair. Having won 98% of votes in a constitutional referendum in 2015 that still allows him to run for two more terms of office lasting until 2034, he is going nowhere.

To assess Rwanda today, you can look at Mr Kagame's policies in three places: at home, in the wider Great Lakes region, and in the rest of the world. Across them a picture emerges of some reform and reconciliation, with a lot of repression and realpolitik. Central to Mr Kagame's domestic agenda is state-enforced brainwashing. At mandatory *ingando* (solidarity) camps and in prisons, an official narrative is drummed into the population. It is a story that emphasises a national Rwandan identity over ethnic ones. It does not mention the crimes committed by Mr Kagame's party, the Rwandan Patriotic Front (RPF).

For the government, the case for top-down reconciliation is obvious, given that perpetrators live cheek by jowl with the families of victims. Has it worked? A state-sponsored "reconciliation barometer" shows that nearly 100% of Rwandans respond positively to questions about whether they are tolerant, trusting and united. Phil Clark of the School of Oriental and African Studies at the University of London has written that "most Rwandans...have chosen to get on with life rather than settle old scores."

Other researchers argue that in Rwanda reconciliation is often superficial. Susan ▸▸

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Thomson of Colgate University in New York has described "everyday resistance" to government schemes. This includes people keeping silent or even laughing during community meetings, and passing critical messages clandestinely at vegetable markets. Though it is impossible to see into the hearts of ordinary Rwandans, you can see the repression that has come with reconciliation. Expansive laws banning "divisionism" and genocide denial are used against dissidents. A system whereby neighbours spy on one another keeps close tabs on villagers. Journalists and opposition politicians have been imprisoned and some have died in mysterious circumstances. Opponents of the regime outside the country have been harassed and some have been killed, according to Human Rights Watch, an international monitor.

Rwanda prefers it when visitors focus on Kigali's clean streets, its gleaming convention centre, the lack of petty corruption, its tourism lodges and mountain gorillas. Western diplomats praise Rwanda's effective use of aid, which adds up to the equivalent of around 75% of government spending. Such is the interest from other African officials that there is now a dedicated agency explaining how they can use Rwanda's methods. It is a sign of what Ken Opalo, a Kenyan academic, calls "Rwanda envy". Some of that is justified. GDP grew by more than 8% a year on average from 1995 to 2022. Life expectancy increased from 49 years to 66 between 2001 and 2021. Child mortality fell by 77%.

Yet there may be less to Rwanda's success than meets the eye. Several researchers have credibly suggested that official measures of poverty underestimate its true extent. Others have questioned official data on agricultural yields. And just 2% of Rwandans have fridges, a symbol of African middle-class life. That is well below the rate in other nearby countries such as Ethiopia (6%) and Tanzania (10%) that have similar income levels, according to the Global Data Lab at Radboud University in the Netherlands.

In private many Rwandans complain about big gaps between the rich and poor. The country has a higher Gini coefficient, a benchmark for income inequality, than regional peers. A sense that the gains from growth are heavily skewed to a narrow elite could be socially dangerous. One study suggests that Tutsis, who make up 10-15% of the population, hold 80% of top jobs in the government and state-owned firms such as Crystal Ventures, run by the RPF, and Horizon, run by the army. Some foreigners praise these firms for investing in the economy, though they can also deter investors by stifling competition.

Yet Mr Kagame's ambitions have never been limited by his country's borders. In the 1980s he and other Tutsi exiles in Uganda helped Yoweri Museveni take power in that country. In the early 1990s the RPF went to war against the then Hutu-led regime in Rwanda, and in 1994 it marched on Kigali to end the genocide, which was sparked when a plane carrying Juvenal Habyarimana, Rwanda's then president, was shot down. In 1997 Mr Kagame and Mr Museveni together toppled Mobutu Sese Seko, Congo's dictator for three decades, after he gave sanctuary to Rwandan army and militia leaders who had taken part in the genocide. When the man they replaced him with, Laurent Kabila, proved less than pliant, Rwanda invaded again, instigating a war that led to the loss of 1m-5m lives, mostly from hunger and disease.

Bad neighbours

Rwanda, which seems to export more minerals than it mines at home, has retained a strong presence in resource-rich regions of eastern Congo. According to the UN, it supports an armed group known as M23, which is accused of murder and rape and is close to capturing the regional capital, Goma, increasing tension between Congo and Rwanda. "War could break out at any time," worries a Western diplomat.

Rwanda's sympathisers argue that its actions in eastern Congo are about self-defence and the protection of Tutsis. The Rwandan government points out that there are links between the Congolese army and a group known as the FDLR, which traces its origins to the Hutu *génocidaires* who fled in 1994. Yet there is more to Rwanda's meddling. The latest spasm of violence by M23 followed Congo's moves to sideline Rwanda by inviting Burundian and Ugandan troops into the country and by cosying up to Kenya. Michela Wrong, a journalist, wrote last year that "Kagame has long believed in his right to be *incontournable* [unavoidable], not only in Rwanda but also in the region, on the continent, and even in the global arena."

Some early aid to Rwanda was motivated by Western guilt for failing to intervene to stop the genocide; some because Rwanda proved that aid to Africa could actually work. Increasingly, though, it is Mr Kagame's transactional realpolitik that ensures the West backs him. Britain, for instance, wants to send asylum-seekers there. Some in Rwanda's government regret that deal because they think it tarnishes its brand. But there have been benefits. Britain has agreed to pay £370m ($470m) for the "partnership" by 2026, about ten times more than its annual aid contributions to the country, with more cash if asylum-seekers ever arrive. That contrasts with Britain's response in 2012 to an M23 offensive, when it cut aid to Rwanda.

France, too, is cosying up to Mr Kagame. For years relations were strained because a French judge accused the RPF of shooting down the plane carrying Habyarimana, whose regime Paris supported. Emmanuel Macron, who in 2021 in Kigali asked for forgiveness for France's role during the genocide, has repaired relations. The EU is funding Rwanda's deployment against jihadists in Mozambique, near where Total, a French energy giant, is building a huge gas project. In February, to the ire of Congo, the bloc said it wanted to boost imports of minerals from Rwanda.

America has taken a tougher stance. It has imposed sanctions on a Rwandan general for his alleged role in supporting M23 and has suspended military aid. But America remains Rwanda's largest donor and is reluctant to alienate Mr Kagame, an ally with a strong army that he is willing to send to unstable parts of Africa. Rwanda's leader also knows his way around Washington; in February he wooed congressmen at a prayer breakfast. (By contrast, a South African delegation turned up during recess and struggled to meet anyone.)

Indeed, Rwanda has managed to keep friends across several political divisions. China has built most of Rwanda's major roads and sells it weaponry. Mr Kagame has praised Russia's role in Africa—yet will be one of a few African countries soon to host a new Ukrainian embassy. Rwanda expressed sympathy with Israel after the massacre by Hamas on October 7th, but has also sent aid to Gaza. Qatar is a major investor in Rwanda but this month a delegation was welcomed from its rival, the United Arab Emirates. "Kagame understands that, ultimately, diplomacy is all about interests," says a diplomat.

When Rwanda's leader speaks on April 7th there will be many foreign dignitaries in attendance. When he wins re-election in July, few of them will speak out. There is a grim logic to such reticence: Mr Kagame will probably be calling the shots for at least ten more years. But as his fourth decade in charge of Rwanda begins, the outside world may want to ponder a question. How stable can Rwanda really be if it depends on the rule of just one man? ■

The war in Gaza

On the brink of man-made famine

JERUSALEM

Gaza is starving while Israel and Hamas reject even a temporary ceasefire

AS AMERICAN SHIPS were crossing the Atlantic to build a humanitarian pier in Gaza, American diplomats withheld their veto when the UN Security Council voted on March 25th for a ceasefire between Israel and Hamas during the month of Ramadan, which ends on April 9th. America's dispatch of ships and this diplomatic rebuke reflect the growing frustration of President Joe Biden's administration with Israel's conduct of the war as well as wider concerns that many of Gaza's 2.2m inhabitants will starve unless they get urgent aid.

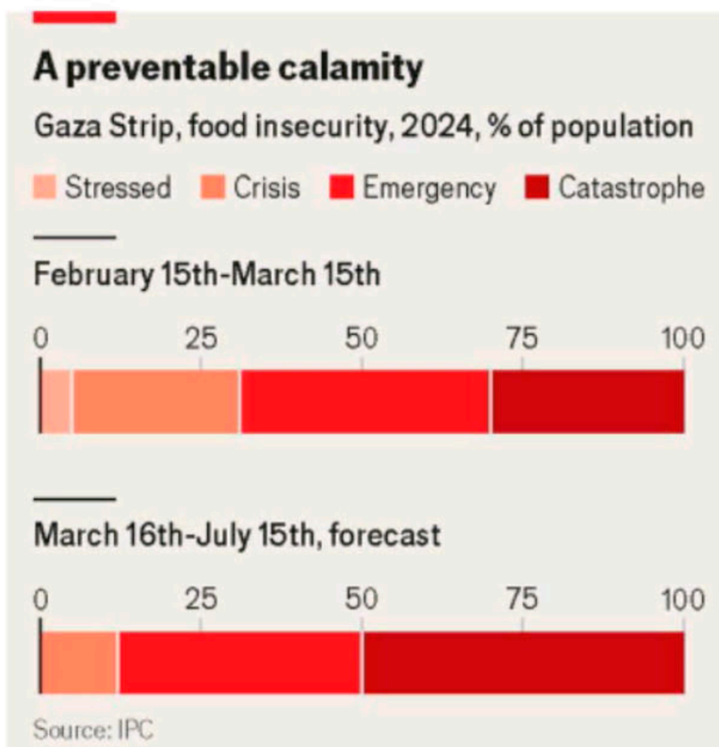
These worries crystallised on March 18th with the release of a report warning that about half of Gaza's population faces "catastrophic food insecurity" and that around 70% of an estimated 300,000 people still in Gaza city will probably experience "famine" within the next two months. The report was compiled by the Integrated Food Security Phase Classification (IPC) system, an international network that provides apolitical assessments. Israel, which previously denied accounts of starvation, has tellingly not rebutted the IPC report.

The famine is caused not only by Israel's restrictions on food entering Gaza, but also by its interruption of distribution. The UN says Israel routinely denies approval for aid convoys. Earlier this month it bombed a food-distribution centre. Israeli forces occupy most of the farmland and have displaced much of the population.

Reports from the ground in Gaza are patchy and not always trustworthy. The 365 sq km coastal strip is divided into enclaves, some controlled by the Israel Defence Forces (IDF), others by Hamas. Increasingly there are areas where local crime families have stolen the little food brought in and are selling it for profit.

There are no reliable numbers yet of deaths from hunger but the data the IPC has gathered indicate that in February 29% of children under the age of two in northern Gaza were suffering from acute malnutrition. Some 66% of families there went without any food for 24 hours at least ten times last month.

The situation is worst in Gaza city, which has been intensively bombarded and cut off by the IDF in the nearly six months since Hamas launched its deadly attack on Israel. Only a small handful of supply convoys have been allowed in. There are now more regular convoys to the 1.5m Palestinians sheltering around Rafah on the Egyptian border, but these supplies, insufficient as they are, will be jeopardised if Israel embarks on the next step of its military campaign against the last major stronghold of Hamas there.



Israel claims its war is to "destroy Hamas", not the civilian population, and has denied that it is intentionally starving Gaza. But some senior Israeli politicians have called for exactly that and security officials have admitted that withholding supplies is "a lever of pressure on Hamas to release Israeli hostages". Israel has also cut off the water pipeline to northern Gaza to force the population to move south.

"Even if it's not fully intentional, it's criminal negligence bordering on intentionality, and the result for the people of Gaza is the same," says Tania Hary of Gisha, an Israeli human-rights organisation. It and others have asked the Supreme Court to order the government to remove restrictions on supplies to Gaza and to accept its responsibility as the occupying power to provide for the population.

Some IDF officers accept that they are responsible for all the population's needs. "We will supply them if given the order," says one. But no such order has been forthcoming from the government of Binyamin Netanyahu, the prime minister, whose hard-right ministers have even tried to block shipments of flour from America.

Israel's position on supplies to Gaza has fluctuated since the war began. First it allowed only a minimal number of lorries through the Rafah border crossing with Egypt. It has since opened its own crossing with Gaza, but only for supplies that have first come through Egypt, and started allowing shipments by sea. Yet Mr Netanyahu's government is also pandering to those Israelis who—traumatised by the massacre on October 7th and demanding that Hamas release hostages—oppose allowing any food in. Some have picketed Israel's border crossing to Gaza to try to halt aid convoys. As a result, the government has not held any serious discussions or published a policy on humanitarian aid.

"All the decisions on supplies to Gaza have been made on the fly, without the generals or the government understanding that we have a responsibility to come up with a comprehensive strategy," says a frustrated IDF officer. On March 13th Israel seemed to change policy when it pledged "to flood the area with aid". But instead of providing it, Israel will merely facilitate efforts by others to do so.

Israel has also built a new road into northern Gaza and allowed a resumption ▸▸

of shipments by private Palestinian contractors, who before the war brought in around 90% of Gaza's food imports. Yet this is not enough and many are calling for a resumption of operations by the UN Relief and Works Agency, the main aid organisation in Gaza, which Israel says has been infiltrated by Hamas.

The quickest way of preventing famine would be a temporary ceasefire to allow aid in. But Mr Netanyahu has rejected the UN resolution calling for one, because it is not conditional on the release of 134 hostages still held in Gaza. Hamas, meanwhile, has rejected a proposal for a six-week truce, including the release of 40 hostages and hundreds of Palestinian prisoners, because it does not require Israel to withdraw its forces from Gaza. Locked in a deadly battle, both sides seem prepared to let the people of Gaza starve. ■

Egypt

A crisis deferred

DUBAI

After pushing its economy to the brink, Egypt gets a bail-out

IN ANCIENT TIMES, the pharaohs knew their survival might depend on the annual flooding of the Nile. Without its deluge of rich black silt, crops could not be sown, and hungry people tended to turn on their leaders. Times have changed, but Egypt's modern-day pharaoh still looks elsewhere to sustain his rule: not south, to the headwaters of the Nile, but east, to the oil-rich monarchies of the Gulf.

On February 23rd Egypt and the United Arab Emirates (UAE) signed a $35bn deal to develop Ras el-Hekma, a wedge of land jutting off Egypt's Mediterranean coast. The biggest urban land sale in Egypt's history saw the Emiratis buy the rights to 171m square metres (42,000 acres) of land, with plans to build homes, hotels and shopping centres in a sort of Dubai on the Med. Egypt will retain a 35% stake in the project.

This was not just a property deal, though: the deluge of investment also bailed out a country on the brink of economic crisis after a decade of debt-fuelled spending. Two months ago, Abdel-Fattah al-Sisi's government was scrounging for dollars to pay for imported goods and for an enormous debt-service bill.

Within weeks of the announcement, the IMF more than doubled the $3bn loan it promised Egypt in December 2022, to $8bn. The European Union (EU) announced a €7.4bn ($8bn) aid package, and the World Bank stumped up another $6bn. All told, Egypt hauled in more than $50bn, a sum that dwarfs the central bank's $35bn in foreign reserves. The mega-deal has, for now, pulled it back from the brink. But it leaves several big questions.

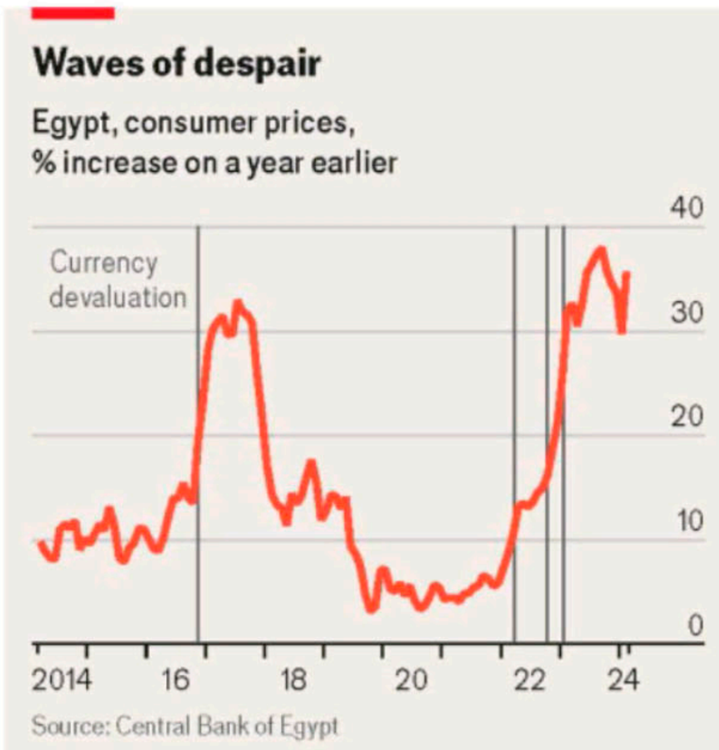
The first is what the UAE gets in return for its largesse. The answer is partly about politics. The Emiratis are exasperated with Mr Sisi, who begs them for aid even as he disagrees with their foreign policy in neighbouring Libya and Sudan. No one wants to see economic collapse in the biggest Arab country. But the UAE did not want to bail out Mr Sisi as it did after his coup in 2013, when it joined Saudi Arabia and Kuwait in sending $25bn in aid.

The UAE hopes the Ras el-Hekma deal, the largest influx of foreign direct investment in Egypt's history, will give it more leverage over Mr Sisi—and perhaps turn a profit, too. Property has been a good investment in Egypt, where many people see houses as a safer bet than stocks or savings. Apartments and villas in a fancy Emirati development might appeal to both Egyptian and Gulf buyers.

There are, however, reasons for scepticism. Mr Sisi, a career military man, is unlikely to bend much on foreign policy. Profits may be slow to trickle in: Egypt has a patchy track record with purpose-built cities. The new capital rising in the desert east of Cairo, almost a decade in the making, is still largely a ghost town (it does not even have a name yet). Mostafa Madbouly, the Egyptian prime minister, promises that Ras el-Hekma will attract 8m tourists. That seems unlikely, since the whole country drew only 14.9m last year.

Still, the UAE can afford to be patient—and the real price tag is less than the $35bn headline. ADQ, a sovereign wealth fund in Abu Dhabi, agreed to pay $24bn in fresh money. The other $11bn comes from existing deposits at Egypt's central bank, which it had never expected to recoup anyway.

The second question is what the deal means for Egypt's promised reforms. In 2022 it assured the IMF it would float its currency and stop the state from crowding out private enterprise. Similar pledges had come to naught before: Egypt devalued the pound three times between March 2022 and January 2023 but never allowed it to float. By the start of 2024 efforts to prop up the currency were unsustainable. The official rate was around 31 to the dollar; on the black market, it was 75. The IMF refused to unlock further tranches of aid.



On March 6th the Egyptian pound was allowed to sink to 50. In a surprise move, the central bank also raised its main interest rate by six percentage points, to a record 27.25%. That lured back foreign investors, who bought almost half of the $2bn in short-term local-currency debt that Egypt sold the following day. It also convinced the IMF to increase its loan. Time will tell whether any of these reforms are serious. Some analysts doubt the pound is truly floating. And the government is as reluctant as ever to sell state-owned firms, especially those controlled by the army.

Annual inflation set several records last year, peaking at 39.7% in August. Though it had cooled in recent months, the rate unexpectedly jumped to 35.7% in February, from 29.8% a month earlier. Onions, a staple of Egyptian cooking since antiquity, now cost 50 pounds a kilogram at some markets, a 400% increase over a year ago. Sugar prices have doubled. At 400 pounds per kilo, even the cheapest cuts of beef cost almost two days' pay for the lowest-paid civil servants.

In their public statements, Egyptian officials act as if the crisis is over. Mr Madbouly vows that prices will drop: with more dollars in the banks, he says, firms will flood the market with imports. That is not usually how devaluations work, though, as Egyptians know from prior experience (see chart). Pass-through inflation may be lower this time, since many firms have already priced in the weaker currency. But slowing inflation does not mean lower prices.

The first time that Mr Sisi asked the IMF for help, in 2016, external debt was 17% of GDP. At the end of last year it was 46%. Before the Ras el-Hekma deal Egypt had $79bn in payments due by the end of 2026, a sum more than double its foreign reserves. By releasing the $11bn in central-bank deposits, the UAE momentarily reduced Egypt's debt burden—but also allowed it to borrow an even larger sum from the EU, the IMF and the World Bank, not to mention private investors.

Egypt needs to grow its economy and fix its chronic current-account deficit. But its private sector is anaemic and sky-high interest rates will be a drag on growth. Property sales to local buyers will not bring in dollars. The state will be on the hook to build water, power and transport infrastructure for the new city—which will require big foreign-currency outlays. The country's fiscal reckoning has not been resolved, only rescheduled. ■

Europe

Ukraine's war

Digging in

Short of munitions and men, Ukraine is racing to fortify its front line

EARLIER THIS year, a common view was that the war in Ukraine was settling into a stalemate. That now seems optimistic. There is an alarming possibility that a big new Russian push in the next few months could punch through Ukraine's defences and deep into the country.

Since the fall in February of Avdiivka, a bitterly fought-over coking town in Donetsk province, Russian forces have been pressing hard in eastern Ukraine. Although Russia paid a high price in blood and equipment to take Avdiivka—up to 17,000 of its soldiers may have been killed—its forces are pushing as far west of the town as they can, trying to stop Ukraine from forming stronger defensive lines there. So far, they have only taken some seven to ten kilometres. But a bigger push is expected in the summer.

"The next five to six months could be critical," says Konrad Muzyka, an analyst at Rochan Consulting and author of the Ukraine Conflict Monitor, a website. The priorities for Ukraine, according to Michael Kofman of the Carnegie Endowment for International Peace, are "manpower, fortifications and ammunition".

Ukraine has performed miracles in pushing back Russia's Black Sea Fleet and reopening grain exports from Odessa. And it is conducting an air campaign against infrastructure targets in Russia, especially oil refineries, using home-made drones. It is hitting Russia so hard that America has become concerned about the global oil price. But this remains primarily a ground war.

Ukraine is suffering from acute "shell hunger", which is why it was forced to withdraw from Avdiivka. By prolific use of drones, it has been able to compensate partially. But drones cannot concentrate fire in the way that artillery can. The blocking of the Biden administration's $61bn military-support package by pro-Donald Trump Republicans in Congress has had direct consequences. So has the failure of the European Union to come up with more than half of the million shells it had promised to deliver by this month.

Russia is firing at least five shells for every Ukrainian one. Although the Biden administration's support bill remains hostage to electoral politics, Europe is only belatedly rising to the challenge. With Russia now churning out some 3m artillery shells a year and receiving additional stocks from North Korea and Iran, Europe expects to produce just 1.4m shells a year by the end of 2024, rising to 2m late next year.

The best prospect for helping Ukraine is an initiative that the Czech government has been quietly working on since the war began. The Czechs have scoured the world for supplies of munitions and have now sourced about 800,000 shells. Several countries, including Germany, the Netherlands, Denmark and Canada have stumped up money. If €3bn ($3.3bn) could be scraped together, say the Czechs, they could get their hands on 1.5m shells. Nico Lange, a Ukraine expert and former German defence official, says that small numbers of these shells have started to arrive. ▸▸

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They will, he adds, give the troops at the front "breathing space" over the next couple of months.

Other munitions are also in short supply. Ukraine is running perilously low on air-defence interceptors. On the night of March 21st-22nd, which saw the biggest attack on Ukraine's energy system since the war began, only 92 of the 151 missiles and drones launched by Russia were intercepted. Since then there have been further attacks on Kyiv and the western city of Lviv.

Ukraine also urgently needs more ways to hit targets in Crimea and logistics hubs deep behind enemy lines. It has probably used up a large proportion of the Storm Shadow and Scalp cruise missiles that Britain and France donated. They showed their value again on March 24th when two more large Russian landing ships were hit off the occupied port of Sevastopol. Olaf Scholz, Germany's chancellor, has dug in his heels, refusing to give Ukraine the even more powerful Taurus missile. Ukraine is also running low on tanks and other fighting vehicles, though there is hope that America could send it hundreds of mothballed Bradley fighting vehicles without needing more cash from Congress.

If Ukraine is dependent on its allies to provide it with most of the materiel it needs to fight the war, it must take the blame for being slow to recruit more soldiers. The average age of Ukraine's troops serving on the front line is 43. Although morale, according to reports, remains generally high, many of them are exhausted and need rotating.

Russia has little difficulty recruiting contract soldiers: it can pay them amounts that seem extravagant in poor parts of the country. Mr Muzyka reckons there is a steady flow of about 30,000 fresh soldiers to the front each month—enough to sustain for the foreseeable future the "meat attacks" that were used in Avdiivka. In the aftermath of Russia's sham presidential election, its defence minister, Sergei Shoigu, announced on March 20th the formation of two new armies, which will require an additional 300,000-400,000 soldiers.

Despite political reluctance, it is clear that Ukraine must mobilise on a much wider scale than permitted under current law, which does not allow conscription below the age of 27. In December Ukraine's then-commander-in-chief, Valery Zaluzhny, wanted to recruit a further 400,000 soldiers. But Mr Zelensky refused to sign a bill that would have lowered the age of enlistment to 25.

The mobilisation bill going through parliament has been subject to thousands of amendments, including requirements that soldiers must be rotated every six months and allowed to leave the army after three years. It may be passed in early April. Training the new recruits will take several months. Meanwhile, the new commander-in-chief, Oleksandr Syrsky, is conducting an audit to see why, with a 900,000-strong army, only 300,000 soldiers have actually seen combat.

Nor does Mr Zelensky have much excuse for the delays in constructing defensive fortifications. The Russians showed over the summer that defenders in this war have the upper hand when operating from well-prepared lines. Only in November did the president announce the start of major construction employing both engineering troops and civilian contractors. An integrated defence system, including anti-tank ditches, "dragon's teeth" obstacles, minefields, firing points and earthworks to provide protection for infantry, is only now slowly taking shape. For now at least, says Mr Muzyka, a stalemate looks like the best-case scenario for Ukraine. ■

Attack in Moscow

The uses of terror

Vladimir Putin blames an Islamist attack on Ukraine and America

FEW RUSSIAN LEADERS apart from Stalin have been as obsessed with their own security, while failing so spectacularly to provide it for their people, as Vladimir Putin. From the bombings of apartment blocks in various cities in 1999, to the terrorist attack on March 22nd at Crocus City Hall, a concert venue in Moscow, his main concern has always been his own grip on power. Predictably, Russia's president has tried to turn the latest security failure into a justification for his dictatorial rule and for his war against Ukraine, which has already cost hundreds of thousands of lives.

As *The Economist* went to press, the death toll had reached 139 people. The terrorists appear to belong to Islamic State Khorasan Province (ISKP), a branch of Islamic State based mainly in Afghanistan but with followers across Central Asia. American officials had alerted Russian counterparts that such an attack was coming. But for Mr Putin, accepting that his American arch-enemy might act out of concern for Russians (or a desire to co-operate against Islamist terrorism) would undermine his paranoid and conspiratorial worldview. So he directed his ire precisely against those who had tried to warn him.

"We know that the crime was perpetrated by radical Islamists," Mr Putin said on March 25th. But, he asked, who gave the orders? "Who benefits from this? This atrocity can only be a link in a whole series of attempts by those who, since 2014, have been at war with our country using the neo-Nazi regime in Kyiv as their instrument." Alexander Bortnikov, the head of the FSB, Russia's state security service, quickly echoed his boss, blaming the attack on America, Britain and Ukraine. Many senior officials inside the Kremlin know such allegations are nonsense but are obliged to endorse them, according to a report by Bloomberg. As "retribution", Russia may escalate missile attacks on Ukraine.

Mr Putin was trying to cover up his own blunder. In early March, under their "duty to warn" policy, American officials shared their intelligence about a planned attack in Moscow by ISKP. On March 7th the FSB said it had killed two Islamist radicals who were planning an attack on a synagogue in the city. Later that day America's embassy in Moscow said it was "monitoring reports that extremists have imminent plans to target large gatherings in Moscow", including concerts. On the same day one of the alleged terrorists was photographed inside Crocus City Hall. A cloakroom attendant later said security had been strengthened around that date, and staff were instructed on what to do during a terrorist attack.

Nevertheless, on March 19th Mr Putin blasted the American warnings as "blackmail" intended to "intimidate and destabilise our society". Three days later gunmen attacked a show by the rock group Piknik, mowing down spectators and setting the building ablaze. Afterwards, when ISKP claimed responsibility, the Kremlin tried to blame it on Ukraine.

Obviously the attack is a blow to the reputations of Mr Putin and of the security services on which he depends. But Russia's president knows how to turn such failures to his advantage, using them to justify more war against Ukraine and further repression of his own people. Russian police soon detained four suspects fleeing near Bryansk, some 390km south-west of Moscow. They then began leaking gruesome videos of the men being interrogated and

French wine

Vine intervention

PARIS

Why the French are drinking less wine

FRENCH SCHOOLS once prized the nutritional value of wine. So commonly was it served to children that in 1956 the government banned wine in school canteens—and even then, only for the under-14s. France was the world's biggest wine producer last year. A bottle of wine has long been to the French meal what fast driving is to the German motorway: a humdrum habit, national right and personal pleasure.

No longer. In 2022 roughly 10% of French people drank wine every day, down from half in 1980. Back in 1960 the French drank an average of 116 litres of everyday wine per person. Between 2000 and 2018 that shrank from 28 litres to just 17. A glass of wine, let alone the once-familiar *pichet*, is an increasingly rare sight at the lunch table.

What is going on? It is not simply price. A bottle of (rough) Bordeaux can still be found in a French supermarket for under €3 ($3.25). Some village co-operatives sell local produce straight from the vat for €1.90 a litre—less than fresh orange juice. A better explanation is that a beer-drinking trend is challenging Mediterranean habits. The French now tell polls that they prefer beer to wine. Beer, including craft brews, accounts for more than half of all alcohol bought in French supermarkets. Even in southern France, some cafés serve imported Belgian or German beer on tap.

Most important, a health-conscious younger generation is drinking less. A quarter of French 18- to 34-year-olds say they never drink alcohol. Fully 39% of under-35s say that they do not drink wine, next to only 27% of the over-50s. *Le dry January* has entered the national lexicon. No- and low-alcohol drinks are spreading. In an attempt to "speak to Generation Z by adopting its codes", Pernod Ricard, a drinks giant, runs a marketing campaign with the slogan "*buvez plus...d'eau!*" (drink more...water!)—although presumably it means in between downing its spirits too.

Of course French oenophiles—and importers—keep fine wines flowing. Consumption of high-quality wine remains strong. But the decline of cheaper stuff has wider repercussions for France. Last summer the government allocated €200m to buy superfluous low-end wine that producers could not sell. In some areas farmers are ripping out lesser vines altogether. Less booze may improve health, but not necessarily the mood or landscapes of rural France.

Spanish politics

The Catalan labyrinth

ELNE

Separatists are gearing up for regional elections

"PRESIDENT! PUIGDEMONT!" The supporters who greeted Carles Puigdemont (pictured) on March 21st in the French town of Elne still see him as the true leader of Catalonia. And they hope he will soon be the official one again too. Mr Puigdemont announced that he will lead his party, Junts per Catalunya, in regional elections in May. But he did so 13km from the border, because he cannot set foot in Spain without being arrested.

In 2017, when he was president of Catalonia, Mr Puigdemont held an unconstitutional referendum on independence. After a Spanish crackdown, he fled to exile in Belgium. But when Spanish elections left a hung parliament last July, Mr Puigdemont's price for letting his party's MPs back Pedro Sánchez as prime minister was amnesty for the referendum's organisers, including himself. That amnesty passed the lower house of Spain's parliament on March 14th. The senate, controlled by the conservative People's Party, wants nothing to do with it. But it can only delay the amnesty; unless the constitutional court overturns it, it will take effect within months.

Some say that deadline is the reason Pere Aragonès, the current president of Catalonia, called elections for May 12th, after a budget dispute with a small left-wing ally. Mr Aragonès hails from another separatist Catalan party, Republican Left (ERC). There is little love lost between it and Junts, which flounced out of their co- ▸▸

▸ tortured to pro-war Telegram channels. One showed a camouflaged officer pinning down a suspect (identified as Saidakrami Rajabalizoda, a Tajik national), slicing off his ear and shoving it into his mouth. Another displayed a photograph of Shamsidin Fariduni, a second Tajik suspect, with a battery connected to his genitals.

Maria Sergeyeva, a former official in the Russian president's office, explained the logic of this public display on her Telegram channel. One purpose, she wrote, is to signal to potential terrorists "that they will be treated not as human beings, but as Satans". Another and more important one is to give satisfaction to those who feel pain and fury. "Working with dark energies, with the crowd's hatred is not the most pleasant thing...[But] in a country that has been conducting a special military operation...there is plenty of this energy. And it is better for the state to work with it."

Generating hatred and cultivating cruelty has been not so much a side-effect as a goal of Mr Putin's war. His regime rewards those who engage in torture and killing, while punishing those who display mercy. In a country where opposition to the regime is considered an act of extremism or even treason, publicising torture is a signal not just to potential terrorists but to his own security services and elites.

Dmitry Medvedev, a former prime minister and president who often vents a more extreme version of the official propaganda line, took up the point in a Telegram post on March 25th. "You ask me what to do? Should they [the suspects] be killed? Yes, they must be killed. And it will happen. But much more important is to kill anyone who has been complicit, who helped them and who paid for them. To kill all of them." Talk of lifting the moratorium on the death penalty which Russia imposed when it was still considering getting closer to Europe is now rife in parliament. This will not enhance Russia's security or protect its people from Islamic State. But it will make Russians more vulnerable to the terror of their own state. ■

alition government in 2022. Mr Puigdemont is a powerful symbol to many independence supporters, and his party mates say Mr Aragonès timed the vote to keep his rival from campaigning in person.

Those gathered in Elne were thrilled with Mr Puigdemont's promise to return from exile if he has the votes to be installed as regional president. That is because, for separatists, thrills have been notably lacking of late. Mr Puigdemont acknowledged the "frustration" and "demobilisation" many felt. The crowd was rich in grey-haired pensioners; some acknowledged that their children and grandchildren had little appetite for politics after the referendum. In principle some 40-50% of Catalans support independence, but in a recent poll just 27% said it should be a priority of the new government.

The other problem is disunity. There are three separatist parties in Catalonia's parliament. They may soon be joined by a fourth led by Clara Ponsatí, a former Junts leader. They nearly had to make room for a fifth: the Catalan National Assembly (ANC), the main pro-independence NGO, held a vote in early March to form a "civic list" with the sole goal of pushing for independence. The proposal failed narrowly. One ANC leader, asked if he knew any activists who would now stay at home rather than vote in May, said "about a million".

Such divisions benefit the regional Socialists, who top the polls. A first-place finish might vindicate the amnesty in the eyes of some who opposed it. But mistrust will make it hard for any separatist party to govern with the Socialists; bad blood will make it tricky for them to join one another. Like Spain itself, Catalonia increasingly seems too divided to govern. ■

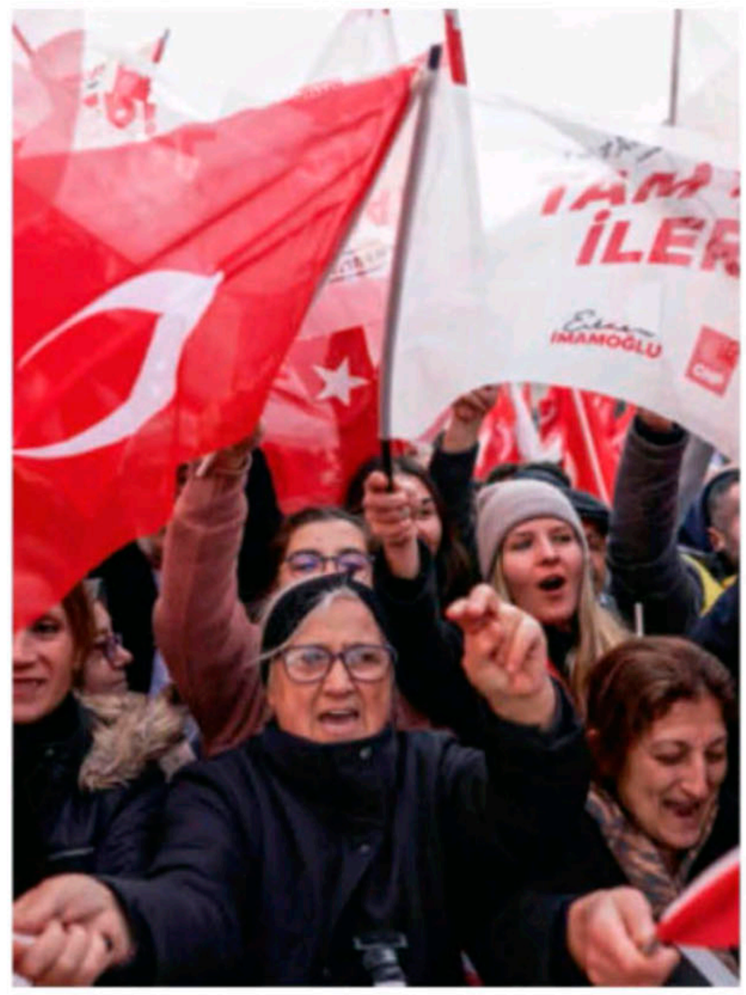
Turkey's local elections

Perishable Goods

ISTANBUL

Turkey's new opposition party has faded

THINGS ARE not good for the Good (or IYI, in Turkish) Party. Two years ago, having broken off from Turkey's main nationalist bloc, the party had a full head of steam, polling at nearly 20%. The opposition alliance it joined seemed poised to give Recep Tayyip Erdogan, Turkey's president, and his governing coalition a run for their money. But on the eve of local elections set for March 31st, Good is imploding. Support for the party has slipped to single digits. After a disappointing result in last year's general elections, its alliance with the Republican People's Party (CHP) has come apart. Senior party officials and lawmakers are leaving Good in droves.



Staying true to Imamoglu

The local elections for mayors and city councils will almost inevitably see Mr Erdogan's Justice and Development (AK) party prevail in most parts of the country. But in Istanbul, the motor of Turkey's $1trn economy, the race may come down to the wire. Neither the Goods nor the Peoples' Equality and Democracy Party (DEM), the country's main Kurdish bloc, have a chance of winning the city. But the few percentage points their candidates are bound to receive may cost Ekrem Imamoglu, the incumbent mayor, the election. Mr Imamoglu, of the CHP, is ahead in most polls, but not by much.

On paper, AK's candidate in Istanbul is Murat Kurum, a former urban-affairs minister. But the man powering AK's campaign is Mr Erdogan. Turkey's leader grew up in Istanbul, served as its mayor in the 1990s, and continued to run the city through his surrogates, even after he became prime minister and then president. His streak ended in 2019, when Mr Imamoglu, backed by a coalition of CHP secularists, IYI nationalists and Kurdish voters, defeated AK's candidate.

Turkey's strongman is now determined to take back control of the city and its $16bn budget. One thing standing in his way is the economy. Despite interest-rate increases totalling more than 40 percentage points since last summer, when voters gave him another five years in power, the dip in consumer prices Mr Erdogan hoped to see before the local elections has not yet materialised. Annual inflation recently exceeded 67%. Meanwhile, the central bank's reserves are again running low, fuelling suspicion that the bank has resumed selling dollars to support the lira. In what is becoming an election-season tradition, coffeehouses in Turkey are thick with chatter about the lows to which the currency will plunge once the vote is out of the way.

Local elections in Turkey are as much about storm drains, bus service and patronage networks as they are about national politics. For Mr Imamoglu, a second term as mayor would be a stepping stone to taking over the CHP, which is plagued by infighting between factions loyal to its new leader, Ozgur Ozel, and its former one, Kemal Kilicdaroglu. Mr Imamoglu might then run for president in 2028.

The vote could also change Mr Erdogan's retirement plans. He recently announced that his current term would be his last, inviting speculation about AK's next leader. (Top candidates seem to be Hakan Fidan, the foreign minister and former spymaster, and Selcuk Bayraktar, Mr Erdogan's son-in-law and the face of Turkey's drone programme.) But Mr Erdogan, who less than two years ago swore he would not increase interest rates as long as he was in power, is not exactly a man of his word. Winning in Istanbul could embolden him to pursue his latest pet project, a new constitution, presumably designed to guarantee him another term.

The elections may also decide IYI's fate. The party has been in a tailspin since the spring of 2023, when its leader, Meral Aksener, publicly refused to back Mr Kilicdaroglu in the presidential elections, only to reverse course days later. When Mr Kilicdaroglu lost, she and the Goods withdrew from the opposition alliance and refused to back CHP candidates in the local elections. By then, many voters had lost track of what the party stood for.

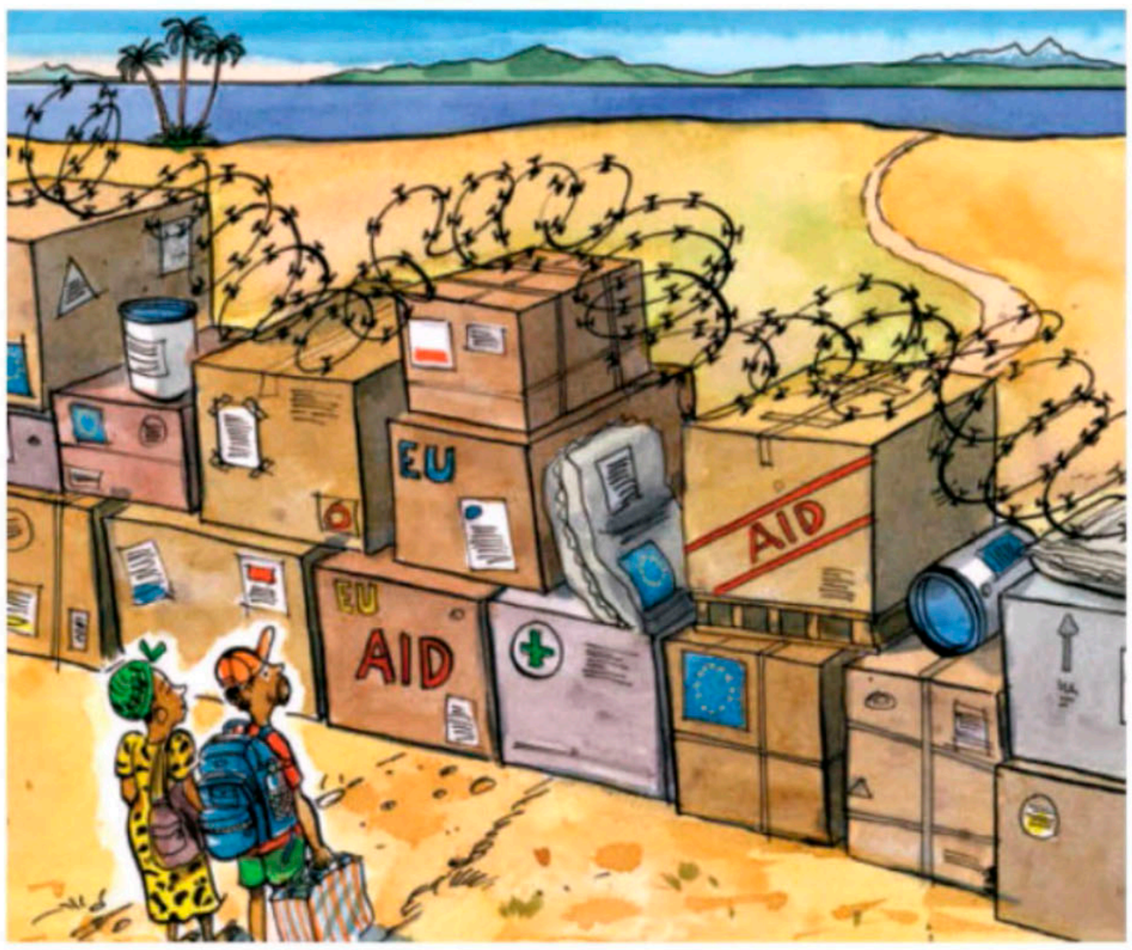
As long as Mrs Aksener is in charge, say her associates, Good will continue to oppose Mr Erdogan. But a weak showing on March 31st may set the stage for a leadership challenge, a schism or both. Some Good politicians remain close to the Nationalist Movement Party (MHP), from which Good is descended, and which forms part of Mr Erdogan's governing alliance. "Those people can easily shake hands with Erdogan," says an IYI insider. "They don't aspire to have popular support, but to have power." They may soon decide to jump ship.

The opposition faces a wider problem. "Many voters are convinced they cannot win elections," says Seda Demiralp, an academic. A win for Mr Imamoglu could re-energise them. But some in Turkey think they will need a more thorough shake-up to mount a challenge to Mr Erdogan or his successor. "The opposition needs to be restructured," says Bilge Yilmaz, a senior Good member. Many of Mr Erdogan's opponents are more concerned with rent-seeking at the local level than winning elections at the national one, he complains. "Everyone needs to go." ■

CHARLEMAGNE

The me-first school of diplomacy

How Europe's fear of migrants came to dominate its foreign policy



ASKED WHETHER their past imperial behaviour might entitle former colonies to compensation, Europeans like to change the subject by pointing to their generous overseas-development budgets. The continent is home to some of the world's biggest foreign-aid programmes; a handful of European Union members even meet the aspiration that rich countries should spend 0.7% of their national income on alleviating global poverty. Anyone whose heart has been warmed by reports of schools being built and irrigation systems installed might care to look at the fine print of exactly who is being helped. The Netherlands has in recent years found a new worthy recipient for its supposed generosity: part of the cost of hosting asylum seekers on Dutch soil is now paid from the foreign ministry's aid budget. Do-gooders howl in protest at the measure, which in effect depletes development spending. Right-wingers say it matters little if an Afghan being helped is in Herat or The Hague, it's all going to foreigners anyway.

A schism has long been evident. On the one hand, illegal migration is seen as a problem, and politicians know that "stopping the boats" (or some locally equivalent tough-sounding measure to curb new arrivals) will keep them in office. On the other, Europeans see themselves as a force for good in the world, happily trading and diplomatically allying with countries far and wide. For decades the two worlds were kept separate. Cops and interior-ministry types put up fences to keep migrants out, while diplomats, trade officials and development specialists showered money, vaccines and sweetheart trade deals on the very countries the refugees came from. In the wake of a migration surge in 2015-16 and a recent increase in illegal arrivals, Europe has decided that stopping the boats matters more than being nice to others for its own sake. Foreign policy is being co-opted by the interior-ministry crowd to keep down migrant numbers.

A set of EU laws due to be adopted in April call for a "comprehensive approach" to tackling migration—ie, one that includes putting pressure on foreign governments to ensure fewer of their people pitch up illegally in Europe. In many ways this will formalise a tactic that has become the norm in recent years. On March 17th the EU agreed to provide over €5bn ($5.4bn) in grants and loans to Egypt, the latest country with a Mediterranean coastline to get money for sealing its borders more effectively. A deal in 2016 with Turkey and one with Tunisia last year served as templates; more are in the works. Their aim is clear: to help stem the flow of people to Europe. Those that can help "externalise" the EU's migrant problem—for example Turkey, which hosts Syrians who might otherwise end up in Germany—can get even more cash.

But countries far beyond Europe's shores are also being coerced into helping bring down migrant numbers. Every year around 400,000 foreigners are ordered to leave the EU, often having arrived illegally and failed to convince one of its 27 member states they were entitled to refugee status. Less than a quarter of those are deported, often because their home countries—places like Bangladesh, Algeria or Nigeria—balk at taking them back. (Locals in poor countries take pride in having relatives in rich ones who send back remittances even if they work illegally.) The new EU rules foresee faster deportation for arrivals from countries whose citizens are rarely granted refugee status. That requires an effective conveyor belt to deport those deemed to be economic migrants—for which the help of foreign governments is key. Hence the new diplomatic deal: help us, or else.

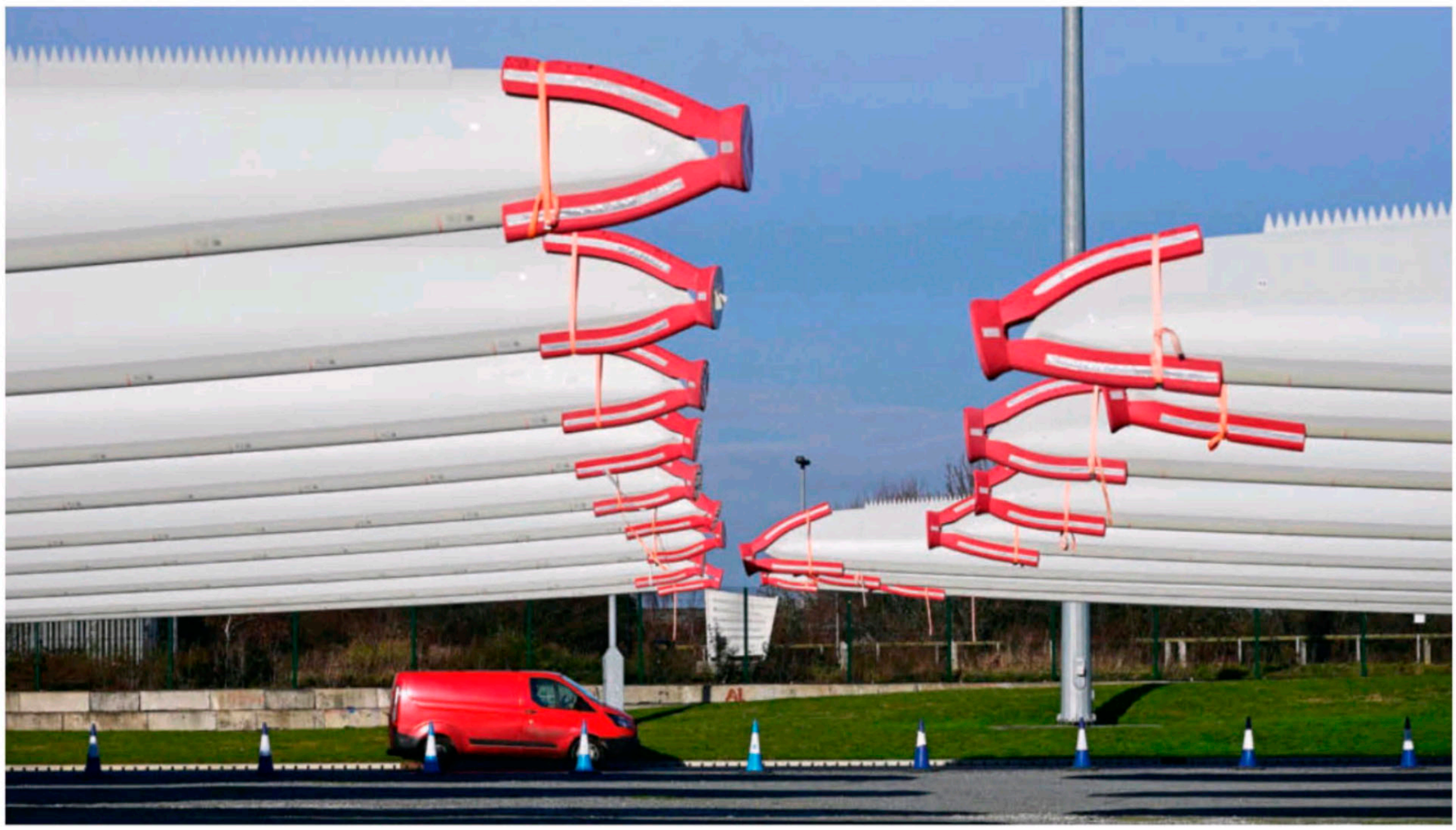
Under the EU's new approach, governments refusing to readmit their own citizens can be punished. One sanction is to make it harder for people in those places to get visas for EU countries. Another is to cut development aid, a threat made to the likes of Ethiopia. A decades-old scheme that lets the world's 60 or so poorest countries export goods to Europe with no or low tariffs—a key poverty-reduction measure—could soon become conditional on those countries doing the EU's bidding when it comes to refugees. Help us with migration or face import taxes, in other words.

Help me help me help you

Critics say imposing conditions on aid, trade and visas is unconscionable. "Europe is putting its short-term migration priorities ahead of the development needs of some of the world's poorest countries," says Nadine Biehler of the German Institute for International and Security Affairs. The big-money deals with the likes of Egypt and Tunisia are also eye-wateringly expensive. They help keep in power strongmen who will slow down their countries' development. Making aid conditional in this way is a breach of principles that dictate that recipients, not donors, should steer where the money goes. Diplomats grouse that it is hard to convince an African country to help Europe when canvassing for votes against Russia in the UN, for example, while also threatening them.

The interior-ministry faction who are the main proponents of the new approach have routed the opposition. In a polity where right-wing populists are rising in the polls, migration is a political priority and foreign aid is not. Europe is moving from "an era of naivety to an era of assertiveness", in the words of Margaritis Schinas, a European commissioner helping to join up foreign and migration policies. Old-school trade, development and diplomatic types feel this is all grubbily transactional, but know they can do little about it beyond grumble to columnists. Pragmatists in the development bureaucracy of the EU well understand that being seen to help reduce migration is a good way to keep scarce funding. They paint a picture of a broader "partnership" between Europe and poor countries, of which migration is only one facet. Plenty of schools and irrigation systems will still get built, in other words—as long as you do what we ask first. ■

Britain



Green dreams

The energy estuary

THE HUMBER

Britain's dirtiest region hopes to become a hub for green energy

AT THE SIEMENS GAMESA factory in Hull, workers are busy making 180 turbine blades for a wind farm off the coast of Aberdeenshire in Scotland. Each is 108 metres long, a giant sabre-shaped tooth crafted to slice through the air. A core of fibreglass is layered with epoxy resin, balsa wood and plastic to produce "just the right combination of flexibility and stiffness", says Andy Sykes, the project director.

Once ready, the blades will be laid horizontally on boats in the Humber estuary to head north for installation. The waters off Britain's east coast are dotted with windmills that supplied almost a sixth of the country's electricity last year. Two-thirds of these turbines have blades made in Hull.

Politicians of all stripes point to the Siemens factory as a model. On a visit in 2021, Rishi Sunak, then chancellor, said it pointed to the critical role of domestic green industries. Sir Keir Starmer, the Labour Party's leader, has bold ambitions of Britain becoming a "green-growth superpower", spurred by a boom in manufacturing jobs. Ed Miliband, the shadow energy secretary, whose constituency is nearby, wants to "rebuild Britain's industrial strength".

That is improbable. Britain is an open, services-based economy. Unlike Germany, South Korea or parts of America, it has little industrial heft. Only 7% of jobs are in manufacturing. "Politicians hate saying it but Britain is a services superpower...we're not going to turn ourselves into Germany," says Torsten Bell, head of the Resolution Foundation, a think-tank, and a former adviser to Mr Miliband. Boosting services in second-tier cities, Mr Bell argues, is a more plausible plan for economic revival.

But green industries could still play a big role in helping Britain lower its carbon emissions and in improving the prospects of its former industrial heartlands. Britain has some advantages in high-value manufacturing and clean-technology innovation, according to a study by Anna Valero of the London School of Economics. The country has excellent universities. It has ready access to the North Sea. It could expand in areas such as offshore wind and carbon capture and storage (CCS), where carbon produced in industrial processes is isolated and pumped underground.

A tour of the Humber gives a sense of the possibilities and the hurdles. Its geography is unusual, combining a deep-water channel, some 14km wide near the mouth, with vast tracts of flat land perfect for factories. In the 18th century the estuary propelled the expansion of the Yorkshire coalfields by making water-borne freight easier. In the 20th century it expanded as a hub for North Sea oil and gas. Along with Teesside, the Humber's banks became the most industrially intensive part of Britain. By the early 1980s there were 1,600 factories on Humberside, employing almost a third of the local workforce.

The Humber now aspires to be the "green-energy estuary". Beyond the blade factory, the region has attracted a bevy of green projects (see map). Grimsby is the ▸▸

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busiest port for offshore wind servicing in Europe. Orsted, a Danish state-owned developer, is erecting the world's biggest offshore wind farm, one of many off the coast. There are plans to produce hydrogen from natural gas at Saltend with CCS; the port of Immingham is being upgraded to allow for hydrogen to be exported.

Head inland to Keadby and SSE, a British company, has won approval to build one of the world's first gas-fired power stations with CCS. At Selby, Drax is trying to do the same with biomass (see box). In both cases the plan is for the captured carbon to be piped back under the North Sea.

It makes sense to develop CCS in Britain's dirtiest region. Building the infrastructure required to store hydrogen or sequester carbon is expensive, but once done it should attract more investment. To make "green" hydrogen, which is produced from water using a renewables-powered electrolyser, it helps to be near sources of cheap renewable energy.

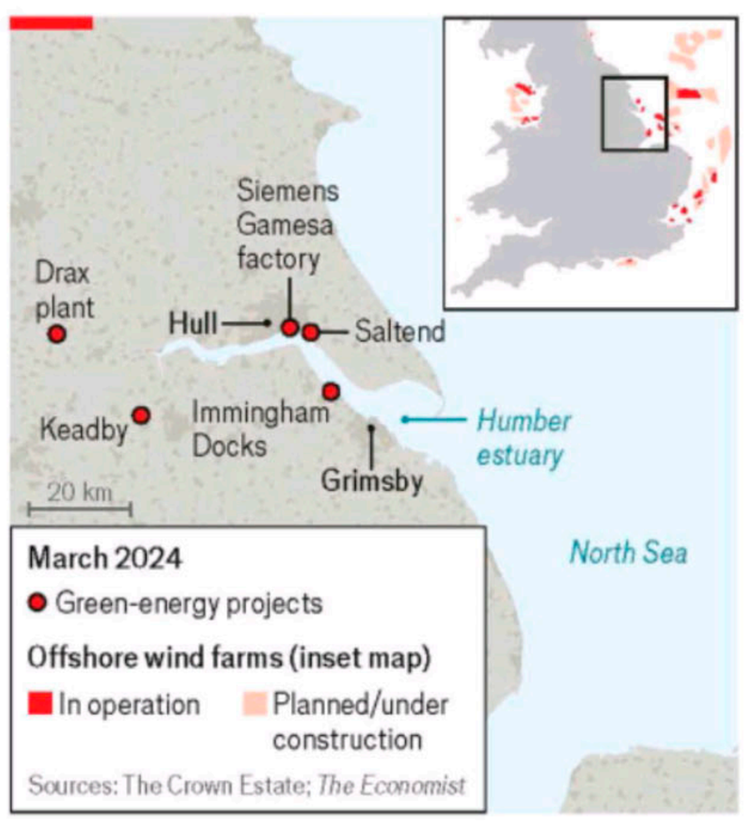
A green-energy boom could bring more jobs to the region. The blade factory, which the government helped to lure in 2016 with tax incentives, employs around 1,500 people, many of whom have come through a nearby technical college. Making blades is essentially "craft-based work", says Mr Sykes. One reason Siemens chose Hull is that it was already the British capital of caravan manufacturing—another "craft based around composites with lots of transferable skills".

But as much as the factory has been a boon for the city, it may not be a model for Britain. Only around a fifth of the value of manufacturing a turbine is in the blades. Twice as much is in the nacelle, the central hub which contains all the electronics, points out James Gilbert, professor of engineering at Hull University. Siemens does that in Cuxhaven in Germany. Britain ought to be aiming to attract investment in the higher-value end of the supply chain.

Spend time on the Humber and you can see why that will be hard. Hull has a good university with strengths in robotics and manufacturing. But like many former industrial areas, it feels neglected and cut off. Over the past 40 years manufacturing's share of jobs in the region has fallen by almost half. Philip Larkin said he liked living there because it was "so far from everywhere else". What pleases misanthropic poets is less alluring to investors. Visiting executives are put on a minibus at Manchester airport because rail services across the Pennines are so unreliable, says Ian Kelly of Hull and Humber Chamber of Commerce. Isolation makes it hard to retain young graduates.

Much depends on policies made in Westminster. The Humber must compete for green investments with the likes of Lower Saxony, in Germany, and Midtjylland, in Denmark. But according to Andrew Elmes of Siemens Energy, Britain has much less settled climate policies than Denmark, Germany or France.

Mr Miliband remains keen for Britain to have its own national champion to rival the likes of Orsted. The Humber, he says, "can absolutely be at the vanguard of Britain winning the [global] race." But there is a tension between attracting foreign investment and domesticating the supply chain. As with turbine blades, success will rest on having the right amount of flexibility. ■



Renewable energy

Smoke alarm

The future of Drax, Britain's largest power plant

IF YOU WANT a monument to Britain's energy transition, look no further than the 12 smoke-stained cooling towers of Drax power station, which loom over the north Yorkshire countryside. Built close to the now-dormant Selby coalfield, which once delivered the dirtiest fossil fuel to its furnaces, Drax is Britain's largest power plant, generating around 4% of the country's electricity supply. The final coal unit on the site closed in 2023; the vapour that now billows from the cooling towers is a byproduct of the process of burning wood pellets.

Drax's role in the next stage of the transition is uncertain, however. The government is mulling whether to extend subsidies for the plant. The current arrangement, which tops up lump-sum payments to Drax if the wholesale electricity price falls below a set level, is due to end in 2027. An extension would give its owners, Drax Group, which also owns biomass plants in North America and hydropower plants in Scotland, time to fit the plant with a carbon-capture-and-storage unit.

In principle bioenergy with carbon capture and storage (BECCS) could be a carbon-negative form of electricity. As long as the trees turned into wood pellets are regrown, a plant like Drax has very low emissions (mostly from getting the wood to the burners). If the carbon released from burning the pellets is also captured and stored underground, it can have negative emissions. Drax has plans to pipe captured carbon out into exhausted gas reservoirs under the North Sea as part of the "East Coast Cluster", a government-based programme to remove carbon dioxide produced in the industrial heartlands around the Humber estuary and on Teesside.

In practice, whether BECCS is carbon-negative depends on how the original biomass is gathered. Drax imports its wood pellets from forested America rather than denuded Britain; green types fret that the trees being harvested across the Atlantic may not be being replanted sustainably. Any emissions from deforestation abroad are excluded from the British carbon footprint; a report by the National Audit Office, a spending watchdog, concluded that there was inadequate oversight of the supply chain. Even if all the wood is well-sourced, says Philip MacDonald of Ember, a non-profit, the timber could be used for other purposes than burning.

Wind and solar power have both become much cheaper since 2012, when Drax received its latest set of subsidies to refit its coal units to burn wood instead. There are fewer potential efficiency gains from biomass power than other technologies: trees are a mature technology and the land to grow them is finite. For the moment Drax has the advantage that it does not depend on the sun shining, nor the wind blowing. That may be enough to keep Drax's furnaces fuelled until 2030 and perhaps beyond; the government has admitted more gas power plants will be needed as a backup to wind power. But if the electricity-storage problem can be solved, Drax's cooling towers may become a monument of a different kind.

BAGEHOT

After the pinch comes the punch

Boomers are losing for the first time

THE 1950S were a good decade to be born in Britain. A newly minted welfare state ensured that your early years were free from squalor. For the lucky few who made it there, university cost nothing. During your peak earning years, taxes plunged thanks to Margaret Thatcher, oil gushing from the North Sea and the restorative effect of the EU's single market on the sick man of Europe. Rocketing house prices more than compensated for a few years of high interest rates. Defined-benefit pension schemes, then still the norm, ensured that retirement would be prosperous.

Whatever this generation wanted, this generation nearly always got. Remarkably, someone born in the 1950s would have been on the winning side of every election if they had voted with the bulk of their age group. The result was that baby-boomers paid in less and took out more from the welfare state than any generation before or since. In 2010 David Willetts, a Tory grandee and self-aware member of this blessed cohort, summed it up best in a book titled: "The Pinch: How the Baby Boomers Took Their Children's Future—And Why They Should Give it Back".

Now the good times are coming to an end. Boomers can expect to pay more tax, watch other generations benefit from perks they themselves never had and face being on the defeated side of an election for the first time. A generation used to having everything its own way is starting to lose out for the first time. The pinch is over; the dynamic is reversing. Call it the punch.

Jeremy Hunt, the chancellor of the exchequer, landed the first blows. The Tories have overseen giant tax rises by letting inflation lower the value of tax-band thresholds. To ease their pain, Mr Hunt has focused on taxes paid only by those of working age. Rather than cut income tax, which is paid by everyone from landlord pensioners to students with a bar job, Mr Hunt chopped National Insurance (NI) contributions, which are paid only by those under 66. Since November NI contributions have fallen from 12% to 8%, saving workers about £20bn ($25bn; 1% of GDP) a year. All taxpayers face some pain; only younger taxpayers enjoy any relief.

Where the state is expanding into new areas, it is now to the benefit of younger people. Britain has become a literal nanny state: the government will soon cover the bulk of child-care costs for working parents, again due to Mr Hunt's largesse. At £8bn per year—a shade less than the budget for the justice department—this is strikingly generous. The highest earners aside, young parents benefit to the tune of about £6,500 per child. During the pinch, millennials moaned that their parents received perks that they failed to pass on. On child care, the roles are reversed.

Goodies for pensioners are comparatively frugal. Mr Hunt confirmed on March 24th that, if re-elected, the government would maintain the "triple lock", which increases the state pension by the higher of the rate of inflation, earnings growth or 2.5%. Although the policy triggers millennial tantrums, it is cheap compared with recent giveaways. Britain's annual pension bill is about £10bn (0.5% of GDP) bigger than it would have been if the state pension had increased by earnings or inflation since 2012. But in the past few months Mr Hunt has set aside the best part of £30bn (1.5% of GDP) a year for tax cuts and freebies for working-age people, with young parents doing best of all. On paper Mr Hunt is a 57-year-old Thatcherite and the finance minister of the Pensioners' Party; in practice, he is Britain's first millennial chancellor.

Politically, the voices of older voters are already fading. Women Against State Pension Inequality, a campaign group, moan that the government failed to properly notify women born in the 1950s that the state pension age was set to increase from 60 to 65, the same age that men started to draw their retirement benefits. In 2019 the Labour Party's leadership declared that the women who missed out should be repaid in full, at a cost of £58bn. Now, even after an ombudsman has suggested they deserve some money (although not £58bn), politicians from both parties offer excuses rather than the promise of juicy payouts.

Then there is the next election. What matters more to boomers than the unfamiliar sting of being on the losing side, as seems almost certain, will be the strength of the punch that the Labour Party ends up delivering. Rather than lacing up its boxing gloves, Labour is still in denial. In government it plans to stick with ludicrously austere spending plans put forward by the Conservatives while returning Britain to growth levels last seen in the noughties, when the country hosted some of the world's biggest banks and was still a net energy exporter.

An expensive trainer stamping on a human face for ever

Once reality sets in, Labour will face a choice of whom to pummel. On the one side are younger voters, who endure high marginal tax rates, have few assets and overwhelmingly vote Labour. On the other are older voters, who revel in much lower marginal rates, have lots of assets and generally will not vote Labour. The politics point in one direction, but so do the practicalities. Older voters will be more heavily taxed for the same reason that Willie Sutton robbed banks: "Because that's where the money is."

The pinch lasted decades. Privilege built up over years will take more than a few budgets to undo. The punch will be a long, slow reversal. But it will also be a familiar story. Millennials will use their demographic weight—they overtook the boomers in size in 2020—to rebalance taxes away from themselves, shifting the burden onto other generations to spend on perks for themselves, much as the boomers did. "Being a great big generation makes you a powerful disruptive force: you pour through society like a flooding river breaking its banks," wrote Lord Willetts about his boomer peers. Perhaps boomers and millennials are not so different after all. Everyone turns into their parents eventually. ■

International

Indians abroad

Narendra Modi's secret weapon

ABU DHABI AND LONDON

How India's prime minister uses the diaspora to campaign at home and lobby abroad

ON A GREY morning in north-west London earlier this month an enthusiastic group gathered outside a community centre to fly the Indian flag—plus another one featuring the lotus flower, symbol of India's ruling Bharatiya Janata Party (BJP). Some wore saffron scarves, a colour associated with Hinduism. After staging a car rally through the neighbourhood, they reconvened outside a Hindu temple. A British Conservative MP addressed the crowd, praising the government of Narendra Modi. The gathering, organised by the Overseas Friends of the BJP, the party's diaspora arm, got little attention in the local media. But footage of it soon appeared on the websites of many Indian outlets.

The rally was just one of countless such events run by the overseas branches of India's parties, as the country's general election that starts on April 19th beckons. India's huge diaspora is an increasingly powerful force for mobilising support at home and abroad. Indian politicians court it for its financial and campaigning punch. As in India itself, the BJP has been more systematic and successful than its rivals. If Mr Modi wins a third term, as seems likely, he can partly thank the diaspora.

Indians abroad have long played a disproportionate role in politics at home, going back to India's fight for independence. Many of the anti-colonial movement's leading lights, including Jawaharlal Nehru and Mohandas Gandhi, spent years studying in Britain. Trained as lawyers, they used the ideas they had absorbed to argue for freedom back home. Some of the most notable post-independence prime ministers, including Indira Gandhi and Manmohan Singh, also spent long periods abroad.

Since then, India's diaspora has grown in size and influence. Some 18m Indians who retain their nationality live abroad, according to the UN. That makes them the largest diaspora in the world, followed well behind by Mexicans (11.2m) and Russians (10.8m). If those who have relinquished their Indian passports are included, the number may exceed 32m, according to the Indian government's estimates.

Most Indians abroad have been highly successful. In 2023 they sent home nearly $125bn in remittances, equivalent to around 3.4% of India's GDP, according to World Bank estimates. In America 80% of citizens of Indian origin have college degrees. The median Indian household income there is $150,000, twice America's national average. People of Indian descent lead Google, the World Bank—and Britain.

There are still plenty of low- or semi-skilled Indian workers filling menial jobs the host countries' natives will not or cannot do, especially in the Gulf states. Yet even there the share of white-collar professionals as a proportion of Indians is growing. It now approaches 30%. Especially in English-speaking countries, today's Indian diaspora has more cash and clout than earlier waves of migrants, who often started out dirt-poor.

What does this mean for their role in Indian politics? Most Indians who live outside India do not vote in Indian elections, as they can vote only in person in their constituencies back home. That costs too much for most of them in time and money. Only 120,000-odd are registered for this ▸▸

year's poll, according to India's election commission, and only a fraction of that modest number are expected to turn up.

In a country with nearly 1bn registered voters, 18m potential votes dispersed across hundreds of electoral districts would be unlikely to make a difference. Besides, plenty of diaspora Indians remain immune to Mr Modi's charms. A survey of Indian-Americans in 2020 by the Carnegie Endowment for International Peace, an American think-tank, found that while 48% approved of Mr Modi, 31% disapproved and 22% strongly so. Indeed, the diaspora is much less enthusiastic than Indians in India, 78% of whom are said to approve of him. One reason may be that they read a wider variety of news than their relatives at home, where most media are relentlessly pro-BJP. Moreover, an increasing number of migrants are from south India, where Mr Modi is not so popular.

At least in Britain, those who have recently migrated for work or education tend to be less politically strident, says Pratik Dattani, who runs Bridge India, a non-partisan diaspora outfit in Britain. For many in the diaspora, Indian politics may not be their main concern, ranking behind worries about jobs, education and daily life.

The real impact of the diaspora in politics is in funding, campaigning and spreading India's influence. As overseas Indians have become more prominent in their host societies, many have begun to take more of an interest in politics both in their new countries and back home. So political parties, Indian and foreign, are wooing them more keenly.

Mr Modi and his BJP are acutely aware of this. Their election manifesto in 2014 called the diaspora "a vast reservoir to articulate the national interests and affairs globally" that would be "harnessed for strengthening Brand India". The next year the party's general secretary said the BJP saw the diaspora as India's voice abroad, "the way the Jewish community looks out for Israel's interests in the United States".

Many Indians abroad have risen to the task. The Overseas Friends of the BJP in America plans to send 3,000 Indian-American activists back to India to put up posters and canvass voters. They say they will make 2.5m calls to people in India to persuade them to vote for Mr Modi. The Indian Overseas Congress, the equivalent outfit representing the opposition Congress party, has similar plans, though its organisers are vague about numbers. India's opaque electoral-finance system makes it tricky to gauge exactly how much money the diaspora contributes; parties are rarely required to disclose the source of donations. But it is bound to be a lot.

The code of colour

Diaspora groups have long mixed politics with support for particular communities. But they have become more political and pro-BJP since Mr Modi took over. Playdates for children or community prayer meetings are likelier to have a saffron tint. Members lobby MPs in Britain or members of Congress in America to back Mr Modi.

Yet most mobilisation of the diaspora happens away from the host countries' politics. Much of the messaging is on social media, usually in WhatsApp groups. Members hail Mr Modi's latest infrastructure drive or foreign-policy success. They also promote the BJP's darker notions, such as "love jihad", a conspiracy theory that Muslim men are systematically seducing Hindu women in order to convert them.

One reason for the government's success in courting the diaspora is that the BJP's activities abroad are as efficient as its electoral machine at home. Cabinet ministers on foreign trips make a point of meeting diaspora groups, often to raise cash. Hundreds of groups close to the BJP are active in Britain. Such diaspora mobilisation has also picked up in America.

Soon after his election Mr Modi starred at a rally for 18,000 fans in New York's Madison Square Garden. He had previously been barred from America for his alleged part in deadly communal violence in his home state of Gujarat in 2002 (he was cleared of all charges). Many of his trips to countries with many Indians include such events, most recently in Abu Dhabi. Last year he wowed a diaspora crowd in Sydney (pictured on the previous page).

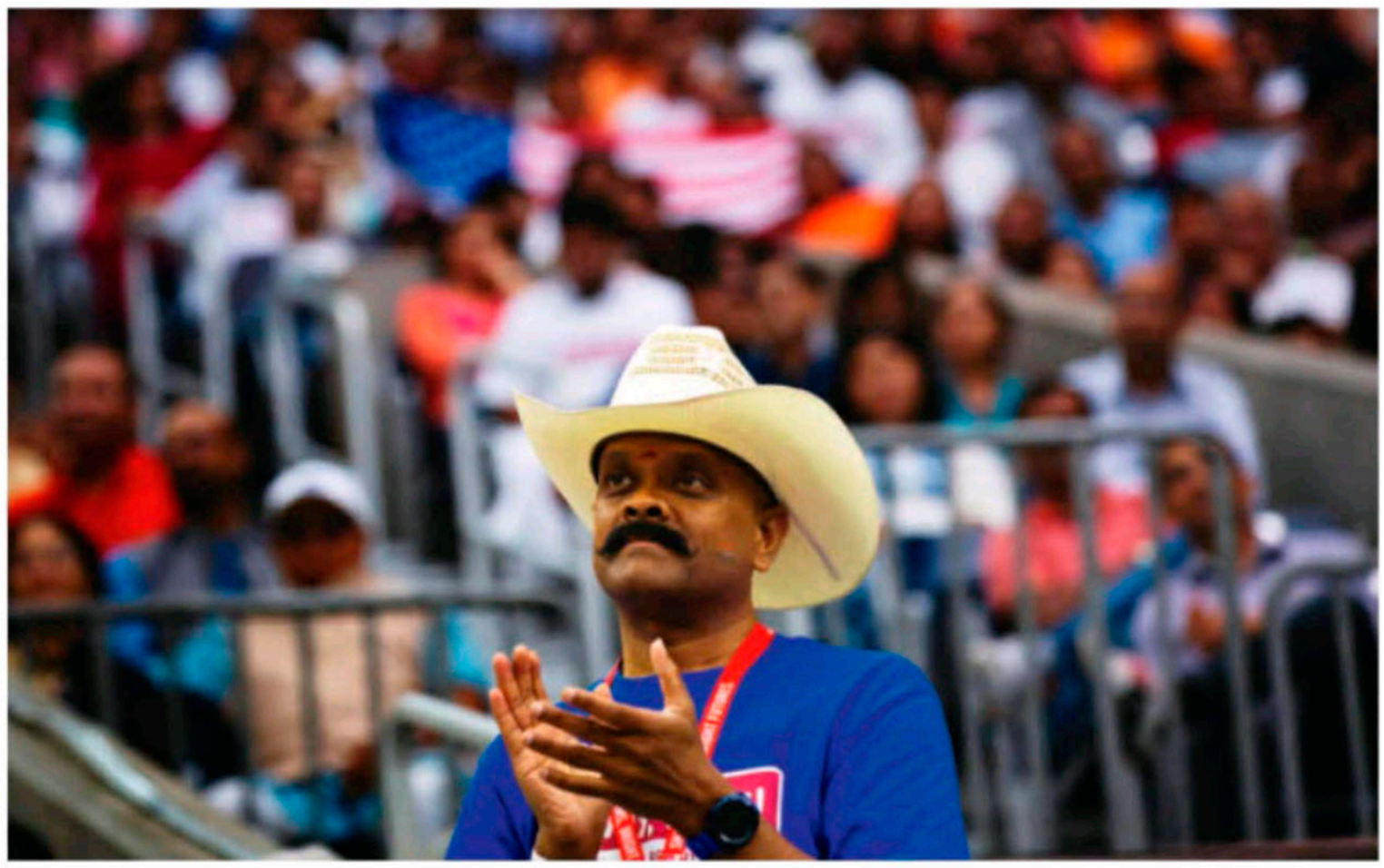
These events serve two purposes, says Edward Anderson of Northumbria University, author of a recent book on Hindu nationalism in the diaspora. They help tie him to a group he values for its social, cultural and economic weight. And the pictures of crowds cheering him abroad shine his image back home as a feted statesman.

Mr Modi's emphasis on India's rising global stature resonates with many overseas Indians, says Mr Dattani. "There is a sense that India is now everywhere and this guy did it," he says. In Abu Dhabi, where Mr Modi also inaugurated a huge Hindu temple, he was feverishly acclaimed by his fans. "For the past ten years under his rule India has really evolved," says Ganesh Sarma, a sales executive aged 62. "He works only for the country, not for himself, and our relationship with almost the entire rest of the world is fabulous now."

Efforts by Congress, by contrast, have fallen flat. Rahul Gandhi, the party's figurehead, also travels the world to lobby the diaspora. His main concern has been to highlight social problems and Mr Modi's increasingly authoritarian methods. That resonates with long-standing critics in the diaspora, but turns off most Indians abroad who want to think well of their country, says Mr Dattani. In 2023 Pew, a pollster, found that Indians in America, both citizens and migrants, had overwhelmingly favourable views of their home country. The BJP has used Mr Gandhi's foreign visits to paint him as disloyal for talking down his country to foreigners.

The government has also targeted less prominent Indians, chiefly academics and journalists hostile to the BJP. Many hold a special status called "Overseas Citizen of India" that grants rights (such as the ability to live and work in India) to people who have dropped their Indian citizenship and to foreigners married to Indian citizens. (India does not allow dual citizenship.) The BJP weaponises this status by revoking it for those it deems unpatriotic.

In any event, Mr Modi and his BJP are adept, at home and abroad, at dealing with their foes. And much of India's burgeoning diaspora is keen to ride along on a seemingly unstoppable bandwagon. ■



Houston, we have no problem with Mr Modi

Business

Consulting

The lost art of self-management

The golden age for CEO whisperers may be coming to an end

AN ANONYMOUS MEMO briefly circled the web in March. The authors, who claimed to be former partners at McKinsey, rebuked the illustrious strategy consultancy for its pursuit in recent years of "unchecked and unmanaged growth", and chastised its leadership for, of all things, a "lack of strategic focus". With humility typical of McKinseyites, they warned that "an organisation of genuine greatness" was at risk of being lost.

The memo, which was swiftly taken down, is but the latest murmur of discontent at McKinsey. In January Bob Sternfels, its managing partner, was forced into an internal contest for the top job after he failed to clinch support for re-election from a majority of senior partners in an initial round of voting. Although he ultimately prevailed, the saga hinted at the trouble brewing within the firm.

Not long ago the consulting industry looked indestructible. Fees rocketed during the covid-19 pandemic as clients sped up efforts to digitise their businesses, diversify their supply chains and respond to growing calls to bolster their environmental, social and governance (ESG) credentials. The consulting revenues of the industry's most important firms—including the triumvirate of strategy advisers (Bain, BCG and McKinsey), the "big four" accounting giants (Deloitte, EY, KPMG and PwC) and Accenture (also the world's largest outsourcer)—grew by 20% in 2021 and then 13% in 2022 (see chart on next page).

Since then, however, growth has been soggy for the industry's "great eight", slowing to around 5% in 2023, according to estimates by Kennedy Research Reports, an industry-watcher, and calculations by *The Economist*, based on company filings. Clients grappling with inflation and economic uncertainty have cut back on splashy consulting projects. A dearth of mergers and acquisitions has led to a slump in demand for support with due diligence and company integrations.

That has caused a headache for the consultancies. When demand from clients looked limitless, they recruited staff as if there were no tomorrow. Revenues at McKinsey are up by a third since 2019—but headcount is up by half, to 45,000. As job opportunities at startups and private-equity firms have withered, fewer consultants have left the firms of their own accord, reversing the spike in attrition rates during the pandemic.

Now tomorrow is here, with a vengeance. Bain and Deloitte have paid some graduates to delay their start dates. Newbie consultants at a number of firms complain that there is too little work to go ▸▸

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around, stunting their career prospects. Lay-offs, typically rare in consulting, have become widespread. All of the big four have made cuts to their advisory teams. Last year Accenture, the only one of the eight that is publicly listed, said it would fire 19,000 staff. On March 21st the company reported that its consulting revenues for the quarter to February shrank by 3%, year on year, after flattening in the previous quarter. It also lowered its growth forecast for the year ahead, sending its share price down by 9%.

The consulting industry has made it through choppy waters before, including the dotcom crash and the global financial crisis. Yet its recovery this time will be complicated by three things. The first is geopolitics. The consulting giants, all of which are based in America or Europe, have benefited from decades of globalisation during which they spread their tendrils into every part of the globe. Deloitte, the biggest of the bunch by consulting revenues, has offices in more than 150 countries and territories.

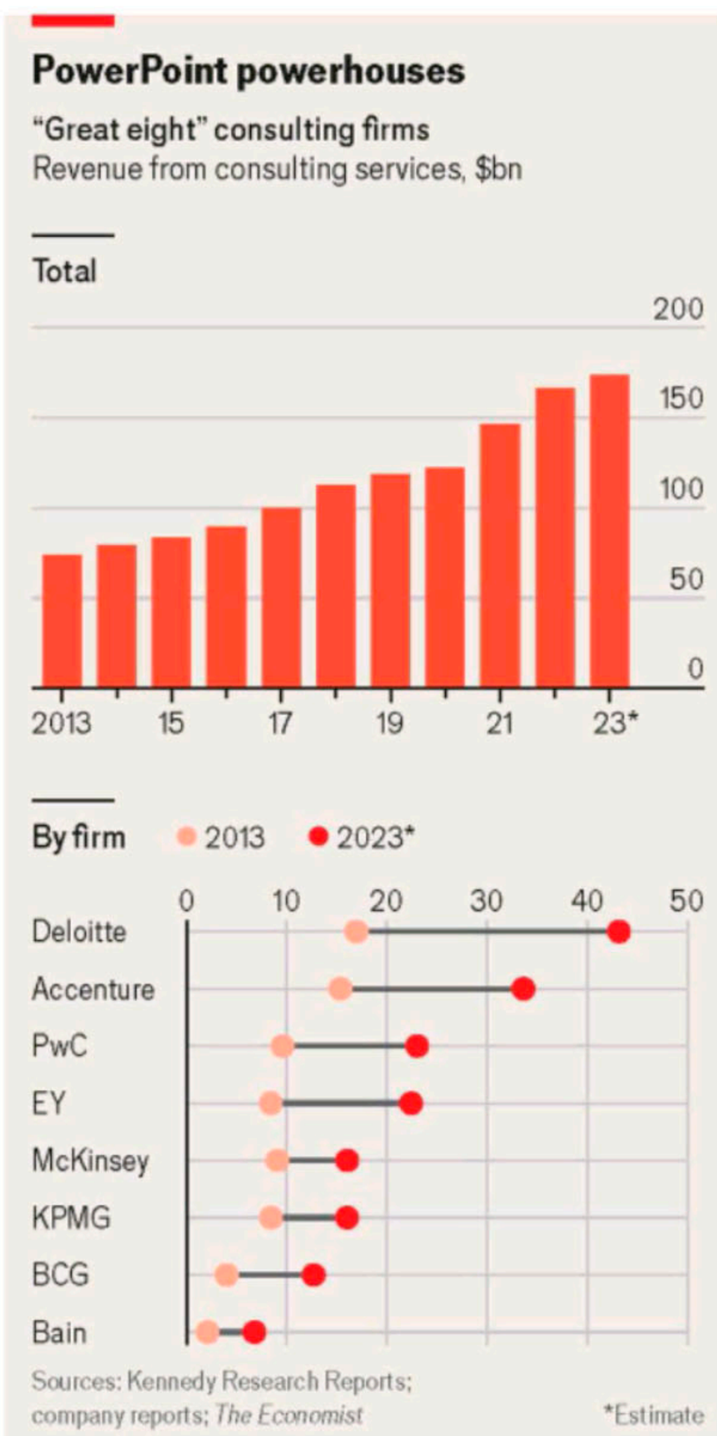
That is now placing the firms in awkward spots. Last month it emerged that the Urban China Initiative, a think-tank co-founded by McKinsey, provided advice to the Chinese government in 2015 that helped shape its "Made in China 2025" plan, which has sought to reduce the economy's reliance on foreign know-how and place China at the forefront of sectors from electric vehicles to artificial intelligence (AI). Although McKinsey denied that it wrote the report, some American lawmakers have called for the firm to be barred from American government contracts. In the 12 months to September 2023 the federal government paid McKinsey more than $100m in fees.

Now China is also starting to squeeze foreign advisers of various stripes out of its market. Last year Dentons, a global law firm, unwound its tie-up with Dacheng, a Chinese one, in response to new cyber-security and data-protection rules that made the combination unworkable. Although China is yet to produce a home-grown consulting powerhouse, it has already begun to make life difficult for foreign ones. Staff in Bain's Shanghai office were questioned by Chinese authorities last year, for reasons unknown. On March 22nd it was reported that the Chinese government was scrutinising PwC's auditing work at Evergrande, a bankrupt Chinese property developer that has been accused by China's government of fraudulently inflating its revenues. That could weigh on PwC's consulting business in the country.

It is not only the West's relationship with China that is causing problems. In February the bosses of BCG, McKinsey and Teneo, a smaller consultancy, along with Michael Klein, a dealmaker, were hauled before a congressional committee in Washington after failing to hand over details of their work for Saudi Arabia's Public Investment Fund. The committee is investigating Saudi Arabia's efforts to build "soft power" in America through, for example, its investments in sports such as golf. McKinsey and BCG said that their staff in Saudi Arabia could be imprisoned if the firms divulged what they had done for their client. The Gulf has been a rare bright spot for the consultants of late, with the oil-rich states splashing out on advice as they seek to diversify their economies.

Waning enthusiasm for ESG, denounced by critics as "woke capitalism", presents a second threat to the industry's recovery. In recent years the consulting giants have spent big on building out their ESG offerings, especially around decarbonisation. In 2021 McKinsey acquired three sustainability consultancies. In 2022 Accenture gobbled up five. So far these investments seem to be paying off. Christoph Schweizer, the boss of BCG, which acquired Quantis, an environmental consultancy, in 2022, says that sustainability was one of his firm's fastest-growing areas of work last year.

Whether that growth will continue at the same pace is less clear. In America Republican-run states including Florida, Missouri and Texas have withdrawn funds parked with BlackRock, the world's largest asset manager, in protest over its use of ESG considerations when making investments. Consulting clients surveyed in January by Source Global Research, another industry analyst, ranked sustainability projects tenth in their list of priorities for the year, down from fourth in 2023. Some consulting grandees admit that certain clients are reining in their climate ambitions. Stretched consumers are now less able to pay a green premium, suggests one bigwig.



The third and thorniest challenge for the great eight is technological change. For many years clients sought their help to modernise creaky old systems. Increasingly, the consultants themselves are grappling with digital disruption. The boss of a big buy-out firm says that his dealmakers are turning to software tools and data providers rather than pricey consultants for some of the analysis needed to evaluate a target company. Other tasks that legions of consultants once spent hours on, such as compiling and categorising data on a company's spending habits, can now be done at the push of a button.

The consultants are not standing idle. Bain, for example, has redesigned the way it does due diligence on companies, incorporating nifty tools such as web-scraping programs. The firms are also racing to stay one step ahead of AI. Last August McKinsey launched Lilli, a ChatGPT-like bot trained on its corpus of frameworks and other intellectual property, which consultants can use to speed up their work. Others have followed suit. Manny Maceda, the managing partner of Bain, reckons these bots will free up time for consultants to better understand the "organisational realities" of their clients.

Excitement among clients over this type of "generative" AI is also creating opportunities for new work. Mr Schweizer says that BCG has already completed hundreds of projects with clients around the technology. Accenture has booked $1.1bn-worth of generative-AI work in the past six months. Much of this is happening in collaboration with the tech companies developing the AIs. Accenture has been working with Microsoft. In March the consulting firm also announced a partnership with Cohere, an AI-model builder with which McKinsey has buddied up, too. Bain has an alliance with OpenAI, the maker of ChatGPT. BCG is collaborating with Anthropic, one more AI firm.

Such partnerships look like a welcome source of growth for the consultants. In time, though, they could become a drag—especially if they are successful. The quicker corporate clients become comfortable with chatbots, the faster they may simply go directly to their makers in Silicon Valley. If that happens, the great eight's short-term gains from AI could lead them towards irrelevance. That is something for all the strategy brains to stew on. ■

Accounting

Numbers guys and gals

A profession tries a makeover to attract newcomers

IN TIKTOK PARLANCE, "accountant" is code for a sex worker. Now proper bean-counters want to reclaim the title and make it appealing to prospective recruits, on the popular short-video app and elsewhere. The American Institute of Certified Public Accountants (AICPA), the profession's main trade group in America, has a TikTok feed laden with career tips and young accountants (the real sort) living their best professional lives. It has 27,000 followers—and its work cut out.

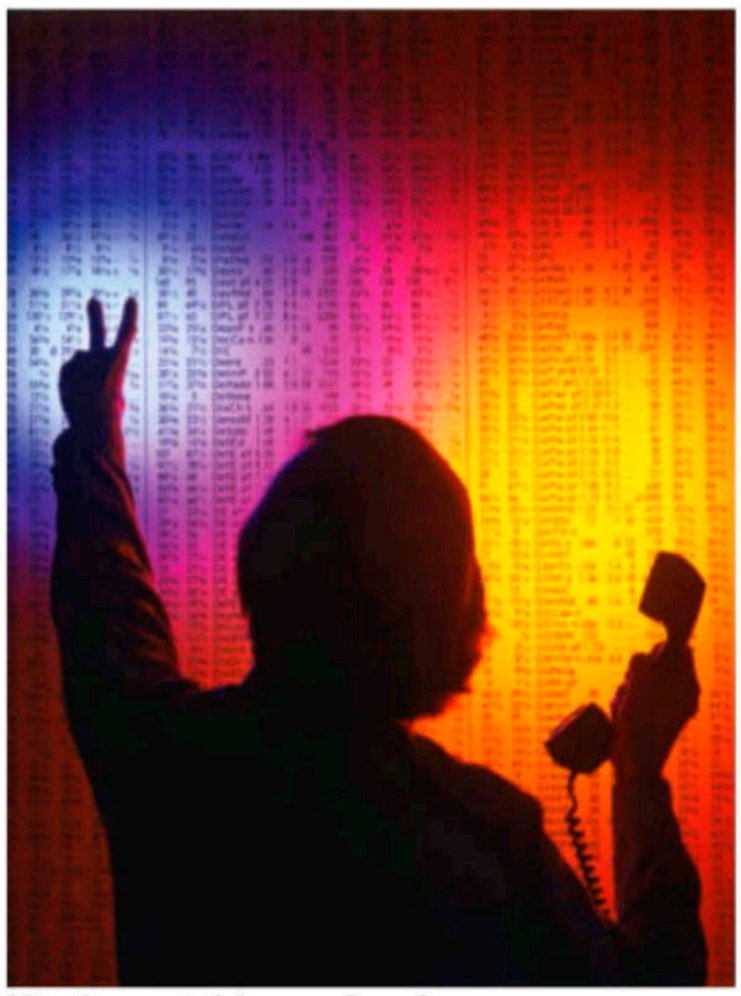
America had 1.6m accountants and auditors last year, according to the Bureau of Labour Statistics. That is down from nearly 2m in 2019. Many veterans are retiring—five years ago three in four certified accountants were at or near retirement age, according to AICPA. Too few youngsters are interested in taking their place. Only 65,000 students completed an accounting degree in 2022, down from around 80,000 a year between 2012 and 2018.

This is having a material impact on American business. Advance Auto Parts, a car-parts supplier, explicitly mentioned "the loss of certain accounting personnel and turnover of accounting positions" as a reason for delaying its quarterly regulatory filings last year. It was not alone. In 2023 more than 700 companies blamed a lack of personnel, typically in accounting, for potential errors in their financial statements, according to Bloomberg, nearly a third more than made similar excuses in 2019.

Unless more people are attracted to the profession, such problems will proliferate. The rub is that making accounting appealing as a career is hard, says Ashley Austin, who teaches it to undergraduates at the University of Richmond. Other finance jobs, such as investment adviser or trader, require less time in college and pay more on graduation, she admits.

Ms Austin tries to promote the profession by describing practitioners as interpreters of data rather than counters of beans. PWC, one of the "big four" professional-services firms with a giant accounting practice, is collaborating with accounting professors to make entry-level courses less tedious, says Rod Adams, PWC's chief recruiter in America. It helps that a lot of the grunt work typically taught in first-year classes is now done by computers, leaving the fun creative stuff to humans.

AICPA, too, wants to jazz up the job, by branding the accountant as a strategic contributor—or, in the words of Tom Hood of AICPA, from a "CF-No" (the chief financial officer who vetoes projects) to a "CF-Know". One campaign led by AICPA touts virtues such as autonomy, remote work, travel, the ability to live anywhere: just the sort of thing that many youngsters say they relish. Accounting+, as the initiative is called, has enlisted the general manager of the Pittsburgh Steelers, an American-football team, to endorse accounting courses. It has also sponsored TikTok influencers to make the career sexy. Not too sexy, though—at least one of the TikTokers had to clarify that she was endorsing actual accounting, not the sex trade. ■



V is for variable overheads

Sportswear

Three stripes and you are out

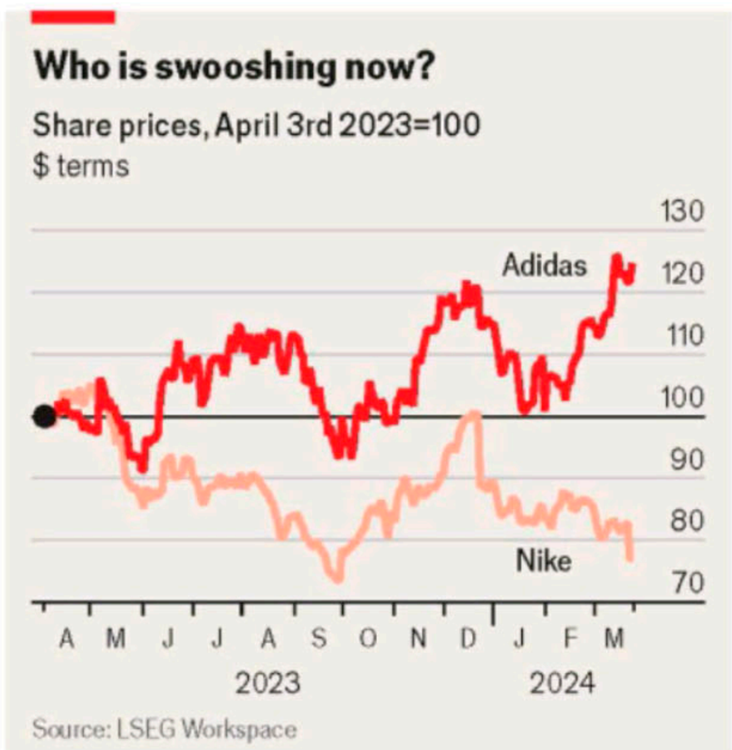
BERLIN

A marketing victory for Nike is a business win for Adidas

THE CHOICE to replace Adidas with Nike as the supplier of kit for the German football team from 2027 to 2034 was a purely commercial decision by the German Football Federation (DFB). Germans' reaction to the ending of a 77-year-old all-German partnership was, by contrast, highly emotional. Commerce is destroying a piece of *Heimat*, lamented Karl Lauterbach, the health minister, using the German word that evokes the idea of home, belonging and place. Robert Habeck, the economy minister, said that he would have hoped for a bit more "local patriotism". Markus Söder, Bavaria's straight-shooting premier, declared it simply "wrong, a pity and incomprehensible".

Bernd Neuendorfer, head of the DFB, was "aghast" at the outcry. In his view, the decision was a no-brainer. The DFB is in financial dire straits and he received an offer from the American company that was far higher than the one from Adidas, so he accepted it. According to reports in the German press, Nike offered €100m ($108m) to kit out the *Nationalmannschaft*, twice as much as its German rival. For the world's biggest maker of sportswear, with an annual operating profit of $6bn, it is pocket change. For Adidas, the distant number two, which eked out just €268m from operations in 2023, matching Nike would have burnt a hole in its pocket.

Bjorn Gulden, who took over as chief executive of Adidas at the start of 2023, chose finance over football—his earlier career as a professional player notwithstanding. Under the no-nonsense Norwegian's leadership, Adidas seems to be at last on the path to recovery. Its share price has risen by around 40% over the past 12 months. Its operating profit may pale in comparison with Nike's, but it came as a pleasant surprise to analysts, who had forecast a loss. Mr Gulden expects an operating profit of €500m this year.



Adidas's chief "runs the business well", sums up Aneesha Sherman of Bernstein, a broker. He has mended Adidas's dysfunctional relationship with retailers. He has increased the production of Gazelle and Samba, two classic Adidas trainers popular with European and American fashionistas, ten-fold. And he has found an elegant sol- ▸▸

ution to €1.2bn in unsold stock of Yeezy shoes designed by Ye, an American rapper (formerly known as Kanye West) with whom Adidas has severed ties after his offensive outbursts. The Yeezies are being sold in tranches with parts of the profit going to charities.

Nike, for its part, needed a win. It recently warned that its sales will be clobbered this year by On and Hoka, two trendy running-shoe brands. In China, a huge market, it faces competition from home-spun rivals such as Anta. Cristina Fernández of Telsey Advisory, another broker, notes that a renewed focus on sport is one way that Nike's boss, John Donahoe, is trying to revive the swoosh, along with reducing inventory and improving relations with wholesalers. In December he also announced $2bn in cost cuts over the next three years. And in February he said he would eliminate around 1,600 jobs, or 2% of Nike's worldwide workforce.

One area where Mr Donahoe's axe will not fall is marketing. He pumped a cool $1bn into promoting Nike's brand in the last quarter, 10% more than in the previous three months. As part of this campaign he is reportedly willing to pay much more for kitting out the German squad, which is ranked a middling 16th in the world, than for the French team, which is second. Instead of bashing Mr Gulden and Adidas, Germans should be praising the firm's pfennig-pinching. After all, what is more *Heimat* than thriftiness? ■

BARTLEBY

Corporate uniforms

A quarter of the American workforce wears one. Why?

IF YOU WORK in a white-collar job in an office and make your way there this week, it is unlikely that anyone will be able to guess exactly what you do from your clothes. That is not true for lots of the people you will interact with. The bus driver who gets you to your destination, the barista who makes your coffee and the people on reception who wish you "good morning" as you enter the building—they, and many others, are likely to be wearing some kind of corporate uniform. A poll of American workers conducted last summer by Gallup found that although most employees wear casual clothes—some smart, some really not—almost a quarter donned a uniform.

For employers who require them, there are several arguments in favour of uniforms. They help ensure a level of professionalism in appearance. They project a brand identity, from the red coats of Virgin Atlantic crew to the "Browns" uniform of UPS delivery drivers. They may have useful job-specific features: chefs' jackets are double-breasted to protect against burns and can be reversed to hide stains. They send a clear signal to customers about whom they should approach with questions, avoiding those awkward "do you work here?" moments.

Those customers draw different conclusions if staff are in uniform, for good and bad. A study by Robert Smith of Tilburg University and his colleagues asked people to imagine being on the receiving end of poor service when picking up a pizza. They were then shown pictures of uniformed or non-uniformed employees; the person who had notionally treated them badly was circled. Participants were more likely to blame the company than the individual or the circumstances for a bad experience when a uniform was involved. If corporate clothing makes each worker seem more representative of their employers, the authors suggest that it may be a good idea not to give it to inexperienced workers.

Uniforms can also affect the psychology of employees. In 2012 Hajo Adam, now of the University of Bath, and Adam Galinsky, now of Columbia Business School, coined the term "enclothed cognition" to describe the effect that specific clothes have on the way that people think and feel. Questions have been raised over the validity of enclothed cognition, but a new meta-analysis by Messrs Adam and Galinsky, along with Carl Blaine Horton of Columbia Business School, concludes that the phenomenon is real.

In one study Guillaume Pech of Université Libre de Bruxelles and Emilie Caspar of Ghent University gave participants the option to administer electric shocks to other people in return for money; those dressed up in Red Cross uniforms showed more empathy than those in normal outfits. Xuehua Wang of Asia Europe Business School and her co-authors found that formal clothes made people more likely to make healthy eating choices. According to a paper by Saaid Mendoza of Providence College and Elizabeth Parks-Stamm of University of Southern Maine, people who wore a police uniform during a video-game simulation designed to test reaction times were more likely than those in their own clothes to shoot unarmed targets. Clothes maketh the bang.

The effects that uniforms have on workers will obviously vary. A uniform that confers a sense of professional identity—a doctor's white coat, say—is likely to be more motivating than one that does not. People will be happier to be a corporate billboard if they feel pride in their employer. Some work clothing looks good and some of it is a paean to polyester: you do not so much represent a brand as a fire hazard. Some uniforms are comfortable and some are not, with women usually getting the worst of it. Only in 2023 were female police officers in Britain issued with body armour made to suit their anatomy.

The obvious objection to uniforms, at least from people who do not wear them, is that they suppress individuality and autonomy. But employees who do not have to wear a formal uniform often gravitate towards a costume anyway. Some coders seem to be under an unspoken obligation to wear T-shirts. The combination of shirt, trousers and Patagonia gilet is known as the "midtown uniform" for finance types in New York. Executives wear cultlike corporate lapel pins. Celebrity bosses build brands by wearing the same outfit day after day. You may not be required to don a uniform when you head off to work. You may nonetheless be wearing one.

Antitrust and artificial intelligence

ChatFTC

SAN FRANCISCO

Regulators are forcing tech giants to rethink their AI strategy

TRUSTBUSTERS HAVE big tech in their sights. On March 25th the European Commission opened a probe into Apple, Alphabet (Google's parent company) and Meta (which is Facebook's). Regulators in Brussels think the measures which the American technology behemoths have put in place to comply with the Digital Markets Act, a sweeping new law meant to ensure fair competition in the EU's tech industry, are not up to scratch.

Days earlier America's Department of Justice, along with attorneys-general from 16 states, sued Apple in what could be the most ambitious case brought against American tech since the DOJ battled Microsoft a quarter-century ago. It alleges that the iPhone-maker uses a monopoly position in smartphones to "thwart" innovation, "throttle" competitors and discourage users from buying rival devices. Apple denies wrongdoing.

All this scrutiny is, on its face, backward-looking; the cases concern the tech giants' existing products and business models. But it is intensifying just as they try to position themselves to profit from the next wave of technological disruption—ChatGPT-like "generative" artificial intelligence (AI). And it is changing how the titans of tech approach the challenge.

During previous waves of technological change large companies often bought upstart innovators to stay ahead. In another lawsuit the Federal Trade Commission (FTC), America's main trustbusting agency, alleges that Meta stifled competition in social media by, among other things, buying Instagram and WhatsApp, two budding rivals. Whether or not the FTC has its way in court and forces Meta to divest one or both of the apps, any similar deal today would be a non-starter with regulators in America and Europe.

With takeovers getting thornier, the tech giants have instead taken to investing piecemeal in promising startups. In 2023 about two-thirds of the $27bn raised by smaller AI companies came from Alphabet, Amazon and Microsoft, according to data from PitchBook, a research firm. That includes Microsoft's $10bn investment in OpenAI, maker of ChatGPT and the world's hottest AI startup, and Google's $2bn stake in Anthropic, another creator of clever "large language models". The giants are spreading these smaller bets: Microsoft has backed other model-makers, such as Mistral, a year-old French firm trying to give OpenAI an run for its money. (The startups are diversifying their financing, too: besides Google's investment, Anthropic may get up to $4bn from Amazon.)

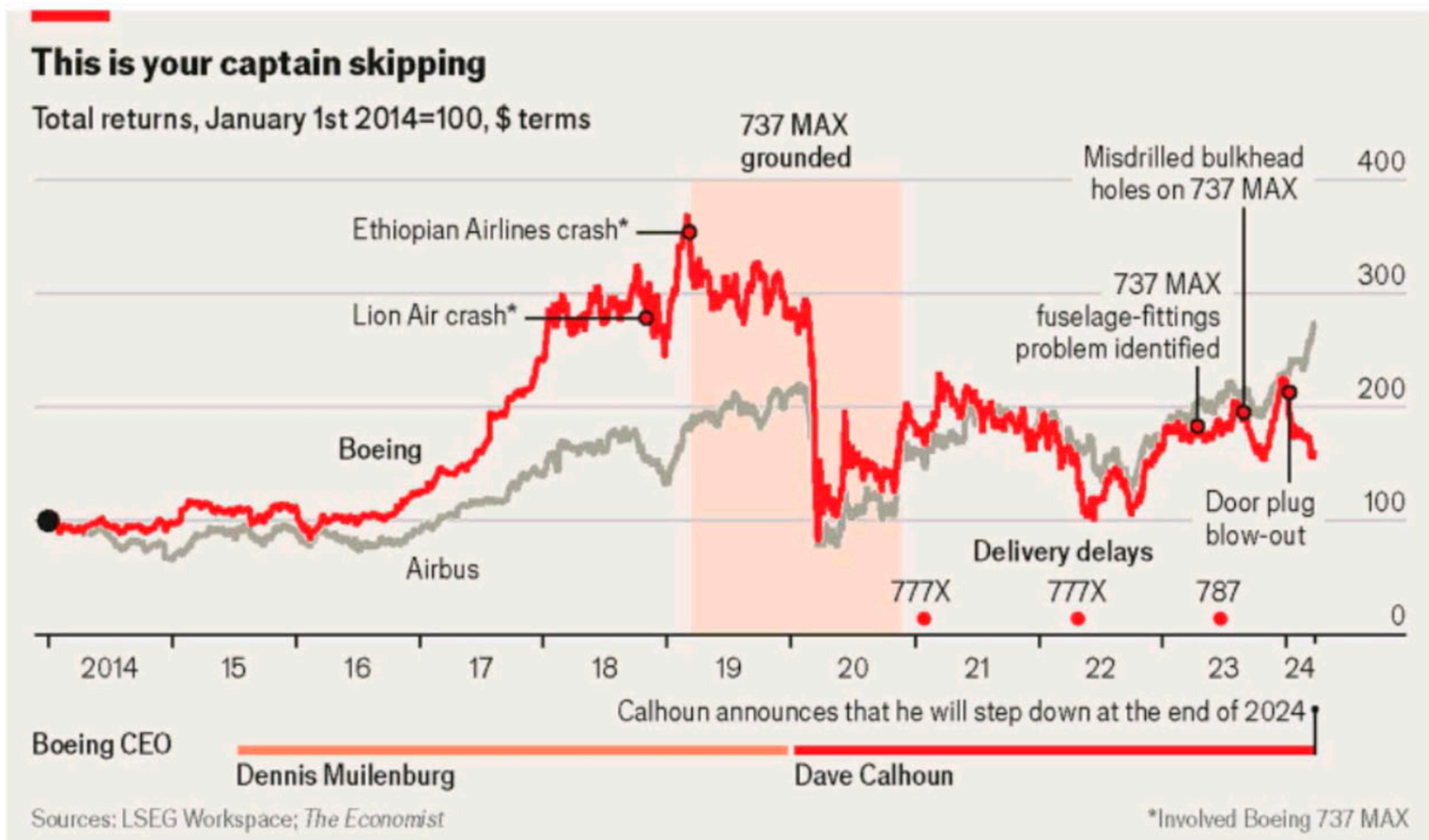
Such deals often involve terms other than getting onto a startup's shareholder list. They often give the investor access to the smaller company's technology, sometimes exclusively. Microsoft is at pains to point out that its investments in OpenAI and Mistral do not involve taking equity stakes (though it declines to divulge what they do involve, exactly).

Some AI deals may involve arrangements between the behemoths themselves. Apple and Alphabet are reportedly discussing one that could result in some iPhone features being powered by Gemini, the search giant's generative AI.

Another approach is to poach star AI entrepreneurs and technologists. Since the start of 2022 Alphabet, Amazon, Apple, Meta and Microsoft have collectively hired some 30 AI experts from OpenAI, Anthropic and Cohere, a Canadian model-maker, according to Live Data Technologies, a research firm. On March 19th Microsoft announced that it would recruit almost the entire workforce of Inflection AI, another builder of cutting-edge models, including its co-founder, Mustafa Suleyman. (Mr Suleyman sits on the board of *The Economist*'s parent company.)

Trustbusters are not blind to these developments. Regulators on both sides of the Atlantic are already probing some of the recent tie-ups that fall short of full acquisitions. Apple's rumoured Gemini deal with Google is modelled on a similar agreement that makes Google the default search engine on Apple's devices—and that is already at the centre of another antitrust case that the DOJ has brought against Google. It is probably only a matter of time before they start looking into big tech's AI-hiring practices.

The giants may be hoping that by the time these antitrust actions are pursued, let alone resolved, they will have cornered the AI market—as they have done with today's digital businesses. Forgiveness can be sought later, even if that means repeated trips to the courtroom. ■



Beware of low-flying aircraft-makers

The blowout of a fuselage panel from a Boeing 737 MAX over Oregon in January was a "watershed moment" for its maker, according to Dave Calhoun. But it was only the latest in a string of incidents that have brought the once high-flying aerospace giant low. After trying—and failing—to right the company over the past four years, on March 25th Mr Calhoun said he would step down as chief executive at the end of 2024. His as-yet-unannounced successor will take the yoke in the middle of a turbulent flight.

SCHUMPETER

Digital David v the Google Goliath

Meet the adman taking on the cookie monster

JEFF GREEN learned about marketing the hard way. In his late teens he was sent to Ventura, on the Californian coast, as a Mormon missionary. He spent 12 hours a day knocking on people's doors, mostly to have them slammed in his face. His sales pitch was hardly compelling on the bikini-loving west coast, but as he tells Schumpeter: "If you can convince people to give up premarital sex, 10% of their income, no more alcohol, no more smoking or coffee or tea, and then go to church three hours on Sunday, then arguably you can sell anything." Today he is head of a digital-advertising platform, The Trade Desk (TTD), which he co-founded and based in Ventura, his old stamping-ground. Its market value of $42bn is only slightly less than the combined worth of two of the most valuable ad agencies, Publicis and Omnicom. In digital advertising, the only firms bigger—albeit much, much bigger—are the Goliaths of big tech.

Mr Green is no longer a Mormon. In 2021 the billionaire publicly parted ways with the Church of Jesus Christ of Latter-day Saints, rebuking it for its accumulated wealth and intolerant stance on issues such as gay rights. But he remains a crusader. His latest fight is against Google. Following the lead taken three years ago by Apple, maker of the iPhone, this year Google aims to phase out cookies, bits of software code that enable marketers to track consumers digitally across third-party websites and target them with ads. Google's justification for ending the practice is data privacy. But Mr Green says that is a figleaf, and that Google's cookie removal benefits its own full-throttled advertising platform at the expense of others. "They kept their Ferrari...and said everyone else should ride bicycles," he says. He is on a mission to ensure the digital-ad machinery remains on four wheels.

TTD focuses on placing digital ads in auctions across parts of the internet outside the walled gardens of Google, Apple and other tech giants. That means targeting things like streaming-video content (such as Disney+ and Hulu), audio platforms (Spotify) and the news media. He calls this the "open internet". It is a lucrative business: TTD charges advertisers a commission, or take rate, of about 20% to target digital ads at scale. But it is a lopsided industry: in round numbers, Mr Green says global ad spending is approaching $1trn. Just $10bn of that, or 1%, went through TTD last year. Google's revenues, mostly from digital ads, were a stonking $307bn. In order to ensure that within a cookie-less internet advertisers do not simply double down on Google or its sister company, YouTube, TTD has rolled out an alternative open-source technology, known as Unified ID 2.0 (UID2), that it hopes will improve on cookies as an industry standard.

Google has an enormous advantage. Billions of people use its services, and to do so, many sign in to its Chrome browser using email addresses or phone numbers. These identifiers help advertisers track people across Google's sites. Some internet users resent this trade-off—but not enough to put them off googling, Gmail, Google Maps or YouTube. The challenge for rivals such as TTD is to find a way to persuade users of services outside the walled gardens to join a centralised system of anonymised identifiers so that digital advertising can flourish.

What could induce consumers to surrender their email addresses or phone numbers and invite a non-Google advertising onslaught? Mr Green says streaming platforms like Netflix and Spotify provide an answer. They offer ad-supported tiers in exchange for cheaper subscriptions, which many viewers have flocked to. The IDs used to sign in to those services promote the sort of personalisation for which advertisers pay high prices. That can mean the streamers show fewer, more targeted ads.

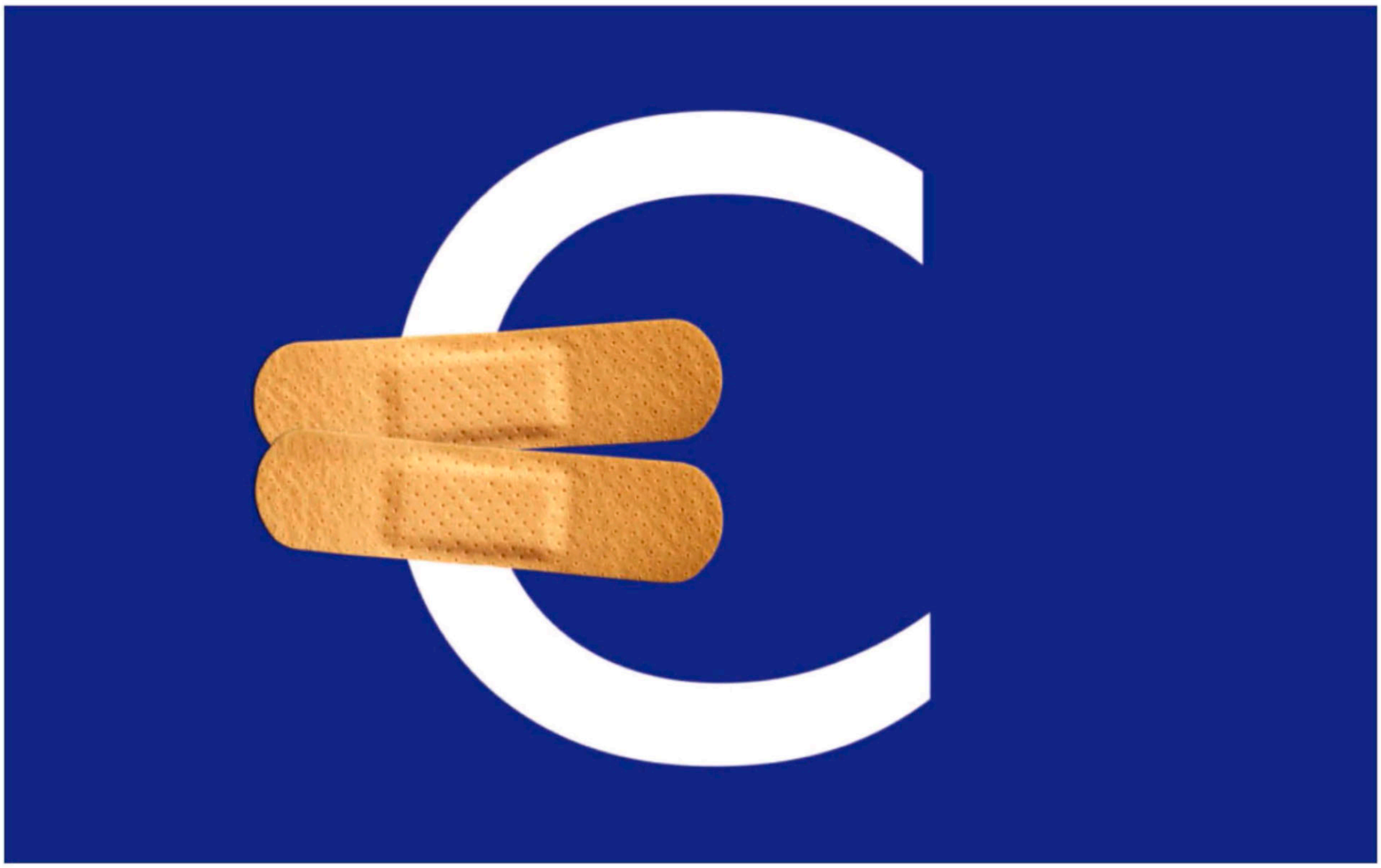
He hopes that as such multi-tiered mixes of subscriptions and ads become more common, consumers will consent to having their anonymised identifiers distributed across the parts of the internet outside the tech giants' domains. This, Mr Green adds with his missionary hat back on, could offer a lifeline to struggling web publishers whose business models currently rely on those giants' whims. He points to Meta's recent decision to shut down Facebook News, which was a source of revenues for many content providers, as potentially hurting the economics of the news industry, thus lowering the quality of journalism and, by extension, undermining the political process.

The great internet bake-off

TTD has its work cut out achieving its boss's ambitions. Evelyn Mitchell-Wolf of eMarketer, a consultancy, says the number of identifiers like UID2 has "exploded" as rivals try to cook up alternatives to cookies. She wonders if any of them will achieve the scale necessary to bypass the tech giants. The focus on Netflix-like connected-TV platforms is also a risk. The big streamers might favour direct access to advertisers over relying on a middleman like TTD, which could then find it harder to sustain its take rate. Moreover, just as the cookie upheaval is under way, an even bigger disruption of digital advertising may be on the horizon. Artificially intelligent chatbots could draw traffic away from publishers, undermining their advertising appeal.

Mr Green, ever the salesman, dismisses such worries. On March 20th two deals were announced that suggested media giants were buying into his vision. NBCUniversal said that for the first time advertisers would be able to bid for digital spots in the Olympic games, using TTD as the exchange. Disney announced it was expanding its real-time digital-ad exchange for Disney+ and Hulu using two partners, TTD and Google. As for chatty AIs, Mr Green notes that they, too, need to generate revenues. How will they do that? Obvious. Like the rest of the internet, they will one day be overrun with ads. ■

Finance & economics



Battered and bruised

First Putin, now Xi. Next Trump?

Europe's economy is under attack from all sides

A DECADE AGO Xi Jinping was welcomed to Duisburg in Germany's Ruhr valley. He praised the region as a hub for Chinese investment; greeted a train that had spent a fortnight travelling from Chongqing, via Russia, to Europe's industrial belt; and enjoyed an orchestral performance of traditional mining songs. More recently, another Chinese arrival in Germany received a frostier reception. In February a ship called *BYD Explorer No. 1* unloaded 3,000 or so electric cars made by BYD, a Chinese electric-vehicle (EV) firm. As the ship's name suggests, it is likely to be the first of many. Little surprise that it has prompted worries about the future of Germany's hallowed carmakers.

China is churning out cars, as its leaders funnel cash and loans to high-tech industry in an attempt to revive the country's moribund economy. Its manufacturing trade surplus is close to a record high as a share of global GDP, and is set to rise higher still. As a result, European leaders are fearful of an influx of advanced, cheap Chinese goods. On March 5th the European Commission decided that it had sufficient evidence to declare China had unfairly subsidised its EV-makers, paving the way for tariffs. Ursula von der Leyen, the commission's president, has warned China not to "race to the bottom" on green tech. Britain has begun a probe into the country's excavators. Emmanuel Macron, France's president, will host Mr Xi in May. He will, according to diplomats, deliver "firm messages" on trade.

Countries from Brazil to India are moving to block China's exports. They are a particular threat to Europe's producers, though, because of the continent's growth model, which has long had trade at its heart. According to the IMF, Europe is the region of the world most open to trade and investment (see chart 1 on next page). In the EU trade in goods and services runs to 44% of GDP, almost twice as much as in America. As a rules-based bloc, the EU is reluctant to violate trade rules too blatantly by erecting barriers. So is Britain, which has a history of support for free trade.

The new China shock arrives at a terrible time for European industry. It is still dealing with an energy shock caused by Russia's invasion of Ukraine, which began just as national leaders were attempting to accelerate the green transition. Gas prices—usually around €20 ($22) per megawatt hour—spiked to more than €300 in 2022, sending electricity prices soaring (see chart 2 on next page). A post-covid rebound turned into inflation and an energy crisis. The European Central Bank (ECB) was forced to raise rates to 4%, hitting demand in an already weakened economy. ▸▸

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Fiscal largesse during the pandemic and energy crisis has since given way to retrenchment. Germany's tight deficit limits have forced the country to cut back this year, with more cuts to come in 2025. France has just announced that its deficit in 2023 was 5.5% of GDP, well above forecasts. It had already pulled what Bruno Le Maire, its finance minister, calls an "emergency brake", cutting €10bn of spending in order to bring fiscal policy back on track.

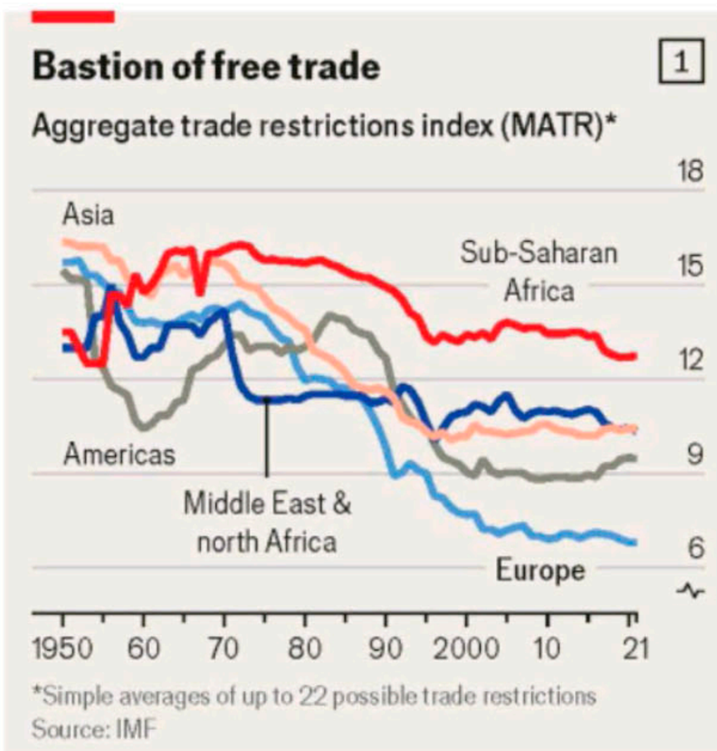
The EU's GDP has grown by just 4% in real terms since 2019, which is around half the pace America has enjoyed. In Britain and Germany GDP per person has actually fallen (see chart 3 on next page). Official forecasts for the EU and Britain project growth of less than 1% this year; beyond that, things are uncertain. Whereas American productivity seems to have risen in the pandemic, Europe's is limping along. The ECB, national leaders, think-tanks and two former Italian prime ministers, Enrico Letta and Mario Draghi, are trying to work out why. At the same time, another threat looms: if Donald Trump wins America's presidential election, European exporters could be subject to tariffs on sales to one of their most lucrative markets.

Shock horror

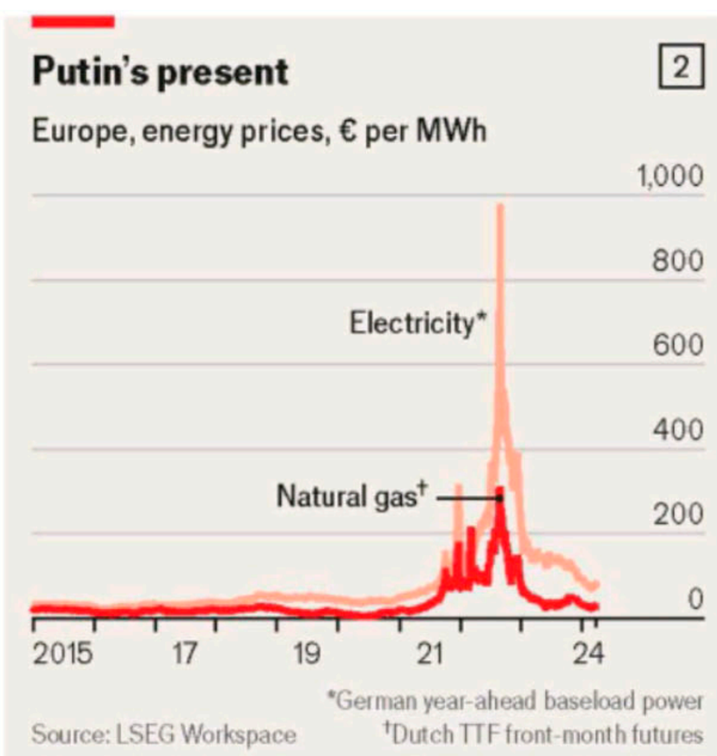
So as the continent's economy reels from the Russia shock of 2022, how will it adapt to a new one from China and maybe a third from America? The first China shock came in 2001, when the country entered the WTO and benefited from lower trade barriers, posing a challenge to Western manufacturers. In America, some regions and sectors were hit hard. Europe got off more lightly, in part because the shock coincided with the accession of central and eastern European countries to the EU. The fast development of the EU's newest members supported the bloc's productivity growth and created demand for Western goods.

This time will be different. Although China is moving towards high-tech manufacturing in response to its economic struggles, Mr Xi is also keen to wean the country off Western industry. He wants to build technological leadership in sectors he sees as necessary for national strength, such as industrial robots and railway equipment. A weaker China aiming to be less dependent on foreign inputs will buy fewer cars, less machinery and less high-tech equipment, precisely the sort of goods that lifted European exports during the first China shock. China's economy is also much larger than it was at the turn of the millennium. As Adam Wolfe of Absolute Strategy, a consultancy, notes, the rise in China's exports since 2019—moderate as a share of the country's GDP—has already felt like a deluge elsewhere.

Moreover, European firms now face Chinese competition in increasingly sophisticated markets, both at home and in third countries. Take cars, the crown jewel of Europe's industry. The sector, along with its supply chain, employs around 3m Europeans. Yet Chinese brands already make up 9% of the pure-battery market in western Europe, according to data from Matthias Schmidt, an automotive consultant. Across the continent, new registrations of Chinese-brand consumer vehicles more than doubled between 2022 and 2023. French, German and Italian mass-market brands appear to be especially vulnerable to competition. Analysts at UBS, a bank, reckon that "legacy" carmakers' global market share will drop from 81% today to 58% by 2030.



Europe's leaders are particularly keen to develop green industries as they pour billions into the climate transition. Yet European companies producing for the mass market will struggle to compete with the value offered by their Chinese competitors. China already dominates wind turbines, for instance, with a market share of 60% in 2022, according to the Global Wind Energy Council, an industry body. That provides its manufacturers with the scale needed for further innovation. And things are only heading in one direction. China's producer-price index, which measures prices at the factory gate, has been falling for 17 months, and is roughly at its level of 2019. The same index for the EU, even excluding energy costs, is almost a quarter above its level of four years ago.



Europe's own attempts to "de-risk" from China—that is, to source fewer critical inputs from the country and restrict investments and exports of high-tech goods to it—will also push up costs. In a recent paper Julian Hinz of Bielefeld University and his co-authors look at the effects of a hard decoupling from China and its allies. For Germany, the European economy most closely intertwined with China, they find that a gradual adjustment would cost 1.2% of GDP, around the same as for Japan. Other major European countries and America would lose about 0.5% of GDP. China's loss would come to around 2%.

Europe's de-risking costs will become harder to bear if Mr Trump wins in November. New levies are a grim prospect for the continent's exporters, which last year sold €500bn-worth of goods to America. Indeed, 20 of the EU's 27 member states ran a goods-trade surplus with the country.

Mr Trump stoked tensions during his first term, when America imposed hefty tariffs on aluminium and steel, hitting European producers. Europe replied with its own tariffs on American products, including bourbon and motorbikes. It took the arrival of Joe Biden for the two sides to reach a (somewhat shaky) truce. Trump 2.0 could be much more painful. The former president has proposed a 10% tariff on all America's imports. Robert Lighthizer, who advises him on trade, has gone further, arguing recently in *The Economist* that even more brutal tariffs might be "necessary".

Lighthizer's heavy blow

The German Economic Institute, a think-tank, has calculated the possible impact. Imagine America applies 10% tariffs on its imports and punishes China with even higher tariffs. America's own economy would take a hit, via higher consumer prices—but Europe's would be hurt more. Germany's total exports would be nearly 5% lower by 2028 than in a world with no new American tariffs. Private investment would also be hit. As a result, German GDP would be 1.2% lower, equivalent to a cumulative loss of €120bn-worth of output by 2028. A Trump administration might go even further, seeking to retaliate against Europe for its digital-services taxes, which target American tech firms, or for refusing to toe the president's line on China.

Meanwhile, when it comes to tensions between China and the EU, tit-for-tat probes into subsidies and dumping will probably become common. The Chinese government, for example, has a clear idea who is behind the EU's EV probe: it has started an anti-dumping probe into French cognac. France has designed its own EV

subsidies for consumers to exclude Chinese brands; Chinese firms offer customers a rebate of the same magnitude, in what one analyst calls "a single-finger greeting to Mr Macron".

The combination of energy, China and Trump shocks could lead to an extended period of restructuring in the European economy. For the continent's consumers, this would be a mixed blessing. Trade wars make goods pricier and reduce choice, but when China subsidises solar panels, European utilities and households get cheaper energy. Some regions could benefit, too. Countries such as Spain, with solar-power potential, or Sweden, with water and wind power, could attract new industries. Indeed, earlier this year H2 Green Steel, a Swedish firm, announced that it had secured €6.5bn in funding for its plant near Lulea in the country's north.

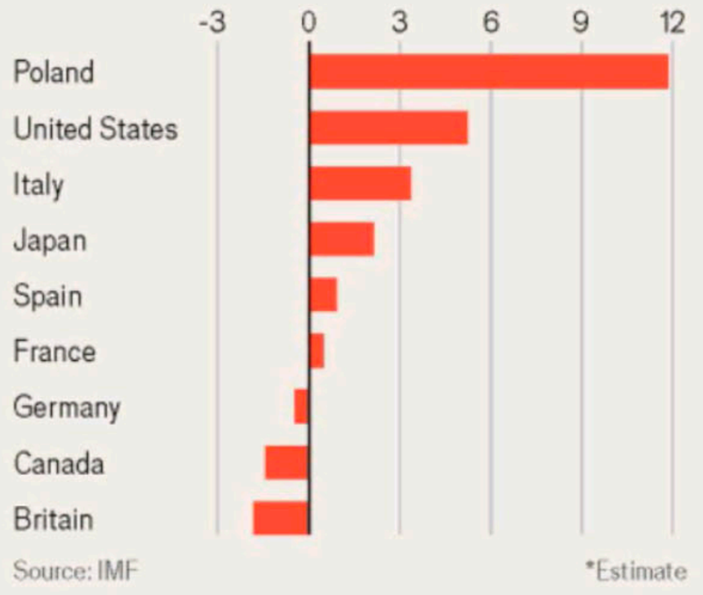
Similarly, some foreign firms will want to invest in Europe to be close to customers when trade is difficult. Poland attracted almost €30bn in foreign direct investment (FDI) in 2021 and 2022, and probably as much in 2023. That is twice the amount it typically received before the pandemic. FDI now makes up 25% of Poland's capital spending, compared with an average of 5% or so in industrialised countries. Some of its inflows came from Bosch, a German engineering firm, and Daikin, a Japanese conglomerate, both of which are building heat-pump factories in the country. According to a survey by EY, a consultancy, 67% of "international decision-makers" expect their firm's European presence to grow, up from 40% in 2021. That may include defence companies, which will supply the continent's growing armed forces—and China's EV-makers.

But most of the restructuring will be less pleasant. Continental, one of Germany's largest suppliers of car parts, is shedding thousands of jobs. Bosch is getting rid of 1,200 positions in its automotive-software division. Others in the car industry have also announced cuts. The previous China shock spurred technological advances as workers moved to more productive companies that invested in innovation. But over the past 15 or so years, firms exposed to Chinese competition have shown signs of slower productivity growth, according to research by Klaus Friesenbichler of the Austrian Institute of Economic Research and co-authors.

Although Germany is Europe's manufacturing powerhouse, the triple challenge could affect the whole continent. Regions with energy-intensive industries or that produce mass-market products in western Europe stand to lose out. Even areas insulated from the initial effects may see successful local firms invest more overseas, as they adapt to protectionism elsewhere. Over the next five years some 75% of large businesses in the euro area expect to diversify across countries, move production closer to sales or shift parts of their businesses to more politically aligned countries, according to a survey by the ECB.

The sick men of Europe 3

GDP per person, % change 2019-23*



Source: IMF *Estimate

Dark clouds

There are limits to what cash-strapped governments will be able do to ease the transition to new industries. This is especially true when they have promised to spend more on defence and there is little desire for the sort of grand EU reforms that could help stimulate growth. The bloc recently approved €1.2bn in public subsidies for cloud computing by seven countries over several years. As McKinsey Global Institute, another think-tank, points out, that comes to about 4% of the annual investment of Amazon Web Services. Patents in frontier technologies are registered mostly by American and Chinese firms. Despite its huge population, in many respects the EU still struggles for scale. Internal goods trade is far from seamless. Services markets are as fragmented as ever.

That leaves a second approach—seeking to preserve the old—for which lobbying is inevitably fierce. In an age when the populist right is resurgent, few politicians want to be blamed for job losses. Payoffs from doing the difficult, technical work of deepening capital markets or integrating electricity markets do not come quickly. In Brussels and Paris the clamour for unhelpful subsidies and other forms of protectionism is growing. Germany, meanwhile, is hamstrung by a three-party coalition that cannot agree on anything, let alone a thorny issue that cuts across geopolitics and industrial policy. As politicians prevaricate, more BYD ships will make the journey to Europe's ports. ■

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Financial obfuscation

Hide and seek

SHANGHAI

China's banks are forced to reveal the scale of their bad-debt problem

BANK OF JIUJIANG, a mid-tier lender from a southern Chinese river town, imparted some bad news on March 19th. In a rare disclosure, it told investors profits for 2023 might fall by 30%, because of poorly performing loans. This is just the sort of information Chinese banks are normally reluctant to reveal. Indeed, they often go to great lengths to avoid doing so.

Typically, the subterfuge works as follows: the bank lends to an asset-management company (AMC) that in return purchases its toxic loans. The contracts drawn up between the two parties include stipulations that enable the AMC to avoid the credit risks of the bad loans they are buying. Confidentiality clauses keep these arrangements from being disclosed, sometimes even to courts.

To regulators it may seem as if banks involved in such transactions are solving their bad-debt problems; in reality, they are concealing them. As Ben Charoenwong and Ruan Tianyue of the National University of Singapore Business School, and Meng Miao of Renmin University, have noted, over time these troubled loans accumulate. For hundreds of banks across the country, they represent a ticking bomb.

The authorities are now catching on. They have hit financial institutions with a flurry of penalties for improper handling of debts. The National Administration of Fi- ▸▸

Emerging from the mist

nancial Regulation (NAFR), a new banking regulator, has handed out more than 20 punishments. In December Citic Bank, a commercial lender, was fined 220m yuan ($30m) for mismanaging bad debt, a record amount. Agricultural Bank of China, a large state lender, received a 27m yuan fine for similar transgressions.

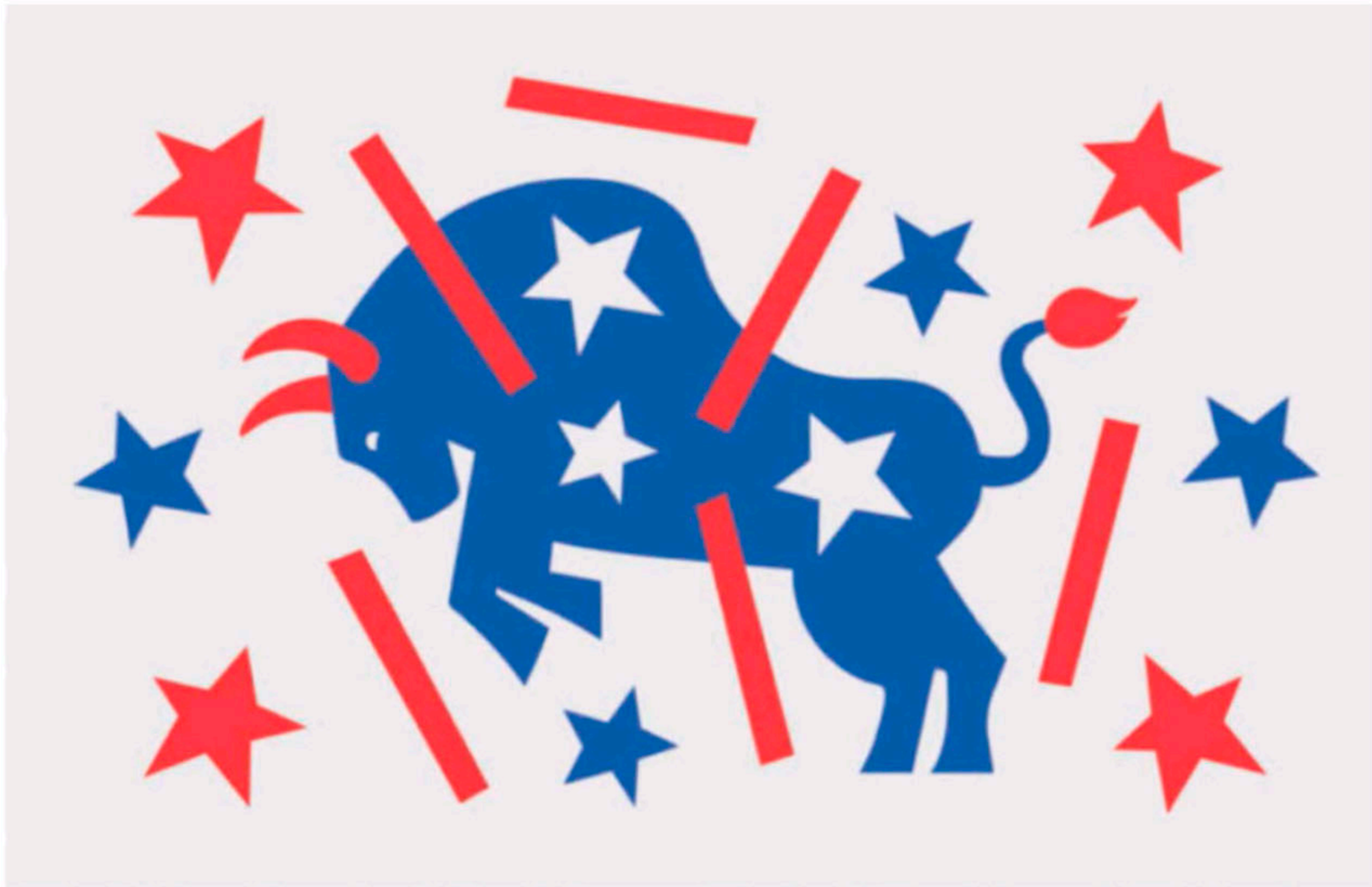
Increased surveillance can in part be attributed to the new watchdog's increased vigilance. Established last year, the NAFR has stronger enforcement capabilities than its predecessors. Supervision of banks had been divided among several agencies, allowing corruption and producing lapses in oversight, which contributed to the collapse of several banks, starting in 2019. The NAFR now seems to be taking the concealment of bad debts more seriously.

But some of the progress began earlier. A decade ago, instead of declaring the true size of their problems by identifying debts as "non-performing loans", banks shoved them into other categories of assets, signalling to regulators that there remained a good chance borrowers would repay (in fact, many of the companies had gone bankrupt). In 2017 one of the NAFR's predecessors began leaning on lenders to be more truthful. The result has been an outpouring of undesirable loans. Bank of Jiujiang's bad loans, for instance, increased seven-fold between 2015 and late last year.

How much of this surge in activity can be trusted? Recognising and digesting bad debts is difficult. Discovering such lending weakens financial institutions' balance-sheets since they are forced to use capital to provision for future bad debts, which in turn makes it harder for the government to direct financial support to favoured industries in pursuit of other policy goals. Some revelations will happen legitimately as local governments recapitalise banks, pumping in funds to enable them to continue to write off bad debts.

Others will happen via AMCs, and thus will only sometimes be legitimate. China created four centrally controlled AMCs decades ago to hoover up bad debts. They are now struggling. One needed a $6.6bn bailout in 2021. Others are poorly capitalised and as a result buying fewer and fewer bad debts, even as banks crank out more. In 2016 the four state AMCs bought nearly 1trn yuan of about 1.5trn yuan in total non-performing loans. By 2022 their purchases came to less than 500bn yuan, despite bad debts rising to almost 3trn yuan.

In late January state media reported that three of them would be merged with China's sovereign wealth fund. They have become distressed financial institutions in their own right and can hardly perform the debt clean-up work for which they were created. That is bad news for Bank of Jiujiang. It is also bad news for hundreds of other similar lenders. ■



The hunt for value

A red flag

As stockmarkets soar, investors may be wise to look beyond America

EVERY WEEK, a new high. Little wonder a sense of unease is settling over markets. Some 40% of global fund managers think that artificial-intelligence (AI) stocks—a crucial driver of the rally—are already in a bubble, according to Bank of America's latest monthly survey. Even Wall Street's most starry-eyed pundits reckon America's S&P 500 index of leading shares can eke out only minor gains in the remaining nine months of the year. For some, such nervousness portends a crash. But for everyone, it prompts a question: with stock prices having already risen so much, are there any left that offer good value?

"Value" stocks are unfashionable, and with good reason. They are defined as shares with prices that are low compared with their underlying assets or earnings (as opposed to "growth" stocks with prices that are high on these measures, yet which promise rapidly rising profits). If that sounds appealing, the returns of recent years have not been. Over the past decade value stocks have performed worse than the broader market and been left in the dust by their growth counterparts. In 2022, as interest rates rose and the prices of speculative assets fell, the pendulum briefly seemed to swing back. But only briefly: the current bull market has again seen value stocks trounced by the rest.

This losing streak has led many to declare value investing dead. Critics say it struggles to account for the intangible assets and research spending that underpin many of today's most successful firms. Investing tools make it easy to filter companies based on price-to-value ratios, meaning that potential returns from this approach will probably be arbitraged away fast. Firms left looking cheap, in other words, are cheap for a reason.

The worry persists, though, that valuations of stocks leading today's bull run have become too high for them to offer stellar future returns. A widely watched measure is the cyclically adjusted price-to-earnings (CAPE) ratio devised by Robert Shiller of Yale University, which divides prices by the past decade's-worth of inflation-adjusted earnings. For America's S&P ▸▸

500 index, the CAPE has been higher than it is today only twice: at the peak of the dot-com bubble, and just before the crash of 2022. Even if a crash does not follow, a high CAPE ratio has historically proved to be a strong indicator that poor or even negative long-run real returns lie ahead.

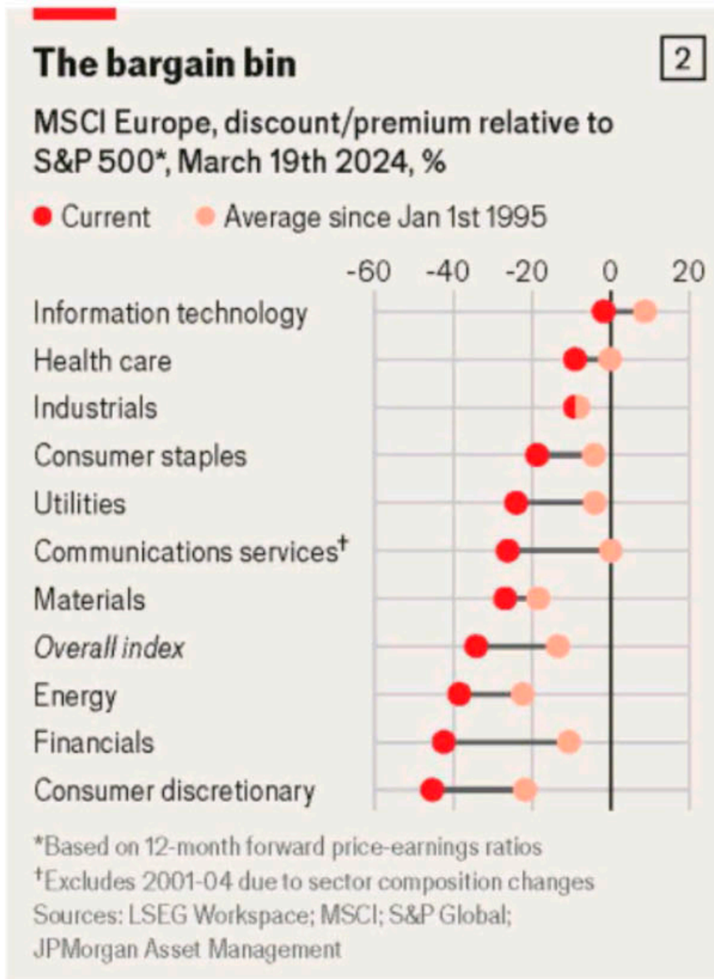
For Victor Haghani of Elm Partners, a fund-management outfit, the response is obvious: look beyond America. In the wider world, valuations are lower (see chart 1). Mr Haghani calculates that, although American stocks attract a much higher aggregate price-to-earnings multiple than those elsewhere, around 40% of their underlying earnings come from overseas. In the rest of the world, some 20% of total earnings derive from America. Put another way, there is a strong degree of crossover in where the profits of the two groups of companies are actually made.

Despite this, the values the market assigns to earnings derived from America and elsewhere are wildly different. Mr Haghani's number-crunching suggests that, to get from earnings to share prices (for both American and non-American stocks), investors are scaling up those coming from America by a factor of over 40. For earnings coming from the rest of the world the equivalent scaling factor is just ten. Such a disparity makes little sense. It is one thing to suggest American firms deserve a higher valuation because there is something exceptional about their growth potential. But why should earnings originating from America boost a share's price so much more than those from elsewhere?

Perhaps the stockmarkets of countries outside America (or, equivalently, the earnings coming from these countries) are simply underpriced in relative terms. This is just the sort of mispricing that markets may eventually correct by raising the valuations assigned for non-American firms, lowering those of American firms, or both. What is more, whereas value investing often involves taking concentrated bets on individual companies or sectors, betting on this repricing allows the risk to be spread across most of the world.

In fact, even the argument that companies outside America merit their current low valuations because they lack dynamism is threadbare. It is frequently couched in terms of the sectoral composition of each market: America's is brimming with the disruptive tech firms of tomorrow, while Europe's, for example, is stuffed with stodgy banks and industrial outfits.

But Hugh Gimber of JPMorgan Asset Management pours cold water on the idea that this explains the lower valuations of European firms. His team has split the continent's companies by sector, analysed the historical multiples by which their earnings have been scaled up to generate their share prices, then compared these with the equivalent multiples for American firms. In most sectors, the European companies' stocks have suffered from long-run average discounts. Today, though, these discounts are present in every sector—and are much deeper than their long-run averages (see chart 2). Rather than failing to operate in cutting-edge industries, such firms might simply be underpriced.



It is not just in Europe that such potential value trades abound. Mr Gimber points to a range of emerging markets that are well placed to profit from global trends, and where valuations are nowhere near as eye-watering as in America. Examples range from Mexico and Vietnam—benefiting from the "friendshoring" of Western supply chains—to countries riding the AI wave, such as South Korea and Taiwan. Jens Foehrenbach of Man Group, an asset manager, notes that the Tokyo Stock Exchange has set an explicit target, prodding firms to take actions that will raise their shares' price-to-book ratios (the firm's market value divided by its net assets) above 1. Some 42% of constituents of Japan's Topix index have yet to reach this, suggesting a bet for those who think that they will.

A unifying feature of all such markets is that—like any value investment—betting on them involves a leap of faith. The longer America's stockmarket outperforms the rest, the more it seems like the natural way of things. Maybe companies listed elsewhere look cheaper because they are simply worse. But there are signs that the pricing differentials have grown too large for professional investors to continue tolerating. In March global fund managers told Bank of America's survey that, month on month, they had rotated more of their equity allocations into European and emerging-market stocks than they had done for years. Any that are underpriced may not remain so for long. ■

Price rises

Curse of the Anglosphere

SAN FRANCISCO

Which country will escape inflation last?

IN JANUARY PRICES across the rich world rose by 5.7% year on year, down from a peak in late 2022 of 10.7%. This conceals wide variation, however. Some countries have slain the inflation beast. Others are still in the fight of their lives.

To get a view of the various battlefields, we have updated our measure of "inflation entrenchment" for ten rich countries. The measure comprises five indicators: core inflation, unit labour costs, "inflation dispersion", inflation expectations and Google-search behaviour. We rank each country on each indicator, then combine the rankings in order to form an overall score.

The results are better than in November, when we last conducted the exercise. They also reveal a linguistic divide. Countries in the EU and Asia perform well; in the English-speaking world, inflation is taking longer to fade. Australia tops the ranking. Britain and Canada are not far behind. America is doing better, but even there inflation remains entrenched.

A few factors may explain the differences. One is fiscal stimulus during covid-19, which was 40% larger in the Anglosphere than elsewhere. The boost to demand is still visible in "core" inflation data, which strips out items such as energy, and indicates underlying inflationary pressure. British core inflation is close to 5%.

Our measure of "inflation dispersion" provides similar clues. This measures the share of consumer prices that are rising by ▸▸

Strewth

Selected countries, February 2024 or latest

Ranking* Out of ten countries†	Core prices‡ % increase on a year earlier	Inflation expectations§ %
1 Australia	3.8	4.4
2 Britain	4.8	2.4
3= Canada	3.0	4.7
3= Spain	3.0	4.1
5 United States	3.9	5.3
6 Germany	3.1	2.2
7 France	2.7	3.5
8 Italy	2.3	3.3

*Three indicators not shown: Google-search behaviour, inflation dispersion and unit labour costs
†South Korea and Japan not shown ‡Excludes energy and food
§Consumers' inflation expectations over the next 12 months
Sources: OECD; Google; Federal Reserve Bank of Cleveland; Morning Consult; Raphael Schoenle; ONS; *The Economist*

more than 2% year on year. Australia tops the rankings here. By contrast, most Japanese prices are rising by less than 2%.

Immigration could also help explain the divide. The rich world has experienced an immigration boom, with a large share of the new arrivals going to English-speaking countries. Last year Australia, Britain and Canada broke net-migration records.

The large rise in population has supported demand. In the past year the cost of renting a flat in the Anglosphere has risen by 8%, compared with 5% elsewhere. The effects on labour markets are less clear. America's unit labour costs, which measure how much firms pay workers to produce a unit of output, are not rising. But Canada's are growing strongly.

History may also play a role in explaining the Anglosphere's entrenched inflation. During the 2010s southern Europe and much of rich Asia saw few price rises. Inflation in the Anglosphere was firmer. Owing to these different experiences, people's current beliefs about future inflation may also differ.

Data coming out of America are worrying. The public believes prices will rise by 5.3% over the next 12 months, more than in any other country in our ranking. Americans also often search on Google for inflation-related topics, suggesting that the cost of living is still on their minds. Across the Anglosphere the threat of continued high inflation—or even a second wave of price rises—has not gone away. ■

BUTTONWOOD

AI revoir

Bidding a fond farewell to the "Magnificent Seven"

ALL MODELS are wrong, goes the statisticians' adage, but some are useful. This time last year, plenty of pundits' models started looking more wrong and less useful. The consensus forecast was a grim spell for economic growth and a dreary one for stock prices—and that was before a clutch of American regional banks buckled. Higher interest rates seemed set to cause pain everywhere. Instead, in the very country where the banking turmoil unfolded, the stockmarket began to soar. By the summer America's S&P 500 index of leading shares had risen by 28% from a trough hit the previous autumn. Analysts hunted for a new model to explain what was going on, and the popular choice revolved around the "Magnificent Seven".

The reason was that shares in this group of tech giants—Alphabet, Amazon, Apple, Meta, Microsoft, Nvidia and Tesla—were acting as if they made up a market of their own. By the start of June the S&P 500 had risen by 12% since the beginning of the year, but virtually the entire gain was down to these seven stocks, with the other 493 having collectively moved sideways. By July they were the biggest seven companies in the index. By late October the Magnificent Seven had added $3.4trn (or 50%) to their combined market value since the start of the year, even as the other 493 had lost $1trn (3.8%). Apple was the group's worst performer but had nevertheless seen its share price rise by 30%.

Alas, the band has broken up. One feature of the storming bull run that began on October 27th is that the Magnificent Seven have stopped charging as a pack. As the broader S&P 500 has risen by 26%, three of the group have turned from leaders to laggards: the share prices of Alphabet and Apple have underperformed, while that of Tesla has fallen outright. The remaining four have beaten the index, but by wildly differing amounts. Whereas Microsoft has done only slightly better than the average S&P 500 member, Nvidia's shares have rocketed by an astonishing 129%. Six of the seven are still the index's largest stocks, but Tesla has been replaced by Berkshire Hathaway, Warren Buffett's investment vehicle.

What happened? Last spring the narrative was obvious: the Magnificent Seven would end up as the winners from the artificial-intelligence (AI) gold rush. All were enormous to begin with, which would help them weather any downturn and outspend rivals on research and development. Each had already conquered its respective niche of the tech world, meaning they could probably carry on outsmarting other firms. And their big cash balances stopped rising interest rates from looking too threatening.

In part this seductive story has fallen apart because, like all models, it was oversimplified to begin with. The idea of the Magnificent Seven as "big tech" incarnate—or at least of "big tech" as a homogenous group—was always something of a stretch. Aside from trillion-dollar valuations and hordes of clever employees, a manufacturer of AI chips (Nvidia) does not have an awful lot in common with an online retailer (Amazon) or a purveyor of social networks (Meta). Nor does a software firm born in 1975 (Microsoft) necessarily share the prospects of an electric-vehicle maker established in 2003 (Tesla). In this, the Magnificent Seven concept was not alone. Think of the arbitrariness of the "BRICS" gang of countries (Brazil, Russia, India, China and South Africa), or of the even bigger and more amorphous "emerging markets" group.

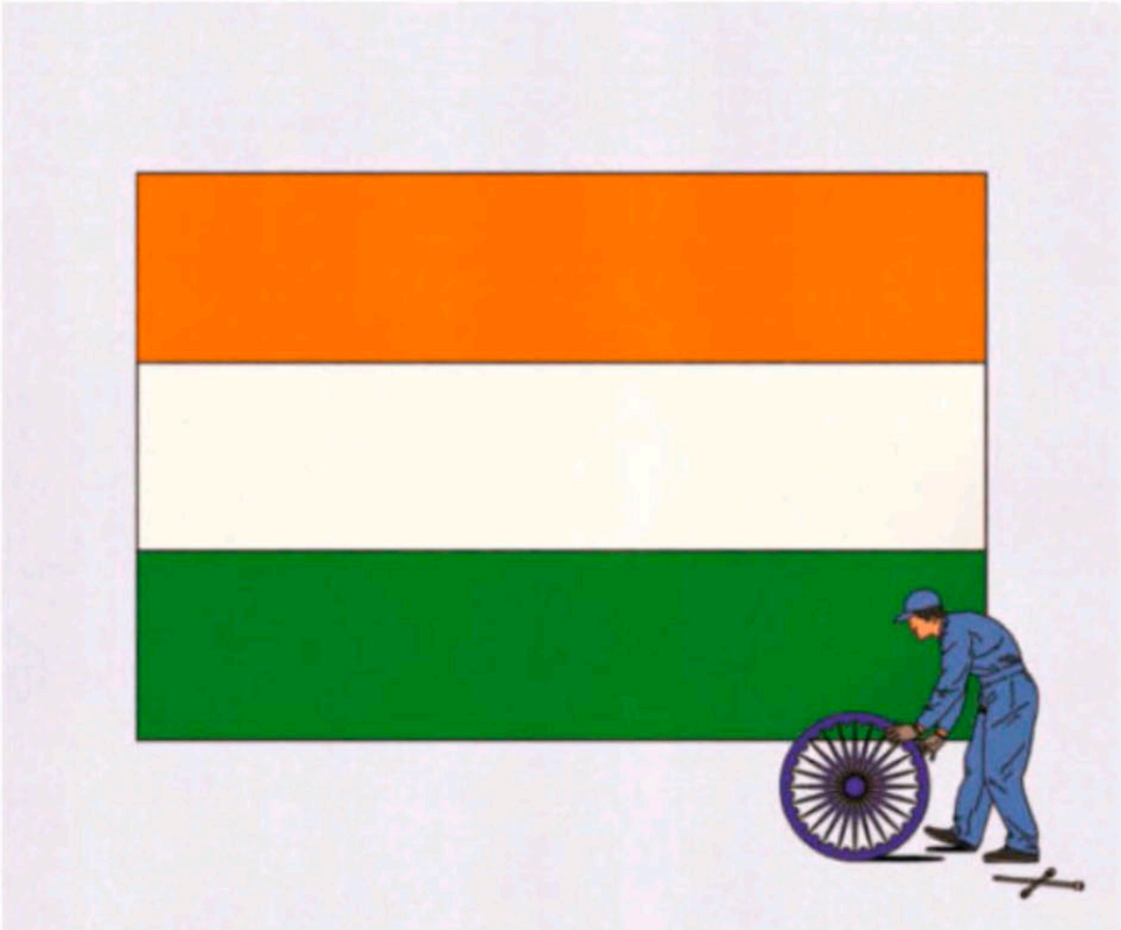
Yet the disbanding of the Magnificent Seven signals some broader shifts, too. One is that, as last year's bank failures fade from memory, investors have become less anxious about the impact of higher interest rates. America's economy has defied recession forecasts and boomed instead. Firms that are insulated from shocks by big market shares, profit margins and cash buffers have thus lost some of their "safe haven" appeal.

It also shows that, though optimism is surging through markets, not all caution has been thrown to the winds. A year ago generative AI so enthralled investors that tech giants were assumed to be winners by default. Now that automatic benefit of the doubt is being withdrawn. Nvidia has pulled away from the rest of the group as it is transforming hype into stratospheric sales and profits. Apple and Tesla are being punished, in part, for failing to communicate how they will do the same. Investors might be excited about AI but—encouragingly, for those who fear a bubble—they seem willing to be sceptical, too.

FREE EXCHANGE

The importance of leadership

How India might try to grow at the pace of an Asian tiger



IS INDIA ACHIEVING its potential? In the year to the third quarter of 2023, the country grew at a blistering rate of 8.4%. Over the next half-decade it is expected to expand at 6.5% a year, which would make it the world's fastest-growing big economy. So far, so good. The problem, as critics point out, is that China, Japan and South Korea all expanded at 10% or so a year during their periods of rapid growth. Part of the reason for India's less impressive figures is a slowdown in globalisation. But a new book by Karthik Muralidharan of the University of California, San Diego, called "Accelerating India's Development", argues that the crucial barrier to faster development is a lack of "state capacity".

Mr Muralidharan describes this concept as the "effectiveness" of government. Throwing money at a state lacking capacity is like adding fuel to a car near a breakdown: it won't get you very far. Currently, the Indian state succeeds when on "mission mode", achieving clearly defined goals. In April it should pull off the largest democratic exercise in history, as voters pick a prime minister. At the same time, it struggles with mundane, everyday aspects of governance, such as education and health. Three in five rural children in the fifth year of school cannot read at a second-year level—and in the past five years the failure rate has only worsened.

Part of the issue is the precociousness of Indian democracy. The franchise became universal in 1950, when the country was mostly impoverished. Citizens demanded that the state met their basic needs well before it had the money or capacity to do so. India launched its food-security programme in the 1960s, for instance, when it was a fifteenth as rich per person as America was when it launched its own such programme in the 1930s. This set a pattern: the Indian state does a lot, but little well.

In his 800-page tome, Mr Muralidharan lays out fixes. The book is crammed with details about how the Indian system works and could be improved. Three ideas stand out. They concern how the state should manage people, use technology and improve its federal system. And they hold lessons for other governments.

Since 2002, when Mr Muralidharan was a graduate student, he has been conducting surveys on absentee rates. It turns out that teachers skip school perhaps as often as pupils: they are absent 20-30% of the time. The problem is not pay. In 2017 a study by Rohini Pande of Yale University found that across 33 countries, India offered the second-highest wage premium to public-sector employees. Rather, the problem appears to be governance. School supervisory positions have ultra-high vacancy rates of 20-40%. Mr Muralidharan calculates that filling such roles would be ten times more cost-effective than hiring more teachers.

Such problems reflect a strange approach to civil-service management. About 1m Indians apply each year for about 1,000 slots, making it one of the most selective bureaucracies in history. Yet India has just 16 public employees per 1,000 people, one of the lowest ratios in the world. Indian officials also hop from position to position across various different tiers of government, moving every 15 months on average. As a recent retiree notes, this means that they have far too little time to develop proper expertise in any one area. Therefore problems go unresolved.

Better data would help. It should not take an academic survey to ascertain rates of teacher absenteeism. Official numbers on educational outcomes paint a far rosier picture than those collected by independent organisations. Schools and low-level bureaucrats have incentives to cheat. As such, Mr Muralidharan suggests digital data collection, audits and stiffer accountability.

A running theme throughout the book is the need to pay attention to India's federal structure. The country has 28 hugely diverse states, 15 of which are big enough to be in the top fifth of the world's countries by population. Historically, Indian politicians have fallen prey to cycles of corruption in which companies bribe leaders in exchange for favours, with leaders then using the money to fund expensive campaigns that involve, in effect, bribing voters. In some states, this cycle is starting to break down. Campaigns promising to get stuff done are precisely what propelled Narendra Modi, India's prime minister, to the top job.

Progress in the "third tier" of government, which is made up of villages, towns and cities, has been less impressive, however. Deng Xiaoping, China's leader from 1978 to 1989, introduced reforms that rewarded local officials for their economic performance. India could use something similar, especially if states granted their local authorities more resources and power. Of the 18 similar countries looked at by Mr Muralidharan, India was the least decentralised when it came to fiscal affairs. Just 3% of state spending happens at a local level, compared with 51% in China. In 2000 three Indian states—Bihar, Madhya Pradesh and Uttar Pradesh—were split in two. So was Andhra Pradesh in 2014. All four splits have led to faster economic growth.

Go-faster stripes

There is much else in Mr Muralidharan's book. But changes to personnel, data and federalism would together represent the beginnings of a reform package that could do wonders for India's governance, and therefore its growth. Indeed, the sheer variation in performance across India's cities and states demonstrates the potential benefits. Karnataka, a large and reasonably well-run state, is six times richer per person than Bihar, the country's poorest state—making India one of the world's most geographically unequal countries. Internal migration is relatively rare, which means that for incomes to grow faster, poor states will have to get their act together. The changes outlined by Mr Muralidharan will be tough to enact, but not impossible. And if some states make the leap, they may inspire others to follow their example. ■

Science & technology

Antarctica

Out of sight out of mind

Earth's largest refrigerator is defrosting

THE DEADLIEST hurricane ever to hit America made landfall over Galveston, Texas, a barrier island in the Gulf of Mexico, on September 8th 1900. Terrified inhabitants watched a 4.5-metre-high wall of water approach their shores and tear through their homes. More than 8,000 people died. In the aftermath, a massive concrete seawall was built to keep future storm surges at bay. The engineers thought making it 5 metres tall would be enough.

And it was, for 120 years. But even as the wall was being built, human-caused climate change was getting under way, piling new heat and energy into the global climate system which would push the seas up shorelines around the world. Today, the US Army Corps of Engineers has a $57bn plan to build a new barrier, dubbed "Ike Dike", to protect Galveston as well as the Houston region and large petrochemical facilities that sit behind the island from ever bigger and more powerful storm surges. It could be the largest civil-engineering project in American history. Where will the water that it is designed to hold back come from? Much of it will hail from Earth's southernmost continent more than 10,000km away, home to the world's largest ice mass by a factor of ten: Antarctica.

When it comes to polar climate impacts, the Arctic receives most of the world's attention. For years, scientists have warned of dramatic changes there being the canary in the climate coal mine. The blanket of summer ice that has persisted on the northernmost ocean for millennia steadily dwindled to almost nothing but it wasn't until Siberia, land of permanently frozen soil, caught fire in 2019 that anyone outside the (alarmed) climate community and (delighted) shipping industry paid much attention.

The southern pole, by contrast, has been neglected in the climate narrative. That is due in part to its remoteness and in part to an early scientific miscalculation. While the Arctic was melting rapidly, Antarctica looked relatively stable. Not only that, climate models suggested it would see more snowfall in a warming world, causing its ice pack to grow, not shrink.

The models, it turns out, were wrong. A build-up of jaw-dropping events and extremes in recent years has shown that Antarctica is undergoing massive changes on land, sea and in the atmosphere above. As a result, a new portrait of the continent is emerging which has, so far, received little attention. Polar scientists are warning of a regime shift.

Terra incognita

This matters: despite appearances, Antarctica is not isolated from the rest of the world. For millennia, the continent has acted like a massive refrigerator for Earth. It sits at the centre of a vast ocean, which is full of krill and fish and is a huge sink for carbon dioxide. Its ice sheets store the largest volume of water on Earth, keeping it out of the seas. As that ice is reduced to liquid, the water will disproportionately raise sea levels in the northern hemisphere, ▸▸

→ ALSO IN THIS SECTION

73 Attack of the killer whales

where most humans live.

"When I first started working in Antarctic glaciology [30 years ago], it was about adventure and discovery," says Martin Siegert, director of the Grantham Institute for Climate Change at Imperial College London. "It still is about those things but it has got really serious really quickly."

Alarm bells rang loud and clear in the second half of 2023. They began with a second consecutive summer where the expanse of sea ice floating around the continent hit an all-time low—10% lower than it was in 2022, itself a record-setter. Then, from May onwards and as the region headed into its winter, researchers watched with increasing alarm as the ice struggled to recover. By July, the extent of sea ice was 2.5m square kilometres smaller than the recent average (see chart 1). Ella Gilbert and Caroline Holmes, researchers with the British Antarctic Survey, wondered: "Antarctica is missing a chunk of sea ice bigger than Greenland—what's going on?"

On thin ice

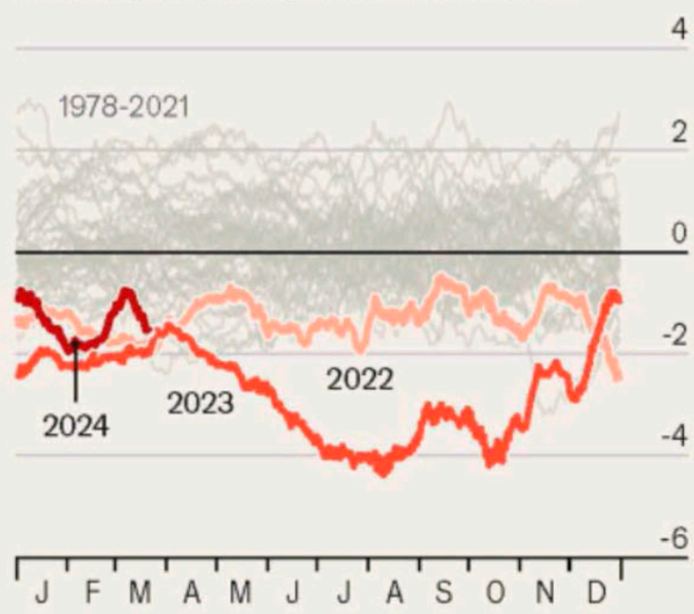
What is going on could be a long-term shift in the state of Antarctic ice. In an analysis published in the *Journal of Climate* earlier this month, Will Hobbs of the University of Tasmania in Australia, and colleagues, looked at 44 years of satellite records and found evidence of a regime shift in the seasonal waxing and waning patterns of the sea ice, starting 15 years ago. Since then the ice has been characterised by greater swings and variability. In a related analysis, Ariaan Purich at Monash University in Australia and Dr Hobbs's co-author Edward Doddridge, also at the University of Tasmania, showed that on average the extent of sea ice briefly increased around 2007 before abruptly entering a "new low-extent state" in 2016. Data for the Southern Ocean suggests that warmer water due to climate change could be partially to blame. The last two years of remarkable sea-ice lows accentuate the pattern.

"If Antarctica is starting to behave like the Arctic and losing sea ice, that is a major concern," says Dr Siegert. It would suggest a profound shift for a region that has for millennia helped to keep the rest of Earth cooler than it would otherwise be.

Less sea ice means more water is exposed to the sky. Because water is darker than ice, it absorbs more heat. This accelerates warming, a phenomenon known as the ice-albedo feedback. In the Arctic, this positive feedback loop is well-established and explains why the region is warming up four times faster than the global average. Recently, Antarctica has begun warming at twice the global average, a sign that it is also starting to become a driver of global warming rather than acting as a buffer. "We are deeply, deeply concerned about that," says Dr Siegert.

It's getting hot in here 1

Antarctic sea-ice extent, standard deviations relative to 1978-2022



Source: National Snow and Ice Data Centre

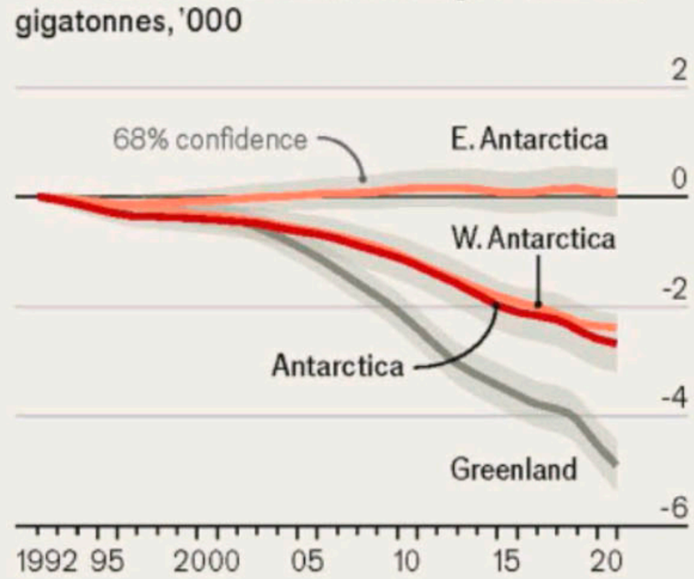
In an effort to raise the alarm, Dr Siegert and 13 other polar experts have compiled a list of anomalous events that have been observed both on the Antarctic continent and in the surrounding Southern Ocean, from sea-ice lows to marine heatwaves (19 between 2002 and 2018), and record numbers of melt ponds on top of the continental ice sheets. The most extreme heatwave ever recorded on Earth, for example, happened in Antarctica in March 2022. Temperatures rose by 30 to 40°C above the norm for that time of year across large parts of East Antarctica. The Conger ice shelf, spanning an area 1.5 times the size of New York City and already in a critical state, collapsed within days.

Scientists are still trying to work out how these gobsmacking extremes are related to the continual fluctuations they see in the oceans and atmosphere, and the extent to which climate change is the ultimate culprit for each event or trend. Yet there have been signs of long-term climate-related change in Antarctica since about the turn of the 21st century, when several massive ice shelves collapsed.

Ice shelves are floating slabs of ice that form where glaciers on land flow out to sea. In Antarctica there are 15 large ones, each of which hugs a different part of the coastline. In January 1995, the Larsen A ice shelf, which covered 1,500 square kilometres, disintegrated. Seven years later, dramatic satellite images showed the neighbouring Larsen B ice shelf splinter in a matter of weeks. Some 3,250 square kilometres of ice were lost, an area the size of Rhode Island.

Epic meltdown 2

Cumulative ice-sheet mass change since 1992, gigatonnes, '000



Source: "Mass balance of the Greenland and Antarctic ice sheets from 1992 to 2020", by I. Otosaka et al., *Earth System Science Data*, 2023

Despite the scale of these events—and studies that had warned, decades earlier, that this part of Antarctica was particularly vulnerable to warming and had helped push up sea levels by several metres during hotter times 120,000 years ago—the Larsen A and B collapses did not raise urgent worries about a long-term shift in Antarctic climate. At the time, computer models were not so good at simulating how polar ice would respond to a warming world. In December 1995, a year after Larsen A collapsed, the Intergovernmental Panel on Climate Change (IPCC) declared in its second major assessment of climate change: "Little change in the extent of the Greenland and Antarctic ice sheets is expected over the next 50–100 years."

The intervening years have revealed just how wrong that prediction was. Antarctica's ice sheets are nearly 1.5 times as vast as the United States and so thick (up to 5km) that their smooth surface hides a mountain range as large and nearly as high as the European Alps. They hold 90% of the world's land ice. A 2019 report of the IPCC noted that, contrary to its earlier assessment, the rate at which they were losing mass had rapidly increased since 2002 (see chart 2). Water and ice flowing out of Greenland's and Antarctica's ice sheets will soon be the biggest driver of sea level rise, most of which was previously caused by seawater warming up and therefore expanding and taking up more room.

Several factors are to blame. Collapsing ice shelves, made more fragile from below by warming waters and jostled by more turbulent seas, have hurried things along. Ice sheets, which sit on the Antarctic continent, are connected to the ocean by glaciers that slowly flow towards the water. Ice shelves, which float at the edge of the continent, act like corks that buttress the glaciers behind them. Break the seal and the glaciers flow more quickly. Breakdown at the continent's edges also allows warmer ocean waters to creep up under the ice margins, seeping into cracks in the ice and between the ice and the bedrock. "That's a problem because when the oceans get involved, they can melt the ice ten times more quickly than atmospheric heat can," says Dr Siegert.

The greatest and most immediate concern is for the West Antarctic ice sheet, which is losing ice much faster than its

East Antarctic counterpart (see map). The good news is it holds less than a tenth of the water sitting on East Antarctica. The bad news is that despite appearances it does not sit on solid land but on a frozen landscape made up of islands separated by deep basins. As the ice margins move back towards the continent, ocean water is able to flow into this frozen landscape, exposing more and more of the ice's underbelly to melting from below.

All the ice we cannot see

West Antarctica's Thwaites glacier, which is the size of Great Britain, currently drives around 4% of global annual sea-level rise. It is melting rapidly, retreating hundreds of metres per year (new data published in February shows that this began, unnoticed, in the 1940s). Its upstream bedrock dips downwards towards the middle of the West Antarctic ice sheet, bottoming out around 2.5km below sea level. As a result Thwaites acts as a gateway that can either hold in or release a much larger mass of ice. "If Thwaites goes it's pretty much the whole of the West Antarctic ice sheet that follows," says Dr Siegert. Perhaps appropriately, it has been given the moniker "doomsday glacier".

The most obvious impacts of all this melting ice, beyond the Antarctic Circle, will be on global sea levels. Antarctica's ice sheets hold enough water to raise them by a staggering 60 metres, though such a catastrophic rise would take many centuries to occur. Much smaller changes, however, could still have a sizeable impact on coastal regions around the world.

The extra water from melting ice will not be distributed equally. Ice slipping off land and into the oceans decreases the gravitational pull of that landmass. Each mass of ice on Earth has its own gravitational fingerprint and its own associated geographical pattern of sea-level rise. Ice lost from Greenland's ice sheet, for example, decreases sea levels on the nearby shores of north-western Europe and eastern Canada, and raises them around South America. Losses of ice from West Antarctica push water up around the coastlines of North America, Australia and Oceania.

Greenland has been losing ice since the early 2000s, but losses from West Antarctica have been increasing since the early 2010s and are likely to continue on this path. This means that future sea level rise will have disproportionate consequences for the northern hemisphere (including the Houston area).

The consequences of defrosting Antarctica extend beyond rising seas. The Southern Ocean that surrounds it is the largest sink for carbon dioxide and heat on the planet, soaking up roughly 12% of annual carbon-dioxide emissions from human sources. Large-scale currents around Antarctica redistribute carbon, heat and nutrients to the rest of the world's oceans. The Southern Ocean's value as a carbon sink was recently estimated by Natalie Stoeckl, an economist at the University of Tasmania, to be between $28bn and $720bn per year depending on the assumed cost of carbon, with a best estimate of $180bn, in the current climate. How the rate of carbon draw-down will change as the climate warms up even further is not yet known.

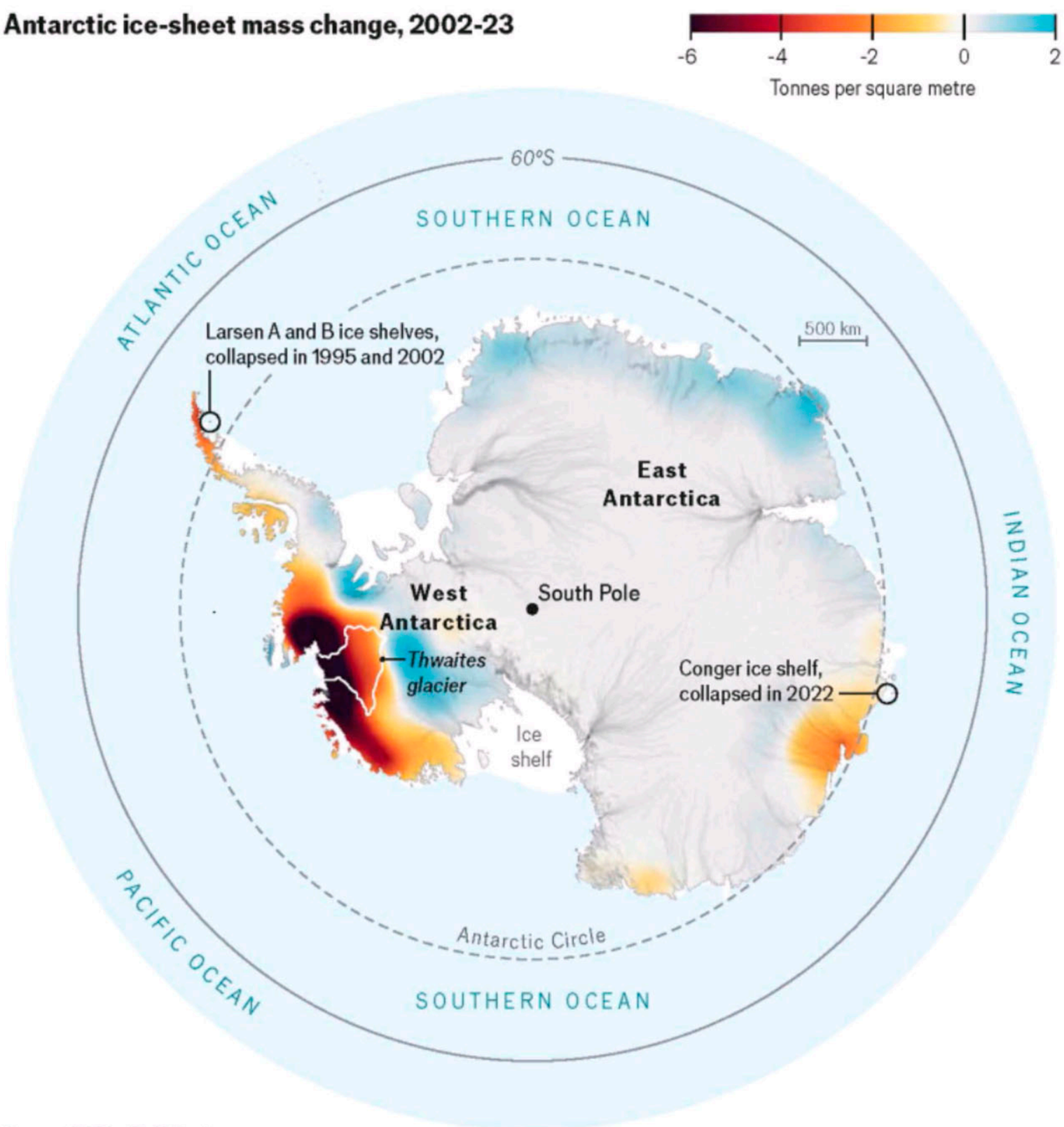
Already, though, there are signs that these ocean currents, known as the Antarctic overturning circulation, are slowing as more fresh water from melting ice flows off Antarctica. Fresh water is less dense than salty ocean water, so it floats at the surface. That puts the brakes on an underwater "waterfall" in which trillions of tonnes of water, rich in nutrients and gases, tumbles into the ocean's depths when it reaches Antarctica's icy shores.

Research led by Matthew England at the University of New South Wales in Sydney, Australia, showed last year that the Antarctic overturning circulation has slowed by 30% in 30 years, suggesting the vital carbon dioxide sink is being disrupted. The change is likely to have knock-on effects for fisheries north of the Antarctic circle, where a large share of wildlife relies on nutrients transported there from Antarctica's coastline. Populations of Antarctic krill, which is turned into food for people or feed for aquaculture, will probably also be affected.

Dr King recently warned that one of Antarctica's nearest neighbours, Australia, is woefully unprepared for the consequences that Antarctica's changing regime could have on its economy. Studies suggest what happens at the southern pole could be linked to Australia's weather patterns, temperature and rainfall. "Some of the studies are partially contradictory," notes Dr King. That only emphasises how much work remains to be done to truly understand what lies ahead.

And that is the crux of it. For too long, too few have worried about Earth's remotest continent and its largest refrigerator, while attention focused on the fires that burned, literally and figuratively, on more populated shores. Antarctica was variously portrayed as an explorer's playground, a utopian land of scientific co-operation or a poster child for environmental protectionism. The exceptionalism is misguided, as the people of Galveston are finding out. ■

Antarctic ice-sheet mass change, 2002-23



Sources: NASA; JPL/Caltech

Marine zoology

Killers' tactics

Killer whales deploy brutal, co-ordinated attacks when hunting their prey

THE KILLER whales that roam the waters of the Monterey Submarine Canyon, off the coast of California, are brutal animals. When hunting grey whales, they target mother and calf pairs, chasing them until the calves begin to tire. At that point the killer whales separate the grey whales by manoeuvring between them or dragging the calves away by their tail flukes or fins. Once a calf is separated from its mother, the killer whales incapacitate it by bludgeoning it with their heads and tails before drowning it by leaping atop its blowhole to keep it below the surface.

The killer whale (*Orcinus orca*) is a diverse species, boasting several isolated populations around the world that occupy varying—and, in several cases, still little described—ecological niches. Two recent studies have shed some light on the unique hunting cultures of the killer whales that stalk the deep waters off the north-east Pacific Ocean.

Distinct killer whale populations are known as "ecotypes" and can differ in size, colour and body proportion. Where their ecological ranges overlap, ecotypes rarely interact and do not appear to interbreed. Most of what makes killer-whale ecotypes distinct is their culture—socially learned behaviours that killer whales are known to transmit from one generation to the next. These include preferences for different marine prey species and the collaborative strategies used to locate, hunt and kill them, potentially honed over millennia. Different killer-whale ecotypes even communicate using distinct "dialects" made of clicks, whistles and calls, with "accents" that differ between pods.

The most studied killer-whale ecotypes are the three that occupy the north-east Pacific coastline, from northern Alaska to southern California. "Offshore" killer whales, up to 6.6 metres long, patrol distant waters in pods of 100 to 200 individuals, hunting pelagic fishes like sharks. "Resident" killer whales, around 7 metres in length, stalk the coastline in pods of up to 25 individuals, targeting coastal fishes (primarily salmon). Finally, "transient" killer whales, each up to 8 metres in length, are found across both shallow and deep coastal waters and pursue marine mammals, including cetaceans (whales and dolphins), as well as pinnipeds (sea lions and seals). While "inner-coast" transients stalk shallow waters near the shore, "outer-coast" transients hunt in the deep open waters along canyons at the edge of the continental shelf.

To understand these transient killer whales better, Josh McInnes from the University of British Columbia in Canada led a team that analysed 261 sightings of killer whales around the Monterey Submarine Canyon System collected by surveys and whale-watching vessels. The dataset included almost 100 predation events. Publishing their results in the journal *PLOS ONE*, Mr McInnes found patterns in behaviour of outer-coast transients that differed from those of their inner-coast cousins. The latter ambushed harbour seals, sea lions and the occasional otter, while the former tended to perform co-ordinated dives in their hunt for larger mammalian prey.

(Cetacean needed)

Outer-coast transients appear to have developed specialised strategies—such as the repeated battering and drowning of grey whale calves—because their prey is bigger and takes more time to subdue. Like most specialised killer-whale hunting behaviours, these strategies are thought to be honed, down the generations, as a form of cultural knowledge.

While studying the outer-coast transients, Mr McInnes also stumbled upon hints of a previously undescribed population of killer whales that were big-game hunters of an entirely different class. Writing in the journal *Aquatic Mammals*, his team described nine offshore encounters with 49 killer whales between 1997 and 2021. These killer whales were seen killing sperm whales, pygmy sperm whales and large Risso's dolphins, as well as scavenging on leatherback turtles.

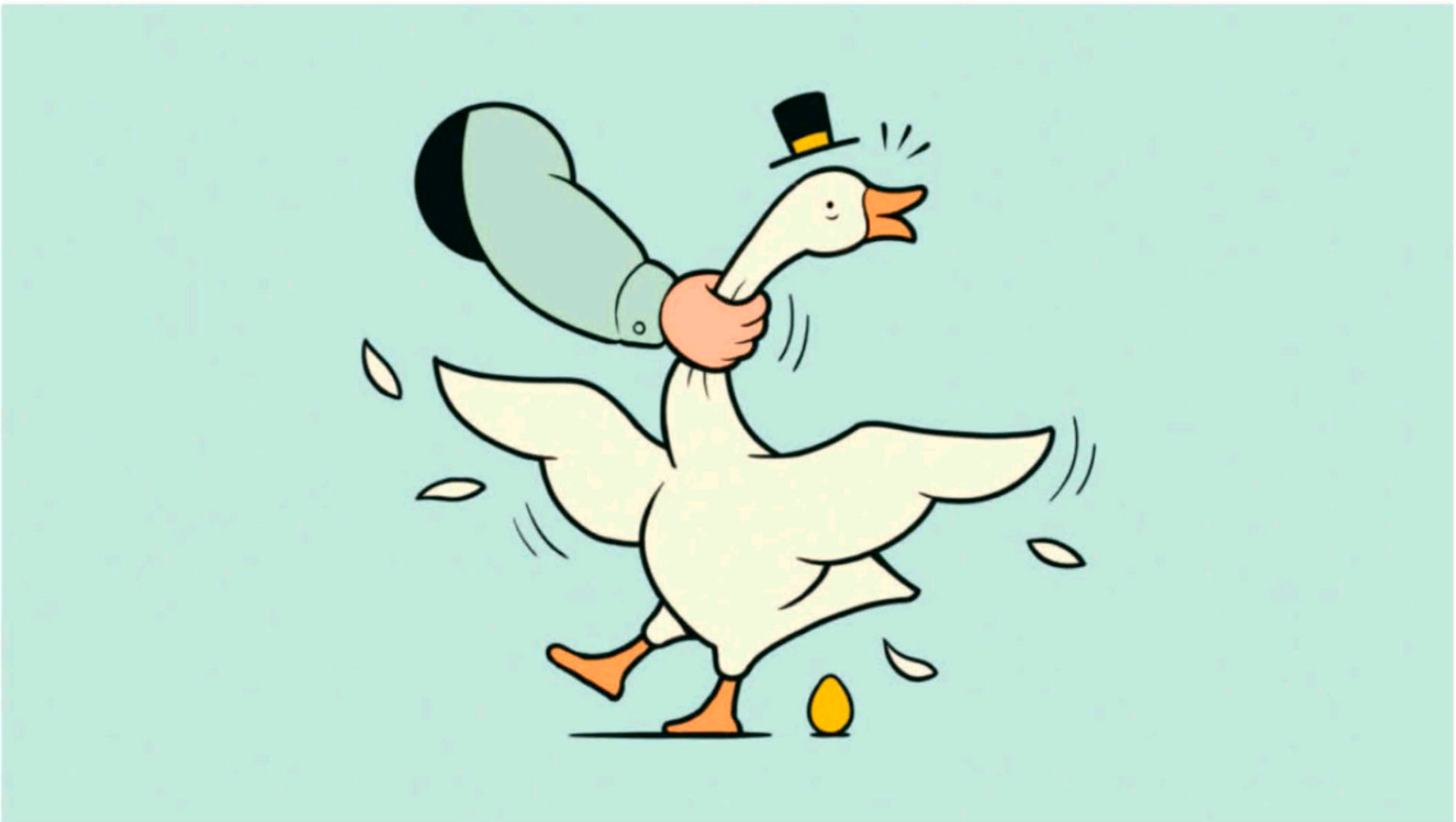
The attack on sperm whales, which can grow to around ten times larger than adult killer whales, was a particularly impressive show of predatory force. On October 21st 1997, between 15 and 35 killer whales were observed hunting a herd of nine sperm whales over the course of four hours. The sperm whales were subjected to repeated waves of aggressive attack, injuring all of them and severely injuring several before one sperm whale was finally isolated from the herd and killed. Out of the surviving sperm whales, three are thought to have died from the wounds they sustained and it is possible the entire herd later succumbed to its injuries.

Little more than that is known about these killer whales for now, except that they are identifiable by characteristic circular scars left by bites from cookie-cutter sharks, which suggest these hyper-aggressive creatures stalk the deep waters of the north Pacific.

More data, especially of the genetic kind, will need to be collected from both outer-coast transient killer whales as well as their newly discovered cousins terrorising the pelagic waters of the north Pacific, before scientists can fully describe the new ecotypes and add them to marine-biology textbooks. Nevertheless, the discoveries are a reminder that biodiversity is not just about the diversity between species but also within them. Killer whales seem to exist in many more shades than just black and white. ■

Flippin' heck!

Culture



Inequality

The fallacious case for abolishing the rich

Arguments for caps on income and wealth are simple, rousing and wrong

Limitarianism. By Ingrid Robeyns. *Astra House; 336 pages; $28. Allen Lane; £25*
Enough. By Luke Hildyard. *Pluto Press; 160 pages; $19.95 and £14.99*

TWO NEW books argue for doing away with the rich. Not in the Pol Pot sense of murdering them all, for the writers—a Dutch professor of ethics and the director of a left-wing British think-tank—are impeccably nice. Rather, they favour policies that would make it impossible to have "too much" money.

How much is too much? Ingrid Robeyns of Utrecht University in the Netherlands, the author of "Limitarianism", thinks the state should prevent anyone from accumulating more than $10m (or pounds, or euros; it is a rough figure). In addition to this hard "political limit", she thinks there should be a much lower "ethical limit". In countries where the state pays for health care and pensions, no one should amass more than $1m in savings, and society should scorn anyone who does.

Luke Hildyard, who runs the High Pay Centre in London and whose book is called "Enough", stops short of an "absolute cap" but suggests something close to it. No one should earn more than the current threshold for entering the top 1% of taxpayers, he believes. (In Britain that was over £180,000 a year in 2021-22; in America it was about $330,000 in 2021.) Redistributing additional income or wealth beyond this point, or enacting policies so that such riches never accrue in the first place, "has no real downsides", he claims.

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77 Moussaka's surprising resilience
78 Twenty-five years of "The Gruffalo"

The authors offer many reasons for loathing the loaded. They are bad for the environment, with their private jets and occasional holidays in space. They aggravate housing shortages by owning multiple homes. Some of them buy political influence. Some acquired their wealth corruptly. A pragmatist might tackle these problems directly, by taxing carbon emissions, allowing more homes to be built, tightening campaign-finance laws or cracking down on corruption. But for Ms Robeyns and Mr Hildyard, everything depends on cutting the rich down to size.

They make the reasonable point that the marginal benefit of an extra $1,000 is greater for the poor than the rich. A hungry family could buy food for months; a banker might blow that amount on a single dinner, not including the wine. The authors go further, though, blaming rising inequality for a host of ills. A radically more equal society would be less stressed, they argue (no rat race!) and more cohesive (less envy!). The money hoarded by the rich could be used to uplift the poor and improve public services.

Mr Hildyard makes these points more concisely—and with flashes of wit. His riff about how many banknotes it would take to cover every floor in Britain—£1.7trn ($2.1trn) in fivers—made this reviewer smile, as did his musing on the relative prices of pointless luxuries. A one-hour guest appearance at your birthday party by ▸▸

James Corden, a British comedian who likes to sing karaoke in cars with celebrities, is about as costly as a half-kilo of cocaine, apparently.

When it comes to practicalities, however, both books lose their grip. How, exactly, can one abolish the rich? Mr Hildyard favours a maximum wage and a hefty wealth tax, among other measures. Ms Robeyns says it will require a patchwork of policies and is irritated by those who try to oversimplify her idea by describing it as a marginal tax rate of 100%. But if she is serious when she says that $10m should be "as hard a limit as possible", that implies something very close to a marginal tax rate of 100%.

Such a policy would provoke tax-avoidance on an epic scale. Brainy advisers would strain every synapse to help rich folk hide their wealth or shift it to friendlier jurisdictions. If, against the odds, a government managed to thwart such tricks, many rich folk would emigrate. And if governments all adopted similar wealth-banning policies and enforcement was tight, as the authors desire, the effects would be even worse.

Imagine a world where any gain above £180,000 a year, or $10m over a lifetime, was forfeit. Highly productive people—such as surgeons and engineers, never mind word wizards like J.K. Rowling—would have no financial incentive to keep working after that point was passed. Perhaps some would carry on toiling out of altruism or for the love of the job. But many would be tempted to kick back, relax and deprive the world of their exceptional skills, drive and imagination.

Consider, too, the incentives such a system would create for entrepreneurs. You have an idea for a better mousetrap. Under the old system, you might mortgage your house to raise cash to build a mousetrap factory, in the hope of making a fortune. Under the new system, you must shoulder the same risks (such as losing your home), for a small fraction of the rewards.

Potentially big ideas would stay small. Even if your mousetrap is so good that the world might reasonably be expected to beat a path to your door, it would be irrational to borrow money to expand production. The financial risks of trying to build a global business fall on you. The rewards go to someone else. Only a mug would take such a bet.

Or a politician, betting with other people's money. Indeed, most ventures that required hefty capital upfront—from chip factories to offshore wind farms—would probably have to be owned or backed by the state. Since the record of state-run industries over the past century has been one of cronyism, sluggishness and inefficiency, this ought to have given the authors pause.

Like many on the left, they gloss over the huge fall in global poverty over the past few decades and focus on inequality within countries, which they are sure is rising inexorably thanks to the unfairness of capitalism. But is it? In March Maxim Pinkovskiy, an economist at the Federal Reserve Bank of New York, and his co-authors published new estimates suggesting that global inequality fell dramatically between 1980 and 2019 and that inequality within countries had barely budged since the 1990s. (Though an asset-price boom later increased wealth inequality.)

There may still be a reasonable case for more redistribution, at least in some places. But in a study of 27 rich countries in 2017, Jacob Lundberg of Uppsala University in Sweden found that five (Austria, Belgium, Denmark, Finland and Sweden) were already on the wrong side of the Laffer curve. That is, their top tax rates were so high—adding up to around 70% in Sweden, for example—that their governments would raise more money if they cut them.

The idea that governments might find a lot more cash from tax rates higher than Sweden's is delusional. Jean-Baptiste Colbert, Louis XIV's finance minister, said that "the art of taxation consists in so plucking the goose as to procure the largest quantity of feathers with the least possible amount of hissing." He did not add: "unless it's a big goose, in which case strangle it." ■

Survival stories

Whatever floats your boat

Could your marriage survive a shipwreck?

Maurice and Maralyn. By Sophie Elmhirst. *Chatto & Windus; 272 pages; £18.99*

WHEN THE captain of a Korean tuna-fishing ship first caught sight of Maurice and Maralyn Bailey bobbing in the Pacific Ocean in June 1973, he could not work out what they were. About four months earlier, while they were trying to sail from England to New Zealand, their boat had crashed into a sperm whale. The couple was stranded in a tiny inflatable life-raft tied to a flimsy dinghy, subsisting on rainwater, turtles whose throats they had slit, birds they strangled and sharks they suffocated. Unable to stand and wearing clothes that had disintegrated, their skeletons looked ready to burst through their skin.

Miraculously, they were alive. In "Maurice and Maralyn", Sophie Elmhirst (an occasional contributor to *1843*, *The Economist*'s sister magazine) draws on her own reporting, Maralyn's diaries, the memoirs that the two published and a trove of news clips to tell the tale of this couple's survival—and the love story that bubbled alongside.

The pair (pictured) had met a decade earlier at a car rally in Derby, England. Maurice was older and flew planes, but was lonely, awkward and felt that he had "so much to wade through before he could *do* anything". Maralyn was chatty and brave and, unlike Maurice, "seemed to know instinctively how to *do* things". They married, bought a home and then sold it, using the money to buy a yacht. Their dream was to become explorers.

The Baileys, on smoother seas

They found their adventure. But despite the seafaring and adrenaline, in "Maurice and Maralyn" it is love itself, "a terrifying fluke", which makes life extraordinary. Two people choose and are chosen, "and, most unlikely of all, these choices must happen at roughly the same time", Ms Elmhirst writes.

The heartbreak comes later, long after the shipwreck. The pair age, illness strikes, loneliness returns. In the end, though, Maurice declares his life a triumph. Not because of any pioneering expedition or headlines about their extraordinary survival, but simply because he has loved and been loved. Never sentimental and perfectly paced, this is the best sort of story: a true one.

Beyoncé's country turn

Take me to Texas

The star singer has always been a canny interpreter of musical trends

BEYONCÉ HAD shown her cards long before she released "Texas Hold 'Em", a country-pop track, in February. In 2021 she launched a clothing collection inspired by the "overlooked history of the American black cowboy". She sat astride a crystal horse for the album cover of "Renaissance" (2022) and wore a white, wide-brimmed hat to the Grammy awards. Her lyrics have frequently referred to her upbringing in Houston. "Earned all this money," she sang on "Formation" in 2016, "but they never take the country out" of her.

Her new album, "Cowboy Carter", released on March 29th, evokes a honky-tonk. The record is the second instalment in a three-part project conceived during the covid-19 pandemic, in which Beyoncé pays tribute to the black roots of musical genres. (On "Renaissance" she focused on disco and house music.)

The album is as perfectly timed as a line dance: Americana is flourishing in popular culture. Models have been strutting down Louis Vuitton's catwalk wearing snakeskin cowboy boots, and Prada is selling bolo ties. Western sagas such as "Yellowstone" have drawn millions of viewers. Last year country-music tracks accounted for more than a third of streams of the top 50 songs on Spotify in America, up from 2% in 2016.

Beyoncé's experimentation with country is part of a tradition of artists crossing into new genres in search of new audiences. Bob Dylan forsook acoustic folk for electrified rock (and was called a "Judas" for his efforts). David Bowie tried on a wardrobe of looks and produced different sounds to match. Dolly Parton, Taylor Swift and Shania Twain all left country behind for mainstream pop. Coldplay have moved away from the sometimes dour indie rock of their early albums for more upbeat pop and electronic tunes.

Those who adapt to new musical trends thrive. Coldplay and Ms Swift are in the midst of lucrative concert tours—which have brought in an estimated $810m and $1bn, respectively—while many of their contemporaries have faded into obscurity.

Beyoncé has also evolved to meet changing tastes. In the 1990s, as the lead singer of Destiny's Child, a girl band, she sang rousing anthems of female empowerment. After striking out on her own, she added soulful ballads to her repertoire to show off her powerful voice and later incorporated reggae and trap.

Country allows Beyoncé to experiment with a new style of songwriting again. On early R&B hits she bragged of having too much money to spend. By contrast, on "16 Carriages", one of the new country tracks, Beyoncé's lyrics are more down-to-earth: she remembers the toil of her early career and being "overworked and overwhelmed". Tonally, these songs are better suited to an era of inflation and cost-of-living crises.

As well as being an astute commercial choice, crossing over allows artists to make a statement about their own value. Lady Gaga, for instance, was a pop hitmaker and chose to release an album of jazz standards to prove her vocal chops. Having range has long been important. In the early 20th century, when record labels made and marketed music along racial lines, experimentation became a way for black artists such as Louis Armstrong to "assert that no one should reduce them to a stereotype", says Eric Weisbard, a music historian. By turning her talents to a host of genres, Beyoncé is showing that she has "no limit artistically", he adds.

"Texas Hold 'Em" has been at the top of the charts in America and Britain. But some have questioned whether Beyoncé's tracks are authentic country music. One country radio station even refused to play it. This is a fraught subject in a heavily white genre, which originated 100 years ago and has roots in African-American folk music. Beyoncé hopes her work will help to nullify "the mention of an artist's race, as it relates to releasing genres of music". Posting an image of her on yet another horse, she declared: "This ain't a country album. This is a Beyoncé album." ■

Pulling new tunes out of the hat

Museums

A different sort of art heist

NEW YORK

Museums are raising their ticket prices. How high can they go?

"IT'S ALMOST a moral duty that museums should be free," said Glenn Lowry, director of the Museum of Modern Art (MoMA). That was in 2002, when a ticket to MoMA cost $12 (around $19 in today's prices). In October MoMA started charging $30, the latest in a series of price rises.

MoMA is not the only museum raising the cost of admission. The Metropolitan Museum in New York ended its longstanding "pay what you will" policy for out-of-town visitors in 2018 and raised general admission for them to $30 in 2022. Last summer the San Francisco Museum of Modern Art, the Philadelphia Museum of Art, the Whitney Museum and the Guggenheim Museum all followed suit, bumping a standard ticket from $25 to $30.

Museum staff complain of climbing costs and a case of "long covid". In America only a third of museums have met or surpassed pre-pandemic visitor numbers. Higher energy and labour costs have pushed up ticket prices in Europe, too. In January the Berlin State Museums, the Louvre and the Vatican Museums, which include the Sistine Chapel, raised the price of general-admission tickets by 20%, 29% and 17%, respectively. Prices have remained stable only in Asia and the Middle East, where museums are younger and state funding is especially generous.

Ticket fees may seem high, particularly in destination cities where tourists are not ▸▸

likely to be dissuaded by spending a few more dollars. But "whatever museums charge, it is not covering their operating costs," says Javier Jiminez, a director at Lord Cultural Resources, a consulting firm. The Association of Art Museum Directors reported in 2018 that ticket sales accounted on average for just 7% of total revenue at American art museums. Memberships contributed another 7%. The remainder of budgets usually come from endowments, charitable donations, grants and retail operations.

European museums are less reliant on admissions fees, because they are often heavily subsidised by governments. This can make it awkward to ask taxpayers to buy a pricey ticket and in effect pay twice. Many institutions choose to offer reductions for the young, pensioners and locals.

All national institutions in Britain offer free admission, as do most state-run museums in China. (Exceptions are made for special exhibitions.) In America some 30% are free, including big public museums like those of the Smithsonian Institution and private ones such as the Getty Centre in Los Angeles. Some observers have repeated Mr Lowry's call for museums, especially the most well-endowed, to stop charging for admission entirely.

Ballooning prices go against museums' goal of sharing art with a more diverse public. They could also accelerate the already steep decline in the share of Americans attending museums and galleries: between 2017 and 2022 it shrunk by 26%.

Declining public interest, particularly among young people, is a challenge for institutions that rely heavily on public support. Those who choose not to visit a museum today may be the people who vote against government subsidies or refuse to write personal cheques as patrons in a few years. Those who spend time inside museums' galleries are more likely to grasp their richness and want to invest their own riches in them.

Yet significantly reducing costs may not actually do much to attract new audiences either. In both America and Europe, people say that price is just one of several factors when it comes to deciding what to do with their leisure time. If tickets were free, "people who typically come anyway might come more often. Otherwise, you're not really changing your demographic," says Michael Rushton, an economist at Indiana University who studies pricing in the arts. He compares museums to elite American universities: Harvard and Stanford could afford to make tuition free for all, but many wealthy students who do not need the gift would be among the biggest beneficiaries. As museums throughout the West debate what price is right, most are unlikely to conclude the answer is zero, "moral duty" or not. ■

World in a dish

God of the Greek kitchen

How moussaka made it into the pantheon of Greek gastronomy

IN 1821 GREEK revolutionaries rose up against the Ottomans, setting off years of bloodshed that culminated in the creation of a free state in 1829. On March 25th each year Greeks celebrate Independence Day with parades and abundant feasts of *bakaliaros skordalia*, delicately battered cod with garlic dip.

And yet it is moussaka—sloppy squares of richly flavoured mince, potatoes, aubergines and indulgent béchamel sauce—that many consider Greece's national dish. Its entry into the pantheon of Greek gastronomy came about a century after Greek independence. The country's embrace of the dish is a lesson in how traditions are forged and how a nation's cuisine evolves.

Nikolaos Tselementes is considered the godfather of Greek moussaka. In the 1920s he published the first complete Greek cookbook, "Odigos Mageirikis" ("Cooking Guide"), which included six recipes for moussaka. His creations contained none of the pungent flavours hitherto used by Greek cooks, such as bay leaf and cinnamon. These were "contamination" from nearly four centuries of Ottoman rule, Tselementes wrote. He hated garlic and—unusually for a Greek—olive oil. The chefs of antiquity had not tossed cumin or other "eastern" spices into their pots, he said.

His efforts to bake politics into food were successful. "Odigos Mageirikis" became a staple of wealthy urban kitchens and the word "*tselementes*" synonymous with a recipe book for a while. By tapping into patriotism and Hellenising the hearth, Tselementes revolutionised Greek cuisine.

Not all foreign influences were anathema. Like many culinary contemporaries, Tselementes was besotted with French gastronomy. This may have been what inspired him to coat his moussakas in velvety béchamel. His Gallic-Greek creations also featured aubergine, as well as fried courgette and, in winter, artichoke. The French gratin—a vegetable casserole enveloped in white sauce and breadcrumbs—was a more likely source of inspiration than versions of moussakas cooked in the Middle East, says Aglaia Kremezi, a food writer.

As chefs and food historians seek to revive lost recipes and resurrect culinary traditions, moussaka proves that authenticity is an elusive concept in food. Cultures have long borrowed from one another, and gastronomy is all the richer for it.

A dish ripe for reinvention is also more likely to endure. Tselementes's moussaka is still served in *tavernas* around the world. Nowadays there is no single way to prepare it. A restaurant in eastern Corfu bakes crayfish between layers. In Britain cooks might chuck in roast goose: lo and behold the "goussaka". As for the béchamel, it is best kept light by whipping tangy yogurt with olive oil. If he knew, Tselementes would be whipped into a frenzy. ■

"The Gruffalo" turns 25

Where the wild thing is

The rhyming children's book rewrote the rules for worldwide success

WHEN JULIA DONALDSON set out to write a children's book featuring a mouse—who would take a stroll through "the deep dark wood", fending off a series of predators with wit and cunning—she intended him to meet a tiger for tea. Ms Donaldson, a British author who wrote songs for children's television, had been inspired by a Chinese fable about a girl who escapes death by convincing a tiger that she is the queen of the forest. But there was a problem: Ms Donaldson wanted the book to be in rhyming couplets, and not a lot rhymes with tiger. She decided it would be more pragmatic for the beast's name to end with the sound "oh". And so, with the help of Axel Scheffler, a German illustrator, one of the most lucrative monsters in children's publishing was born.

"The Gruffalo", which was published 25 years ago in March, has achieved such great success that tired parents everywhere have considered jacking in their boring jobs to write children's books. To date it has sold 11.6m copies worldwide, according to the publisher. Last year Ms Donaldson's whole oeuvre—now 200 books and counting—brought in £15.6m ($19.6m) in sales, with "The Gruffalo" leading the pack.

Whereas some books cause grown-ups to groan inwardly when a child selects them at bedtime, "The Gruffalo" is almost as fun to read aloud as it is to listen to. Like most fables featuring animals, it has an unspecific setting and universal themes—the triumph of the underdog, brains over brawn—that help it resonate with both young and old audiences. Credit is also owed to Mr Scheffler, an illustrator with the most recognisable style since Quentin Blake (who collaborated with Roald Dahl). Mr Scheffler has said initial sketches "were deemed to be 'too scary for tiny children' by the editor so I had to make him a bit rounder and more 'cuddly'." The result resembles one of the terrible creatures from Maurice Sendak's "Where the Wild Things Are" (1963), another classic.

Today you can buy Gruffalo-branded slippers, cushions and crisps (cheese-and-onion Gruffalo claws, anyone?); get tickets to the stage show; and keep a toddler quiet for half an hour with the Oscar-winning short film featuring the voices of James Corden and Robbie Coltrane. Many fans think that the book's sequel, "The Gruffalo's Child", is—like "The Godfather Part II" and "Top Gun: Maverick"—even better than the original.

At the last count "The Gruffalo" has appeared in 107 languages and dialects, including Armenian, Basque, Esperanto, Kurdish and Thai, making it the second-most translated children's book of recent times. Only "The Little Prince" by Antoine de Saint-Exupéry, first published in 1943, has racked up more foreign editions, says Michele Young, rights director at Macmillan Children's Books, the publisher of "The Gruffalo" in Britain.

Because its fame now seems like a foregone conclusion, it is easy to forget that the book defied early expectations. Before Ms Donaldson "paved the way" for other authors, editors were nervous about books that rhymed, according to Ms Young. It was hard to sell the rights to international publishers, because poetry is notoriously difficult to translate.

Vladimir Nabokov thought translating rhyme was so challenging that writers should not bother. In the introduction to his translation of "Eugene Onegin", which rendered Alexander Pushkin's Russian verse into English prose, the novelist spelt out his belief that translators should be as faithful to the original text as possible. "To reproduce the rhymes and yet translate the entire poem literally is mathematically impossible," he wrote. Happily for children and parents who do not speak English, most translators of "The Gruffalo" ignored Nabokov's pleas. Instead they have chosen to channel poets such as Alexander Pope, whose translation of Homer's "Iliad" captures the spirit of the original rather than striving for verisimilitude.

Of mice and men

Andy Smart, who translated "The Gruffalo" into Arabic with his wife, Nadia Fouda, distilled the pair's modus operandi to: "Keep the mood, keep the rhyme, don't lose the humour." Their version, in which the pictures have been flipped so it can be read from right to left, is one of the few to change the name of the Gruffalo: to "*Gharfoul*", a made-up word drawing on "ghoul", because it was easier to rhyme in Arabic.

The need to make lines rhyme and scan, coupled with a translator's desire to give their own spin to the text, leads to delightful variations. Whereas Ms Donaldson's last line in the original English is "The mouse found a nut and the nut was good", the Italian mouse gets a closing soliloquy: "Mmmh, è squisita! Che bella giornata! Che dolce è la vita!" ("Mmm, it's delicious. What a beautiful day! How sweet life is!").

Gruffalo connoisseurs can have fun spotting the differences between what the mouse claims are the Gruffalo's favourite foods, in a successful ploy to scare off predators. In the German version, "roasted fox" becomes "Fuchsspieß" (fox kebab). The Japanese translator has turned "scrambled snake" into "snake *kabayaki*", adapting a traditional dish of grilled fish, while in the French version it becomes "crème de serpent" ("cream of snake"). Such local adaptation makes "The Gruffalo" a perfect treat before bed, wherever you are. ■

What rhymes with millions?

Economic & financial indicators

	Gross domestic product % change on year ago latest		quarter*	2024†	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 gov't bonds latest, %		change on year ago, bp	Currency units per $ Mar 26th	% change on year ago
United States	3.1	Q4	3.2	1.8	3.2	Feb	2.5	3.9	Feb	-2.8	-6.1	4.2		87.0	-	
China	5.2	Q4	4.1	4.7	0.7	Feb	1.0	5.3	Feb‡§	1.4	-4.4	2.2	§§	-49.0	7.21	-4.7
Japan	1.2	Q4	0.4	1.3	2.8	Feb	2.3	2.4	Jan	2.7	-4.7	0.8		43.0	151	-13.7
Britain	-0.2	Q4	-1.4	0.4	3.4	Feb	2.6	3.9	Dec††	-2.8	-4.2	4.0		45.0	0.79	3.8
Canada	0.9	Q4	1.0	1.2	2.8	Feb	2.6	5.8	Feb	-0.6	-1.2	3.5		74.0	1.36	1.5
Euro area	0.1	Q4	-0.2	0.8	2.6	Feb	2.5	6.4	Jan	2.6	-3.1	2.4		22.0	0.92	1.1
Austria	-1.7	Q4	0.2‡	0.5	4.2	Feb	3.5	5.0	Jan	2.4	-2.4	2.9		10.0	0.92	1.1
Belgium	1.5	Q4	1.4	1.1	3.6	Feb	2.4	5.5	Jan	-0.5	-4.4	2.9		13.0	0.92	1.1
France	0.7	Q4	0.2	0.9	3.2	Feb	2.7	7.5	Jan	-0.8	-4.6	2.8		-5.0	0.92	1.1
Germany	-0.2	Q4	-1.1	0.3	2.7	Feb	2.1	3.1	Jan	6.2	-1.5	2.4		22.0	0.92	1.1
Greece	1.1	Q4	0.6	2.8	3.1	Feb	3.4	10.4	Jan	-5.7	-1.9	3.4		-72.0	0.92	1.1
Italy	0.6	Q4	0.7	0.5	0.8	Feb	1.9	7.2	Jan	1.0	-5.3	3.7		-30.0	0.92	1.1
Netherlands	-0.4	Q4	1.4	0.9	2.7	Feb	2.4	3.7	Feb	8.3	-2.4	2.6		13.0	0.92	1.1
Spain	2.0	Q4	2.3	1.7	2.9	Feb	2.9	11.6	Jan	1.8	-3.5	3.2		-16.0	0.92	1.1
Czech Republic	-0.2	Q4	1.0	1.2	2.0	Feb	1.8	3.0	Jan‡	-0.3	-2.4	3.9		-66.0	23.3	-5.7
Denmark	3.2	Q4	8.2	1.3	0.8	Feb	1.8	2.9	Jan	9.4	1.2	2.4		nil	6.88	0.6
Norway	0.5	Q4	6.2	1.0	4.5	Feb	2.6	3.9	Jan‡‡	14.4	12.0	3.6		60.0	10.7	-2.0
Poland	1.0	Q4	nil	2.8	2.8	Feb	4.1	5.4	Feb§	nil	-5.2	5.6		-42.0	3.97	9.8
Russia	5.5	Q3	na	1.9	7.7	Feb	6.5	2.9	Jan§	2.0	-1.7	13.2		241	92.9	-17.0
Sweden	-0.1	Q4	-0.2	0.4	4.5	Feb	2.7	8.5	Feb§	5.9	-0.7	2.5		35.0	10.6	-1.3
Switzerland	0.6	Q4	1.2	0.9	1.2	Feb	1.4	2.2	Feb	7.9	-0.3	0.6		-41.0	0.90	2.2
Turkey	4.0	Q4	3.9	3.1	67.1	Feb	52.3	9.8	Jan§	-3.1	-4.5	25.0		1,321	32.1	-40.7
Australia	1.5	Q4	1.0	2.0	4.1	Q4	2.7	3.7	Feb	0.5	nil	4.1		83.0	1.53	-2.0
Hong Kong	4.3	Q4	1.8	3.2	2.1	Feb	2.2	2.9	Feb‡‡	7.0	-1.4	3.8		77.0	7.82	0.4
India	8.4	Q4	8.0	6.6	5.1	Feb	4.8	8.0	Feb	-0.8	-5.3	7.1		-26.0	83.4	-1.1
Indonesia	5.0	Q4	na	5.1	2.8	Feb	2.7	5.3	Q3§	0.3	-2.3	6.7		-7.0	15,798	-4.1
Malaysia	3.0	Q4	na	4.4	1.8	Feb	2.6	3.3	Jan§	1.9	-4.4	3.9		-15.0	4.73	-6.3
Pakistan	nil	2023**	na	0.9	23.1	Feb	21.0	6.3	2021	-3.0	-7.1	14.2	†††	-107	278	1.6
Philippines	5.6	Q4	8.7	5.7	3.4	Feb	2.7	4.5	Q1§	-2.2	-6.1	6.2		5.0	56.4	-3.6
Singapore	2.2	Q4	4.8	2.4	3.4	Feb	3.5	2.0	Q4	18.6	0.1	3.1		25.0	1.35	-1.5
South Korea	2.2	Q4	2.5	2.2	3.1	Feb	2.1	3.2	Feb§	2.5	-2.5	3.4		16.0	1,342	-3.6
Taiwan	4.9	Q4	9.7	3.3	3.1	Feb	2.0	3.4	Feb	14.1	0.1	1.4		23.0	31.9	-4.8
Thailand	1.7	Q4	-2.3	3.4	-0.8	Feb	1.3	1.1	Jan§	3.0	-3.5	2.8		45.0	36.4	-6.2
Argentina	-1.4	Q4	-7.3	-4.1	276	Feb	259.6	5.7	Q4§	0.4	-1.9	na		na	856	-76.0
Brazil	2.1	Q4	-0.1	1.8	4.5	Feb	4.1	7.6	Jan§‡‡	-1.5	-7.2	10.9		-213	4.99	5.2
Chile	0.4	Q4	0.4	2.0	3.6	Feb	3.6	8.4	Jan§‡‡	-3.9	-2.5	5.8		44.0	981	-17.3
Colombia	0.3	Q4	0.1	1.3	7.7	Feb	5.8	12.7	Jan§	-3.2	-5.1	9.9		-216	3,895	21.4
Mexico	2.5	Q4	0.3	2.3	4.4	Feb	4.5	2.8	Jan	-0.6	-4.7	9.3		35.0	16.7	10.7
Peru	-0.4	Q4	0.9	2.1	3.3	Feb	2.6	7.6	Feb§	-0.3	-2.5	7.0		-53.0	3.70	1.9
Egypt	2.7	Q3	na	2.6	35.7	Feb	30.5	6.9	Q4§	-2.1	-10.9	na		na	47.4	-34.8
Israel	-4.6	Q4	-20.7	1.9	2.5	Feb	2.8	3.3	Feb	4.9	-6.3	4.3		46.0	3.64	-1.4
Saudi Arabia	-0.8	2023	na	2.0	1.8	Feb	2.1	5.1	Q3	0.5	-2.0	na		na	3.75	0.3
South Africa	1.2	Q4	0.2	1.6	5.5	Feb	4.7	32.1	Q4§	-2.0	-5.7	10.5		54.0	18.9	-4.0

Source: Haver Analytics. *% 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. Note: Euro area consumer prices are harmonised.

Markets

In local currency	Index Mar 26th	% change on: one week	Dec 29th 2023
United States S&P 500	5,203.6	0.5	9.1
United States NAScomp	16,315.7	0.9	8.7
China Shanghai Comp	3,031.5	-1.0	1.9
China Shenzhen Comp	1,752.3	-2.4	-4.7
Japan Nikkei 225	40,398.0	1.0	20.7
Japan Topix	2,780.8	1.1	17.5
Britain FTSE 100	7,931.0	2.5	2.6
Canada S&P TSX	21,912.5	0.2	4.6
Euro area EURO STOXX 50	5,064.2	1.1	12.0
France CAC 40	8,184.8	-0.2	8.5
Germany DAX*	18,384.4	2.2	9.7
Italy FTSE/MIB	34,688.2	1.2	14.3
Netherlands AEX	878.4	2.1	11.6
Spain IBEX 35	10,991.5	2.7	8.8
Poland WIG	81,286.3	2.0	3.6
Russia RTS, $ terms	1,116.2	0.4	3.0
Switzerland SMI	11,680.4	0.9	4.9
Turkey BIST	8,807.4	-1.4	17.9
Australia All Ord.	8,036.7	1.0	2.6
Hong Kong Hang Seng	16,618.3	0.5	-2.5
India BSE	72,470.3	0.6	0.3
Indonesia IDX	7,365.7	0.4	1.3
Malaysia KLSE	1,538.4	-0.4	5.8

	Index Mar 26th	% change on: one week	Dec 29th 2023
Pakistan KSE	65,906.3	0.6	5.5
Singapore STI	3,233.3	1.9	-0.2
South Korea KOSPI	2,757.1	3.8	3.8
Taiwan TWI	20,126.5	1.4	12.2
Thailand SET	1,377.2	-0.4	-2.7
Argentina MERV	1,214,656.0	7.5	30.6
Brazil BVSP*	126,863.0	-0.5	-5.5
Mexico IPC	57,209.7	3.0	-0.3
Egypt EGX 30	29,057.5	1.3	16.7
Israel TA-125	2,040.8	3.0	8.1
Saudi Arabia Tadawul	12,585.5	-1.7	5.2
South Africa JSE AS	73,608.1	2.4	-4.3
World, dev'd MSCI	3,414.3	0.6	7.7
Emerging markets MSCI	1,040.1	1.2	1.6

US corporate bonds, spread over Treasuries

Basis points	latest	Dec 29th 2023
Investment grade	107	154
High-yield	346	502

Sources: LSEG Workspace; Standard & Poor's Global Fixed Income Research. *Total return index.

Commodities

The Economist commodity-price index 2020=100	Mar 19th	Mar 25th*	% change on month	year
Dollar Index				
All Items	127.1	130.9	3.7	-0.7
Food	136.5	142.7	7.3	2.6
Industrials				
All	119.3	121.1	0.5	-3.7
Non-food agriculturals	138.3	139.0	2.5	7.7
Metals	114.4	116.5	-0.1	-6.7
Sterling Index				
All items	128.2	133.0	4.0	-3.2
Euro Index				
All items	133.4	138.0	3.8	-0.7
Gold				
$ per oz	2,156.5	2,176.4	7.1	10.5
Brent				
$ per barrel	86.5	86.9	4.4	10.3

Sources: Bloomberg; CME Group; Fastmarkets; FT; LSEG Workspace; LME; NZ Wool Services; S&P Global Commodity Insights; Thompson Lloyd & Ewart; Urner Barry; WSJ. *Provisional.

For historical indicators data, visit economist.com/economic-and-financial-indicators

OBITUARY
Amnon Weinstein

The reviver of Holocaust violins died on March 4th, aged 84

AS HE GREW up, Amnon Weinstein wondered where his extended family was. Where were his grandfather and grandmother, his uncles and aunts? In reply his mother would reach for a book about Vilnius, then in Poland, their home once, and show him a picture of Ponary forest. "Here they are," she would say. Under the tall, thin, silent trees.

Gradually he learned about the forest. It was once the loveliest spot in Vilnius, where at weekends people would stroll, picnic and meet friends. Poets wrote verses, painters painted and his father, already in love with violins, played music with his friends. But it was also there that in the second world war the Nazis killed around 100,000 people, 70,000 of them Jews, with rifles and machineguns, burying them crudely under mounds of sand.

At that point Amnon, too young to remember anything of the Holocaust, buried his curiosity also. His father, who had escaped to British-run Palestine just before the war, never spoke of it. So matters remained until one day in the 1980s, when he was repairing violins in his father's workshop in Tel Aviv, a young man brought in a battered specimen and asked if he could mend it.

The instrument was in a dreadful state, scuffed and cracked, its varnish worn away, with damage to the top plate from rain and snow. Yes, the customer explained, it had been outside much of the time, because his grandfather had been forced to play it as he walked to and from the gas chambers in Auschwitz, alongside those who were selected to die. Hearing that, Mr Weinstein almost refused the job. But he took it on. When he opened the violin he found black powder inside, the ash of human beings from the crematoria chimneys.

This was the most poignant Holocaust violin he came across, but it was not the first. Piled in confusion in a corner of the workshop were dozens more, bought by his father from post-war Jewish immigrants to Palestine and Israel who could no longer bear to play them. Most had been made in Germany, produced cheaply at the turn of the 19th century by Germans who mingled more freely with Jews. Few had had a classical career; instead they played amateur klezmer in the shtetls of eastern Europe, at dances and celebrations. Some were decorated with the star of David, occasionally in mother-of-pearl, because the more Jewish a violin looked, the more likely the rabbi was to recommend that its owner should be hired for weddings. Boys in the shtetl were expected to play, and hung up their instruments proudly on the kitchen wall. But the memories they also carried, of ghettos and camps, were too raw. In dark days, violins spoke of hope; now that their owners were safe, they were discarded. Even his father did nothing more with them.

Yet each instrument had a story, and these increasingly haunted him. Slowly, over the 1990s, he began to collect the dusty and beaten violins. Some he already had, or found in antique shops; customers brought in more from their attics. One had played Bach Partitas in freezing cold in a labour camp. One had been left as a deposit for rent in Brussels by a young Jewish violinist who never came back; inside it was a withered flower. One had been thrown from a train window to a railway worker somewhere in France, with the cry "Take my violin, that it may live!" It fell on the rails, but was rescued. Inside another was a thickly scratched swastika and the message "Heil Hitler! 1936"—a repairer's mockery of its Jewish owner, who went on playing it without knowing. Runnels of old glue seeped from the f-holes like tears. That one he would keep but never repair. Never.

For the rest, he went to infinite pains. A repair might take 18 months, working from morning till night in the workshop in a basement heady with varnish on King Solomon Street. Violins hung everywhere, labelled with the names of their owners and their stories, if he could find them, together with clusters of new bridges, backs and fingerboards. He worked lovingly, scraping away the dirt and damage with chisels and files, applying warm glue from saucepans, dusting off debris with a soft shaving brush. Pare a little, straighten a little; such a light, fragile thing, like a human life. Before involving himself with violins, he had wanted to be a wood sculptor and had studied that for three years. But he found making and repairing violins very similar: not a craft, but an art. A violin was a sculpture that produced sound.

What kind of sound? Clearly, a good violin had all the beauty of the human voice. But he also sought something distinctively Jewish, a kind of weeping, even when the melody was merry. He did not play violin himself—the viola was his instrument—but when his violins were almost fully repaired, his friend Shlomo Mintz would sometimes drop by to test them. Shlomo believed that their music, like a prayer, could take the listener to mystical realms. When they visited Auschwitz together he played the Hasidic *Ba'al Shem Tov Nigun* with fierce emotion on one of the restored violins, outside those terrible gates.

For Mr Weinstein every note played meant victory. Victory of the Jews, who had survived with their culture, over the Nazis, who had disappeared from history. Victory of good over evil, and of music over silence. His collecting had led directly to a project, Violins of Hope, which saw more than 60 of his violins being played by professional musicians in orchestras across Europe and America. He was determined that they should speak again for all the dead of the Holocaust, Jews and others, and for life. With each concert he organised an exhibition and programmes in schools, retelling the instruments' stories.

The first concert given in Jerusalem, in 2008 beside the Western Wall, caused him terrible anxiety. He couldn't sleep for worrying what feelings might be unleashed. But it went triumphantly. The violins playing together sounded exactly as he had hoped: like a forest of living, singing souls. ■

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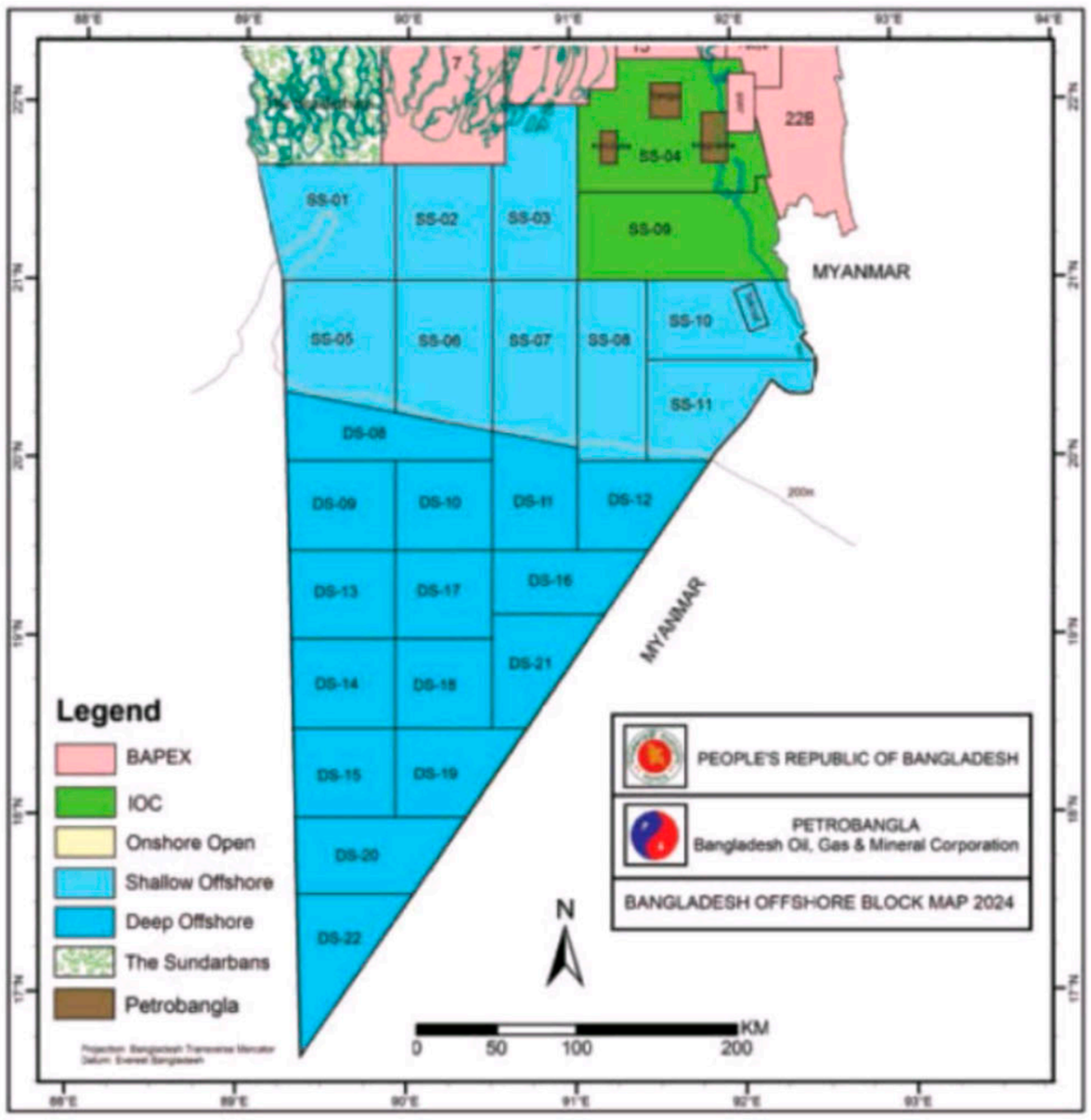
Government of the People's Republic of Bangladesh
Bangladesh Oil, Gas & Mineral Corporation (Petrobangla)

Notice Inviting Bids for Oil and Natural Gas Exploration Under Bangladesh Offshore Bidding Round 2024

The Government of the People's Republic of Bangladesh and Petrobangla invite International Oil Companies (IOCs) to bid for acreages for Oil and Gas exploration. Nine (9) Shallow Sea blocks (SS-01, 02, 03, 05, 06, 07, 08, 10 & 11) and fifteen (15) Deep Sea blocks (DS-08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 & 22) are currently available for exploration by the IOCs. The bidder, singly or in association with other companies, can bid for one or more blocks. Contracts will be signed with the successful bidders in line with the Bangladesh Offshore Model Production Sharing Contract 2023.



CONTRACT FEATURES

- Full repatriation of profit.
- No signature bonus or royalty.
- Uncapped attractive gas price linked with international marker.
- Oil price will be determined on the basis of the fair market value prevailing in South and South East Asia.
- No duty for equipment and machinery imported for petroleum operations.
- Contractor's Corporate Income Tax liability will be borne by Petrobangla.
- Bank Guarantee for performance of the Minimum Exploration Program.
- Provision for assignment of interest and share transfer.
- 100 percent cost recovery with a yearly cap of 75%
- Mandatory work program consists of 2D seismic survey only.
- Mandatory purchase of available 2D Multi-client seismic data against bidded blocks to get relief from Mandatory work obligations proportionately.
- Minimum work obligation in each of the Exploration Periods.
- Biddable work program commitment over and above the mandatory program.
- Petroleum Profit sharing on the basis of R-factor with biddable upper & lower limits.
- Option to sell Contractor's share of Natural Gas in the domestic market to a third party, at a negotiated price, subject to Petrobangla's right of first refusal.
- Option to export Contractor's share of Natural Gas subject to Petrobangla's right of first refusal.
- Carried stake of 10% for BAPEX. (For Shallow Sea blocks only)

QUALIFICATION CRITERIA

- Bidder, whether individual or in case of joint venture at least one member must have offshore daily production of at least 15,000 barrel of oil or 150 mmscf of gas as Operator to be qualified for bidding.
- Bidders must have at least one (1) global experience (other than home country) in the oil & gas exploration and production.

AVAILABILITY OF DATA

A basic Information Package is available, which includes a Brochure providing geological and related information, the Bangladesh Offshore Model Production Sharing Contract 2023, details of the blocks offered (block map), The Bangladesh Petroleum Act 1974, Promotional Package order form with content and Data Sales Package order form with content and price. The Information Package will be available at a cost of US$ 300 (US Dollar three hundred) or equivalent Bangladeshi Taka to the interested bidders/companies.

To enable companies to assess the geological prospects of the blocks on offer, Promotional and Data Packages are available on payment basis. Promotional Packages contain Bidding Document, sample seismic sections, gravity, magnetic, geological maps. Companies are required to purchase the Promotional Package in order to qualify for bidding. The purchase price of Promotional Package is US$ 10,000 (US Dollar ten thousand) or equivalent Bangladeshi Taka. Purchase of Data Sales Package is optional. Several Data Sales Packages are available at different prices. Companies interested in bidding and purchase of Promotional and Data Sales Packages may contact:

Director, Production Sharing Contract
Bangladesh Oil, Gas & Mineral Corporation (Petrobangla)
E-mail: dpscpb@petrobangla.org.bd with a cc to gm.contract@petrobangla.org.bd

Note: Multi-client data can be purchased directly from TGS-Schlumberger Joint Venture.

Bids in duplicate should be submitted in sealed envelopes superscribed **"Confidential" "BANGLADESH OFFSHORE BIDDING ROUND 2024"** and **"Proposal for Block # ....."** not later than **1:00 pm BST on 09 September 2024,** to:

Director, Production Sharing Contract
Bangladesh Oil, Gas & Mineral Corporation (Petrobangla)
Level-3, Petrocentre, 3 Kawran Bazar C/A,
Dhaka-1215, Bangladesh

Public opening of bids before the authorized representatives of the bidders will take place at **2:00 pm BST** on the same day at the same address. Bidders intending to be present during the bid opening should depute their authorized representative.

Companies wishing to participate in the bidding may request for clarifications on the terms and conditions of the bid. A pre-bid discussion will be held. Only bonafide E&P companies or their authorized agents and reputed international E&P service companies will be eligible to attend the pre-bid discussion by pre-registration.

OCEAN BLINDNESS

Why we need to tackle society's negligence, ignorance and disinterest in the ocean

The Nippon Foundation and 3710Lab—a Tokyo-based non-profit organisation supporting ocean education—hosted the 2nd International Conference on Design for Ocean Environments in September and October 2023 in Tokyo. The conference aimed to utilise design to unlock the vast potential of the ocean, and address issues caused by ocean pollution. Attendees included artists, creators, scientific researchers, corporate managers and international project development experts such as Naoto Fukasawa, a globally renowned product designer, Kodai Taguchi, representative of 3710Lab, and Mitsuyuki Unno, executive director of The Nippon Foundation. The conference facilitated discussions on how the power of design can address society's negligence, ignorance and disinterest in the ocean. Alongside the conference, an exhibition was held at Roppongi AXIS, showcasing auditory, sensory and visual art and products designed to raise awareness about humans' deep connections to the ocean.

"To devise effective solutions, we must first undergo the process of knowing the ocean, thinking about the ocean, and then becoming fully conscious of the ocean."

Naoto Fukasawa Product designer

We don't know the ocean

The conference and exhibition embraced "ocean blindness" as a central theme. Coined by Dr Sylvia Earle, an oceanographer and the founder of Mission Blue, the term describes the critical situation faced by the marine environment. Mr Unno expressed concern about the waning public interest in the sea and its profound connections to humans and society. Recent surveys have revealed that even in Japan, a maritime nation, 40-50% of young people do not feel a strong affinity for the ocean. While scientific research has continuously shed light on unexplored aspects of the ocean, many individuals remain oblivious to our symbiotic relationship with it, resulting in declining interest and the tacit acceptance of the deepening ocean crises and a lack of action to solve them. Mr Taguchi also emphasised the importance of addressing marine pollution by nurturing common awareness of the issues. 'The symbiosis of the ocean and humans can be achieved if more citizens explore the meaning of the word "ocean blindness" and share a diverse range of interpretations with society as a whole', he said.

Using design to understand humanity's symbiotic relationship with the ocean

How could we raise awareness of "ocean blindness" in our society and bring about behavioural change to tackle marine pollution? One of Mr Fukasawa's remarks offers us an important clue: "To devise effective solutions, we must first undergo the process of knowing the ocean, thinking

about the ocean, and then becoming fully conscious of the ocean." Our priority in addressing ocean pollution is to make people aware of the ocean's power and potential, which will serve as the basis to devise solutions, and to enable us to pass them on to our next generation through education. Design has a vital role to play. Design has the power to incorporate social challenges into people's everyday lives through innovative ideas, perspectives, or shapes and forms. Design has the power to relate ocean issues to people's personal issues across cultures, genders and generations.

The magnitude of the challenge demands urgent action from all stakeholders, such as governments, businesses, research communities and general citizens. The Nippon Foundation and 3710 Lab intend to accelerate the efforts to overcome "ocean blindness" and address marine pollution through the 3rd International Conference on Design for Ocean Environments, which is scheduled for 2024. This comes in tandem with various programmes and activities, including youth-driven design projects and enhanced marine environment design workshops aimed at increasing the appeal and impact of our undertakings. We are at the beginning of this process and still have much ground to cover. However, there are still many options full of potential that we can start using to make a difference.

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