The Economist

THE WORLD AHEAD 2025

NOVEMBER 23RD–29TH 2024

Disrupter-in-chief

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Volume 453 Number 9424
Published since September 1843
to take part in *"a severe contest between intelligence, which presses forward, and an unworthy, timid ignorance obstructing our progress."*

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The world this week Politics

Ukraine fired the first longer-range missiles supplied by America into **Russia**, after Joe Biden gave permission for the weapons to be used. The Army Tactical Missile System has a range of 300km (186 miles). ATACMS targeted a military facility in Russia's Bryansk region. Russia said it shot the missiles down; Ukraine said it had hit an arms depot 110km inside Russia. Britain reportedly allowed Ukraine to use long-range Storm Shadow missiles, which targeted Russia's Kursk region. America closed its embassy in Kyiv after receiving information about a specific Russian air attack. American officials said the decision to close the building was made out of "an abundance of caution.

Vladimir Putin, meanwhile, signed an order that lowers the threshold for Russia's use of **nuclear arms**. The new doctrine allows Russia to launch nuclear missiles at a nuclear-armed country that merely supports any other country's attack on Russia. And also to fire the weapons in response to a "critical threat" to Russia's sovereignty. The decree was planned for a long time, but the timing of Mr Putin's signature rattled some in the West.

The **G20's** statement at the conclusion of its summit in Rio de Janeiro weakened its support for Ukraine compared with its recent declarations, omitting any mention of Russia. The G20 also failed to promise any transition away from fossil fuels, though it did call for more aid for climate change, as well as taxes on the very rich and poverty relief.

Germany described the latest damage to two underwater communications cables in the **Baltic Sea** as sabotage. Suspicion fell on a Chinese-registered vessel that had docked in Russia. Separately, Britain, France, Germany, Italy, Poland and Spain issued a joint statement declaring that "Russia is systematically attacking **European security** architecture."

Rural affairs

Thousands of British **farmers** descended on London to protest against the government's decision to apply inheritance tax to farms. Officials claim that the changes will affect 500 estates. Farmers disagree, and say 70,000 farms will be hit. Celebrity farmers, such as Jeremy Clarkson, supported the tooting tractors. Farmers also demonstrated in France, over an EU-Mercosur trade deal, but were more robust in their protest than the genteel Brits. The French dumped manure and rotting food outside government buildings and burned hay bales.

Donald Trump filled out more appointments for his new government with loyal supporters. They include Howard Lutnick, the boss of Cantor Fitzgerald, who was nominated as commerce secretary, and Linda McMahon, best known for her connections to professional wrestling. She was nominated to lead the Department of Education, which Mr Trump hopes to grip in a half nelson by threatening to abolish it.

Transit officials in **New York** approved a rejigged congestion-charging scheme, which could come into force in Manhattan's central business districts on January 5th. The daily charge has been reduced to $9.

Antony Blinken, the American secretary of state, took to X to declare that Edmundo González is the "president-elect" of **Venezuela**. It was the first time that the United States has recognised the opposition candidate as president-elect since July's election. Nicolás Maduro's regime maintains that it won, but has refused to release voting tallies which might provide evidence of its victory. Mr Maduro is due to be re-inaugurated on January 10th.

Brazilian police arrested four members of an elite army unit and one police officer who are accused of plotting to kill President Luiz Inácio Lula da Silva days before his inauguration in January 2023. The plot was part of a plan to keep the then incumbent president, Jair Bolsonaro, a far-right former army captain, in power after he lost the 2022 election. Separately, a supporter of Mr Bolsonaro blew himself up outside Brazil's Supreme Court.

Doctors Without Borders, widely known as MSF, suspended its operations in **Haiti's** capital over worsening security. The charity's staff have been threatened and an assault on one of its ambulances killed two patients. It will be missed; only around a quarter of Port-au-Prince's health facilities are operating.

Judges in **Hong Kong** sentenced 45 pro-democracy figures to between four and ten years in prison in the city's biggest-ever national-security trial. The activists' crime was to have held a primary election in 2020 in the hope of winning control of the legislature. They then planned to demand greater democracy—or else to vote down the government's budget and so force the chief executive to resign. The state called this subversion. America and the EU criticised the case as politically motivated.

American prosecutors charged Gautam Adani, one of **India's** best known businessmen and one of the world's richest people, in connection with a scheme that allegedly paid $250m in bribes to Indian officials to obtain state contracts for a renewables-energy firm owned by his conglomerate. The prosecutors claim that Mr Adani and seven others defrauded American investors. The Adani Group denied the allegations. The share prices of its companies swooned.

Left turn

Sri Lanka's snap parliamentary election was a landslide win for the left-wing coalition that supports the president, Anura Kumara Dissanayake. It took 159 seats in the 225-member legislature. Mr Dissanayake is also the finance minister and must present a budget, which the IMF will note as it prepares to release the latest tranche of its loan to the country.

Almost 100 lorries carrying food aid to **Gaza** were looted by armed gunmen. Philippe Lazzarini, the head of UNRWA, the UN's agency for Palestinians, said that the breakdown of civil order in Gaza meant it had become impossible to operate there. The UN said that almost no aid had reached parts of northern Gaza for 40 days and repeated its warning that famine was imminent.

At least 36 people were killed in Israeli strikes on the **Syrian** town of Palmyra. The British-based Syrian Observatory for Human Rights said that the attacks had hit a weapons depot and other sites in and around an area inhabited by families who have relatives in Iranian-backed militias.

Senegal's ruling party won a parliamentary election. It is a big victory for the president, Bassirou Diomaye Faye, who was elected in March promising radical reforms, which include fighting corruption and having a bigger say in the country's oil-and-gas industry.

The world this week Business

Spirit Airlines filed for bankruptcy protection, the first big carrier in America to go bust since American Airlines in 2011. Spirit, a low-cost airline, has not made an annual profit since 2019 and, like other discount rivals, has seen ticket prices plunge amid a surplus of seats. In January a judge blocked its takeover by JetBlue Airways on competition grounds. A mooted merger with Frontier Airlines also came to naught. Spirit regularly features at the top of lists of America's most hated airline, a crowded field.

America's Department of Justice asked a judge to force **Google** to sell its Chrome browser. The judge is considering what Google must do to comply with his landmark antitrust ruling, which found that it had used improper means to maintain a monopoly in online search. Google said the government was pursuing a "radical agenda that goes far beyond the legal issues". By next August, well into the Trump administration, the judge will issue a decision on Google's remedies, which it may then challenge.

Nvidia produced another solid set of earnings. The chip company's revenue rose by 94% in its latest quarter, year on year, to $35.1bn. Net profit soared by 109%, to $19.3bn. Amid strong demand for its next-generation chips for artificial intelligence, Nvidia forecast that revenue for this quarter would come in at $37.5bn, ahead of Wall Street expectations.

The Biden administration finalised an agreement that provides TSMC, which manufactures about three-quarters of the world's most cutting-edge **computer chips** for Nvidia and others, with $6.6bn in grants to build factories in America. With an additional $5bn in loans, it is the first big deal to be completed under the Chips Act of 2022. In October Donald Trump said that the "chip deal is so bad" because it benefits only "rich companies".

Xiaomi, a Chinese company best known for its smartphones, provided an update on its nascent business in electric vehicles. It delivered more than 67,000 of its SU7s in the first nine months of the year, and expects to have delivered 130,000 by the end of December. Revenue from the EV unit grew by 52% in the third quarter over the second quarter.

Wither the German miracle

Volkswagen replaced the head of its business in North America. The German carmaker wants to expand in America to offset declining sales in China, but its ambitions on that front will become more complicated if Mr Trump imposes stiff tariffs on foreign-made vehicles. In another indication of the troubled state of European carmaking **Ford** announced that it was cutting 800 jobs in Britain and 2,900 in Germany, which is already contending with huge lay-offs at VW.

Thyssenkrupp, a German engineering conglomerate, wrote down the value of its steelmaking business by a further €1bn ($1.1bn) and reported a 12-month €1.4bn net loss. Daniel Kretinsky, a Czech billionaire with interests in Britain, including an investment in West Ham football club, owns a 20% stake in the steel business and is considering raising it to 50%.

The annual rate of **inflation in Britain** jumped from 1.7% in September to 2.3% in October. Energy bills have gone up after an increase to the cap on energy prices. But the core inflation rate, which strips out energy and food, also rose, to 3.3%.

Comcast announced that it will spin off its portfolio of **cable channels** housed under NBCUniversal, which includes MSNBC and CNBC, into a new company. It will retain NBC's other assets, including the TV broadcast network, sports coverage and films. More and more viewers are ditching their cable subscriptions in the age of streaming. Comcast is also keeping Peacock, the streaming service for NBC programming and movies.

Shareholders in **News Corporation** voted against a proposal from activist investors to end the company's dual-class share structure. The Murdoch family controls the media group through its voting power in class B shares, which News Corp argues provides stability.

A judge in New York sentenced **Bill Hwang**, the founder of Archegos Capital Management, to 18 years in prison for artificially inflating the value of stocks in his portfolio. The collapse of Archegos in 2021 led to hefty losses at banks that dealt with the fund.

Seasonal joy, and pain

Walmart issued a bumper set of earnings and lifted its profit forecast. The retailer expanded its market share, mostly because more households earning at least $100,000 are buying its goods. The company's share price has risen by 60% this year. By contrast, profit shrank and sales barely grew at **Target**. Whereas Walmart raised its outlook heading into the Christmas shopping season, Target lowered its forecast.

The Economist

Disrupter-in-chief

Elon Musk is given the ultimate target: America's government

IN 2017 ELON MUSK branded Donald Trump a "con man" and "one of the world's best bullshitters". Now he is known at Mar-a-Lago as Uncle Elon and is in the president-elect's inner circle. This week they watched a rocket launch together. The alliance of the world's leading politician and its richest man creates a concentration of power both want to use to explosive effect: to slash bureaucracy, detonate liberal orthodoxies and deregulate in the name of growth.

Mr Trump has a mandate for such disruption. Despite America's economic prowess, much of Main Street, Wall Street and Silicon Valley is frustrated by government profligacy and incompetence. They are right to be. The state needs an overhaul. Yet Musk-led reform risks creating a new problem for America: the emergence of a combustible, corrupt oligarchy.

Weeks after helping Mr Trump win the election Mr Musk has climbed to the apex of power (see Briefing). The president-elect has appointed him to a new advisory body, called DOGE, tasked with slashing spending. Mr Musk is already in touch with foreign leaders and lobbying for cabinet appointments. It is hardly the first time a tycoon has had extraordinary influence in America. In the 19th century robber barons such as John D. Rockefeller dominated the economy. In the early 20th century, when there was no Federal Reserve, John Pierpont Morgan acted as a one-man central bank.

Mr Musk's firms are more global than the big 19th- and 20th-century monopolies, and smaller if measured by profits to GDP. Musk Inc is worth the equivalent of just 2% of America's stockmarket. Its main units are Tesla, an electric-car firm; SpaceX, his satellite-communications and rocket business; X, formerly Twitter; and xAI, an artificial-intelligence startup that was valued at $50bn in a deal this week. These mostly have market shares below 30% and face real competition. *The Economist* reckons that 10% of Mr Musk's $360bn personal fortune is derived from contracts and freebies from Uncle Sam, and 15% from the Chinese market, with the rest split between domestic and international customers.

Mr Musk is also different because he is a disrupter. Rather than exploiting monopolies to raise prices, or creating a stable banking system as the foundation for finance, most of Musk Inc uses technology to slash costs in competitive markets. This disruption is central to Mr Musk's messianic ideology, in which innovation conquers humanity's intractable challenges from climate change to colonising Mars. Realising these distant goals depends on a genius for constantly rethinking industrial processes. His desire for freer action helps explain his contempt for orthodoxies, including what he regards as woke conformism. From the bureaucrats who allowed the American government's space-launch market to be rigged by defence firms to the Californian box-tickers who regulate Tesla's factories, he views the state as an impediment to growth.

Both Mr Trump and Mr Musk want to disrupt the entire federal government. Mr Musk has said DOGE may aim to cut as much as $2trn from the $7trn annual federal budget and abolish many agencies. It is easy to ridicule such goals as naive—$2trn is more than the government's entire discretionary spending. But with a budget deficit of 6% of GDP and debt of almost 100%, reform is needed (see Finance & economics section). The creaking Pentagon machine is struggling to adapt to the age of drones and AI. Lobbying by incumbent firms helps explain why federal regulations have reached 90,000 pages, near an all-time high. Even if Mr Musk achieved only a fraction of his liberalisation, America could have much to gain.

What, though, are the dangers? One is cronyism and graft. The president-elect is an economic nationalist and the industries Mr Musk has interests in have become strategic, thanks to rivalry with China, the militarisation of space and cross-border disinformation wars. Proximity to power could let him skew regulations and tariffs and hobble competitors in fields from cars and cryptocurrency to autonomous vehicles and AI. Since the start of September the total value of Musk Inc's businesses has risen by 50% to $1.4trn, far outperforming the market and its peers, as investors bet that its boss will be able to extract exceptional rents from his friendship with the president.

At the same time Mr Musk could bungle, especially when he is outside his areas of expertise. He has shown erratic judgment in foreign affairs, by micromanaging the use of the Starlink satellite service in Ukraine and comparing Taiwan's status to Hawaii's. His love of the limelight and conspiracies, and of the swirl of social media, are worrying. With $50bn of his personal wealth tied up in China, which hosts half of Tesla's production, he is an obvious target for manipulation.

He could also fail before he even starts, because of the combustibility of the Trump-Musk combination. The next president loves hiring and firing. The tech tycoon burns through executives and relationships, too. The fusion of Silicon Valley libertarianism and techno-utopianism with the MAGA nationalism of Mr Trump's world is inherently volatile. Reforming government requires patience and diplomacy, neither of them Mr Musk's strong suits.

On another planet

If Mr Musk's political career proves to be brief, it could still have two lasting, pernicious effects. One would be to turn politicians away from reforming government. With his appointment, that goal has received more attention than ever. But if he mounts a half-baked programme that ends in spectacular failure, the ambition to tackle spending will be set back for years.

The other effect would be to normalise collusion between politicians and tycoons. As the state expands into trade, industrial policy and technology, the incentives for state capture are growing. At the same time, Mr Trump's method involves weakening institutions and practices supposed to guard against conflicts of interest. America is a long way from behaving like an emerging market. But if oligarchic business titans habitually worked with dominant politicians, it would suffer great harm. That used to be unthinkable; no longer. ■

Liberal reform

It's time

Why British MPs should vote for assisted dying

THIS NEWSPAPER believes in the liberal principle that people should have the right to choose the manner of their own death. So do two-thirds of Britons, who for decades have been in favour of assisted dying for those enduring unbearable suffering. And so do the citizens of many other democracies—18 jurisdictions have passed laws in the past decade.

Despite this, Westminster MPs look as if they could vote down a bill on November 29th that would introduce assisted dying into England and Wales. They would be squandering a rare chance to enrich people's fundamental liberties.

The proposal—put forward as a private member's bill by Kim Leadbeater, a Labour backbencher—seeks to set out the safeguards that would govern assisted dying for the terminally ill. This will be a free vote, in which MPs follow their conscience rather than a party line and Ms Leadbeater has received no help from the government, even though the prime minister, Sir Keir Starmer, has said he is in favour. A few weeks ago, it looked as if her bill would pass. Now opposition is growing and Sir Keir has taken up a position on the fence.

You might think the debate over assisted dying would be about principles. But appealing to God or the sanctity of life would no longer succeed in today's Britain. Such arguments, however sincere, operate in a space that is governed by individual conscience, not the state (see Bagehot).

What is more, the principle of assisted dying has already been established. The courts have ruled that doctors can withdraw life support from patients in a vegetative state. And Britons are free to travel to Switzerland for an assisted death. Between 2016 and 2022, about 400 people did so.

Ms Leadbeater's bill extends this logic. Going to Switzerland to die costs about £15,000 ($19,000); companions risk prosecution. The bill would make assisted dying open to anyone who qualifies, rich or poor, including those who need their family to be with them.

Those who can no longer defeat the bill on principle have therefore joined those who worry about the details. But these arguments do not withstand scrutiny either.

Much of the running is being made by Wes Streeting, who as health secretary has argued that access to palliative care is too hit-and-miss to give terminally ill patients a genuine choice. That is a red herring. The closest analogue to Ms Leadbeater's proposed system is in the Australian state of Victoria (see Britain section), which passed its law in 2017. It gathers data on palliative care and has found that assisted dying does not happen more often in places where access is patchier.

In any case Mr Streeting could afford to improve access to palliative care. Those in the hospice sector in England believe that an extra £350m-400m of annual statutory funding, around 0.2% of the NHS budget, would allow them to meet demand fully. Even then, the need for assisted dying would remain. One reason is that in around 1% of cases, the best palliative care does not ease physical pain; another is that most people choose assisted dying because they want autonomy.

In a bold piece of ministerial judo, Mr Streeting also argues that the health service, which he runs, is too broken to take on the burden of assisted dying. Yet doctors already routinely make decisions over life and death. Through the principle of "double effect", doctors can administer painkillers to terminal patients knowing that they will cause death. One salutary consequence of Ms Leadbeater's bill would be to bring these obscure judgments into the light, and to involve patients in them.

Critics also raise concerns about the risk of coercion. But that is not credible in this case. In Ms Leadbeater's bill a person with around six months to live must make sustained requests approved by two doctors and a judge. The idea that an evil relative might go to great lengths to kill someone who will shortly be dead makes no sense.

Someone may choose an assisted death for fear of being a burden, which is cited as a reason in four out of ten cases in Oregon, which has had an assisted-dying law for longest. It would be better if people didn't feel burdensome, obviously, but that does not stop them from making rational choices. Indeed, the option to die may be all the comfort people seek: a fifth of those handed the medication in Victoria never take it.

Even if opponents of the bill are reassured by these arguments, some cannot shake the fear that Ms Leadbeater's law would be a slippery slope. If they mean that the criteria would sneakily be broadened to include the mentally ill or disabled without further legislation, then the facts are against them. In no case has an assisted-dying law restricted to the terminally ill expanded in this way. In Canada the scope widened, but that was because the courts enforced broad eligibility criteria derived from the country's existing Charter of Rights and Freedoms.

If they mean that future legislation could extend the right to assisted dying after due debate and consideration, then that is not an argument against, but a recommendation. In the view of *The Economist*, Ms Leadbeater's bill is drawn too tightly. Oregon and Victoria have shown that a doctor does not need to be present for the medication to be safe. A High Court judge is unnecessary when two doctors have already given their opinions. A prognosis of six months or less to live is arbitrary and imprecise. A 21-day cooling-off period is too long for people with only a very limited time to live; in 2021 California reduced this period from 15 days to two. None of that is an argument for voting down the current bill—indeed it can improve as it passes through Parliament.

Ms Leadbeater's bill would have been better if the government had helped her prepare it, or if Sir Keir had set up a citizens' assembly that weighed up the evidence and presented MPs with an agenda. The fact that he did not is one more example of his passive style of government. But that is not a reason to reject it, either. We would sooner that more Britons benefit from greater freedom, choice and dignity than none does. MPs should reassure themselves about the details of the bill, and then they should vote for it. ■

Fiscal policy in Germany

Act now, Mr Merz

Europe's biggest economy cannot afford to wait until after its election to relax the debt brake

GERMAN POLITICIANS and economists have bickered over the country's "debt brake" for years. So it was no surprise that a row over the rule, a constitutional provision that bars the federal government from running anything other than minuscule budget deficits, finished off Olaf Scholz's despised "traffic-light" coalition earlier this month. The good news is that the consensus for easing the brake to allow more public investment in bridges, buildings and brigades is now stronger than ever (see Europe section). The bad news is that a quirk of Germany's electoral system could stop reform in its tracks.

Germany's early election, expected on February 23rd, is likely to see Mr Scholz, from the Social Democrats (SPD), tossed out of the chancellery and replaced with Friedrich Merz, leader of the centre-right Christian Democrats (CDU)—assuming that the SPD does not first ditch Mr Scholz as its candidate for chancellor in favour of Boris Pistorius, the popular defence minister.

The debt brake was written into the constitution under Angela Merkel, the previous CDU chancellor, in 2009. But thanks in part to pressure from the party's regional chiefs, the CDU is coming round to the need for reform. Germany's stagnant economy, which in real terms has barely grown since before the pandemic, and the need to fund Ukraine and its own army, the Bundeswehr, have added to the pressure.

The Economist's preference would be to do away with the debt brake entirely, but we accept that may be a step too far for many voters. Instead, a Chancellor Merz would probably agree to ease the debt brake after the election in exchange for concessions from his coalition partners, perhaps on welfare or on immigration, as part of the give and take of coalition talks in Germany. The trouble is that, because the debt brake sits inside the constitution, amendments to it need two-thirds majorities in both houses of parliament. And polls suggest that when Germany votes next year, enough small parties could fall below the 5% threshold needed to enter the Bundestag to bestow a blocking minority on a pair of fringe parties—the hard-right Alternative for Germany and the new "left-conservative" Sahra Wagenknecht Alliance.

To forestall that, the SPD and the Greens, who now form a minority government, have asked Mr Merz to help them act immediately. Together with the CDU and its Bavarian sister party, they hold more than two-thirds of the seats in parliament. The Greens suggest another special fund for the armed forces, like the one pushed through by Mr Scholz in the wake of Russia's invasion of Ukraine in 2022. The SPD has proposed changing the rules of the debt brake itself.

In the normal course of things, working out the details of such far-reaching changes would be left until after the election. Making legally sound distinctions between productive investments and government consumption is hard. In addition, legal appeals to Germany's powerful constitutional court would be inevitable. Mr Merz seems minded to follow this logic, hoping to obtain as high a price as possible from his coalition partners after the election.

But the dangers of waiting are too great. Should the AfD and the BSW achieve their blocking minority, Mr Merz may find himself leading a government that cannot tackle urgent problems, including Germany's crumbling public sector and Ukraine, which could be vulnerable if it had been forced into a bad peace. In that case, the cash-strapped Mr Merz might end up being a one-term chancellor. For his own sake, as well as Germany's and Europe's, he should act now. ■

Higher education

Diminishing returns

The benefits of doing a master's degree are smaller than they appear

FOR YOUNG people with big ambitions, bagging a measly bachelor's degree no longer seems enough. Students in America have been rushing into postgraduate courses, even as demand for higher education among the general public has declined. These days nearly 40% of university-educated Americans boast at least two degrees. In Britain a surge in demand from foreign students has created a huge boom in postgraduate education. Universities there now dole out four postgraduate qualifications for every five undergraduate ones.

Master's degrees lasting one or two years are the biggest draw. These courses are necessary for jobs, such as teaching in academia, that are appealing even if poorly paid. Yet many of the people who enroll in postgraduate study are taking part in an educational arms race. Now that undergraduate degrees are common, goes the thinking, it takes extra credentials to get ahead. The hope is that advanced qualifications will boost all manner of careers.

That is often a mistake (see International section). New data are helping researchers compare the earnings of postgraduates with those of peers who are equally bright but have only a bachelor's degree. One analysis suggests that more than 40% of America's master's courses provide graduates with no financial return or leave them worse off, after considering costs and what they might have earned anyway. A study in Britain concludes that completing a master's has, on average, almost no effect on earnings by the time graduates are 35. ▸▸

Dreadful returns to lofty qualifications should worry students and politicians alike. Governments are right to think that investing in skills can pep up growth—but not when universities are flabby and inefficient. It is not just students who suffer if poor courses burden them with outrageous debts; taxpayers do, too. About half the money the American government lends to students each year is for postgraduate degrees. Generous repayment and forgiveness schemes mean a big chunk of that will never be repaid.

Governments should respond in two ways. First, they should abandon policies that are distorting the market for postgraduate study. America does not limit what it will lend postgraduates for tuition fees. This blank cheque has created a culture of profligacy in which universities raise fees, obliterating the financial returns students might ultimately make. Britain has also slipped up, though in a different and sneaky way. For a decade it has mostly declined to let universities increase fees for undergraduates, even as inflation has caused their costs to rise. In order to make up for that financial shortfall, vice-chancellors have vastly expanded expensive postgraduate programmes, some of which are of dubious quality.

The second priority for governments should be to give students the data they need to make better choices. A chasm divides the riches that flow from getting the most lucrative master's, such as in computer science, from the meagre returns of English or film studies. Fees vary wildly by institution, even for very similar programmes. And yet people shopping for postgraduate education find it much harder to get hold of information—on matters such as drop-out rates or probable future earnings—than people applying for their first degrees.

Masterstroke

America is trying to change this. Under new rules, graduate colleges may soon be compelled to warn applicants before they sign up for courses that have a record of saddling students with low wages and high debts. Donald Trump, who likes to lambast college presidents, should make sure these changes take place. And regulators in other countries should consider similar schemes. Higher education ought to make students brainier and richer. It too often fails to do either. ■

The Middle East

Trump to Tehran

Iran is weak. For America's next president that creates an opportunity

In Washington the "Nixon to China" tagline has lost its attraction. Both parties are too hostile towards the People's Republic for a miraculous reconciliation to be possible. Perhaps, though, Donald Trump can find a replacement—with Iran. In his first term he ditched the Joint Comprehensive Plan of Action (JCPOA), a nuclear deal signed in 2015, and promised to negotiate a better one by applying "maximum pressure". That didn't work. Joe Biden sought to reduce tensions with Iran but is leaving office with the Middle East on fire. In January the president-elect will have a second chance. He should use it to rescue a relationship that has poisoned America's presence in the Middle East for almost five decades.

Mr Trump's failing the first time round was that no one knew what he wanted. Was maximum pressure supposed to produce a stronger nuclear pact? Or was it to force Iran into changing its foreign policy? Or to remove the regime altogether? Mr Biden made the opposite mistake. His aides fiddled with the JCPOA and got too soft. Lax enforcement of sanctions meant that Iran's oil exports more than tripled after 2020, helping keep the regime afloat.

A new Iran policy needs to combine stronger pressure with a negotiating path and more ambitious goals. The pressure is justified. Iran's behaviour has been worse than ever. It has produced four bombs'-worth of highly enriched uranium. Its proxies wage war with Israel and menace trade in the Red Sea, and its arms-makers churn out missiles and drones for Russia.

People close to Mr Trump say he will move quickly to choke off Iran's oil sales. Better enforcement of sanctions would deprive Iran of billions of dollars in revenue. European signatories to the JCPOA should trigger "snapback" provisions to restore multilateral sanctions, and America should put pressure on key trading hubs, including Dubai. America should also make clear that it holds open the option of a sustained campaign of bombing to destroy Iran's nuclear programme.

Pressure is only half the equation. Less obviously, America should match harsh actions with the promise of something better. Even Gulf states that once urged maximum pressure now welcome detente. For one thing, pressure alone may bring about a repeat of Mr Trump's first term. Tensions will spiral, and Iran may lash out at Gulf states and American interests. Another snag is that reviving the JCPOA would not be enough. Stricter limits on Iran's nuclear work and intrusive monitoring are needed. A deal must also include a pledge from Iran that it will limit its missile-development programme and stop backing regional militias.

Iran has rejected such demands before. Why would it agree now? The Islamic Republic is at its weakest since the war with Iraq in the 1980s (see Middle East & Africa section). Its strategy of deterrence is in tatters. Hizbullah, its strongest proxy, has been battered by Israel, which has also destroyed much of its air defences, making bombing nuclear sites easier. Inflation is high and young Iranians are angry. Ali Khamenei, the supreme leader, 85, lacks a successor.

Mr Trump should make clear that regime change is not his goal and avoid surprises by ensuring that Israel co-ordinates any military action with America. If Iran meets his demands he could offer a big reward: the prospect of normal ties. America's prize would be the prospect of security in the Middle East, freeing it to focus on Asia. Countless obstacles oppose such a grand bargain. But Mr Trump loves photo ops. It would be hard to top the first ever meeting between an American and an Iranian president. Just imagine: Trump to Tehran. ■

Letters

LETTERS ARE WELCOME AND SHOULD BE ADDRESSED TO THE EDITOR AT:
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Researching ADHD

I read your article on research that questions whether attention-deficit hyperactivity disorder should in fact be seen as a disorder ("Coming into focus", November 2nd). The use of the term "neurodiversity" is misleading. An individual does not "have" a neurodiversity, any more than he or she can "have" any other kind of human diversity. Diversity in, say, the ability to control one's attention or susceptibility to distraction is a description of a statistical fact, not a condition that one catches, inherits or develops. It arises from innate differences in the biology of individuals as well as the accuracy of measurements used to describe those differences.

We might add a third kind of diversity based purely on differences in social constructions about individuals made at different times or in different places by different families, communities, cultural groups, professional organisations and so forth. Divergent conclusions are often reached depending on who is observing one's manifestations of self-control and attention.

Moreover, contrary to what your article implies, there are no data to show that any scientific consensus about ADHD exists. And there is much less evidence supporting what any specific educational or social response is required to help optimise individual outcomes over a lifespan. Implying that there is a consensus has serious policy consequences, not merely scientific ones.

DR MICHAEL GERBER
Professor emeritus
Gevirtz Graduate School of Education
University of California, Santa Barbara

ADHD has become so common that it often feels as if everyone has it. We need more scrutiny of the demand and misuse of powerful stimulants that have a potential for abuse. Could it be that these diagnoses are driven not by genuine disorder but by societal pressures to boost productivity in adults and academic performance in children? From my own experience in white-collar suburbia, it's an emphatic yes.

TYLER DOERSCHUK
Columbus, Ohio

Trump's win in perspective

After allowing the election to sink in, I find myself perplexed by your description of Donald Trump's victory as "resounding" ("Comeback king", November 9th). Ballots are still being counted, but Mr Trump's margin of victory in the popular vote is now less than two percentage points, or fewer than 2.8m votes. Joe Biden won in 2020 with a 4.5-point margin, but it was never characterised as "resounding".

Mr Trump's win in the electoral college was middle of the road, hardly historic, and not the mandate from the American people it is claimed to be. Some parts of the media are overreaching in their narrative that this election shows that Americans hate the Democrats. It is quite fair to analyse why the Democrats lost, but these sweeping pronouncements may fail the test of time when in two years the House of Representatives swings away from the party in power, as has been the case in the mid-terms.

LARRY FATA
New York

The profit motive

"Diplomacy on ice" (November 2nd) described how, without clear sanctions or accountability, well-intended policies are not enough to protect the Antarctic from unchecked exploitation. The Antarctic treaty says no one can own Antarctic real estate. Yet all are welcome to extract resources.

As it turns out, the budding private space industry has long viewed the treaty as an ideal template for future space-settlement policy. The notion of not owning land fits neatly with its idealism. But now that the industry's focus is shifting from satellites and space stations to commercial and military bases on or proximate to the Moon, the idealistic arrangements of the Antarctic treaty seem unrealistic and unenforceable at best. Going to space for purely scientific inquiry has been eclipsed by the same factors that fuelled European expansion in the New World and unleashed interest in Antarctica: profit and power.

DR JACK GREGG
Whittier, California

Great canal journeys

The value of Britain's extensive and historic canal network is much greater than providing a cheaper place to live than on land ("Life on the water", November 2nd). The towpaths themselves are heavily used for cycling, walking, fishing and tourism. The waterways are vital habitats for wildlife and vegetation. Plans to transfer water from the north-west to the south and east will provide vital environmental benefits as the climate changes. Canal-boat trips and water sports, or simply messing about in boats, are an incalculable contribution to well-being and mental health. Underfunding the Canal and River Trust, which is hard pressed to look after them properly, is a short-sighted way of planning for the generations to come.

DAVID WOLFSON
Chair
Milton Keynes Canals

A difficult problem

Thank you, Francis Cubitt, for drawing attention to the disappearance of the word "problem" (Letters, November 2nd). The same fate has befallen "difficult", which has been linguistically cleansed in favour of "challenging". Circumstances can be challenging but often they are difficult or just plain impossible. Calling the situation in Ukraine or Gaza challenging befits one of Oscar Wilde's dowagers. Equally, saying your child has issues rather than problems might sound kinder, but the prejudice remains.

Other words that have fallen foul of modern middle-class mores are "discuss", "debate" and "argue". All have been submerged by "conversation". For me, a conversation is about the weather or a friend's holiday. Would that Wilde or George Orwell were here to mock these verbal gymnastics.

WILLIAM DOLBEN
Madrid

The dude

Your obituary on Quincy Jones said rightfully, or maybe only hopefully, that, "After 'Thriller' there was no 'white music' and 'black music'; all cats sang all sorts" (November 9th). I like the story of when Jones studied with Nadia Boulanger, who taught Aaron Copland. After teaching sessions he would bring her canned peaches and she'd bring a bottle of Beaujolais. She told him that "Your music will never be more or less than you are as a human being."

Jones later pondered that "It's okay to play fast and all that other stuff, but unless you have a life experience, and have something to say that you lived, you have nothing to contribute at all. So I decided to live my life, and I did."

STEVE CROCKETT
St John's College
Annapolis, Maryland

Can't get no satisfaction

You described Justin Trudeau's identity politics as "sanctimonious" ("The dying of the light", October 19th). A local journalist once remarked that the Canadian system of government is a sanctimocracy: rule by the holier-than-thou.

ROBERT GENTLE
Johannesburg

The antipathy of Canadians towards their prime minister was quite apparent when, in the middle of this summer's Rolling Stones concert in Vancouver, Mick Jagger commented on his long-standing friendship with the Trudeau family and was roundly booed. Mick quickly pivoted to the recent success of the Canadian soccer team.

GARY PHILLIPS
Seattle

Briefing Elon Musk and Donald Trump

The first buddy

LOS ANGELES AND WASHINGTON, DC

Elon Musk and Donald Trump seem besotted. Where is their bromance headed?

DURING HIS victory speech on election night, Donald Trump touched on most of the standard topics for such occasions. He thanked his supporters and his staff. He praised his wife and children. He pledged to keep faith with voters. But mostly, he talked about Elon Musk. Fully 17% of his remarks—as much time as he spent sketching out his plans for his presidency—were devoted to the "super-genius" who had taken a break from managing his various businesses to help Mr Trump's campaign. He banged on about Mr Musk's generosity, his efficiency and, most of all, the technological prowess of his firms: "That's why I love you, Elon."

Mr Musk, the world's richest man, and Mr Trump, soon to be the world's most powerful, are in the throes of a heady bromance. The pair have been inseparable since the election, with Mr Musk accompanying Mr Trump to Washington to meet Republicans in Congress and Mr Trump heading to Texas with Mr Musk to watch a test flight of a rocket built by SpaceX, one of Mr Musk's firms.

Mr Musk, who styles himself "the first buddy", appears to be involved in every element of the presidential transition. He is sitting in on interviews with prospective nominees to the cabinet. He has himself been named as the co-head of a new "Department of Government Efficiency" (DOGE), which is supposed to slash both red tape and wasteful spending. He has joined Mr Trump's calls with world leaders, such as Volodymyr Zelensky, the president of Ukraine. He has also conducted freelance diplomacy on his own, meeting Iran's ambassador to the UN, according to the *New York Times*.

Friendly advice

The hope that Mr Musk may bring a little business nous and technical wizardry to the Trump administration is alluring. Some blue-sky thinking could help diminish America's yawning budget deficit, of about 6% of GDP, and overhaul its often clunky bureaucracy. But there are also many reasons to worry about Mr Musk's ascendancy. There will certainly be troubling conflicts of interest: in part Mr Musk is interested in deregulation, after all, owing to the many pesky rules hemming in his companies. Critics also fear that America's government may become dangerously reliant on a single individual, especially in the realm of space and satellites. Mr Musk's forays into foreign policy could jeopardise both his own business interests and America's diplomatic goals. Perhaps the most pressing question is whether the bromance can last, given that both men are known to have massive egos and frequent fallings-out with friends and colleagues. The stage is set, in short, for a tumultuous psychodrama with global ramifications.

Both Messrs Musk and Trump have already benefited hugely from their friendship. Mr Musk is thought to have spent about $200m to help get Mr Trump elected, an enormous amount given that the to- ▸▸

→ ALSO IN THIS SECTION

19 Elon Musk in his own words

tal declared spending so far of the campaign and outside groups is about $1.1bn (that will rise as final disclosures are filed). Mr Musk played a big part in efforts to turn out voters in swing states, focusing especially on those with little interest in politics. At the very least, that allowed the campaign to divert its limited funds to other purposes. It may also have helped galvanise support for Mr Trump among young men. Mr Trump, whose electoral pitch stresses his success as a businessman, clearly revelled in the endorsement of such a celebrated entrepreneur. That Mr Musk owns X, a social-media platform favoured by political types, and used it to cheerlead energetically for Mr Trump, was another bonus.

Friends with benefits

The benefits to Mr Musk of the bromance have been even bigger. Since the election, the market capitalisation of Tesla, the electric-vehicle (EV) firm that accounts for about two-thirds of his wealth, has grown by $300bn. That increment alone is more than double the combined market value of General Motors, Ford and Stellantis, the "big three" carmakers of Detroit. Although America's stockmarket has risen across the board, Tesla's ascent has been steeper (see chart). As Mr Musk owns roughly 20% of the firm, its surge has boosted his personal wealth by $60bn. The next biggest firm in Mr Musk's portfolio, SpaceX, is privately held, so the jump in its value is harder to gauge. But reports suggest its shares also command a much higher price than before the election.

Investors clearly think that Mr Trump's presidency will be good for Mr Musk's firms. There are three broad explanations. First, the government is a big customer of SpaceX, in particular, with which it has signed over $15bn in contracts over the past decade. NASA accounts for most of this, but some transactions are for military purposes. SpaceX has a $14m contract with the US Space Force (the little sister of the air force) to provide communications to the Ukrainian armed forces and government until November 30th through its Starlink satellite network. Space Force is also paying SpaceX $733m to carry satellites into orbit. The Pentagon has plans to incorporate 100 satellites from SpaceX's military division, Starshield, into its own communications network. Starshield also has a $1.8bn contract to help the secretive National Reconnaissance Office build spy satellites. The Space Development Agency has a $149m contract to send messages between SpaceX satellites by laser, and so on.

Presumably, more such custom could be forthcoming, especially from an administration well disposed towards Mr Musk. As it is, SpaceX conducted 90% of all orbital launches in America in 2023. Government agencies accounted for more than 20% of its business. By the same token, during Mr Trump's first term, the Federal Communications Commission (FCC) offered Starlink subsidies to help expand access to broadband in rural areas. But a payout of almost $900m was rescinded during Joe Biden's presidency. It could be reinstated in Mr Trump's second term.

The stringency with which the government enforces regulations also has an impact on Mr Musk's firms. They are the subject of 20-odd investigations and reviews by different federal agencies. The National Labour Relations Board, for example, is upset about how Mr Musk has handled workers' campaigns to unionise at Tesla. The Department of Transportation has complained about the way Neuralink, Mr Musk's brain-implant company, moves hazardous materials around. And the Fish and Wildlife Service thinks SpaceX has not done enough to protect the nests of birds near a launch site for its rockets in Texas. A less exacting administration could make all these problems go away.

In the grand scheme of Mr Musk's business empire, however, his contracts with the government are small change and the regulators' complaints are minor irritations. His companies are worth well over $1trn. His personal wealth is estimated at about $360bn. For all SpaceX's government contracts, the majority of its revenue comes from Starlink, almost all of whose customers are commercial.

By far the most material way the Trump administration could affect his fortunes is by drafting new regulations and rescinding old ones. Mr Musk has long maintained that Tesla's future hinges on the successful development of autonomous vehicles. At the moment, autonomous driving is regulated at the state level, putting Tesla at a disadvantage to Waymo, a subsidiary of Alphabet, the firm that owns Google. Waymo already operates "robotaxis" in a handful of cities, whereas Tesla has yet to launch any fully autonomous services. After Bloomberg reported on November 17th that Mr Trump's transition team had told advisers it plans to make a federal self-driving framework a priority, Tesla's shares soared, while those of Uber and Lyft, which could be hit by the competition, fell. Mr Trump is also reported to have invited Mr Musk to join a call with Sundar Pichai, the boss of Alphabet—an extraordinary opportunity for a commercial rival.

The buddy premium

Market capitalisation, November 5th 2024=100

Source: LSEG Workspace

Another potential Trump policy, the scrapping of a generous tax credit for EVs, would also have a big impact on Tesla. Although it would make the firm's cars more expensive, it would hurt other American producers more, since Tesla's costs are lower. "It would be devastating for our competitors," gloats Mr Musk. In fact, the end of the credit along with higher tariffs (another Trump pledge) might be especially advantageous to Tesla, whose EVs have the highest share of parts made in North America in the industry. Both domestic and foreign rivals would be hamstrung.

SpaceX's fortunes, too, are heavily dependent on regulators. It has received the FCC's approval to launch 12,000 satellites (it already has more than 6,000 in orbit), but has requested permission for 30,000 more. Mr Musk has also complained often and loudly about the lethargy of the Federal Aviation Administration (FAA), which he accuses of "smothering" innovation with "Kafkaesque paperwork". He quips that he can build a rocket faster than the agency can process the relevant approvals. SpaceX develops new spacecraft through frequent testing and redesign. Its commercial and government rivals tend to be more plodding and methodical. Byzantine bureaucracy thus burdens SpaceX more. A more permissive approach would be a boon.

The sensitivity of Mr Musk's firms to regulation creates blatant conflicts of interest in his proposed role as co-head of DOGE. Yet neither Mr Trump nor Mr Musk seem to have any qualms. Mr Trump neatly captured the problem on the campaign trail when he grumbled, "I'm for electric cars. I have to be because Elon endorsed me." Mr Musk, for his part, has stated that his dream and SpaceX's explicit corporate goal of colonising Mars will be possible only with DOGE's help: "The Department of Government Efficiency is the only path to extending life beyond Earth."

The potential conflicts are so glaring that Mr Trump seems to be designing DOGE to skirt the relevant regulations. He specified, when announcing the department's creation, that Mr Musk and Vivek Ramaswamy, a businessman-turned-politician who will be its joint boss, would provide ideas about reforming the bureaucracy "from outside of government". As an adviser, rather than a federal employee, Mr Musk will not be subject to various ethics rules, notes Kathleen Clark of Washington University in St Louis.

But this arrangement may also diminish DOGE's effectiveness, since it will resemble a commission more than a conventional government department. In fact, the prevailing wisdom in Washington is that DOGE will not amount to much. This is not because of any doubts about Mr Musk's sincerity or abilities. He has campaigned against red tape for years, long before there was much prospect that he would be given an official mandate to trim it (see box). He moved Tesla's headquarters from California to Texas in part in protest at California's bureaucratic ways. Last year he railed, in a typical tweet, "Like Gulliver, tied down by thousands of little strings, we lose our freedom one regulation at a time."

At both Tesla and SpaceX, Mr Musk has proved himself a master of efficiency, reducing the cost of previously rarefied technologies to an extent incumbents had thought impossible. Mr Trump calls him "the greatest cutter". (The president-elect seems to be especially impressed by Mr Musk's decision after buying X to sack some three-quarters of its staff, although X's value has shrunk dramatically under Mr Musk's ownership, leaving it almost irrelevant to him financially.) Mr Musk himself has talked about cutting $2trn, or about a third, from the federal budget, and dramatically simplifying the tax code.

But the history of efforts to slash regulation and government spending in America is not encouraging. The sticking point tends to be Congress, whose members are not keen to eliminate jobs in their own districts. Ronald Reagan set up a similar outfit, known as the Grace Commission, with an explicit mandate to "drain the swamp". Congress shelved its proposals.

Messrs Musk and Ramaswamy have therefore said that they will recommend changes that Mr Trump can order unilaterally, without any new legislation. They claim the scope for this is huge because of two recent Supreme Court rulings that have curtailed the authority of the bureaucracy and thus called into question many existing rules. But legal challenges to any reforms are inevitable, and the pair will have only 18 months to make anything happen: DOGE cannot formally start work until Mr Trump becomes president on January 20th and is supposed to wind itself up by July 4th 2026.

Indeed, it is possible that Mr Musk's influence has already reached its peak. He has lots of businesses to run and cannot put corporate life on hold indefinitely for endless backslapping at Mar-a-Lago, Mr Trump's estate in Florida, or—in time—the White House. Presidential transitions are by their nature fluid and their direction malleable, especially before the most important personnel have been chosen. But in less than two months the transition will end and the more rigid, bureaucratic structures of Washington will replace it.

Unfriended

There is no exact historical precedent for Mr Musk's influence over Mr Trump, but presidents and their business backers tend to fall out. William Hearst, a newspaper magnate, quickly became disillusioned with Franklin Roosevelt, whose first campaign for president he had enthusiastically backed. Andrew Carnegie, a steel baron who was the world's richest man in his day, could not get Theodore Roosevelt to listen to him about foreign policy. Theodore Roosevelt also ended up crossing swords with J.P. Morgan, the founder of the bank of the same name, after having enlisted his help to end a mining strike.

There are already signs that Mr Trump is not entirely in thrall to Mr Musk. Although Mr Musk had called publicly for Howard Lutnick, a Wall Street financier, to be named Treasury secretary, Mr Trump gave him the less prestigious job of commerce secretary instead. Mr Musk is rumoured to be bickering with Trump advisers of long standing. Mr Trump displayed a hint of fickleness at a recent gathering at Mar-a-Lago, when he joked about Mr Musk, "I can't get him out of here."

At the very least, fears of Mr Musk's overweening influence are probably overblown. SpaceX's domination of a strategic industry is not unprecedented. IBM had an 88% share of the market in tabulating equipment in 1932 and a 70% share of the nascent computer industry in 1967. Its devices were crucial to the Pentagon and intelligence agencies, used for everything from air defence to cryptanalysis. AT&T had a monopoly on telephone services for most of the 20th century and thereby made itself indispensable to American spooks. Both firms were eventually hobbled by antitrust suits—although the success of SpaceX and Tesla stems from superior products, not a monopoly.

In practice, Mr Musk's influence over military affairs is not as untrammelled as it seems. For one thing, SpaceX's position in space launch is commanding but not a monopoly, argues Doug Loverro, a former senior official at the Pentagon and NASA. The vast majority of its launches are of its own satellites, he notes. Strip those out and the picture looks more balanced. The US Space Force's launch contracts for 2022 to 2027 are split roughly evenly between SpaceX and a rival consortium, he says. The Pentagon's plans for mega-constellations for communications involve a dozen different contractors. Jeff Bezos, Amazon's founder, is setting up a rival firm, Blue Origin. Starship, meanwhile, is well suited to sending large numbers of small satellites into low-Earth orbit and getting humans to Mars, he argues—not sending larger military and spy satellites to higher orbits. "The fact of the matter is it's a very competitive field out there," concludes Mr Loverro, "especially on the DOD side."

Nor is it clear that Mr Musk could actually use his leverage. "As much as the US government needs SpaceX," says John Plumb, who until recently was assistant secretary of defence with responsibility for space, "SpaceX needs the US government." The company requires operating licences from the FCC and launch licences from the FAA. Although Mr Musk is an increasingly dominant supplier, the government is also a buyer with unusual purchasing power. "In my experience SpaceX has been an excellent partner for the Department of Defence. But if SpaceX for some reason decided to take on the full force of the US government," concludes Mr Plumb, "that would be a terrible, terrible business decision and frankly crippling for them." If need be, a president could even invoke the Defence Production Act of 1950, which allows the government to compel private firms to act in service of national security.

Even the idea that Mr Musk might

wield undue influence over foreign policy can be flipped on its head. Mr Musk's closeness to Mr Trump could be seen as a liability for his companies outside America. The most obvious test is China, where just over half of all Teslas are made. The firm's dependence on China is, if anything, growing: in May, it broke ground on a second factory in Shanghai, to make batteries.

The leverage this gives the Chinese authorities over Tesla already appears to constrain Mr Musk's actions. Although, in the name of free speech, he provides Starlink access to Iranians with smuggled terminals despite the objections of their government, he has not done anything similar in China. He tends to toe the official Chinese line on Taiwan and is fulsome in his praise for China as a place to do business.

Friendly fire

The risk that Tesla could get caught up in Mr Trump's dealings with China is obvious. "I think that the Chinese are thinking very carefully about how to use Musk to make clear to Trump that there are costs for tariffs," says Zack Cooper of the American Enterprise Institute, a think-tank. He notes that China has few contacts within the Republican Party and may be hoping that Mr Musk can help manage relations with the Trump administration. "If Musk wants to continue making significant amounts of money in China, then they're going to expect him to play a positive role," says Mr Cooper, noting that China needs only to tweak rules on EVs to have a big impact on Tesla's fortunes.

Similar risks apply to Mr Musk's involvement in politics in general. He is now so strongly associated with Mr Trump that he may put some people off buying Teslas, says Tu Le, of Sino Auto Insights, a consultancy. Although X saw record traffic during the election, since then the number of people leaving the platform for less MAGA-ish rivals such as Threads and Bluesky has surged. Moreover, the alliance between tech libertarians like Mr Musk and nativist populists that are the bedrock of Mr Trump's support is fragile. One camp yearns for change, the other resents it. That is an irresolvable contradiction.

If things go wrong, Mr Musk may suffer dire consequences. His control of Tesla is not ironclad. Unlike other tech tycoons such as Mark Zuckerberg, who owns super-voting shares in Meta, Facebook's parent, Mr Musk's 21% stake in Tesla does not fully insulate him from other shareholders. If his politics end up harming the company, he could still be booted out. His bigger stake in SpaceX offers more protection—but a good relationship with Uncle Sam is essential to its operations. Mr Musk is entering an even more complex realm than rocket science. It will take a super-genius to navigate it without mishap. ■

Elon Musk in his own words

Poster boy

Our analysis of nearly 40,000 of his posts on X reveal a changed man

"SURE, YOU might say something silly once in a while, as I do, but that way people know it's really you!" As part of a plea for "political & company leaders" to join him in holding forth on X, his social network, Elon Musk has repeatedly stressed that such posts offer an unusual and engaging authenticity. We have taken him at his word. What do his tweets say about him?

To work out what subjects preoccupy Mr Musk and how his views have changed over time, *The Economist* analysed his activity on Twitter (as it was) and X (as it became in 2023). Using artificial intelligence to trawl through his 38,358 posts between December 2013 and November 2024, we found that he is posting far more often and with a far more political bent. Climate change and clean energy used to be the realm of policy on which he opined the most, but he now bangs on much more about immigration and free speech (see chart).

Mr Musk posts vastly more than he used to. From December 2013 to the middle of 2018, he tweeted just over a dozen times a week, on average. Between then and October 27th 2022, when he completed the purchase of X, he was posting 50 times a week. Since the takeover, that has risen to around 220 a week.

Those who follow him—and over 200m do—may also have noticed a shift in subject-matter. From 2016 to 2021 between 30% and 50% of his tweets each year were about Tesla or SpaceX, his two biggest companies. These days only 11% are. Meanwhile the share of his posts that are political has risen from less than 4% in 2016 to over 13% this year.

The shift in the topics of such posts is even more dramatic. In 2022, as he was buying Twitter, posts about free speech surged. This was followed by a leap in 2023 and 2024 in talk of immigration, border control, the integrity of elections and the "woke mind virus". (The vicissitudes of poor regulation has remained a common topic throughout.)

Despite his considerable business interests outside America, few posts mention other countries. Between 2017 and 2020 around 1% touched on China, but often in passing ("China & Japan have awesome trains...") or to praise Tesla's unit there. His interest in the country has since waned. Before Russia's invasion of Ukraine, Mr Musk showed little interest in either country, but in 2022 they featured in almost 3% of his tweets. The only other country to crop up in more than 1% of his posts in recent years is Brazil, after the country briefly blocked X in August this year.

To his followers Mr Musk advocates a fierce focus on missions he sees as urgent, such as making humans an "interplanetary species" by colonising Mars. But his own posts reveal shifting interests over the past few years, with the only truly intense focus on the act of posting itself. He may have more money than anyone else on Earth and the ear of the next president, but to a casual observer, he may not seem that different from any other American man in his 50s: lurching rightward politically, online a huge share of the time, complaining about immigration and mocking the left.

Prolific and indignant

Posts by Elon Musk on Twitter/X, by time

Local time zone, California to Dec 2020 then Texas

By selected topics*

*Posts can touch on several topics at once †To November 11th

Sources: Twitter/X; *The Economist*

United States

Democrats

Donkey Rashomon

WASHINGTON, DC

Three factions compete to explain to the party how it lost to Donald Trump, again

THESE ARE NOT the reports Democrats were hoping to prepare. Instead of transition plans for the incoming Kamala Harris administration, draft executive orders and legislative outlines, Democrats are producing post-mortem analyses of how their campaign came apart in 2024. Those Democrats who are honest with themselves are recognising an uncomfortable truth: as awful, immoral and weird as they consider the Republican Party, the American people considered it to be the better option for governing America.

Dissect the emerging election data and the diagnosis looks even worse than it first seemed. The Democratic Party's idea of itself as a party of the young, ethnic minorities and the working class has been punctured. The best available data suggest that, compared with Barack Obama's performance in 2012, Ms Harris did 16 percentage points worse among voters without a college degree, 19 points worse with young voters, 26 points worse with African-Americans and 27 points worse with Hispanics. "We have only begun to internalise the ways in which all the basic tenets of the emerging Democratic majority have now been completely reversed. There is not a leg standing of it any more," says Patrick Ruffini, who wrote a prescient book on growing Republican strength among the multiracial working class.

Among Democrats brave enough to believe in their own agency, a much knottier debate has emerged over identity politics.

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Throughout the first Trump presidency, elite institutions embraced previously radical ideas of equity over equality, the tyranny of objectivity and the violence of speech. Democratic politics were downstream of this cultural shift, leading to an embrace of ideas (including by Ms Harris) such as defunding the police, paying for gender-affirming care for illegal immigrants and banning fracking. Whole ethnic groups were rebranded by those who knew better: Hispanics were now Latinxs; Asian-Americans were now AAPI; the collective lumping of non-whites as POC ("people of colour") was upgraded to "BIPOC". By 2022, Democrats realised that such talk, voguish in 2020, was a political liability and began to edge away from it.

By 2024 Ms Harris spoke like a different woman from her previous presidential campaign iteration, revoking her former positions without explanation. It didn't work. According to a survey of swing voters released by Blueprint, a Democrat-aligned firm, majorities of persuadable voters believed that the earlier, progressive Harris was the real one. Among those who chose to vote for Mr Trump, 83% believed that she would use taxpayer dollars to pay for transgender surgeries for undocumented immigrants in prison, 77% believed she would decriminalise border-crossing, and 74% believed that she would ban fracking. The political advertisement that even ▸▸

Democrats concede was the ad of the century was one that Mr Trump's campaign released that ended with the line: "Kamala's for they/them. President Trump is for you." Ms Harris's campaign did not rebut it, and tried instead to focus on economic messaging. But the two "are not completely separate or mutually exclusive...it creates a portrait of a party that's out of touch with ordinary voters, particularly ordinary working-class voters", says Ruy Teixeira of the American Enterprise Institute.

The attempt to jettison that unappealing brand is already underway. "I personally think that identity politics needs to go the way of the dodo," Elissa Slotkin, the newly elected Democratic senator from Michigan, told reporters. Seth Moulton, a Democratic representative from Massachusetts, caused a furore by saying that he did not want his daughters to get hurt playing sports with trans girls. That attracted 200 protesters at his district office in Salem, condemnation from the state's leading official and one comparison to a Nazi collaborator, made by a local party official. "The backlash proves my point," says Mr Moulton. "We go around the country saying if you don't agree with my absolutist view, you fail the litmus test: You're not only wrong—you're a bad person."

With that attitude, many voters do not even bother to consider policy. "I felt this was a cultural election. I think that people don't trust us on the economy and on immigration, not because they're analysing our policy, but they just feel that Democrats are preachy, arrogant and out of touch," says Mr Moulton. Marie Gluesenkamp Perez, a congresswoman from Washington who won re-election in a rural district by overperforming Ms Harris by around five points, agrees. "You can't have a conversation about policy if you signal to somebody that you're not listening to them, or you think you're better than them. Everything else is off the table after that," she says. Mr Trump's performance among Hispanic voters ought to stir Democrats awake, Ms Perez adds. "Asking people to have some kind of generic loyalty to a brand because of ethnic or racial identity is much less compelling to people."

Others in the party think that the answer lies in plainer economic messaging. Chris Deluzio, a Democratic congressman from the suburbs of Pittsburgh, won his own tight race even as Ms Harris floundered in the state. "I hope my party pays attention to races like mine, where you've got candidates clear about who they're fighting for and who they're fighting against," he says, citing his stances on protecting workers from powerful corporations and opposing trade deals that hollowed out the rustbelt. "There's often a tendency in my party for people to look for win-win framing, but also sometimes there's a bad guy." This is similar to the economic strategy that Mr Biden tried at the national level, through industrial policy, infrastructure spending, and pro-union rhetoric; he may simply have lacked the oratorical capacity to explain it.

And then there are some Democrats who spy a middle road. "The Republicans engage in identity politics that is intertwined with Christian nationalism. The Democrats engaged in identity politics that is intertwined in evaluating individuals based on group identity, rather than as individuals. I think the path for Democrats is to reject both," says Jake Auchincloss, another Democratic congressman from Massachusetts. "I'm worried that the version that Democrats are going to align on is Diet Coke when MAGA is Coca-Cola: dial down the wokeism and then amplify the economic populism." There is a version of a Democratic Party that embraces supply-side progressivism rather than the preachy variant; and one that rejects protectionism and instead embraces free trade as a tool for containing China. It is closer to the iterations of the party that thrived under Bill Clinton and Barack Obama, even if it is unfashionable now.

In Rashomon style, political actors will all tell different stories about why parties lose. But the one that dominates is powerful. It structures how the party remakes itself in its wilderness years. Fresh elections for the leadership in the coming months will be important because the victors will write the definitive post-mortem of the 2024 election. After their loss to Mr Trump in 2016, Democrats chose not to conduct a formal autopsy, and drifted into a movement of mass resistance. With hindsight, this backfired. No comparable resistance movement appears to be mounting towards Trump II. But ruling out one strategy that didn't work before is not the same as alighting on a new one. ■

Harris-Dole

US presidential elections, difference in vote share, percentage points

*Those earners in the top half and bottom half of the population
†Those with and without college degrees
Source: Patrick Flynn, Focaldata

Los Angeles

Farewell to the five queens

LOS ANGELES

A county of 10m people conducts a civilised revolution

LESS NOTICED among recent political events, Los Angeles is reckoning with a small revolution. Los Angeles County is home to nearly 10m people, making it more populous than all but ten states. Its five supervisors wield a $50bn budget. What happens in this sprawling conglomeration of suburbs and highways affects a quarter of all Californians. And, as in the rest of the country, Angelenos voted for change.

In contrast to many Midwestern and east-coast population centres, county governments in California are run by five supervisors, who combine executive, legislative and quasi-judicial powers. In LA "each supervisor is an autocrat in their district", says Fernando Guerra, director of the Centre for the Study of LA at Loyola Marymount University. That is about to end.

Voters narrowly chose to expand the board of supervisors to nine, elect (rather than appoint) a county chief executive and create an ethics commission to increase oversight of the whole shebang. The measure's passage marks the first time voters have approved board expansion since 1913, when the county adopted its charter and its population hovered somewhere near 500,000. In the city of Los Angeles, which is run by a mayor and a powerful city council, voters favoured ballot measures to implement independent redistricting of the council and school board, as well as to strengthen the city's ethics commission. The sum of these results is a repudiation of the corrupt and ineffective politics that has dogged Los Angeles in recent years.

The decisions to overhaul the structure of local government are largely a reaction to a series of scandals. Four former or sitting city-council members have faced criminal charges in as many years for embezzlement, bribery or lying to the feds. In 2022 a leaked recording of three other council members and a labour leader revealed the group of Hispanic powerbrokers making disparaging remarks about other ethnic groups as they discussed how to slice up the city during redistricting. Three of the four lost their jobs, and the final holdout lost his bid for re-election.

Their ousting did not placate Angelenos. The ballot measure that will create an independent redistricting commission is meant to combat the kind of back-room politicking caught on tape. For structural reform to happen "there usually has to be something...that has really got people agi-

tated", says Raphael Sonenshein of the Haynes Foundation, which supports research on governance and democracy in Los Angeles. The last time LA saw such a reckoning was in the 1990s, when the Rodney King riots prompted police reform, among other efforts.

What will the county's measure achieve? The five supervisors are known as the "five little queens". Their fiefs of roughly 2m constituents each will be nearly halved in size when four new colleagues join the board in 2032, after the next census reapportionment. Governance wonks hope that budgets will be better allocated for homelessness and that supervisors will be more responsible to their voters. "Local government works best when...elected officials have to pay attention to their constituents," says Mr Guerra. "When districts get too big, that just cannot happen."

Zev Yaroslavsky sat on the county board for 20 years, and the city council for 20 years before that. He argues that the most consequential reform is actually the creation of an elected county chief executive. He likens LA County's government to a business without a CEO or a state without a governor. The county's size and wealth demand a different system, he reckons, and a leader that can take decisive action rather than dithering. The person who is elected to that position will be among the most important—if not the most important—local-government executives in the biggest state in America, he argues.

Many bits of the reform have yet to be finalised, including how exactly the county will pay for the new positions (taxes have been ruled out). Mr Yaroslavsky relishes those details, while knowing that they will make others' eyes glaze over. "Governance makes a difference," he says, even if "it's boring as hell". ■

The ancien regime

New York

Stop, start

NEW YORK

Congestion pricing gets the go-ahead after all. Maybe

NOVEMBER 20TH MARKS the first "Gridlock Alert" day of New York City's holiday season. This is the official designation for the city's busiest traffic days of the year. But traffic is bad most days, with more than 900,000 cars entering Manhattan's central business district. INRIX, a traffic-data firm, found that New York City leads the world in urban traffic congestion among the cities scored, with the average driver stationary for 101 hours a year. After years of false starts, including a cowardly pre-election pause by Kathy Hochul, New York's Democratic governor, congestion pricing has the green light.

Back in June, Ms Hochul claimed the toll of $15 could "break the budget of a working- or middle-class household". Sceptics point out that parking in Manhattan often costs $30 an hour. An early-bird all-day special might cost $60. Ms Hochul's real concern was the congressional districts on Long Island and in Westchester County, where commuters were not happy. But with the election of Donald Trump, no fan of road pricing, and with House Democrats flipping some swing districts, last week Ms Hochul gave the go-ahead, albeit at a reduced price of $9.

The scheme is not only designed to cut traffic: it also is a revenue stream for repairs and upgrades for the Metropolitan Transportation Authority (MTA). The authority runs the subway, buses and commuter lines to the suburbs, as well as some tunnels and bridges, and will now implement congestion pricing. On November 18th its board approved the new $9 toll. Eventually it will increase to $12 and then $15 in 2031 (if it actually happens this time).

The scheme, a cousin of the one that in London made traffic better, improved air quality and raised revenue, is not quite a sure thing. The MTA is primarily New York's business, but it receives 10-20% of its capital budget from the federal government, which gives Washington leverage. And the incoming administration is not over-fond of schemes for pricing externalities dreamt up by economists. Advocates of the toll think a speedy implementation is therefore key. Kate Slevin of the Regional Plan Association, which has been pushing for pricing for decades, is delighted congestion pricing has been resurrected, but says: "There is a sense of urgency to get the scheme up and running." Sam Schwartz, better known to New Yorkers as "Gridlock Sam", fears "There is a snowball's chance in hell to get this passed with the Trump administration."

His fears are valid. Had Ms Hochul gone ahead with the scheme in June, it may not have been on Mr Trump's radar. Now New York's House Republicans are urging him to kill pricing once he is back in the White House. Mike Lawler, a Republican who represents the Hudson Valley and is a possible challenger to Ms Hochul in 2026, has been particularly outspoken. There are also several legal challenges, including one filed by neighbouring New Jersey. In Washington, Josh Gottheimer, a Democratic congressman from New Jersey, hopes the House will advance a bipartisan bill to deprive the MTA of federal dollars.

Mr Schwartz finds the opposition galling: "People seem to think that free passage was guaranteed when our country was created in our constitution." Tolls were in place until 1911 on the four East River bridges. "I haven't met anyone who loves congestion, have you?" asks Michael Shamma of TYlin, an engineering firm. He says pricing was presented as a means to raise money for the MTA, and that was "the wrong reasoning": emphasis should have been put on the benefits of reduced traffic, from clean air to a stronger economy. The city has just hosted a marathon; it now needs to sprint. ■

Migration

Deporting the suits

CHICAGO

It's not just illegal migrants who are worried about the next few years

IN THE FINAL weeks of his campaign, speaking to a "town hall" hosted by Univision, a Spanish-language television network, Donald Trump made a point he doesn't make very often. Asked about the need for immigrant workers, he replied: "We want workers, and we want them to come in." The problem, he said, was illegal immigration. "I want them in even more than you do," he said. "And we're going to make it so that people can come into our country legally."

Is it a promise he can make good on? Some in Mr Trump's camp hope so. Immigration lawyers report they have already had a flood of calls from nervous visa-holders worrying about what it means for their ability to stay in America. One reason why is that on November 11th the president-elect announced his intention to appoint Stephen Miller, one of his long-standing advisers, to be his deputy chief of policy. Mr Miller says that America should ▸▸

be "for Americans only".

In his 2016 campaign Mr Trump promised to create a "big beautiful door" for legal immigration. But his administration—largely under the direction of Mr Miller, who served in a similar role then—quietly ground sand in the gears of the machine that issues visas and work permits. "They created an invisible wall," says Dimo Michailov, an immigration lawyer based in Washington, DC. Denial rates for key work visas, such as the H1B (which allows foreigners with degrees or equivalent specialist skills to take jobs in America) and the L1 (which allows multinational companies to post workers to America) rose. So too did "requests for evidence", where applicants are required to provide lengthy documentation to prove they qualify.

From 2016 to 2019, average waiting times rose by 46%, according to analysis by the American Immigration Lawyers Association, an industry group. It was "more red tape, more paperwork, more interviews", says Julia Gelatt of the Migration Policy Institute, a think-tank. Total legal immigration did not in fact fall much until the pandemic, she notes—lawyers worked out how to navigate the new rules and the total number of work visas issued levelled off. But it got costlier and slower.

Under Joe Biden, the government has slowly ungummed the system. It has, for example, lessened scrutiny for visa renewals, instead of treating them like new applications, and waived the requirement for interviews in many cases. These sorts of policies seem likely to be undone. "I kind of have a presumption that anything the Biden administration did they'll try to rip out every little vestige of," says David Bier, of the Cato Institute, a libertarian think-tank. That could mean, for example, the spouses of H1B-holders being denied the right to work, and those of L1-holders being made to apply for work permits. Graduates of American universities, who can currently work for up to three years, depending on their degree, may see that right curtailed. More people converting to green cards (permanent residency), either from work visas or through family ties, could be required to be interviewed.

The immigrants with the most to fear are Indians and Chinese nationals. Since 1991 there has been a cap on the number of employment-based green cards that can be issued to citizens of any one country. Indians and Chinese disproportionately arrive in America by studying at universities and then taking jobs on graduation, but thanks to the cap only a vanishingly small share can hope to ever get permanent residency. Instead many stay stuck on nominally temporary visas even as they build lives. If someone with an H1B loses their job, they have just 60 days to find a new qualifying one before having to leave the country (a grace period Mr Trump could cut). Having a child who is a citizen offers no protection to a parent, and their non-American children lose their right to stay when they become adults. Longer waits and tighter renewals could force many long-term residents to leave.

Jules, a Chinese-born corporate lawyer who has lived in America since arriving as an exchange student at high school, says that during the last Trump administration one of her visa renewals was delayed for two years. She carried on working, but she could not travel abroad. "It's been so traumatic, I am kind of numb about it," she says. With Mr Trump's re-election, she is looking at whether she might be able to get permanent residency elsewhere. For her and others, America was first, but Canada or Australia may be second. ■

Exit, voice, and loyalty

The Jan 6th prisoners

Capitol offences

ATLANTA

Donald Trump has the power to pardon them, but he would again smash norms

MANY AMERICANS hope that Donald Trump will fulfil his campaign pledges to bring down prices and deport illegal immigrants. But a small group of convicted rioters are on tenterhooks over another electioneering promise. Mr Trump has repeatedly vowed to free his supporters who were imprisoned for storming the Capitol on January 6th 2021. He has repeatedly called them "hostages" and "unbelievable patriots" while recasting the attempt to disrupt the peaceful transfer of power as "a day of love". "Why are they still being held?" Mr Trump mused weeks before the election. His return to the White House means he could soon pardon them all.

Enrique Tarrio, the former leader of the Proud Boys, a far-right group, who is serving a 22-year sentence for his role in the attack, told *The Economist* in June that he reckons Mr Trump will "right all the injustices and inequalities of the past four years". After the election his lawyer issued a statement applauding the result. In Miami, Mr Tarrio's hometown, Proud Boys are making plans for reunions. "Our boys, and all other political prisoners, are now coming home!" says a friend of Mr Tarrio.

To date, the federal government has charged 1,561 people for crimes arising from the Capitol attack; 979 pleaded guilty and 645 went to prison. At least seven, including Mr Tarrio and Stewart Rhodes, the head of the Oath Keepers, a far-right militia, were put away for more than a decade. The Department of Justice (DOJ) has not said how many remain in custody but the number probably runs into the hundreds. What would it mean for them to be freed?

The cases were politically fraught from the start. Within the DOJ, higher-ups feared infringing on defendants' rights to free expression. Some prosecutors were frustrated by that: "If they were al-Qaeda this would have been a national emergency, but these were good ol' boys from rural America so it was different," says one.

Yet the evidence in many of the Capitol cases was rock-solid—security footage was supplemented by screenshots of defendants bragging about what they did on social media. A consensus gradually developed within the DOJ that the law required extensive prosecutions.

The result was a sweeping success. Jury after jury sided with the prosecutors and found the rioters guilty of assaulting police officers, causing civil disorder and other ▸▸

crimes. Although judges often handed down lighter sentences than the government asked for, the verdicts disrupted groups like the Oath Keepers.

A president's power to pardon people convicted of federal crimes is enshrined in the constitution. Yet if Mr Trump frees hundreds of January 6th prisoners early in his term, he would depart dramatically from precedent. Historically, the justification for mass amnesty—for low-level marijuana offenders, for example—has been to remedy past injustices and bring the country together, says Kimberly Wehle, a law professor at the University of Baltimore. Mr Trump would be ratifying his own claims of innocence over January 6th.

Prosecutors worry that freeing January 6th prisoners will affect how justice is meted out during Mr Trump's second term. "If violent [Trump] supporters are pardoned, prosecutors will have to assume that ordinary supporters" such as businessmen close to the president "will also be pardoned" if charged with wrongdoing, says Louis Manzo, who prosecuted 25 Oath Keepers before leaving the government.

On November 8th, William Pope, a January 6th defendant who has pled not guilty to disorderly conduct charges, warned a judge that advancing his case before Mr Trump's inauguration could "lead to a dangerous cycle of escalating retribution" and that it would "be wise" for the court to take up this "final opportunity to make peace" before setting him free. His words suggested how emboldened some of the accused already feel. ■

Health

How gaga is MAHA?

WASHINGTON, DC

RFK junior has the potential to do harm, but also some good

WHEN MICHELLE OBAMA suggested in 2010 that American children should eat less junk food, it triggered outrage in conservative circles. "Get your damn hands off my fries, lady," Glenn Beck, then a Fox anchor, told his audience, adding that "if I want to be a fat-fat fatty and shovel French fries all day long, that is my choice." Right-wing commentators criticised "food-police" overreach. Within months of Donald Trump becoming president in 2017, his administration said it would roll back some of the healthy school-lunch requirements (it failed).

The idea that Americans should be free to eat whatever they want, that the government has no business in their fridges, and that companies should be able to make money with as few regulatory hurdles as possible, has long been core to Republicanism. But "make America healthy again" (MAHA), championed by Robert F. Kennedy junior, Donald Trump's pick for secretary of health, challenges these orthodoxies. Indeed, his merry band of followers is anything but orthodox. The latest to join is Dr Mehmet Oz, a star known for promoting pseudoscience and having psychics on his TV show, who has been nominated to lead the Centres for Medicare and Medicaid Services (CMS), which provides health coverage for nearly half of Americans.

If confirmed, Mr Kennedy will be responsible for leading 13 agencies, including CMS, the Food and Drug Administration (FDA) and the Centres for Disease Control and Prevention (CDC). He would be in charge of managing national health crises, from the current opioid epidemic to a future pandemic, and will have power to direct the agencies' priorities. Putting a vaccine-sceptic conspiracy theorist in charge of the country's health policy, and the largest department in terms of federal budget, is nutty. Yet underneath the tinfoil hat Mr Kennedy—who calls ultra-processed foods "poison" and waxes lyrical about regenerative farming—advocates some things liberals have long favoured.

In a video promoting MAHA, Mr Kennedy promised that he and Mr Trump would "transform our nation's food, fitness, air, water, soil and medicine". To achieve this, he has pledged to replace "corrupt industry-captured officials" in the health agencies with "honest public servants", take a tough approach with big business, use government regulation to ban harmful substances from food and farming, and support alternative medicine.

Fly-thru

MAHA supports interventions which under a Democratic administration would be termed "nanny state". Mr Kennedy wants to ban pharmaceutical advertisements and has promised to "get [ultra-] processed food out of school lunch immediately." Calley Means, a rising star in the MAHA movement, recently said that "Michelle Obama was right," in her efforts to make school lunches healthier. Where most Republicans ridiculed Joe Biden's efforts to insist on clearer food labels, Mr Kennedy wants much the same.

The MAHA agenda is outspokenly hostile to big business and Mr Kennedy—a former environmental lawyer who successfully sued corporations for using harmful chemicals—makes no secret of his plans to go after Big Pharma, Food and Agriculture. He advocates stricter regulation and has said he wants to eliminate "1,000 ingredients in our food that are banned in Europe". Although it seems unlikely Mr Trump read the small print on Mr Kennedy, he has (for now) endorsed his criticisms of industry, writing in his nomination announcement that "For too long, Americans have been crushed by the industrial food complex and drug companies."

The third and final area where MAHA looks less like traditional conservatism and more like hippy progressivism is in its embrace of alternative medicine and unorthodox approaches to health. Mr Kennedy advocates bringing a range of experimental treatments into the mainstream. He has berated the FDA for "suppressing" alternative therapies, from the kooky to the dangerous, and has suggested Medicaid should cover health food and gym memberships. He wants half of the National Institutes of Health's research budget to be spent on "preventive, alternative and holistic" treatments. And he wants to legalise psychedelics for therapeutic use—a departure for the party of "Just say no".

Ultimately, Mr Kennedy will be able to act only at the behest of his boss who, having promised to let the bear-botherer "go wild", has also sent a few mixed signals about his commitment to MAHA. In a picture posted last weekend by his son, Donald Trump junior, Mr Trump and Mr Kennedy posed with McDonald's meals and Coca-Cola. The accompanying text read "Make America Healthy Again starts TOMORROW." It did not look like a happy meal for Mr Kennedy. ■

LEXINGTON
TechnoMAGA

Why Donald Trump is gaining ground with Silicon Valley

THEIR NICKNAME may not have aged well, but their ideas proved powerful. In the early 1980s a group of rising Democratic congressmen started calling for the American government to promote a "high-tech revolution", to stoke the economy, to counter competition from Japan, and to help their own party shuck its statist, retrograde image. They became known as the Atari Democrats, after the company that turned television sets into platforms for a breakthrough video game, Pong. One of those Democrats, Al Gore, succeeded in passing a law in 1991 that, as he put it, would "link your computer to millions of computers around the country, give you access to huge 'digital libraries' of information, and deliver services we cannot yet imagine".

Money from that law financed a supercomputing centre at the University of Illinois Urbana-Champaign, where a young programmer named Marc Andreessen helped create the first popular Web browser, Mosaic. Mr Andreessen went on to co-found Netscape and to become one of the most successful venture capitalists in Silicon Valley. Like many other technologists, he assumed that he would support Democrats in election after election, until Joe Biden, Kamala Harris and Donald Trump came along.

After Mr Trump won earlier this month, Mr Andreessen summed up his reaction this way: "It felt like a boot off the throat." Speaking on the podcast he hosts with his VC partner, Ben Horowitz, another longtime supporter of Democrats who also backed Mr Trump this year, Mr Andreessen added, "Every morning I wake up happier than the day before."

Ms Harris easily carried the counties that include Silicon Valley. But her margin shrank compared with Joe Biden's in 2020, and technologists say that high-profile defectors such as Elon Musk are eroding the stigma that once accompanied support for Mr Trump, just as it accompanied support for Democrats before the Atari insurgents appeared. Once the cool kids, Democrats have begun to seem the party of caution and even priggishness, more preoccupied with word-choice than productivity growth. As the Atari Democrats once did, Mr Trump and his vice-president, J.D. Vance, a former VC, have the chance to identify their party with progress and the future, at least as technologists define them.

An almost spiritual faith that technology can solve any problem, including those created by technology, turns some denizens of Silicon Valley into single-issue voters. That is the case with Messrs Andreessen and Horowitz. They support politicians of either party they think will help "Little Tech," or startup firms, a focus that also aligns with their financial interest. On their podcast they argued that stifling regulation and lack of clarity from the Biden administration have hampered innovation in cryptocurrency, artificial intelligence, nuclear energy and defence technology, putting America in some critical fields behind China, which Mr Andreessen called the "USSR 2.0". They despised a proposal from the Biden administration to tax unrealised capital gains, saying it would ruin equity-rich but cash-poor founders of startups.

It did not help that Mr Biden and his top regulators would not meet the duo, who issued their endorsement in July, while Mr Trump not only had dinner with them but gave out his mobile number. They were heartened that, when it came to any emerging technology, he assured them, "we have to win".

Some Democrats recognise their party risks being identified with bureaucracy and stasis. "The Democratic Party needs to be the party that is for building things, for dynamism, for new industry," says Congressman Ro Khanna, whose district includes Silicon Valley. "We've lost some of that to Trump." Mr Khanna, a possible candidate for president in 2028, looks more to Franklin Delano Roosevelt than the Atari Democrats for a model. They "were blind to inequality", he says, and as a result were "accomplices in the creation of an America that today has such a different outlook if you're living in Cupertino then if you're living in Youngstown, Ohio". The right approach, he says, is "not marrying deregulation and tax cuts with dynamism, which I would argue is the Trump phenomenon with Elon Musk and Andreessen. It's marrying this innovation and dynamism with an FDR progressivism."

Truth Socialism

To be Silicon Valley's new champion Mr Trump may have to soften some views, including on climate change, and resolve some contradictions within his movement. Vivek Ramaswamy, a pharmaceutical entrepreneur and former Republican candidate for president, has identified a rift over regulation. In a speech in July, he noted that while "national protectionists" praised antitrust regulation and consumer protection under President Biden, "national libertarians" like him "believe in dismantling the regulatory state altogether". He added, "I don't care to replace a left-wing nanny state with a right-wing nanny state."

Mr Trump has put him, along with Mr Musk, in charge of proposing cuts in government, and Mr Ramaswamy has spoken of eliminating "countless" regulatory agencies and 75% of the federal bureaucracy. But foremost among the "national protectionists" is Mr Vance, a protégé of Peter Thiel, another Trumpist VC from the Little Tech world. Mr Vance has praised Mr Biden's Federal Trade Commission chair, Lina Khan, and advocated such aggressive government intervention as breaking up Google.

Further complicating the picture is that Mr Trump, who as president will be exempt from conflict-of-interest and disclosure laws that apply to other officials, now has his own social media company, Truth Social, as well as a cryptocurrency business, World Liberty Financial. He will be a competitor in the tech industry as well as its regulator-in-chief. When it comes to technology, Mr Trump has several possible ways to win. ■

The Americas

Brazil and China

The best of friends

SÃO PAULO

As Donald Trump returns to the White House, Xi Jinping, China's leader, spies a chance to draw Brazil closer

THE RE-ELECTION of Donald Trump on November 5th rather overshadowed Luiz Inácio Lula da Silva's big bash. Lula, as Brazil's president is known, hosted the G20 leaders' summit in Rio de Janeiro on November 18th and 19th. Heads of state from 19 of the world's largest economies, as well as the European and African Unions, convened to talk shop.

Lula had three goals for the summit: the creation of a global alliance to reduce hunger and poverty; an agreement to reform global institutions like the IMF and the UN; and an increase in countries' financial commitments to combat climate change. He also wanted to whip up support for a global tax on billionaires. Lula got a declaration signed by all G20 participants to broadly support these ambitions. Mr Trump, soon to be the most powerful person in the world, will not share the zeal.

Mr Trump's return to the world stage may scupper Lula's plans, but he has a consolation prize: his relationship with Xi Jinping. After the G20 China's president travelled to Brasília, the capital, to meet his Brazilian counterpart. To celebrate 50 years since their countries established diplomatic ties they signed 37 agreements, covering everything from Brazilian grape exports to co-operation on satellites. Sino-Brazilian relations "are at their best moment in history," said Mr Xi, with Lula by his side. In recent months, "anyone who is anyone in Brazil has been to China," says a former Brazilian ambassador to Beijing.

Several factors have been pushing Brazil and China together. In Brazil's case they are mostly political. Shortly before the election in the United States, Lula threw veiled support behind Kamala Harris, Mr Trump's rival. Meanwhile, Mr Trump is close to Jair Bolsonaro, Lula's far-right populist predecessor and nemesis. Elon Musk has become Mr Trump's right-hand billionaire. The tech entrepreneur had a months-long feud with Brazil's highest court this year, which culminated in his social-media platform, X, being banned in Brazil for over a month. On November 16th Lula's wife, Rosangela da Silva, said "Fuck you, Elon Musk," at a public event. Mr Musk replied on X, "They are going to lose the next election". This means Lula will not expect a warm reception in Washington after Mr Trump is inaugurated in January.

China's problems with the United States run deeper. Mr Trump has said he will slap 60% tariffs on all Chinese goods as soon as he takes office. And so China is keen to do everything it can to expand the markets for its goods beyond the United States. Brazil, the world's ninth-largest economy, is an important part of that puzzle. Brazil also shares China's multipolar view of the world, and is keen to rely less on the dollar for international transactions.

But perhaps the most important component of Sino-Brazilian friendliness is that China wants to buy what Brazil is selling. China guzzled Brazilian oil, iron ore and soyabeans though the 2000s as the Chinese middle class grew rapidly. It over- ▸▸

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took the United States as Brazil's biggest trade partner in 2009, during Lula's second term (see chart). Commerce continues to expand despite slowing Chinese growth. Brazilian exports to China are running at record highs. Brazil is one of a handful of countries that boast a trade surplus with China; last year it exported $51bn more to the Asian giant than it imported from it.

And that surplus could yet grow. During Mr Trump's last term, between 2017 and 2021, Brazilian exports to China nearly doubled as China bought soyabeans, corn and chicken from Brazil instead of the United States. On this visit, Mr Xi and Lula signed deals that could soon allow Brazil to export grapes, sesame, sorghum and fish products to China, which could be worth a combined $450m per year. TS Lombard, an investment firm in London, reckons that a 10% increase in Chinese demand for Brazilian products could boost GDP growth from a projected 2% in 2025 to 2.6%.

But it is Chinese investment in technology, industry and green energy which most excites Lula, a former carworker who has pledged to slash Brazil's carbon emissions. The United States remains the biggest source of foreign investment into Brazil by far. Chinese investment in the region—and in Brazil—has fallen in recent years. But the composition of that investment still suits Lula. Last year fully 72% of it went to clean-energy projects. Exports of electric vehicles, solar panels and lithium-ion batteries from China to Latin America rose from $3.2bn in 2019 to $9bn in 2023. Brazil absorbed 63% of the total by value.

"Five years ago China was investing in expensive fixed assets like electricity infrastructure, oil and gas," says Hsia Hua Sheng, a professor at the Getulio Vargas Foundation in São Paulo who also works for Bank of China. "Today it invests in manufacturing, renewables, services and logistics." He claims that these are "higher-quality" investments because they often involve partnerships with local firms, job creation and technology transfer. BYD and Great Wall Motors, two Chinese rivals to Tesla, are opening electric-vehicle factories in Brazil next year. BYD's is in a former Ford factory. It will be the firm's biggest factory outside Asia.

A high-tech Chinese factory built on the site of a fading American industrial champion is hard enough for officials in Washington to stomach. But no subject is likely to ruffle as many feathers in a Trump-Musk White House as a deal on satellites. During Mr Xi's visit a memorandum of understanding was signed between Brazil's state telecommunications company, Telebras, and SpaceSail, a Chinese maker of low-Earth orbit satellites that competes with Mr Musk's Starlink. Brazil's communications minister, Juscelino Filho, said he hoped SpaceSail will offer its services in Brazil "as soon as possible". In October, Mr Filho had visited SpaceSail's headquarters in Shanghai and those of another satellite-maker in Beijing. The visit followed a spat about free speech and disinformation between Mr Musk and Alexandre de Moraes, a powerful judge on Brazil's Supreme Court. In August Mr Moraes froze Starlink's bank accounts in Brazil to force Mr Musk to take down social-media accounts on X, the platform he owns. Starlink controls almost half of the market for satellite-internet services in Brazil. SpaceSail plans to have 600 satellites in orbit by the end of 2025—around a tenth of the number that Starlink does.

Beyond this, Lula and Mr Xi could further their countries' financial co-operation. In 2023 they agreed to settle all trade in their countries' own currencies rather than in dollars. In October that same year they carried out the first transaction in yuan and reais. The scale of these transactions is currently puny, but they carry symbolic weight and may provoke Mr Trump's ire. He has warned that he would slap tariffs of 100% on goods imported from countries that try to "leave the dollar".

Such radical actions by Mr Trump would probably have unintended consequences. "The relationship between Brazilian and Chinese businessmen is way more consolidated today compared with five or ten years ago," says Mr Hsia. That is thanks in part to the trade war Mr Trump waged in his first term. In his second, he may end up making Chinese and Brazilian businessmen friendlier than ever. ■

Corruption in Central America

Impunity machine

PANAMA CITY

Central America's parliament shields politicians from prosecution

THE CENTRAL AMERICAN PARLIAMENT (Parlacen) is not popular. It is a space of "impunity, nepotism and waste" according to one Guatemalan congressman. José Raúl Mulino, Panama's president, laments that he cannot "sign a decree to pull us out of Parlacen today". In El Salvador's general election in March many voters refused to fill in Parlacen ballots. "Look for honest work, stop being parasites," read one spoiled paper.

Parlacen was set up in 1991 with the lofty goal of becoming a "symbol of liberty, independence and reconciliation" in a region devastated by civil wars in the 1980s. Each of the member states—Guatemala, Nicaragua, El Salvador, the Dominican Republic, Honduras and Panama—sends 20 delegates to the monthly meetings in Guatemala City. Former presidents and vice-presidents are automatically entitled to a seat; they choose whether to take it. In practice however, most of the work on regional integration and co-operation—including free movement, trade and standardising regulations—has been done by a different institution, the Central American Integration System. Parlacen has been reduced to the status of a talking-shop. Its decisions are non-binding.

It has found one use: a mechanism by which Central American politicians who are accused of corruption can delay prosecution. A seat at Parlacen confers the same broad immunity from prosecution as do seats in most Central American national assemblies. In Panama, for instance, sitting Parlacen members must be tried by Panama's overworked Supreme Court.

Take the case of Juan Carlos Varela, a former president of Panama. He declined to take up his seat in Parlacen when he left office in 2019. Afterwards, as the Odebrecht corruption scandal unfurled, the US State Department banned Mr Varela from entering the United States, accusing him of accepting bribes. In 2024, with his trial scheduled in Panama, Mr Varela changed his mind about Parlacen and took up a seat. His case must now be transferred to Panama's Supreme Court. Mr Varela denies wrongdoing. The immunity from prosecution in lower courts that is afforded by Parlacen means that "a case that should take two years can last ten years," says Alonso Illueca, a specialist in international law.

Panamanian law moved more quickly against Mr Varela's successor, Laurentino ▸▸

Cortizo, who stepped down in July. On October 17th the country's attorney-general confirmed that Mr Cortizo had been formally accused of mismanaging public finances. But he also said that his office had not been able to open investigations, as it was not clear if Mr Cortizo had taken up his seat in Parlacen. We could find no public comment by Mr Cortizo on the matter.

Politicians' discovery of dutiful feelings towards Parlacen just as their legal affairs become dicey is sometimes too much for people to bear. In 2020 Guatemala's outgoing president, Jimmy Morales, who had been accused of illicit campaign financing (which he denies), had to be sworn in at a hotel after protesters swarmed into Parlacen's headquarters in Guatemala City.

And though politicians on the campaign trail decry the waste (Parlacen's wage bill is $14m per year) and the impunity, they may secretly value its protection. Mr Morales's successor, Alejandro Giammattei, vowed to pull Guatemala out of the parliament, only to seek its protection when under investigation in January 2024. Ricardo Martinelli, Panama's president from 2009 to 2014, once called Parlacen a "cave of thieves" and attempted to withdraw Panama from it. After his term ended he took up his seat while under investigation for corruption. He has spent most of 2024 holed up in the Nicaraguan embassy in Panama City, having received a ten-year sentence for money-laundering. (He and Mr Giammattei both deny wrongdoing.)

Parlacen has also been cosying up to authoritarian regimes. In the past two years deputies have voted to grant Russia and China permanent observer status, the latter replacing Taiwan. Both countries use this status to boost the position of their authoritarian ally, Nicaragua, according to Mr Illueca. China also uses it to forge diplomatic links with Guatemala, which maintains official ties with Taipei.

Several regional leaders besides Mr Martinelli have proposed to withdraw their country from Parlacen. But this is not straightforward. Mr Martinelli's effort was deemed unconstitutional by Panama's Supreme Court because it had not sought the unanimous support required from Parlacen's member states. But Mr Mulino's apparent defeatism has prompted other Panamanian delegates to give it another go. They are proposing a plebiscite on Panama's membership, believing that a popular rejection of the parliament would represent a sovereign claim that trumps Parlacen's rules under the constitution.

With the exception of Salvadoreans, Central Americans have steadily lost faith in their political institutions over the past decade, according to Latinobarómetro, a polling company. Stories like Parlacen's help make the case that those institutions serve politicians more than the people. ■

Salmon farming in Chile

Fishy business

Robbery has become a big problem for Chile's second-largest export business

WEARING HI-VIS jackets and heavy boots, the men in the CCTV footage almost look as though they are meant to be there—until one pulls out a gun. On March 20th at least ten men burst into a cold-storage facility in San Antonio, a port in central Chile, threatened its employees and made off in four lorries filled with salmon worth some 600m pesos ($616,000). Their plot was soon foiled. In April police recovered some of the fish in San Felipe, a nearby commune. And in August they arrested 11 people in connection with the heist. Officials behind the sting—dubbed Operación Santo Salmón (Operation Holy Salmon)—think the gang was planning to sell the goods during Lent, when Catholics forgo meat in favour of fish.

Robberies have become a big problem for Chile's second-largest export business; salmon farming generated 6trn pesos in revenue and supported some 70,000 jobs in 2023. There were just two robberies in 2018, according to SalmonChile, which represents the country's fish farmers. That number has since leapt sharply. Between 2019 and 2023 there were 158 salmon robberies, most of which targeted cargoes of fish being delivered by lorry. Many more are thought to go unreported.

The crime wave has battered the industry. SalmonChile puts losses since 2019 at more than 67bn pesos. Firms are spending more on insurance and tracking equipment. Lorry drivers are afraid, as the heists sometimes turn violent; two drivers were abducted during robberies earlier this year. Many firms are avoiding their usual delivery routes in the south. Some drivers have started wearing bulletproof vests. Ricardo García of Salmones Camanchaca, a fish-farming business, reckons that these additional expenses, combined with the losses, are costing the industry around 1% of its gross operating profits each year.

A couple of factors lie behind the recent rise in crime. Making off with a lorry-load of salmon—typically worth around 200m pesos—was always bound to be lucrative. But since domestic demand has risen by almost 20% between 2013 and 2020, gangs can probably net more cash than ever before by selling fish in local markets. At the same time, the government's crackdown on wood theft may have encouraged the country's "timber mafias" to target shipments of salmon instead. Salmon heists are most frequent in the Biobío region, which has long been among those worst affected by timber theft.

Chilean lawmakers are starting to act. It isn't just that crime is hurting business. Markets awash with stolen salmon that has been stored (and sometimes even processed) in dodgy conditions pose a risk to public health. Some members of the Chamber of Deputies, Chile's lower house of Congress, have proposed a bill—modelled on laws targeting timber smugglers—that would make salmon robbery a specific crime with harsh penalties. Mr García says that closer co-ordination between businesses and the police has already led to fewer crimes this year: just 12 robberies have been recorded so far, down from 24 last year. For now, though, salmon-jacking is still going all too swimmingly for Chile's fish-farm mafias. ■

Stop, thief!

Asia

Aspiring Asia

Middle-class malaise

SINGAPORE

The surprising stagnation of Asia's middle classes

IN AUGUST AMALIA ADININGGAR, Indonesia's statistician-in-chief, appeared in parliament with bad news. The country's middle class had shrunk. Between 2021 and 2024, 6m Indonesians had fallen into the "aspiring middle class", an official euphemism for being a stone's throw away from poverty. The middle-class share of the population had fallen to 17% from 22% before the pandemic. Asked about the grim trend the next day, Joko Widodo, then the president, deflected: "This issue exists in almost all countries."

He was not wrong. Asia's middle class is not growing as it once did. Between 1991 and 2014, the average annual growth rate in the number of Asian middle-class households was 6%, according to our analysis. In the past decade, it has slowed to 2%. In a few countries, including China, it has shrunk. Exclude India, where the middle class is still growing, and Asia's middle classes have stagnated. At stake are the futures of 2.7bn people in the middle class, or 72% of the population of developing Asia.

The pace of middle-class growth matters enormously—and not just for poverty reduction or the profits of big international firms. An empowered middle class can expand individual rights and lead to a more accountable state. One influential argument holds that a rising middle class spurs regulations on child labour: as technological change raises the returns to skilled labour, middle-class parents face incentives to educate their children instead of sending them to the factories. Most stable democracies have a large middle class.

Who counts as "middle class" can be defined either absolutely, by using fixed income thresholds across countries, or relatively, by measuring from the centre of a country's income distribution. Many countries and scholars have their own favoured definitions. The best data are patchy and released with long lags.

To handle this, we have created a measure to track the Asian middle class using data from the Economist Intelligence Unit (EIU), our sister company (see chart 1 on next page). We opted for an absolute measure, defining "middle class" as households making between $3,000 and $25,000 in disposable income a year, in inflation-adjusted terms and holding exchange rates fixed. Our data covers 3.7bn people, nearly 80% of Asia, leaving out the rich economies of Japan, Taiwan, South Korea, Hong Kong and Singapore, and also places where data is scarce, such as Afghanistan, Bangladesh, Bhutan, Cambodia, Myanmar and Nepal.

The most striking finding is a steady deceleration in the growth of the middle class. Throughout the 1990s and 2000s, an average of 19m households in Asia joined the middle class every year, and did so at an increasingly rapid pace. That acceleration tailed off over the 2010s.

Since 2021 just 12m households have been added to the middle class per year, and the vast majority of growth is coming from a single source: India. Without it, the post-pandemic rate of addition collapses ▸▸

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to only 1.7m households a year. EIU forecasts suggest that, outside India, the Asian middle class will soon stop growing, and could even shrink. This is not just down to slower overall population growth. Indonesia's middle class is stagnating despite a demographic tailwind. In our numbers China's middle class began declining before its population did, and the shift has been sharper, too. In six out of nine countries we considered, the share of households in the middle class has stopped rising and in four of nine it is falling.

Even in India, impressive middle-class growth has been lopsided. It has been propelled by the 130m households in India's upper-middle class, or those making between $5,000 and $25,000. By contrast, real incomes among the 150m households earning between $1,000 and $5,000 have stagnated (see chart 2).

Partly, this points to upward mobility: in this century the Indian upper-middle class has added over 100m households. But it also reflects a divergence in fortunes within the country. Since the pandemic, per-household real income has grown 9% slower in the lower-middle than in the upper-middle. The gap is forecast to widen.

A great divergence 2

India, household disposable income, % change on a year earlier, by income bracket*

Source: EIU *2019 prices

Stuck in the middle

Why is Asian middle-class growth stalling? In part it is a by-product of getting richer. As countries develop, their middle classes (measured in absolute terms) tend to approach a stable share of the population.

Yet in developing Asia, this is not the whole story. Unsolved structural problems still hold back the middle class. Several developing Asian countries face widespread informality of the workforce. A study from 2021 found that Indonesian workers who fell into informality because of the Asian financial crisis of 1997 suffered a lasting 32% drop in subsequent earnings. Covid-19 caused informal employment to rise by five percentage points in Indonesia after 2020, to 61% of workers. Meanwhile in Thailand high household debt strangles middle-class borrowers.

Getting richer 1

Asia, number of households with annual disposable income of $3,000-25,000
2019 prices

Source: EIU *Malaysia, Sri Lanka, Thailand and Vietnam

Once reliable drivers of growth have also stopped working. In the past decade foreign direct investment and exports have kept Vietnam's middle class growing at an average 3% annual rate, faster than the regional average. But that is half the pace it grew at between 1990 and 2014. Vietnam has struggled to train its workforce. Labour productivity lags peer countries and firms face shortages of skilled workers.

Even as real income growth has slowed in some places, higher inflation has created a perception of eroding living standards, enraging many middle-class voters. Especially important is the price of food. In developing Asia it makes up a third of consumption, compared with 9% in America. Food prices were mostly stable during the 1990s and 2000s, until droughts caused food-price crises in 2007-08 and again in 2010-12. The surge never entirely reverted. Food prices were on average 46% higher during the 2010s than in the 2000s, in nominal terms, according to the UN. The war in Ukraine, and its disruption of grain markets, has had a painful effect. Average food prices have risen another 15% in this decade, compared with the last.

How will this affect politics? Asia has remarkably flimsy social-safety nets for its degree of prosperity; some rankings put it ahead only of sub-Saharan Africa. In some places leaders respond with handouts. Thailand is currently rolling out one-off transfers of 10,000 baht ($300) to Thais making less than 840,000 baht a year.

In others, unassuaged middle-class anger threatens those in power. Jakarta was rocked this year by protests against legislative machinations meant to install one of the sons of Jokowi (as Indonesia's former president is known) as governor of Central Java. Polls showed that, compared with other classes, middle-class Indonesians were the most concerned about corruption and the most dissatisfied with Jokowi's rule, though he remains popular. It is unlikely to be the last bout of protest.

Similarly, even though middle-class Indians have fared better economically than lower-class ones, it was they who punished the ruling Bharatiya Janata Party in this year's elections. The party's middle-class vote share fell three percentage points compared with the election in 2019, according to the Centre for the Study of Developing Societies, a think-tank in Delhi.

The case of Malaysia is instructive. In the 1990s and 2000s, a rising activist middle class demanded *reformasi*: greater freedom of speech, clean elections and an end to security crackdowns. *Reformasi* "was able to coalesce opinion across ethnic divides, because we also had a rising [majority ethnic] Malay middle class," creating a "middle-class consciousness", says Johan Saravanamuttu, a political scientist. But as the country's middle class has been pinched, reform has faded and identity politics has risen, including a resurgence in fundamentalist Islamist politics. Anwar Ibrahim, the prime minister, has realised "now is not yet the time for liberal reforms," and has portrayed himself instead as an investment-courting job creator, says Ben Suffian, a Malaysian pollster.

It is too early to say if the current middle-class stagnation in Asia will lead to more demands for reform, or the unwinding of liberal politics. Either way, a disgruntled middle class is here to stay. ■

Women in the workforce

Distress or opportunity?

MUMBAI

The mystery of India's rising female labour-force participation rate

IN 2018 THE statistics office of the government of India released the first "periodic labour force survey", designed to provide quarterly and annual snapshots of employment in the country. That year the proportion of women aged 15 and above who were in work was a miserable 23.3%, far below the global average of 53%. By contrast, the labour-force participation rate (LFPR) among Indian men was 75.8%.

But the rate has picked up healthily every year since, rising to 41.7% in the latest survey released in September. For a country marked by deep gender inequality, a change this rapid and in the correct direction seems like unalloyed good news. Is it?

Not everyone is convinced. One explanation offered by sceptics is that the rise is the result of changes in the way the government measures the rate. The International Labour Organisation (ILO), which ▸▸

Correction: Last week's issue included a photo of Shafiqur Rahman Barq, rather than Shafiqur Rahman, in the story on Bangladesh. Sorry.

Counting carbs

does not include unpaid workers (such as those who help out on the family farm), pegs female LFPR lower, at 33% last year against the official 37%. Yet there is no disputing the trend. The ILO, like the government, shows the rate rising sharply in recent years, especially since the pandemic (see chart). Moreover, measurement changes may have had a one-time effect, says Amit Basole of the Azim Premji University in Bangalore, author of the "State of Working India" report. But it would not explain consistent rises.

Another cause for caution is that the rise does not appear to be driven by shifts in social norms. In many families it is considered a matter of some shame for the women of the house to work, carrying the implication that the men cannot provide. In rural areas, where much of the rise has occurred, the likelihood that a woman is in work declines with every extra thousand rupees her husband earns. There is no evidence that these long-established norms have shifted in recent years.

For clues about what is driving the rise, economists look at what work women are doing. "A lot of it is an increase in self-employment," points out Ashwini Deshpande of the Centre for Economic Data and Analysis at Ashoka University near Delhi. This includes working on the family farm or running a small shop out of the home, but also things like rolling *bidis*, a type of cigarette, or making *poppadums*.

Mr Basole is of the view that the entry of large numbers of women into self-employment is the result of economic distress in rural areas. Rates of female participation in casual labour or fixed employment have declined in recent years even as more rural women work on family farms or on their own account, which "points to people trying to generate some sort of an income in the absence of opportunities," he says. If economic distress is the cause, women's LFPR could fall again as their families' prospects improve.

The other, more optimistic, explanation is that women are taking advantage of new opportunities. The government is serious about getting more women into the workforce, says Ms Deshpande, and has been pushing schemes to promote self-employment. Women have received more than two-thirds of loans under a government microfinance scheme aimed at encouraging non-farm businesses in rural areas. "This initiative likely encouraged more women to take up entrepreneurship, reflected in the growing number of self-employed female workers," reckon analysts at Goldman Sachs, a bank. Yet average earnings from self-employment for women in rural areas remain stagnant. Ms Deshpande counsels patience: "We should give it time." More women in the workforce is good news for India, and for its women. But it is only when they earn more, too, that it will be time to celebrate. ■

Pour myself a cup of ambition

India, female labour-force participation rate, %
Aged 15 and over

Sources: ILO; Ministry of Statistics and Programme Implementation
*Years ending June

New Zealand

A fight over rights

SYDNEY

Racial tensions boil over

BARE-CHESTED MAORI warriors led 42,000 protesters to New Zealand's parliament on November 19th. Some of the demonstrators, waving red, black and white Maori flags, had marched hundreds of miles to oppose a bill that would pare back their rights. The protest was one of the largest in support of Maori people. The bill, declared Jenny Shipley, a former conservative prime minister, is "inviting civil war".

That is hyperbole. But it has been decades since race relations were so fractious in New Zealand, a country known for its relative harmony. It has tried to honour a treaty struck in 1840 between Maori chiefs and British settlers. It has embraced its indigenous language and culture. But the tone has changed since New Zealanders elected a conservative coalition government, led by Chris Luxon, last year. It has revoked policies introduced by previous Labour governments. It has cut back the use of Maori language and abolished a Maori health agency.

Tempers frayed when ACT, a small libertarian party within the ruling coalition, introduced a bill that would erode the rights handed to Maori people under the treaty. Since the 1970s a tribunal has investigated past breaches of the treaty and compensated tribes for them. The treaty has wound its way into laws aimed at redressing colonial wrongs. Such measures have helped improve Maori lives. Though still disadvantaged, they live longer and are wealthier than Aboriginal Australians.

David Seymour, ACT's leader (who has Maori heritage), complains that "activist judges have twisted the meaning of our founding document" to hand out ever-growing privileges to Maori, who make up 20% of the population. Ethnic quotas and shared-governance initiatives are giving them unfair advantages, he argues. His bill aims to curb the treaty's modern applications. By trying to "rewrite the treaty", it would undermine democracy, over 40 barristers wrote in an open letter. The bill is not likely to pass. Mr Luxon promises that his National Party will vote it down after a public consultation. Yet many worry that the damage has already been done.

Visas

Extra baggage

Outsourcing firms are capitalising on Indians' misery

APPLYING FOR a visa to Europe's border-free Schengen zone can be a humbling experience. "One must set aside ego," says an applicant from Bangalore. "I feel stripped bare each time I apply," says another from Mumbai. The bureaucratic grind can wear down even the most seasoned traveller. Tourists and businesspeople wanting to visit Europe must provide heaps of paperwork—forms, months of bank statements, pay slips and tax returns. After all that, successful applicants are typically granted visas that cover only the length of their trip. For those needing to return, the whole ordeal begins anew.

Citizens of rich countries do not need a visa for short stays in most parts of the world. But those from the developing world often do. Indians are among the worst off (see chart). For them, the high fees, long waits and application hurdles of the visa process make travel, whether for business or leisure, much tougher.

A handful of private firms are cashing in. Outsourcing companies now handle 40% of visa applications on behalf of governments. Although consulates still make the final decision, these contractors verify paperwork, collect fingerprints and gather other biometric data from applicants. Three firms—VFS Global, TLScontact and BLS International—control over 70% of the market, with VFS alone holding half the overall share. An early entrant, VFS processed 6m applications for 25 governments in 2008. By last year, that number was 26m applications for 67 governments. In October, Singapore's state-owned investor Temasek acquired a stake in the company, valuing it at $7bn.

As disposable incomes rise in developing countries, and as travel rebounds after the pandemic, the market is primed for further growth. Nuvama Group, an investment firm, predicts the visa-outsourcing industry will expand by more than 9% annually, crossing $5bn by 2030. For governments, visas are a nice little earner. In 2023 the European Union pulled in over $900m from visa fees.

For travellers, however, the process has only become harder. Between 2013 and 2023, the rejection rates of visa applications for the Schengen area more than tripled from around 5% to 16%. Visiting America is no easier. Appointments for tourist and business visas at the American consulate in Mumbai take about 14 months. In Bangkok it takes six months.

Bottom of the pack

Selected passports, % of countries/territories that can be visited without a visa, July 2024

Source: Henley and Partners

There is also the price tag. A study by the European University Institute found that citizens from poorer countries pay far more for visas than those from wealthier ones, and when the fees are measured against national incomes, the gulf between rich and poor countries is even wider. The standard fee for a short-term Schengen visa is $95, a British visa $151 and an American one $185. For frequent travellers to the Schengen area, which grants visas for very short durations, the costs add up.

Adding to the burden is the service fee travellers pay to the outsourcing firms handling their application. For example, Indians pay an additional $23 for a Schengen visa. Then come the optional add-ons to make the experience more comfortable (or just bearable): for $40, applicants can relax in a special lounge with personalised service; for $30, paperwork can be submitted outside regular hours; for $200, it can be done from home. These extras are highly profitable. BLS International, which is based in India, generated nearly a third of its revenue from such "value-added" services, with a robust 20% profit margin.

Governments defend outsourcing by arguing that consulates still make the final decisions on visas; private contractors simply reduce the administrative load. Federica Infantino, a researcher who studies migration at Université Côte d'Azur, believes there is another benefit. Visas are often a "touchy" issue, she says, and when dealing with visa denials having an intermediary can be useful for governments.

Restrictive border policies do not just complicate travel; they are economically damaging. Tourists from countries such as India and China are among the biggest spenders, according to UN Tourism, a multilateral agency. Research by Camilo Umana-Dajud of CEPII, a French think-tank, shows that visa restrictions significantly reduce bilateral trade. Easing access has the opposite effect. ■

Climate change

Water woes

The Caspian Sea is shrinking rapidly

FOR MANY living on Kazakhstan's coast, it was obvious long ago. The Caspian Sea is drying up. The world's largest inland body of water has dropped by two metres since the mid-1990s, shrinking by 15,000 square km, an area bigger than Connecticut. Each year in Aktau, a coastal city, the sea retreats further from the shore.

Two factors lie behind the Caspian's decline. Growing water use along Russia's Volga river, which provides 80-90% of the Caspian's inflows, has caused volumes entering the sea to drop. Meanwhile rising temperatures have pushed up evaporation rates, leaching more water from the sea itself. Researchers at the University of Bremen predict that if global warming continues on present-day trends, the Caspian could drop by around eight metres by the end of the century. If temperatures rise faster, it could fall by as much as 20 metres. A decline in that range would cause swathes of the sea to vanish, particularly in the north-east, where it is shallowest.

The most immediate impact would be felt by the Caspian's wildlife. Species such as the Caspian seal are already suffering from falling water levels, says Assel Baimukanova, a researcher at Kazakhstan's Institute of Hydrobiology and Ecology. But the Caspian's retreat would also have unpredictable environmental consequences for the wider region. In time, a smaller Caspian would lead to lower rainfall in Central ▸▸

Now you sea it

Asia, where water is already scarce.

Central Asia's economies could suffer, too. Since the beginning of the war in Ukraine, trade has boomed in the region, particularly through the "middle corridor", which bypasses Russia by linking East Asia to Europe via the Caspian's ports. Money has poured into Kazakhstan's ports, too, which are expanding to deal with increasing volumes. But as the Caspian shrinks, investments in new infrastructure will start to look riskier. Ships already leave Aktau before they are fully loaded because of shallower waters. Authorities in Kuryk, another Kazakhstani port, have ordered large-scale dredging in an effort to boost capacity. Kazakhstan's oil business has been disrupted, too. The operator of the Kashagan oilfield in the northern Caspian was recently forced to dig channels in the seabed to allow ships to reach its facilities, after a drop in the sea level blocked access for normal vessels.

Last year the local authority in Aktau declared a state of emergency over the fall in water levels. This summer Ilham Aliyev, Azerbaijan's president, complained to Vladimir Putin, his Russian counterpart, that the situation could become "catastrophic". In principle, under the 2003 Tehran Convention, the countries surrounding the Caspian are committed to preserving its environment. But their governments—a mixture of post-Soviet regimes and autocracies—are slow to act, despite the looming economic consequences. ■

BANYAN

A leap to the left

Sri Lanka's president with Marxist roots now dominates parliament too

SRI LANKA was once a pioneer of free-market capitalism in South Asia. After J.R. Jayewardene took power with a super-majority in 1977, he introduced a French-style executive presidency and economic reforms that overturned the left-wing orthodoxy of the previous two decades. Cheered on by Western governments concerned about Soviet influence, Sri Lanka became the first country in the region to liberalise its economy.

South Asia's most developed nation has now leapt back to the left. It was surprising enough that Anura Kumara Dissanayake, an outlier from a party with Marxist roots, won a presidential election on September 21st. More stunning still was his National People's Power (NPP) coalition's landslide victory in a parliamentary poll on November 14th. It won 159 of 225 seats, more than enough to change the constitution. Previously, the NPP had just three.

Mr Dissanayake's mandate is another clear warning to South Asia's political and business elites in 2024, following electoral upsets in Pakistan and India and a student-led revolution in Bangladesh. Considering his Janatha Vimukthi Peramuna (JVP) party's past links to China, his victory could intensify that country's tussle with India for influence in the region. It is also a test for the International Monetary Fund (IMF), given his pledge to review a bail-out.

But the outcome raises questions for Mr Dissanayake too. What exactly does "Comrade President" (as he was introduced at rallies) plan to do with his vast powers and how will ideology shape those plans? Can he meet voters' high expectations within the IMF's constraints? And how open to criticism and political opposition will he be if public support wanes?

His campaigns were based on broad promises to end endemic corruption and cronyism. That proved hugely effective among voters still reeling from Sri Lanka's first debt default, in 2022. Mass protests ousted the president that year, and though his successor stabilised the economy and secured a $2.9bn IMF bail-out, voters penalised him in September over continuing corruption and austerity measures.

Opponents portrayed Mr Dissanayake as a dangerous radical. They cited the JVP's two failed uprisings in the 1970s and 1980s (the party renounced violence in 1994). They pointed to his paltry government experience—he was briefly an agriculture minister two decades ago. And they said he would cause a financial crisis by trying to renegotiate the IMF bail-out.

So far, such warnings have been unwarranted: Mr Dissanayake has been far more of a pragmatist than a revolutionary. As he often boasted in election rallies, he has run the country with a cabinet of just three for almost two months without spooking markets. Harini Amarasuriya, the prime minister whom he reappointed on November 18th, is widely respected. And the cabinet of 21 people he named after this month's election includes a sensible balance of academics, seasoned politicians and new faces.

His handling of the IMF has been especially telling. While it may be possible to adjust tax rates and other parts of the existing plan for meeting bail-out benchmarks, some feared that he would demand much more, potentially reopening debt-restructuring talks with creditors, including India and China. But in a meeting with an IMF team that arrived in Sri Lanka on November 17th, Mr Dissanayake committed to the existing agreement, according to people familiar with the discussions. "That question is at least resolved in the short term and that is important for the stability of the economy," said one.

At the same time, in a nod to the public pressure he faces to increase social spending, Mr Dissanayake urged the IMF to maintain a "balanced approach that considers the hardships faced by citizens". And his government did not provide details on longer-term questions, such as its growth strategy and its views on trade or the role of the state sector. "That's where you will have an ideological issue," predicts Murtaza Jafferjee of Advocata Institute, a think-tank in Colombo, the capital. He fears that the government's protectionist and statist instincts could stifle badly needed productivity growth.

Some answers may become clearer in the next few weeks, when Mr Dissanayake is expected to present an interim budget. Not all Sri Lankans may like what they hear. For the moment, though, most are just glad to be rid of a political old guard that pushed their once promising economy to the brink of collapse.

China

The Sino-American rivalry

Inside the head of Xi Jinping

China's leader is a risk-taker. How far will he go in confronting America?

As DONALD TRUMP assembles his foreign-policy team, many of his picks display a common characteristic: they are strident China hawks. Those seeking a tougher approach towards America's rival range from Mike Waltz, Mr Trump's proposed national security adviser, to Marco Rubio, his nominee for secretary of state. Part of their job will be to grasp how relations have changed in the four years since the last Trump administration, a period in which the Chinese economy has sagged, tensions around Taiwan and in the South China Sea have grown, and the war in Ukraine has further divided the world's biggest powers. When weighing up the risks Xi Jinping is prepared to take in his competition with America, new calculations are needed. Forming them must involve studying what motivates China's leader.

A valuable tool is the vast body of literature purporting to have been written by Mr Xi. The number of volumes bearing his name, explaining his views on China's main concerns at home and abroad, far exceeds that of books by Mr Trump or Mr Putin—or, indeed, previous Chinese leaders (see chart on next page). According to an estimate by the China Media Project, he published 120 volumes in the first decade of his rule. This year at least nine have been added to the pile ("Excerpts from Xi Jinping's Discourses on Natural Resources Work" is hot off the presses this month).

These books are tedious, but they are also important. They reflect the ideology that guides the party and show how Mr Xi is trying to reshape it to justify his distinctive approach to ruling the country and projecting Chinese power. In 2017, during Mr Trump's first term, "Inside the Mind of Xi Jinping" by François Bougon, a French journalist, became the first critical book-length study of what is commonly known as "Xi Jinping Thought". Mr Bougon argued that Mr Xi "manoeuvres, tinkers, and seeks his balance" between conflicting ideological forces in China. "There is no indication that he is the author of a coherent doctrine of his own."

Analysts now have much more of Mr Xi's thought to sift through. Among global statesmen, Kevin Rudd is rare in having undertaken this task. Mr Rudd was Australia's prime minister between 2007 and 2010, when Mr Xi was China's heir apparent, and again in 2013, after Mr Xi became leader. In a recent book, "On Xi Jinping: How Xi's Marxist Nationalism is Shaping China and the World", Mr Rudd, who is now his country's ambassador to America, says "the outline of Xi's brave new world is now hiding in plain sight for us all." His bibliography lists well over 50 of Mr Xi's books. More than a quarter were published after Mr Trump left the White House.

In Mr Rudd's telling, ideology is the main impulse behind Mr Xi's actions. China's leader sees powerful historical forces leading to the decline of the West and the ▸▸

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ineluctable rise of the East. The process can be hastened by a disciplined Communist Party that understands the dialectical process. In his pursuit of the "great rejuvenation of the Chinese nation" by 2049, when the party marks the centenary of its rule, a defining objective is "reunification" with Taiwan. Like his predecessors, Mr Xi does not rule out the use of force.

Mr Xi has steered China towards what Mr Rudd calls Marxist Nationalism. In other words, he has purged the party and strengthened its control, shifted economic policy away from market forces towards greater central planning, and embarked on a more bellicose foreign policy. In Mr Rudd's view, Mr Xi would want to take Taiwan—ideally without a war—by the end of his fourth term in 2032. "The only thing that would prevent him would be effective and credible US, Taiwanese, and allied military deterrence—and Xi's belief that there was a real risk of China losing any such engagement," writes Mr Rudd.

Therein lies the rub. Who knows how Mr Xi would weigh up the risks? By surrounding himself with yes-men, he may have made it more difficult for dissenting views to percolate upwards. And Mr Xi is certainly a risk-taker. His purges of high-level officials, ostensibly for corruption, are a sign of that (millions must be quietly fuming at him). So are his displays of military muscle around Taiwan and shoals claimed by the Philippines. In both places a small clash could escalate. Even if Mr Xi's behaviour so far has not been as reckless as Mr Putin's, it may become more so.

Risk v endure

Yet Mr Xi's writings (or those of his ghostwriters, overseen by Wang Huning, his chief ideologue and author of a gloomy book on the United States called "America against America") are also laced with anxiety about threats to the party. He often urges officials to learn lessons from the Soviet Union's collapse. In another book published this year, "The Political Thought of Xi Jinping", Steve Tsang and Olivia Cheung of the School of Oriental and African Studies in London argue that Mr Xi's ideology is mostly a cover. It is less about socialism and more about strengthening the party's power. If the authors are right, it may suggest that Mr Xi's focus is on preventing collapse. He would reckon that losing a war could trigger a regime-threatening backlash at home.

Indeed, it is far from clear that Mr Xi is really a Maoist or Marxist. Mao called for endless class struggle against bureaucratic elites and "capitalist roaders". Mr Xi's writings stress the need for stability. He has no truck even with protests by nationalists—there have been no large ones during his rule, unlike in preceding years.

In his handling of the economy, Mr Xi has scared entrepreneurs with his left-leaning talk. His "common prosperity" campaign, launched in 2021, raised the spectre of big new redistributive schemes. That effort coincided with a regulatory crackdown on large tech firms which smacked to some of an ideologically driven assault on the titans of private enterprise. But in the past year or two Mr Xi has been struggling to revive the economy. This has involved treating private firms with a softer touch and promoting high-tech manufacturing. It is hard to spot much in the way of socialism in his efforts. Some economists argue that more spending on welfare would help the economy by encouraging people to save less and spend more, but Mr Xi criticises doling out money for such purposes.

Two strands of Mr Xi's thinking are far less in doubt to those who have studied him. One is his Leninism, meaning his emphasis on the party as an instrument of control. He blames the Soviet collapse on ideological laxity. He wants his officials to parrot well-worn doctrinal lines, rather than debate them.

The other strand is Mr Xi's chest-thumping nationalism. The message conveyed by his works contrasts with that of Deng Xiaoping, who said China should "hide its capabilities and bide its time". Mr Xi says China must move to the "centre of the global stage". Some of Mr Trump's picks for senior jobs believe this means more than a mere desire for great-power status (China has that already). "They are seeking to supplant us and they are seeking to replace democracy and capitalism with their one-party-form-of-rule techno-state," said Mr Waltz last year.

Mr Xi is careful to avoid such language, but Mr Tsang and Ms Cheung agree that he wants global leadership. This is not "about taking over from the United States as the global hegemon, with all the baggage of US leadership", they say. "It is also not about overtly overturning the liberal international order. The ultimate goal is to capture or 'modernise and transform' the international order into one that fits in with Xi's thoughts." That, clearly, would be a chilling world for democracy.

Yet for all the words Mr Xi has published, it is possible to misread them. "I sometimes worry that the sheer volume of Xi's musings obfuscates more than it illuminates," says Jonathan Czin, a former analyst of China at the CIA. "In China's system, Xi is in effect both pope and emperor—responsible for ruling, as well as promulgating ideological justifications that read like an obscurantist theological treatise from the Middle Ages."

As America and China struggle to make sense of each other during the new Trump era, misinterpretations will abound. That will make a fraught relationship all the more dangerous. ■

Chaguan, our China column, has been suspended. Our goal is to reinstate it when we have a new columnist resident in Beijing.

Food security

Of pigs and protein

BEIJING

As a trade war looms, China looks to cut its reliance on America

ONE OF THE many legacies of Donald Trump's first trade war with China is that pigs in the country now have a more varied diet. In response to Mr Trump's tariffs on Chinese goods in 2018, China imposed a 25% levy on American farm products. That included soyabeans, which China uses for protein in animal feed. Much of the levy was waived in 2019, but the damage was done. When Mr Trump's first term began, some 40% of China's soyabean imports came from America. As he prepares for his second, only 18% do.

Officials in Beijing think that number is ▸▸

still too high. They have been obsessed with food security ever since Mao Zedong's policies led to a famine in the 1950s. The Communist Party believes its legitimacy rests in part on securing affordable food for the masses. Couple that with the country's insatiable appetite for pork and the importance of soyabeans becomes clear. China uses over 110m tonnes of them every year, of which 80% are imported. They are a dangerous "choke-point" for the food supply, say state media.

Mr Trump's threat of a new trade war puts China's leaders in a tricky spot. America's president-elect has talked of imposing tariffs of 60% on Chinese goods. Even if he settles on lower levies, China will feel the need to respond. American soyabeans are an obvious target. Even today, about half of them go to China, bringing in $15bn for American farmers in 2023. If China slapped tariffs on them it would cause pain in places like Iowa, but it would also make it more expensive for China to feed its pigs, pushing up the price of pork.

In the longer term, Chinese officials are trying to further reduce their reliance on American soyabeans. One way they are doing this is by strengthening China's trade links with Latin America. No country sends more soyabeans to China than Brazil (see chart on previous page). As Mr Trump returns to the White House, the two are drawing closer (see Americas section). Meanwhile, it is hoped that a China-backed megaport in Peru will cutting shipping times and open new lines of trade between Latin America and China. China's leader, Xi Jinping, was on hand to inaugurate the port on November 14th.

Back at home, China's farmers are being offered big subsidies to grow soyabeans. And, despite public suspicion of genetically modified (GM) crops, since 2021 some farmers have been allowed to plant GM soyabeans. Such efforts have helped China increase its annual production of soyabeans from 15m tonnes to 20m over the past five years. On the demand side, a number of farmers are trimming the soyabean content of pig feed or using alternative sources of protein. Then there are the fur farmers of Shandong province, who are experimenting with feeding minks and foxes the processed carcasses of skinned animals, rather than soyabeans.

China's labs might provide the ultimate solution. In January a team at the Tianjin Institute of Industrial Biotechnology said they had synthesised proteins suitable for animal feed. The process was fuelled by methanol, a chemical which the scientists had derived from coal. The final product, they claimed, was made cheaply enough to be competitive with soyabeans. If it all works at scale, it will be a game-changer. China lacks farmland, but it has lots of coal. And pigs are not fussy eaters. ■

Human rights

A decade in jail for holding a primary

HONG KONG

Dozens of pro-democracy activists are punished in Hong Kong

WHETHER A CRIME was even committed is debatable. Nevertheless, on November 19th judges in Hong Kong's biggest-ever national-security trial sentenced 45 activists to between four and ten years in prison. Those jailed are among 47 pro-democracy figures, known as the "Hong Kong 47", who were rounded up in 2021 for having organised a primary to choose candidates for the local legislature. Fourteen of the defendants were found guilty in May of conspiracy to commit subversion. Thirty-one had already pleaded guilty. Two were acquitted. The entire case has been widely criticised as politically motivated.

The plan for the primary, held ahead of an election scheduled for September 2020, was probably legal at the time the activists drew it up. It was also clever. Rather than split the pro-democracy vote in a system already rigged against them, they hoped to run a single slate of candidates. If their camp went on to win a majority, they planned to vote down the budget and so force the chief executive at the time, Carrie Lam, to resign.

The activists had been emboldened by the huge pro-democracy protests that rocked the city in 2019. By the time the primary took place, though, the environment had changed dramatically. In the interim, covid-19 had put an end to the demonstrations. And just days before the primary was held—attracting 600,000 of Hong Kong's 4.5m voters—the central government imposed a draconian national-security law on the city. It was under this measure that the Hong Kong 47 were arrested.

The pandemic eventually provided the government with an excuse to postpone a general election it was fearful of losing. But that did not diminish the crimes of the activists, said officials. The justices in the case called Benny Tai, an affable law professor, "the mastermind" of the primary plan. He received the longest sentence: ten years.

During the trial hundreds of people queued to secure a seat in court (pictured), suggesting a level of latent support for the pro-democracy movement. But the security law enacted in 2020 and a new one passed this year have instilled fear in Hong Kong's liberals.

Their mood is unlikely to improve in the near term. On November 20th the trial of Jimmy Lai resumed. Mr Lai is accused of sedition and colluding with foreign forces. The former media mogul and generous supporter of anti-Communist causes, who is 76, has been held in solitary confinement for more than three years. His friends say he is resigned to dying in prison—and that his real crime, like that of the Hong Kong 47, is supporting democracy.

The scene of a crime

Middle East & Africa

America and the Middle East

Maximum pressure 2.0

DUBAI

The Trump White House may bomb and penalise Iran into a deal

OCCASIONALLY, THERE are second acts in American diplomacy. During his first term, Donald Trump abandoned the nuclear pact agreed on in 2015 by Iran and world powers. He went on to pursue "maximum pressure", crippling sanctions meant to compel Iran into a stricter agreement. It was only half successful: the sanctions battered Iran's economy, but Mr Trump left office without a deal.

Now he may get another chance. Many of the sanctions have remained in effect under Joe Biden, but American enforcement has flagged: Iran's oil exports climbed from less than 600,000 barrels per day (bpd) in 2019 to a high of 1.8m bpd earlier this year, almost all of them sold to China. People close to the president-elect are keen to resume the pressure in January—but such talk has prompted unease in the Middle East, and not only in Iran.

Though Mr Trump has been vague about his plans, many of his cabinet nominees support tougher sanctions. Marco Rubio, his pick for secretary of state, opposed the original nuclear deal and criticised Mr Biden for his failure to enforce an oil embargo. Mike Waltz, Mr Trump's choice as national security adviser, wants to "reinstate a diplomatic and economic pressure campaign" against Iran.

There may be dissenting voices, such as Tulsi Gabbard, who is tipped to be director of national intelligence. But advocates of fierce embargoes have spent four years making detailed plans for how to implement them and the sceptics have no clear alternative. The new administration will probably go with the ready-made policy.

Tougher American enforcement could well block up to 1m bpd of Iranian exports. That could halve Iran's oil revenue at a time when its budget deficits are already widening fast. What is more, Mr Trump might be able to avoid a big rise in American petrol prices. The International Energy Agency, a global forecaster, predicts an oil-supply glut of more than 1m bpd in 2025. The market could probably absorb the loss of some Iranian crude.

Still, the effect might be temporary, since Iran has built a resilient network to defy sanctions. So the question is what America wants to achieve; sanctions are meant to be a means, not an end. For some hardliners in Washington, the ultimate goal has always been regime change.

That may be a minority view, but there is broad consensus beyond the incoming administration that a new nuclear deal is necessary. Even some supporters of the original agreement, the Joint Comprehensive Plan of Action (JCPOA), think there is no going back to it. The JCPOA sought to keep Iran's "breakout time", the period it would need to produce a bomb's-worth of enriched uranium, to around one year. It limited Iran's uranium stockpile to 300kg enriched to 3.67% purity.

Iran has blown past those limits. The International Atomic Energy Agency (IAEA), the UN's nuclear watchdog, estimated in October that Iran had more than 6,600kg of uranium enriched to various ▸▸

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levels. That included 182kg at 60% purity, a hair's breadth from weapons-grade. It has also resumed production of uranium metal, which can be used to make the core of a nuclear bomb. Iran could probably produce a bomb's-worth of enriched uranium in less than two weeks. Reviving the JCPOA would lengthen that time-frame—but it would still be far less than a year.

Ask and ye might receive

America could ask for many things in a new deal. It could insist that Iran dismantles some of its nuclear facilities, particularly those that were used in the past for weapons research. It could require Iran to implement the Additional Protocol, an addendum to the Nuclear Non-Proliferation Treaty which gives the IAEA further inspection powers. Beyond capping enrichment, a new deal could also try to restrict Iran's missile programme, or demand that Iran curtails its military support for its proxies.

The problem is that diplomats have tried to negotiate some of these provisions in the past. Iran refused. This is where advocates of maximum pressure think Mr Trump is their secret weapon: he could threaten to attack Iran's nuclear facilities if diplomacy fails, and he might seem crazy enough that Ali Khamenei, Iran's supreme leader, would take him seriously.

Mr Khamenei may not, though. After a year of back-and-forth missile attacks between Iran and Israel, many conservatives in Iran would be reluctant to negotiate away their nuclear programme. Instead he could try to call Mr Trump's bluff. He knows that the new president does not want a war with Iran and that some of his allies are keen to disengage from the Middle East in order to focus on China. Rather than a comprehensive accord, Iran could propose a limited one that simply pulls its nuclear programme back from the threshold. It could offer to get rid of its stockpile of 60%-refined uranium, by blending it down or by shipping it out of the country, and to cap enrichment once again.

This would be hard for Mr Trump to defend, a far weaker agreement than the one he abrogated in 2018. But he could argue that his predecessor left him a mess. A more limited deal would find some support in Iran, too. Hardliners seem to have accepted that they cannot muddle along without sanctions relief.

Binyamin Netanyahu opposed the JCPOA and has dreamed for years that America might attack Iran's nuclear facilities. But he would struggle to sabotage the new administration's diplomacy. The Israeli prime minister has long promoted Mr Trump as Israel's greatest champion in America; it would be ironic if Mr Trump ended up securing Republican support for a watered-down agreement with Iran.

Gulf states, meanwhile, worry that he will fail. Faisal bin Farhan, the Saudi foreign minister, supported maximum pressure during Mr Trump's first term; now he talks cheerily about how Saudi Arabia's relations with Iran are "on the right path". The Saudis are keen to avoid a repeat of Mr Trump's first term, when Iran targeted their oilfields. Prince Faisal visited Iran last summer, the first such trip in seven years. There is talk of joint military exercises.

The kingdom has also tried to distance itself from Israel. At a conference in Riyadh earlier this month, Muhammad bin Salman, the crown prince, condemned Israel not only for its wars in Gaza and Lebanon but also for its recent air strikes on Iran. The Saudis worry that Mr Trump may want them to cut ties with Iran and have urged the coming administration not to shatter their fragile detente. With the Middle East mired in an ever-widening war, few are in the mood to take risks. ■

Gaza

Control out of chaos

JERUSALEM

Israel's hardliners reckon Gaza's anarchy means no one else can possess it

AMID THE catastrophic destruction of Gaza, new buildings are rising. Not shelters for Palestinians left homeless by the war, or hospitals for the sick and injured, but bigger outposts for the Israel Defence Forces (IDF) along the new roads it has paved in key spots, bisecting the coastal strip and cutting it off from Egypt.

On November 12th the army opened another new road, at the Kissufim crossing on the border with Israel. For the moment this one is not meant for Israeli troops but to let aid into central and southern Gaza. Israel is eager to rebuff accusations that it is starving Gaza's people. But on the first day the crossing was operating an aid lorry was stolen after entering the strip. The next day 14 out of 20 lorries trying to get in were stolen, some by Palestinian gunmen who shot and wounded the drivers.

One of the few things Israel and aid groups agree on is that Gaza's growing chaos makes it ever harder to distribute aid to the 2.2m people there, most of them displaced by the war. Little is getting in. Nearly a third of the lorries entering Gaza are hijacked, reckons an Israeli officer. On November 18th, only 11 lorries in a convoy of 109 trucks made it into southern Gaza, says UNRWA, the UN's agency for Palestinians.

Some looters run their own fiefs. Some are stronger than Hamas which, despite being battered by Israel, still controls parts of Gaza. One Israeli general admitted that IDF units do not always try to stop looters because commanders are loth to risk their soldiers' lives in the crossfire.

The situation in northern Gaza is dire. The UN says that virtually no aid has reached parts of the area for 40 days, repeating its warnings that famine is imminent. Fishermen heading out to sea have been shot by Israeli troops. Prices of basics have soared. Onions cost 400 times as much as they did before the war, eggs 16 times and sugar over 25 times. Few people have cash to pay for food anyway: banks no longer function.

Israel has no clear plan for delivering aid to Gaza. Currently the lorries are brought in by international aid organisations or paid for by foreign governments. ▸▸

The brink of starvation

But once through Israeli checkpoints the convoys may come under fire from looters, the IDF and Hamas.

Israel and the international groups blame each other. Israeli officials claim that they co-ordinate with them but say they are inefficient at dishing out the aid. UN agencies say Israel rejected 27 of 31 aid missions to northern Gaza between November 1st and 18th. In a recent deposition to Israel's Supreme Court, the IDF admitted that it does not have enough forces on the ground, so "doesn't effectively control Gaza Strip" and therefore Hamas retains some "governmental authority".

Israel's security establishment wants to set up an alternative Palestinian force, aligned with the Palestinian Authority in the West Bank, to replace Hamas and take over running the strip. But Binyamin Netanyahu, Israel's prime minister, is against this. Rather than present a day-after strategy for Gaza, he sacked its main proponent, the then defence minister, Yoav Gallant. After he was fired Mr Gallant privately told relatives of Israeli hostages still in Gaza that there was no longer a security reason for the IDF to remain there.

Mr Netanyahu is under pressure from his far-right allies to reject a ceasefire. They make no secret of their desire to build settlements in Gaza. They want the IDF to control civilian affairs there as a prelude to permanent occupation. The generals oppose this. Mr Netanyahu has wavered, suggesting private security contractors (a polite word for mercenaries) should protect aid convoys. Senior IDF officers say this would be expensive and ineffective.

Concern is growing that the far right will exploit this lack of strategy to secure Israeli control of Gaza. Air strikes continue, but since October 5th the only major IDF operation in Gaza has been in Jabaliya refugee camp, north of Gaza City, where many of Hamas's remaining fighters are concentrated. The IDF says it killed 1,200 of them. Palestinians and aid groups say many of the casualties were civilians.

"Our mission in Jabaliya is to move the civilians out of the area so we can ensure that no terrorists or terror infrastructure remains," says an officer involved in the operation. The generals insist that Palestinian civilians will be permitted to return to the north. But they will not say when. None has been allowed back so far. And the generals' political masters may have other ideas. Israeli lawyers, including some who have advised the government on international humanitarian law, have warned that the current operations "raise a heavy concern of war crimes of forced deportation".

With northern Gaza almost empty of civilians and most of its buildings destroyed, it looks ever likelier that Israel will insist on maintaining control to pave the way there for new Jewish settlements. ■

Sudan's war

The quest for legitimacy

NAIROBI

The most notorious side in Sudan's civil war pitches itself as a partner for peace

A YEAR AGO the Rapid Support Forces (RSF) seemed to be on a roll. The Sudanese paramilitary group, which had been battling the Sudanese Armed Forces (SAF), Sudan's regular army, since April 2023, had taken over much of Khartoum, the capital. Almost all of Darfur, its ethnic base in the far west, was under its control. And equipped with weapons reportedly supplied by the United Arab Emirates (UAE), its most powerful foreign ally (which denies sending them), it was even on the cusp of capturing the army's traditional heartlands in the south-east. Muhammad Hamdan Dagalo (better known as Hemedti), the group's leader and Sudan's most feared warlord, prepared to embark on a tour of African capitals, where he would be welcomed like a president-in-waiting.

These days there is less talk of a clear military victory for the RSF. Its troops may be close to seizing full control of the Darfur region's capital, el-Fasher. But elsewhere it has seen setbacks. Since the end of the rainy season in September, the army has made inroads into RSF-controlled parts of Khartoum. With allied militias, it has held the line in the south. And in late October, a top RSF commander in Gezira state defected. This led to a wave of retaliatory attacks against civilians so brutal that observers likened them to the ethnic cleansing of non-Arab tribes from RSF-occupied parts of West Darfur last year.

For those hoping to negotiate an end to a war which has caused the world's worst humanitarian crisis, all this makes the task of understanding the RSF—its goals and its capacity to achieve them—more pressing. The most recent talks, held in Switzerland in August, were a resounding failure. Yet that was largely because the SAF refused to attend them. By contrast the RSF "believes there is no way out of this war through total victory for one side", one of its top negotiators told *The Economist* in a rare interview on November 18th. Analysts are divided on whether the group's demand for negotiations is genuine. But if it is, it prompts an important question. What kind of deal would be acceptable to the RSF and its foreign backers?

According to the official, Elzeddain el-Safi, the RSF is fighting to overthrow a narrow group of northern Sudanese who have dominated the state and the army since independence from Britain in 1956. He calls the conflict Sudan's "final war". It has displaced about a third of the population and triggered what experts fear may be the worst famine the world has seen in 40 years. By "final" he means that it will not end until the root causes of perennial instability are dealt with, above all the marginalisation of remote areas such as Darfur. Mr el-Safi also argues that the war was instigated by Islamists from the former ruling party of Omar al-Bashir, Sudan's long- ▸▸

standing dictator, who was toppled in peaceful protests in 2019. The Islamists, Mr el-Safi claims, are fighting to return themselves to power. The RSF, he insists, is struggling to "secure the people's choice".

The RSF's claim to be waging war for democracy is unconvincing. The group grew out of the Janjaweed, militias notorious for rape and butchery of civilians in Darfur in the 2000s. There is little to suggest it has fundamentally changed. In 2021 Mr Dagalo, then the de facto vice-president in a transitional government alongside the SAF's leader, Abdel-Fattah al-Burhan, took part in a coup against the civilian prime minister. Mr el-Safi says the RSF soon recognised that this was a mistake. But he does not deny that Mr Dagalo still wants to govern Sudan: "He has full right to lead the people." Yet a warlord loathed by large swathes of the population would find it hard to do so democratically.

The army insists that it is fighting to prevent the break-up of Sudan. Yet some observers suspect that there are many within the SAF's ranks who would willingly relinquish Darfur, a rebellious region whose diverse population they see as having little in common with northerners from Khartoum and its hinterlands. In response, the RSF now trumpets a firmer commitment to the country's territorial integrity. "The RSF will never allow a divided Sudan," says Mr el-Safi. "Sudan will stay united."

There are reasons to take seriously the RSF's commitment to Sudanese unity. Darfur, a landlocked, water-scarce region the size of France, is not an obvious candidate for independent statehood. And the UAE (whose military support Mr el-Safi denies) is understood to regard securing access to the Red Sea coast as core to its interests in Sudan. Any deal which would force the RSF to withdraw its troops from Khartoum and the fertile farmland along the Nile valley would probably be a non-starter.

Instead, Mr el-Safi outlines the RSF's idea for a negotiated settlement. It should begin, he says, with a cessation of hostilities. The war's current battle lines should be frozen in place, but both sides would withdraw from "civilian installations" such as residences and schools. A demilitarised buffer zone could potentially be enforced by African peacekeepers. After that should come a "national dialogue" involving all political forces in the country except for Islamists and the former ruling party. These groups would be allowed to take part in national politics only after a period of perhaps five years, once "we've reset the rules ...and stabilised the country".

It is not hard to understand why the RSF is emphasising its commitment to talks. Most outside powers, including the UN, reckon the SAF has more legitimacy in the eyes of most Sudanese. Yet the army's dogged refusal to engage seriously in negotiations has weakened its international standing, particularly among Western diplomats. The RSF is trying to position itself as the more reliable partner for peace.

This remains questionable. Despite promising to allow aid into the areas under its control, the RSF has kept el-Fasher under siege for months. Elsewhere, aid workers complain of deliberate bureaucratic obstacles. Moreover, the RSF's leaders continue to deny atrocities which have been extensively documented. Mr el-Safi blames "mainstream media" for spreading false information about ethnic cleansing in Darfur. Sexual violence committed by RSF soldiers is well-attested, yet one of Mr el-Safi's colleagues recently claimed the group had recorded just one rape in areas it controls. The militia's professed desire for talks is welcome, but it has a long way to go before its word will be trusted. ■

GM crops

The non-appliance of science

Why genetically modified crops aren't feeding Africa

THE SPECIES of bacteria *Bacillus thuringiensis* produces proteins that some caterpillars find toxic. Insert the underlying genes into a maize plant, and creepy-crawlies will be poisoned by their lunch. That is the idea behind Bt maize, a genetically modified (GM) variety that has been grown in dozens of countries worldwide.

Soon Kenya might join them. In 2022 its government lifted a long-standing ban on GM crops, including Bt maize. On November 7th a judge threw out lingering legal challenges from activists which had blocked cultivation. The ruling is the latest skirmish in a long struggle to bring GM crops to Africa, which both sides frame in Manichean terms. Enthusiasts say genetic wizardry could feed a hungry continent. Sceptics warn of a sinister plot by multinational corporations to ensnare unwitting African farmers.

Growing gains

Number of genetically modified crop varieties*
1997-2022, selected countries

*That have been, or continue to be, developed
Source: The mBio Project

Neither claim is quite right. The most striking fact about GM crops in Africa is that they are hardly sown at all. Only in South Africa have they really taken off (see chart). Until recently an insect-resistant cowpea in Nigeria was the only GM food crop being grown elsewhere. Varieties of maize are now being introduced in Nigeria, and cowpea in Ghana. Eight countries cultivate GM cotton. But after decades of costly research that is a modest harvest.

The scientists behind GM crops blame prohibitive regulation. Only 11 of Africa's 54 countries have ever officially approved their cultivation. Some politicians repeat myths, such as claims that eating GM food will make men grow breasts and women grow testicles. Other critics focus on how big business might exploit small farmers. Mariam Mayet of the African Centre for Biodiversity argues that GM crops "entrench a certain industrial model of agriculture" that undermines local seed systems and harms the planet. Debates about GM are really about rival visions of African farming. One is high-input, high-tech; the other favours a more organic eco-ideal.

But profits matter just as much as politics. It is difficult to make money by serving small farmers, so the crops they grow can be overlooked. "If we waited for big biotech companies to research and develop cassava, we could wait for ever," says Francis Nang'ayo of the African Agricultural Technology Foundation (AATF), which brokers the transfer of technology into African markets.

Crop development therefore relies on a constellation of interests. The world's biggest biotech firms hold patents on the genetic know-how behind certain "traits", such as drought tolerance or insect resistance. In one approach, they agree to share this technology under licence with the AATF. The Gates Foundation, the American government and other donors stump up money for research. New crops are developed with African scientists and sub-licensed to local seed companies, often royalty-free. The biotech firms participate not only because it is "the right thing to do" but also with an eye to growing markets for the future, says Mark Edge of Bayer, one of the biggest such companies.

In practice collaborations are hard to make work. A project might falter if a donor cuts funds or a company pulls out. In 2016 Burkina Faso suspended the cultivation of insect-resistant cotton that had been developed by local scientists and Monsanto (now Bayer), which was taking a royalty. The reason was not anti-GM activism, but that the fibres were too short and cotton firms were losing money. ■

The Economist

THE WORLD AHEAD 2025

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THE WORLD AHEAD, THE ADELPHI, 1-11 JOHN ADAM STREET, LONDON WC2N 6HT. +44 (0) 20 7830 7000. ECONOMIST.COM/WORLDAHEAD2025
WORLDAHEADEDITOR@ECONOMIST.COM. EDITORIAL CLOSE DATE: NOVEMBER 14TH 2024

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ILLUSTRATIONS: Cover: Ben Jones, Inside: Ben Hickey, Carl Godfrey, Celina Pereira, Chloe Cushman, Cristiana Couceiro, Daniel Liévano, Diego Mallo, Ellie Foreman-Peck, Leon Edler, Mark Harris, Pete Ryan, Ricardo Rey, Ricardo Tomás, Tim McDonagh, Twisha Patni

PHOTOGRAPHS: Alamy; DPA; EPA; Nichole Sobecki/ VII/ Redux/ Eyevine; Wang Teng/Xinhua/Eyevine; Getty Images; Magnum/Bruno Barbey; NASA/JPL-Caltech/SSI; Panos/ Lorenzo Maccotta; Panos/Marco Garafalo; Science Photo Library; SpaceX/NASA

The World Ahead 2025

From the editor

IT SEEMS APPROPRIATE that 2025 has been designated the year of quantum science and technology by the United Nations. Because like Schrödinger's cat, which (in a quantum thought-experiment) was both alive and dead at the same time inside a closed box, 2025 has hovered in a superposition of two very different states, defined by the outcome of America's election. Now the ballot boxes have been opened, the world knows which 2025 to expect: the one where Donald Trump returns to the White House. With that uncertainty resolved, here are ten themes to watch in the coming year.

1. America's choice. The repercussions of Mr Trump's sweeping victory will affect everything from immigration and defence to economics and trade. His "America First" policy will have friends and foes alike questioning the solidity of America's alliances. This could lead to geopolitical realignments, heightened tensions and even nuclear proliferation.

2. Voters expect change. More generally, incumbent parties did badly in 2024's unprecedented wave of elections. Some were chucked out (as in America and Britain); others were forced into coalition (as in India and South Africa); others were pushed into cohabitation (as in Taiwan and France). So 2025 will be a year of expectations. Can new leaders deliver what they promised? Will humbled leaders change? If not, unrest may follow.

3. Broader disorder. Mr Trump may push Ukraine to do a deal with Russia and give Israel a free hand in its conflicts in Gaza and Lebanon. America's more transactional stance and scepticism of foreign entanglements will encourage troublemaking by China, Russia, Iran and North Korea (the "quartet of chaos") and more meddling by regional powers, like that seen in crisis-hit Sudan. But it is unclear whether America would stand up to China in a conflict over Taiwan or in the South China Sea.

4. Tarrifying prospects. For now, America's rivalry with China will manifest itself as a trade war, as Mr Trump imposes restrictions and ramps up tariffs—including on America's allies. As protectionism intensifies, Chinese firms are expanding abroad, both to get around trade barriers and to tap new markets in the global south. So much for decoupling; Chinese firms, building factories from Mexico to Hungary, have other plans.

2025 will be a year of expectations. Can new leaders deliver?

5. Clean-tech boom. China's government has encouraged booming exports of solar panels, batteries and electric vehicles to offset a weak domestic economy. The result is a Chinese-led clean-tech boom, with adoption of solar panels and grid storage outstripping forecasts. And the world will soon learn whether global emissions have peaked.

6. After inflation. The rich world's central bankers have celebrated the defeat of inflation. Now Western economies face a new challenge: reducing deficits, by increasing taxes, cutting spending or boosting growth. Many may also have to increase defence budgets. Painful economic choices loom. In America, Mr Trump's policies will make things worse: hefty import tariffs could hamper growth and reignite inflation.

7. Age-old questions. America has just picked its oldest-ever president-elect. World leaders are greying, along with their populations. Expect more discussion of age limits for political leaders. China, meanwhile, is looking for economic opportunities in an ageing world. In parts of the Middle East, by contrast, a booming youth population, coupled with a shortage of jobs, risks instability.

8. Crunch time for AI. It's the biggest gamble in business history: more than $1trn is being spent on data centres for artificial intelligence (AI), even though companies are still not sure how to use it and adoption rates are low (though many workers may simply be using it in secret). Will investors lose their nerve, or will AI prove its worth, as "agentic" systems become more capable and AI-developed drugs emerge?

9. Travel troubles. The global movement of people, not just goods, faces increasing friction. Conflict is disrupting global aviation. Europe is adding new border checks, and its borderless Schengen system is fraying. The backlash against "over-tourism" will diminish in 2025, but restrictions introduced by many cities, from Amsterdam to Venice, will remain.

10. Life of surprises. With assassination attempts, exploding walkie-talkies and giant rockets being captured by chopsticks, one lesson of 2024 was to expect the unbelievable. What implausible-sounding things could happen in 2025? Our "Wild cards" section offers a selection to watch out for, including a devastating solar storm, the discovery of lost ancient texts—and even another global pandemic.

To navigate the future, it can help to anticipate the unlikely. We hope you will find *The World Ahead 2025* a useful guide to the coming year, whatever surprises await. ●

Tom Standage
Editor, *The World Ahead 2025*

Great Trade opens doors

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Leaders

Trump, technology and uncertainty

A guide to the forces that will shape 2025

WHAT HAPPENS when the world's biggest economy takes a sharp protectionist turn? When the global superpower decides that a transactional foreign policy beats alliances? And when the reset takes place as wars rage, menacing adversaries join forces and artificial intelligence (AI) is changing everything from health care to warfare? The world is about to find out.

In the campaign Donald Trump promised massive change. That is possible, but the rhetoric of campaign speeches is quite different from the reality of governing. The people Mr Trump chooses for his team and the priorities they focus on will determine how much he can accomplish. His early appointments suggest an emphasis on loyalty, hawkishness and disruption.

Foreign-policy tests will come fast. Mr Trump has repeatedly said he will end the war in Ukraine in a single day and will face pressure to get a deal quickly. As the first example of his supposedly muscular diplomacy, the outcome will ripple around the world. If Mr Trump presses Ukraine to accept territorial losses, but offers a security guarantee that durably deters Vladimir Putin, America's (and Mr Trump's) credibility will be enhanced. But if he forces Ukraine into a lopsided peace deal that leaves it vulnerable to Russia, Mr Putin will have won. Ukraine's survival will then depend on whether Europeans can defend it—a test they are likely to fail (see leader). China and other would-be aggressors will take note: American promises are empty.

The Middle East will pose early tests of a different sort. Mr Trump may well succeed in getting Israel and Hamas to agree to a ceasefire in Gaza; Binyamin Netanyahu will want to give him a quick win. But Mr Trump is unlikely to steer Israel towards the only long-term solution—a path to a Palestinian state. He will want to be tough on Iran, not least because it may have plotted to assassinate him. But "maximum pressure", his administration's sanctions policy in his first term, will now prove less powerful. Iran has built a shadowy network to sell its oil, mainly to China.

Reinventing the machinery of government could be the most important part of Mr Trump's agenda

The most important geopolitical choice will be how to deal with China. Though its economy is currently weak, China is both a more aggressive and more formidable adversary than when Mr Trump first became president in 2017. He could swiftly face a crisis in the South China Sea. Whether he assists the Philippines or abandons it will be a key test.

China will also reveal how extreme Mr Trump is about tariffs. He has promised 60% levies on imports from China (and 10-20% on all other countries). Is this negotiating bluster or a real desire to decouple America's economy from China's? That will become clear in 2025, not least because implementing tariffs will compete for attention with Mr Trump's other priorities.

Top of that list will be illegal immigration. Expect a showy effort at mass deportations. Tax cuts will also be high on the agenda because Mr Trump's first-term tax package expires at the end of 2025. He added some $10trn-worth of new tax-cutting promises during the campaign. But even though Republicans hold both houses of Congress, lawmakers are nervous about budget-busting on that scale.

With luck, the most consequential part of Mr Trump's domestic agenda will lie elsewhere: in a programme to deregulate and reinvent the machinery of government, from drug regulation to military procurement. These reforms will determine how quickly America adopts and diffuses cutting-edge technologies including biotech and AI. Elon Musk will be in charge. His promise to slash the federal budget by $2trn is absurd. But the idea that America needs government reform to maintain its lead in radical new technologies is surely right.

If Mr Trump truly wants to make America great, this is where his administration should focus. It would be ironic if the man who loves tariffs led the charge to accelerate technologies that may eventually reshape or replace many American jobs. But extending America's lead in AI would do far more to ensure its future prosperity and military security than any other part of the MAGA agenda. Over to you, Elon. ●

Zanny Minton Beddoes Editor-in-chief, *The Economist*

The MAGA scale of policy plausibility

A five-part guide to where Donald Trump will be constrained—and where he will not

THE 47TH president of America will be less constrained than the 45th president was, even though they are the same person. Donald Trump will enjoy more deference from his staff, his party and the courts than he did in his first term. That is not the same as saying there will be no constraints on him. Where can he be expected to get his way on his domestic-policy agenda in 2025—and where will he struggle?

While running for election, Mr Trump issued 20 headline policy priorities, backed by a 16-page document which goes into a little more detail. A practical way to think through presidential authority and constraints is to rank them on a five-point MAGA plausibility scale, from category five (certain to happen) down to category one (certain not to). In the coming year there will be intra-party battles between Republican factions. The courts will not let Mr Trump do whatever he wants. America's federal system delegates important powers to states and cities. And the clock is ticking, because the recent pattern has been that presidents who start with a trifecta go on to lose control of the House two years later. The interplay of these constraints will shape what Mr Trump can accomplish.

In category five—the dead certs—is the pledge to "make America the dominant energy producer". That is because America, which produces more barrels of oil than any other country, is by that metric the dominant producer already. Job done! The same goes for the pledge to bring America "record levels of success": on many economic measures America is already there. The promise to make its cities beautiful again is more subjective. But, with the possible exception of Houston (which has other charms), America's big cities are aesthetic marvels and will continue to be so in 2025.

Pledges that belong in category four—the highly likely—include those to scrap the electric-vehicle (EV) mandate and to cut costly regulation. The EV mandate was a Biden-administration executive order and therefore can be reversed by a Trump-administration executive order, with no need for legislation. The power to cut regulation resides in large part with the federal bureaucracy, which Mr Trump will slash, aided by Elon Musk. Also in category four is the pledge to keep the dollar as the world's reserve currency. It is hard to see that changing over the next year, or four. The same goes for the promises not to cut Medicare or Social Security, or to raise the retirement age. Control of Congress should enable Mr Trump to extend his 2018 tax cuts: that is also highly likely in 2025.

A practical way to think through presidential authority and constraints is to rank policies on a five-point scale

In category three—the probable—is one of Mr Trump's biggest domestic-policy pledges: to sharply increase tariffs on imports. The policy platform does not put a figure on this: it merely says Republicans will support "baseline tariffs" on foreign-made goods. A universal tariff of 20%, which Mr Trump promised on the campaign trail, would probably need congressional approval, which is a constraint (see leader). Support for "baseline tariffs" is vaguer, though. Next, the promise to "keep men out of women's sports" will be hard to bring about. But the administration will issue an executive order banning the participation of trans girls in women's sport in schools and colleges that receive funding from the federal government.

In category two—possible, but less likely—is Mr Trump's other signature domestic promise: to "carry out the largest deportation operation in American history". The recent total for the most people deported in a single year is held by Barack Obama's administration, which at its peak deported just over 400,000. A bit further back, Dwight Eisenhower's administration is thought to have deported just over 1m people in 1954 (it is hard to be precise because records from then are less complete). If that is the benchmark, it would be very hard to exceed it without cheating, for example by classifying someone turned away at the border as having been deported. "Sealing the border" will also be hard: irregular crossings were high during Mr Trump's first term until covid-19 closed the southern border. Attempts to deter migrants through extravagantly harsh policies, such as breaking apart migrant families, were stopped by Mr Trump after they were widely denounced as cruel. That is a constraint, too.

That leaves category one, the policies least likely to happen in 2025. Mr Trump's pledge to make college campuses patriotic again is, thankfully, doomed to fail. A patriotic university sounds like something that belongs in Beijing, not Boise. Students presumably love their country as much as other citizens do, but core to America's greatness is that they cannot be compelled to do so, least of all by the president. As for the promise to "restore peace in Europe and in the Middle East, and build a great Iron Dome missile defence shield all over our country—all made in America": if President Trump is able to end the war in Ukraine without capitulating to Russia, and bring a durable peace between Israel and the Palestinians, he could leave a legacy that exceeds that of any president since Ronald Reagan. That is something to aspire to. ●

John Prideaux United States editor, *The Economist*

If Europe wants peace, it must plan for war

But none of its major governments seems ready to face the future

THE SECURITY of Europe is entering a perilous and enduring decline. In 2025 Russia will have the upper hand in Ukraine. America, looking towards Asia under President Donald Trump, will become viciously transactional. Not since the 1930s have European leaders so urgently needed to summon the courage to face reality and the statesmanship to take action. Unfortunately, Europe's leaders are weak and distracted by their problems at home. Instead of standing up they are more likely to bury their heads deeper in the sand.

The danger begins in Ukraine. It comes not only from Russia's slow, relentless advance in the east—though, as the Ukrainian army is hollowed out, that looks ever more likely to cause the front to collapse. The real problem is that Russia's president, Vladimir Putin, knows the West has been unwilling to give Ukraine enough money or weapons to defend itself.

What is more, Mr Putin knows the West has failed to stop Russia, even though doing so would avoid the costly, dangerous alternative of defending the frontiers of northern and eastern Europe instead. He will rightly surmise that Europe is too weak-willed and complacent to face the changing geopolitical reality. If he concludes that he has more chances to disrupt NATO, his behaviour will become yet more aggressive.

The election of Mr Trump multiplies the threat. Ukraine has shown how much European security still depends on American hard power, 30 years after the end of the cold war. But the United States is globally over-extended and needs Europe to take more responsibility for its own defence. Even under a Democratic president, America's attention would have been drifting towards Asia.

Mr Trump will accelerate this process. Although unpredictability will be a central feature of his foreign policy, some of his beliefs are fixed. These include the idea that alliances are nothing more than contracts in which America provides security as a service.

No matter that America also gains from its alliances diplomatically and militarily, in ways that Mr Trump ignores. If America is to continue to back Europe, Mr Trump will want something tangible in return, whether on trade, military contracts or direct payments. He could even do a deal with Mr Putin, over the heads of European leaders, to carve up Ukraine.

It is hard to say which is in shorter supply: money or leadership

Either way, as members of an explicitly transactional NATO, European countries will no longer feel they can depend on America's cast-iron promise to fight alongside them if they are attacked. Mr Putin knows this, too, and that will be a further incentive for him to destabilise and attack the places to his west.

His motive is simple, but existential—at least in his eyes. After the collapse of the Soviet Union, Russia discovered that it could not thrive in the ordered, democratic, American-led world. The only way for Russia to claim its place as one of the great powers is to destroy the foundations of that order, including NATO, the European Union and the credibility of Western democracies. For Europe, therefore, the stakes are existential, too. You would never know it. Although frontier states feel the bear's breath on their necks, many others are absorbed in their own dramas.

It is hard to say which is in shorter supply: money or leadership. Germany, under the small-thinking Olaf Scholz, is tearing itself apart. In France a minority government survives at the behest of the pro-Russian Marine Le Pen, while the political classes position themselves ahead of the presidential election in 2027. An inexperienced Labour government in Britain is absorbed by fumbling efforts at domestic reform.

None of them is ready to face the future. The possibility of Mr Trump's return has long been clear, but Europe has been unable to draw up a coherent plan if he pulls the plug on Ukraine, as he has threatened to. Though Brussels will redirect a chunk of EU money to defence, Europe has suffered persistent shortages of arms, despite warnings that its defence industry is underpowered. National budgets will have to rise, too.

The task of making Europe safe is immense, and will take years. All the more reason to start work now. Leaders must be clear to their people about the dangers ahead, starting with the idea that Russia wants to destroy the EU and NATO, not just Ukraine.

Another requirement is for European countries to forge a common front. Both Mr Putin and Mr Trump will strive to divide them. For Mr Putin division is an end in itself; for Mr Trump it is a means to undermine Europe's leverage in negotiations. Britain's departure from the EU is an obstacle to industrial mobilisation. But it is a member of NATO and the Joint Expeditionary Force, a northern European partnership.

The last requirement is to start building a deterrent to Mr Putin. Europe needs larger armed forces. They need to be equipped by a defence industry with greater capacity. They need a command structure, in case Mr Trump refuses to let America fight. It will not come cheap. Europe has been unable to muster enough willpower to prevent a Ukrainian defeat. In 2025, does it have the resolve to avert something even worse? ●

Edward Carr Deputy editor, *The Economist*

America's deterrence deficit

The gap between the threats the world faces and American power will become stark

As the Trump administration takes office in early 2025 the world will be in its most dangerous state since the cold war. The contest between America and China will loom large, two regional wars will be burning, a zone of anarchy in Africa will be expanding, the observance of global laws will be in decline and four autocracies—China, Russia, Iran and North Korea—will be tightening their pact to undermine Western power. As the Biden administration departs it will also be clear that America is alarmingly overstretched, with the strains being visible in everything from low missile stocks to creaking sanctions enforcement.

This gap between a more anarchic world and America's limited power to influence it will be a far bigger feature of President Donald Trump's second term than it was in his first. In some cases he will be indifferent to it; in others he may believe he can deploy his brand of muscular threats and dealmaking to fix problems. But his isolationist instincts will stop him from enacting the policies needed to enhance American power in the long run. And the shortfall in American clout may trigger frustration, leading him to embrace quick-fix brinkmanship, capitulation and a shedding of responsibilities that ultimately weaken America's position and accelerate the chaos.

The world wasn't meant to look like this. For years the dominant force was said to be the Sino-American rivalry, sometimes called the "Thucydides trap". This rivalry is as intense as ever, and in some respects the Biden administration handled it well by building up Asian alliances. But the huge surprise has been the roiling violence elsewhere. Casualties in the Ukraine war could reach 1m by the end of 2025. Iran's scheming and the havoc in Gaza and Lebanon threaten instability in the Middle East for yet another generation.

Compared with the start of Mr Trump's first term in 2017, more of the world operates in a grey zone: think of Sudan's epic civil war or booming oil-smuggling. In a game-changing shift, the four autocracies are collaborating in drones, intelligence and sanctions-busting. They are pushing boundaries. In the final weeks of America's electoral race, China simulated a blockade of Taiwan and North Korea made nuclear threats and sent troops to Russia. This cocktail of local wars and alliances is familiar to students of the two world wars.

The Trump administration will explore unorthodox and sometimes shocking quick fixes

Of course, some of the explanation for a more dangerous world lies with factors far beyond America's control, including the morphing ideologies of autocrats and the rise of new economic powers. But Mr Trump and his advisers are also right to blame waning deterrence. There is a perception that America is wary of unleashing overwhelming hard power: consider the dribble of weapons to Ukraine or the struggle to police the Red Sea. Resources are stretched. There are too few shells to resupply allies, scarce air-defence batteries are being shuffled between hotspots and at one point in August there were no aircraft-carriers in the Pacific. If the autocracies collaborated more, for example on nuclear weapons, the gap would get worse.

If you were to prepare a briefing on American power for President Trump on January 21st 2025, complete with pictures, you could argue that the deterrence gap is a solvable problem in the long run. America's share of global GDP is 26%, or 58% including its allies, almost the same as in 1987 when Paul Kennedy, a historian, warned it would eventually stumble under its military burden. It hosts about half of all leading AI models. The four autocracies will face succession crises and are struggling with lousy productivity; China and Russia have shrinking populations, too.

Mr Trump may embrace some long-term policies that build up American power, such as a retooling of its defence industry and higher military spending. But the problem is that his isolationism and protectionism will undermine America's alliances. Instead the Trump administration will explore unorthodox and sometimes shocking quick fixes. His more extreme advisers will recommend making far more aggressive use of limited resources: should America make more nuclear threats (as Dwight Eisenhower did in the 1950s), or consider preventive attacks, for example on Iran, or encourage allies such as South Korea to build nuclear weapons? Other advisers will recommend that he shrinks the number of problems by abandoning more of America's commitments. That includes pushing for peace in Ukraine. Mr Trump may even try to split the autocracies, as America did with the Soviet Union and China. Separating Vladimir Putin from Xi Jinping would be the ultimate deal.

In a more dangerous world President Trump's desire for disruption and capacity to intimidate will have uses. Yet his brinkmanship, inconsistency and vulnerability to being played by opponents will cut against his aim of pursuing "peace through strength". The long-term restoration of American power requires investment and alliance-building that he will probably be unable or unwilling to do. The deterrence gap is growing, and in 2025 the world will find that even Mr Trump is not a big enough figure to close it. ●

Patrick Foulis Foreign editor, *The Economist*

Will "tariff man" get his way?

Donald Trump's explosive trade plan could cause global damage—but he will struggle to implement it all

ALMOST A CENTURY has elapsed since America's Congress last passed a bill into law levying tariffs on imported goods. The Smoot-Hawley Tariff Act of 1930, which raised average tariffs on imports by around 20% and incited a tit-for-tat trade war, was devastatingly effective: global trade fell by two-thirds. It was so catastrophic for growth in America and around the world that legislators have not touched the issue since. "Smoot-Hawley" became synonymous with disastrous economic policymaking.

With Donald Trump re-elected as America's president, history threatens to repeat itself. On the campaign trail he promised to levy tariffs of 10-20% on all goods imported across America's borders—with levies of as much as 60% on imports from China, and 100% on those from Mexico. Many economists have tried to estimate the possible impact on growth and inflation. All have concluded that such sweeping tariffs would harm growth and push up prices.

The Peterson Institute for International Economics, a think-tank, reckons a 10% universal tariff increase and retaliation from trade partners would knock one percentage point off America's growth for the two years after its introduction, and continue to impose a drag on growth indefinitely. Trading partners such as China and Mexico would also take sizeable hits. UBS, a bank, has already downgraded its Chinese growth forecast for 2025 to just 4.0% from 4.5%. The big questions now facing America, and the rest of the world, are whether Mr Trump really intends to go ahead with this plan—and, if so, whether he will be able to.

Start with the more quixotic question of whether Mr Trump really means it. Only he knows the answer. But plenty of his economic advisers have argued that his threats of huge tariffs are simply a bargaining tactic—and that he does not actually want to impose such sweeping measures. The trouble with this logic is that it is all too familiar. The same argument was made during Mr Trump's first campaign about his promises to "build the wall" (supposedly just a metaphor) or introduce a "Muslim ban" (an exaggeration).

In fact, he was serious about both—so Mr Trump may well be just as serious about his trade agenda, too.

Analysts have concluded that sweeping tariffs would harm growth and push up prices

Robert Lighthizer—a hardliner on trade issues, and an advocate of tariffs—appears to be in contention for various important roles in the next Trump administration. Having led Mr Trump's trade efforts the first time round, he would be ready to hit the ground running.

What about the more concrete question of whether Mr Trump will be able to implement his plan? He can certainly impose some tariffs. He did so during his first term, on things like steel and aluminium, under the broad powers ceded by Congress that allow the president to take action during emergencies or to protect national security.

Yet the most sweeping version of Mr Trump's trade plans would surely exceed the limits of those powers. The inevitable legal challenges that would result mean the plan would probably end up in the Supreme Court. Whether the justices would allow such broad tariffs to stand is unclear, but it is not a certainty. So imposing universal tariffs would probably require getting Congress to pass legislation.

A standalone tariff bill is probably out of the question. Mr Trump will also be working with a razor-thin margin in the House of Representatives, where there are plenty of Republicans (although not nearly as many as there once were) who do not support an anti-trade agenda. If a bill did make it through the House it could avoid filibustering in the Senate by being passed as a budget bill, through a process called reconciliation. But that process can take place only once each fiscal year, and has become the main avenue through which all policymaking gets done.

As such, whatever bill tariffs might end up in would probably encompass a smorgasbord of Mr Trump's economic policies—including an extension of the tax cuts he implemented in his first term and the repeal of some of the environmental subsidies put in place by President Joe Biden. The advantage of including tariffs in such a bill would be that they could raise revenue to offset that lost through tax cuts. But cleanly bundling up an extreme trade agenda with so many other competing priorities would be hard. Some tariffs could no doubt be included, but not the sweeping measures mooted during campaigning.

That Mr Trump might face political constraints on his trade policy perhaps explains the reaction of markets. Investors are certainly expressing concern about the impact on some countries: the Mexican peso has had a pretty torrid year, falling by around a fifth against the dollar, even as the greenback sits at roughly the same level, against a basket of global currencies, it was a year ago. But overall, investors seem to be shrugging off the potential threat to growth that drastic tariffs would pose. American equities jumped by 2.5% the day after Mr Trump won re-election, and have continued to climb since. Is that too optimistic? The world will find out in 2025. ●

Alice Fulwood Wall Street editor, *The Economist*

The coming border crackdown

America will not be the only country trying to curb migration in 2025

VOTERS EVERYWHERE are fed up. In all the big countries that held elections in 2024, the incumbent party lost seats. Complaints varied, but two stand out. One was high prices (partly a consequence of pandemic-era largesse). The other was migration, which surged after covid-19 border controls were eased. A sense that governments had lost control in both areas spurred voters to punish them in America, Britain and France in 2024, and hastened the collapse of Germany's ruling coalition. In 2025 some leaders will try to reduce economic and cultural turbulence for citizens by shutting out foreigners. The most dramatic experiment will be in the United States. How it pans out will have global consequences.

Blaming immigrants for stealing Americans' jobs and "poisoning" the nation's blood, President-elect Donald Trump vows to round up and deport all those in the country illegally. The economic effects would be grim. If he deports only 1.3m irregular workers (out of an estimated 8.3m), America's economy will be 1.2% smaller than expected by 2028; if he throws them all out, it will be a stunning 7.4% smaller, according to the Peterson Institute for International Economics.

If mass deportations are combined with Mr Trump's proposed tariffs, thus simultaneously choking the supply of imported labour and goods, the damage will be even worse: an economy anywhere from 3% to 10% smaller than expected by 2028, and cumulative inflation 13-23% higher. Also, by another estimate, every 100 deportations will reduce the number of jobs for the native-born by 8.8.

Mr Trump's plans are costly and legally questionable, but he will not need Congress to give him extra funds or authority. Instead, his advisers say he will revive emergency powers he wielded during the pandemic. Covid-19 may be gone but there are plenty of other diseases that immigrants might, in theory, carry—and the new president may use this as a pretext to end asylum. Building huge detention camps for migrants would be expensive, but Mr Trump could divert some of the Pentagon's budget, spuriously claiming to be defending America against an invasion.

The main checks on him will be practical and political. Wholesale deportation would require the co-operation of law-enforcement agencies in states and cities run by Democrats. This will not be forthcoming, and unlawful migrants will seek sanctuary in such places. Public support for expulsions may plummet if it means tearing families apart—more than 11m American citizens live with a relative who may be subject to removal. Specific industries, from fruit farms to hotels, will lobby furiously if their businesses are threatened by a labour shortage. So Mr Trump will surely stop short of the most extreme version of his plan.

For rich countries, a smart immigration policy will involve striking a balance

Across the rich world, asylum rules will grow tighter in 2025. Italy's attempt to process claims in a third country, Albania, has run into legal troubles, as did Britain's similar scheme, in Rwanda, before it. But the notion that asylum-seekers should seek refuge in the first safe country they reach, rather than keep moving until they find a rich country, will gain currency. Mr Trump's team talks of holding would-be migrants in camps in Mexico or Africa, in the hope of deterring many from setting off in the first place.

Irregular migrants will dominate the headlines. But many on Mr Trump's team are also keen to curb legal migration, even of highly skilled people. This will dull America's extraordinary dynamism: by one estimate, immigrants are 14% of America's population but generate 36% of innovation. If Mr Trump makes legal immigration even harder than it already is, he will create an opportunity for other places, from Dubai to Switzerland, to poach the talent America spurns.

With large swathes of the world growing more hostile to foreigners, the advantages of selective openness will increase. Smart governments should trumpet how quickly they issue visas to high-achievers, and woo talent not just from America but from all "drawbridge up" countries, including China and Russia.

For policymakers in all rich countries, a smart immigration policy will involve striking a balance. Governments must show voters that they are in control of who is let in, and that newcomers must pay their way. Only then will voters consent to inflows sufficient to ease skills shortages, rejuvenate ageing workforces and prop up pay-as-you-go pension systems. Japan, which is ageing and shrinking faster than most, has quietly decided to admit an extra 800,000 foreigners over the next five years, in areas from nursing to construction work. There is little backlash; the jobs need doing and few Japanese want to do them. Other rich, ageing countries should pay attention.

Covid-19 showed that governments can close borders tightly if they choose to do so—and that the cost of doing so is high. If Mr Trump imposes comparable restrictions on America when there is no pandemic, he will make it less rich, less innovative and less humane. Other leaders should not copy him. But some undoubtedly will. ●

Robert Guest Deputy editor, *The Economist*

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Crunch time for AI

Will the AI bubble burst, or will the technology finally start to deliver real value?

IT MAY BE the biggest gamble in business history. Today's mania for artificial intelligence (AI) began with the launch of ChatGPT at the end of November 2022. OpenAI's chatbot attracted 100m users within weeks, faster than any product in history. Investors also piled in. Spending on AI data centres between 2024 and 2027 is expected to exceed $1.4trn; the market value of Nvidia, the leading maker of AI chips, has increased eight-fold, to more than $3trn.

And yet most companies are still not sure what the technology can or cannot do, or how best to use it. Across the economy, only 5% of American businesses say they are using AI in their products and services. Few AI startups are turning a profit. And the energy and data constraints on AI model-making are becoming steadily more painful. The disparity between investor enthusiasm and business reality looks untenable—which means 2025 is shaping up to be a crunch year. The race to make AI more efficient and more useful, before investors lose their enthusiasm, is on.

Start at the cutting edge of innovation. Several constraints are slowing the pace at which the technological frontier is being pushed out. Training big models needs huge amounts of energy. The electricity used to train GPT-4, the large language model underpinning ChatGPT, could have powered 5,000 American homes for a year; the equivalent figure for GPT-3, its predecessor, was 100. Developing ever larger and whizzier models thus requires ever deeper pockets. By some estimates, the next generation of models could cost $1bn to train; and the larger they become, the more the cost of querying them (known as "inference") will mount. Meanwhile, there is a looming shortage of training data. By one estimate, the stock of high-quality textual data on the internet will have run out by 2028.

Companies around the world are rushing to come up with clever fixes to these problems, from more efficient and specialised chips to more specialised and smaller models that need less power. Others are dreaming up ways of tapping new high-quality data sources such as textbooks, or generating synthetic data, for use in training. Whether this will lead to incremental improvements in the technology, or make the next big leap forward affordable and feasible, is still unclear. Investors have poured money into superstar firms like OpenAI. But in practice there is not much difference in performance and capabilities between the flagship models offered by OpenAI, Anthropic and Google. And other firms including Meta, Mistral and xAI are close behind.

It seems that much adoption of AI is in secret, as workers use it without telling their bosses

For end users of AI, a different kind of struggle is under way, as individuals and companies try to work out how best to use the technology. This takes time: investments need to be made, processes rethought and workers retrained. Already some industries are further ahead in adopting AI than others: a fifth of information-technology firms, for instance, say they are using it. As the technology becomes more sophisticated—such as with the arrival in 2025 of "agentic" systems, capable of planning and executing more complex tasks—adoption may accelerate.

But culture also matters. Although few firms tell statisticians they are using AI, one-third of employees in America say they are using it for work once a week. In some roles the figure is even higher. One study found that 78% of software engineers in America are using AI at least weekly, up from 40% in 2023, as are 75% of human-resources staff, up from 35%. And OpenAI says 75% of its revenue comes, tellingly, from consumers rather than from corporate subscriptions.

All of this suggests that much use of AI is in secret, as workers use it to streamline tasks such as rewriting text or generating reports. Employees may worry that if they admit to using AI to get things done more quickly, bosses will give them more work to do, or take this as a signal that fewer workers are needed. This in turn suggests that AI adoption is as much a management challenge as a technological one. To get the most out of the technology, bosses need to create an environment that incentivises openness and experimentation, rather than secrecy and suspicion.

And AI can be used for more than office pencil-pushing. It may be that, in 2025, the most prominent AI breakthroughs come in other areas, such as drug development (the first AI-derived drugs may go into stage-three clinical trials) or defence (as intelligence is added to drones, which are emerging as key weapons systems of the future). Indeed, the West worries that China will harness AI to gain a military and economic advantage. Ironically, Chinese engineers have become particularly adept at innovating around resource constraints, in part because American export controls have curtailed their access to cutting-edge AI chips.

The AI race, then, will take many forms in 2025. Yet the point at which investors lose their nerve is often when new technologies quietly start gaining traction. Will the bubble burst, or will the technology start to deliver? The answer in 2025 may be: a bit of both. ●

Rachana Shanbhogue Business affairs editor, *The Economist*

A place to talk about cooling the Earth

The secretary-general of the UN is in a unique position to start a conversation about geoengineering

PROJECT POPEYE was an attempt by America to vanquish its Vietnamese enemies using cloud-seeding techniques to wash out their supply lines. It didn't work. But a few years after the fact, in 1977, it did bring about a treaty aimed at stopping others from following suit. The "Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques", normally known as ENMOD, prohibits countries from deliberately using "environmental modification techniques having widespread, long-lasting or severe effects" to harm each other.

Given that no countries have since done deliberate harm to others in this way, ENMOD can perhaps be counted a success. That, though, would be to confuse effectiveness with irrelevance, given that no countries have shown any serious evidence of wanting to break its strictures. The last time its signatories got together to confer was in 1992.

The time has come for them to think about gathering again. Environmental modification with "widespread, long-lasting and severe effects" is one of the most striking features of 21st-century life. The greenhouse-gas-driven climate crisis is not the sort of thing ENMOD was conceived to deal with. But the treaty might still play a useful role in addressing it.

Although 2025 is quite unlikely to be the hottest year on record—as 2023 was and as 2024 will prove to have been come January—it is still likely to be hotter than every year in every previous decade on record. More alarmingly, it is also set to be one of the coolest years for decades to come. There is welcome progress in reducing emissions in many countries. But what matters to the climate is not the rate of emissions, but the cumulative total. Until that stabilises, all other things being equal, temperatures will continue to rise.

However, all other things do not have to be equal. Solar geoengineering is another form of environmental modification. It would cool the planet by reflecting incoming sunlight back into space before it can do any warming. Research suggests that injecting shiny particles into the stratosphere might be a quite feasible way of doing this, and thus possibly slowing or stopping the rise in temperatures over much of the world.

Consider the consequences of choosing not to explore the possibility

It sounds like the very definition of hubris. It would have physical, chemical and biological effects well beyond those on temperature, changing the hydrological cycle, the chemistry of the upper atmosphere, even conceivably the rate of photosynthesis. Its indirect effects on human affairs might be yet more worrying. Such schemes would be easier to add to than to counteract, so the level of modification the world would see would probably be the level chosen by the country with the greatest appetite for such modification—unless others intervened by diplomacy or force. Many might also take this as an opportunity to ease off on emissions reduction, thus increasing the amount of solar geoengineering which might be called for, and doubling down on the risks that would come with it.

But then consider the consequences of choosing not to explore the possibility. At least four or five more decades of rising temperatures, maybe more; more deadly heatwaves in places that have rarely seen such things; deadlier heatwaves in places all too used to them; more droughts and crop failures; more glaciers melting; more extreme rainfall and flooding; more of the lower productivity associated with high temperatures blighting more developing-world economies; more people forced to move from places becoming more or less uninhabitable. More suffering.

There is no easy way to discuss such choices, and no obvious place for such discussions. The UN Framework Convention on Climate Change was not designed with solar geoengineering in mind, and has shown no interest in adapting itself to the task. But the ENMOD convention might provide an alternative.

Its main purpose is to prevent malicious environmental modification, but the 78 states party to it are also committed to "international economic and scientific co-operation in the preservation, improvement, and peaceful utilisation of the environment, with due consideration for the needs of the developing areas of the world". That is as good a starting place for discussing geoengineering and its prospects as any that international law has to offer.

A handful of parties to ENMOD could start setting up a meeting to discuss how they might think about, avoid or govern geoengineering tomorrow. Alternatively one man could get the ball rolling on his own: António Guterres, secretary-general of the United Nations. He inveighs passionately against the growing impacts of climate change, proclaiming in 2023 that "the era of global warming" had been replaced by "the era of global boiling". But all he offers to counter the apocalypse he describes is a new urgency about emissions reductions, which will have no effect for decades. If he wants countries to think seriously about the risks and potential of acting to cool the world, he should set the table for them. ●

Oliver Morton Senior editor, *The Economist* and chair, The Degrees Initiative

Age limits and democracy

Imposing a maximum-age limit on elected politicians may seem sensible, but would be illiberal

THE AMERICAN presidential election of 2024 was groundbreaking in many ways, not least in its elevation to the highest office, for the first time, of a convicted felon. But it established another precedent too: that age is a consideration when running for president. American voters, Democratic Party powerbrokers and eventually President Joe Biden himself concluded that 81 was too old to run for another four-year term. Does it make sense for democratic societies to enshrine such limits into law?

Serving into old age is often a mark of politicians' dedication as public servants. Yet age limits are applied to workers in other professions that carry a heavy burden of responsibility. Airline pilots in America and the EU must stop working at 65. Firefighters and police in many countries retire at 60 or earlier. Americans must leave the armed forces before they turn 64.

Governments also restrict the rights of citizens to do all sorts of things as they get older, especially if those activities could pose a danger to other people. Many European countries require drivers to take medical tests at regular intervals after the age of 70 in order to keep their licences. Finland requires medical tests for driving-licence applicants aged 45 or higher. England imposes an age limit for serving on a jury. Sitting in judgment of one's peers or steering a tonne of metal and glass at 60mph is no small responsibility. Nor is running a country, state or district.

Meanwhile, the average age of world leaders is increasing—it has risen from 55 to 62 over the past five decades, according to our analysis (see International section). And it is not just presidents and prime ministers who are getting older. On Capitol Hill, two-thirds of America's senators and half of its representatives were born before 1964. No doubt many are robust, but not all: 11 lawmakers have died in office since 2020. Half of them were over 80. Supreme Court judges are also appointed for life, rather than serving until a designated age, or for a fixed tenure.

Every democracy sets a minimum age for holding office. Some, such as France, are exceptionally liberal, allowing 18-year-olds to run for president, a position with near-monarchical powers. Others are more circumspect. Italy's president must be at least 50, even though the position is largely ceremonial. But no country sets an upper age limit for wielding power. Should they? Wisdom and experience count for a lot. But so do vitality, dynamism and fresh ideas.

America's political gerontocracy is a symptom of deeper problems, not the cause of them

North Dakota is leading the charge: in June its voters approved a measure that sets a maximum age for representing the state in Congress (candidates are barred from running if they would turn 80 during their term). More widely, both Republicans and Democrats favour age limits for politicians and Supreme Court judges by overwhelming majorities, according to a survey by the Pew Research Centre. In Britain, the governing Labour Party has promised to impose a retirement age of 80 on members of the House of Lords, who are appointed for life. And India's ruling Bharatiya Janata Party imposes an age limit of 75 on candidates standing for office, though it is not rigidly enforced.

It may sound reasonable for democracies to adopt age limits for those seeking elected office. But to do so would set a dangerous precedent. In a free society both the electorate, and the candidates they vote for, should be as broadly representative as possible. That means placing as few restrictions as possible on who can vote and whom they can vote for. The more governments impose limits on who can stand, the greater the danger that such limits will be subject to political meddling. Better just to let voters decide. The bar to imposing an age limit should thus be very high.

Moreover, according to our analysis there is no need for it. That is because even though the average age of world leaders is rising, in democracies (as classified by the Economist Intelligence Unit, our sister organisation) it is falling. The average age of democratic leaders has fallen from 59.4, for the period between 1975 and 1985, to 58.2 for 2015-25. In the OECD, a club of mostly rich countries, the equivalent figure fell from 59.0 to 55.7. In 1975 no country had a freely elected leader under 45, but now (as *The World Ahead 2025* goes to press) three of them do: Chile, Ireland and Guyana. In most free countries, in short, the age of leaders is neither a significant nor a growing problem.

The notable outlier to this trend is America. But that is due to the fact that many aspects of its democratic system favour incumbency and seniority. Gerrymandering of electoral districts also ensures that many races are uncompetitive, allowing incumbents to keep their seats for decades. America's political gerontocracy is a symptom of deeper problems, not the cause of them. A maximum-age limit would simply mask these problems, rather than fixing them.

As Donald Trump, aged 78, returns to the White House, the global debate about political age limits seems likely to intensify in 2025. Autocrats would, by their nature, ignore such restrictions. Democracies should think very carefully before imposing them. ●

Leo Mirani Asia correspondent, *The Economist*

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Superforecasters
Predictions, provided

Forecasts for key events in 2025, from the superforecasters at Good Judgment

JOURNALISTS AND commentators often make predictions about the future using ambiguous, carefully chosen words. Some other forecasters, however, prefer to express their prognostications using the rather more precise language of numbers and probability distributions.

Good Judgment, a forecasting firm, has recruited many such people to its team of professional superforecasters, who work together to provide detailed, specific forecasts. Here are their predictions for some key events in 2025.

Will Russia and Ukraine announce a ceasefire with an intended duration of at least 28 days before October 1st 2025?

What will Nvidia's market capitalisation be on December 31st 2025?

Will Min Aung Hlaing or his military successor cease to be the leader of Myanmar before October 1st 2025?

What will China's annual inflation rate for 2025 be?

What will be the effective US tariff rate for Chinese imports in the second half of 2025?

How many Bundestag seats will the Christian Democratic Union /Christian Social Union (CDU/CSU) win in the next German federal election?

How many seats will the Liberal-National Coalition win in the next Australian House of Representatives elections?

How many seats will the Conservative Party win in Canada's next federal parliamentary election?

Will NASA's Artemis 2 mission be launched successfully before January 1st 2026?

Forecasting winner

Congratulations to Daniel Nilsson, a data scientist based in Sweden, who has won **The World Ahead 2024 forecasting challenge**, run in collaboration with Good Judgment. A new forecaster, he is well on his way to being invited to join the superforecasting team, like previous winners. **Could you be a superforecaster, too?** Enter our 2025 challenge, which runs until October 2025, at **gjopen.com/economist**

LAST YEAR'S PREDICTIONS

The superforecasters scored 4.5/8 with their forecasts for 2024, correctly calling China's sub-5% GDP growth, Britain's election, continued conflict in Ukraine, no clash between China and a Quad power, and no euro-zone recession (though they expected one quarter of contraction, so they were only half right). But global GDP growth outpaced their forecast of 1.5-3%; they said Narendra Modi's alliance would win at least 300 seats in India's election (it won just 240); and they wrongly predicted a Democrat would win the US presidency.

United States

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The sequel is usually worse

What to expect after Donald Trump's second electoral victory

Idrees Kahloon Washington bureau chief, *The Economist*

THE FIRST time Donald Trump won the presidency, in 2016, by beating back both the Republican and Democratic establishments, was shocking. That he won it again in 2024—after losing in 2020, inciting his supporters to try to violently overturn his loss, then keeping control of his party while weathering 90 or so felony indictments (with convictions on 34 of those counts), two assassination attempts and one switch-up at the top of the Democratic ticket—is utterly surreal. Only one previous president, Grover Cleveland, managed to return to the White House after being booted out once. That was more than a century ago.

Most presidents who return to office do so without unified party control of Congress. But Mr Trump has been graced with a trifecta, with Republican majorities in both the Senate and House of Representatives. This gives him, once again, the chance to pass legislation rather than merely flexing the powers of executive authority. His victory also brings relief from the lawsuits that have dogged him. And he will be tempted to seek retribution against his political enemies.

Mr Trump squandered much of his political capital in 2017 pursuing a repeal of the Affordable Care Act, known as Obamacare. His signature achievement, actually shepherded by his congressional allies, was a major tax cut known as the TCJA. Many of the important provisions of that bill will expire at the end of 2025, requiring a new bill to either extend or revise them. Mr Trump has pledged a variety of tax giveaways which would collectively cost trillions over the coming decade if enacted. All this will need to be resolved in the giant tax bill to come. Mr Trump may look to cut clean-energy spending, approved by Democrats, as a way to fill some of the revenue gap.

It will not be a comfortable time to be a bureaucrat. Mr Trump's animosity towards the "deep state" has hardened in his time away from power; his allies have prepared plans to eliminate those they consider to be conspirators and doubters. He will use his executive fiat to overturn Joe Biden's executive orders on environmental limits. He will issue sweeping executive orders on immigration, aiming to "shut down" the

southern border and limit asylum.

Having pledged sweeping tariffs on China, Mr Trump will be swift to show he means business, perhaps by invoking national-security authorities to implement them without specific congressional approval. All this will be challenged in court.

For all the storm and stress about Mr Trump's return at home, his first year could be even more consequential abroad. Under Mr Biden, America was one of the chief sponsors of Ukraine's defence against Russia's invasion. Mr Trump pledged to settle the conflict after his election, even before he was inaugurated. Further military aid from America is unlikely to be forthcoming, pushing more of the burden onto the Europeans.

Although Mr Trump is hesitant about traditional war, he is keen on trade wars. So he is likely to intensify Mr Biden's policy of export controls on sensitive materials, such as the advanced chips used for artificial intelligence, alongside a bevy of new, punitive tariffs.

It will not be a comfortable time to be a bureaucrat

This will be Mr Trump's final term in office. He may consider what his legacy will be, beyond just beating his political enemies at home and disengaging abroad. After remaking the Republican Party from within—into a nativist, protectionist party, sceptical of military adventurism and indeed of broader American involvement overseas—his victory ensures that this ideological transformation will be enduring. J.D. Vance, the new vice-president, aged 40, is the heir apparent to the Make America Great Again movement that has taken over American conservatism, provided he can stay in Mr Trump's good graces. Wherever Mr Trump takes America in the next four years will be felt for decades to come. ●

What now for the Democrats?

The way forward is far from clear

James Bennet Lexington columnist, *The Economist*

LEFT TO THEIR own devices, American political parties are weak, befuddled things. When they wind up in the political wilderness they tend to wander, muttering to themselves, until some new leader—a Ronald Reagan, a Bill Clinton, a Donald Trump—comes along to supply direction. In blazing the Republicans' path back to the White House, Mr Trump has sparked a frenzy of finger-pointing and even some soul-searching within the Democratic party that will continue throughout 2025 and beyond. The Democrats can at least console themselves that they have a strong generation of rising politicians from outside the Beltway who are, at last, free to compete to set the party's direction.

President Joe Biden's disastrous decision to seek re-election, despite concerns about his age, prevented that competition from happening when it might have produced a candidate and agenda strong enough to defeat Mr Trump. Kamala Harris ran a creditable campaign once Mr Biden dropped out, but she is unlikely to reclaim the nomination. So there is no Democratic frontrunner—and no Democratic leadership with the authority or credibility to anoint one.

Nor is there agreement on policy or message. The need to contend with Mr Trump's overhaul of the Republican party will complicate the Democrats' debate over whether the winning path nationally lies further left, or towards the centre. The pro-labour economic populism of the party's leftists may appeal to working-class voters who defected to Mr Trump, but those same people are alienated by leftist positions on policing, illegal immigration and transgender rights.

For now, it will fall to the Democrats' congressional leaders—Hakeem Jeffries in the House and Chuck Schumer in the Senate—to counter Mr Trump. That means the Democratic agenda will be defined by opposition to his initiatives. Even that agenda may not cohere, because Mr Trump and his policy are whatever he says they are, day to day. His endless shape-shifting will keep Democrats off-balance.

The last time Democrats had an open competition for their nomination, in 2019 and 2020, the party lurched to the left. It was the febrile season of covid-19 and Black Lives Matter. Ms Harris came to regret some of the positions she took. Now the dynamics will be different. Some sensible candidates from 2020 will be contenders again. But the buzz in 2025 will be loudest about governors in their 40s and 50s who will compete on records of pragmatic decision-making.

Gretchen Whitmer of Michigan and Josh Shapiro of Pennsylvania are proven vote-winners with working-class people in battleground states. Andy Beshear of Kentucky has won handily, twice, in a state Mr Trump carried three times. Wes Moore was elected as Maryland's first black governor in 2022 with 64.5% of the vote.

But until the 2028 campaign gets going, no one will be sure what the Democrats are, except not-Trump. In 2020 Mr Biden called himself a "bridge" to the future. He has left his party with no map, or any idea whom to trust to find a way forward. ●

↑ *No garbage jokes, please*

Trump's rich inheritance

America's economy enters 2025 in great shape. Politics will not spoil it—yet

Simon Rabinovitch US economics editor, *The Economist*

IT IS NATURAL to assume, with Donald Trump back in charge, that America's economic outlook for the coming year will depend on his agenda and his whims. But when thinking about how the economy might fare, it is best to start by leaving politics aside.

America enters 2025 with impressive momentum. Not long ago the consensus prediction of analysts was that it would have suffered a recession by now. Instead, it is the only major economy where output is above pre-pandemic trends. Its unemployment rate is hovering around 4%, well below the average of the past three decades. Even better, the bane of the past few years is fading away: inflation is set to return in 2025 to the Federal Reserve's target of a 2% annual pace.

One worry is that all this sounds too good to be true. Some economists fret that a slowdown in job creation augurs poorly for growth. Others have the opposite concern—namely, that inflation will prove stubborn. But in 2025 these fears are unlikely to materialise. With supply chains fully healed from the covid-19 pandemic and the labour market also back to normal, price pressures will continue to recede.

One worry is that all this sounds too good to be true

With inflation abating, the Fed has already started reducing rates from their peak of 5.5% in September. It will take rates below 4% by the end of 2025, a level that will encourage businesses and consumers to spend more. And that, in turn, will allow the economy to make a soft landing in 2025. It would be an accomplishment to celebrate: a best-case scenario in which America wrestled down inflation without crushing growth. Mr Trump is sure to take credit for the strong economy, though Joe Biden will have played a bigger role in bringing it about.

So, how will Mr Trump's policies affect America's economy? His supporters believe that he will make it even stronger. Two parts of his programme could help. First, he has vowed to unleash a wave of deregulation. He will make it easier for energy companies to obtain drilling permits, for tech giants to deploy artificial intelligence and for financial firms to lend money. Second, he has vowed to slash taxes. But these policies may not deliver as much of a growth kick as Mr Trump hopes. Oil and gas production were already at record highs under Joe Biden, and there is not much scope for major increases. As for the tax cuts, with America's federal deficit already at 6%, at least some Republicans in Congress will object to Mr Trump's tax plans, limiting their eventual size.

Two other parts of Mr Trump's agenda present serious risks. He is hell-bent on raising tariffs, viewing them as necessary to bring more manufacturing back to America. And he wants to boot millions of illegal immigrants out of the country, a central promise of his election campaign. Together, these policies could prove a harmful combination: they would drive up the price of imports and strip the economy of workers, thereby weighing on growth and fuelling inflation.

Much will depend on how aggressive Mr Trump is in his pursuit of his goals. He is likely to move swiftly in jacking up tariffs on China, but he may be a little more deliberate in slapping levies on the rest of the world. Stricter border controls will stanch the flow of people entering America from the south, but it will be harder to round up migrants already in the country.

The economic consequences of Mr Trump's worst policies may thus remain relatively muted in 2025. That is not to minimise the danger: as he escalates both tariffs and deportations, the fallout will increase. But in the coming year, at least, America's robust economy will overpower its corrosive politics. ●

→ Outside the beltway

United States

Sources: Bloomberg; Haver Analytics

A world in turmoil

In his contempt for allies, the new president will probably add to the chaos

Anton La Guardia Diplomatic editor, *The Economist*

TO UNDERSTAND THE forbidding world that Donald Trump will confront, open the 75-page report of a bipartisan commission on national security, published in July. "The threats the United States faces are the most serious and most challenging the nation has encountered since 1945 and include the potential for near-term major war." America may have to fight several regional conflicts at once, which could merge into a global one. The country, the commissioners said, is not ready for such wars. Worse, Americans are scarcely aware of how the world around them is darkening.

The new president will inherit several crises. America is supporting two friends fighting protracted wars, Ukraine and Israel; and tensions are rising in Asia, with potential for conflict over Taiwan, the Koreas or the Philippines. The problems are all the harder to manage because four of the most prominent autocracies—China, Russia, Iran and North Korea—are increasingly making common cause. Nuclear threats are growing, too (see International section). Whether the quartet constitute a real alliance or not, their deepening partnership is fast becoming the frame of reference for Washington's foreign-policy debates. Every crisis is increasingly connected to broader geopolitical rivalries.

During the campaign Mr Trump veered between hyperbole about an impending "world war three" and glibness about how easily he could prevent it, without saying how. In office he may add to the turmoil.

But predicting what he will do is hard. Mr Trump presides over three broad schools of thought in the Republican Party. The "primacists" aim to preserve America's leadership and the global order it created. America must prevail just about everywhere, they argue; a victory for Russia in Ukraine would embolden China in its threats to invade Taiwan. In contrast, "prioritisers" argue that America is becoming dangerously overstretched. Better to concentrate its limited resources where they matter most, in Asia, and leave Europe and the Middle East to fend mostly for themselves. The prioritisers, in turn, merge fuzzily with "restrainers", who generally want America to do less in the world. Mr Trump's picks for the big national-security jobs reflect the full range. Marco Rubio, his choice for secretary of state, is a conventional Republican hawk. Mike Waltz, named as national-security adviser, wants America to turn to Asia. Peter Hegseth, the choice for defence secretary, bemoans the "woke" military and leans towards isolationism.

At different times in his first term Mr Trump nodded towards all three groups. But he also has his own impulses: an obsession with trade deficits and tariffs; contempt for alliances; and an attraction to autocrats and a desire to make deals with them. So expect renewed trade wars, especially with China; threats to abandon allies or renegotiate terms with them; the partial or complete end of American military support for Ukraine; greater leeway for Israel in its wars and settlement policies; more economic pressure on Iran; and growing tension with Mexico on everything from trade to migrants and drugs.

A big question is whether and how far to increase defence spending, which is close to historical lows at about 3% of GDP and projected to decline. The bipartisan commission recommended a 3-5% real-terms increase in the next fiscal year, and thereafter a "glide path" to cold-war levels of spending (5-17% of GDP). That is a big jump at a time of strained public finances. The federal deficit is expected to reach 6% of GDP, and will grow substantially under Mr Trump's plans for tax cuts (though he hopes that tariffs on imports, and slashing wasteful spending, will fill the gap). Securocrats argue that deterrence is cheaper than war. But it is hard to imagine Mr Trump cutting benefits or raising taxes to pay for more weapons. ●

Green to brown

What Donald Trump's return means for energy policy

Vijay Vaitheeswaran Global energy and climate-innovation editor, *The Economist*

"BY FAR, THE single most important thing the US can do in this moment to combat the global climate crisis is to send Harris to the White House." So declared Manish Bapna, head of the NRDC Action Fund, an influential green lobbying group, in advance of the American presidential election. During his first term, Mr Trump embraced fossil fuels and tried to roll back environmental regulations. During the 2024 campaign, his energy mantra was "Drill, baby, drill!" and he mocked climate science and electric vehicles.

That stood in stark contrast to Kamala Harris, his defeated opponent, who threaded the needle by supporting both hydrocarbons and clean energy. She vowed to defend Joe Biden's climate accomplishments. The most important of these, the misnamed Inflation Reduction Act (IRA), would—if kept in place—spark a $3trn investment boom into a range of low-carbon technologies over a decade. However, Mr Trump ridiculed that law on the campaign trail as the "Green New Scam" and vowed to kill it.

Now that Mr Trump has won, will Mr Bapna's fears be realised, or will the president-elect's pro-fossil-fuel and anti-climate rhetoric prove mere campaign bombast? Ideologues at the Heritage Foundation, a conservative think-tank, believe radical change is possible. With help from Trump advisers, they have prepared proposals to reverse environmental policies and speed up deregulation. Mr Trump has disavowed that effort, known as Project 2025, but parroted its main points on deregulation and embracing fossil fuels.

With Republicans in full control of Congress, some of that agenda will now move forward. There will be few new restraints on oil and gas drilling, and Mr Biden's pause on approvals of new projects to export liquefied natural gas will be lifted. Because nobody, including Mr Trump, expected him to win in 2016, he was ill-prepared to govern. Many of his appointees were incompetent loyalists, and their efforts at regulatory reform were ▸▸

There will be few new restraints on oil and gas drilling

often sloppily executed. The NRDC brought 163 lawsuits against the Trump administration, and won 88% of those that were resolved. This time his advisers will be more competent and more formidable.

Still, American presidents have less control over energy than people think. Oil prices are largely set by the OPEC cartel. Mr Trump yanked America out of the UN's Paris agreement on climate change, but that neither led to a collapse of global efforts nor prevented an acceleration in climate action by states, cities and firms. To the chagrin of progressives, and due in part to conflicts in Ukraine and the Middle East, America became the world's biggest oil and gas producer during Mr Biden's term (see chart).

Mr Trump's promise to kill the IRA will probably fall flat as well. Nearly four-fifths of its lavish tax credits flow to Republican districts, which explains why nearly a score of Republican congressmen issued a letter opposing its repeal. Even a senior oil-and-gas lobbyist says his clients, who benefit from the IRA's subsidies for hydrogen production and carbon capture, "will go to the mat" to prevent its repeal.

Mr Trump's victory will not mean a collapse in climate efforts; clean-energy investment has gained a momentum of its own as the cost of renewables plunges. The fundamental question, says Mr Bapna, is whether America will be a leader or a laggard. But the policy uncertainty Mr Trump brings will give Wall Street pause. Wood Mackenzie, a consultancy, reckons that his presidency will reduce investment in America's energy transition by $1trn, to roughly $6trn, by 2050. America's economy will continue to get greener, but brown energy is not going away. ●

It's a gusher

Crude oil production, % of world total

Source: Rystad Energy *Forecast for Q4

Over here

Donald Trump will try to upend America's immigration system

Aryn Braun West Coast correspondent, *The Economist*

NO ISSUE IS more tied to Donald Trump than immigration. While announcing his first run for president in 2015, Mr Trump called Mexicans criminals and rapists. Over the following nine years "Build the wall!" and "Mass deportation now!" became rallying cries for his campaigns. On the heels of his quick and decisive victory over Kamala Harris, Mr Trump will again try to curb legal immigration and deter the illegal kind. In 2025 his team will be more experienced and more effective.

America's immigration system is made up of scores of federal agencies. The process is badly outdated and confusing to navigate for immigrants and policymakers alike. Even with a trifecta—Republicans have captured control of the Senate and the House of Representatives, as well as the presidency—reform in Congress is doubtful. Even so, the president has broad authority to change immigration rules and set different priorities.

It is helpful to think about the changes Mr Trump could make on a sliding scale. On one side are technical tweaks. As in his first term, the president could limit the length of time for which a visa is valid, and make obtaining that visa harder by increasing vetting, fees and waiting times. The number of people granted green cards would again plummet. The president also has the power to set the number of refugees accepted. For the next four years, expect that number to be very low.

At the border, Mr Trump has pledged to restart his policy which required some migrants who tried to cross the southern border to await court hearings in Mexico. But only about 70,000 migrants were enrolled in the programme, and that will only happen if Claudia Sheinbaum, Mexico's new president, co-operates. Mr Trump vows to drop a government scheme (which he calls an "app for smuggling illegals") that lets migrants make appointments to apply for asylum. He also intends to end programmes that Joe Biden used to try to control the migrant flow, offering some nationalities work permits but not a path to citizenship.

At the other end of the scale is Mr Trump's most extreme proposal: mass deportations. Little can be achieved on that front without extra funding from Congress. But even poorly executed attempts to round up migrants in America's interior would separate families and engender division between the Trump administration and Democratic-controlled states with laws protecting unauthorised immigrants who live there.

Some things will be beyond Mr Trump's control. His contentious policies will be challenged in the courts. If America's economy cools, fewer migrants will come looking for jobs. If Venezuela sinks further into ruin, more citizens may stream north.

There will be backlash. Increasing deportations or ending DACA, a law protecting from removal those brought to America as children, could rejuvenate pro-immigrant protests like those in Mr Trump's first term. That movement has gone quiet—but perhaps not for long. ●

A question of justice

Is "lawfare" now a permanent feature of American politics?

Adam O'Neal Washington correspondent, *The Economist*

COUNTLESS POLICY consequences follow from Donald Trump's victory. But the result is also deeply personal for the new president. The election was, in part, a referendum on Mr Trump's guilt in numerous court cases against him (in May he had been found guilty of 34 counts of falsifying business records). The Department of Justice (DOJ) began winding down federal cases against him the day after his election, and it became clear that he would not face sentencing for his existing convictions. But the first year of Mr Trump's second term will bring a reckoning for the rule of law in America.

Even before the president-elect's legal travails captivated the nation, Americans lacked faith in their criminal-justice system. A 2024 Gallup survey found that only 21% had a "great deal" or "quite a lot" of confidence in the system, down from 34% in 2004. The intensity of this distrust will grow in 2025. The tragedy of the 2024 election is that either outcome would have led to profound cynicism on the other side.

Politicians have faced the possibility of being sent to prison throughout American history, typically over corruption, but presidents had largely avoided the vagaries of being investigated by law-enforcement officials while in office. Richard Nixon's downfall brought about a new era of independent counsels that could threaten a presidency. Congressional Republicans made use of that process to investigate Bill Clinton, and Mr Trump's situation supercharged the trend of criminal investigations infecting high politics.

The waters are muddy, because the cases involving Mr Trump are so varied. It seems clear that he mishandled classified documents, though the case was initially dismissed. And the business-fraud case in which he was convicted relied on a novel legal theory that may not withstand scrutiny on appeal. The whole saga has created a dangerous situation that will play out throughout 2025.

How will an already dysfunctional Congress operate when matters of criminal justice are treated like partisan policy disputes? How many local prosecutors, Democratic or Republican, will try to raise their profiles on the back of shaky cases against national politicians? What does it mean if the Supreme Court and DOJ—which have been pulled into these controversies and must make decisions that disappoint half the country—no longer command respect from most Americans? And will candidates enter political races to reduce their chances of going to jail?

Those in power will see little reason to dial back tensions, on the assumption that the opposition will pursue them once it returns to office. Many are watching to see if Mr Trump has his political enemies investigated. If he called a legal truce, that could help prevent lawfare from spiralling out of control and becoming an everyday feature of American life. But, given the events of recent years, it seems unlikely. ●

Back to the states

What will happen with abortion rights now?

Sacha Nauta Social affairs editor, *The Economist*

ABORTION WAS one of the defining issues in the 2024 presidential election campaign. Kamala Harris used every opportunity to warn that a Trump victory would be disastrous for women and that her opponent would ban abortion nationally. Will this happen in 2025?

Although the return of Mr Trump is bad news for reproductive rights in America, he is unlikely to ban abortion outright nationally. First, passing such legislation would be very hard—the Republican party does not have the required supermajority in Congress. Second, Mr Trump has repeatedly said that even if such a bill made it to his desk, he would veto it.

Instead, battles over reproductive rights will continue to be fought primarily at the state level. In eight out of ten states that held a referendum on abortion on November 5th, a majority of Americans voted to protect access (though in Florida's case, not by enough to pass the state's 60% threshold). In most cases this means protections for abortion access will be enshrined in state constitutions. But despite Mr Trump's insistence that "it is up to the states" to decide on abortion policy, only half of American states allow such referendums. Governors in red states will continue to block abortion access. Politically astute Republican politicians will reframe "bans" as "guardrails" or "safety limits", recognising that harsh bans are unpopular: only 9% of Americans think abortion should be illegal in all cases.

↑ *On the streets, in the courts*

The most substantive fights in 2025 will probably take place in courtrooms. Efforts in abortion-ban states will focus on trying to stop the flow of abortion pills into such states, and the flow of patients out. And having, in 2022, returned the issue to the states, the Supreme Court may have to look at the issue again in 2025. Questions around jurisdiction over interstate travel for terminations, the availability of abortion pills and obligations around emergency provision could all return.

At the federal level Mr Trump does have some levers to pull. In particular he has power over the main agencies involved in implementation of abortion-related policies. He could issue an executive order directing agencies to police access more strictly, for example by clamping down on interstate shipping, or the provision of abortion medication to minors, on the pretext of setting national safety standards.

Most likely, access to abortion will continue to diverge in 2025. It is only a matter of time before someone files a wrongful-death suit on behalf of a girl or woman who lost her life because doctors were too frightened to provide the medical care she needed. ●

By Invitation

How America should deal with the quartet of chaos

History offers valuable lessons, argues Sarah Paine, professor of history and grand strategy at the US Naval War College

THE SECOND COLD WAR began with Xi Jinping's accession to power, Vladimir Putin's disposal of term limits in 2012 and Russia's ingestion of 7% of Ukraine in 2014. Both leaders have signalled that international norms no longer matter and they have deepened their relations with Iran and North Korea, portending a hostile alliance variously known as CRINK, the axis of upheaval or the quartet of chaos. In 2025, how should America respond to it?

Each of the four seeks international successes to vindicate different power paradigms. Mr Putin wants to conquer Ukraine to prove Russia's greatness. Mr Xi aims to maintain the Communist Party's power monopoly by rallying nationalism to take Taiwan. In North Korea, Kim Jong Un is building a nuclear arsenal to retain his throne. Ali Khamenei wants to vindicate his brand of Islam by extending Iran's regional domination.

Each also prioritises different theatres: eastern Europe and the Caucasus for Russia; north-east Asia for North Korea; the Levant for Iran; and the near seas for China. And each faces different primary adversaries: Ukraine for Russia; South Korea for North Korea; Israel for Iran; and, depending on the trouble China chooses to make, Taiwan, India or another country. Because the rules-based international order precludes their military choices, they share the ultimate goal of overturning those rules and the institutions enforcing them—making America a common secondary adversary.

Given that the quartet's primary adversaries, intermediate objectives and main theatres do not align, each will veto other members' plans that conflict with their own. North Korea relies on Sino-Russian tension to avoid domination by either. Iran fears dependence on Russia. Neither China nor Russia wants one power, let alone Iran, to dominate the Middle East. Neither wants the other to dominate Central Asia, but each seeks to do so itself. Siberia has resources China covets on lands the tsars stole, so expect marriage problems.

The quartet faces growing opposition. Their shared antipathy towards the rules-based global order threatens the prosperity of every beneficiary of the legal security those rules provide. Most countries are small, so their security depends on the rules.

America won the first cold war through a strategy of assisted suicide

How will this cold war play out? History offers guidance. First, it will not end soon. Only after several generations did Chinese and Russian leaders conclude that emerging from poverty required co-operation with the West. So they called off the first cold war. But those leaders have since died.

America and its allies won the first cold war through a strategy of assisted suicide. They opposed communism for its brutality, economic ineptitude and continentalist penchant for military over-extension. Given Russian and Chinese recidivism, America and its allies should again amplify those economic and military weaknesses to fast-track their impoverishment and reduce their ability to fund military adventures.

To do so, they should use sanctions—not to change behaviour but, like chemotherapy, to shrink the tumour. Comparing North and South Korea illustrates the long-term compounding effects of reducing economic growth by a percentage point or two. Ratchet up enforcement by eliminating the dark-money havens sheltering the kleptocrats—and use that money to aid their victims.

Another lesson is to emulate the greatest generation. The conscripts of the first world war rose to leadership roles amid the Depression, and then had to send their own children to fight another world war. Their solution was institution-building on a global scale, including the UN, the IMF, NATO and the predecessors of the WTO and EU. They created forums to resolve differences, not with soldiers, but with lawyers and diplomats, maintaining peace in the industrialised world until Mr Putin invaded Ukraine. So deepen co-operation in the West, build an equivalent institutional architecture in the East (Japan's prime minister, Ishiba Shigeru, has called for an "Asian NATO") and extend it globally.

Finally, do not despair over Russia's and China's U-turn on the road to prosperity. During the first cold war, the winners prospered while their enemies endured poverty of their own making. The rules-based order, however flawed, is positive-sum through compounded growth and the facilitation of co-operation. Countries vested in the rules-based order should foster each other's economic growth during the long wait for others to relearn that territorial expansion is a negative-sum proposition that obliterates wealth and lives. ●

ADVERTISEMENT

MENTORING NEXT-GEN WOMEN IN TECH

How one Brazilian student is leading by example

17-year-old Giovana Rocha dos Santos from Campinas in Brazil says Samsung Innovation Campus, a programme which has been training young people in the country since 2020, ignited her passion for technology and opened her eyes to career opportunities in the sector. She wants to help guide future cohorts to follow in her footsteps and leverage all that the programme has to offer.

In 2022, while studying Technical Electronics at the Federal Institute of São Paulo (IFSP), I first learned about Samsung Innovation Campus—a programme that would go on to change my life.

When I realised I would be able to learn Python and artificial intelligence (AI) skills through the programme, classes that I did not have access to in my curriculum, I realised I could not pass up this opportunity to deepen my knowledge of tech.

DRIVEN BY DATA

Samsung Innovation Campus was my gateway to the world of technology and innovation; it took me on a journey of discovery. It fuelled my passion for using technology in practical ways to solve real-world problems—which inspires me much more than solving an exercise in a book.

I learned Python first and then AI. The classes were dynamic and covered the basics like initial concepts to the use of advanced libraries. The course platform had a clear sequence of content to follow, while teachers taught us the project methodology in parallel. The study materials were also translated into Portuguese and presented in an organised way, which made it easier for me to enter the world of IT and programming, topics I was worried I would struggle with.

The classes emphasised identifying problems and seeing how they could be solved with Python. So, I began to brainstorm ideas with the teachers who encouraged us to look at our daily lives. That sparked my project, DriveSafeAI.

Every day, I walk along Avenida John Boyd Dunlop, which is considered the largest road in Campinas city. The road is jammed with cars, trucks, motorcycles and bicycles and along the sidewalks are billboards with traffic-accident statistics. My goal was to develop a data-analysis algorithm using Python that indicates the risk of accidents occurring in particular spots along the road at different times of day. I felt that with this information, local authorities could use preventative measures, such as signs and traffic police, in a more targeted and effective way.

The support I received from my teachers and mentors at Samsung Innovation Campus was invaluable to my project. They guided me in identifying which traffic-data elements

> "Now equipped with the technical knowledge and soft skills I gained during the course, it has given me the confidence to pursue a career in technology."
>
> **Giovana Rocha dos Santos**, participant of Samsung Innovation Campus 2023

were helpful for the analysis I wanted to do. Knowing I could get their help whenever a doubt arose in my mind boosted my confidence in solving the challenge.

FROM STUDENT TO MENTOR

After completing the programme, I secured an internship at the State University of Campinas, also known as UNICAMP. My work currently involves developing prototypes for renewable-energy solutions. At the same time, I am continuing to develop DriveSafeAI. I recently requested new data from municipal authorities and am building additional variables into the algorithm to make it more accurate.

I am hoping my next step will be to study engineering at university level. In the long term, my dream is work abroad for a company that believes in empowering young people and women around the world.

In the short term, I have been appointed as a mentor for this year's Samsung Innovation Campus, which means I will be helping five students brainstorm and develop their projects. I am really excited by this role; I see this as an opportunity for personal and academic growth.

A LIFECHANGING EXPERIENCE

My experience at Samsung Innovation Campus 2023 was incredible. It was a fruitful, creative and productive period of my life.

While I developed core technical skills, such as Python, I also learned how to pitch and honed interpersonal skills. The latter is especially important as I am now able to talk about tech and science with researchers without getting nervous.

The programme also included an employment module. Aimed at helping prepare students for their working lives, I had the opportunity to receive career guidance, and to learn about resume preparation and how to network.

The teachers were always available to support us and answer our questions. Additionally, we had access to IFSP's laboratory, where we could use manufacturing equipment and materials.

More importantly, the programme was free of charge, which gave me access to resources and materials that I would not have been able to afford otherwise.

If I had to sum up my time at Samsung Innovation Campus, it was a journey of technological discovery, where I found myself as a woman in tech and science at the end. Now equipped with the technical knowledge and soft skills I gained during the course, it has given me the confidence to pursue a career in technology—and a clearer vision for my future.

In more than 30 countries, Samsung Innovation Campus is preparing young people for tomorrow's workplace by equipping them with skills in new and emerging technologies.

To learn more, visit **bit.ly/future-is-you** or scan the QR code.

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The Americas

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Handle with care

MEXICO CITY

What Donald Trump's return means for Latin America

Sarah Birke Bureau chief for Mexico, Central America and the Caribbean, *The Economist*

DONALD TRUMP'S decisive victory in the United States was met with trepidation across most of Latin America. And with good reason: the impact of his return to the White House in 2025 will be felt across the region. Mr Trump may not have mentioned Latin America much during the campaign, with the exception of Mexico, which he regularly bashed. But the main topics he cares about—illegal immigration, trade imbalances and drugs—put the Americas in the crosshairs. And Marco Rubio, Mr Trump's pick for secretary of state, cares more about the region than many: he is the son of Cuban immigrants.

The first challenge will be Mr Trump's plans for dealing with migrants. The vast majority of the millions of people Mr Trump says he wants to deport are Latin Americans: of the estimated 11m people residing in the United States illegally, over 4m are Mexican, 2m are from Central America, over 800,000 from South America and 400,000 from the Caribbean. Latin American countries would struggle to absorb them. And their economies would take a big hit from the loss of remittances, which make up 20-25% of GDP in El Salvador, Guatemala and Honduras.

Latin Americans also accounted for the vast majority of the 2.1m encounters at the southern border in 2023. To reduce that number, Mr Trump is likely to bring back some of his policies, such as trying to strong-arm other countries into accepting asylum seekers, cracking down on migrants to deter them or, in the case of Mexico, making them wait on their side of the border. Given that the root causes of migration remain (see next article), this could cause chaos.

Mexico, now the largest trading partner of the United States, will be the country most affected by Mr Trump in other ways, too. He has threatened to impose tariffs on day one, in part to reduce his country's trade imbalance with Mexico, which was $159bn in 2023. Mr Trump is also unhappy about car factories in Mexico, and Chinese investments. Mexico says it would hit back with its own tariffs, which would cause a costly trade war. All this could blow up the United States-Mexico-Canada Free Trade Agreement (USMCA)

which Mr Trump himself negotiated during his first presidency. Cool heads may prevail: North America's economies are deeply integrated and any disruption would hurt them all. Mr Trump may consider a review of USMCA, due in 2026, as a chance to make deals.

His return may also put the kibosh on nearshoring, which many of the region's countries are betting on to juice their sluggish economies. Mexico had hoped to be the main benefactor of efforts by companies in the United States to decouple from China, a policy Mr Trump pushed in his first term that was bolstered by supply-chain disruptions caused by the pandemic and Russia's invasion of Ukraine. But Mr Trump wants firms to reshore to the United States, rather than to nearshore. This would reverberate beyond Mexico, to Chile and Costa Rica, among other countries.

Mexico could also be hit hard by Mr Trump's attempts to stem the influx of fentanyl, a drug made by gangs in Mexico and exported north, and which killed around 75,000 Americans in 2023. Mr Trump may be restrained from bombing gangs' drug laboratories, as he has threatened to do. But he is likely to take a more invasive and unilateral approach to the security threats coming from Mexico than previous administrations.

Mr Trump wants firms to reshore to the United States, rather than nearshore

Under Joe Biden, the United States put supporting democracy on the back burner, but it did help Guatemala's president overcome resistance by anti-democratic forces to take power after his electoral win. Mr Trump is unlikely to care about such things. He likes strongmen, chief among them Nayib Bukele, El Salvador's president. He is currently serving an unconstitutional second term and has shown little regard for human rights in his crackdown on crime. Another is President Javier Milei of Argentina, who hopes Mr Trump's return may help him get a $15bn IMF loan to help his radical overhaul of Argentina's economy.

Mr Trump and Mr Rubio will look rather less kindly on Latin America's leftist autocrats in Cuba, Venezuela and Nicaragua. During his first term Mr Trump turned the screws on Venezuela and ended Barack Obama's policy of normalising relations with Cuba. Less certain is what faces Brazil's current president, Luiz Inácio Lula da Silva. He is no Trump bedfellow, but could benefit if Mr Trump's "America First" strategy frees him to pursue his ambitious goal of trying to lead the global south. What is clear is that if Latin America was tested by Mr Trump the first time he occupied the White House, things will be even tougher in 2025. ●

Crossing continents

The struggle over migration in Latin America will intensify in 2025

Kinley Salmon Latin America correspondent, *The Economist*

AS 2025 BEGINS, migration in Latin America remains as politically fraught and physically dangerous as ever. The pressure to migrate was highlighted in July when Nicolás Maduro, Venezuela's president, stole the election and cracked down on protesters. Now Donald Trump's victory brings the prospect of mass deportations and crackdowns at the Rio Grande. Few countries in Latin America are as crude, but barriers are going up within the region, too.

Such barriers may put off some migrants, but plenty of push factors are still causing people to pack their bags. Those factors may even increase in some hotspots. The biggest rise in migrants in 2025 will probably be those fleeing Venezuela. Some 7m people have left in the past decade. After Mr Maduro is inaugurated in January more will go, especially if Mr Trump further sharpens economic sanctions. Most Venezuelans who have left since 2015 have remained in Latin America. Colombia alone hosts 2.5m. Others will try to reach the United States.

Population of Venezuelans, May 2024 or latest

Source: Regional Inter-Agency Co-ordination Platform for Refugees and Migrants from Venezuela

Migrants have plenty of reasons to leave other countries, too. Haiti is still overrun by gangs, despite the arrival of a Kenyan-dominated international police force. Cuba's economy is struggling, even by its own standards. Cubans and Haitians are historically most likely to aim for the United States, though in the past decade many Haitians have headed to Chile, while some Cubans travel south to Brazil or Uruguay. More Ecuadoreans, reeling from rampant gang violence, are leaving, too. In El Salvador, President Nayib Bukele's security crackdown has eased one reason to migrate, but the economy's sluggish performance, expected to continue in 2025, is strengthening another.

It is not just Latin Americans migrating on the continent. Chinese, Indians and Africans are also trying to reach the United States by flying into the region and hiking north. More than 37,000 Chinese were found by border patrols at the southern border of the United States during 2024. Some are also staying in Latin America. Mexico granted 5,000 temporary residency visas to Chinese immigrants in 2023.

Latin American governments will step up their own crackdowns on migrants in 2025. In Panama, the new government is less friendly to those coming through the Darién Gap from Colombia, and has increased deportation flights. Chile, a big destination for Venezuelans, will hold elections in 2025. It will probably move to the right and further limit immigration. It is also getting harder for Venezuelans to enter Peru, which already hosts 1.5m of them. Even in generous Colombia, which has given millions the right to work, a new wave of Venezuelans could prompt a backlash. In Canada the Conservatives, who have promised to quickly reduce immigration, are on track to win the election in the coming year.

Migration routes are changing, too. More migrants, especially from outside the region, may fly into Nicaragua to avoid the Darién Gap before heading north. Panama's crackdown will push others onto dangerous sea routes and into the hands of unscrupulous traffickers. Tragedies, alas, will soon follow. ●

Crime and hard punishment

Two elections could show growing support for tougher security policies

Ana Lankes Brazil correspondent, *The Economist*

ENTHUSIASM FOR a ruthless approach to crime is spreading. That is in part thanks to Nayib Bukele, the president of El Salvador, who in 2022 declared a state of emergency and has thrown 80,000 people, or 2% of the country, in jail. Human-rights groups say torture and death in prison are common. Salvadoreans seem not to mind: homicides have plummeted and Mr Bukele was re-elected by a landslide in 2024.

Other leaders have cheered Mr Bukele's "iron fist" model and, to varying degrees, are trying to emulate it. In June Argentina's defence secretary signed an agreement to strengthen security ties with El Salvador. Ecuador has renewed various states of emergency since the start of 2024.

In 2025 concerns about crime will shape presidential elections in Ecuador, which has rapidly become home to some of the world's most violent cities, and in Chile, where the murder rate has risen from 4.5 per 100,000 people in 2019 to 6.3 in 2023, slightly above that of the United States. Pressure to crack down is mounting.

Ecuadoreans vote in February, less than two years after a snap election brought Daniel Noboa to the presidency. They will elect a president for a full four-year term, and choose all 151 members of Congress. Shortly after Mr Noboa assumed office, gangs unleashed havoc, blowing up cars and taking over prisons. He sent the army and police onto the streets and into prisons. Thousands of people have been arrested. The government claims the murder rate and robberies have fallen, though not by much. Mr Noboa, who is running for re-election in February, will probably pledge to clamp down harder.

In Chile a young leftist, Gabriel Boric, was elected president in 2021 after national protests demanded greater equality. But Chileans became concerned that crime was on the rise because of immigration, which has surged. To assuage allegations that he is soft on crime, Mr Boric tried to expand police officers' self-defence powers, increased the security budget and announced the construction of a new maximum-security jail.

Sniffing the electoral mood, the opposition has decried these moves as half-hearted. Right-wing legislators and mayors have called for a state of emergency to be declared in the capital, Santiago, and for the temporary suspension of visa requests for migrants from 13 countries including Venezuela and Ecuador. A turn away from youthful idealism towards tough-on-crime candidates seems likely in the general election in November 2025, when Chileans again elect a president and renew Congress's 155 seats. If Ecuador and Chile move towards the "iron fist" model, other leaders will surely take notice. ●

Banking the unbanked

Progress is being made in Latin America, but it is a long road

Sarah Birke Bureau chief for Mexico, Central America and the Caribbean, *The Economist*

THE WORLD'S 1.4bn people without a bank account are missing out. They lack the security it provides compared with informal ways to save and the benefits of participation in the formal economy, all of which imposes a drag on economic well-being and growth. But there is good news in Latin America and the Caribbean. The number of people in the region opening their first account has been growing faster than the global rate.

In 2021, 6% more Latin Americans had a bank account than in 2014—double the global increase of 3% over that period. In 2025 financial institutions will aim to maintain that momentum by focusing on women, rural populations and poorer people, who remain unbanked at disproportionately high rates.

The region's progress underscores how much further it has to go, however. About 26% of Latin America's population still do not have an account, a lower percentage than in sub-Saharan Africa or South-East Asia, but higher than in East Asia and the Pacific. Disparities within Latin America are stark: just under half of Mexicans over the age of 15 have an account, compared with 73% across the region.

Many people distrust banks and lack financial literacy. Large informal sectors incentivise people to shy away from formal ▸▸

services. It does not help that banks across the region often charge high fees.

The covid-19 pandemic was a catalyst for progress in financial inclusion. With much of the population stuck at home, digital transactions that required more than just cash gained traction. Government policies have also played a role. In Colombia and the Dominican Republic, pandemic-related transfers were made only to bank accounts, in order to encourage financial engagement. Governments in Brazil and Mexico introduced their own digital-payment systems, with mixed success.

A growing private fintech market is playing its part. Challenger banks are offering new, user-friendly options. They are being aided by the roll-out of "open banking" in the region, which enables and encourages financial institutions to share data, within strict privacy and security limits. Brazil is a world leader. Nubank, founded in Brazil in 2013, entered Mexico in 2020 and now has 7.8m users there. Such competition is driving down costs and pushing traditional banks to innovate.

About 26% of Latin America's population still lack a bank account

However, not all attempts to reduce cash usage have been successful. In 2021 the president of El Salvador, Nayib Bukele, made bitcoin legal tender, claiming that use of the controversial cryptocurrency would boost financial literacy. Many Salvadoreans duly downloaded a virtual wallet to gain a $30 bonus, but then abandoned it, concluding that bitcoin is too volatile to be used as a currency.

Challenges to full financial inclusion in Latin America remain. Many people open accounts but then leave them dormant. Having a bank account does not necessarily translate into access to credit. Between 2014 and 2021, the uptake of credit cards and loans in Latin America grew more slowly than the global average, even though the number of new bank accounts grew more quickly.

The region's biggest challenge is ensuring that financial inclusion does not exacerbate inequalities. The gender gap in access to financial services has narrowed globally, but it has widened in Latin America. Similarly, rural populations and poor people are less likely to have access to financial services than their wealthier, urban counterparts.

Financial inclusion is not just about where people store their money: it drives savings, investment and entrepreneurship. Conversely, lack of inclusion hampers growth and exacerbates poverty. As the whole region continues to grapple with slow growth and high poverty rates, expanding financial inclusion in 2025 will continue to offer significant benefits. ●

Time's up

Justin Trudeau is unlikely to win Canada's election

Robert Russo Canada correspondent, *The Economist*

JUSTIN TRUDEAU has begun what is almost certainly his final election campaign. The Canadian prime minister is defiantly seeking a fourth consecutive mandate despite a year of relentlessly sliding support. Such is the antipathy towards Mr Trudeau and his Liberal Party that three-quarters of Canadian voters disapprove of them, according to polls during 2024. An easing of interest rates, a steady drop in inflation to just over 2% and a breather in the dizzying ascent of house prices have done little to arrest the decline in Mr Trudeau's support.

In September 2024 special elections in two constituencies, which had been reliable Liberal seats for years, provided direct tests of his appeal. The Liberals lost both, provoking pointed questions about Mr Trudeau's leadership from once-stalwart supporters. Many of them cast envious glances across the southern border after the swift and bloodless switch made by Democrats in the United States at the top of their ticket. Some Liberals, including Mark Carney, a former governor of the Bank of England, have started to assemble embryonic leadership campaigns in preparation for the possibility that Mr Trudeau, who singlehandedly revived their moribund party nine years ago, will choose to step aside.

But Mr Trudeau insists that he is not going anywhere. Aged 52, he is now the longest-serving leader in the G7 and is determined to host the group's next summit in the Canadian Rockies in June. That showcase, along with an expected series of further interest-rate cuts that may kickstart an anaemic economy, is what keeps him turning up for work, his supporters say. So does the prospect of confronting the Conservatives' pugnacious leader, Pierre Poilievre.

Mr Poilievre was first elected as a 25-year-old MP two decades ago. His assiduous wooing of the younger and working-class voters who propelled Mr Trudeau to power in 2015 seems to be working. Conservatives rarely do well with those voters, but Mr Poilievre's early focus on inflation and the runaway cost of housing won him unexpected support. Polls suggest that his Conservatives will win a sweeping majority in the forthcoming elections, which must take place before the end of October 2025.

Whoever wins, there will be little time for celebration. Canada is heavily dependent on trade with the United States: trade in goods and services between the two countries was valued at $909bn in 2022. But that formidable economic activity is underpinned by a North American free-trade agreement which comes up for review in 2026, with negotiations beginning in 2025. Donald Trump's personal disdain for Mr Trudeau, along with his promise to level a 10-20% tariff on all imports, will make those discussions nerve-racking for Canadian companies and their employees, given their dependence on access to the booming American market.

By Invitation

Argentina: the making of an economic miracle?

Governing with economic prudence has revived growth, says Javier Milei, president of Argentina

BY THE CLOSE of 2023 Argentina was teetering on the edge of a precipice, beset by a confluence of economic ills reminiscent of its most harrowing crises. The monetary overhang had ballooned to twice the level of 1975, which triggered the infamous *Rodrigazo*, an inflationary spiral that ushered in five decades of stagnation. The central bank's interest-bearing liabilities had swelled to four times the monetary base, surpassing even the ratio of 1989 that precipitated hyperinflation. By the year's end GDP was in free fall after 15 years of stagnation. Prices increased during 2023 by 211%.

Faced with impending disaster, swift and decisive action was our only recourse. We began by slashing public spending by 30% in real terms, achieving fiscal balance in our first month in office. We also devalued the currency and raised import taxes, narrowing the black-market premium from over 100% to a more manageable 25%. Country risk, a measure of the risk of default, plunged by 40% and monthly wholesale-price inflation (which spiked to 54% in December 2023) fell to 2%.

In a bold departure from Argentina's long history of fiscal excesses, our primary policy is the pursuit of a balanced budget. Our financing needs, aside from rollover, will be nil. With total nominal debt stock remaining flat, our debt-to-GDP ratio will steadily decline, effectively restoring fiscal solvency. In a country where promises are often made lightly, we focused on making our commitment to fiscal balance into a tangible reality. As we prove in the coming months that we can sustain our commitment to fiscal solvency and repay our outstanding foreign debts, the country's risk premiums should gradually disappear, paving the way for increased savings, higher productivity and real-wage growth.

Our monetary policy has undergone several distinct phases. The initial phase involved eradicating money-printing to fund government spending. The second phase saw the elimination of the central bank's remunerated liabilities, phasing out the interest-rate-driven automatic growth of money supply. With those liabilities gone by our seventh month in office, further money growth was solely the result of the central bank buying dollars, potentially risking a higher-than-acceptable monetary expansion. To avoid this, we have transitioned to our third (and current) phase, where we have diminished these purchases of reserves, thus stopping this remaining source of further money-printing.

If we succeed, many might label our achievements a "miracle"

Now it is only a question of time until inflation drops to international levels (if not lower). Once that is achieved we will lift capital controls and cease all remaining foreign-exchange interventions.

Economic growth is on track to recover, driven by both cyclical and structural factors. After a sharp fall, wages and pensions in the private sector are now rising, fuelling aggregate demand and higher capacity utilisation. Inventories stockpiled in 2023 in anticipation of hyperinflation have been gradually winding down, further normalising aggregate demand. On the structural side, we will reap the benefits of a 15%-of-GDP boost in aggregate savings, courtesy of fiscal adjustment.

This is being combined with an ambitious programme of structural reforms—largely encapsulated in the Bases Law passed by Congress in July. Scrapping rent-control laws, for example, has led to a 170% increase in supply and a 40% drop in real rental costs. Additionally, the reduction in country risk premiums, stemming from the restoration of fiscal sustainability, serves as a powerful catalyst for savings and investment.

What lies ahead in 2025 is more of what we've already done: strict fiscal balance, no money growth and deregulation. Argentina has suffered from an overdose of deficits, money-printing and useless regulations. All that needs to go. As we pursue a smaller government, fiscal consolidation will need to deepen. And, mindful of the fiscal balance as we always are, we know that it is lower expenditures that open the way for lower taxation. We are also aware that undoing Argentina's regulatory mess will take time. There the challenge is to keep the reforms on the move.

We have made significant strides, yet much remains to be done. If we succeed, many might label our achievements a "miracle". But it is no miracle—it is the result of governing with macro-economic prudence and adhering to the principles of economic freedom that have enriched nations. We work to show the world that embracing the ideas of freedom brings prosperity. ●

Asia

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By the people, for the people

Democracy is under pressure across the region

Emma Hogan Asia editor, *The Economist*

FANS OF DEMOCRACY breathed a sigh of relief in June 2024, when India's electorate returned Narendra Modi, the prime minister, to government with a weakened mandate. Mr Modi had been gunning for a landslide win for his third term, boasting beforehand of how his party would win 400 of the 543 seats, giving him free rein to ram through legislation. But his Bharatiya Janata Party (BJP) managed to garner only 240 seats, which has forced Mr Modi to govern in a coalition, tempering his Hindu-nationalist agenda and some of his strongman instincts.

Then in August, widespread protests led to the ousting of Sheikh Hasina, Bangladesh's prime minister, who had become increasingly autocratic. Both events seemed good omens for the struggle between democracy and autocracy in Asia. Is such optimism likely to spread in 2025?

Take India first. Asia's biggest democracy appears to be flourishing—up to a point. On the face of it, Mr Modi is acting as if little has changed since his humbling at the polls: his rhetoric still combines Hindu nationalism with an emphasis on development. His cabinet has not changed much since the election. But the opposition has been emboldened and civil society has become more confident, meaning that Mr Modi has had to make a series of U-turns on issues such as Muslim charities and a controversial broadcasting bill.

The Supreme Court has also blocked BJP-run states from introducing measures that could have been used to target Muslims. More about-turns are likely in 2025, not least as Mr Modi faces increasing criticism from the Rashtriya Swayamsevak Sangh (RSS), a Hindu-nationalist organisation linked to the BJP. A round of state elections recently went better than anticipated (the party unexpectedly won in the state of Haryana), but suggested that Mr Modi is less of a vote-winner. In Haryana, for example, local issues predominated.

In the rest of South Asia, the messy business of building democratic institutions will continue. In Bangladesh, the process of establishing a stable society after the exit of Sheikh Hasina will carry on under Muhammad Yunus, an economist and microcredit pioneer, who was appointed leader of the interim

government. Tensions will remain with India, where Sheikh Hasina fled; in October Bangladesh issued a warrant for her arrest. Their strained relations have been stoked by reports that members of the Hindu minority have been attacked in Bangladesh, and by its government's decision to remove the physical inspection of any imports from Pakistan, raising fears that illegal arms could be shipped into the country.

In Sri Lanka, where the new president, Anura Kumara Dissanayake, hails from a party that started as a revolutionary Marxist-Leninist movement, the next few years are likely to be rocky. Mr Dissanayake (known as AKD) is no Marxist zealot, has toned down the rhetoric of his party and has pushed the need for market reforms. But he is untested in power, having served only as agriculture minister 20 years ago. He will probably lead an unstable coalition that needs to undertake painful economic reforms.

Thus it is in South-East Asia where the most worrying examples of anti-democratic politics seem likely to emerge—in particular in Indonesia, where Prabowo Subianto was sworn in as president on October 20th. Mr Prabowo, the defence minister under Joko Widodo (known as Jokowi), his predecessor, was a general, and has been accused of atrocities in the former territory of East Timor (he denies the allegations).

Mr Prabowo started off his presidency with an eccentric initiation ritual: members of his bloated cabinet (with over 100 people, it is the largest since democracy returned in 1998) were summoned to a boot camp at Mr Prabowo's alma mater, the military academy, five days after he was sworn in as president. More worryingly Tom Lembong, a high-profile opposition politician, was arrested soon after that. Prosecutors insist that the charges against him are not politically motivated, but it still looked like a signal to the president's opponents. But it is not just the fact that Mr Prabowo may have more authoritarian instincts that makes his recent elevation to the presidency worrying. It is also because he is likely to be overshadowed by Jokowi, who came to power in 2014 promising to oppose the dynastic politics of old. Yet Jokowi's son is now Mr Prabowo's vice-president, and institutions have been weakened under Jokowi's rule.

Jokowi's son is Mr Prabowo's vice-president

The situation looks grim, too, in Thailand. In August, Pita Limjaroenrat and his Move Forward Party, which won a plurality of seats in the election of 2023, were banned by the constitutional court. Mr Pita and other party leaders were barred from participating in politics for a decade. The court argued that Move Forward's plans to reform the country's harsh *lèse-majesté* law were a threat to Thailand's monarchy. Many of the protesters who took to the streets in 2020, when Move Forward's predecessor party was dissolved, are still in jail. Even if further protests take place, the lack of democratic accountability is clear.

And in Myanmar, where a military junta took over in a coup in 2021, hopes for a democratic breakthrough by rebel forces fighting the army look dimmer than ever. The junta will probably not fall. But the armed rebel groups that are gaining ground are unlikely to support democratic rule, and they continue to be supported by China. It is a damning indictment of democracy's plight in Asia in 2025. ●

Investing in India's future

Will private firms step up to maintain the country's investment splurge?

Simon Cox China economics editor, *The Economist*

NARENDRA MODI, India's 15th prime minister, is no great fan of the first person to do the job. Jawaharlal Nehru, who led India from independence in 1947 until his death in 1964, was an urbane socialist who once wrote that the spectacle of organised religion filled him with horror. To him, "the temples of modern India" were dams and other marvels of infrastructure. All of this is antithetical to Mr Modi, a tub-thumping Hindu nationalist of modest upbringing. But in their approach to the Indian economy, the two prime ministers share a striking similarity: a heavy reliance on public investment.

Mr Modi's coalition government plans to devote over 11trn rupees ($130bn) to capital expenditure in the year to the end of March 2025, an increase of 230% in five years (ignoring inflation). The benefits are visible in new airports, railways and roads. Today Nehru would find many temples of progress at which to worship.

This state-led boom is a bit of a surprise. Mr Modi came to power in 2014 promising to unleash private enterprise by offering "minimum government, maximum governance". He scrapped India's centralised planning commission. Nehru, according to Pulapre Balakrishnan, an Indian economist, believed the public sector could be "an active agent of resource mobilisation", not the "flaccid employment-granting welfarist agency" it became after his death. Mr Modi has concluded that it can be both.

Mr Modi's reliance on public investment is, however, probably not ▸▸

A big surprise

India, central-government capital expenditure, % of GDP

Sources: Haver Analytics; Ministry of Finance *2024/25 estimate

sustainable. The government is keen to reduce its budget deficit, aiming to trim it to 4.5% of GDP in the 2025-26 fiscal year. It also has other claimants to appease. After the failure of Mr Modi's party to win an outright majority in elections in 2024, his government now depends on coalition partners, who may have expensive ideas of their own. So far the new government has resisted the temptation for crowd-pleasing handouts. But the pressure will grow if the ruling coalition suffers any setbacks in upcoming state elections. Both Delhi, the capital, and Bihar, one of the country's poorest states, go to the polls in 2025.

Given the government's constraints, investment spending must now come from companies. The coming year will reveal whether private firms agree. Many of India's big conglomerates seem ready to do their bit. S&P Global reckons Indian conglomerates could invest about $800bn over the next ten years, almost three times the amount they invested over the past decade. About 40% of this will be in emerging industries such as green hydrogen, chipmaking, data centres and electric vehicles.

It should also become clearer in 2025 whether this mobilisation of capital will help mobilise labour. India's workforce is growing, but many people are stuck in unpaid jobs for small family firms. And millions who went back into agriculture during the covid-19 pandemic have yet to return to the cities.

Nehru's growth strategy was criticised for prioritising heavy industry, rather than light manufacturing and other labour-intensive sectors that could have absorbed more of India's vast, underemployed workforce. In July 2025, Mr Modi's term as prime minister will exceed 11 years and two months. At that point only Nehru himself will have enjoyed a longer continuous period in office. If Mr Modi is ever to catch India's first prime minister, he will have to create better-paying jobs for the voters who gave him his. ●

Indian conglomerates could invest $800bn

Building it

MUMBAI

At last, a boom in Indian infrastructure

Leo Mirani Asia correspondent, *The Economist*

UPON TAKING office as India's prime minister in 2014, Narendra Modi immediately boosted infrastructure spending. Many state and local governments followed suit. The country desperately needed it. Urban infrastructure has endured years of neglect even as cities expanded in size and population.

Nowhere is this more so than Mumbai, the commercial capital. Home to 22m people, India's richest city had long been an embarrassment, with gridlocked roads, packed trains and an airport at capacity. In 2025 some of the city's new infrastructure projects will, at last, be complete.

Perhaps the most eagerly awaited will be the opening of new metro lines. One that will connect the city's southern tip to other business districts and the airport is expected to be fully operational by the end of 2025. It will be Mumbai's first mass-transit link to the existing airport.

Another much-anticipated project is a coastal road running along the city's west coast, part of which opened in 2024. The plan is to use the road, built on reclaimed land, to link the west with a bridge on the east of the city, in turn connecting the Mumbai peninsula to the mainland. The 10km road will be completed in 2025, with 175 acres of new parks and seaside promenades alongside it.

Arguably the most impressive infrastructure project to open in 2025 will be a vast new airport on the city's outskirts. Mumbai's existing airport has just one usable runway and is in the middle of the city.

The completion of these megaprojects will build upon a spate of ribbon-cuttings in 2024. More are on the way, including a high-speed rail link to Ahmedabad, an economic hub, and a motorway to Delhi, the capital.

To pay for all this, and similar projects across the country, India has in recent years turbocharged public investment. A record 11trn rupees ($130bn), or 3.4% of GDP, has been set aside for infrastructure in the year to the end of March 2025, three times the annual amount of a decade ago. Much more spending and building will be necessary to expand India's economy and boost the living standards of its people. But the pace is picking up.

↑ *No jams tomorrow*

Japan's 2025 problem

TOKYO

The issue of ageing will come to the fore

Noah Sneider East Asia bureau chief, *The Economist*

THE NOTION of a greying Japan is nothing new. But 2025 is when the country will really start to feel its age. Japan's baby-boomers, some 7m-8m people known as the *dankai*, born between 1947 and 1949, will all be 75 or older. The total number of over-75s will reach nearly 22m, up from 17m a decade ago. The growth in ever-creakier old folks will ripple through Japan's social systems, pushing up health and pension costs while the tax base shrinks. The government projected in 2018 that overall social-security costs, including pension payments, will increase by nearly 60% between 2025 and 2040. Policymakers refer to this as the "2025 problem".

In most countries, being seen as "elderly" tends to start at 65 years old. But in Japan many people remain *genki*, or full of life, long after they are officially "old". More than half of those aged 65-69 and more than one-third aged 70-74 are employed. Most are healthy enough to live independently. Just 3% of those aged 65-74 require nursing care. The Japanese gerontological association has suggested reclassifying those aged 65-74 as "pre-old".

On turning 75, however, problems begin to mount. Labour-force participation drops to 12%. Health-care costs increase precipitously. The share of the population requiring nursing jumps to 12% for those aged 75-84, and to 45% for those over 85. In Japan the over-75 cohort is known as the "advanced elderly".

The government has tried to manage by making tweaks, such as expanding the construction of care homes. It has loosened restrictions on migrant workers and is recruiting more caregivers from South-East Asia. An overhaul to the pension system is scheduled for 2025.

→ Inverted

Japan, population by age group, 2025 forecast, m

Source: UN Population Division

Such measures will help, but bolder reforms and greater honesty from politicians will also be necessary. The share of the population over 75 was below 20% in every one of Japan's 47 prefectures in 2020. In 2025 it will be above 20% in 16 of them. By 2050 it is projected to be over 20% in all but one. The advanced elderly, canes and walkers in hand, are on the march. ●

Unpopularity contest

SYDNEY

Australia is probably heading for a minority government

Eleanor Whitehead Australia and New Zealand correspondent, *The Economist*

IF AUSTRALIANS MADE one thing clear at the most recent federal election in 2022, it was that they were fed up with the major parties. The conservative Liberal Party, which had been in power for nine years in coalition with the smaller National party, suffered the worst result in its history. But because the Liberals lost eight seats to Greens and green-minded independent candidates (known as "Teals"), the left-leaning Labor Party, the main opposition, edged into power only narrowly. Less than a third of voters backed Labor.

Australians are just as glum about their next election, which is expected by May 2025 and could be sooner. It will pit the Labor prime minister, Anthony Albanese, against Peter Dutton, from the right wing of the Liberal Party. Conservatives regard "Albo" as weak; progressives see Mr Dutton as nasty. Both are unpopular with voters. Analysts reckon that Australians will end up with a minority government, possibly led by Labor with the support of Greens, Teals and independents.

Part of the problem is that Labor's record is thin. In 2022 it ended years of paralysis over Australia's climate policy, passing a law that imposed legally binding targets to reduce emissions. In foreign policy, it has managed to patch up Australia's trading relationship with China, while countering China's growing influence in the Pacific. Yet much of its term was consumed by a botched campaign for a "Voice to Parliament", an advisory body to represent the views of indigenous communities. Australians voted against the idea at a referendum in 2023. What lingered was a feeling that the government was out of touch on what voters cared most about: the economy.

That is what will dominate the coming election. Inflation has proved hard to tame, and high interest rates have hurt indebted homeowners. Australians are also angry about a worsening housing crisis.

The Liberals ought to be able to capitalise on those frustrations. But the party has alienated many of its traditional voters by veering hard to the right on issues such as climate change. It lost almost all its urban seats in 2022 and may struggle to form a government without winning back support from educated urbanites, especially women.

Memories of the last hung parliament, in 2010-13, still cause pain. Julia Gillard, Labor's then prime minister, was pressed by the Greens to introduce a carbon price. The policy worked, but the Liberals labelled it "a great big tax on everything" and Labor was trounced at the next election. No one likes a hung parliament, but a fragmented, frustrated electorate means there may be no escaping it. ●

Echoes of 1949

SINGAPORE

Could Myanmar's junta fall in 2025?

Aaron Connelly Asia diplomatic editor, *The Economist*

JUST A YEAR after Myanmar declared its independence from Britain in 1948, the new government's authority extended no farther than the suburbs of Rangoon (now Yangon). Though beset by insurgencies and defections, the army fought its way out of the capital to conquer most of the country. For 75 years, no other institution has had its reach or resilience.

But in 2024 the Tatmadaw, as the army is known, suffered its worst reversals on the battlefield since the early years. First it lost control of most of the crossing-points on its border with China. Then it lost most of the roads needed for trade with its neighbours. Increasingly it is on the back foot in the centre of the country. The fighting has come to the doorstep of the military regime: the hill station of Pyin Oo Lwin, where the army trains its officer corps. For the first time since 1949, defeat of the Tatmadaw does not feel impossible.

The latest uprising began after the army seized power from the democratically elected government of Aung San Suu Kyi in February 2021. The ethnic Bamar majority, which mostly lives in the central lowlands, poured into the streets to protest. When the army began to shoot them, they fought back, with training and equipment sourced from ethnic armed groups.

The biggest winners in 2024, however, have not been brave young protesters. Rather, a coalition of ethnic armed groups known as the Three Brotherhood Alliance now governs swathes of the Shan Hills between Mandalay and China, and nearly all of Rakhine state in the country's west. They are disciplined and experienced fighters, but have little time for democracy. One group, the Arakan Army, is accused of atrocities against the Rohingya, a Muslim minority in Rakhine state.

China has long offered the Brotherhood groups support, funnelling arms through third parties and giving them access to Chinese territory and markets. It gave the Brotherhood's offensive in 2023 a green light because it was frustrated with scam centres, targeting Chinese citizens, being run from the territory of the junta's proxy forces on the border.

Analysts say China helped weaken the Tatmadaw to eradicate its scam centres, but does not want it to collapse. Now that the Brotherhood groups control significant territory and economic activity, China has less influence and might start to back the junta to keep it from failing.

The regime is under pressure in other ways. It has lost sources of revenue and its currency is depreciating. Cohesion within the Tatmadaw now depends on coercion. Some officers mutter that they would defect, if they could get their families out. Defections and Chinese interference brought the army to the brink of collapse in 1949. The question in the coming year is whether that could happen again. ●

↑ *Rebel yell*

Indonesia at a crossroads

SINGAPORE

Lofty growth goals will not be realised

Ethan Wu Asia correspondent, *The Economist*

ASIA'S BIGGEST economy, China, moves mountains to attain 5% growth. South-East Asia's biggest economy, Indonesia, is doing it with ease. Its growth rate has been around 5% for most of the past three decades. For a middle-income country, however, this is mediocre, and Indonesia's politicians have long sought more. The new president, Prabowo Subianto, who took office in October, has promised 8% growth within five years.

To achieve this, the former general plans to spend. Some of his ideas are wasteful, such as expanding the number of government ministries (there are already 34). His flagship campaign pledge, to give Indonesia's 83m schoolchildren free lunch, shows more promise. The logistics look hard, however, especially for Indonesia's often unco-ordinated and corruption-plagued bureaucracy.

Financing is in doubt, too. Mr Prabowo's aides have earmarked 71trn rupiah ($4bn) in the coming year, but analysts fear cost overruns. Raising taxes in Indonesia is arduous. The total tax take is 10% of GDP, half the regional average. According to the World Bank, more than half of Indonesian workers are informally employed, which is a lot even by developing-economy standards.

Mr Prabowo thinks Indonesia should borrow more. That could require changing the law: Indonesia's fiscal-restraint rules cap debt and deficits at 60% and 3% of GDP, respectively. These limits have kept the country's bonds investment-grade, and kept investors calm. The country's deficit, at 2.7% of GDP, is just shy of the fiscal limit, so a big unfunded spending binge would breach it. But Mr Prabowo's hard-charging, authoritarian tendencies suggest he is not afraid of testing limits.

Achieving 8% growth will require deeper changes. Mr Prabowo has gestured towards overhauling state-owned enterprises and improving tax collection, but details are sparse and previous efforts have been derailed. Unless reforms can gain momentum, Indonesia's growth may remain stuck at around 5%. ●

China

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New president, new dangers

Donald Trump will challenge China, but his return also presents opportunities

Roger McShane China editor, *The Economist*

HE IS KNOWN as Comrade Jianguo on Chinese social media. But this nickname for Donald Trump is not an expression of solidarity. The term *jianguo* means "build the nation". Chinese netizens are referring to their own country. The sobriquet reflects a view that the new president is so bad for America that he is good for China.

Some members of China's political elite espouse a more refined version of this view. They judge Mr Trump to be intellectually incurious and, above all, self-interested. His re-election is seen as further evidence of America's decadence and decline. That provides China's rulers with an opportunity to push their vision of how the world should be run. But they know, too, that Mr Trump poses real dangers—not least for China's struggling economy.

During his presidential campaign Mr Trump often painted China as America's economic nemesis and threatened to impose tariffs of 60% on its goods. If he follows through, that would knock 2.5 percentage points off Chinese economic growth over the subsequent year, projects UBS, a bank. But it is unlikely. The threat of enormous levies should be seen as a negotiating ploy—to be taken seriously, not literally—say Mr Trump's advisers. The businessman from New York is all about making deals.

China can ill afford a trade war of any size. Since emerging from the pandemic, its economy has underperformed. Chinese entrepreneurs are disillusioned with a government that is obsessed with security, unpredictable in its rulemaking and enamoured of its own central planning. Bold stimulus is needed to revive sentiment and spending, and to reverse a slump in the property sector, which accounts for a fifth of GDP. But China's rulers keep disappointing investors with timid and incomplete policies.

It may be that the Chinese government is saving its fiscal firepower in case Mr Trump acts rashly. But it already has plenty to worry about. The new administration in Washington will continue the policy of impeding the flow of Western technology, such as advanced chips, to China. These restrictions aim to hinder the modernisation of China's armed forces—

and to ensure that America has an upper hand in the industries of tomorrow, such as artificial intelligence and quantum computing. The measures make it harder for China's ruler, Xi Jinping, to cultivate his own "new productive forces", or cutting-edge technologies that he hopes will drive economic growth.

If Mr Xi's frustration grows, there is a risk that China will become more aggressive. It is already forcefully pushing its grandiose territorial claims in the South China Sea, challenging Malaysia, Vietnam and the Philippines. They, in turn, have pushed back. The Philippines, an American treaty ally, has been the most assertive of all. Its sparring with the Chinese coastguard around disputed shoals has raised fears in Washington that things could escalate out of control.

Tensions are also rising around Taiwan, the self-governing island of 23m people that China claims. China is dismayed by the provocative language of its independence-minded president, Lai Ching-te. It is deploying more air and naval craft around the island. In recent years, America has increased its arms sales to Taiwan and urged it to revamp its defences to prepare for Chinese aggression. But Mr Trump has intimated that he might not send American sailors, soldiers and airmen to defend Taiwan if China attacked.

It is difficult to square that with Mr Trump's selection of China hawks, such as Marco Rubio and Michael Waltz, for top jobs in his administration. But the administration is unlikely to be tested in this way. China is not yet ready for a war that might involve America.

Mr Xi sees China hawks everywhere in Washington

Officials in Beijing will look for other ways to take advantage of Mr Trump's unilateralism and his disregard for America's friends and allies. They will try to drive a wedge between America and European countries, which Mr Trump might also hit with tariffs. And they will continue to promote China as leader of the global south, claiming to be benevolent while criticising American bullying.

Some Chinese officials fantasise that Mr Trump, ever the salesman, might pursue a grand bargain with Mr Xi—one that takes in trade, Taiwan and other sources of tension. But there is so much else that divides the two countries, from China's export of chemicals used to make fentanyl, which kills thousands every year in America, to a hacking campaign that aims to give China the ability to wreak havoc on America's critical infrastructure.

Then consider the perspective of Mr Xi, who sees China hawks everywhere he looks in Washington. A crisis seems much more likely than a deal. Any number of things might lead to one in 2025. But that was true regardless of who won America's election. ●

Cities of the future

BEIJING

Why China's second- and third-tier cities are thriving

Gabriel Crossley China correspondent, *The Economist*

UNTIL VERY recently, China's young people, investors, consumers and creators flocked to just four cities: Beijing, the capital; Shanghai, a financial hub; Shenzhen, a tech centre; and Guangzhou, an export powerhouse. With giant populations, superior public services and gleaming infrastructure, these were dubbed "first-tier" cities by the government. But in 2025 China's smaller cities will start to steal their thunder.

First-tier cities are losing their lustre. They have become unaffordable for most Chinese: median house prices are typically 30-40 times higher than median incomes. They also have a poor quality of life, with many companies demanding a "996" work schedule (9am-9pm, six days a week). Underpaid and overworked, their residents are spending less amid China's economic slump. Profits in Beijing's restaurant sector fell by nearly 90% in the first half of 2024.

↑ *Chengdu rising*

Many second- or third-tier cities, meanwhile, are on the up. Their infrastructure is top-notch, housing is relatively cheap and the pace of work is more relaxed. Their economic growth often outpaces the national average. And by Western standards, they are still giants: many have populations of over 10m, and are still growing rapidly. Beijing and Shanghai, by contrast, are now shrinking.

In 2025 it will be consumers in smaller cities who will keep businesses afloat. With lower living costs, they can afford to splash out. Little wonder that coffee shops and electric-car dealers are springing up on smaller cities' streets. Yum China, which operates KFC, a fast-food chain, plans to add several thousand new outlets by 2026, more than half of them in smaller cities.

In the coming year smaller cities will attract more young people. Surveys suggest that white-collar workers are increasingly sick of the tier-one grind. In the summer 12m students will graduate from China's universities. Many will look for jobs, not in Beijing and Shanghai, but in cities like Changsha and Nanjing—provincial capitals with vibrant cultural industries. Both are attracting lots of livestreamers, musicians and artists.

Talented young people will help China's smaller cities make technological progress, too. Take Hefei, a former backwater in eastern China's Anhui province. Thanks to government investment and private enterprise, it now has a thriving tech sector, with industries like high-end manufacturing, biotech and semiconductors. In the coming year officials will focus on developing its "low-altitude economy", China's preferred term for delivery drones and flying taxis.

Smaller cities can offer a more relaxed political atmosphere, too. Chengdu, a city in the south-west, is known for its teahouses, laid-back lifestyle and counter-cultural music. It is increasingly drawing liberal-minded young people from first-tier cities. Behind closed doors, some may air grievances about how the country is run. That is one area, though, where the supremacy of the capital, Beijing, remains unchallenged. ●

Reefs and beefs

Asian nations are pushing back against China in the South China Sea

Jeremy Page Asia diplomatic editor, *The Economist*

IN EARLY 2024 Taiwan looked like the most dangerous flashpoint in Asia. China, which claims the self-governing island as its own, was frustrated by Lai Ching-te's victory in a presidential election there in January. It had branded him a "dangerous separatist" who could provoke war. Soon after his inauguration in May, Chinese forces staged two days of naval and air drills around the island, putting military commanders on edge in America, bound as it is, by law, to help Taiwan defend itself.

In 2025 the focus of concern may shift southward. In the South China Sea, long-running friction over disputed rocks and reefs has escalated into dramatic clashes at sea. They have mostly occurred between Chinese and Philippine coastguard vessels. But with neither side willing to back down, such encounters could quickly escalate into a naval confrontation that might suck in America, a treaty ally of the Philippines.

One place to watch is Sabina Shoal. The outcrop in the Spratly Islands lies 150km west of the Philippine province of Palawan, but is also claimed by China, Vietnam and Taiwan. No claimant has a long-term presence. But the Philippines stationed its largest coastguard vessel at the shoal for five months in 2024, alleging that China was about to start building there. China sent its own ships in response, one of which rammed the Philippine vessel. The Philippines withdrew its ship in September but has promised continuous patrols there.

Second Thomas Shoal, also in the Spratlys, is another possible flashpoint. The Philippines has controlled it since 1999, when it grounded an old ship there. In 2023 it started trying to take in building materials to reinforce the hull. China responded with a blockade and by disarming a Philippine navy mission to break it in June. The two sides have since reached an agreement whereby China "inspects" all shipments—from a distance—to ensure no construction materials are brought in. How long this will last is unclear.

The outcrops involved may seem too small and remote to be worth risking a broader flare-up. Yet each side has cause to stand firm. The Philippines' president, Ferdinand "Bongbong" Marcos, has pledged to do more than just protest against Chinese encroachment in waters claimed by his country. America is also determined to reinforce its treaty with the Philippines and to stop what it calls Chinese "salami-slicing"—small acts of aggression that make territorial gains. China sees the chance to show America's allies that they cannot rely on it for help.

There are signs that other countries are becoming more assertive. Vietnam has been dredging and reclaiming land on features it occupies in the Spratlys. By June 2024 it had built up about half as much land as China did during construction of seven new military bases in the Spratlys in 2013-16. It also appears to be building a second airstrip. Even Malaysia (which is generally averse to confronting China) has expanded hydrocarbon exploration in disputed waters.

What happens will depend, in part, on how Donald Trump's administration views the problem, and the relationship with China more broadly. Relations over the reefs could get rockier still. ●

Innovation's stormy seas

SHANGHAI

Entrepreneurs in China must navigate an unpredictable environment

Don Weinland China business and finance editor, *The Economist*

ALL MANNER of consumer-electronic devices pass through Shenzhen's markets. The southern Chinese city is at the centre of one of the world's densest industrial clusters for electronics manufacturing. More recently some costly parts have been making their way through the markets—but these objects can only be manufactured overseas.

They are the ultra-powerful artificial intelligence (AI) chips designed by Nvidia, an American company, and manufactured in Taiwan by TSMC, the world's leading chipmaker. A single chip can go for well over $30,000 when purchased from its maker; on the black market they fetch far more. And tech companies from across China are flocking to Shenzhen to get their hands on them.

What does this thriving black market reveal about Chinese entrepreneurs in 2025? It shows that they face many challenges: President Joe Biden's ban on high-powered AI chips, introduced in 2022 and since tightened, is just one example. Chinese chipmakers struggle to make comparable wares, which has forced those in the country's burgeoning AI scene to pay higher prices. Yet at the same time the shortage of powerful chips has forced AI startups to innovate and find ways to do more with less, highlighting the inventive nature of China's entrepreneurs.

Unexpected shifts in domestic regulation are another hazard that innovators have been forced to navigate. In recent years fintech and consumer-tech barons have faced sudden clampdowns as Xi Jinping, China's supreme leader, has tried to steer innovation towards fields that he considers strategically more valuable. The prospects for giants such as Alibaba in e-commerce, and Tencent, a gaming and social-media colossus, have darkened. Unicorns, or unlisted companies valued at more than $1bn, have also been losing their horns as China's economy faces greater economic pressures. In 2024 even Mr Xi asked underlings where all the unicorns had run off to.

But new champions are rising. Companies such as BYD, a maker of electric vehicles (EVs), Longi, a solar-power firm, and Cambricon, which makes AI chips, are the current stars of China's tech scene. The message from Mr Xi has been clear: the government wants entrepreneurs and investors to focus on the next wave of emerging technologies.

These include advanced chips, robotics and AI; new kinds of green technology (see next story); and even fringe areas such as flying taxis and brain-computer interfaces. The Communist Party has stressed the importance of self-sufficiency for many years and has done much to support local innovation, particularly in the chipmaking industry.

Expect the buzz around this new generation of Chinese technology firms to intensify in 2025. Autonomous taxis, for example, are operating in a handful of American cities, but are on the verge of widespread commercialisation in China. Hubs (or "vertiports") for flying taxis, which have yet to take off in the West, are opening in cities across the country; passengers may start whizzing between Shanghai and nearby cities in 2025. And even remote Chinese counties will have EV charging stations by the end of the year.

The weakness of China's economy will bite harder in the coming months, however. Many of these impressive technological leaps will be bankrolled by the state at a time when local governments are finding it harder to pay the bills. As flying taxis lift off in some cities, bus services may halt in poorer regions. Consumer confidence will remain low if China's leaders cannot fix the country's ailing property market; households may hold off on buying an EV, even if they are able to charge one.

And no matter how much Mr Xi would like to isolate China from the American political cycle, Donald Trump's return to the White House, with his plan to impose tariffs on Chinese goods, is likely to pose fresh challenges to China's storm-tossed army of innovators. ●

→ Smaller boats

China, new startups valued at $1bn or more

Source: PitchBook *To October 10th

Post-solar power

BEIJING

China hopes to dominate the next phase of green innovation

Gabriel Crossley China correspondent, *The Economist*

CHINA HAS revolutionised some green technologies in recent years. Spurred by generous government subsidies and cut-throat competition, its companies worked out how to make solar panels, batteries and electric cars efficiently and ever more cheaply. Today China dominates global production of all three. Cheap Chinese technology, now being rapidly rolled out across the world, is helping to decarbonise electricity production, road transport and more.

The next phase of green innovation, though, is trickier. Cement factories, chemical plants and steel mills—all big sources of carbon emissions—need large amounts of heat to work, and burning fossil fuels is still the most practical way to provide it. Big ships and planes, meanwhile, are difficult to power with batteries. Reducing emissions from these so-called "hard-to-abate" sectors may require new technology. In 2025 Chinese firms will increasingly be trying to develop it.

One approach is to capture the carbon ▸▸

Semiconductors' enormous growth potential

The future is being built on a foundation of sophisticated technology, and Tokyo Electron Ltd (TEL) is playing a pivotal role in this revolution. We speak to Toshiki Kawai, TEL's chief executive, to discuss how his company is facilitating advances through investment in "Technology Enabling Life".

"The AI-driven era has just begun, and the market's growth potential is enormous."

Toshiki Kawai
President and chief executive, Tokyo Electron Ltd

How is the evolution of transformative technologies that improve our daily lives affecting the outlook for the semiconductor industry?

Electronic devices, the internet and social networking have created vast amounts of data. The future AI-driven market will unleash the potential of this data collected through past decades.

The recent drastic improvement in devices' cognitive capabilities has been possible because of innovations in semiconductor technology, which enable advanced applications that will define the future. These also include virtual reality, including digital twins, and autonomous driving.

These advances are enlarging the market for semiconductor devices, which is expected to grow to over $1trn by 2030, about twice the current size. A new phase of evolution lies ahead, with technologies like quantum computing, 6G/7G and Industry 5.0 coming in a few decades. According to Ajit Manocha, president and chief executive of industry association Semiconductor Equipment and Materials International, by 2050 the market could be as big as $5trn. The AI-driven era has just begun, and the market's growth potential is enormous.

With the semiconductor market expected to grow, how does TEL intend to achieve its mid-term management plan?

We have set targets of achieving sales of more than 3trn yen, an operating margin of more than 35% and a return on equity of more than 30% by the fiscal year ending March 2027. To reach this goal and grow further, we will leverage our capabilities to create value-added products and services. Our strengths include being the world's only company that makes equipment for all four consecutive semiconductor manufacturing processes: deposition, coating/developing, etching and cleaning. We also have the number one or two market position in all equipment segments. Our coater/developer connecting with an extreme ultraviolet exposure system has almost 100% market share. And we have high-performance equipment in fields such as semiconductors for generative AI, where high capacity, speed and reliability, and low power consumption, are imperative. It might be said that all semiconductors used worldwide pass through our equipment.

This advantage rests on about 23,000 registered patents as of March 2024. To further sharpen our edge, we plan to invest more than 1.5trn yen ($10.5bn) in research and development, and more than 700bn yen ($4.9bn) in capital expenditure, over the next five years.* We also plan to recruit a total of 10,000 employees globally in that time.

"Semiconductors have a crucial role to play in uniting digitalisation and decarbonisation."

Produced by EI Studios for TEL

* Dollar amounts in parentheses are calculated to one decimal place as of September 23rd 2024.

What are the major needs to be addressed by semiconductor manufacturers as they develop advanced processors, and what approaches is TEL taking to support them?

We must urgently propel the continuous technological evolution of semiconductors in four key aspects: higher capacity, speed and reliability, and lower power consumption.

Power efficiency and digitalisation help to mitigate environmental challenges. Developing the conditions for more people to work and meet remotely, or to receive more remote support in fields such as health care, could drastically reduce CO2 emissions from travel. Innovations in semiconductors have a crucial role to play in uniting digitalisation and decarbonisation.

How we do this in manufacturing is through scaling and advanced packaging. A current state-of-the-art GPU—a kind of processor that can perform AI functions—contains about 80bn transistors, each 4nm wide. We foresee that this will scale down to 2nm within five years, increasing power efficiency, and the number of transistors will rise to 480bn. At the same time, the high-bandwidth memory modules used for generative AI will evolve to have more than five times the capacity. Advanced applications will demand this higher performance.

Please tell us about how TEL as an organisation is adapting to boost performance and encourage continuous innovation.

Our employees drive the realisation of our goals, and a key to their motivation is the feeling that their work and their company are offering important value to the world. We make it clear how they contribute to progress by setting out our vision, "A company filled with dreams and vitality that contributes to technological innovation in semiconductors", based on the idea of "creating shared value" advocated by the American management scholar Michael Porter.

As a measure to value our products and services, we place great importance on pursuing profit. Simultaneously, we make the most of our company's expertise to achieve social, economic and corporate value through business activities.

While demand for semiconductors continues to grow, securing human resources and developing their skills is a significant challenge. If current trends of technological innovation accelerate further and this rapid pace of market growth continues, competition for people will likely intensify. Our corporate growth is enabled by people, and our employees both create and fulfil company values. Therefore, our company is committed to motivation-oriented management, which incorporates awareness that our company and work contributes to society, the dreams and expectations of the company's future, opportunities to take on challenges, globally competitive compensation and fair personnel practices, and a workplace with an open atmosphere. As a result,

What initiatives will TEL take to achieve a sustainable and prosperous future?

The company celebrated its 60th anniversary on November 11th last year. We used the opportunity to create our vision and a corporate message, "Technology Enabling Life". TEL is committed to pursuing technological innovation in semiconductors as a driver of sustainable growth.

For the environment, we have a programme called E-COMPASS. It consists of three pillars: accelerating our efforts to develop high-performance semiconductors with lower power consumption, reducing the environmental impact of the equipment used in manufacturing without compromising performance, and addressing environmental issues through our business activities. Through those activities, we are working towards net zero by 2040.

Everything we do fits into two themes: innovation and sustainability. Tokyo Electron will keep working for success in both digitalisation and decarbonisation.

"Everything we do fits into two themes: innovation and sustainability."

TEL
TOKYO ELECTRON
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emitted by factories before it enters the atmosphere and to store it. This is technically possible; the problem is doing it cheaply enough to spur wide adoption. Chinese scientists have filed three times as many patents in "carbon capture and storage" (CCS) methods as their American counterparts. In 2024 Tencent, a tech giant, invested 100m yuan ($14m) in a dozen promising CCS technologies. China Energy Investment, a state-owned company, is building a demonstration CCS project at a chemicals plant that aims to capture 1m tonnes of carbon a year by the end of 2025.

Hydrogen is another area of focus. It can be used to heat a steel mill or power a truck with no greenhouse-gas emissions. The difficulty is producing the gas in a clean way (making what is known as "green" hydrogen) rather than by using fossil fuels ("brown" hydrogen). This can be done using renewable energy to power a machine called an electrolyser, which splits water molecules into hydrogen and oxygen. But at the moment the hydrogen produced in this way is still too expensive for most commercial uses.

China is well positioned to push costs down. It already makes about 40% of the world's electrolysers, and does so more cheaply than competitors. And thanks to years of splurging on solar panels and wind turbines, it also has plenty of renewable energy. Inner Mongolia, a vast region of northern China with abundant wind and sunlight, plans to make 480,000 tonnes of green hydrogen in 2025—not much compared with the amount of brown hydrogen China makes, but a start.

Other countries, including India and Brazil, also hope to become green-hydrogen superpowers. But China's skill in building infrastructure will give it a further boost. Officials are building pipelines to transport hydrogen to industrial centres. Shenzhen, a tech hub in the south of the country, already has a fleet of hydrogen-powered buses. By the end of 2025, it hopes to become China's "hydrogen capital", setting international standards for the nascent industry.

The success of such ventures matters a great deal to China. It intends to eliminate net emissions, and become carbon neutral, by 2060. But its steel industry makes as much of the metal as the rest of the world combined. Its chemicals and shipmaking industries, too, are the world's largest.

These new green technologies would have more than just domestic appeal, however. They would also create valuable new export markets. Chinese progress in these areas will lead to more grumbling from its trading partners. Western firms are already struggling to compete with China's existing green tech. Some worry that the global energy transition has become too dependent on China. It may soon become even more so. ●

A silver-haired lining?

China hopes to turn ageing into an economic asset

Alice Su Senior China correspondent, *The Economist*

CHINA'S POPULATION is shrinking and ageing, a process that will continue apace in 2025. The total fertility rate, or the average births per woman, has fallen to 1.1, far below the 2.1 needed to maintain a stable population. After a possible small post-pandemic uptick of births in 2024, the auspicious year of the dragon, the birth rate is expected to resume its decline. Meanwhile the number of people over 60 is expected to grow from 300m in 2023 to more than 400m by 2035—that is, from one-fifth to nearly one-third of the population. This bodes ill for China's economy, with fewer young people working to support more old folks. But state planners think they have found a silver lining: the "silver economy".

In 2024 China's State Council issued a policy document on promoting a "silver economy to improve the well-being of the elderly". It called for companies to invest in elder-friendly industries such as smart health care, anti-ageing products, personal pensions and tourism. "Promote theme products such as nostalgic tours and youth tours," it recommended. The state has also called upon local governments to develop better services for old people, such as meal deliveries, at-home health care and cultural-enrichment activities.

The focus on silver-haired spenders makes sense. The ageing society will have massive needs—and the coming generation of retirees will have money to spend. The UN estimates that the largest age cohort, aged 50-60, includes 230m people, most of whom will retire in the next decade. "They are the most wealthy sector of society," says Tim Xie of Quantasing, an educational-technology firm that pivoted to focus on the silver economy in 2022.

Older Chinese tend to be more frugal. But the growing cohorts of those in "new middle age" (45-60) and "old age" (over 60) are in a sweet spot in the middle, says Mr Xie. They spent most of their working lives in China's boom years and are retiring with enough time to enjoy their savings. Quantasing has attracted 120m users to its online courses, which help retired people develop hobbies such as calligraphy, meditation and piano. Only 400,000 are paying customers so far, but Quantasing expects that number to grow as it expands into wellness products and tourism.

The China Research Centre on Ageing, a government think-tank, estimates that in 2024 the silver economy (ie, the value of providing services or selling goods to the old or nearly old) reached 7trn yuan ($1trn), about 6% of GDP. It expects this to rise to 30trn yuan by 2035, or around one-tenth of GDP, and to one-third of GDP by 2050. Chinese companies are already responding. Registrations for new silver-economy enterprises grew by more than 40% from 2019 to 2023, according to Qichacha, a business-data platform.

There are challenges to developing the silver economy. The elderly are susceptible to scams. They will need consumer protection, even as the government encourages firms to sell them as much as possible. Chen Gong of Peking University warns that too many firms may be piling in without enough thorough research. "Many policies are shouting a lot but doing little," he says. Cai Fang of the Chinese Academy of Social Sciences points out that more welfare and social services for the elderly are needed. Silver-haired spending is bound to grow. It will be tougher to make sure that the well-being of China's old folks grows along with it. ●

Middle East & Africa

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Now what?

The outlook for the Middle East depends on three cantankerous old men

Gregg Carlstrom Middle East correspondent, *The Economist*

WHEN THE Gaza war began in late 2023 even some Israeli generals thought it would be finished within two or three months. Few observers thought it would drag on for more than a year. Fewer still predicted the swift decapitation of Hizbullah, the Shia militia based in Lebanon, or the back-and-forth bombardment between Iran and Israel. During 2024, assumptions that had seemed to govern the region for decades collapsed within months.

War will continue to shape the Middle East in the coming year. Even the best-case scenario is a bleak one: that the regional conflict grinds to a halt, but the destruction and displacement it caused remains a problem for many years. The fighting may not end, though. Instead it could expand and shatter a fragile detente in the Gulf. Which way the region goes will depend largely on three cantankerous old men: Ali Khamenei, Binyamin Netanyahu and Donald Trump.

The first two have been consistent. Mr Khamenei, the supreme leader of Iran, is nervous about direct conflict with Israel but also willing to risk it for the first time in Iran's history. The ballistic-missile barrage he approved in October is unlikely to be the last. As for Mr Netanyahu, the Israeli prime minister, he is determined to strike harder not just at Iran's proxies but at Iran itself. The wild card is Mr Trump.

Optimists hope that he will not want a war hanging over the start of his presidency. If pushed towards a ceasefire, Mr Netanyahu would be unlikely to defy Mr Trump. The prime minister cannot ignore him the way he did Joe Biden. But that will be cold comfort for Palestinians and Lebanese.

By some accounts more than 10% of Gaza's 2m people have already fled, often paying huge sums of money to reach Egypt. That exodus will continue in 2025. Those who remain in Gaza will spend much of the year huddled in tents and makeshift shelters. Reconstruction will be slow, if it begins at all. Mr Netanyahu will continue to dismiss talk of post-war arrangements in Gaza.

Mr Trump may be more attentive to Lebanon, if only because he now has a Lebanese son-in-law. But

there, too, even if the war ends, many of its 1m displaced people (one-fifth of the population) have no homes to return to. Their prolonged displacement will aggravate sectarian tensions in a country that always worries about renewed civil strife.

And all of that assumes that the conflict comes to an end. Those hoping Mr Trump will improve the lives of the Palestinians in Gaza may be disappointed. History suggests he will not pressure the Israeli prime minister. Mr Trump showed little concern for the plight of the Palestinians during his first term. Israel's right-wing government will probably move ahead with its de facto annexation of the occupied West Bank. In Lebanon, the Israeli army is keen to end the fighting, but that will require a complicated diplomatic agreement in which Hizbullah agrees to pull back from the border. Without such an agreement, mission creep will remain a risk. Instead of leaving, Israeli troops may push deeper into Lebanon.

The big question is whether the fighting will spread further. There is already a heated debate in Iran about whether to build a nuclear weapon. If the country can no longer deter Israel through conventional means, goes the thinking, then perhaps it needs the bomb. Mr Netanyahu would like American help to strike Iran's nuclear facilities. Mr Trump will be pulled between a hawkish wing of his party, which supports such a step, and an isolationist wing that wants to avoid getting too involved with another war in the Middle East.

There will be some other unlikely voices urging restraint. Mr Netanyahu, among all the regional leaders, has the strongest relationship with the incoming Trump administration, with Muhammad bin Salman, the Saudi crown prince, probably a close second. MBS, as he is known, will urge Mr Trump to rein in the regional war and avoid a conflict with Iran.

Though Iran remains a bitter rival to Saudi Arabia, the kingdom has rethought its hostility towards the Islamic republic. Faisal bin Farhan, the Saudi foreign minister, says his mandate is to "protect Vision 2030", his country's ambitious plan to overhaul and modernise its oil-based economy. Officials in other Gulf countries take a similar view. At the start of Mr Trump's first term, they pushed him to confront Iran; now they will push him to avoid confrontation.

For eight years, Arab-Israeli normalisation has been the focus of American policy in the Middle East. MBS will continue talking with America about such a deal, but he is unlikely to agree to one. He may now prefer to wait until others in the neighbourhood make a move: Bashar al-Assad, the blood-soaked Syrian dictator, might wonder if a quiet outreach to Israel will improve his standing in the West.

Other Arab states will be little more than bystanders. Economic problems will continue to fester across the region. Egypt, for example, managed to avoid a balance-of-payments crisis in 2024 only by securing an enormous investment from the United Arab Emirates—but its currency, already devalued four times since 2022, will probably sink again. (The dramatic reduction of shipping coming through the Suez canal, once a valuable source of revenue for Egypt, has not helped.) And Tunisia's economy will stagnate further now that Kais Saied, its erratic president, has won a second term in office.

Ultimately America, Iran and Israel will determine what happens next in the Middle East. Arab states will be watching nervously. ●

War and politics

JERUSALEM

For Binyamin Netanyahu, peace has its own risks

Anshel Pfeffer Israel correspondent, *The Economist*

IF THE GENERALS of the Israel Defence Forces had their way, the three wars Israel fought in 2024 would all have been over by year's end. They have restored Israel's deterrence, tarnished by Hamas's surprise attack on October 7th 2023. But as one of the generals puts it: "Soldiers fight wars; politicians decide when we've won." And politics means Israel's wars (in Gaza, Lebanon and against Iran) are likely to continue well into the new year.

Most of Israel's aims have been achieved. In Gaza it has dismantled Hamas's military structure. In Lebanon it has forced Hizbullah back from the border. Freeing Israeli hostages and ensuring Hizbullah does not return to the border can be achieved only through ceasefire deals, of which there is little prospect.

Binyamin Netanyahu, Israel's prime minister, is delaying. Hamas is prepared to release hostages only if Israel agrees to a full withdrawal of its troops from two corridors within Gaza. Doing so, Mr Netanyahu claims, will give Hamas the chance to regroup. In Lebanon he demands Israel retain the right to strike Hizbullah at will.

Behind closed doors the generals grumble that Mr Netanyahu's position means a forever war on both fronts, and increases the chance Iran will launch more missiles. They say Hamas and Hizbullah will not want to risk further attacks on Gaza or Lebanon for a generation. Israel needs to rebuild as well.

But Mr Netanyahu insists that Israel is on the way to "total victory". His calculations are not just military. His far-right coalition partners have threatened to abandon his government if Israel withdraws from Gaza or Lebanon. An end to the war would almost certainly mean early elections and a reckoning for his previous failed policy of containing Hamas in Gaza, which ultimately led to October 7th. By delaying a ceasefire, he hopes to buy enough time to recover in the polls.

American politics matters too. Few American presidents have done as much for Israel as Joe Biden, but Mr Netanyahu is not about to allow him any credit for ending the war. Donald Trump's foreign-policy team will have to start afresh. That may prolong the war, and grant Mr Netanyahu more time in office.

Mr Khamenei and Mr Trump

Does an elusive handshake await?

Nick Pelham Middle East correspondent, *The Economist*

SINCE 1979, the Islamic republic of Iran has brandished four core slogans: death to Israel, death to America, export the Islamic Revolution and "cover or suffer", an injunction for women to veil. The regime's resolve to implement them has waxed and waned, but it has never formally abandoned them. Without them, supporters of Ayatollah Ali Khamanei, the 85-year-old supreme leader, might ask, what remains of the Islamic republic?

The question now, though, is will Donald Trump accept anything less? Iran was not destined to clash with Mr Trump when he took office in 2017. He said he wanted a better deal than the Joint Comprehensive Plan of Action (JCPOA), negotiated by Barack Obama in 2015. Mr Trump sought restraints on Iran's regional proxies, but what he wanted most was a photo-op with Mr Khamenei, like the one he staged with North Korea's supreme leader, Kim Jong Un.

Much anguish might have been spared had Mr Khamenei flattered Mr Trump and hosted him in Tehran. Iran's currency might have soared; its economy could have flourished, free of sanctions. But, even though Mr Khamenei has been in power three times as long as Iran's founder, Ayatollah Ruhollah Khomeini, the ghost of the founding imam still haunts him. So he retorted that Mr Trump was "not worthy of any message exchanges".

His presidential vanity dented, Mr Trump withdrew from the JCPOA, enforced an oil embargo and had Iran's most senior general, Qassem Suleimani, assassinated. In response, Iran accelerated its nuclear programme to the point of becoming a threshold state, and vowed revenge. The American government brought charges on November 8th against a man in connection with an alleged plot to assassinate Mr Trump before the election.

Does Mr Khamenei regret his decision? His allies and his economy are weaker now. Since 2016, the rial's value against the dollar has fallen by over 95%. Mr Khamenei has swapped hardliners for pragmatists.

The supreme leader has also retreated on all four of his slogans. His president, Masoud Pezeshkian, speaks of a ceasefire and de-escalation with Israel. Mr Khamenei has signalled readiness to be friends with America. Iran is loosening its dependence on its regional proxies. And it has relaxed the enforcement of the veil.

But unless Iran agrees to abandon its regional ambitions many in Mr Trump's circle will want him to tighten sanctions and the oil embargo. Some will urge him to push for regime change.

As he enters his second term, Mr Trump appears unconvinced. America, he said recently, must make a deal with Iran because the consequences of not having one were "impossible". If Iran abandons its drive for nuclear weapons, Mr Trump said as he cast his vote on November 5th, "I'd like them to be a very successful country." The question now may be whether Mr Khamenei can stomach that photo-op. ●

Pick a camel

Gulf leaders are trying to work with China and with the West

Anjani Trivedi Global business correspondent, *The Economist*

THE GULF'S wealthy rulers spent 2024 doing two things: making their mark on the global technology map as they tried to move up the digital pecking order, and advancing their ambitious economic diversification plans. This involved partnerships with both the West and China, a tricky balancing act akin to trying to ride two camels at once. Going into 2025, however, the Gulf's sheikhs and princes are coming under increasing pressure to choose one or the other.

When it comes to bolstering their technological ambitions, Gulf states have leaned towards the West. The United Arab Emirates (UAE), perhaps the most ambitious Gulf state when it comes to technology, drew in Microsoft as a partner for G42, a home-grown artificial-intelligence (AI) champion. Microsoft is also setting up an engineering centre in Abu Dhabi, and investing in AI infrastructure, along with Blackrock, the world's largest asset manager, and MGX, an Emirati tech fund. Brad Smith, Microsoft's president, calls this a "new model" for "geopolitical and economic collaboration" between the Middle East and the West. It is, he notes, primarily a "government-to-government relationship, supported by the private sector". For its part, Saudi Arabia is setting up a $40bn AI fund with American venture capitalists, and Google plans to establish an AI hub in the kingdom.

At the same time, China has emerged as the Gulf's largest trading partner and is rapidly scaling up its investment in the region. When it comes to the Gulf states' ambitious national blueprints to overhaul their economies by the end of the decade, the sheikhs have turned east, building tighter commercial and financial linkages with Chinese businesses and investors. Chinese companies are building infrastructure in Gulf states and bringing in industrial technology.

The Gulf's cash-rich companies are reciprocating, pouring billions of petrodollars into technology firms and energy projects in China and elsewhere in Asia. In the process, the Gulf's companies ▸▸

are opening up new markets and finding growth opportunities.

The problem is that America is hostile towards Chinese technology tie-ups. It made G42 sever its ties with Huawei, China's telecoms-equipment giant, before sealing the deal with Microsoft. America has been reluctant to allow exports of Nvidia's powerful AI chips to the Middle East, fearing that some of them will end up being sent to China. In February 2024 Du, an Emirati telecoms operator, signed an agreement with Huawei to build 5G networks. America has threatened to stop sharing intelligence with allies that deploy Huawei equipment, fearing that it will be used for spying.

But Gulf states see China as a reliable and attractive partner for achieving their current goals. China helped the UAE become a global trading hub, setting up vast warehouses, wholesale operations and other useful infrastructure. It is also backing the shift to renewable energy by supplying solar panels and wind turbines. Chinese firms have been central to construction, transport and other industrial activity across the Gulf. Research-focused Chinese universities are fostering collaboration in science and technology with their peers in the Gulf, too.

Working with America, though, helps secure the Gulf's technological ambitions, which are central to its plans for economic diversification and future growth. Beyond AI, the Gulf's rulers are eyeing space, defence and cyber-security as promising areas in an increasingly tense region. But America has at times proved to be a transactional partner, stifling the ambitions of Gulf states and their companies, and treating the region as a tool in its efforts to build influence in the global south. That will continue under Donald Trump.

Gulf states can look to other Asian countries as alternatives to China. Saudi Arabia has hedged its bets, collaborating with Indian and South Korean construction companies on some projects. But they struggle to compete with the speed, efficiency and manufacturing might of China's construction and engineering firms. China's companies are eager, too; a slowing economy at home is encouraging them to push into fast-growing foreign markets. In 2025 Gulf states will find that if they want deeper co-operation with Western firms on technology, they will have to be more circumspect about how they co-operate with China. ●

The young and the restless

Will there be enough jobs for Arab countries' growing youth populations?

Ann Hanna Newsdesk editor, *The Economist*

EGYPT'S STRONGMAN, Abdel-Fattah al-Sisi, said in 2021 that Egyptians should have "less than one" child per family. He has long been concerned about population growth, a topic that will become ever more pressing from 2025. His country—and several others in the region—are about to enter a second youth bulge. In Egypt the proportion of the population aged 15-24 peaked at just above 20% in 2010, before falling to around 17% in 2020. But the figure is starting to rise again, and will approach 20% by the middle of the 2030s, according to the UN.

The Egyptian economy is struggling, and Mr Sisi's worry is that there will not be enough jobs. It is not the only country in the region in this predicament: Jordan and Algeria are also experiencing bulges in their youth populations.

When looking at their labour markets, some countries have been lulled into a comparative sense of security in recent years. Egypt's unemployment rate has steadily fallen in the past decade to 6.5%, from a peak of 14.4% in 2013. But this was in large part because fewer people joined the workforce; the employment rate has also declined. The youth-unemployment rate in the Middle East and north Africa, at 24.4%, is almost double the global average, according to the International Labour Organisation (ILO). In the next five years, supply of labour will far outstrip demand. Moreover, the new cohorts will be more educated: the jobs they want may not exist in markets dominated by services, tourism and manufacturing. The results could be growing unrest and surges in emigration.

But there are some possible solutions. Governments could pump more money into a number of potentially job-creating industries. A joint project by the ILO and the European Union identified the agricultural and textile sectors as promising opportunities in Egypt and Tunisia. The prospects are also bright in green energy. The World Bank reckons that if Egypt meets its green-energy targets, it could create 67,000 additional jobs a year until 2050.

Aware of the looming crisis, several governments are adjusting employment policies. Algeria, Tunisia and Morocco are making progress, but there is more to be done. Social-security schemes are lacking in most of the region—a major reason that many workers choose to work informally.

And any strides forward could be upended by crisis and displacement. Jordanians worry that an influx of Palestinians could cause problems for their sputtering economy. Displacement of Lebanese into Syria could be damaging to both economies. The last time there was a youth bulge, the region's young people took to the streets and launched the Arab spring, toppling several governments. This time around, authorities are already contending with the impact of a spreading regional war. A growing cohort of angry, disenfranchised youth would make things considerably worse. ●

Sudan sinks into hell

NAIROBI

The world's biggest humanitarian disaster will continue to be ignored

Tom Gardner Africa correspondent, *The Economist*

NO CITY IN Sudan besides the capital, Khartoum, is more fiercely fought over than el-Fasher, in the western region of Darfur. For much of 2024 it was under siege by the Rapid Support Forces (RSF), a paramilitary group that has spent more than 18 months trying to vanquish the regular Sudanese army, the Sudanese Armed Forces (SAF), and seize control of the state. As a result, el-Fasher is where the famine that now threatens to consume the whole country began. And because of the intensity of the fighting there, it is also a useful place to look to understand where the conflict, which may the biggest and most devastating anywhere in the world today, might be heading next.

As this article was published, el-Fasher remained the SAF's last urban stronghold in Darfur. All its other garrisons in the region had been captured by the RSF many months earlier. Observers had long expected the city's fall, followed by ethnic cleansing of local black African ethnic groups by the mostly Arab RSF. Hundreds of thousands of civilians have already fled, joining the more than 20% of the country's pre-war population of 50m who have been forced to flee their homes since the war began in April 2023.

But despite the RSF's superior weaponry and numbers, the SAF has clung on in el-Fasher, and elsewhere too. The RSF's rapid eastward and southward advances in the first half of 2024 got bogged down by the summer rains. In the far south, it got tied up in a three-way struggle with the army and a local rebel movement. And in Khartoum and its surroundings, the SAF gradually began to win back territory it had lost in the early months of the war. At the start of 2024, Muhammad Hamdan Dagalo, the RSF's notorious commander (better known as Hemedti), made a triumphant tour of the region's capitals, spurring talk of a total RSF victory. That now seems much less likely.

Instead, Sudan's civil war will probably grow even more brutal, complex and difficult to resolve. As in el-Fasher, where various local Darfuri armed groups have been fighting alongside the SAF, self-defence groups and militias will proliferate elsewhere. These include jihadist brigades linked to the army, as well units composed of former members of Sudan's feared national intelligence services. In areas liberated from the RSF in the second half of 2024, these forces were reportedly responsible for brutal repression and reprisal attacks. In some places, such violence will fuel localised ethnic conflict, pulling at Sudan's already badly frayed social fabric.

And in areas under RSF control, there will be resistance. Mr Dagalo's paramilitary forces, known for terrorising civilians from armoured jeeps and motorbikes, are adept at mobile warfare. But they are widely loathed throughout Sudan, where they have no record of governing—and have routinely committed atrocities. Even if they conquer more territory, their rule will be precarious.

Talks to broker a ceasefire have made scant progress, and that seems unlikely to change in 2025. The SAF considers itself the legitimate government of Sudan and is reluctant to sit down with what it sees as a jumped-up militia. During 2024 the army won the support of Russia and received arms from Iran, strengthening the hand of those in its senior ranks who oppose a ceasefire. Those include Islamist hardliners from the party of Sudan's former dictator, Omar al-Bashir, who see war as an opportunity to return to power, as well as business elites who see it as an opportunity to get rich.

For its part, the RSF also sees little reason to make concessions. It has the backing of the United Arab Emirates (UAE), which has continued to supply it with arms, including drones, despite widespread opprobrium. The UAE does so because it reckons, rightly, that it can get away with it.

Despite its horrifying human toll, and a high probability that the instability will soon spread beyond its borders, Sudan's civil war receives only a fraction of the international attention given to wars in the Middle East and Ukraine. Aid deliveries to mitigate what some experts predict will be the worst famine since China's Great Leap Forward are woefully inadequate. Over the next two years more than 10m people could perish—and far too little will be done to prevent it. ●

Sudan's civil war will grow even more brutal

Together is another country

CAPE TOWN

South Africa's coalition government needs to deliver in 2025

John McDermott Chief Africa correspondent, *The Economist*

THREE DECADES after the end of white-minority rule, South Africa is in the midst of a new era. In May 2024 the African National Congress lost the parliamentary majority it had held since the election of Nelson Mandela in 1994, as voters punished it for corruption, rising crime and high unemployment. That meant it needed a coalition to stay in power.

The Government of National Unity (GNU), anchored by the ANC and the former opposition, the liberal Democratic Alliance (DA), has undeniably improved the mood. Business sentiment, the stock-market and the rand have all risen. In one poll in September, 58% of South Africans said the GNU was doing well, while just 21% said it was not. In another, the share saying that the country was on the right track had doubled since April.

There are good reasons for optimism. The DA is a check on the ANC's daftest ideas. Its six cabinet ministers are pushing growth-friendly policies, such as making it easier for firms to hire skilled foreigners. These efforts dovetail with Operation Vulindlela, a structural-reform initiative backed by Cyril Ramaphosa, the president. The power cuts that crippled the country have abated. Inflation is cooling and the central bank has cut interest rates.

Politically, the GNU is more stable than headlines about bickering politicians suggest. The ANC and the DA come from different political cultures. But their leaders have incentives to rub along. After a woeful start, Mr Ramaphosa's legacy depends on a better second full term. The DA wants to show it can be as effective in national government as it has been locally.

But there are huge challenges. In 2025 the GNU will need to deliver more than the odd reform if it is to spark the sustained economic growth required to erode one of the world's highest unemployment rates. An overhaul of freight rail and ports is urgently needed to unclog trade. The state needs to get a grip on corruption and crime. Policies are needed to make it easier for jobseekers to find work and for firms to hire staff. All the while the GNU must try to reverse the rise in public debt, which has tripled as a share of GDP since 2008.

But although Mr Ramaphosa thinks that the best way for the ANC to regain its majority is to govern well in the GNU, some powerful figures in his party disagree. They would rather partner with populist offshoots of the party, such as the Economic Freedom Fighters or Umkhonto we Sizwe. Working with these outfits would also make looting the state easier.

Therein lies the rub. The GNU can be unwieldy. But the coalition is the least bad way for South Africa to bolster its democracy and boost its economy. In a year in which South Africa will host the G20 summit, there is no better time for the country to once again inspire the world. ●

Men with guns

Don't expect them to give them up power

Tom Gardner Africa correspondent, *The Economist*

THE COVID pandemic accelerated a general turn away from free and fair elections in Africa. Several governments —most notably Ethiopia's—took the virus as an excuse to delay, or otherwise tamper with, the electoral process. Most alarming, however, was the flurry of coups, starting with Mali in 2020, followed swiftly by Guinea, Sudan, Burkina Faso, Niger, Gabon and arguably Chad. By the end of 2023, a uninterrupted "coup belt" stretched from the Atlantic to the Red Sea.

Optimists might think that 2024 was the year the dominoes stopped falling. Countries most at risk remained in civilian hands. Fears that Senegal, one of Africa's apparently most stable democracies, might succumb to military rule were also proved wrong. An attempt by the then president, Macky Sall, to delay elections was slapped down by the constitutional court. Bassirou Diomaye Faye, an anti-corruption crusader, swept to victory in the presidential election in March, becoming Africa's youngest democratically elected leader. And the defeat of the ruling party in Botswana's election, in October, was followed by a peaceful transfer of power.

Whether the past 12 months represent a lull, rather than a pivot, will become clearer in 2025. Several coup leaders who promised a "transition" are due either to hand over to civilians or prepare to do so. In Guinea, for example, Lieutenant Colonel Mamady Doumbouya, its ruler since a coup in 2021, has promised to leave office. The signs are not promising. The transition was originally supposed to end in 2024. But a referendum on a new constitution, which could allow Colonel Doumbouya to stand in elections, has yet to take place.

Gabon, the site of Africa's most recent coup, is in a similar predicament. Like Guinea's military rulers, who ousted an ageing president clinging to power, the army officers who toppled Gabon's president, Ali Bongo, in August 2023 were at first welcomed by the public. But unlike Colonel Doumbouya in Guinea, Gabon's "transitional president", Brice Clotaire Oligui Nguema, is reckoned to be still ▸▸

For the few not the many

EIU Democracy index, 2023 ☐ Coup occurred, Jan 2020-Oct 24

Sources: EIU; BMI

quite popular. How long that will last is an open question. Mr Oligui Nguema seems in no hurry to usher in democracy. And if elections are held, as they are supposed to be, in August 2025, he will probably stand and will almost certainly win.

In the Sahel, the region most affected by jihadist violence and military rule, democracy's prospects are even dimmer. In theory, Niger's democratic transition is supposed to last no more than three years. But since July 2024 it has been part of the Alliance of Sahel States (AES), a proposed confederation with Mali and Burkina Faso. The AES, which began as a defence pact, is no champion of democracy. Both Mali and Burkina Faso were meant to hold elections during 2024. Neither did. Niger's junta is unlikely to behave any differently.

But don't expect Niger's neighbours to make much of a fuss. The Economic Community of West African States (ECOWAS), the regional bloc, once considered sending troops to remove the junta. Yet in 2024 the bloc quietly lifted the economic sanctions it had imposed after the coup a year earlier. Mr Faye of Senegal, which is leading mediation efforts with the AES, is sympathetic to some of the club's anti-Western agenda and would like its members to return to the ECOWAS fold.

The West is unlikely to exert much pressure on juntas to hand over to civilians. Guinea is home to the world's largest untapped iron and bauxite reserves. Gabon hosts a French military base. France and America have both been forced to withdraw troops from Niger, where they had been battling jihadists. For would-be putschists, this will be cheering. The clear lesson is that it is possible to seize power by force and get away with it. ●

A greener continent?

LAGOS

Investments in Africa are becoming more eco-friendly

Ore Ogunbiyi Africa correspondent, *The Economist*

AFRICA IS ESPECIALLY exposed to extreme weather events. Droughts, desertification and flooding are constantly upending lives and businesses on the continent, where half a billion people lack access to electricity. In response, some financiers have decided that putting climate and clean energy at the forefront of their investments not only unlocks new funding but also mitigates climate risk, making their projects more viable.

Startups have been leading the way for some time: almost half of all venture-capital activity in Africa in the first half of 2024 went to green projects. Solar-powered innovations are popular as panels continue to get cheaper. Beyond solar, geothermal energy has become a mainstay in Kenya, and is growing in Ethiopia, too.

This "greening" is not just happening in the energy sector. Food-production and insurance companies are becoming more climate-friendly. Other industries, notably fintech and telecoms, have provided foundations on which companies can offer green products and services, even to poorer customers, while remaining profitable. The rapidly growing carbon market is also attracting fresh capital. Blue Carbon, an offsetting firm based in the United Arab Emirates, has bought up millions of acres of forest land, from Liberia to Kenya.

Although foreign direct investment in Africa is slowing, a growing chunk of funding from rich countries is being ring-fenced for green megaprojects, as Western countries become increasingly reluctant to support new fossil-fuel developments. The German government's promise to invest €4bn ($4.3bn) in African green-energy projects by 2030 includes backing for a green-hydrogen plant in Mauritania, for example. Part of China's $51bn investment in Africa will go to 30 clean-energy projects. Britain has invested in a $200m African fund which will provide equity to climate-focused companies. The fund aims to double that amount in 2025.

But closing Africa's biggest infrastructure gaps, for energy provision and broader industrialisation, will require a lot more than what is currently on offer. "Industrialisation is not going to take place on solar panels," says Philippe Valahu of Private Infrastructure Development Group. A group of 18 African states, partnering with the African Export-Import Bank, is seeking $5bn for an "energy bank" to fund fossil-fuel projects of the kind that Western investors are shunning.

Ultimately, Africa's combined climate and energy challenges have become too big to ignore. And more investment in these areas will benefit other industries. A robust grid with a diverse energy mix will reduce the cost of running everything from factories to data centres, in turn creating new opportunities. ●

↑ *Enough sun to go round*

A tale of two Africas

LUANDA

Not everyone is having a lost decade

John McDermott Chief Africa correspondent, *The Economist*

TO WALK AROUND Luanda, Angola's capital, is to tour a graveyard of another era. Half-finished or empty skyscrapers loom over the sun-kissed corniche. Some of the bars along the beach are gaudy monuments to when the price of oil was consistently above $100 and the elites partied in sub-Saharan Africa's second-largest producer country. You can still see the odd bottle of Château Pétrus gathering dust on a supermarket shelf, a relic of a headier time.

A decade on from the end of the commodities boom that fuelled Africa's growth at the start of the 21st century, Angola's economy is still struggling. GDP per person is almost a third lower than it was in 2014. Debts from the good times are now due. Vera Daves de Sousa, the country's finance minister, says that despite her successful efforts to renegotiate terms with Chinese creditors and get a loan from the IMF, 58% of government revenue goes on servicing debts.

Angola's story has echoes in other African countries. In October the IMF described what it calls "sub-Saharan Africa's two-track growth pattern". On one track are the 23 countries it classifies as "resource-intensive", which it defines as having at least 25% of exports in non-renewable commodities such as oil, gold or diamonds. As well as Angola this list includes the two largest economies in sub-Saharan Africa: Nigeria (also the region's largest oil producer) and South Africa (where gold, platinum and coal alone comprise about a third of exports).

On average, resource-intensive countries have a lower GDP per person today than they did a decade ago. This is a direct result of lower prices for their exports. But it also reflects deeper problems. Most resource-rich countries have focused more on dividing the spoils of the boom years than on using the proceeds to build resilient economies.

On the other track are those countries less dependent on commodities. GDP per person there kept growing steadily after the boom ended and the divergence is set to continue. In 2025, the IMF says, nine of the world's 20 fastest-growing economies will be in Africa. Most of these are non-resource-intensive states. Rwanda, Ethiopia, Ivory Coast and Tanzania, for example, are projected to grow by at least 6%. For all the faults of their politicians, it probably helps that, in the absence of a golden (or oily) goose, they have had to learn to find other sources of growth.

This is good news for sub-Saharan Africa. The region faces profound challenges: tight budgets caused by low growth and high debts mean there is little room to invest in the future. Financing for schools, infrastructure and adapting to climate change is hard to raise at home or internationally. A lack of formal jobs for the millions of people entering the labour market every year worries policymakers. Many observers are sceptical that the region can ever catch up with the rest of the world. So if some African states can close the gap they can be exemplars.

The bad news is that the economies of these outliers are not big enough to power the continent, at least not yet. South Africa, Nigeria and Angola alone make up almost 40% of sub-Saharan Africa's GDP. It is time that these giants got their act together—and started to learn from their nimbler peers. ●

In 2025, nine of the world's 20 fastest-growing economies will be in Africa

↑ *Tanzania rising*

International

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Farewell to arms control

Donald Trump must decide how to compete in the third nuclear age

Anton La Guardia Diplomatic editor, *The Economist*

AS 2025 DAWNS, the world is moving further into what many are calling the third nuclear age. It will probably feature more nuclear weapons, more nuclear-armed states, no limits on their arsenals and few qualms about threatening to use them.

The first nuclear era was terrifying enough. America and the Soviet Union confronted each other with tens of thousands of warheads each. The second era, after the end of the cold war, was calmer. Nuclear stockpiles shrank dramatically—though India, Pakistan and North Korea went nuclear during this period. The third age may resemble a new cold war, only more chaotic and with more potential foes.

Russia's all-out invasion of Ukraine in 2022, and Vladimir Putin's threats to use nuclear weapons, marked a milestone towards this new era. So did Xi Jinping's decision to expand China's nuclear arsenal, which the Pentagon has warned about since 2021.

Another big moment will probably come in 2025, when Donald Trump must decide how to respond. New START, the last arms-control treaty limiting nuclear armaments, expires in February 2026. Should America seek a follow-on deal with Russia? There is little prospect of a new arms-control agreement given that Russia has already suspended vital provisions to verify compliance with New START. As for China, it is bound by no such requirements, and has halted what little dialogue it had with America on the issue. For the first time in decades, then, nuclear stockpiles will probably no longer be subject to formal limits.

The old two-power deterrence game will turn into a more complex three-sided rivalry in which two countries—Russia and China—work ever more closely. It may be more bewildering still, given that North Korea, which has nuclear weapons, and Iran, which is on the threshold of being able to acquire them, are drawing closer to Russia and China. Other countries may seek their own nukes if America under Mr Trump is seen as an unreliable protector. Saudi Arabia says it will go nuclear if Iran does. South Korea has recently debated developing its own deterrent. Ukraine suggests it might do so if it cannot join NATO.

America and Russia have more than 5,000 warheads each. Both say that they are abiding by New START's limits on "strategic", or long-distance, nuclear weapons. Each is allowed to deploy 1,550 strategic warheads and 700 launchers, such as intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs) and long-range bombers. The rest of the stockpile, including smaller "tactical" nukes and weapons in storage, is not restricted. The Pentagon projects that China's stockpile, currently about 500 warheads, will exceed 1,000 by 2030, and perhaps 1,500 by 2035. Britain, France, India, Pakistan, Israel and North Korea have much smaller arsenals.

Mr Trump, scornful of arms control and fond of his "nuclear button", may well seek a build-up. The first move would be to "upload" nuclear weapons—ie, shift warheads from reserves to deployed systems. This would involve modifying bombers, adding extra warheads to ICBMs and unsealing launch tubes on Ohio-class submarines. Officials are drawing up plans to do so. Expect the new president to allow the Pentagon to hold exercises to show the ability to upload quickly, as recommended by a bipartisan commission report in 2023. Plans for a submarine-launched cruise missile carrying nuclear weapons—approved by Mr Trump, shelved by President Joe Biden and reinstated by Congress—will get a boost.

America's defence industry has little spare capacity

A bad idea doing the rounds in Mr Trump's entourage is to resume nuclear testing, which the big powers halted in the 1990s. Even hawkish American nuclear experts who favour a build-up think testing is pointless chest-thumping. But America will come up against hard problems if it seeks to expand its actual stockpile. Its defence industry has little spare capacity. Efforts to modernise land-, sea- and air-based weapons are suffering from delays and cost overruns. Most egregious is the Sentinel programme to replace Minuteman III ICBMs, which, at $141bn, is 81% over budget. If the new president decides to join the new nuclear-arms race, it will take time to gather speed. ●

Strange bedfellows

How the world lines up, from wars to whales

Anton La Guardia Diplomatic editor, *The Economist*

THERE IS MUCH talk of a new cold war, but the world has not quite reverted to the old blocs of East, West and a fuzzy non-aligned, ex-colonial middle. Instead many countries triangulate between the big powers to gain advantage, sometimes creating odd bedfellows.

America has strengthened NATO, created new security partnerships in Asia, and brought its European and Asian allies closer together. Some want to expand the G7 group of industrialised countries to include more Indo-Pacific friends. But such alliance-building may unravel with the return of Donald Trump.

Russia and China have drawn closer to Iran and North Korea in a military "axis of autocracy". The pair are also building the BRICS group into a rival economic forum. It also includes India, Brazil, South Africa, the United Arab Emirates, Egypt, Iran and Ethiopia. Expect it to keep expanding as it seeks, for instance, alternatives to trading in American dollars. India, which has a "multi-aligned" policy, also participates in the Quad—a partnership with America, Japan and Australia.

At the UN, Russia can count on just a handful of true supporters for its war in Ukraine, including Belarus, North Korea and Syria. Israel is protected by America's veto at the Security Council. It has only a few friends in the assembly, such as some Pacific-island states, Hungary and Canada.

Then there is Taiwan, a democratic, self-governing island that was booted out of the UN in 1971 and faces the perennial threat of invasion by China. It is recognised by just 12 countries, including Tuvalu, Eswatini and Haiti. Expect China to keep picking off Taiwan's remaining friends.

Geopolitical tensions are playing oddly in the Sahel, where the three coup leaders from Mali, Burkina Faso and Niger broke away from ECOWAS, the main regional body, to form their own "confederation". They have kicked out French and other Western troops and have embraced Russia. For its part, Ukraine is not-so-secretly helping rebels take on these regimes and their Wagner mercenary supporters.

The Trump administration will almost certainly withdraw from the Paris accords on climate change, UNESCO and the UN Human Rights Commission, as it did in its first term. It may also return to its strange alignment with Muslim and Catholic countries to weaken international commitments to women's rights, especially on abortion.

One of the oddest diplomatic battles will continue before the next meeting of the International Whaling Commission in 2026. The creation of a whale sanctuary in the South Atlantic failed by one vote in 2024. Japan left the commission in 2019 to resume commercial whaling. Two other whalers, Norway and Iceland, also exert influence. Pro-whaling states have found allies in Laos and Mongolia. They may have no coast to speak of, but value the favours and aid their votes can attract. ●

Have global emissions peaked?

The world will find out in 2025. It all depends on China

Rachel Dobbs Environment editor, *The Economist*

HAVE GLOBAL emissions of greenhouse gases passed their peak? It is entirely possible. The world will find out, one way or another, in 2025. Passing the peak would be a significant moment in the fight against climate change. In its most recent assessment report, the Intergovernmental Panel on Climate Change, the UN body that monitors climate science, said 2025 was the year by which greenhouse-gas emissions must peak if the world is to have a good chance of keeping global temperature rises within the 1.5-2°C limits specified by the Paris climate agreement.

Why the uncertainty? It takes time to tot up the overall balance of emissions for each country, and to ensure that minor fluctuations are not mistaken for major trends. Under UN rules, rich countries must submit their emissions inventories each year. Poorer countries originally had to do so roughly every four years, but this was shortened to two years in 2024.

Having grown wealthy and powerful through industrialisation, the world's rich democracies have moved away from heavy industry and have decoupled economic growth from their emissions. Most have reported falling emissions for a least a decade, if not longer. Japan hit its peak in 2013, America in 2007, Germany in 1990 and Britain in 1973. Poorer countries' emissions, however, have continued to expand alongside their economies and left them wary of curtailing either. China will not promise anything before 2030; Brazil, India and Indonesia, among others, have yet to commit to a specific date.

↑ *Changing the global trajectory*

But the link between emissions and development has been steadily weakening as energy is used more efficiently and produced in greener ways. This is particularly true of China, which is both the largest greenhouse-gas emitter—producing 30% of the planet's total—and the main driving force behind the expansion of renewable energy (it is building twice as much new solar and wind capacity as the rest of the world combined). China has to report its emissions figures less frequently than Europe or America, and because of delays it has not submitted an update since December 2023, when it provided data only up to 2018.

Observers have, therefore, been frantically trying to divine the trajectory of China's emissions. They rose sharply in 2023 after draconian covid-19 restrictions were lifted. But they seem to have fallen since: analysis by the Asia Society Policy Institute, a think-tank, showed a 3% drop in the year to March 2024. Lauri Myllyvirta, one of the analysts behind the work, reckons China's emissions may have peaked in 2023.

None of this is certain. Mr Myllyvirta notes that higher-than-expected demand for fossil fuels from Chinese industry could upset the predicted trend. China's next official emissions report—due on the last day of 2024—will clarify matters, as will further updates in 2025. But China's emissions are so enormous that a peak would alter the global trajectory.

That would be a great achievement. But it means very little on its own. Any pathway to 1.5°C (and many that end up somewhere hotter) would still require further aggressive emissions cuts and carbon removal. Passing peak emissions should be celebrated. But once emissions are no longer going up, what really matters is how quickly they can be brought down. ●

Links between emissions and development have been weakening

→ When degrowth is good

China, CO_2 emissions*, change on a year earlier

Million tonnes

Source: CREA *From fossil fuels and cement

Questions of seniority

World leaders are getting older, except in democracies

Ainslie Johnstone Data journalist, *The Economist*

THE ADVANCED age of many world leaders came into sharp focus in 2024, when 81-year-old Joe Biden was pressed into pulling out of America's presidential race over concerns about his mental acuity. Americans then elected Donald Trump who, at 78, is no spring chicken. In India, the world's largest democracy, Narendra Modi, now 74, began his third term as prime minister, and 72-year-old Prabowo Subianto shuffled into office in Indonesia. Going into 2025, the world's leaders are, on average, older than ever.

That is not necessarily a problem. Experience can bring wisdom. But slowing down, physically and mentally, is inevitable with age. Research has found that older politicians are less concerned with the needs of the young, and spend less on child welfare and more on benefits for seniors. Over the past five decades the average age of all leaders has risen from 55 to 62. But there are different trends in different types of countries.

The more free and fair a country's elections are, the less its leaders have aged. In countries that are classified as democracies by the Economist Intelligence Unit (our sister organisation), current heads of government tend to be slightly younger than their predecessors, with an average age of 59. In 1975 there were no democratic leaders under 45, but now there are three. There are more mature leaders, too. In 1975 no free country had a leader over 75. Now five do.

Among democracies, America is an outlier. In the past 50 years its politicians, and not just presidents, have got much older. Its legislators are the oldest in the rich world. In the 118th Congress the average age of members of the House of Representatives and the Senate is 59, almost a decade older than the average for elected lawmakers in the OECD, a club of mostly rich countries. The same generation has dominated American politics for 30 years, in part because of big advantages for incumbents. There seems little prospect of this changing.

Countries that have less of a say in their government are driving the trend towards ageing leaders. In hybrid regimes allowing some political rights, heads of government are now 62 years old on average, nine years older than their predecessors five decades ago. In authoritarian regimes the change is even more dramatic. The average dictator is now 64, 12 years older than in 1975. A total of 11 autocracies have leaders over 75.

In countries that do not choose their leaders, those in power have always been reluctant to give it up. What has changed over the past 50 years is that many of these leaders, along with the people they rule, are living far longer. Until more countries adopt democracy, or increases in life expectancy slow down, leaders will become ever longer in the tooth.

The increase in life expectancy around the world, together with the stalling of birth rates, also means that leaders, on average, have become more like the populations they govern. In 1975 the average age gap between leaders and their subjects was 42 years; now it is 39. In the years ahead, expect world leaders to become increasingly grey. But the rest of the world will be greying with them. ●

Sources: One Earth Future; Pew; EIU; Our World in Data; UN; *The Economist*

Leaders at October 23rd 2024, ages at December 31st 2024; median age and life expectancy trends weighted by population

All shook up

Prepare for a worldwide wrangle over copyright, deepfakes and more

Tom Wainwright Technology and media editor, *The Economist*

WORDS, PICTURES, music and now video: generative artificial intelligence (AI) seems like a near-magical tool for creating new and original content in unlimited quantities. Yet to its detractors it is a scam, chewing up human-made, copyrighted work and spewing out pale, derivative imitations. Who is right? In 2025 a combination of litigation and legislation will begin to provide some answers.

Start with the litigation. Representatives of nearly every creative industry have filed copyright-infringement complaints against generative-AI companies for using their material, without payment or permission, to train their AI models. Most of the legal action is in America, where OpenAI and Microsoft are being sued by the *New York Times*, and Anthropic is being pursued by parties including Universal Music Group. In Britain, Stability AI is being sued by Getty Images. All deny wrongdoing.

These and other disputes may be settled out of court: some see the lawsuits as a negotiating tactic by content companies to make tech firms cough up. OpenAI has made at least 29 licensing deals with platforms and publishers, from Reddit to the *Financial Times*, according to a tally by Peter Brown of the Tow Centre for Digital Journalism at Columbia University. (The Economist Group, our parent company, has not taken a public position.) The value of OpenAI's deals alone already exceeds $350m, by Mr Brown's reckoning. A rocky time in court in the coming months could cause that figure to rise.

If claimants resist settling, legal precedents will be set in 2025 that could shape the tech industry for years to come. In America the tech companies are narrow favourites to win. Their "fair use" defence (essentially, that copyrighted material can be used without explicit permission in some cases) has got them off the hook in previous copyright cases, such as a legal complaint against Google Books nearly a decade ago.

However, "if they get to a jury, anything is possible", cautions Matthew Sag of Emory University's School of Law. Stability AI faces a harder test: Britain's copyright law is somewhat stricter than America's, and Getty is also claiming trademark infringement, after some of Stability's generated images reproduced its logo.

As courts deliberate over existing laws, legislatures will debate new ones, in particular on "deepfakes", which use AI to insert a person's likeness into an existing photo or video, often of a pornographic nature. This is worrying parents (whose children are being harassed with "nudifying" apps), celebrities (whose likenesses are being stolen by con artists) and politicians (who have found themselves the targets of AI-powered disinformation). In March the American state of Tennessee passed the Ensuring Likeness Voice and Image Security (ELVIS) Act, to protect performers from having their image or voice used illegally. California has passed laws to stop political deepfakes.

Tennessee passed the ELVIS Act to protect artists

Copyright law may also be reformed. The European Union, Japan, Israel and Singapore have already introduced exceptions to allow the use of copyrighted material, without permission or payment, in the training of AI models, at least under some circumstances. Some in Silicon Valley worry that tech investment could flow away from America to more relaxed jurisdictions. Yet, so far, no country seems willing to become a regulatory wild west. Japan seems minded to tighten the exceptions it has set, to protect copyright interests. Most countries are coalescing around a moderate position: a "race to the middle" is most likely, believes Mr Sag.

The emerging compromise is that tech companies will have to find ways to allow copyright-holders to opt out of having their content used for training. Tech firms will also have to make AI tools better at handling abstract concepts without regurgitating copyrighted material (for instance, being able to draw a generic superhero without reproducing images of Superman). That may prove easier said than done. Do not be surprised if the year ahead is one in which AI generates more questions than regulators can answer. ●

Wish you weren't here

The shock of "overtourism" will subside in 2025

Leo Mirani Asia correspondent, *The Economist*

IS THERE SUCH a thing as "overtourism"? Ask people lucky enough to live in or near Amsterdam, Goa, Mount Fuji or any decent-size city in southern Europe, and they will answer with a resounding "Yes". They are, you might say, over tourism. The influx of tourists, they grumble, is causing congestion and pollution, driving up housing costs and skewing development priorities away from the needs of locals. Many are calling for authorities to do something about it.

Some things have been done. In 2024 Venice limited tour groups to 25 people and, on peak days, instituted a €5 ($5.30) fee for day-trippers. Amsterdam is planning to move its cruise-ship terminal away from the city centre, and forcing some ships to dock 85km away in Rotterdam. Barcelona and some parts of Greece are cracking down on cruise ships and short-term rentals, like those offered by Airbnb. Rome is mulling a €2 fee to see the Trevi fountain. New Zealand, a country with eight times as many sheep as tourists, has tripled its levy on visitors.

The impact of these moves is unclear. Nearly half a million people happily paid Venice's fee, about the cost of a coffee in Piazza San Marco, which suggests that it was too small to deter day-trippers. Large tour groups split up into parties of 25, but stuck close together. Moving cruise terminals out of city centres may increase road traffic as tourists travel to and from ports. And abolishing Airbnb-type rentals reduces competition and lets incumbent hotel operators charge more. Such moves are not only cosmetic, they are an overreaction to overtourism.

The summer of 2024 was a record-breaking one for travel as post-pandemic tourism continued to boom. Arrivals for the whole year are expected to slightly exceed the 2019 peak. Yet that boom is misleading. Globally, between 1995 and 2019, international tourist arrivals grew at an average annual rate of about 5%, before collapsing with the lockdowns of 2020 and 2021. For arrivals to return to 2019 levels meant growth rates of 66% in 2022, 46% in 2023 and at least 38% in 2024. A growth rate of 5% can seem manageable; a growth rate of 40% can feel like an unstoppable deluge. Confronted by 25 years' worth of growth in three, even the most hospitable people will reach their limits.

The good news is that 2025 is likely to feel quieter. Airlines, hotels and cruise lines are seeing traffic to their websites dip. Airbnb warned in August that foreign demand from Americans—a huge tourist market—was slowing. Online travel agents say prices are moderating. Hotels and other travel-and-tourism companies are issuing similar warnings. The signs are that things, especially in Europe, may be returning to normal. Tourist numbers will still climb, but growth will return to its more sedate, pre-pandemic pace.

To take advantage of the economic opportunities tourism offers, cities blessed with visitors might want to avoid putting up barriers, and instead enhance their readiness to welcome travellers. This includes measures like encouraging off-season travel and managing how tourists are distributed across a city or island so "they're not all in the same square kilometre", says Margaux Constantin of McKinsey, a consultancy. In 2023 London received 18.8m visitors, more than any city except Istanbul. Yet few Londoners complain about tourists (though they do complain about many other things).

The alternative is to pull up the drawbridge and lose business to other destinations. But tourism is a lucrative export industry; many countries that envy Europe's problems are easing visa restrictions to lure travellers from places such as India, where outward tourism is booming. And noisy protesters in European cities are only a small minority. Asked in a recent survey about the impact tourists had on their cities, 75% of Spaniards said it was positive. Just 8% felt the opposite. The same people who complain about overtourism in their neighbourhoods are, after all, sometimes tourists in other people's cities, too. ●

→ Back on the road

International tourist arrivals, % change from 2019

Source: World Tourism Organisation *January-July

Crowded skies

The skies above are getting smaller—and more dangerous

Leo Mirani Asia correspondent, *The Economist*

CONSIDER THIS scenario: war in the Middle East shuts down airspace over Iran, Iraq, Israel, Jordan and Lebanon. To the north, Russian skies remain forbidden to Western airlines. Given that most airlines have long avoided routes that cross Syria, Ukraine and Yemen, and many also avoid Afghanistan, the effect on aviation would be enormous. The world's busiest routes would be squeezed into a few heavily congested corridors. There would not be room in the skies for all east-west air traffic, says Thomas Jaeger, the founder of ch-aviation, a data company.

Something almost exactly like this occurred in August 2024, as the world waited anxiously for Iran's response to Israel's assassination of a senior Hamas official in Tehran. In the event, the disruption was brief. But as the world enters an era of growing conflict and geopolitical rivalry, international civil aviation faces ever more constraints. In October 2024, as tensions rose in the Middle East after Israel's assassination of Hizbullah leaders, the International Air Transport Association, a trade body, issued a reminder that "civil aviation serves the civilian population" and "must be kept out of harm's way by all actors in a conflict".

The skies have been getting smaller since 2014, when Russian operatives shot down a Malaysian airliner flying over Ukraine. In 2020 Iranian forces shot down a Ukrainian passenger jet near Tehran, killing 176, in the mistaken belief that it was a "hostile target". Partly as a result of these catastrophic incidents, airspace warnings have proliferated in recent years. Expect plenty more in 2025—and, as a result, more disruption.

There are two main kinds of restriction. One is when a country closes its own airspace. This is rare, says David Mumford of Safe Airspace, a free database of air-risk warnings provided by OpsGroup, a membership organisation for aviation professionals. Examples include Ukraine and Sudan. Russia has closed its airspace to airlines from nearly 40 (mostly Western) countries, just as Europe and America have done to Russian ones. As a result, ▸▸

European and American carriers must now fly much longer routes to destinations in Asia. This puts them at a disadvantage to their Asian competitors that can offer shorter flight times and, because they burn less fuel, lower prices. Air-cargo operations are also affected.

Global connectivity is suffering as a result. British Airways has suspended flights to Beijing until late 2025 and Virgin Atlantic has pulled out of China altogether. Finnair, a Finnish airline which built its business on its "short cut" over Russia, has been among the worst hit. Its executives expect the closure of Russian airspace to last up to a decade. American airlines complain that all this gives Chinese airlines an unfair advantage; they have grabbed bigger chunks of the market on most routes to and from China, compared with 2019. El Al, Israel's flag-carrier, reported its strongest ever first-half results in 2024, as other airlines stopped flying to Tel Aviv. Indian operators also see opportunity in the woes of Western carriers.

The second kind of restriction is an airspace warning, when one country advises its own airlines to avoid specific countries. Such warnings are quite common and usually temporary. But they have grown in number in recent years, and are lasting longer. German authorities, for example, now list 17 countries' airspace as "hazardous", up from 13 in 2020. Every fresh escalation in the Middle East causes shivers in airline headquarters the world over. In 2024 the aviation industry organised its first-ever "World Overflight Risk Conference", an acknowledgment of both the seriousness and the persistence of the problem.

Source: Flightradar24

New risks keep cropping up. There have been reports of "GPS spoofing", or the deliberate disruption of satellite navigation, both in the Middle East and around the Baltic Sea. The main aim is to disrupt drones and missiles, but commercial aircraft are also being led astray. Unpredictable missile attacks by rebel groups in Yemen on shipping traffic in the Red Sea pose risks to planes overhead, too. And even when there is no immediate physical danger, deteriorating relations between countries are a cause to avoid each other's airspace: no airline chief wants an aircraft making an emergency landing in hostile territory. The world is becoming a more dangerous place, not just on the ground, but in the skies, too. ●

How we did in 2024

It was a year that was full of surprises

Tom Standage Editor, *The World Ahead 2025*

WHAT A YEAR. One American presidential candidate bowed out a few months before the election; another was almost assassinated, twice. Ukraine launched a counter-invasion into Russian territory. Iran's president died in a helicopter crash. We anticipated none of these extraordinary events. And we expected America's election to be a coin-toss—and failed to foresee the scale of Donald Trump's decisive victory.

We did better on other elections. There were no prizes for guessing who would win rigged polls in Russia or Rwanda. But the Labour Party won in Britain, Claudia Sheinbaum was elected president in Mexico, Lai Ching-te prevailed in Taiwan and in South Africa the ANC clung to power, albeit in coalition, all as we expected.

In India, we were right to highlight the lack of enthusiasm for Narendra Modi's BJP in southern states, which forced the ruling party into coalition. In Pakistan, Imran Khan's PTI won even though he was in jail and, as we had speculated, senior generals intervened to form a government without him. In the EU elections, the centre-right just clung on as the largest bloc, and Ursula von der Leyen was reappointed as president of the European Commission, as predicted. In Bangladesh, we said Sheikh Hasina would win the election but face trouble because of her ruthlessness. She fled the country in August.

Less accurately, we mentioned Gabriel Attal as a presidential hopeful in France, not as a future prime minister—a job he was appointed to in January, but then lost after snap elections in the summer. We were wrong about Japan, too, predicting that Kishida Fumio would call an early election and win; he stood down in August.

On the economic front, we correctly foresaw that inflation would moderate, interest rates would start coming down and attention would shift to the sustainability of budget deficits. We said America would avoid a recession, but growth would be tepid; growth was in fact surprisingly strong. We did better on China's economy, highlighting the risks of deflation and the likelihood of sub-5% GDP growth.

We accurately called a jump in the price of uranium and China becoming the world's leading auto exporter. Autonomous taxis spread into more cities, and the world was wowed by further test-flights of the giant Starship rocket.

Argentina, though, unexpectedly decided not to join the BRICS. NASA's Moon mission was delayed. But some events, at least, cannot be derailed by the unpredictable decisions of humans: millions of people saw a total solar eclipse in April. Still, the lesson of 2024 is that, as the saying goes, the world is not only stranger than we imagine, it is stranger than we can imagine. That will not stop us trying to anticipate what will happen in the year ahead.

By Invitation

Three lessons for peacemaking in an unstable world

Global conflict is rising, but do not give up on peacemaking, argues Comfort Ero, president of International Crisis Group

WE ARE IN the middle of a very violent decade. Since 2020 a series of major wars—in Ethiopia, Myanmar, Ukraine, Sudan and the Middle East—has claimed hundreds of thousands of lives. The number of smaller conflicts is also rising. Over a quarter of countries globally are afflicted by some form of serious violence. The year ahead is unlikely to see much of a let-up.

As violence increases, policymakers in many capitals seem to be losing interest in making peace. The post-cold-war era, now romanticised as an era of stability, was punctuated by wars and massacres from Rwanda to Syria. The International Crisis Group that I lead, a global conflict-prevention organisation, was founded in 1995 after the international failure to halt the Balkan wars. The global "war on terror", and misadventures like the Iraq war, caused huge suffering. Yet the 1990s and 2000s saw peacemakers and peacekeepers make real progress in countries from Liberia to Timor-Leste.

Today, such peacemaking successes are fading into the past. The last comprehensive peace agreement ending a civil war—between the Colombian government and Marxist rebels—was signed in 2016. As conflicts have spiked in the years since, peacemakers have been able to do little more than craft temporary ceasefires or humanitarian pauses. The United Nations, which was at the centre of international peace efforts 30 years ago, is now a marginal player in Ukraine and Gaza, and losing traction in Africa.

The most obvious reason for this drift is the return of geopolitical competition. America, China and Russia increasingly view regional conflicts in zero-sum terms. This is not only true in cases where they are directly involved, as in Russia's war against Ukraine. The logic of great-power competition is also shaping less strategically significant conflicts. Russia has exploited instability in the Sahel to undermine Western interests in the region, backing military juntas and deploying private military contractors. At the UN, great-power politics has crept into a debate between Chinese and American diplomats over how to deal with criminal gangs in Haiti, because the Haitians recognise Taiwan.

It is politically easier to make the case for funding missiles than mediators

A second driver of conflict is the increasing willingness of middle powers to get involved in fuelling violence. In cases such as Libya and Sudan, regional actors including Turkey and the Gulf states are backing proxies, or deploying their own forces. As the number of participants multiplies, peacemaking grows ever more complicated.

Given these challenges, and the need to focus on other aspects of an ever more complex threat environment, it is understandable that politicians in Washington and elsewhere feel they have less political and financial capital to spend on conflict resolution. It is politically easier to make the case for funding missiles than mediators.

But a failure to get a grip on the proliferation of political violence is likely to store up trouble over the medium term. In a competitive world, even apparently peripheral conflicts can evolve into far bigger headaches, as Russia's exploitation of the Sahel shows. Equally, Moscow and Beijing may find that refusing to work with the West on issues like North Korea's nuclear programme causes them more trouble over time.

Against this difficult backdrop, my team at Crisis Group and I hold onto the lessons of the past 30 years of conflict resolution. Three stand out. The first is that addressing conflicts before they escalate remains far more effective than waiting for them to burn out of control and trying to make peace. The second is that in almost all conflicts, it is useful to engage all the warring parties to hear how they articulate their perspectives, however hardline and obstreperous they may be.

Third, as much as great-power competition and middle-power engagement are shaping the conflict landscape, local dynamics are often the key to understanding what makes parties fight, and how to persuade them to stop. If we can understand these dynamics, there remains enough shared interest in de-escalating violence, in some parts of the world, that peacemaking efforts can still gain traction. In Haiti, China's bickering with America has not stopped the UN greenlighting a peace force, led by Kenya, to start rolling back violence. In Colombia and the Philippines, peace processes aimed at reconciling with rebel groups have had some success and offer hope. The alternative is to allow today's burgeoning list of conflicts to grow further and make an already unstable world more perilous. ●

Europe

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Europe's perilous choice

Go it alone on defence, stick with America or try to muddle through?

Shashank Joshi Defence editor, *The Economist*

DONALD TRUMP'S return to the White House is a bombshell moment for Europe. The continent's powers face the erosion, perhaps dissolution, of their principal alliance at the very moment that Russia has the upper hand in the war in Ukraine. They face a stark choice: find an accommodation with the Kremlin or vastly increase spending on defence and security to keep Ukraine solvent and Vladimir Putin at bay. That debate could unite Europe. It is just as likely to split it.

In the months after Mr Trump's inauguration on January 20th European governments will seek to limit the damage. A cascade of leaders, ministers and officials will try to persuade Mr Trump and his advisers to affirm American commitment to NATO, to continue American aid to Ukraine and to ensure that any peace deal does not condemn Ukraine to permanent subordination. Mark Rutte, NATO's secretary-general, will appeal to Mr Trump's vanity, telling the president-elect that he is single-handedly responsible for European rearmament and that Europeans are vital partners in America's quest to contain Chinese power.

But European governments know they face steep odds. These discussions are likely to unfold amid a blazing global trade war, including American tariffs on Europe. And even if Mr Trump does not formally walk out of NATO, he could hollow out Article 5, its mutual-defence clause, with a few glib remarks.

Mr Trump's Ukraine policy will be shaped by his choice of advisers. The early signs are that mainstream hawks, like Mike Waltz and Marco Rubio, will have to compete with more radical figures such as Tulsi Gabbard and Pete Hegseth. Mr Trump might advocate a version of the deal proposed by J.D. Vance, his vice-president-elect: freeze the front lines and demand that Ukraine remain neutral. He might ask Europeans to deploy troops.

How would Europe respond? One option is to try to muddle through. Perhaps Russia will run out of steam in Ukraine. Perhaps Mr Putin will respect the terms of a ceasefire. Perhaps a pro-European president will return to the White House in 2028. Such complacency has long been Europe's default course of action. But a

second Trump term may persuade European powers that American politics and priorities have changed permanently. Alongside the prospect of a Ukrainian defeat, that could prompt more dramatic action.

The first and most urgent problem is resources: only about two-thirds of NATO's 30 European members currently spend 2% of GDP on defence. Without America, they would need to spend perhaps twice that to have any hope of filling the resulting military gaps. That would mean piling up debt, raising taxes or slashing health and welfare spending. And it would take years—far longer than Mr Trump's four years in office—to rebuild defence industries.

Europeans would also need to decide whether to reorganise the basis of their collective defence. At present, Europe's armed forces have prioritised NATO while also hedging their bets by expanding security and defence capabilities in other institutions, such as the European Union (EU) and regional military blocs such as the British-led Joint Expeditionary Force. Because NATO operates by consensus, Mr Trump could paralyse the alliance in a war, preventing Europeans from implementing its defence plans.

But deprioritising NATO would raise thorny questions. Relying on the EU would risk cutting out Britain, the continent's largest military spender, as well as Turkey, with one of its largest armies. Mr Trump's victory is also likely to prompt a renewed debate over the role of British and French nuclear weapons in deterring attacks elsewhere in Europe.

A second Trump term may persuade Europe that American priorities have changed permanently

These will be messy, schismatic debates. In northern, central and eastern Europe, particularly among the states of the former Warsaw Pact, governments will fight back against any American efforts to impose a bad deal on Ukraine. Defence spending in the so-called front-line states, already high, will rise further. Yet this hawkish bloc does not, by itself, have the resources or industrial capacity to keep Ukraine supplied, let alone substitute for American military power in Europe. The role of Britain, France and Germany will be crucial.

Britain is joined at the hip with America in intelligence and nuclear matters. It would have the most to lose in a complete break with Mr Trump's administration. France would be bolder, urging the EU to take more radical steps in common defence, such as issuing joint debt to fund military spending. In Germany the pro-Russian far right has gained ground ahead of federal elections in February, but both the two main parties might regard a second Trump term as a catalysing moment, perhaps the sort of emergency that would even justify deficit spending for defence.

In all three cases, it is unclear how governments would respond to a Trump-led peace proposal. To fight it would mean boosting defence spending to buy, produce and send arms to Ukraine. To acquiesce would be to grant Russia a partial victory, give it time to rebuild its forces and agree to live with a new iron curtain—or under the shadow of another war. ●

Ukraine's gloomy end-game

The year 2025 could be when fighting largely comes to an end

Christopher Lockwood Europe editor, *The Economist*

ON FEBRUARY 24TH the war in Ukraine will enter its fourth year. The conflict has already resulted in more than 200,000 deaths and three or four times that many casualties. Millions have been displaced and Ukraine's economy has been devastated. The country faces a demographic time-bomb after the flight of so many women and children.

Russia's economy has been damaged, too, by a combination of Western sanctions, labour shortages caused by Vladimir Putin's insatiable need for cannon fodder, and the flight of many into exile. In early November inflation was in double digits, interest rates were at 21% and 40% of the budget was taken up by military and security spending. Mr Putin's thugs silence critics, but he knows most Russians are fed up.

As Ukraine's citizens shiver through a third winter in which power and heating plants are targets for Russian missiles and drones, there is but one cause for hope: that 2025 could be the year in which the fighting largely comes to an end. Both sides are close to ▸▸

exhaustion, and the backers of each would prefer the conflict to wind down. In Washington this will be a priority for Donald Trump's new administration.

Early in 2024 a congressional tussle meant that for several months American funding for Ukraine dried up, as the existing spending package had been exhausted and a new one had not been approved. Some time in 2025 that new $61bn package will in turn be exhausted, though the new administration seems likely to freeze it before then. Cash is not the only problem. America is running low on some of the military hardware it sends to Ukraine, and needs to consider other partners, especially Israel and Taiwan.

That supply-side constraint is even worse in Europe, where governments have done too little to expand defence production to meet the needs of a Ukraine that will not be able to rely on America. Ukraine itself has increasingly impressive defence industries, particularly in drone production. But it will struggle to fill the gap as Western supplies taper off. All this means that, with America's presidential election out of the way, pressure to enter some form of negotiations with Russia will greatly increase in 2025.

Ukraine will have to accept the loss of some territory

What might a possible deal look like? Ukraine will have to accept the loss of some of its territory. The 7% that Russia seized in its first invasion in 2014 (the Crimea and eastern Donbas) is surely unrecoverable. Any settlement will probably also involve Russia holding on to some or most of the additional 11% that it now controls since the 2022 invasion. In return, Ukraine must have solid security guarantees, the ideal one being full membership of NATO. That would probably constitute an acceptable solution in Kyiv, painful though it will be for Ukraine to swallow.

With Mr Trump back in power, however, it seems probable that Ukraine will not join NATO for years, if ever; but it might still at least get some form of security guarantee. At any rate, it does at least now seem highly probable that discussions will start in 2025, and when they do the fighting could sharply ratchet down, even to a ceasefire. That is what happened in 2014 (though that ceasefire never wholly held). While talks grind on, a semi-frozen conflict might arise. Imperfect, yes, but much better than the way things are now. ●

A thousand cuts

The coming fiscal squeeze will affect growth, politics and Ukraine

Christian Odendahl European economics editor, *The Economist*

THE EUROPEAN UNION does not seem to have a debt problem. At around 84% of GDP, its member countries' overall public-debt ratio is a lot lower than Britain's 104% or America's 123%, let alone Japan's 255%. Even if the roughly €1trn ($1.1trn) of collective debt—such as the EU bonds funding the bloc's post-pandemic recovery fund—are included, the ratio does not exceed 90% of GDP. Yet the continent faces a fiscal squeeze in 2025 and beyond that will fuel divisions and cut European growth to almost zero, and may undermine its efforts to step up security spending and continue to support Ukraine.

Low growth is one factor behind the squeeze. Germany's economic growth is practically zero, and there is little prospect of improvement before its federal election in February 2025. France and Italy are still growing, but the OECD, a club of mostly rich countries, reckons both will grow by barely more than 1% in 2025. The downturn is not cyclical but reflects poor growth potential. That will lead to low tax-revenue growth, while spending demands pile up.

The threat of a trade war with America will add to pressures on growth, with the continent especially vulnerable to new trade frictions. Investment banks sharply revised down estimates of European growth after Donald Trump's victory.

Another factor is demography. Ageing European populations add to their states' bills not just via pension spending but also in the health and social-care sectors. An older population is also less productive and innovative, reducing growth further. The EU reckons that, as costs rise, age-related spending will consume a larger share of output in the future: 1.2 percentage points more of GDP by 2070.

Finally, there are the self-imposed rules that mandate cuts. The EU's fiscal rule-book, recently reformed, says countries with high deficits must devise plans to reduce them. Germany has its own constitutional "debt brake" that imposes cuts, even with reasonable deficits. Bruegel, a think-tank, reckons that France, Italy and Spain will have to reduce their deficits by about 0.5% of GDP per year to comply with the rules.

→ Ready for the squeeze?

General-government structural balance, % of potential GDP

Source: IMF

The effect of the fiscal squeeze in 2025 will be even slower growth than forecasters currently project. China will continue to challenge European manufacturing in markets around the world, even as its own domestic weakness hurts European exporters. Mr Trump's victory will entrench and extend protectionist policies put in place by his predecessor. Europe's domestic consumption is increasing, but adding a fiscal squeeze will sap the little growth that will result.

It will also make politics in Europe harder. Germany's election, after the collapse of its government, will be fought over the state of the economy and how Germany's elite have let the former paragon of economic strength fall from grace. The beneficiaries are likely to be those at the political extremes. In France and Spain, where governments are hanging on by a thread, the inevitable fiscal cuts will make them even less popular. Agreeing on sweeping reforms and more common EU spending, as suggested by Mario Draghi, the former head of the European Central Bank, in his landmark report in September 2024, will be just as hard.

The main victim may be Ukraine. The country's military strength and financial health depend on American and European support. For 2025 the G7 agreed on a scheme, still to be finalised, to use profits from frozen Russian state assets to fund about $50bn of aid, in part because financing it from domestic resources proved increasingly difficult. Should that money run out, Europe will have to make even deeper cuts to fund Ukraine's security—and its own. ●

Balancing act

The year ahead will be perilous for Emmanuel Macron and his government

Sophie Pedder Paris bureau chief, *The Economist*

FRANCE IS HEADING for a bumpy 2025. Michel Barnier, the new conservative prime minister, runs a precarious minority coalition. If he can impose a steady hand, he may last the year. But he is up against aggrieved opposition on both the left and right. Divided, these two blocs can merely block his legislative plans. Together, they could bring down his government. By the summer, French voters could be returning to the ballot box again.

Mr Barnier needs to keep his coalition of right-wingers and centrists loyal to President Emmanuel Macron together, while keeping the opposition split. The left will be consistently hostile. This means that, to pass legislation, he will need tacit approval from Marine Le Pen. The hard-right leader will seek to appear responsible but, in effect, the government's survival will be in her hands.

This will give her a lot of clout. She will push for the introduction of proportional representation for parliamentary elections. The conservative interior minister, Bruno Retailleau, will demand tougher policy on immigration and policing, dismaying left-leaning coalition centrists. Differences in the coalition will be sharpened by the race to succeed Mr Macron at the next presidential election, due in 2027.

A big source of tension will be fixing the dreadful public finances. France's efforts to curb the budget deficit to 5% of GDP in 2025, still well above the EU's 3% limit, will be closely watched by Brussels and financial markets. Big business and the rich will face extra taxes. Mr Barnier's promised spending cuts will meet resistance, in parliament and on the streets.

For the president, the coming year will be uncomfortable. Used to micro-managing policy, Mr Macron will have to learn to delegate. In 2024 he lost European and then legislative elections, after calling a snap parliamentary election. Power will slip increasingly from the Elysée Palace to the prime minister's mansion, Matignon. The constitution bars Mr Macron from dissolving parliament again until July 2025. Even then, fresh elections would not resolve the problem of a split parliament. Political deadlock will intensify calls for Mr Macron himself to step down and hold an early presidential election.

Increasingly detached, Mr Macron will shift his attention abroad. This could play to his strengths, as he pushes for greater European strategic autonomy and maintains his hawkish support for Ukraine and its potential membership of the EU and NATO. But the president's authority abroad will be damaged by weakness at home. Mr Macron's best hope will be that the coalition government beds down and shields him from French grievances. If not, he will be blamed for a year that could bring more political instability than he has bargained for. ●

Poles apart

Europe is watching Poland's crucial presidential election

Vendeline von Bredow Senior Germany correspondent, *The Economist*

POLAND WILL hold a presidential election in 2025, probably in May, that is likely to decide the future of the populist-nationalist Law and Justice party (PiS). Either PiS will be "on a highway to return to power—or it will be the end of PiS as we know it", says Andrzej Bobinski of Polityka Insight, a think-tank in Warsaw. The fate of the party founded in 2001 by Jaroslaw and Lech Kaczynski, identical twin brothers who conquered conservative Poland, will be a bellwether for other countries in Europe where hard-right parties have recently gained increasing power and prominence.

Law and Justice was in power for eight years until October 2023, when a three-way coalition led by the centrist Civic Platform of Donald Tusk, a former president of the European Commission, won parliamentary elections. During its time in power PiS had taken control of the public-service media and packed the judiciary—and in particular the constitutional court, Poland's top court—with its acolytes. It also picked endless battles with the commission in Brussels: over the party's radical overhaul of Poland's judiciary, its disregard for the authority of the European Court of Justice and its refusal to accept its quota of migrants.

The presidency is Law and Justice's last foothold in executive power. Andrzej Duda, the current president, who hails from PiS, backs its policies, though he has reportedly fallen out with Jaroslaw Kaczynski, the party's influential leader. The Polish president lacks the wide-ranging powers of France's president, but is more powerful than his German counterpart, whose role is mainly ceremonial. And he can play an extremely obstructionist role if he chooses to do so, given that he nominates ambassadors, oversees foreign policy and, crucially, has the power to veto legislation.

In December 2023 Mr Duda threatened to veto parts of Mr Tusk's budget over the new government's plans to shut down the public broadcaster, which had become a mouthpiece for PiS. In February 2024 he ▸▸

vetoed a law that would have allowed over-the-counter access to the morning-after pill for girls and women aged 15 and above. (Poland's laws on reproductive rights are among the most restrictive in Europe, another legacy of the PiS years.) And in March 2024, when the government announced the recall of 50 ambassadors who had been appointed under the previous administration, a furious Mr Duda claimed he was blindsided by the recalls. He refused to sign off on dozens of new ambassadorial appointees.

Mr Tusk argues that with Mr Duda in the presidential palace his hands are tied, preventing him from implementing the reform agenda he promised his voters. His party's candidate for the presidency is likely to be Rafal Trzaskowski, the popular mayor of Warsaw, who lost to Mr Duda in 2020 by a whisker.

Because Mr Duda may not run again, PiS needs to choose a new presidential candidate. The hot money is on Mariusz Blaszczak, a 55-year-old former defence minister who is a fan of Donald Trump, America's president-elect, because the PiS government that he was a part of had such a good experience during Mr Trump's first term in office. Another possible candidate is Karol Nawrocki, a 41-year-old historian who is the head of the National Institute of Remembrance.

The most hardline possibility is Przemyslaw Czarnek, a 47-year-old former education minister who is known for his criticism of gay and trans rights and his support for corporal punishment for children. Then there is a dark horse: Slawomir Mentzen, a young co-leader of Confederation, a party even more nationalist and right-wing than PiS. Mr Mentzen has a huge following on social media, especially TikTok.

After Law and Justice won parliamentary elections in October 2016, Poland became the only EU country where the hard right controlled both chambers of parliament and the presidency. The reverberations of PiS's eight years in office—and whether it will now find itself making a complete exit from executive power—are thus being closely watched all across Europe as a possible cautionary tale. In October 2023 Judy Dempsey of Carnegie Europe, a think-tank, wrote that "Warsaw's new leadership has a great chance to restore the rule of law, end the country's bitter polarisation, and revive its influence in Europe."

Mr Tusk has tried to seize his chance, but his efforts have often been hindered both by Mr Duda and by his own lack of talent for compromise. His task will become easier if an ally is elected in the presidential election—or much more difficult if someone even more hardline than Mr Duda prevails. ●

Exit Scholz, enter Merz

Under its next government, Germany will shift to the right

Tom Nuttall Berlin bureau chief, *The Economist*

GERMANY WILL enter 2025 preparing for a snap election brought about by the demise of its three-party coalition in November. The surprise vote, to be held in late February, seven months earlier than expected, presents an opportunity for Europe's largest economy to confront its manifest challenges, chief among them its flailing industrial model, and to respond to Donald Trump's return.

Friedrich Merz, the candidate for chancellor from the opposition centre-right Christian Democrats (CDU) and their Bavarian allies, the Christian Social Union (CSU), looks likely to take the reins from Olaf Scholz, the Social Democrat (SPD) incumbent. The 69-year-old Mr Merz (pictured), an irascible old-timer with a long history in the corporate world, will present himself as the best chance for Germany to lift itself from its economic funk. Expect him to campaign to the right of Angela Merkel, the last CDU chancellor, with proposals to reform welfare, attract foreign investment and ease the flow of capital to German firms. Hoping to arrest support for the hard-right Alternative for Germany (AfD), Mr Merz will also talk tough on the irregular immigration that has bedevilled Germany in recent years.

↑ *Tall order*

The question of how to revive Germany's economy, which has barely grown in six years, will dominate the campaign and subsequent coalition negotiations. (The new government will also have to negotiate a snap budget, as the country is likely to begin 2025 without one.) Germany's industrial giants are struggling with energy prices, high taxes, red tape and labour shortages, and the country's huge car industry appears to have no answer to the rapid rise of Chinese EVs. Germany's specialised *Mittelstand* firms are highly exposed to the world's protectionist turn, especially amid the threat of Trumpian tariffs. The next chancellor's role in shaping the EU's response will be crucial.

One early test of the next government's ambition could be the fate of Germany's "debt brake", a constitutional provision that sharply limits public borrowing. As spending demands and legal constraints bite, even some in Mr Merz's ranks want to loosen its shackles. It would require a two-thirds majority in the Bundestag. But if that hurdle is overcome and Mr Merz's would-be governing partners can win him over, a modified debt brake could create space for fresh public investment in infrastructure and defence, and allow Germany to boost aid to Ukraine—helpful if Mr Trump pulls the plug. If not, there may be a second off-books fund to boost defence spending, after one Mr Scholz pushed through in 2022.

Diplomacy will present another test. If, perhaps under pressure from Mr Trump, Ukraine arrives at a settlement with Russia, Germany will face demands from allies to provide it with security guarantees and to lead the funding of reconstruction. On EU matters important capitals, notably Brussels, Paris and Warsaw, will expect a Merz-led government to restore a German assertiveness lacking under Mr Scholz, even if it may not always be to their liking. Mr Merz is unlikely, for example, to agree to a big joint-borrowing project to fund EU defence, despite his backing for Ukraine.

Hanging over all this will be Mr Merz's search for coalition partners. A victorious CDU/CSU would probably have to choose between governing with the SPD in a mushy left-right "grand coalition" of the sort often favoured by Mrs Merkel, or with the Greens, who are hated by many conservatives. Yet so fragmented has German politics become that the conservatives may need the support of both. Mr Scholz's throuple of social democrats, greens and liberals began optimistically but was unable to marshall a coherent response when crisis struck. That lesson will not be lost on Mr Merz. ●

By Invitation

Ukraine is a litmus test for the resolve of Europe and its allies

Europe can achieve long-term peace only if it is prepared for war, says Edgars Rinkevics, president of Latvia

WHETHER WE LIKE it or not, there is no question that the rules-based international order is being irreversibly transformed. The purposes and principles of the charter of the United Nations have been forcefully torn apart by Russia, despite its status as a permanent member of the UN Security Council. With its invasion of Ukraine and its actions elsewhere, Russia is attempting to rearrange the international system in a way that benefits only aggressors.

Europe's current security landscape is just one of multiple burning crises around the world. Russia's aggression has had widespread consequences beyond Ukraine's borders. It has impacted global food security, energy prices and nuclear safety, with humanitarian consequences both in Ukraine and farther afield. In the Middle East, meanwhile, Iran poses a clear and present danger. Israel has a legitimate right to self-defence against terrorist attacks. But conflict in the region has aggravated an already dire humanitarian situation. In today's interconnected world, such crises can and do have far-reaching effects, crossing borders and demanding a comprehensive response.

Ukraine has passed the sobering milestone of more than a thousand days of resistance, fighting to defend its land and people, and to determine its own future. Those days have been filled with bloodshed and destruction, for which Russia bears sole responsibility and for which it should be fully held accountable. But Russia is no longer acting alone.

In a dismaying development, North Korea has deployed troops under Russian command, while Iran continues to supply Russia with lethal drones and missiles. Ukraine is a litmus test for the resolve of the whole Euro-Atlantic community.

We need to be more resolute, individually and collectively, in supporting Ukraine until it prevails—without being self-deterred by any self-imposed red lines, which have anyhow proven to be a moving target. The risk of escalation lies in not doing enough, rather than in doing too much. Weakness and fear serve only as an invitation for further Russian aggression.

If and when peace talks are considered, there cannot be any negotiations behind Ukraine's back. Our task for 2025 and beyond is to proactively contain Russia's ability to pose any threats. That includes limiting its efforts to regain military strength. Russia is, and will remain, the most direct and long-term threat to Euro-Atlantic security.

The days when an investment of 2% of GDP in defence was sufficient are behind us

No European can afford complacency, fatigue or neutrality, whether political or economic. Europe can achieve long-term peace only if it is prepared for war. By Europe I mean not only the members of the European Union, but all European members of NATO.

We have a mountain to climb to accelerate defence-industrial production, innovation and technological development in the face of mounting threats. If we want to be regarded as serious and credible players in the global arena, we need to move from a process-oriented approach to being more clearly results-oriented—and quickly.

Security is an ongoing adaptation process of planning, resourcing, exercising and implementing lessons learned. The days when an investment of 2% of GDP in defence was sufficient are behind us. Today's required course of action is to move from a level of 2.5% towards 3% of GDP, investing in forces and critical capabilities, and in particular in air defence. These are no longer optional measures, but necessities.

Moreover, we can no longer pretend that old ways of thinking are effective, either on the battlefield or beyond it. Hybrid warfare already tops the risk-assessment charts across Europe. Malign activities by our adversaries (such as sabotage, instrumentalisation of irregular migration and malicious cyber-activities), merged with conventional tactics, require an appropriate mix of both defensive and offensive response measures.

Only by being confidently resourceful will Europe be able to make the case for resolute partnership across the Atlantic and the Indo-Pacific. Britain, France, Germany and Poland have essential roles to play in becoming the generators of credible European deterrence.

European and North America powers need each other, now more than ever. We should not lose our focus and resolve. We must prevent our adversaries and strategic competitors from sowing discord among us. This is not the time for division and disagreement. We must recognise that the basis of our collective future security lies in our unity. ●

Britain

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Backbenchers and backbiting

Labour will spend 2025 doing what it loves: fighting itself

Duncan Robinson Political editor and Bagehot columnist, *The Economist*

THE LABOUR PARTY hates two things, runs the old joke: getting its own way, and each other. In 2025, Sir Keir Starmer's government may have a majority of 154 in the House of Commons; it may sit atop the world's least constrained executive; it may have four clear years to bend the country to its will. Is it happy? Not really. Labour will spend 2025 fighting itself.

Some fights, at least, are over policy. A scrap over Europe will be the aperitif. Backbenchers will grumble that the government should be less cowardly when it comes to Europe. The Labour leadership is so twitchy it will not even do a deal on student-exchange schemes. Labour's entire electoral strategy will remain focused on a segment of Eurosceptic voters who switched from the Conservatives to Labour at the last election, leading MPs to grumble: what about the rest?

A long-running row over the two-child limit for child benefit may come to an end in 2025, with a decision to abolish it—but not for a few years. More MPs will ask what the point of a Labour government is, if not to lift children out of poverty. At least planning reform, the centrepiece of the government's strategy, is something almost the whole party agrees on.

There will be a by-election. There always is. But one in the north-west, in a safe Labour seat, would cause mild panic if the party lost to a right-wing challenger from Reform UK. Questions about Sir Keir's leadership would start to rumble. The prime minister will turn 63 in September—a few years away from his pension. Anonymous Labour types would be quoted saying he "looks tired". Downing Street sources would hit back that the prime minister scored twice in the most recent game of eight-a-side football that the soon-to-be-pensioner still plays every Sunday.

A tweak to leadership rules might then turn the Labour Party conference in the autumn to its favourite topic of conversation: itself. Rather than allowing its (quite left-wing) members to have the final vote on its leaders, the party will push to give only MPs a say. Framed as a way to keep out the radical left, it is anything but. Before the change, removing a leader was a gamble. This will make it much cleaner.

With Sir Keir still in office, a not-so-subtle battle for succession will begin. A flurry of soft-focus profiles of cabinet ministers will appear in newspaper supplements; scruffy ministers will sharpen up; tubby ones will slim down, flaunting the gaunt, Ozempic-hollowed cheeks that are now the hallmark of the middle-aged and the politically ambitious.

Arithmetic guarantees a certain amount of internal scrapping inside the Labour Party. There are 402 Labour MPs and only 100 or so jobs in government. At the same time, the typical backbencher has a slim majority of a few thousand. For many, a job in government is now or never. With Labour still polling neck and neck with an unpopular—and still defiantly right-wing—Conservative Party, jitters will begin. In a bid to assert authority, Sir Keir will launch a brutal reshuffle. It will not settle things. Old hands in cabinet will be sent to the backbenches to fume; overlooked backbenchers will become increasingly obstreperous.

If Labour can afford to spend 2025 fighting itself, it is because the Conservatives, the main opposition, will be fighting everyone else. Kemi Badenoch, the new Conservative leader, is a political pugilist, and will spend 2025 picking fights with such foes as human-resources departments (parasitical) and the National Trust (unpatriotic). Do not be surprised if she launches an ill-fated push to make "cancelling" people covered by hate-crime legislation. James Cleverly, a Tory leadership contender who argued that the party should "be more normal", will bide his time.

If there is a political race, it is to the bottom

Sir Keir will end 2025 where he started, level with the Conservatives and leading a strangely fractious party, though he may be a few pounds lighter and with a suspiciously gaunt face. Challenger parties will continue to offer alternatives—from extreme-right to green to a new "technopopulist" outfit—that few seem to want. In Britain in 2025, if there is a political race, it is to the bottom. So, despite all the infighting, Labour will struggle on for three more years, and quite possibly five more after that. ●

Fragmentation is here to stay

Expect the realignment of British politics to continue

Matthew Holehouse British political correspondent, *The Economist*

GLANCE AROUND the chamber of the House of Commons in 2025 and British politics appears quite stable. A mass of Labour MPs spill over the green government benches and up into the aisles, having tallied more than 400 of a possible 650 seats in the general election of 2024. With their support, the government can legislate more or less as it wishes.

But under the surface, things will be more volatile. Britain's party politics is fragmenting. The first-past-the-post electoral system, which has sustained the dominance of two large parties, is increasingly at odds with the voting habits of the British public. Labour's landslide result represented the biggest mismatch in a century between the popular vote (34%) and the share of seats for a government (63%). The vote share of Labour and the Conservatives combined was, at 57%, the lowest since at least 1918. Smaller parties secured long-sought bridgeheads in the House of Commons. The coming year will reveal whether this fragmentation reverses or, more likely, becomes entrenched.

For the Conservative Party, reversing this development is an existential

challenge. In 2024 it was ousted from government, suffering its worst result since at least 1832, both in vote share (24%) and seats (121 out of 650). Its support split: to Labour, to the Liberal Democrats and especially to Reform UK, a right-wing outfit, which secured five seats. The new Tory leader, Kemi Badenoch, has made clear she intends to put those on the right first. In the contest to replace Rishi Sunak, she stressed immigration control and other issues dear to right-wingers.

An early test of her approach will come in May, with local-government elections in English rural areas where the party has traditionally been strong. The year ahead will also reveal whether Ms Badenoch is willing or able to reach beyond the red-meat issues of the leadership campaign to build a broad national platform.

Absent from the Tories' leadership contest was much talk of the Liberal Democrats, which was surprising considering that the party secured its best-ever result, bagging 72 seats, many in places long synonymous with prosperous, genteel conservatism. But this success was dependent on former Tory voters feeling relaxed enough about the prospect of a Labour government to defect. That could change if the government gets into trouble.

For the prime minister, Sir Keir Starmer, the task of 2025 is insulating Labour against fragmentation to the left and right—as well as holding on to the voters it gained from the Conservatives. In 2024 Reform came second in 98 constituencies, in 89 of which it was second to Labour. To Labour's left, the Green Party enjoyed its own breakthrough in 2024, winning four MPs. It finished second in 40 constituencies, all but one of them won by Labour.

The Scottish National Party had its contingent of Westminster MPs reduced from 48 to nine in 2024, but it will be angling for a comeback in the year ahead if the new government falls short of its promises. The Scottish Parliament elections of 2026 will be a critical test of its long-term health. And then there is a cluster of independent MPs, mostly in seats with large Muslim populations, who won power by tapping into disaffection with Labour's policy on Israel.

For years the fortunes of the Conservatives and Labour operated like a see-saw: as one fell, the other would inevitably rise. The risk for the parties of the centre is that faith in the already tarnished Labour government continues to fall, without any recovery of faith in the shattered Tories. If so, do not be surprised if support for a change to the first-past-the-post system grows in 2025. ●

Growing pains

Conditions for economic growth are favourable, but results are uncertain

Archie Hall Britain economics correspondent, *The Economist*

THE BRITISH economy is running out of excuses. Growth has been sluggish for over a decade. Political chaos after the Brexit referendum of 2016 did not help. The covid-19 pandemic and lockdowns certainly stifled growth—as did the surge in energy prices after Russia invaded Ukraine in 2022, and the rise in interest rates after inflation surged.

Now, though, that tumult is over. Inflation is back near its 2% target. Growth picked up in 2024, and forecasts became steadily more optimistic (see chart). Can Britain sustain this in 2025? The backdrop looks good. Interest rates are falling. Politics, at least domestically, is slightly calmer. The new Labour government's policies are not perfect: its urban-housing targets are not ambitious enough, and adopting the previous government's "red lines" on Brexit, another growth-dampener, was also ill-advised. But many policies, especially on infrastructure and housebuilding elsewhere, look promising.

Plenty could still go wrong. Labour has shown occasional enthusiasm for soak-the-rich tax policies that could hinder efforts to lure investors. A global slowdown would hit a medium-size and open economy like Britain's very hard. Trade could deteriorate after Donald Trump is inaugurated, though Britain's skew towards services exports would probably lessen the impact of tariffs on manufactured goods.

The most troubling scenario, though, would be if everything goes right yet growth still does not materialise. What if the global environment is stable, the government's economic plans stay sensible but growth is still tepid in 2025? That would confirm a deeper, more structural growth problem. One worrying data point is that productivity growth was also weak in the otherwise calm years between the global financial crisis of 2007-09 and the Brexit vote in 2016. Overall GDP growth looked better, but was flattered by a demographic boost from women and immigrants entering the job market. It would be a troubling sign if Britain cannot surpass that weak productivity baseline.

Labour needs robust growth to boost the tax take and pay for its plans to repair public services without another big increase in borrowing. If the Office for Budget Responsibility (OBR), the debt watchdog, nudged down its estimates of Britain's trend productivity growth, the government would lose tens of billions of pounds' worth of fiscal space to borrow. The OBR's assumptions are already rosier than those of most forecasters; it would take a lot to raise them, but not much to pull them down. To win re-election in 2029, Labour must show material improvements to the National Health Service, transport, policing, the courts and more. Without growth it will struggle to deliver them.

Watch the British economy closely in 2025, then. The initial recovery in growth during 2024 was a pleasant surprise for the economy and for the government. But if it cannot be sustained in 2025, it really will be time to worry. ●

Coastally awesome

A new path will make it possible to walk around the coast of England

Catherine Nixey Britain correspondent, *The Economist*

YOU WILL walk past Pevensey, where William the Conqueror landed, and Margate, where the Spanish Armada did not. You will walk past Plymouth, from where the *Mayflower* famously set sail, and Southampton, from where the *Titanic* infamously did. You will walk past places made famous in poetry and song: past Lyme Regis, where Mary Anning sold seashells on the seashore, past Scarborough Fair, and past the blue birds over the white cliffs of Dover. You will walk along a "footpath through British history", says David Abulafia, a professor of history at Cambridge University, and its "relationship with the sea".

Britain is an island nation. And soon it will be possible to walk all the way round that island, because the King Charles III England Coast Path, as it is formally known, will open. (Wales already has a coastal path, and Scottish rules enshrine the freedom to roam, including along the ▸▸

coast.) The English path has been long awaited: the campaign for it began in 2004. It is also long. Its 2,700 miles will make it the longest continuous coastal path in the world. Neil Constable, national adviser at Natural England, which has created the path, hopes that by the end of 2025 it will be possible to arrive at the coast of England, and "turn right or left and follow the national trail as far as you want to go".

Since the 1930s British walkers have campaigned for the right of access to Britain's beauty spots. The coastline was one area where this was lacking: prior to the creation of the path access was "patchy", says Kate Conto, a policy officer at the Ramblers' Association, which began the campaign. Only about two-thirds of the coastline was accessible. Now the whole lot will be. Such a path is, says Robert Macfarlane, professor of English at Cambridge University and author of several books on walking, "truly an epic prospect—it will connect deep pasts and possible futures, birdsong and industrial heritage, river-mouth and lighthouse".

Producing that path has, at times, been tricky. Paths that run alongside Britain's seas have an irritating tendency to end up under water. In some places the coastal path "keeps falling into the sea", says Darren Braine, a senior adviser at Natural England. This was not merely a logistical problem. It was also a legal one. In Britain a right of way is defined by a mark on a map. It is defined, in other words, by co-ordinates, not common sense.

That means a path remains a right of way, even if the land beneath it crumbles away; even if a sea appears on top of it. Just as the waters to the east of England contain ghostly, fossilised forests from when there was land between Britain and Denmark, they also contain ghostly, submerged footpaths that only fish can use. Which is charming, but rather inconvenient. The new path therefore has "rollback" rights: the right of way will move as the coastline does, so that it is always on land (regardless of where the land may be).

The path, which takes in many of the well-known landmarks of the British coast—its abbeys and castles and lighthouses—might seem to delineate historical continuity. In truth, says Professor Abulafia, it will delineate change. Not just because it will encircle a nation that was once a great naval power and is no longer, but because it will pass things that have now gone. Here it will pass Winchelsea, a once-great port that is now inland due to the accumulation of silt. There it will go past Dunwich, an entire town swallowed by the sea. There is, says Professor Abulafia, a "vanished past that links Britain to the sea". In 2025, with the opening of the coastal path, that past will become a little more visible. ●

This mortal coil

Assisted dying is set to be legalised in some parts of Britain

Georgia Banjo Britain correspondent, *The Economist*

WHEN ESTHER RANTZEN, a television personality with terminal lung cancer, called for the right to die, she joined a long line of advocates for the cause. Despite widespread public support, several attempts to change the law have failed. In 2025 that pattern will be broken: several jurisdictions within Britain are likely to legalise assisted dying. These will include some or all of England and Wales, Scotland, and the British crown dependencies of the Isle of Man and Jersey.

In Scotland, where an assisted-dying bill has been proposed by Liam McArthur, a Liberal Democrat member of the Scottish Parliament, a final vote could be held by the end of 2025. In Jersey (one of the Channel Islands between Britain and France), where a bill is being drafted, a debate could be held as soon as the summer, with legislation following shortly after. The Isle of Man is perhaps the furthest along. There, a bill should be given royal assent at some point in 2025, though it will not be implemented until 2027.

Westminster, by contrast, has been slower to debate an assisted-dying bill. But the idiosyncrasies of parliamentary process mean it could be the first British parliament to pass one. Kim Leadbeater, a Labour MP, introduced her bill to the House of Commons on October 16th, and a debate was scheduled for November 29th.

In previous parliaments, bills have been voted down by cautious MPs, or starved of time by sceptical governments with control of the legislative agenda. This time, though, many new Labour MPs appear supportive, seeing the issue in the way previous generations of lawmakers saw abortion or gay rights. The prime minister, Sir Keir Starmer, himself a supporter, says he will grant MPs a free vote on the issue.

New Zealand and parts of Australia have recently passed laws in the face of resistance from some palliative-care doctors, disability activists and faith groups. Opponents point to Canada, where assisted dying is no longer restricted to the terminally ill (as it is in the American state of Oregon), but is available to people with disabilities who are deemed to be suffering unbearably.

Polls show that two-thirds of British adults support a change in the law, and in reality no British politician will advocate for a regime as broad as Canada's. All proposed legislation follows Oregon's narrower model: an applicant must be terminally ill, and their death must be approved by at least two doctors.

The debate will be intense, but change now seems inevitable. France and Ireland are on similar paths. In 2025 some Britons will be given the right to die, signalling that politicians have caught up with public opinion on this controversial subject. ●

Wild cards

In the modern age, the unbelievable has become commonplace. Entire countries are shut down by a global pandemic. Cajoling an artificial intelligence to do useful things is a real job. A giant rocket returns to Earth and is caught by steel "chopsticks". Bombs hidden in exploding radios kill dozens of people. Self-driving taxis are a hit with tourists in San Francisco. To navigate the future, it can help to anticipate the unlikely. Here are ten unbelievable-sounding things that could happen in 2025

A SOLAR STORM CAUSES GLOBAL DISRUPTION

Eruptions of plasma from the surface of the Sun, known as coronal mass ejections (CMEs), can shoot billions of tonnes of energetic particles into space. If the Earth is in the path of such an eruption, the result can be geomagnetic storms and widely visible auroras, as charged particles slam into the Earth's magnetosphere. At solar maximum, the peak of its 11-year cycle, the Sun can produce two or three CMEs per day, compared with one a week at solar minimum. And the Sun is currently at solar maximum in an unexpectedly active cycle—hence the unusually vivid displays of auroras in May and October 2024, with the Northern Lights visible as far south as Sicily and Alabama.

As well as producing spectacular light shows, such solar storms can cause problems. These include short-wave radio blackouts and disruption to power grids, as currents are induced in cables and transformers. In 1989 a solar storm knocked Quebec's grid offline for nine hours, and a CME that narrowly missed the Earth in 2012 could have destroyed a quarter of America's high-voltage transformers, according to one analysis. CMEs can also affect satellites, by causing the atmosphere to swell slightly, increasing drag on those in low orbits. In February 2022 a CME led to the loss of 38 satellites.

The most powerful recorded solar storm, which occurred in 1859, is known as the Carrington event, after one of the astronomers who observed it. Auroras were visible even close to the equator, in Cuba, Jamaica and Colombia, and electric telegraphs across Europe and America were disrupted.

Were a large solar storm to occur in 2025, its impact could be far greater than any in the past, because of humanity's greater dependence on technology. A report prepared in 2013 by Lloyd's, an insurer, estimated the cost of such an event in America alone at $0.6trn-2.6trn. It could take months to repair damage to electrical grids and restore power. Water and food supplies would be interrupted. Thousands of satellites could be disabled, including those used for navigation, disrupting global aviation and shipping.

Solar physicists put the odds of a Carrington-level geomagnetic storm some time in the 2020s at around one in ten. And analysis of carbon-14 levels in tree rings suggests there were solar storms in the 8th and 10th centuries that were ten times more powerful.

A 4G MOBILE NETWORK GOES LIVE ON THE MOON

A new Moon race is under way. A variety of robotic space probes have been sent to its surface in the past few years, both by national space agencies and private firms. Not all have worked as planned: some have crashed into the surface, or toppled over after landing. The complexity of Moon landers has been increasing, with some carrying rovers, small robots or cameras that detach during descent. The main vehicle then acts as a radio relay, beaming signals from these other devices back to Earth. In 2025 a Moon lander built by Intuitive Machines, an American startup, will try out a new approach to such lunar networking: it will contain a small 4G cellular base-station, made by Nokia.

If all goes well (and recent Moon landings have had a decidedly mixed record), this will allow a rover and a small "hopper" robot to use standard 4G technology, like that found in smartphones, to communicate with the *Athena* lander as they explore the landing site near the lunar south pole. The use of 4G is part of a wider trend of cutting costs by using commercial, off-the-shelf technology in space missions, rather than inventing entirely new ways of doing things.

The IM-2 mission, which is funded by America's space agency, NASA, is due to blast off as soon as January 2025. The idea is that when American astronauts eventually return to the surface of the Moon, they will be able to use 4G to communicate with each other—and to phone home.

A SPORTS TOURNAMENT ENCOURAGES DOPING

The world's sporting bodies go to great trouble to try to ensure that athletes do not gain an unfair advantage by using performance-enhancing drugs. As a series of doping scandals demonstrates, however, their methods are far from foolproof. But what if doping was not just allowed, but encouraged?

That is the idea behind the Enhanced Games—a sports tournament where competitors are allowed to use drugs and technological aids to gain a competitive edge in athletics, swimming, weightlifting and other disciplines. The entrepreneur behind the idea, Aron D'Souza, has been trying to get it off the ground for several years. But he now has Peter Thiel and other billionaire investors on board, and has struck a deal with the production company owned by Ridley Scott, a Hollywood director, to make a ten-part television series about the first tournament, which Mr D'Souza says will take place in the second half of 2025.

Critics of the scheme, including officials at anti-doping agencies, are appalled. They point out that steroids and other kinds of performance-enhancing drugs can endanger athletes' health. Mr D'Souza insists that safety is paramount, and that monitoring the use of drugs is safer than using them in secret (which, he claims, is what 44% of athletes are doing). But he has yet to close the deal with a host city, and faces a struggle to sign up competitors. Will his Enhanced Games manage to get out of the starting blocks?

A NEW GLOBAL PANDEMIC BREAKS OUT

What, another one? Already? Surely not! But one of the surprising things about the covid-19 pandemic, in retrospect, was the length of the interval after the previous pandemic of comparable scale and severity, in 1918. After all, the global population soared during the 20th century, cramming billions of people into cities, while the advent of global aviation made it easier than ever for bugs to spread across borders.

Researchers had long highlighted the risk of an outbreak, either from a familiar pathogen such as an influenza virus, or an unfamiliar one: in 2018 the World Health Organisation (WHO) warned that "a serious international epidemic could be caused by a pathogen currently unknown to cause human disease". In the event it was a novel coronavirus that spread around the world starting in late 2019. It is now a matter of when, rather than if, the next major pandemic occurs. And the gap is unlikely to be another century.

In July 2024 the WHO updated its list of "priority pathogens" that could trigger a pandemic, the number of which has grown to more than 30. Among those added to the list were influenza A viruses, commonly known as bird flu, which can also infect mammals, including humans. One strain, H5N1 clade 2.3.4.4b, has been spreading since 2020, exchanging genes with other flu viruses as it goes, and infecting wild birds, seals, dairy cows, poultry and some humans. This virus is being watched closely, and has been detected on all continents, including Antarctica.

During 2024 America notably failed to bring an outbreak among farm animals under control, resulting in several known human cases (but no deaths). This virus is arguably the most plausible candidate to cause the next global pandemic. But just how dangerous it would be depends on whether it mutates further.

A MAJOR VOLCANIC ERUPTION CAUSES CHAOS

The world is "woefully unprepared" for the disruption that would be caused by a really large volcanic eruption, according to Michael Cassidy, a volcanologist at the University of Birmingham, and Lara Mani, who studies risk at the University of Cambridge. Writing in *Nature* in 2022, they described the eruption of a volcano in Tonga in that year, the largest since Mount Pinatubo in 1991, as a "near miss" that should be treated as a wake-up call. A really large eruption, like that of Mount Tambora (in modern-day Indonesia) in 1815, would cool the climate, affect food production and could disrupt aviation, shipping and communications infrastructure for months or years. Analysis of ice cores suggests there is a one-in-six chance of such an eruption, classified as magnitude 7 on the scale used by volcanologists, this century. Yet far more resources go into monitoring the smaller risk

from asteroids than into volcano monitoring, Dr Cassidy and Dr Mani note. They have called for more sensors, including the launch of a satellite dedicated to monitoring volcanoes, and more emphasis on preparedness. As 2025 dawns, some volcano-watchers are looking nervously at Iceland, where an eruption abruptly shut down transatlantic air travel for a few days in 2010; others are worried about volcanoes close to large population centres in Italy, Indonesia and the Philippines. A really big eruption would have a global impact.

ANIMALS GET THEIR OWN BANK ACCOUNTS

What if animals had their own pots of money, and could spend it in ways to promote conservation and biodiversity, increasing their chances of survival? That is the idea behind "interspecies money", a concept being developed by Tehanu, a technology outfit. It has already launched a trial involving a family of 19 mountain gorillas in Rwanda, and in 2025 it hopes to extend this scheme to cover all gorillas in the country. In the coming year it also hopes to launch a separate project to help protect the straw-coloured fruit bat, which is found across central Africa and plays a valuable role in seed dispersal. Tehanu's system uses sensors and artificial intelligence to determine the needs of the animals—for example, that a poacher's snare needs to be removed, or that an individual gorilla requires veterinary treatment. It then recruits a nearby human to do this work, via an online services platform that the company calls "the gig economy for nature", and issues a payment once it is complete. In this way, animals can direct their funds to local workers in accordance with their needs and those of the ecosystem they inhabit. Tehanu's aim is to show that distributing conservation funding in this way is transparent, produces verifiable results and creates sustainable jobs—as well as protecting the animals, their habitats and the ecosystem services they provide. Humans can make digital payments verified by facial recognition, so why shouldn't gorillas?

RUSSIA DEPLOYS A NUCLEAR WEAPON IN SPACE

The Outer Space Treaty of 1967 bans territorial claims on celestial bodies and the stationing of nuclear weapons in space. But in February 2024 the chair of America's House intelligence committee warned that Russia was developing a new space weapon, which intelligence sources believe involves a nuclear warhead that can be detonated in orbit to knock out satellites. Nuclear weapons have in fact been detonated in space before: both America and the Soviet Union performed high-altitude nuclear tests in the early 1960s, before signing the treaty of 1967. The resulting electromagnetic bursts affected satellites, which were few in number at the time. But today there are thousands of satellites in orbit, serving a range of civilian and military purposes, which would be vulnerable both to the radiation from a nuclear blast and to the orbital debris it would create. In recent years America, China, India and Russia have tested a range of other anti-satellite capabilities, including ground-based missiles and lasers. In November 2021 Russia destroyed a defunct Soviet-era satellite using a Nudol hypersonic missile. The destruction of the satellite created 1,800 pieces of space debris and forced astronauts in the International Space Station (including two Russians) to shelter in their escape craft. Russia has also deployed a series of "nesting doll" satellites; the latest, Cosmos 2570, launched in October 2023, released a second vehicle, which then released a third, in what appeared to be a test of an orbital anti-satellite weapon. An orbiting nuclear weapon would be much cruder and much more devastating; its main value would be as a threat. Were Russia to launch such a weapon in 2025, it would cause widespread alarm. It would also demonstrate that the idea of war in space is, increasingly, no longer science fiction.

A KEY NORTH ATLANTIC CURRENT SLOWS OR SHIFTS

The Atlantic meridional overturning circulation (AMOC) is a network of currents in the Atlantic ocean that circulates warm water northwards and cold water southwards. This helps distribute nutrients that sustain ocean life, and means some parts of the world are warmer than they would otherwise be. The AMOC is considered a key "tipping point" in the global climate system, and analysis of ice cores suggests that shifts in the AMOC's flow have been associated with abrupt climate change in the distant past. More recently, researchers have found, there are signs that the AMOC has been weakening over the past century. An analysis by researchers at the University of Copenhagen, published in 2023, concluded that there is a 95% chance that the AMOC will collapse between 2025 and 2095, with the most likely date in the 2050s, if greenhouse-gas emissions continue on their current trajectory. Other researchers have cast doubt on whether something so drastic can be predicted with such accuracy, or indeed at all. But even short of a collapse, changes to the AMOC are worth watching for, because any shift could have far-reaching impacts. Northern Europe could get colder and drier, with more powerful storms, shorter growing seasons and summers more prone to drought. The ocean temperature on America's north-east coast could rise further, affecting fisheries, accelerating the melting of the Greenland ice sheet and causing sea levels to rise. And the "intertropical convergence zone"—the tropical belt where the weather systems of the two hemispheres meet—could move south, causing droughts in Africa and Central America that would affect tens of millions of people. Climate change is a gradual process, but a shift in the AMOC could be far more abrupt.

A LOST TEXT FROM ANTIQUITY IS DISCOVERED

When Mount Vesuvius erupted in 79AD, burying the Roman town of Pompeii, hot gases from the volcano also flash-fried the library of a villa in nearby Herculaneum, carbonising (and thus preserving) thousands of papyrus scrolls containing Greek and Latin texts. Efforts to unwrap and read the scrolls physically, starting in the 18th century, all failed; a few words were sometimes visible, but the scrolls disintegrated. Then in 2023 researchers used a combination of X-ray scanning and artificial intelligence to reveal passages of text inside one scroll. (The breakthrough occurred when Nat Friedman, a technology investor, put the X-ray scans online and offered a $1m prize to anyone who could decode them.) The text, extracted by a team of student volunteers and analysed by papyrologists, turned out to be a previously unknown work by Philodemus, a Greek philosopher who had lived in Herculaneum. As more scrolls are scanned and analysed, what other lost works might soon be discovered? Perhaps a trove of Julius Caesar's correspondence, given that the villa once belonged to his father-in-law. Other tantalising possibilities include lost tragedies by Sophocles or Aeschylus; missing historical books by Livy; unknown poems by Sappho; copies of the Acta Diurna, the Roman state's daily news bulletin; or perhaps an eyewitness account of the activities of a certain itinerant preacher in first-century Judea?

EVIDENCE OF ALIEN LIFE IS DETECTED

Where is everybody? That was the question posed by Enrico Fermi, a physicist, in 1950. Given the enormous age of the universe, alien civilisations have had plenty of time to spread out, yet humans have not seen any trace of them. It is not for lack of trying. And one of the various efforts dedicated to the search for extraterrestrial intelligence (SETI) could strike gold at any time. Most such efforts rely on analysis of radio signals, with data from radio telescopes in Australia, South Africa and America being scrutinised for signs of alien transmissions (essentially, anything that doesn't look natural, such as odd patterns that repeat regularly). Other approaches to SETI involve looking for laser flashes (on the basis that aliens might use light rather than radio for long-range communication), hunting for the tell-tale glow of potential "Dyson spheres" (vast, shell-like structures that aliens might have built around stars to capture as much of their radiation as possible), and analysing the atmospheres of planets around other suns, thousands of which have been discovered in recent years, for evidence of biological activity. Searching for aliens, once regarded as a fringe activity, has become part of mainstream research, and more scientists are now engaged in it than at any time in the past. Might they find something in 2025? Any discovery, if it happens, will come without warning—and it would have a profound effect on humanity's perception of its place in the universe.

Business

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Energy's next big thing

NEW YORK

From giant batteries to compressed gas, grid-scale energy storage is booming

Vijay Vaitheeswaran Global energy and climate innovation editor, *The Economist*

ENERGY STORAGE for the electrical grid is about to hit the big time. By the reckoning of the International Energy Agency (IEA), a forecaster, grid-scale storage is now the fastest-growing of all the energy technologies. In 2025, some 80 gigawatts (GW) of new grid-scale energy storage will be added globally, an eight-fold increase from 2021.

Grid-scale energy storage is on the rise thanks to four potent forces. The first is the global surge in deployment of solar and wind power, which are intermittent by nature. That did not matter when only small amounts were used on the grid, but they can now make up half or more of generation capacity in some markets, creating a headache for grid operators on cloudy and still days. Big batteries attached to the grid, which store energy when it is abundant and release it when it is needed, solve that problem neatly. The IEA predicts that in 2025 the combination of solar-photovoltaic generation and battery storage will be cheaper than the cost of coal-fired power in China, and new gas-fired plants in America.

The second factor boosting energy storage for the grid is Chinese overcapacity in battery manufacturing, which has led to a big drop in the price of lithium-ion batteries, the kind used in laptops, smartphones and more recently electric vehicles (EVs). Since 1991 the price has plunged by 97%, and in 2025 prices for grid batteries will converge with the historically much lower prices for EV batteries (see chart). As growth in EV sales has slowed and the lithium-ion battery glut has expanded, battery-makers in Asia have been forced to find new buyers. For the first time, the market for grid batteries in China now exceeds that for consumer electronics, and will grow further thanks to policy mandates requiring the deployment of grid-scale storage with wind and solar farms.

A third boost for energy storage is the power-guzzling surge driven by the rise of artificial intelligence (see next story). Goldman Sachs, a bank, reckons that global power demand at data centres will rise from 240 terawatt hours (TWh) in 2020 to 600TWh in 2025. But tech giants have noisily committed to

climate-friendly goals such as net-zero emissions, which means they cannot turn to coal and gas plants. They need vast amounts of renewable energy, with storage to ensure power is provided round the clock.

The fourth and most intriguing of the forces at work, though, is the rapid emergence of innovative energy-storage alternatives that go beyond conventional lithium-based batteries. Sodium-ion batteries are a promising alternative, being cheaper and less flammable. This is particularly attractive for operators of data centres, who can get cheaper insurance by avoiding lithium. BloombergNEF, a research firm, expects makers of sodium batteries, led by China's HiNa, to begin large-scale manufacturing for grid storage in 2025. Form Energy, an American startup, has raised $1.2bn to develop a low-cost battery based on iron-air chemistry. It will start operations in 2025 in California and Minnesota.

Other energy-storage systems use gravity. Switzerland's Energy Vault has developed a hybrid system involving pumped water and lithium batteries which it plans to test in 2025 in a 500-metre mineshaft in Sardinia. The firm has an agreement with SOM, the architectural firm behind Dubai's soaring Burj Khalifa, to embed its gravity-based storage system into future skyscrapers in order to reduce their carbon footprints.

Old-fashioned pumped-hydro storage, in which water is shunted between reservoirs at different heights, still makes up most of the world's grid-scale energy-storage capacity. India's Greenko, a big renewable-energy developer, has modernised this gravity-based approach and found an economical way to build lots of it. The firm plans to have 50GWh of storage operational in 2025, with another 50GWh coming within the next few years.

Compressed gas is another approach showing promise. Italy's Energy Dome stores carbon dioxide under pressure in distinctive white domes. When energy is needed, the gas is expanded and passed through a turbine. The firm has a facility in operation in Italy, and plans to start building one in America in 2025. The system developed by Canada's Hydrostor, by contrast, uses air as its working fluid. The firm will start construction at a big facility in Australia in 2025, with an even bigger one planned for California.

In sum, an energy-storage revolution is under way. Lithium batteries will rule for the time being, but many alternatives are following behind, promising cleaner and more reliable energy in the future. ●

All charged up

Source: BloombergNEF

*2023 prices

The real limits on artificial intelligence

LOS ANGELES

Get ready for superchips, supercomputers—and supersized headaches

Henry Tricks US technology editor, *The Economist*

FIFTEEN YEARS after his death, David Blackwell's name will be on every tech nerd's lips in 2025. Nvidia, a semiconductor giant, has named its latest superchip after the mathematician and game theorist, who was the first African-American inducted into the National Academy of Sciences.

The Blackwell chip's debut, with full-scale production starting in early 2025, has provoked breathless anticipation. It will form the backbone of the first data centres purpose-built for the era of generative artificial intelligence (AI). Nvidia's boss, Jensen Huang, calls them "AI factories". But it will also draw attention to the bottlenecks—from the making of chips to the construction of data centres—created by demand for AI-related computational power.

Blackwell is a graphics processing unit (GPU), the kind of AI workhorse chip that has turned Nvidia into a $3trn giant. The superchip is integral to a new Nvidia platform that will prompt some of the biggest AI firms, including the cloud-service "hyperscalers"—Amazon, Microsoft and Google—to build new server farms for generative-AI computation on a huge scale, with unprecedented energy requirements.

Demand is booming. Baron Fung of Dell'Oro, a research firm, estimates that sales of servers for generative-AI tasks will rise by more than three-quarters in 2025 compared with 2024, reaching $147bn, mostly thanks to hyperscalers' spending on Blackwell GPUs. As a result, energy demand is also surging. Lucas Beran, also of Dell'Oro, says data centres used to have power requirements of 100-200 megawatts (MW), but big ones now require 300-500MW.

The International Energy Agency (IEA), a forecaster, estimates that over the next two years, global power consumption from data centres could more than double from its 2022 level, reaching 1,000 terawatt hours by 2026—equivalent to the electricity consumption of Japan. Expanding the grid is hard. Ensuring that electricity is carbon-free is harder still. There are plans to restart a nuclear power station at Three Mile Island in Pennsylvania to power several Microsoft data centres, and Google has ordered nuclear reactors from Kairos Power, a startup.

Whether you call them AI factories, data centres or server farms, these new facilities will be giant supercomputers. Elon Musk's so-called "gigafactory of compute" in Memphis is expected to boast 200,000 GPUs. But the energy and chips are not the only real-world constraints on AI. ▸▸

The pressure to build bigger and better generative-AI models may also create strains along the semiconductor supply chain. Nvidia has already encountered engineering snags in the production of its Blackwell chips by TSMC, a Taiwanese firm, which delayed the launch. David Crawford of Bain, a consultancy, says that if demand for the GPUs remains strong, there could be shortages of high-bandwidth memory and advanced packaging.

Blackwell's debut has provoked breathless anticipation

At the local level, environmental groups in Memphis are already protesting that the power consumption of Mr Musk's AI factory will disadvantage local people. At the global level, the IEA says some countries, such as the Netherlands, have put curbs on data-centre construction because of grid constraints. Some tech firms will seek to ease pressure on the grid by erecting on-site generators, but these are often fired by natural gas.

The new data centres need energy not just to power their AI servers, but also to keep them cool. Systems built around Blackwell GPUs will rely on closed-loop liquid cooling—a technique for which demand is expected to surge in the coming year. Such changes will require more than just a retrofit.

Some countries will find it easier to build generative-AI infrastructure. China's central-planning system facilitates bringing together server farms, power plants and workers. But it is cut off from Nvidia's fanciest GPUs because of American trade restrictions. Neither East nor West will find building the next wave of generative AI easy. ●

Home-made chips

Expect more export bans, a supply glut and creative sanctions-dodging

Shailesh Chitnis Global business correspondent, *The Economist*

ADVANCED CHIPMAKING will return to America in 2025, more than a decade after the country lost its edge in semiconductor manufacturing to Taiwan. Ironically it is TSMC, a Taiwanese chip giant, that will lead this comeback by making state-of-the-art chips at its new fabrication plant (or "fab") in Arizona in the coming year. The American government hopes that chipmakers will produce almost a fifth of all leading-edge chips domestically by 2030.

Reviving advanced chip production is one part of America's strategy; the other is keeping China's chipmaking ambitions in check. Since 2022 America has banned the export of the whizziest chips and chipmaking tools to China. In response, China has invested heavily in its local industry. With Donald Trump expected to take a harder stance with China, the chip wars will intensify in the coming year.

So far, restrictions mainly target specialist, high-performance chips that are used to run artificial-intelligence (AI) applications. In 2025 America will add some high-bandwidth memory (HBM) chips to the naughty list. Chinese chipmakers, already barred from using the latest manufacturing tools, will find it even harder to produce powerful AI chips without access to HBMs.

China will tighten its grip on the production of less flashy but equally essential chips. For a few years Chinese firms have been expanding their capacity for "mature-node" semiconductors. These unglamorous, lagging-edge chips may not grab the headlines, but they power everything from televisions to fridges, and account for over three-quarters of global semiconductor manufacturing capacity.

Bernstein, a broker, estimates that in 2024 China imported $40bn-worth of chipmaking equipment, nearly two-fifths of worldwide sales. Investment will continue in 2025, with most of the imported gear going into mature-node fabs that use older technology, making chips of 28nm (billionths of a metre) and above. By late 2025, as these fabs ramp up, this will lead to a flood of cheap chips. Western semiconductor firms that specialise in lagging-edge chips will feel the impact.

America's efforts to block China's access to advanced chip technology will continue to yield mixed results. In 2023 Huawei, a Chinese tech giant, unveiled a smartphone chip built on 7nm technology. The firm is rumoured to be working on a 5nm chip with SMIC, China's largest chipmaking firm. In 2025 Chinese firms will make cutting-edge chips by pushing older tools to their limits, though only a small fraction of the chips produced using such tricks are thought to be usable.

Chinese firms with deep pockets will find ways to gain access to advanced AI chips. But their scarcity will push Chinese researchers to focus on software improvements, devising smaller, more efficient models to eke out more performance from slower chips. No doubt there will also be tariff skirmishes and rule tweaks in the continuing Sino-American tussle. The longer the chip war drags on, the more it will test the loyalty of countries and companies caught in the crossfire. ●

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Going global

SINGAPORE

American tariffs are helping to drive Chinese firms' expansion overseas

Mike Bird Asia business and finance editor, *The Economist*

AMONG WESTERN multinational firms, outsourcing has become a dirty word. Firms that once eagerly moved production abroad (especially to China) in order to reduce costs are keen to show they are committed to their home bases. But now the cheaply manufactured shoe is on the other foot. Chinese firms are the ones shifting their operations abroad, investing in new production facilities across the world. This trend will intensify in 2025.

For Chinese firms wishing to export to America, overseas operations are no longer optional. Moving production out of China has allowed them to avoid American tariffs put in place during Donald Trump's first term, and retained by the Biden administration. With the re-election of Mr Trump, and the prospect of tariffs against Chinese exports of 60% or more, the scramble to find overseas bases is now urgent.

The logic goes beyond the trade war, too. Local production in other countries opens up new markets and insulates Chinese producers against future trade restrictions. It can generate local goodwill—and sometimes government subsidies as well. It also reflects the grim reality of China's economic slump. For decades, the booming domestic market was enough for the country's big firms. Now, faced with a protracted slowdown driven by a slump in the property sector, it is no longer such a promising option.

The shift is visible in "greenfield" foreign direct investment in new sites by Chinese firms, which hit a record $163bn in 2023 (see chart), concentrated outside the West. Saudi Arabia, Malaysia, Vietnam, Morocco and Kazakhstan were the five largest destinations. There has been no sign of a slowdown in 2024. BYD, China's leading maker of electric vehicles (EVs), which is already building a factory in Hungary, announced a $1bn investment in Turkey in July. Great Wall Motor opened a car factory in January 2024 in Thailand, where Chang'an Automobile's factory is also due to open in March 2025. Beiqi Foton Motor, a truckmaker, is preparing to spend $1bn on an EV factory in Mexico. Overall outbound investment by Chinese companies in the first nine months of 2024 was $124bn, a 9.2% increase on the same period in 2023.

Listed Chinese companies are still homebodies. They make just 10% of their revenue abroad, compared with 35% for Japanese firms. But some pioneers make more: Goertek and Luxshare, two electronics firms in Apple's supply chain, have expanded in South-East Asia in recent years, and now make 93% and 89% of their revenues overseas respectively.

Such moves offer huge opportunities. Done well, expanding abroad can be an antidote to trade tensions. Chinese firms, and carmakers in particular, are following in Japanese footsteps. Trade tensions between Washington and Tokyo, which peaked in the 1980s, were soothed by massive investment by firms like Honda, Nissan and Toyota in American production sites. Chinese carmakers may never crack the American market. But expansion abroad will help soothe trade tensions with other countries.

Yet the shift comes with risks, too, as Chinese solar-panel manufacturers operating overseas have found. America's Department of Commerce says that their production sites in South-East Asia are used for little more than the final assembly of Chinese goods, and placed new tariffs on the firms' production there in June 2024. As Chinese firms shift overseas in increasing numbers to escape the coming wall of tariffs, they may find that the long arm of American protectionism still reaches them nonetheless. ●

↑ *Coming to a green field near you*

→ Pastures new

Greenfield investment, $bn

Source: fDi Intelligence

BYD announced a $1bn investment in Turkey

East meets West

China's e-commerce upstarts will start to look more like Western ones

Guy Scriven Global business correspondent, *The Economist*

IT DID NOT take long for Chinese e-commerce firms to spread worldwide. Shein has rapidly become the preferred choice of American teenagers buying clothes. In 2023 TikTok launched its own e-commerce offering to its 1bn-plus users. And for most of 2024 Temu was America's most downloaded app. But this rapid rise also attracted the scrutiny of policymakers. In 2025 this will force changes upon the upstarts that will make them more like their Western rivals.

One factor behind their rise has been a marketing blitz. Shein and Temu flooded social media with eye-catching promotions. Another is dirt-cheap prices, possible partly because Chinese firms charge merchants less than American ones do, and also because they ship goods straight from Chinese warehouses to the destination country. From there, delivery firms, such as UPS and FedEx, take the packages to the shopper's door. The lack of an Amazon-like logistics network keeps prices low, but also means that shipments can take weeks to arrive.

Now things are changing. First, higher prices. The cost of air freight shot up in 2024, as more packages were sent from China. And taxes may start to be applied. Chinese goods are so cheap because import rules often allow small packages to be sent tax-free to Western countries. In 2015, 134m such packages entered America tax-free. In 2023 that figure reached 1.1bn, 60% of which came from China. The growth has rankled policymakers in America, Britain and the EU, who are trying to close the loophole.

A second change will be in the types of goods that they stock. Temu is trying to add European and American brands. Both Shein and Temu have been buying warehouse space in America, allowing them to sell bulkier items. To protect itself from rising shipping costs, Temu is also handing responsibility for logistics and delivery to Chinese merchants who have warehouses in America.

A third shift is that Chinese firms will have to deal with environmental, social and governance (ESG) issues. European policymakers worry about the environmental impact of cheap, disposable clothes. In America, Congress has probed Temu and Shein for the possible use of forced labour in their supply chains.

Shein is doing the most to respond to such concerns, partly because it plans to list on the London Stock Exchange. To boost its sustainability credentials it has launched a €200m ($223m) fund to invest in "circularity" (jargon for recycling and reusing goods), and rolled out a second-hand marketplace.

But as they face growing pressure, the companies may also shift focus to places outside America, where there is less scrutiny. All three have been expanding in the Middle East and Latin America. TikTok's purchase of a majority stake in Tokopedia, an Indonesian e-commerce company, will help it make further inroads into South-East Asia. Bernstein, a broker, expects the value of all the goods sold on Temu to grow from $53bn in 2024 to $96bn in 2026, but the share bought by Americans to shrink from a third to a quarter.

China's e-commerce firms have long tried to downplay their Chinese roots in an attempt to persuade Western policymakers that they are not a threat. None of that may be enough to shield them from major shake-ups in 2025. ●

Xi's electric

To see the cars of the future, look at China's EVs

Simon Wright Industry editor, *The Economist*

THE MAIN appeal of a Chinese electric vehicle (EV) to foreign buyers is obvious: high quality at prices Western carmakers cannot match (even allowing for import tariffs on Chinese vehicles). But Chinese EVs do not just offer lower prices. They also have more impressive features. The styling and technology in their 2025 models show where cars, as a whole, may be heading.

Some vehicles made by BYD, for example, offer rotating touchscreens in the centre of the dashboard, which can swivel themselves between landscape and portrait modes. Its Atto-3, a quirky mid-size EV, has unusual guitar-like strings on its door panels, and a gear-selector seemingly inspired by a rocket ship. The upmarket Yangwang U8 SUV, meanwhile, can "tank turn" on the spot by spinning its wheels in different directions, and has a "floating" mode that lets it drive on water in emergencies.

If that sounds a bit much, marvel instead at the minimalist cabin of the Jiyue 01, a collaboration between Baidu, a Chinese tech giant, and Geely Auto. Aside from a touchscreen, its only controls are two pedals (brake and accelerator) and two buttons, located on the steering yoke. Its autonomous-driving system copes admirably with Beijing's crowded streets and unpredictable traffic. But the $30,000 car also doubles as a giant video-game system. Pull over, and you can use the steering yoke to control a virtual car in an on-screen game.

The SU7 Max, a new EV from Xiaomi, best known as a maker of smartphones and home appliances, accelerates like a supercar (0-60mph in 2.8 seconds) and has a battery range of 800km (497 miles). It also allows for remote control, while on the road, of Xiaomi devices in the driver's home.

Chinese new-car buyers, whose average age is around 35 (some 20 years younger than in Europe), are tech-savvy and expect vehicles to be loaded with whizzy features. Chinese firms are giving them what they want. Western carmakers may not be able to catch up.

↑ *He's done things you never expected*

Present new arms

Conflict is driving investment in European defence firms, old and new

Kenneth Cukier Deputy executive editor, *The Economist*

IF THERE IS one iconic image from the Ukraine war, it may be that of a small drone destroying a Russian tank. Examples of such destruction abound on social media. The asymmetry of cost and damage typifies modern warfare. It is also spurring a major retooling of armed forces. In 2025 Europe's traditional defence businesses will bump up against the innovation ecosystem of entrepreneurial startups.

The idea of "defence-tech" is coming of age, thanks to new technologies such as drones and artificial intelligence (AI). America led the way, with firms like Palantir, which provides data analytics to governments and companies, and Anduril, which sells drones and autonomous submarines. Both recently won big Pentagon contracts. That offers encouragement to European defence startups vying for contracts, like Helsing, which develops drones and AI software, Finland's ICEYE, a microsatellite-maker, and Delian Alliance Industries, which sells autonomous surveillance systems.

More than €2bn ($2.2bn) in venture investment has gone to around 300 defence-related startups in each of the past three years, according to Dealroom, a data provider. Government funding will add to that in 2025. NATO's Innovation Fund has a war-chest of €1bn. The European Defence Industry Programme boasts €1.5bn.

Those sums are small compared with Europe's annual defence budget of around €340bn, but more money is coming. Despite an increase in spending since the war in Ukraine began, eight countries will fail to reach the NATO target of spending 2% or more of GDP a year on defence. Reaching that target—something Donald Trump will strongly encourage—would add a further $45bn a year. New rules are being considered to let the European Investment Bank lend more to the sector.

Yet Europe's defence market is fragmented: there are, in effect, 27 Pentagons (one for each member of the European Union). Governments privilege local firms and existing suppliers. It is hard for new entrants to break in, even if there is a need for smaller, innovative systems.

Adding momentum for defence-tech firms in 2025 is a landmark report on European competitiveness released in September by Mario Draghi, a Eurocrat grandee, that called for supporting the sector. Some 48% of European defence spending goes to non-EU suppliers, with 34% going to America. Moreover, just 18% of spending involves collaboration between countries. The Draghi report calls for a radical overhaul in everything from defence funding and procurement to cross-border co-operation.

Trying to make this happen will be the task of the EU's first-ever commissioner for defence. Andrius Kubilius, a former prime minister of Lithuania, was nominated in September. He is charged with supporting European industry, not just its security. He endorses the controversial idea of having the EU issue "defence bonds" to pay for the new funding, which is supported by France and Estonia, but opposed by Germany.

Josh Wolfe of Lux Capital, a defence-tech investor, expects an emphasis in 2025 on "maintenance-tech"—innovation to extend the life of older systems. After all, the new commander of the British Army recently announced the goal of doubling the forces' lethality by 2027 without more spending. Many expect a wave of tie-ups between incumbents and startups in 2025.

More pessimistic observers fear that not much will change, however, despite the need, attention and funds. A bias towards the status quo runs deep, they say. As a result, the flood of new funding could actually entrench the incumbents, making life even harder for defence-tech startups. The fight to transform warfare is not just taking place on the battlefield. ●

Not yet cleared for take-off

Boeing will hope that 2025 is better than 2024

Simon Wright Industry editor, *The Economist*

LITTLE HAS gone right for Boeing in 2024. The year started with a mid-flight blowout of a panel from the fuselage of a 737 MAX passenger jet. There were no serious injuries, except those added to Boeing's reputation, just as it seemed to be recovering from two fatal crashes involving the same model of aircraft six years ago. The firm's competence was put in question again in September when malfunctioning software meant that Starliner, a capsule designed to ferry astronauts to the International Space Station, was forced to return to Earth empty. That left two space-farers stranded in orbit awaiting a lift home in a craft from SpaceX, Boeing's biggest rocketry rival. Then a strike by 33,000 workers halted production of most planes for nearly eight weeks.

A company that was once a byword for engineering prowess has lost its way, seeming to put financial returns before technical excellence after a merger with McDonnell Douglas in 1997. Between 2014 and 2020 Boeing handed out $61bn in dividends and share buybacks. But now its finances have fallen to Earth, too. Since 2020, when the pandemic severely dented demand for plane travel, Boeing's annual losses have totalled $23bn.

In March, Dave Calhoun, Boeing's boss since 2020, accepted responsibility for the company's ills and agreed to stand down. In 2025 all eyes will be on Kelly Ortberg, a seasoned aerospace executive who took over in August. What can he do to restore Boeing to its former heights?

The most important job for Mr Ortberg, an outsider in a firm that prefers to appoint leaders from within, is to restore Boeing's culture of engineering excellence and improve quality control. But breaking a company's culture is much easier than remaking it. Mr Ortberg needs to take his time to understand a complex organisation employing 145,000 people worldwide before making substantial changes. Rumour has it that he wants to relocate Boeing's headquarters from Virginia back to Seattle; that would be a sensible way to put bosses closer to operations. ▸▸

Other tasks require more urgent attention. Despite its travails, the Boeing 737 MAX is a good plane with a huge backlog of orders. Boeing's waiting list, however, is not as long as that of Airbus, its European competitor in the duopoly that supplies large passenger jets.

Calls to launch an entirely new plane should be resisted as unaffordable and unnecessary. More important is restoring relations with regulators, who have capped production of the 737 MAX at 38 a month until Boeing can convince them that the safety lapses that led to the panel blowout have been dealt with.

Delivering more planes would also assuage the anger of customers, clamouring for new fuel-efficient jets. Bulging order books mean there are no free delivery slots for new planes at Airbus for many years. Customers have little choice but to stick with Boeing. But late deliveries will give airlines leverage to seek even bigger discounts.

Starliner's troubles highlight problems at other parts of the company, where competition is also heating up. While Boeing has struggled with huge cost overruns in its space division, Elon Musk's SpaceX has gone from strength to strength. Defence, usually a reliable bulwark against the cyclical nature of commercial aerospace, has floundered, even as defence spending around the world is at a multi-decade high. Overambition in fulfilling fixed-price contracts has led to losses, and Boeing has had less success in bidding for lucrative new programmes.

Mr Ortberg's to-do list is lengthy and onerous. Fixing Boeing is a job that will take years rather than months. But having fallen so low, the only way is up. ●

↑ *Grounded*

Never say DEI

Diversity programmes will not die in 2025, but they will be slimmed down

Sacha Nauta Social affairs editor, *The Economist*

IF 2020 WAS the year when diversity, equity and inclusion (DEI) schemes ballooned and bosses declared their undying commitment, then 2024 marked the start of the anti-woke backlash. This pummelling will continue in 2025 and spread. Yet DEI will not die, but will instead undergo a makeover before returning in a more modest form.

Looking back at the sharp rise in the corporate world's commitment to DEI in 2020, in the aftermath of George Floyd's murder, it is tempting to expect the fall to be just as steep. There are signs of this. Mentions of DEI in earnings calls have fallen sharply. After rising 14-fold between early 2020 and mid-2021, by mid-2024 they were only three times higher than before Floyd's killing. In 2025 such scrubbing of overt references will continue.

According to Gallup, a pollster, just 38% of Americans now want businesses to take a stance on current events, down ten points since 2022. Divisive and ideological interventions are turning employees against DEI, too. In 2019, 77% of companies said racial diversity was a high priority. That had dropped to 69% by 2024.

Bosses and shareholders fear few things more than the wrath of online influencers, particularly those spurred on by Elon Musk, who states that "DEI must die." Tractor Supply, a huge farm-supplies firm based in Tennessee, responded to complaints in June by promising to "retire current DEI goals while still ensuring a respectful environment". More such responses in the face of bad PR will follow in 2025, particularly from firms with conservative customers. The re-election of Donald Trump will give them both motivation and political cover.

But most companies will respond less dramatically. They will tone down their rhetoric and gradually phase out some schemes. Job postings or internships aimed at only one particular group will be challenged by lawyers. Executive-compensation schemes that tie bonuses to diversity targets will be phased out.

Yet smart employers will recognise that most workers are broadly in favour of promoting genuine diversity and inclusion, and will retain the good elements. Efforts to ensure that recruitment draws from a bigger and broader talent pool will continue, along with fairer, more systematic ways to evaluate candidates, such as blanking out names on CVs and asking every interviewee the same questions.

Nearly three-quarters of workers believe workplaces have become more respectful and inclusive over the past decade, according to Lean In, an NGO, and McKinsey, a consultancy. The aim of making workplaces fairer and genuinely more inclusive will not die in 2025. But the DEI acronym might be beyond saving. As "chief diversity officers", driven to correct the world's injustices, are replaced by HR types with more modest, less divisive goals, DEI may re-emerge as something closer to its original purpose. ●

By Invitation

Understanding how the world works is the next step for AI

Look beyond language models, says Fei-Fei Li, co-director of Stanford HAI, CEO of World Labs and "godmother of AI"

LANGUAGE IS FULL of visual aphorisms. Seeing is believing. A picture is worth a thousand words. Out of sight, out of mind. The list goes on. This is because we humans draw so much meaning from our vision. But seeing was not always possible. Until about 540m years ago, all organisms lived below the surface of the water and none of them could see. Only with the emergence of trilobites could animals, for the first time, perceive the abundance of sunlight around them. What ensued was remarkable. Over the next 10m-15m years, the ability to see ushered in a period known as the Cambrian explosion, in which the ancestors of most modern animals appeared.

Today we are experiencing a modern-day Cambrian explosion in artificial intelligence (AI). It seems as though a new, mind-boggling tool becomes available every week. Initially, the generative-AI revolution was driven by large language models like ChatGPT, which imitate humans' verbal intelligence. But I believe an intelligence based on vision—what I call spatial intelligence—is more fundamental. Language is important but, as humans, much of our ability to understand and interact with the world is based on what we see.

A subfield of AI known as computer vision has long sought to teach computers to have the same or better spatial intelligence as humans. The field has progressed rapidly over the past 15 years. And, guided by the core belief that AI needs to advance with human benefit at its centre, I have dedicated my career to it.

No one teaches a child how to see. Children make sense of the world through experiences and examples. Their eyes are like biological cameras, taking a "picture" five times a second. By the age of three, kids have seen hundreds of millions of such pictures.

We know from decades of research that a fundamental element of vision is object recognition, so we began by teaching computers this ability. It was not easy. There are infinite ways to render the three-dimensional (3D) shape of a cat, say, into a two-dimensional (2D) image, depending on viewing angle, posture, background and more. For a computer to identify a cat in a picture it needs to have a lot of information, like a child does.

We need to move from large language models to large world models

This was not possible until three elements converged in the mid-2000s. At that point algorithms known as convolutional neural networks, which had existed for decades, met the power of modern-day graphics processing units (GPUs) and the availability of "big data"—billions of images from the internet, digital cameras and so forth.

My lab contributed the "big data" element to this convergence. In 2007, in a project called ImageNet, we created a database of 15m labelled images across 22,000 object categories. Then we and other researchers trained neural-network models using images and their corresponding textual labels, so that the models learned to describe a previously unseen photo using a simple sentence. Unexpectedly rapid progress in these image-recognition systems, created using the ImageNet database, helped spark the modern AI boom.

As technology progressed, a new generation of models, based on techniques such as transformer architectures and diffusion, brought with them the dawn of generative AI tools. In the realm of language, this made possible chatbots like ChatGPT. When it comes to vision, modern systems do not merely recognise but can also generate images and videos in response to text prompts. The results are impressive, but still only in 2D.

For computers to have the spatial intelligence of humans, they need to be able to model the world, reason about things and places, and interact in both time and 3D space. In short, we need to go from large language models to large world models.

We're already seeing glimpses of this in labs across academia and industry. With the latest AI models, trained using text, images, video and spatial data from robotic sensors and actuators, we can control robots using text prompts—asking them to unplug a phone charger or make a simple sandwich, for example. Or, given a 2D image, the model can transform it into an infinite number of plausible 3D spaces for a user to explore.

The applications are endless. Imagine robots that can navigate ordinary homes and look after old people; a tireless set of extra hands for a surgeon; or the uses in simulation, training and education. This is truly human-centred AI, and spatial intelligence is its next frontier. What took hundreds of millions of years to evolve in humans is taking just decades to emerge in computers. And we humans will be the beneficiaries. ●

Finance

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Down to earth

Rich-world interest rates will fall sharply in 2025. Where will they settle?

Archie Hall Britain economics correspondent, *The Economist*

BUMPILY AND with a few shudders, central bankers made the landing in 2024. The grim predictions that only deep recessions could pull sky-high inflation back down to earth proved misplaced. Instead, a sharp increase in interest rates, supply-side improvements and the passage of time did the job well enough. Inflation is at or near 2% across the rich world and, barring trade wars or other shocks, should stay low. The economic news in most rich countries is fairly sunny. Growth varies from strong to mediocre, but at least is not negative. Share prices are still higher than ever. Unemployment is just above all-time lows.

Job done, then? Well, almost. The economy may be back to normal, but economic policy is not. Interest rates are at their highest level since before the financial crisis of 2007-09. Most central banks—including the Federal Reserve, European Central Bank and Bank of England—started cutting rates only in the summer or autumn of 2024. Bigger drops are coming in 2025. Traders foresee roughly one percentage point of further cuts in America, Britain and the euro area.

Or look to budget deficits. America's government is now running a deficit of 6.4%, the highest in post-war history, outside covid or the financial crash. Donald Trump will surely widen it further. Many rich-world peers have done a bit better at reining in government spending since the pandemic, though deficits also look worrisome in France and Italy.

Policy will re-normalise in 2025. Monetary policy will move faster and more consistently than fiscal policy. Central bankers tend to be more sober and predictable than politicians. Far less clear, though, is what baseline economic policy will drift back to. The last proper stretch of economic normality was five years ago. As the dust settles, what has changed?

Central bankers tend to express answers to that question in terms of r* (pronounced r-star), the "neutral real interest rate". That is the interest rate which, after stripping out inflation, neither stimulates nor depresses the economy. Alas, r* cannot be observed directly. Economists look instead at how the economy responds to real-life interest-rate moves. If

→ Star chart

Neutral real interest rate*, %

*Forecast medium-term policy rate minus the expected medium-term inflation rate
Sources: Bank of England survey; Federal Reserve

the structure of the economy has changed since the pandemic, r* should be different, too.

From the 2000s to the 2010s, r* fell sharply. In the decade after 2010, even ultra-low interest rates failed to gin up demand. More recently, rich-world economies have shrugged off even quite hefty interest-rate rises. Has r* risen, and will it stay up? Jerome Powell, the Fed chair, seems to think so, as do many investors and economists (see chart). There are good reasons for this. Geopolitical tension, for instance, may have taken the shine off US Treasuries as a safe haven.

An immediate recession does not look likely

But do not call time on a low-rates world quite yet. In the long run, the single greatest determinant of real interest rates is probably economic growth. Investors can hardly expect high returns amid stagnation. Slow population growth is weighing on workforces. Growth figures were jolted around by the covid-19 pandemic, but most rich countries are either on their pre-pandemic trend or a bit below it. People who expect to live longer are likely to save more, boosting the supply of capital in search of return-generating investments. That also pushes down on r*.

As interest rates continue their descent during 2025, r* will help determine where they settle. Other factors could intervene. Rates may need to stay higher for a while to counterbalance bigger fiscal deficits if, for instance, governments raise defence spending to hedge against growing American isolationism. And if the world is now more prone to supply shocks, rate-setters may need to skew tighter to ward off inflation. But think long-term enough and r* is inescapable.

A lower-than-expected r* could cause trouble. One reason Americans have been sanguine about the recent wobbles in the labour market is that the Fed still has plenty of room to ease. But if the neutral interest rate is lower, then rate cuts will also have to be deep to push monetary policy into stimulative territory.

None of that should be a concern yet. An immediate recession does not look likely. But the further rates fall, the more likely it is that monetary policy will start feeling like the 2010s all over again. ●

Vitamin boost

Amid softer markets, three commodities will stand out

Matthieu Favas Commodities editor, *The Economist*

FOR MUCH of 2024 commodity prices were driven by low demand. America slowed down and economic woes worsened in China, the world's biggest importer of raw materials. So prices for everything from coal and cobalt to natural gas are lingering at levels that prevailed before Russia's invasion of Ukraine in 2022. For many commodities, this outlook—depressing for traders but helpful to Western central bankers—will carry through to 2025.

Crude oil could become even cheaper, despite persistent geopolitical tensions, as producers outside the Gulf continue to increase output. And although it is a critical ingredient in all things needed to speed up the green transition, copper may remain unsteady because of shorter-term worries about China's property sector. For a small group of materials, however, pricing will be driven by supply concerns, as market disruptions keep prices red-hot. Three commodities will stand out.

Brazil accounts for 70% of global production of orange juice. In 2024 São Paulo, the most productive state in its "citrus belt", faced a crippling drought. At the same time citrus greening, an incurable bacterial disease that turns oranges bitter and kills trees, went rampant in the region's groves. The price of orange-juice futures in New York, which soft-drink companies use to hedge against price swings, broke records. It will take years before replacement trees can bear fruit, even as seekers of vitamin C keep on buying orange juice. So expect the big squeeze to continue.

The market for another morning favourite will also be jittery. In 2024 prices for arabica coffee beans hit the highest price in a decade after an unseasonal episode of frost hurt yields in Brazil, producer of 40% of the world's supply. That created more demand for lower-quality robusta beans, which are most often used in instant formulas. Producers of fancier coffee started adding more robusta to their regular blends—but major droughts have also hit Vietnam, the largest grower. Shipping problems linked to attacks in the Red Sea increased the pressure. Some late rain in growing regions may have helped, but stocks of all beans remain low. In 2025 coffee-drinkers may have to swallow higher prices and blander flavours.

Coffee and oranges are tasty, but hardly vital. Uranium is mildly poisonous, but more essential. Demand for it is expected to increase as nuclear plants, a reliable source of low-carbon power, play a bigger role in the energy mix of China, India and other big economies. But potential for disruption abounds. In August Kazatomprom, which produces one-fifth of the world's mined uranium supply in Kazakhstan, trimmed its output target by 15-19%. Soon afterwards Vladimir Putin hinted that Russia, home to 44% of global uranium-enrichment capacity, might limit exports in response to Western sanctions. Logistical issues and tricky geopolitics could cause a meltdown in the market for the radioactive metal.

Beyond the hype

Don't expect a productivity boost from AI in 2025

Callum Williams Senior economics writer, *The Economist*

ARTIFICIAL INTELLIGENCE (AI) has already made many people very rich. Anyone who in 2021 bought shares in Nvidia, which makes AI chips, has by now octupled their money. The firm's founder, Jensen Huang, has probably made more than $100bn from the share-price surge—and he is not the only one in Silicon Valley sitting on gigantic paper profits. And yet so far, AI has had almost no impact on America's economy, with unemployment still very low and productivity growth weak. Expect this puzzle to continue in 2025.

Businesses are typically slow to adopt new technologies. Most bosses do not have the time to keep up with the latest trends, whatever they may claim. Financial executives are cautious creatures, and resist spending large sums on unproved gizmos. Historical examples abound. Firms across the world took decades to adopt electricity. The tractor was invented in the early 20th century, but by 1940 only 23% of American farms had one. It was not until 2010 that two-thirds of American firms had a website.

AI has had almost no impact on America's economy

Some argue that the latest wave of AI technology is more significant than electricity and the internet combined, and so it will spread fast. But so far there is little sign of this. America's Census Bureau asks businesses whether they use AI to produce goods and services (ie, for more than just a quick query on ChatGPT). Only 5-6% answer in the affirmative. In Canada, 6% of all firms used AI to produce goods or delivering services in the past year, according to official data. The results for Britain are more impressive, with 20% of firms using AI, though its statisticians ask the question in a different way.

Even in Britain, however, the trends are unimpressive, with the same share having used AI a year ago. Adoption elsewhere has bounced around, with no sign that AI is diffusing across businesses. Small wonder, then, that it is hard to pinpoint any economic impact. GDP growth is decent, but hardly stronger than it was in 2022, the year that OpenAI's GPT-3 was released to the public. Productivity growth remains in the doldrums, far below where it was in the 1960s or 1970s. AI-boosters will tell you that the technology is transforming the fortunes of this company or that. Don't believe them.

The labour market tells the same story. Unemployment across the OECD club of mostly rich countries recently dipped below 5%, its lowest for decades (see chart). The share of working-age people in employment is at an all-time high. There is not much evidence of a surge in people leaving their jobs, which is what you would expect if AI were making people surplus to requirements. Wage growth also remains fairly high. Ask central bankers, and they will tell you that labour demand is currently too high, not too low, as they seek to bring inflation back down to 2% targets. So much for the idea that AI is destroying jobs.

Will an AI wave break over the economy in 2025? Don't bank on it. Only about 7% of American firms, when asked, say that they have plans to adopt AI in the coming months. Capital spending across the rich world remains fairly weak, suggesting that businesses are not investing in the tools that would allow AI to give them a big productivity boost. The question for the coming year is how long this disconnect between the financial markets and the real economy on the usefulness of AI can endure. ●

A new Asian pecking order

As India's economy overtakes Japan's, will it cause an "India shock"?

Simon Cox China economics editor, *The Economist*

CHINA OVERTOOK Japan in 2010 to become the world's second largest economy, a title Japan had held for almost 40 years. It went on to become the world's biggest manufacturer, a dominant buyer of commodities and the holder of $3trn of foreign-exchange reserves. Its penetration of foreign manufacturing markets was dubbed the "China shock" and its buying of safe, foreign assets a "savings glut".

Will the world see such a rise again? India hopes so. In the coming months it is likely to overtake Japan and become the second-biggest economy in Asia and the fourth largest in the world (behind America, China and Germany). India's population is already bigger than China's and its economy is likely to grow two or three percentage points faster in the next few years. India's leaders want its GDP to reach $5trn by 2028 and exports of goods and services to reach $1trn apiece by 2030.

India also aims to benefit from the geopolitical tension that China's rise has provoked. Manufacturers scared by Sino-American tension see India as an alternative. Canalys, a market-research firm, says Apple will produce over a fifth of its iPhones in India by the end of 2025.

So will India make as big a splash? The short answer is no, because of the scale and style of its development. In 2010, Japan's economy was still over 8% of world GDP. But its clout has diminished. By the time India overtakes it in a year or two, Japan's share of world GDP will be less than 4%.

India's workforce remains only three-quarters of the size of China's, partly because it includes so few women. Social trends can change. But on some projections, India's labour force will not surpass China's until the 2040s. Even then, India will account for a smaller share of the global workforce than China does today.

That will make it harder for India to become the world's workshop. Even if it meets the government's $1trn target, its goods exports will be just 3% of the global total in 2030, says Citigroup, a bank. South Korea achieved that share ten years ago.

India's exports of services are more impressive. Its share of the global total could reach 6% by 2030, according to Citi, up from 4.6% in 2023. Multinationals are keeping legal and HR work in-house but moving it offshore, setting up "global capability centres" in India. That will threaten some skilled jobs in the West. But PwC, an accountant, says the centres could employ just 3.4m people by 2028.

An "India shock", then, is not likely. Nor is another savings glut. India's investment needs tend to exceed its own saving rates, so large net capital outflows are unlikely. Indeed, capital will be attracted to India's liquid stockmarkets and the inclusion of its bonds in global indices. India's rise will be less spectacular than China's, and less likely to provoke a backlash. ●

Flotation tanks

Will IPOs make a comeback?

Josh Roberts Capital markets correspondent, *The Economist*

SPEAK TO THE bankers who make their living floating private companies on the public markets and you will sense a frisson of excitement about the coming year. Initial public offerings (IPOs) have been thin on the ground for some time. Now, though, stockmarkets are buoyant and companies are eager to raise new capital.

The bankers obviously can't say which of the rumours are true. But the names that are being thrown around tell you the scale of the coming flood. There is Stripe, a payments giant that in 2021 secured a $95bn valuation, which then made it America's biggest unlisted company. Perhaps Klarna, a fintech firm that was Europe's largest startup around the same time, will press the button, too. Then there are Chinese superstars, each worth tens or hundreds of billions of dollars: Ant Group, Bytedance, Lalatech, Shein and Xiaohongshu, to name just a few. All will surely float as soon as they get the nod from Beijing.

The trouble is that, changing barely a name or detail, you could have had the same conversation in late 2022, and then again in late 2023. On neither occasion would such optimism have been warranted. The IPO market has been dreary ever since a record-breaking splurge in 2021, when it was awash with liquidity from finance ministers' fiscal stimulus and ▸▸

→ Sinking feeling

Global initial public offerings, deal value, $bn

Source: Dealogic *To October 31st

central bankers' monetary largesse. That year, according to Dealogic, a data provider, firms going public raised over $600bn globally. But that fell to $170bn in 2022, $120bn in 2023 and just $100bn in the first ten months of 2024.

In America, home to the world's mightiest capital markets, the drought is even more marked. Firms listing there raised $38bn in the first ten months of 2024. Annualised and adjusted for inflation, that makes it leaner than nine of the ten years from 2010 to 2019.

The fortunes of IPO bankers seem unlikely to improve in 2025. If they were going to, then they ought to have done so already. Plenty of stockmarkets are close to all-time highs and—except for a few wild weeks over the summer—volatility has been low to middling. These are supposed to be the ideal conditions for selling newly minted shares at a good price that rewards buyers by holding up (or rocketing) once trading begins. But the bosses of private firms, the institutions that invest in them, or both, seem to disagree.

The growth of private capital markets, which have fewer rules, gives executives a chance to shun the spotlight

One reason is that interest rates, whose rise sparked the drought, remain a source of risk. Central banks, especially in America and Europe, have begun to loosen monetary policy. But a clouded outlook for inflation and developed countries' vast deficits have kept bond yields jumping around. These determine firms' borrowing costs and the "risk-free" rate of return against which their shares are measured. Uncertainty over the risk-free rate makes IPOs hard to price, and hence sparse.

A second brake on new listings comes from bosses' dislike of the public glare an IPO brings. Many have long thought the disclosure and regulatory requirements for public firms to be too onerous. The rapid recent growth of private capital markets, which have far fewer rules, now gives executives a chance to shun the spotlight. Plenty are eager to seize it.

Most important of all is geopolitics. Wars rage in Europe and the Middle East. Long-feared conflict between China and Taiwan would threaten semiconductor supply chains. Donald Trump's return is more likely to inflame tensions than calm them (and will probably send America's deficit even higher). If you are a global boss, now is not a propitious time to make promises about your firm's long-term performance. Yet that is what those floating on the stockmarket must do; so expect them to remain few in number. ●

Financial mountaineering

Having hit new highs in 2024, America's stockmarkets could get rocky again

Alice Fulwood Wall Street editor, *The Economist*

WHAT A DIFFERENCE a year makes. As *The World Ahead 2024* went to press in November 2023, the S&P 500, the leading index of American equities, was in the doldrums. Share prices were 15% off their peak in early 2022. A chart of the index's performance over the previous two years looked like a mountain range: pushed up and down on inflation worries, undercut by rising interest rates and spooked by fears of a growth slowdown. When pondering what 2024 might bring, your correspondent argued that, after a couple of years of deep uncertainty, investors might finally get enough information about the state of the economy to decide whether to be jubilant or miserable.

And their verdict? They chose jubilation. Since its trough in October 2023 the S&P 500 has climbed by more than 40%. The American economy has powered on, unperturbed by tighter credit conditions. Productivity has continued to surge. In the year to the end of June 2024 output per hour grew by 2.5%, an astonishing pace compared with the average from 2005-19 of just 1.5% and a better showing than even the post-war average of 2.2%. Inflation has all but abated. On a three-month annualised basis, core PCE, the Federal Reserve's preferred gauge of price levels, now stands at just 2.3%, roughly in line with the target. Monetary policy is at last being eased. In September, Fed policy rates were cut, for the first time since 2020, by 0.5 percentage points from their post-financial-crisis peak of 5.25-5.5%.

↑ *Troughs as well as peaks*

In addition to happy news from the economy, returns have been supercharged by the AI boom. The share prices of the "magnificent seven", a group of leading tech companies, have risen by 90% since the October 2023 lows. Nvidia alone has added $2.5trn—more than Google is worth—to its market capitalisation. Investors even rejoiced at the re-election of Donald Trump, who promises to cut taxes and deregulate the economy.

Yet after a year defined by growing certainty that all was well, the summer of 2024 has revealed just how anxious investors have once again become. Though the economy still appears to be growing at a remarkable clip, amber warning signs are flashing. The labour market softened. Loan delinquencies, in commercial property and on credit-card balances, have climbed to post-financial-crisis highs.

With the S&P 500 at fresh all-time highs and valuations—the price that investors are having to pay for a firm, relative to its profits—back at cyclically peaky levels, investors are twitchier. Stockmarkets plunged when confronted with weakness in data releases, such as surveys on consumer confidence or manufacturing indexes, that are usually considered mostly unimportant compared with the blockbuster releases of information such as inflation data or job numbers.

Starry-eyed AI optimism also feels more precarious. Confidence about Nvidia's prospects was easier when it was a mere $1trn company than it is now, as it jostles with Apple to be the world's most valuable firm. Since reaching new highs in July the magnificent seven have been on a stomach-churning up-and-down journey, single-handedly wiping about 10% from the S&P 500 before adding some back (and then losing and regaining ground again).

In 2024 investors got what they wanted: a strong economy, disinflation and easier monetary policy. That heady mix was coupled with truly remarkable technological progress. Investors rejoiced in this mix by escaping the jagged mountain range and heading straight for a new peak. But given changeable economic data, stretched valuations and the risk that Mr Trump brings chaos on trade, it is hard to believe 2025 will deliver such a fortunate mix. Back to the mountain range, then. ●

The trade war spreads

It is pulling in countries that had previously managed to sit it out

Mike Bird Asia business and finance editor, *The Economist*

THE TRADE war which began with tit-for-tat tariffs between Washington and Beijing in 2018 has now been raging for nearly seven years. With the re-election of Donald Trump in America, it will intensify in 2025. But the trade war is also spreading geographically. The number of countries being dragged into spats over trade with China is increasing, posing difficult decisions for governments.

Mr Trump has proposed tariffs of 10% or 20% on imports from around the world. Those from China face an even steeper suggested duty of 60%. That makes the average American tariff already in place, at around 12%, look modest. Quintupling the tariff on Chinese goods would make a broad swathe of products too expensive for American buyers. Chinese exports to America amounted to around $500bn in 2023. That could drop by as much as 85% if the tariffs were implemented in full, according to one analysis.

But as well as affecting trade between the two superpowers, the commercial turmoil will spill over to the rest of the world in the year ahead. China's policymakers are likely to permit—or engineer—a fall in the yuan to blunt the impact on its manufacturers. That will drive down the cost of Chinese goods all over the rest of the world. Countries that once preferred to sit out of the trade tussle are already being pulled into the fight. In 2025 they will feel even more pressure to respond with their own trade restrictions.

Decisions by China's government are also raising the stakes. Investment in property fell by 10.1% between January and September 2024, compared with the same period in 2023. The crisis in the property market, once one of China's main engines of growth, has now been going on for more than three years.

In late September, Chinese stockmarkets began to surge, driven by hopes for more stimulative economic policy from Beijing. But so far, few policies that might revive consumer spending have been announced, and exports have been a more reliable source of recent economic growth. Investment in manufacturing rose by 9.2% in the first nine months of the year, helping to offset the pain. The combination of a moribund economy at home, and an American market which is being closed off to Chinese producers, means that surge of investment is producing industrial goods destined for other overseas destinations.

Around the world, electric vehicles (EVs) have already emerged as one of the foremost sources of tension, and one that looks likely only to grow. Back in 2018, China exported around 1m cars, which played very little role in the early trade tussles. That figure surged to 5m in 2024, and China has emerged as the world's largest car exporter, thanks in large part to its expertise in producing low-cost EVs.

Some countries have already raised steep walls against imports of Chinese cars. A proposal by America's Department of Commerce to prohibit the use of Chinese software in cars would in effect ban Chinese cars from American roads. In August the Canadian government imposed 100% tariffs on Chinese-made EVs. In Europe, the issue is still a matter of political discord. A proposal by the European Commission for tariffs of up to 45% on Chinese EVs faced opposition from the governments of Germany and Hungary, though those of France, Italy and Poland supported the new levies. Germany's car industry opposed the move, given the risk of retaliation from China, the industry's largest foreign market.

Chinese cars could be banned from American roads

But the tensions are rippling out beyond the rich world. Many middle-income countries are weighing the pros and cons of accepting cheap Chinese goods and Chinese investment on the one hand, and protecting their own domestic producers on the other. Brazil, Chile and Mexico raised tariffs on Chinese steel imports in April. Countries in South-East Asia are also being dragged into the fray. In July, Indonesia's trade minister threatened tariffs of up to 200% in areas including ceramics, textiles and footwear. Malaysia's government is reviewing its anti-dumping duties against Chinese steel.

For countries around the world, both rich and poor, the effects of the trade war will become more and more difficult to avoid, particularly if the incoming Trump administration raises an almighty tariff wall. Sitting out the conflict is no longer much of an option. ●

Science & technology

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Making pharma go faster

Artificial intelligence will show its potential to speed up drug development

Shailesh Chitnis Global business correspondent, *The Economist*

PROGRESS IN COMPUTING has long been described by Moore's law, a rule of thumb which says that the cost of processing power falls by half roughly every two years. The pharmaceutical industry follows an opposite rule. Its version, called Eroom's law ("Moore" spelled backwards), posits that the cost of developing a new drug doubles roughly every nine years. In the 1960s $1bn (at 2008 prices) spent in research and development (R&D) yielded about ten new drugs. Today the same $1bn isn't enough to produce even one.

On average, it now takes ten years and more than $2bn to develop a drug from start to finish. The risks are also steep—less than one-tenth of drug candidates that enter clinical trials are approved by regulators. In the past decade America's Food and Drug Administration has approved an average of just 53 drugs every year. Proponents of artificial intelligence (AI) say it has the potential to make drug discovery faster and cheaper—something that would be welcomed by pharmaceutical companies and patients alike. In 2025, as a wave of new drugs nears regulatory approval, AI will begin to fulfil that promise.

The process of developing a drug begins with identifying a target, such as a protein or gene, that is associated with a particular disease. Researchers then search for a molecule that can either block or enhance the target's activity. Once potential molecules are found, they are tested for safety and effectiveness first using computer models, and then on animals. This phase, known as the preclinical stage, can involve screening as many as 1m compounds before selecting just one or two promising candidates. All this can take years, and accounts for nearly a third of the cost of drug development, even before any human testing.

It is in this preclinical phase that drugmakers are using AI to boost their chances. The pharmaceutical industry has used computational models for decades, but AI is changing drug discovery in several ways. First, it improves researchers' understanding of diseases and their targets by analysing huge amounts of disparate data. Software can also pinpoint promising molecules and fine-tune their structures to boost their success in

→ Eroom for improvement

AI-discovered molecules in clinical trials*

Source: "How successful are AI-discovered drugs in clinical trials?", by M. Jayatunga et al., *Drug Discovery Today*, 2024

*By AI-native biotech companies

AI-based methods could double the productivity of R&D

human trials. Generative AI can go a step further, by dreaming up entirely new molecules to test.

In 2020, AlphaFold 2, a model made by DeepMind, an AI laboratory owned by Google, stunned the scientific world by accurately predicting the structure of nearly every protein in the human body. In May 2024 its successor, AlphaFold 3, expanded its capabilities to other molecules that make up living things: proteins, DNA, RNA and small molecules called ligands. Such models are changing drug development by reducing months of trial-and-error experiments to just hours of computation. Insilico, a startup that uses AI to develop drugs, says its software identified a new drug target and designed a molecule suitable for human trials in only 18 months and at a cost of $2.7m—a fraction of the usual time and expense required.

Breakthroughs in the preclinical phase have now progressed into the business end of drug development. BCG, a consultancy, estimates that about 65 AI-inspired molecules are currently in human trials (see chart). Around a third of these are in the second phase of clinical trials, in which the drug is tested for effectiveness and side-effects. Firms must then decide whether to move forward with more expensive phase-three studies on a larger population. Less than a third of drug candidates make that leap.

During 2025, results from this crucial second phase will be reported for more than half a dozen drugs. Some AI-designed drugs have already stumbled at this stage. BenevolentAI and Exscientia, two promising British AI startups, recently reported disappointing results in clinical trials for their drugs targeting eczema and cancer. Despite these setbacks, Christoph Meier of BCG believes that AI-based methods could double the productivity of R&D. And it seems likely that four or five AI-developed treatments, if not more, could go on to phase-three trials in 2025.

This is a small sample, but these medicines point to a profound change in drug development. Although AI has yet to shorten clinical-trial timelines, it is already helping pharmaceutical companies make smarter choices about which molecules to take forward, reducing failure rates and cutting costs. Research by Andreas Bender at Cambridge University, for example, shows that reducing failures in phase-two trials by just 20% could save nearly $450m on a single drug's development. In computing, Moore's law has run out of steam. In the pharmaceutical industry, Eroom's law may soon face a similar fate. ●

A new hope

Thanks to mRNA technology, 2025 could be a big year for cancer vaccines

Natasha Loder Health editor, *The Economist*

AFTER DECADES of disappointment, efforts to create vaccines that can stimulate the immune system to fight cancer are showing renewed promise. Breakthroughs are possible in the coming year. The optimism stems from advances in mRNA technology and personalised medicine, and in particular from a melanoma vaccine called mRNA-4157, developed by Moderna and Merck, that is performing well in trials. In 2025 the FDA, America's drugs regulator, could approve the vaccine. And in Britain the NHS's Cancer Vaccine Launch Pad, a tie-up with BioNTech, a pioneer of covid vaccines, aims to fast-track thousands of patients into trials for mRNA-based personalised vaccines for colorectal, pancreatic and melanoma cancers.

Personalised vaccines are tailored to a patient's specific mutations, and aim to train the immune system to recognise and attack cancer cells based on their unique genetic make-up. First comes a biopsy, then the sequencing of the tumour, the identification of mutations likely to generate proteins that would be recognised by the immune system, and finally the manufacturing of a vaccine to target those markers. This can all be done within six weeks, thanks to advances in mRNA technology made during the pandemic, and to progress in artificial intelligence, which is used to predict the molecular markers most likely to stimulate the immune system into action.

But the process is expensive, so parallel efforts are under way, by BioNTech and others, to develop "off-the-shelf" vaccines that work in wider populations by targeting common tumour markers. There is also growing interest in exploring vaccines' potential use as an adjuvant, or booster, to treatments in earlier stages of cancer, alongside surgery or chemotherapy. Some researchers think cancer vaccines could one day even be used preventively in high-risk individuals.

Personalised cancer vaccines provide highly targeted treatment, but their complex manufacturing process makes them costly to produce. The coming year will be crucial. Success would be a vindication of the decades of effort spent trying to create a new way to fight cancer. But with so many past failures, those in the field are taking nothing for granted. ●

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Fusion power is getting closer

The action is shifting from the public to the private sector

Geoffrey Carr Senior editor, Science & technology, *The Economist*

TWO DEVELOPMENTS in the coming year will mark a decisive shift from the public to the private sector in the decades-old quest to generate cheap and abundant power from nuclear fusion. The first will be the opening towards the end of 2025, by a private firm, of a machine called SPARC. This will be the first fusion reactor, public or private, designed to operate at near-commercial scale, with an eventual output of about 140 megawatts (MW). The second will be the non-opening of ITER, the flagship of intergovernmental fusion collaboration, which was scheduled to be ready in 2025. In a hurried announcement in July, that date was postponed.

SPARC is being built by Commonwealth Fusion, a spin-out from the Massachusetts Institute of Technology. Design-wise, it is a tokamak. This is a machine with a toroidal (ie, doughnut-shaped) reaction vessel surrounded by powerful electro-magnets which confine and heat the fuel. That fuel is a plasma of two exotic isotopes of hydrogen: deuterium and tritium. These, when suitably heated and confined, undergo a fusion reaction that liberates helium, neutrons—and a lot of energy.

ITER is a tokamak, too, with an intended power output of 500MW. Unfortunately for the 35-country collaboration building it in France, it won't be ready in 2025. In fact, it is nine years behind schedule, and will not be switched on until 2034. Commonwealth Fusion hopes to reach "Q>1", the point where a reactor releases more energy than is put into it, in early 2026. ITER will not, on its new schedule, reach this point until 2039.

If SPARC works and provides the data that Commonwealth needs to build a full-scale power plant (scheduled for the early 2030s), that will probably be the end of ITER. And even if things do not go to plan for Commonwealth, it is not alone in trying for fusion with private money.

The latest estimate from the Fusion Industry Association, a trade body, suggests that $7.1bn has been raised by more than 40 firms with fusion in their sights. Many are still tiny startups, but several have more than $200m in funding.

Some of these firms are pursuing more exotic approaches than tokamaks, which have, until now, been the tried-and-trusted design for fusion research. General Fusion, a Canadian firm, plans to compress and heat a deuterium-tritium plasma in liquid-metal cavities. A test reactor, in which the compressing metal remains solid, should switch on in 2025.

Helion, in Washington state, proposes a different fuel: a mixture of deuterium and an unusual isotope of helium. Its latest test-bed, Polaris, should also be up and running in 2025. Zap Energy, also based in Washington state, is reviving a once-obsolete approach called Z-pinch. ENN, of Hebei province in China, plans to fuse hydrogen and boron. In short, if Commonwealth Fusion fails to deliver, many other startups are lining up right behind it. ●

Sensitivity about climate

Supercomputers and AI are helping to build better climate models

Rachel Dobbs Environment editor, *The Economist*

AT THE END of the 19th century Svante Arrhenius, a Swedish chemist, made one of the first concerted attempts to work out the relationship between Earth's average temperature and the amount of carbon dioxide in its atmosphere.

The idea of the planet's "climate sensitivity" underpins all understanding of climate change, and attempts to try to mitigate it. Arrhenius laboriously deduced that doubling atmospheric CO_2 would warm the climate by 5-6°C. More than a century of effort has refined that estimate, but plenty of uncertainty remains. The most recent assessment from the Intergovernmental Panel on Climate Change, the UN body responsible for evaluating climate research, concluded that it was "very likely" that doubling CO_2 would raise temperatures by 2-5°C. Advances in climate science during 2025 may help reduce the uncertainty.

Climate sensitivity is tricky to pin down because the atmospheric system involves a dizzying array of processes and feedback loops. Among the most crucial are aerosols and clouds, both of which can have either a cooling effect by reflecting sunlight, or a warming one by absorbing heat. Scientists have struggled to make models fine-grained enough to account for the intricate microphysics of aerosols and clouds, and ▸▸

→ The heat is on

Global average daily air temperature, °C

Source: Copernicus, ERA5

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ECONOMIST IMPACT

Why is no country effectively preventing and managing obesity?

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have been forced to rely on simplified versions of how they think the underlying processes might work. The result is uncertainty around their projections.

An alternative approach is to examine the behaviour of aerosols and clouds in the real world. The coming months look promising in this regard. In recent years NASA and the European and Japanese space agencies launched satellite missions to monitor aerosol-cloud interactions and the mechanisms behind them. Results are expected to arrive during 2025.

Scientists have also been fine-tuning methods to examine how the climate has previously reacted to changing levels of CO_2. Using proxies such as ice cores, tree rings and sediment from the ocean depths, they have built a more accurate picture of the conditions in the distant past. In September, a landmark paper published in *Science* detailed the first reconstruction of Earth's temperature over 480m years. The authors achieved this by combining biological proxies and records of plate tectonics, and filling in the gaps with simulations from climate models. This allowed them, for the first time, to arrive at a rough estimate of climate sensitivity over geological time scales.

The figure arrived at (an average temperature increase of around 7.7°C for a doubling of CO_2) was surprisingly high, and is likely to be re-evaluated in future. But the project highlighted the importance of taking even the slowest feedback loops into account, which will inform new efforts to reduce uncertainties.

Palaeoclimatologists have been helped by advances in supercomputers and artificial intelligence, both of which are being incorporated into new climate models. The first data from CMIP7, a new generation of international climate models, should become available at the end of 2025.

But even the slightest clarification of how sensitive the climate is to CO_2 will be beneficial. In recent years, repeated spates of record-breaking temperatures across land and sea have fuelled concerns that the pace of climate change might be speeding up (see chart on previous page). Scientists have yet to reach a consensus on this. But everything hinges on the question of how the climate responds to extra emissions. If its sensitivity has been underestimated, that could dramatically change the future trajectory of the climate—and the steps humans might take to change it. ●

Watch this space

Humans may fly around the Moon, and robots will explore new frontiers

Tim Cross Senior science writer, *The Economist*

BY THE END of the coming year, astronauts are due to return to the Moon for the first time in more than half a century. Regular readers may find that sentence familiar. That is because we made exactly the same prediction in the previous edition of *The World Ahead*. At the time, the target date for the first crewed flight of America's Artemis programme—which aims to return humans to the Moon, starting with a lunar fly-by mission—was late 2024. But worries over the Orion spacecraft's heat shield and life-support systems delayed things.

Assuming those problems have been fixed, at some point in late 2025 four astronauts are due to take Orion for a ten-day test drive. They will not land on the Moon, but will trace a figure-of-eight orbit, before looping back around to Earth. But the mission could, once again, be delayed.

In 2025 India may join the Soviet Union, America and China in the club of countries that have sent astronauts to space on domestically developed rockets. Like Artemis, India's Gagnayaan human-spaceflight programme has suffered delays. But ISRO, India's space agency, hopes that at some point in the coming year its astronauts will blast off to spend several days in low-Earth orbit.

Elsewhere, the focus will be on uncrewed missions. In May 2025 a Chinese probe called *Tianwen-2* will depart for 469219 Kamo'oalewa, an asteroid which orbits very close to Earth. In December 2025 a joint European-Japanese probe called *BepiColombo* will become only the third spacecraft to visit the planet Mercury. The European Space Agency (ESA) is planning the first flight of Space Rider, a reusable space-plane. Like the Space Shuttle, it is designed to be launched by rocket into orbit before gliding back to Earth to be flown again. Unlike the Shuttle, Space Rider is a robotic space laboratory.

But these days space is increasingly the preserve of private companies as well as government agencies. Today's space superpower is not NASA or ESA or ISRO, but SpaceX, a private American firm founded by Elon Musk, which flies more mass into orbit each year than every other company and country in the world combined.

↑ *We have lift-off*

In 2025 SpaceX will conduct more tests of its giant Starship rocket. It will continue deploying Starlink, a constellation of thousands of satellites that can beam high-speed internet to almost anywhere on Earth. In 2025 Starlink will switch on its "direct-to-cell" service, which will allow ordinary smartphones to talk directly to Starlink satellites, providing mobile-phone reception in areas that lack coverage.

Amazon, a tech giant, has been developing its own Starlink-style satellite constellation, called Kuiper. It plans to begin offering the service in 2025. Rocket Lab, a firm founded in New Zealand, hopes to make the first flight of its Neutron reusable rocket, building on the success of Electron, its existing, smaller vehicle.

Several privately funded Moon missions are due to launch on a single SpaceX rocket in January, involving robotic landers and rovers. Vast, an American firm, plans to launch *Haven-1*, a privately run space station with room for four astronauts. But perhaps the most eye-catching private venture is the *Venus Life Finder* (*VLF*), a joint effort between the Massachusetts Institute of Technology, Rocket Lab and some anonymous philanthropists. Due to launch early in 2025, this robotic probe will carry a single, simple instrument to look for signs of life in the cool upper layers of Venus's clouds.

The giant NASA rocket that is due to take America's astronauts back to the Moon costs around $4bn per launch. The total cost of *VLF*, by contrast, is projected to be less than $10m, including launch. Governments have long ruled the roost. But space exploration is now something wealthy private citizens can pursue, too. ●

By Invitation

The new economics of renewable energy

Solar power is about to transform the economics of energy, argues Casey Handmer, founder of Terraform Industries

WHAT IF WE could make cheap fuel out of thin air? For more than a century, a bewildering variety of methods has been attempted to make drop-in replacements for fossil fuels. Such synthetic fuels could be used with existing energy, transport and industrial infrastructure, collectively worth over $100trn.

Petrol, diesel, kerosene, propane, oil, natural gas and rocket fuel are all hydrocarbons. Synthetic fuel therefore needs sources of hydrogen (from water) and carbon (from atmospheric carbon dioxide). Nature has used this recipe to make living things, including humans, for billions of years. Before the Industrial Revolution, plants were our primary source of fuel. But plants do not use solar energy efficiently enough to make replacements for fossil fuels. Is there another way to use water and air to make huge amounts of cheap fuel?

Whatever process we use will require vast quantities of energy. Synthetic fuel is made by converting electrical energy into chemical energy. But ripping water and carbon-dioxide molecules apart to make fuel requires as much energy as is subsequently released via combustion, and more besides. If done using electricity obtained from the grid, powered by combustion of coal or natural gas, fuel synthesis cannot be cost-competitive with fuel-mining. We need new energy sources that are abundant, cheap and less environmentally harmful than fossil fuels.

And what is the cheapest, most scalable source of energy humanity has ever known? Solar photovoltaics. Carbon-free, zero moving parts, no uranium enrichment, and no specialised labour required. Solar cells are panes of glass that print wealth. We should deploy them accordingly.

It turns out that converting between chemical and electrical energy is about 35% efficient in either direction. Conventionally, burning fuel to make electricity has been the natural economic flow. But once solar energy costs less than 10% of the price of grid power, the economics favour the conversion of electricity into carbon-neutral chemical fuel. This is just a few years away. Solar is getting 15-20% cheaper every year as manufacturing becomes more efficient. Solar synthetic fuel will soon be cheaper than conventional fuel in some markets, and by about 2040 it will be cheaper everywhere.

Cheap and abundant solar power, directly from the array, will transform dozens of industries

I noticed this trend four years ago, and resolved to make this vision—of unconditional energy abundance—a reality. I quit my job writing software at NASA's Jet Propulsion Laboratory and founded Terraform Industries. I raised seed funding from investors who shared my forward-looking optimism, hired the smartest engineers I knew, and got to work. At Terraform, we're now making cheap, synthetic natural gas from sunlight, water and air.

Our "Terraformer" system is a compact chemical plant designed to integrate directly with a one-megawatt solar array in the field—so there are no electricity-transmission costs. It contains an electrolyser (to make hydrogen from water), a carbon-capture system (to extract carbon dioxide from air) and a Sabatier reactor that combines the two to make synthetic natural gas (methane). The whole thing is powered by solar energy.

So far we've shown that we can produce hydrogen for less than $2.50 per kg, carbon dioxide for less than $250 per tonne, and pipeline-grade synthetic natural gas for $35 per thousand cubic feet (MCF). This puts us in economic contention in many markets that rely on imported fuel.

We won't rest until we've saturated the global market for any hydrocarbon at a price cheaper than fracking. We have significant further cost reductions on the way, and a pathway for developing liquid fuels from methanol. In 2025 we expect to be able to produce hydrogen for well below $2/kg. Our full-scale Terraformer, which we will demonstrate in the next few months, will produce 2,300 MCF of natural gas per year. (A typical home uses about 70 MCF a year for heating and cooking.) We need to deploy millions of these over the next couple of decades to meet global demand.

Cheap and abundant solar power, directly from the array, will transform dozens of industries beyond fuel production. It can be used for desalination, cement production, to provide industrial heat and to make fertiliser. Solar power unlocks incredible material wealth for all of humanity with a mere fraction of Earth's land area under panels. And, of course, moving beyond finite fossil fuels to abundant solar energy solves the carbon-emissions problem—in addition to supercharging global economic growth. ●

Culture

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From Marvel to Mario

Move over, superheroes. Films based on video games are the next big thing

Alexandra Suich Bass Culture editor, *The Economist*

GOD MAY have created the world in six days; that is also how long it took Markus Persson, a Swedish developer, to design the first version of "Minecraft". Permitting users to build their own worlds and visit others' creations, it became the most successful video game of all time, surpassing 300m sales worldwide. Profits that dramatic were sure to attract Hollywood's attention and inspire plans for a sequel, of sorts. In 2025 "Minecraft" the film, starring Jack Black, an American actor, will come to the big screen. It will serve as a pixelated pulse-taking of audiences' appetite for adaptations of their favourite games.

Video games are big business—and are inspiring big plans in Hollywood. In addition to "Minecraft", cinemas will, in 2025, host "Mortal Kombat 2" and "Five Nights at Freddy's 2", both based on popular games. Some 30 projects adapting video games into films and television series are in development, according to IGN, an entertainment website.

"We're seeing a content reset at the big studios," says Alice Thorpe of Ampere Analysis, a research firm. Superheroes have lost their invincibility; studios are scanning their catalogues and intellectual property to find their next golden goose. Many have come to believe that video games could be the new comic books, providing recognisable characters with the power to conquer big and small screens.

Video games come with several advantages. Chief among them is cultural and commercial cachet. Gaming is the largest sector of entertainment, by most estimates surpassing the sales of film and recorded music combined. Video-game properties also have a built-in fan base. Look no further than the Game Awards, the industry's annual show, for proof: in 2023 it attracted 118m viewers, six times more than tuned into Hollywood's mainstay, the Academy Awards.

Hollywood's experience adapting video games has not always been a happy one, however. The coming year will mark two decades since the release of a film based on "Doom", a classic first-person shooter game. Its title became a four-letter summary of its fate—and that of many other game adaptations.

Risk appetite for adaptations started to change thanks to the small screen. Successes on streaming services included "The Witcher" (2019) and "Arcane" (2021) on Netflix. HBO's "The Last of Us" (2023), set in a post-apocalyptic America, won critical acclaim and Emmy awards, while staying faithful to the original game. The second season is expected in 2025.

Then there was the breakout film of 2023, "Super Mario Bros", which was the second-highest performing film of the year (after "Barbie"), taking nearly $1.4bn globally at the box office. It set a model of appealing to children and parents alike, reimagining a game as a "nostalgia play" for people who grew up with it, says Ms Thorpe.

There are three things to watch out for in the coming year. One is how video games are changing who participates in Hollywood. "More and more game creators are getting involved creatively" in the development of film and television properties, says Geoff Keighley, who hosts the Game Awards. This can be good, to the extent that it preserves a game's authenticity and helps it translate to film or television. Of course, creators are also hopeful that an adaptation can propel game sales, as occurred with "Fallout" (2024), a post-apocalyptic show that drove new users to the role-playing games on which it was based.

Second, Hollywood will more deeply embrace video-game technology in film-making. It is already changing visual effects in profound ways. Studios now use game "engines", first devised to make video games, to implement intricate special effects on set. Instead of green screens, studios can use huge wraparound screens showing a background scene in real time (rather than adding it after filming). As game engines spread in Hollywood (and not just in video-game adaptations), they will change the way actors, directors and set-designers do their jobs—and make for more visually spectacular experiences.

Video games are changing who participates in Hollywood

Third, watch how Hollywood integrates some of video games' storytelling techniques and action sequences into films. Video games are starting to "provide a fresh source of inspiration to film-makers", says Hermen Hulst of Sony Interactive Entertainment. Much as there were debates about video games' impact on society, there are sure to be discussions about whether video games rub off on Hollywood, for example by making films more violent.

The coming year will also offer a reminder of entertainment's new pecking order. The biggest release of 2025 is not going to be a Hollywood production but a video game, "Grand Theft Auto 6", the first version of the epically popular game to be released in more than a decade. Mr Keighley predicts it will be the "biggest entertainment launch of all time". It will be "bigger than any movie, any streaming show, any music show", he says. When it comes to games, Hollywood, known for its rivalries and jealousies, is no longer the leading star. ●

Universally acknowledged

The 250th anniversary of Jane Austen's birth will be widely celebrated

Rachel Lloyd Deputy culture editor, *The Economist*

FEW WRITERS remain the height of fashion 250 years after they were born. No one talks about Charles Lamb as a must-read essayist, or Elizabeth Benger as a trendy poet. But two and a half centuries on from her birth (on December 16th 1775), Jane Austen stands unchallenged as the greatest romance novelist of all time. "Pride and Prejudice" alone has sold more than 20m copies. The coming year will be marked by declarations of admiration from her legions of fans around the world.

Many will don breeches or gowns in Austen's honour. The English city of Bath, where she lived in 1801-06, will host several costume balls. Academic symposiums will take place in countries including Australia, France and Japan.

At Austen's last residence, in Chawton, Hampshire, a permanent exhibition about her creative process will be unveiled. The museum is also staging a series of festivals—each dedicated to a different novel—and an eight-day birthday celebration in December. Several books about her life and times will be published. A television show, "Miss Austen", examining Jane's relationship with her sister, Cassandra, will air on PBS in America and the BBC in Britain.

Gen Z is surprisingly keen. There have been hundreds of thousands of videos on TikTok about Austen and her work—many of them about her brooding romantic hero, Mr Darcy. To appeal to this younger crowd, Penguin will republish all six of Austen's novels with colourful new covers.

"Pride and Prejudice" remains the most popular of Austen's novels, with numerous film and TV adaptions. It has also inspired many other stories. Helen Fielding says she "pinched the plot" and the character of Mr Darcy for her blockbuster novel, "Bridget Jones's Diary" (a fourth Bridget Jones film will be released in 2025). An adaptation of "Unmarriageable", a novel by Soniah Kamal which transposes the story of "Pride and Prejudice" to Pakistan, is also due to start filming in 2025.

It is no coincidence that "Bridgerton", Netflix's hit Regency-era romance, opens in 1813, the year "Pride and Prejudice" was published. The show, based on a series of books by Julia Quinn, borrows Austen's marriage plots and has a perspicacious, ironic narrator typical of Austen's tales. In the latest season, a bookish character can even be seen toting a copy of "Emma".

Given this astonishing cultural legacy, it is striking that Austen's tombstone in Winchester Cathedral makes no mention of her writing. There will be some redress in 2025. A life-size statue is to be installed in the cathedral gardens, depicting the author beside her desk, with paper, quill and ink at the ready. ●

Losing your marbles

The restitution and repatriation of cultural heritage will accelerate

Max Norman Culture correspondent, *The Economist*

THE PARTHENON MARBLES have not budged from the literal and figurative centre of the British Museum in London since they were purchased from Lord Elgin in 1816. The sculptures—about half of the marbles that survive from the temple in Athens—have also been at the centre of the world's most famous dispute over cultural property since Greece formally demanded their return in 1983.

But in 2025, the marbles may finally be on the move—or, at least, negotiations about their status might take a big step forward. Many arguments against returning them have been toppled. The idea that the British Museum is the only competent custodian for the marbles has always seemed slightly spurious, even more so after one of its staff was accused of pilfering almost 2,000 antiquities and selling them on eBay. Just as powerful is a shift in public sentiment: a YouGov poll conducted in 2023 found that 49% of Britons were in favour of handing them back, and just 15% believed they should remain.

A generational shift in leadership has changed attitudes

The British Museum itself, and the government, also seem ready. A law from 1963 prohibits the museum from giving away its treasures, and the government is not likely to revise it. But both the museum's chair, George Osborne, and its reform-minded new boss, Nicholas Cullinan, support a long-term loan of the marbles, perhaps borrowing other antiquities from Greece in return. The prime minister, Sir Keir Starmer, has indicated that he would not stand in the way.

Greece has publicly rejected anything less than full ownership, but a swap of some kind remains the most realistic outcome. That could offer a model for how the museum might manage the 99% of its stock that sits in storage. Dame Mary Beard, a trustee, has suggested the museum could become a "lending library" for the world. Loans would let it share its sometimes contested collection while burnishing its image. (In 2022 a museum in Sicily loaned Greece a fragment of the marbles in exchange for another sculpture.)

A deal with Greece would also represent the crest of a wave of restitutions that have occurred in the marbles' shadow. Museums are "less hamstrung" by politics on less high-profile items, notes Alexander Herman, the author of a book on the dispute. In the past few years, restitution has become a regular event.

Many items have gone back to Mediterranean countries from which they were taken, such as Italy and Turkey. Campaigners in Cambodia have also convinced the Metropolitan Museum in New York, among others, to return stolen sculptures. In Africa, Nigeria has led the way, securing dozens of bronzes—looted by the British from the Kingdom of Benin in 1897—from German, American and some British institutions.

Objects are also beginning to flow back to Cameroon, Indonesia and Nepal. And Belgium recently gave the Democratic Republic of Congo a catalogue of 80,000 items in its African Museum, an apparent prelude to returns. Bénédicte Savoy, a historian who has advised President Emmanuel Macron of France on the restitution of items to African countries, predicts that China, India and Vietnam will begin to make more vocal requests.

Legal action has helped drive restitution in America. In New York, the Manhattan district attorney's Antiquities Trafficking Unit has wielded state law to return improperly exported objects. (Unusually, two museums in the Midwest and a private collector in Los Angeles are suing to block the unit's seizures; court rulings may curtail its authority outside New York state.) The 1990 Native American Graves Protection and Repatriation Act has resulted in the return of thousands of human remains to Native American tribes, though many are still in museums.

Most restitutions, however, will remain voluntary. Public awareness of the issue is growing both in the art-rich West and in the countries asking for objects back. There has also been a "generational shift" in leadership, notes Dan Hicks, author of "The Brutish Museums", a book on the repatriation debate. Due diligence on provenance is now essential, and restitution is no longer a dirty word. Previous efforts have faltered. But, Mr Hicks says, the idea of the museum as "a prison cell, where objects go to die" is now itself a historical relic. ●

Touching down

The NFL will play more games abroad in 2025 than ever before

Jon Fasman Senior culture correspondent, *The Economist*

GEORGE WILL, a baseball-loving conservative columnist, once wrote that American football "combines the two worst things about America. It is violence punctuated by committee meetings." Within America, Mr Will's opinion is not widely shared: in 2023, 93 of the 100 most-watched television broadcasts were National Football League (NFL) games. In the rest of the world, American football remains niche at best, but the NFL is trying to change that. In 2025 the league will play eight games abroad—more than in any previous season.

The Super Bowl already has an international audience. In 2024 a record 62.5m people outside the United States tuned in—10% more than in 2023 (a leap perhaps helped by Taylor Swift, a singer, dating Travis Kelce, one of the best players of the victorious Kansas City Chiefs). And the league has played some preseason games abroad for decades. Since 2007 it has played at least one regular-season game each year in London, and a total of four games in Mexico City and three in Germany. In 2024 the league played its first game in Brazil. In 2025 it will play in Spain for the first time, and is reportedly considering Australia, Ireland, Japan, Italy, France and Abu Dhabi for future fixtures.

The NFL has also changed how it markets itself overseas. For years, explains Scott Rosner, who teaches sports management at Columbia University, teams could market themselves abroad, but any revenue went to the league, which would divide it among the 32 teams. Since 2022, however, the league has let teams apply for the rights to treat countries as "home" markets, allowing them to keep revenue, as they do for home games.

Today, 25 teams are trying to build fan bases abroad. The Miami Dolphins focus on three Spanish-speaking countries; the Rams, who play in heavily Asian-American Los Angeles, are cultivating fans in Japan and China. Teams eschew the hyper-patriotic packaging in which the NFL wraps itself domestically and opt for partnerships with local ad agencies who know the market. They also set up participatory events such as camps for flag football, a non-contact version in which, instead of tackling, players have to grab a flag attached to their opponents' kit.

The league has invested deeply overseas in flag football, which will be an Olympic sport for the first time in 2028. It requires less equipment but still accustoms players to the game's arcane rules. American football may never replace the beautiful game, but more languages may soon need to find translations for "touchdown", "linebacker" and more. ●

Pay more, watch less

Television's golden era of streaming comes to an end

Tom Wainwright Media editor, *The Economist*

AN EMBARRASSMENT OF riches awaits television and film audiences in 2025, as projects that were delayed by a Hollywood strike in 2023 reach the small and big screens at last. New instalments of "Avatar", "Mission: Impossible" and "Captain America" will jostle for attention at the cinema. At home, viewers will settle down for more of "The White Lotus" and the final chapter of "Stranger Things".

But audiences should enjoy it while they can because, behind the scenes, the tap of fresh content is being tightened. At the same time, prices are rising and commercial breaks are finding their way into streaming services that were previously ad-free. As investors become impatient for profits, a golden age of cheap, abundant entertainment is giving way to a period of austerity.

For the past five years, as cable television has gone into ever-steeper decline, Hollywood studios have done everything they can to sign up customers to their streaming services, splashing out on content and selling it at ludicrously low ▸▸

prices. Disney+ launched in 2019, offering access to the glittering Disney back catalogue, from "Snow White" to "Star Wars", for $6.99 a month. As households rushed to sign up, so did investors.

Yet making money from streaming is proving harder than expected. Netflix, its largest exponent, is making steady profits. Disney's streaming division broke even in the second quarter of 2024. But most of Hollywood's older studios are still losing money on their digital ventures, and shareholders are jumping ship. Shares in Warner Bros Discovery, which lacks theme parks or a broadband business to prop up its anaemic TV and film earnings, have lost 70% of their value since the combined company was formed in 2022.

An industry-wide economy drive is therefore under way, to bring studios back into the black. Most have already slashed their budgets: Disney's outlay on content, excluding sport, was 30% lower in 2024 than in 2022. Even Apple, with near-bottomless cash reserves, is said to be curbing its TV-commissioning enthusiasm. At the same time, customers should prepare for higher prices. Disney+ already costs more than twice what it did at launch, and the company is cracking down on password-sharing. Amazon Prime Video has begun slipping advertising into its programming. The year ahead is likely to see more of this: some wonder if Apple TV+, the last big ad-free service, will roll out commercial breaks in 2025.

Streamers will also try to squeeze more money from subscribers by bundling their services together. Disney and Warner Bros launched a package of their streaming services in 2024, and Comcast, the cable company that owns Universal, offered its broadband customers a bundle of Netflix and Apple TV+ along with its own streaming offering, Peacock. Streamers hope that rolling services together might help reduce customer churn. Disney plans to launch a streaming version of its ESPN sports service in 2025, which is likely to be offered as part of a bundle with its other streaming apps.

Even these initiatives may not be enough to get some studios out of the red. So the year ahead could see some more radical changes. In 2025 Paramount, one of the world's oldest film studios and the last still based in central Hollywood, is expected to complete its sale to Skydance Media, a production company run by David Ellison, a millennial heir to a tech fortune. Rumours abound that more tie-ups will follow now that America's election is out of the way.

Some combination involving Comcast and Warner is possible. So is a partnership including Fox Corporation—though that will depend on the will of its controlling shareholder, Rupert Murdoch. With Mr Murdoch due to turn 94 in March, TV-watchers are increasingly looking ahead to the next chapter in that long-running succession drama, too. ●

Long story short

China's one-minute micro-dramas are flourishing at home and abroad

Nicole Fan 1843 intern, *The Economist*

"CUT!" BARKS the director, and chaos erupts at a film studio in Los Angeles. Actors rush off to change their costumes, while crew members scramble to arrange new props. It is only the second day of filming and they have already crammed in a week's worth of cliffhangers. Filming a micro-drama, the latest new-media format to emerge from China, is just as fast-paced as watching one. "It's soaps on steroids," a scriptwriter explains.

A cross between TikTok and Netflix, micro-dramas are mini soap operas designed for the smartphone generation. Episodes are filmed in a vertical format and last just over a minute each. The acting tends to be histrionic, the storylines often absurd, with titles like "I Actually Had a Flash Marriage with an Abstinent Male God". But the bite-sized sagas are perfect for China's young working professionals: long commutes and gruelling schedules leave little time for binge-watching box-sets on the sofa. Catering to their fragmented viewing habits, these shows rake in millions of views—and millions of dollars. In 2025 they will extend their reach, attracting more viewers outside China.

A single micro-drama can cost over $10 to watch, more than a month of Netflix, as the first few episodes are free of charge, with the rest behind a paywall. Yet viewers have been willing to splash out. The value of China's micro-drama market leaped ten-fold between 2021 and 2023, and its estimated worth of $5.3bn is expected to reach $14bn by 2027. Even a government crackdown on "vulgar" content has not curbed domestic enthusiasm: larger film companies are stepping in to scale up production, while more traditional streaming platforms are setting up their own micro-drama channels.

The mini web-shows are also breaking new ground as an experimental medium. In 2024 two short-form video platforms, Douyin and Kuaishou, released micro-dramas created using artificial intelligence (AI) for the first time. Nearly every aspect of production—from storyboarding and scripting to the actors themselves—involved AI, which accelerated complex processes and cut costs. The success and potential of AI micro-dramas has sent ripples through China's wider entertainment industry: even box-office films are beginning to embrace the technology.

And Chinese-backed apps are spreading the love, delivering micro-dramas to new audiences outside China. Leading the charge are ReelShort and DramaBox, which don't just translate Chinese series but also create original content with foreign actors, writers and directors. Some cultural nuances are still being teased out: shows like "Married for Green Card, Stayed for Love" are blatant, albeit awkward, attempts to appeal to Western viewers. "I feel like a clown," an American actor sighs, bemoaning how Chinese producers insist on sticking to cheesy tropes and over-the-top acting.

The market is growing. Micro-drama apps have cumulatively amassed nearly 55m downloads and $170m in revenue overseas, according to iiMedia Research, a data provider. These vertical shorts look poised to be more than a fleeting trend. Sometimes less really is more. ●

By Invitation

Why museums are turning themselves inside out

Opening up museums' storehouses can improve transparency and accountability, says Tristram Hunt, director, V&A

"BUT WHERE have you hidden all the other stuff?" This is the perennial question for museum directors, as we are accused of secretly stockpiling vast, unseen treasure troves. The truth is, in our hunger for audiences, we always want to put the best material on display, and as much of it as possible. Yet today's visitors rightly demand ever more transparency and accountability around historic collections.

The coming year will see the latest example in a new era of access to public holdings with the opening of V&A East Storehouse in the Queen Elizabeth II Olympic Park in London. As "encyclopedic" museums in the global north wrestle with questions around the provenance and restitution of contested heritage, part of the response must be to reveal museums' hidden secrets and put everything on show.

From the Powerhouse Parramatta in Sydney, to Louvre Lens in the former coalfields of northern France, to the Boijmans in Rotterdam, museums around the world are opening up their back-of-house storage and expertise to engage new audiences and retain public trust. Like the chef's table in a smart restaurant, the inside-out museum is a growing trend, offering immediacy in access to objects and an immersive visitor experience.

When Prince Albert first conceived the Victoria & Albert Museum in the aftermath of the Great Exhibition of 1851, he hoped for "a great treasury or storehouse of art". With all the design flair and range of collections for which the V&A is famous, the V&A East Storehouse, opening in May 2025, offers a truly radical degree of public access. Liz Diller—a brilliant architect based in New York who oversaw the Manhattan High Line, the Broad Museum in Los Angeles and a remarkable range of gallery exhibitions—has transformed what was once a vast, empty shed (originally built as the media centre for the 2012 London Olympics) into a sublime collections hall and self-guided public experience, allowing deep exploration of the hidden workings of a 21st-century museum.

With free admission, and floor after floor of open racking, visitors will be able to see every part of the V&A collection—from couture fashion to Iznik tiles to Regency mirrors to Memphis pottery—for themselves. There are historic rooms (such as the smoulderingly cool, plywood Kauffman office, designed by Frank Lloyd Wright), galleries for tapestries and stage sets, and the David Bowie Centre, encompassing the rock star's archive, costumes and personal effects. A programme called "Order an Object" will let visitors access specific objects by booking an appointment online to see any artefact held at the Storehouse, at a time of their choosing.

Like the chef's table in a smart restaurant, the inside-out museum is a growing trend

In co-operation with youth and community groups, the Storehouse also promises scholarly transparency around the origins and ownership of objects—not least because many of these items have a highly charged past. The Agra Colonnade, for example, is an exquisite example of Moghul design, ripped from the Red Fort in the early 19th century and brought to Britain for display. To ensure that the V&A has legitimacy, particularly with younger generations, it is essential that this colonial history and its legacies today are not ignored. This is not "decolonisation", but a strong, institutional determination to surface, interpret and disseminate difficult histories.

But we know that won't be enough. As museums bring more objects to light in open storage spaces, the coming year will also see further demands for the restitution of cultural artefacts from institutions in the global north. Many British national museums—such as the V&A and British Museum—remain hidebound by laws preventing the "de-accessioning" of material looted during the imperial past. But university and local-authority museums have been involved in returns to indigenous communities in Africa, Australia and North America. In Europe, Germany and the Netherlands (with a well-resourced Colonial Collections Committee) have led the way.

Amid all the controversies, what is so rewarding, from a museum director's perspective, is the continuing power of the object itself. For all the hype around digital immersion, AI and Google glasses, people want to see real things for themselves, not on screens, and want to see looted artefacts sent back home. What we hope to show at V&A East Storehouse is that material culture has lost none of its allure. And we welcome the public challenges that come with putting all the hidden stuff on show. ●

Obituary
The rings of Saturn

For nearly all of 2025, one of the most distinctive features of the solar system will disappear

Ann Wroe Obituaries editor, *The Economist*

EVEN IN THE 21st century, odd astronomical events can be troubling. The eerie dimming of a lunar eclipse, or the strange, silent twilight of a solar one, can still send a shiver down the spine. Even when you know that the phenomenon is temporary and recurring, the vanishing of something familiar is still disconcerting. So it is with Saturn's rings.

For almost all of 2025, from March to November, the giant planet's distinctive rings will disappear. The reason is simple. The rings, which range in thickness from a few tens of metres to a few hundred, form a giant structure 282,000km wide—more than twice the width of the planet itself. They are made of ice and rock fragments that vary in size from boulders to grains of sand. As Saturn makes each 29-year voyage around the Sun, its tilt means the rings are illuminated from above for roughly half that time, and then from below for the other half. But at two points in between, its rings are exactly side-on to the Sun—and seem, to observers far away, to disappear.

Galileo Galilei, the first person to study Saturn through a telescope, was the first to see this. It shocked him profoundly. When he initially turned his instrument on Saturn, in July 1610, he concluded that the strange "ears" or "handles" on either side of the central orb were two separate bodies. Galileo assumed that the parts of this "composite of three" never moved nor changed; he had "no doubt as to its constancy". The planet still had this "triform" shape in June 1612. But by the end of that year the "handles" had vanished. In a letter to a fellow star-gazer, he asked: "Has Saturn devoured his own sons?"

Galileo had touched precisely on why this vanishing mattered. Saturn was named after Saturnus, the Roman god of farming, who with his sickle taught human beings when to sow and when to reap: the inevitable cycle of birth, growth and death. Saturnus was the Roman version of the Greek god Cronos, a Titan who, fearing his own overthrow, devoured all the children born to him. Saturn was thus the planet of order and the progression of time, but also carried overtones of horror: the benign ruler who was also, in Francisco Goya's

imagination, an aged, goggle-eyed monster gorging himself on filial flesh.

Saturn has always had this double character. The Roman festival of Saturnalia in December celebrated both the bringer of peace and fruitfulness, synonymous with feasts and dancing, and the Lord of Misrule, who upended the social hierarchy. At Saturnalia masters waited on servants, and servants gave masters orders, a reversal that many Romans found seriously disturbing. Saturn was both order and confusion.

Something of this dichotomy comes through in Gustav Holst's "The Planets" of 1926, where Saturn's slow, deliberate march, the plod of a clock, builds into a terror of trombones. This movement, Holst's favourite, is subtitled "The Bringer of Old Age". Of course, it must be so. Physical bodies inevitably fall to decay and die. Those heavy chords, based on bells Holst heard being rung at Durham Cathedral by two old men in black robes, are death coming. The quieter ending implies a possible acceptance.

Acceptance, though, is hard in the West in the modern age. Youthfulness is worshipped, old age held at bay. A thousand products promise to keep the body undamaged, while scientists and doctors strive to extend life. Saturn's heavy tread is not welcome.

There are other reasons, too, to fear it. In the 1650s astronomers discovered that Galileo's "handles" were actually flat rings. They turned out to be made of icy shards, pieces of moons, asteroids and comets, torn apart by Saturn's forceful gravity. They are, to paraphrase W.G. Sebald, the detritus of vanished worlds; Saturn is "ever the domain of melancholy", and of the lost, irrevocable past.

Accordingly, Sebald's "The Rings of Saturn" (1995) is one of the saddest books ever written. It is the tale of a journey round the Suffolk coast, past "fields of rubble", "traces of destruction", the remains of windmills and the carcasses of abandoned boats; through "disheartening" Lowestoft and the tiny railway halt at Somerleyton Hall, which is "nothing any more". Digressions emphasise the human condition as a vast necropolis obsessed with death. "The history of the whole world", Sebald writes, "...leads without fail down into the dark."

Yet this is also a book that, notably, does not progress in anything like a straight line. No arrow of time links past, present and future in the old Newtonian way; it is a series of random encounters, memories and mysteries. And this, according to Carlo Rovelli, an Italian physicist, is how, in the quantum era, humans must imagine time. In "The Order of Time" (2017), he writes that there is no structure to it except what individuals experience for themselves. There is no commanding order, no sickle-god, no Holstian heavy tread. It is replaced by a vast "network of events" and "dances made to different rhythms". We ourselves, with our confusions and distractions, are time.

As Saturn's rings vanish during 2025, so too does the constancy Galileo thought he observed in the strangest member of the Sun's family of planets. Cronos, the monstrous son-devourer, has indeed been overthrown. To cite Heraclitus's words from an age aeons before telescopes, the only constant in existence remains perpetual change. It must be embraced. ●

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Europe

The German economy

Beyond repair?

BERLIN AND HANOVER

As elections loom, Germany's business model seems to be terminally broken

THE FINANCE ministry of the southern German state of Baden-Württemberg, home to giants like Bosch, Mercedes and ZF Friedrichshafen, is not a bad spot from which to probe Germany's anxieties. The country is gripped by fears of deindustrialisation as it heads into an election that seems certain to throw its chancellor, Olaf Scholz, out of his job if his party does not dump him first. That ministry's occupant, Danyal Bayaz, frets that Germany has squandered the "globalisation dividend" of the past 15 years, underfunding the public realm in an era of low interest rates. Now, facing an energy squeeze, growing competition from China and the prospect of Donald Trump's America slapping 10-20% tariffs on imports, the country's business model, fears the minister, is "collapsing".

Mr Bayaz laments Germany's inability to get to grips with new tech, despite its strengths in basic research and engineering. He notes that Germany's last successful big startup was SAP, a software firm, founded just as an intensely sideburned Franz Beckenbauer led the West German football team to victory in the 1972 European championships. Germany has over 60 times as many people as Estonia, but only 15 times as many "unicorns" (privately owned startups worth over $1bn).

It is a familiar litany. German industry, especially its small and medium-sized *Mittelstand* firms, has focused on incremental innovation, leaving it unprepared for technological shocks like the advent of electric vehicles. Cosy links between business, banks and politicians bred complacency and resistance to reform. Dogmatic adherence to fiscal rules led to rusting bridges, decaying schools and delayed trains. Growth in foreign markets fattened Deutschland AG's profits (and treasury revenues) for a while, but that export-led model left Germany exposed when the winds of globalisation turned chill.

Now Germany, which last year replaced Japan as the world's third-largest economy, is reaping the harvest. It is difficult to discern any net growth in real GDP since before the pandemic. Forecasts are little better, and do not account for the risks of a Trumpian trade war. Volkswagen, Europe's biggest carmaker, is mooting the first factory closures in its 87-year history; up to 30,000 jobs could be lost. Unemployment is ticking up, albeit from a low base.

High energy prices, especially after Germany had to divest from Russian gas following Vladimir Putin's invasion of Ukraine in 2022, are a common grumble among firms in a country where manufacturing still accounts for 20% of gross value added. That remains almost twice the figure for France, even though industrial production peaked in 2018 and has since sagged more quickly than elsewhere in the EU (see chart 1), especially in energy-inten- ▸▸

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sive sectors such as steelmaking. Order books are down, and planned investments have been postponed or shifted abroad. The CEO of Thyssenkrupp, a lossmaking steelmaker, has said Germany is "in the midst of deindustrialisation". Even retailers have been hit. After Russia's invasion Raoul Rossmann, who runs a pharmacy chain headquartered near Hanover that bears his family name, toured its branches to work out how to save on energy bills.

Other laments include a lack of skilled workers as Germany ages, and layers of red tape, much of it emanating from Brussels, that the Ifo Institute in Munich reckons cost the economy €146bn ($154bn) a year. One crucial development, according to Sander Tordoir of the Centre for European Reform (CER), a think-tank, is the changing relationship with China. In the 2000s and 2010s Germany was perfectly placed to satisfy Chinese appetites for its cars, chemicals and precision-engineered widgets: goods exports to China rose by 34% between 2015 and 2020, even as those to other countries fell. As recently as 2020 China was a net importer of cars, but last year it became the world's largest exporter. Chinese firms are morphing from customers to competitors, coming to eat the lunch not only of the German auto industry but also of the *Mittelstand*. "The car story is emblematic, but it's also about machines and chemicals," says Mr Tordoir.

As Clemens Fuest of Ifo notes, China now accounts for just 6% of total German exports, around the same share as the neighbouring Netherlands. But the China story is not just about export dependence. In a forthcoming paper for the CER, Mr Tordoir and Brad Setser, an economist at the Council on Foreign Relations, an American think-tank, describe how the "second China shock" could worsen Germany's industrial woes. China's domestic market cannot soak up the excess production of its state-subsidised manufacturers, and as they seek customers abroad the country's trade surplus has exploded. This presents difficulties for German firms at home and in markets abroad. "China's state-directed markets could provide irrational levels of financing for Chinese investment in new capacity for longer than swathes of German manufacturing can remain solvent," write the pair.

As German exports to China have declined, America has partly stepped into the breach (see chart 2). Some firms have been able to exploit opportunities opened by America's decoupling from Chinese tech; others have grown fat on the subsidy bonanza triggered by the Inflation Reduction Act. But Mr Trump threatens all that. Not only do tariffs loom—the Bundesbank thinks they could lop a percentage point off German GDP—but new American restrictions could hit German manufacturers

that use Chinese inputs. They will also accelerate Chinese exporters' hunt for alternative markets, including Europe.

German industry is split on China, notes a diplomat: although many *Mittelstand* companies, especially machinery firms, back the policy of "de-risking", carmakers and conglomerates like BASF are doubling down. Volkswagen and BMW are planning big new investments in Chinese production, as are car-parts firms like Continental. Lobbying by the car sector helped ensure Germany was one of only five countries to vote against EU tariffs on Chinese EV imports in October. Inside Germany's government there are tensions between diplomats and spooks, who want to punish China with trade restrictions for propping up Russia's military effort, and industry-minded types who fear that is a measure low-growth Germany cannot afford.

Ending the fetish

The deindustrialisation story can be more complicated than it looks. Losing manufacturing jobs cuts into Germany's already sagging productivity. But gross value added in manufacturing has remained stable even as production has slumped. Some German manufacturers, in other words, may be making more valuable stuff while selling less of it. This "quality over quantity", as Deutsche Bank puts it, suggests a future for German firms in high-end tech, including fancy cars. Germany retains an edge in green technology, including wind turbines and electrolysers.

But this can hardly compensate for losses elsewhere. Germany must get over its "industry fetish", reckons Moritz Schularick of the Kiel Institute for the World Economy. Energy-intensive industries have not grown for two decades. The car sector has been shedding jobs for six years, and a reversal seems unlikely. "For years they had this belief that 'We are the best', and suddenly it's over," says an EU official.

Deep structural forces are driving changes to Germany's industrial model. Convincing Germans that there is an alternative to being an *Exportweltmeister* is the work of years, not months. Even compensating for declining trade elsewhere is a marathon: despite Germany's best efforts the EU's free-trade negotiations with Mercosur, a big South American trading bloc, have dragged on for 25 years. (France, among others, remains opposed.)

For some, a handier tool for juicing the economy would be to reform another piece of the German model that no longer seems fit for purpose: the debt brake, a peculiarity of the constitution that limits the federal government's annual structural budget deficit to 0.35% of output. The debt brake is an artefact of a bygone age, says Max Krahé of Dezernat Zukunft, a Berlin-based research outfit, when Germany relied on other countries running deficits to stoke its economy. In a world where globalisation has stalled, that model no longer works.

Meanwhile Germany's public-investment requirements—one widely cited estimate puts them at €600bn over ten years—have become too big to ignore. Moreover, fresh funds will have to be found for defence. This year Germany at last reached the NATO target of 2% of GDP, but only thanks to a special fund that will soon expire. Even more is likely to be needed to appease the new Trump administration.

For these reasons, there is a growing sense that the next coalition, probably led by Friedrich Merz, leader of the centre-right Christian Democrats, will be open to a modest reform of the debt brake. (Germany will hold an election in February, following the collapse of the three-party coalition this month.) If so, says Mr Tordoir, an investment boom could help compensate for export losses in the short term; done well, investments in education, where Germany lags its peers, and infrastructure could lift Germany's long-term growth rate. There are plenty of ideas for reform around, including raising the permitted deficit (or replacing it with broader guidelines), exempting public investment from borrowing limits, or establishing off-books funds for infrastructure or defence.

Yet as changes to the constitution, all these would require a two-thirds majority in both houses of parliament. And there is every chance that spoiler parties on the extremes might command a one-third blocking minority in the Bundestag after the next election. The governing Social Democrats have therefore asked Mr Merz to consider lending his support to reform now, as that would give pro-reform parties the numbers they need. He has so far refused.

Thorsten Benner, who runs Berlin's Global Public Policy Institute, says Germany has swung from the "facile optimism" of the Angela Merkel years to a "gloom trap" in which dysfunctional politics, the constraints of the debt brake, overbureaucratisation and public distrust reinforce one another. He hopes the next government can act as a "circuit-breaker".

That does not seem implausible. So despondent has the mood become that, in contrast even to six months ago, there is a growing sense that deep-seated change is unavoidable. That will form the backdrop to the next coalition agreement, which may see a "grand bargain" in which Mr Merz accepts debt-brake tweaks if his partners agree to tax cuts or welfare reform. But there would be a grim irony to parliamentary arithmetic thwarting change just as the stars align for it. ■

Training Ukrainians in France

Secret army

SOMEWHERE IN EASTERN FRANCE

A new Ukrainian force is being marshalled to take on the Kremlin's men

Ready for the real thing

THREE UKRAINIAN soldiers, clutching Soviet-made AKM assault rifles, creep stealthily along zig-zagging trenches. In the distance, enemy soldiers are moving in the woods. Gunfire crackles across the plain. Plumes of smoke rise into the cold air. Tiny drones hover overhead. It is an all-too familiar scene from a war that drags on along Europe's eastern fringe. Except that this simulation is taking place at an undisclosed site in eastern France, where the French army is playing the enemy and training over 2,000 Ukrainian soldiers to form the backbone of a combined-arms brigade ready for deployment at the front.

It was during a visit to Paris in June by Ukraine's president, Volodymyr Zelensky, that his French counterpart, Emmanuel Macron, announced the idea. In September the French air force flew in the Ukrainian soldiers. Since then they have been training on French kit, including Caesar howitzers and Milan anti-tank guided-missile systems, as well as taking part in battalion-level military exercises in the field. The men are aged between 25 and 45; 90% of them are freshly drafted. At the French barracks, where cooks offer menus that alternate between Ukrainian (cabbage and sausages) and local (croissants at breakfast), off-duty soldiers in combat fatigues hang around, lifting gym weights or smoking outside.

The training programme, says its director, Colonel Guillaume (the French army does not disclose family names), represents a "major shift" from those already in place elsewhere. As part of the European Union's training mission, it was "co-constructed" with Ukrainian instructors, who are also on-site to supervise the new recruits along with 1,400 French soldiers. At nine weeks of hands-on training, it is longer than the standard five-week programme used by the British army in East Anglia under Operation Interflex, which has already trained 45,000 Ukrainians.

The novelty is the decision by a European force to train, deliver and equip a brigade. (Before last year's Ukrainian counter-offensive, America led a similar effort in Germany.) It will be joined by 1,500 soldiers already trained in Ukraine. "Anne of Kyiv", as the new brigade is known, will be made up of two command posts, three infantry battalions and full logistical support units. The brigade will get armoured vehicles, Caesar howitzers, short-range air-defence systems, anti-tank missile launchers and other kit, which the Ukrainians will know how to use and maintain. French Mirage 2000 fighter jets, which are being adapted to carry French SCALP cruise missiles, will arrive in Ukraine in the new year.

The latest training scheme, suggests Sébastien Lecornu, the defence minister, could help secure more of a tactical return on the battlefield. In a report published in July by the Royal United Services Institute, a British think-tank, Jack Watling and co-authors point to the Ukrainians' unfamiliarity with donated equipment and to the lack of collective training as two shortcomings that help explain the failings of counter-offensive operations in 2022 and 2023.

The French have had to adapt the scheme to the changing situation on the front, says Colonel Philippe, who is in charge of the final exercise. The French had to dig wider trenches to match those the Ukrainians use. The visitors asked for more time with drones. Also at the Ukrainians' request, the focus of the final exercise is on defence. Troops have been out since the night before, with French planes and helicopters flying overhead, to test resistance to fatigue and stress. Grenades are used to simulate air strikes. French military trainers insist that, despite Mr Zelensky's troubles with conscription, these trainees—with an average age of 38—are motivated. "They learn twice as fast as our own new recruits," says one instructor.

For all its merits, this effort may come too late. In recent months Ukraine has lost territory to Russia at multiple points. Its forces are stretched. It is struggling to mobilise fresh conscripts. In September Mr Zelensky said he needed 14 new brigades, suggesting not even four were yet equipped, despite allied pledges. The election of Donald Trump has shifted the diplomatic mood. Mr Macron may now have become one of Europe's most outspoken hawks. "Nothing should be decided about Ukraine without the Ukrainians, nor in Europe without Europeans," he declared on November 12th. But he and his fellow Europeans worry that in practice they will get little say over what happens next. Helping Ukrainians gain whatever tactical advantage they can in order to strengthen their negotiating hand may be the best they can hope for. ■

Arming Ukraine

Attack 'em

Ukraine can, at last, use its Western missiles inside Russia

THE NAME of the weapon, designed in the late 1980s, was both an acronym—Army Tactical Missile System (ATACMS)—and, when said aloud, an exhortation—"attack 'ems". But Ukraine could not, in fact, attack 'em—at least not inside Russia, not until November 17th, when it became clear that Joe Biden, America's president, had changed course and given Ukraine permission to fire the longer-range missiles onto Russian soil. The decision will not dramatically change Ukraine's flagging fortunes on the front lines, though it will boost morale and strengthen the country's hand ahead of negotiations likely to be pursued by Donald Trump after January 20th. Until then, a tumultuous two months lie ahead.

America first gave Ukraine HIMARS rocket launchers in the summer of 2022, though equipped only with shorter-range rockets. In late 2023, after over a year of debate, it relented and provided the 300km-range ATACMS. Ukraine used them to devastating effect in Russian-occupied territory, including Crimea. It destroyed nine helicopters in two strikes that October, but it was denied permission to fire them over the border into Russia against the airfields, ammunition depots and command posts that were being used against it.

Mr Biden imposed that restraint for three reasons. One was the Pentagon's argument that it had limited stocks of ATACMS and that these were needed for war plans in other parts of the world. The second was that their military effect would, supposedly, be limited. In September the Pentagon said that 90% of Russian jets launching glide bombs at Ukrainian positions had already moved east, out of range of ATACMS. The third was the risk of escalation. Ukraine has frequently used its own drones and missiles to strike inside Russia—one attack at Toropets in September took out several month's-worth of ammunition—but ATACMS strikes typically require American assistance with intelligence and targeting. Vladimir Putin, Russia's president, has said that the use of Western missiles in Russia would constitute "direct involvement" in the war.

Ukraine and its backers bat these arguments away. They say there are more than enough ATACMS in America's inventory—more than 1,000, by some estimates—and they are being gradually replaced with newer and longer-range missiles. Russian jets may be out of range, but other targets abound. Besides logistics hubs and the like, they could include helicopters and attack aircraft providing close-air support to troops. Escalation concerns are also overdone, they argue. After all, Mr Putin considers Crimea to be an inalienable part of Russia and yet did nothing in response to ATACMS strikes there. Likewise, he has failed to take any dramatic retaliatory steps in response to the West's steady intensification of arms supply, from small arms to missiles to tanks to fighter jets.

Payback time

Mr Biden's decision now leaves three big questions. One is the extent of his reversal. Initial reports suggested Ukrainian strikes would be confined to Kursk province, where North Korea is helping retake territory seized by Ukraine. But the first ATACMS strike appears to have hit an ammunition dump in the Bryansk region next door. That suggests Ukraine may have more latitude than is thought, though America is likely to be vetting every target.

The second question is whether the decision catalyses more action by America's allies. On November 20th Ukraine appears to have fired as many as a dozen British Storm Shadow cruise missiles into Kursk province, suggesting that Mr Biden had also reversed his earlier opposition to their use in Russia. France's identical SCALP missiles are likely to follow. All eyes are now on Olaf Scholz, Germany's chancellor, who will come under mounting pressure to send German Taurus missiles—a step he ruled out, again, a week ago.

The third and most consequential issue is how Mr Putin will choose to respond. America was throwing oil on the fire, said a spokesman for the Kremlin. "If such a decision has been taken, it means a whole new spiral of tension." On November 19th Russia published a revised nuclear doctrine which lowered the threshold for nuclear use. And on November 21st, Ukraine said that Russia had hit the city of Dnipro with a (conventionally-armed) intercontinental-range ballistic missile (ICBM). If true, that would be the first time such a missile has been used in combat anywhere; but the missile type has not yet been confirmed.

Actual nuclear use remains far-fetched. More likely is Russian action elsewhere. One concern is that Russia might provide advanced missiles to Houthi rebels in Yemen. Another is that Russian assets will intensify their campaign of sabotage inside Europe. That may already have occurred. On November 18th a pair of undersea data cables in the Baltic Sea were cut. Western security officials from several countries told *The Economist* they did not have hard evidence of sabotage. But Boris Pistorius, Germany's defence minister, offered a blunt assessment: "Nobody believes that these cables were cut accidentally."

Mr Biden may be hoping that Mr Putin will choose not to respond too aggressively, in order to keep open the prospect of cutting a deal with Mr Trump next year. The president-elect is said to have told Mr Putin in a phone call that he should not escalate the war. The Kremlin denies that the phone call took place. If the account is true, then both Mr Biden and Mr Trump will have had their answer in the skies above Ukraine in the early hours of November 17th: the largest air attacks since last year crippled Ukraine's power grid and killed a reported 18 people. ■

CHARLEMAGNE
The oldest scourge

A rise in antisemitism puts Europe's liberal values to the test

IN 1945, AS Europe smouldered and the moral reckoning of the Holocaust lay ahead, Karl Popper pondered the paradox of tolerance. An open society needs tolerance to thrive, the Austrian-born philosopher posited. But extending that intellectual courtesy to the prejudiced would result in the undermining of the very tolerance that made their intolerance possible in the first place. Popper concluded it was on balance better to nip the bigots in the bud early on and save everyone the kind of trouble his home continent (and Popper personally, given his Jewish heritage) had just been through. The history of post-war Europe, at first in the west and then in the former communist bloc, is one of polities striving to balance the right of allowing everyone to say what they please while preserving the liberal society Popper sought to bring to life.

A form of intolerance that should have seen its last in 1945 has made a discomfiting return. Antisemitism, never quite expunged from the continent but once banished beyond the political pale, is so rife in Europe now that 96% of Jews say they have experienced it in the past year. More than half say they fear for their safety; the same number have either emigrated or considered doing so in recent years. Physical attacks, while rare, are rife enough that three-quarters of Jews occasionally avoid wearing religious symbols in public. Even more worrying these statistics, compiled by the European Union for a report released in July, were based on data gathered before the terrorist attacks by Hamas in October 2023, and the brutal Israeli response. Every indicator has become worse since then. A dispiriting flow of antisemitic incidents reached an apogee in the wake of a football match involving a team from Tel Aviv playing in Amsterdam on November 7th, after which Israeli visitors—some of them behaving even more boorishly than is customary for football fans, including tearing down Palestinian flags and worse—were chased in the streets by mobs in what the city's mayor described as a "pogrom". Rabbi Menachem Margolin, chairman of the European Jewish Association, warned of Europe "going down the darkest path again".

The continent suffers from three sorts of antisemitism. The first is the kind of bigotry, soft or hard, that people in Popper's era might have recognised. It is the prejudice that puts the greedy Jew (preferably with a hooked nose) at the centre of all manner of conspiracy theories, from hoarding gold to controlling the media/banks/politics. An offshoot of ancestral intolerance, it became the preserve of the extreme right: think of Jean-Marie Le Pen, founder of the French party now known as the National Rally, describing the Nazi gas chambers as "a detail" of history. The resurgence of this type of prejudice has been fuelled by the advent of the internet, whose dark corners are the spiritual home of crackpots.

The second antisemitism is one that can be thought of as an unwelcome import through waves of migration. New arrivals to Europe in the past six decades or so often came from Muslim-majority countries. Some lacked the liberal cultural mores which most Europeans (debatably) believe themselves to exemplify, and justifiably felt no guilt for the Holocaust nor what preceded it. A sympathy for the Palestinian cause hardened attitudes to Jews in ways that sometimes resembled Mr Le Pen's tirades. Even as the migrants became the parents of European-born children, the bigotry all too often endured. In France, the EU country with both most Jews and Muslims, 55% of the latter think the former are too powerful in politics (a claim that can easily be dismissed as fanciful). Across Europe, perceptions of prejudice against Jews have risen most in places that have taken in lots of migrants in recent years, such as Germany, the Netherlands and Sweden.

Add to this a third antisemitism linked to some Europeans' anger at the Israeli government of the day, which shoots up in the wake of strife in the Middle East (ie, all too regularly). Protesting against the actions of Israel in Gaza is legitimate, everyone agrees, but also acts as a pretext for those who hold less acceptable views about Jews. Drawing the line between what is fair criticism and what is covert bigotry can be hard: Germany recently passed a resolution combating antisemitism that critics—including Jewish ones—say stymies legitimate discussion of any Israeli misdeeds.

Whose antisemitism is it anyway?

This confluence of hatred can lead hostility towards Jews to pop up in unexpected places. In France it is now the radical-left Unsubmissive France party that many think fits the antisemitic bill, given its full-throated backing of Palestinians has veered into bigotry (one party grandee called Hamas a "resistance movement"). Over half of French Jews say they might leave if its leader, Jean-Luc Mélenchon, came to power. That is nearly twice the number who might go if Marine Le Pen, daughter of Jean-Marie and now party figurehead, were to lead France. Like other hard-right leaders, such as Geert Wilders in the Netherlands and Viktor Orban in Hungary, she now ardently supports Jews and Israel: being on their side is a way of stigmatising the bigger Muslim minority. This hard-right embrace of Jews can lead to odd moments, such as Mr Orban cheering Israel while presenting George Soros, a liberal Jewish philanthropist, as an all-controlling bogeyman (hint, hint).

Bigotry against Jews holds a special place in Europe, given its history. But one lesson of Amsterdam is that antisemitism can itself be used to bludgeon another minority. Within days of the scenes there, its mayor, Femke Halsema, expressed anxiety that the violence, and the use of the word pogrom, were being weaponised by the hard right. The actions of a few Muslims, though vile, had been seized upon by the likes of Mr Wilders to stigmatise millions; a minister of Moroccan descent resigned, threatening a fragile coalition. Fighting prejudice is a moral duty, as Popper concluded. Doing it with more prejudice is no answer. ■

Britain

Assisted dying

The Victorian example

MELBOURNE

The closest analogue to Kim Leadbeater's bill can be found Down Under

MEMBERS OF PARLIAMENT in Britain usually have a party line to toe. But occasionally, on matters of conscience, they are given a "free vote" and the chance to exercise their judgment independently. On November 29th MPs must make up their minds on one of the most consequential issues of all: whether people in England and Wales have the right to an assisted death. That is the date of the second reading of a private member's bill put forward by Kim Leadbeater, a Labour backbencher, which would legalise assisted dying for terminally ill adults.

The public debate draws heavily on the experience of other countries, some of which passed assisted-dying laws decades ago. Yet comparisons can mislead as well as inform. Opponents of assisted dying frequently point to Canada to warn of the risk of a "slippery slope": the scope of the law there has widened over time and the number of people choosing to end their lives in this way has risen sharply. But Canada's law has been shaped by successive court cases, and had relatively expansive eligibility criteria from the outset.

When legislatures are in charge of the process and define eligibility narrowly, as is the case with the proposed bill in Britain, the picture is very different. Both the domestic courts in Britain and the European Court of Human Rights have indicated that assisted dying is a matter for a parliament or state to legislate, notes Stevie Martin of the University of Cambridge. Nineteen Anglophone jurisdictions have passed assisted-dying laws restricted to the terminally ill. None of these has broadened.

As MPs weigh up their votes, a much more instructive comparison than Canada lies in Australia, and in one state in particular: Victoria. Its assisted-dying law was the first passed Down Under, in 2017, and is almost a mirror image of Ms Leadbeater's. A terminally ill person there can be prescribed a lethal drug only after making multiple requests; if they have less than six months to live and are of sound mind; and if two independent doctors agree, pending approval by a senior civil servant. Mental illness cannot be grounds to apply. All these measures feature in Ms Leadbeater's bill (though the approver in England and Wales would be a High Court judge).

Victoria's experience offers MPs in Westminster three lessons in particular. The first concerns how Britain should have approached such contentious legislation. First, a parliamentary inquiry into end-of-life care built consensus for a change. Next the state government convened an advisory panel that consulted hundreds of experts and the public to work out the details. The resulting private member's bill, introduced by the health minister, finally passed after over 100 hours of debate. ▸▸

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Contrast that meticulous, government-backed approach with the process in Westminster. Ms Leadbeater had not thought much about the issue until she topped a private members' ballot in September. She has had to rely on the unpaid help of a former parliamentary drafter to write the bill. Although Sir Keir Starmer, the prime minister, supports the principle of assisted dying, his government is neutral (and the health secretary, Wes Streeting, is active in his opposition). The debate next week will last only five hours.

"The 29th of November is the start of the parliamentary process," says Ms Leadbeater. The government has pledged to allow proper time for scrutiny if the bill passes its second reading. But Rachel Maskell, a Labour MP and opponent of assisted dying, is right to argue that the process feels "rushed".

The second takeaway from Victoria's regime, after five-and-a-half years in operation, is that a law that looks an awful lot like Ms Leadbeater's bill can be implemented safely. The number of cases each year is rising but small: 0.84% of all deaths in Victoria in 2023-24 were assisted. Three-quarters of assisted deaths are cancer-related; the median patient age is 73.

The explicit coercion some fear seems not to have occurred. Dr Anna Negus, a doctor in Western Australia, has assisted around 80 deaths there; she has never seen a hint of coercion. "To the contrary," she says: "Families often try to talk their loved ones out of it." It is reasonable to worry that some people might choose an assisted death because they fear being a burden. But some seem to find reassurance in having the option: a fifth of those who are given the medication in Victoria never take it.

Victoria collects feedback from families after a death. With over 500 responses, it is the largest survey of its kind in the world. "The most common word in the narratives is 'peaceful'," says Professor Michael Dooley, who heads the statewide pharmacy service for assisted dying.

There is no evidence that uptake is higher in areas where access to palliative care is patchier (see next story). Four-fifths of those who take advantage of the law are receiving palliative care, funding for which has increased every year, notes Euan Wallace, the most senior civil servant in Victoria's health department and the official who approves the requests.

One thing is especially striking: how uncontroversial the law now is. When the law first passed, "I had clinicians pushing a finger in my chest telling me I'm a monster", says David Speakman, who was then chief medical officer of Peter MacCallum Cancer Centre. "That's no longer the case."

Not everyone is reconciled to the law. Robert Clark, a former lawmaker who opposed the assisted-dying bill, remains convinced that the safeguards are a "charade". For him, a civil-servant review amounts to little more than a "tick-box exercise". But Professor Wallace, the civil servant in question, rejects this characterisation of his role. He reads three to four applications a day, and requests more information if he is unsure whether they are compliant. He was initially uneasy about the law but changed his mind when he saw its impact on patients and their families. "It is a deep privilege to be involved," he says. "It's an amazing piece of human kindness."

Indeed, the third lesson from Victoria is that Ms Leadbeater's bill risks being not too lax, but too restrictive. It is telling that other Australian jurisdictions, all of which have since followed Victoria's lead, have included fewer safeguards, not more. In June, for example, the Australian Capital Territory passed a law for those with a terminal prognosis without specifying a timeframe for how long they had left to live.

There is little prospect that Victoria's law will liberalise soon, some small tweaks aside. A five-year review, which is also built into Ms Leadbeater's bill, can consider only its operation and not the legislation itself. "Sometimes I wish it hadn't passed," admits Jane Morris, who runs Dying With Dignity Victoria, a pro-assisted dying lobby group.

Yet the proposed regime in England and Wales would be even stricter than Victoria's. As part of the approvals process, doctors could be forced to appear in court. In contrast to Victoria, where a pharmacist leaves medication with the patient under lock and key, they would have to be present for the death. Under Ms Leadbeater's bill, to ensure that the wish to die is settled, patients must usually reflect on their decision for 21 days; the cooling-off period in Victoria is nine days. Far from being a slippery slope, the biggest risk with Ms Leadbeater's bill is that it is a straitjacket. ■

By invitation

Kim Leadbeater is one of a pair of MPs on opposing sides of the assisted-dying debate to lay out their positions in online essays published this week by *The Economist*. You can read her argument, and the case made by Danny Kruger, a Conservative MP who opposes the bill, at **economist.com/by-invitation**

Palliative care

False dilemma

One element of the assisted-dying debate is easily fixed

MISAPPREHENSIONS ABOUND about palliative care. That it happens in hospices when most are cared for at home. That it is about death when it is about improving quality of life. As a parliamentary vote on whether to allow assisted dying in England and Wales approaches, another misconception risks taking hold.

Wes Streeting, the health secretary, asserts that the state of palliative care "wouldn't give people a real choice" if assisted dying were to be legalised. In fact, this is something well within Mr Streeting's power to fix.

It is true that 100,000 Britons a year die needing palliative care but without being able to get it. Although Britain routinely tops international rankings for this kind of treatment, a service is not gold-standard if not everyone has access to it. Spiralling costs and stagnant statutory contributions mean that most hospice funding now comes from charitable donations; informal carers often pick up the pieces.

The hospice sector requires an immediate injection of cash to cover its deficits, estimated to be £50m-60m ($64m-76m) last year. It also needs a longer-term plan to make it sustainable. Around 660,000 Britons died in 2023; that number is forecast to rise to almost 800,000 by 2040. The best solution is probably for the NHS to cover hospices' clinical-care costs, leaving extras like bereavement services to be funded by donations.

A sustainable new contract for adult hospice care (including wider community services and at-home care) would probably cost the NHS in England an extra £350m annually, reckons Toby Porter of Hospice UK, a charity. That is around 0.2% of its budget.

But, as Amanda Pritchard, the NHS's chief executive, has acknowledged, a third of all NHS hospital-bed days are accounted for by the 1% of Britons who are in their last year of life. Moving just 10% of their care into the community would suit patients and free up beds equivalent to the capacity of three large hospitals. Funding palliative care properly is morally right and financially wise, whichever way the vote in Parliament goes.

BAGEHOT

Assisted dying and the two concepts of liberty

Isaiah Berlin would recognise the debate unfolding in Britain over the right to die

SIR KEIR STARMER was born in 1962 in a Britain that was still cloaked in an austere, suppressive fug. The lord chamberlain censored plays. Abortion was outlawed, and divorce permitted only rarely beyond cases of adultery. Gay sex was a criminal act. This world was largely swept away before the future prime minister started secondary school. Individual liberties triumphed over collective moral prohibitions. My rights beat your qualms.

Assisted dying is, for its advocates, the next and last step of this liberal revolution. A private member's bill, brought before Parliament by Kim Leadbeater, a Labour MP, would give terminally ill patients in England and Wales a right to request their death. It will be debated in a second reading on November 29th but its chances of passing are unclear. On this issue Britain, once a pacesetter in liberalising legislation, is behind other Western countries. Why?

The problem does not lie with the public, which has consistently supported change since the early 1980s. Nor does the cause of assisted dying lack friends in high places: successive bills have been brought before Parliament since the first was debated in 1936. It remains unresolved because the debate on this issue is no longer a fight between the liberal idea of personal autonomy and a Christian idea of public morality. It has become a fight within liberalism, between two rival ideas of liberty.

Isaiah Berlin, a political theorist, would have recognised this battle. In 1958 he delivered a lecture entitled "Two Concepts of Liberty", which set out two big strands of philosophical thought on freedom. "Negative liberty", or "freedom from", was the ability of a person to do as they wished without interference from others. This was the realm of English thinkers such as Thomas Hobbes and John Stuart Mill. It means the right to property, religion and speech beyond the grasp of the state.

In contrast, "positive liberty", or "freedom to", said Berlin, was about "self-mastery" and the triumph of a person's "higher nature" over his low impulses and outside influence. It reflected a sense of a deeper autonomy: "a doer—deciding, not being decided for, self-directed and not acted upon by external nature". But, he went on, liberating people's true will would invariably mean the state placing constraints on what they could legally do for their own benefit—just as children are compelled to go to school, even if they do not grasp why. In other words, negative and positive liberty were in conflict. Jean-Jacques Rousseau, a Swiss liberal thinker, had said one could force people to be free. This, Berlin said, was the logic of paternalists, tyrants and Marxists.

Berlin's lecture can serve as a guide to today's debate. Ms Leadbeater and her supporters preach a negative liberty: picking the time and manner of your death is an essential question of freedom, choice and autonomy. Berlin argued that negative liberty requires privacy: "a frontier...drawn between the area of private life and that of public authority". Liberals of the 1960s wanted the government to get out of the bedroom; advocates of assisted dying want it out of the hospice.

Opponents of assisted dying cast their arguments in terms of autonomy and choice, too. Under Ms Leadbeater's regime, they argue, patients would inevitably feel under pressure, implicitly or overtly, to end their lives. For the frail and sick who fear themselves to be a burden, argues Danny Kruger, a Conservative MP, "the conversation" about an assisted death would not be an expansion of liberty but a mockery of it, robbing the dying of the freedom that comes with knowing their nearest and dearest are not conspiring to kill them. This argument is a version of Berlin's positive liberty: a constrained legal choice but greater real autonomy. For paternalists, the philosopher said, oppression was justified if it liberated the "'true', albeit submerged and inarticulate, self".

Post-war moralists approved of a strong state. Today's opponents of assisted dying have a libertarian suspicion of it. Given the long list of geriatric-care scandals, the argument runs, the National Health Service seems all too good at finishing people off already. The idea of meaningful choice, on which the concept of negative liberty rests, is hard to apply to a bureaucracy that struggles to provide people with decent dinner options.

Give me liberty and give me death

In this clash of two liberties, listen to what the assisted-dying debate is not. God loomed over the bill in 1936: Lord FitzAlan, a former lord lieutenant of Ireland, declared it an impertinent usurpation of the Almighty. God's presence was also felt the last time the Commons debated a bill on assisted dying, in 2015. ("Although some may believe that suffering is a grace-filled opportunity to participate in the passion of Jesus Christ, which is selfishly stolen away by euthanasia, I say 'Please count me out'," sighed Crispin Blunt, a Tory supporter of that bill.)

But society is becoming more secular at a striking pace, as is the House of Commons. Christian groups know that if they relied on appeals to Christian ethics, they would lose. There is less talk of the sanctity of life and the moral injury of suicide, more focus on notions of "safeguarding" and "informed consent".

For advocates, Ms Leadbeater's bill may turn out to be another missed opportunity. It has been hastily prepared. Sir Keir, despite his support for the cause, has decided to follow Harold Wilson, the Labour prime minister of his childhood, in being an aloof bystander rather than a participant. But the debate is inexorably shifting onto their preferred terrain. The argument has inched from moral prohibitions to policy design. It centres not on whether assisted dying is tolerable but whether the British state is able to implement it. This clash of two concepts of liberty explains why the debate has persisted for so long. But a battle fought on liberal terms is also one the liberalisers will, in the long run, surely win. ■

International

Higher education

Is your master's degree useless?

Second degrees are all the rage. But don't bank on a big pay-off

IN THE COMING months millions of people across the northern hemisphere will apply to do postgraduate study. Most will top up an undergraduate qualification with a one- or two-year master's degree in the hope that this will set them apart in a job market crowded with bachelor's degrees.

"The number-one reason people get these degrees is insecurity," reckons Bob Shireman of the Century Foundation, a left-leaning think-tank in New York. "The feeling that if they are going to get a job—or keep their job—they need a master's degree." Yet on average these provide a much smaller bump to wages than an undergraduate degree does. And a new body of data and analysis suggests that a shockingly high share of master's courses leave graduates worse off.

In America close to 40% of workers with a bachelor's also boast a postgraduate credential of some sort. In the decade to 2021 the number of postgraduate students there increased by 9% even as undergraduates fell by 15%. PhDs required by academics and long professional degrees of the sort needed by doctors and lawyers are becoming more popular. But master's courses still account for most of the growth.

They are an even bigger business for universities in Britain, which hand out four postgraduate degrees for every five undergraduate ones. This has much to do with a boom in master's students from places such as India and Nigeria. Britons have been getting in on the action, too. The number enrolling in taught master's courses has grown by about 60% over 15 years.

In part this has been driven by employers demanding higher qualifications as jobs in science and technology, in particular, grow more complex. But universities are also keen. In Britain, undergraduate fees are capped by the government and have barely increased in a decade. Enrolling more postgraduates—who may be charged whatever the market will bear—is one way to cope. America's university-age population will soon start declining. College presidents there hope that repeat customers can keep their institutions afloat.

Since 2000 the cost of postgraduate study in America has more than tripled in real terms, according to the Centre on Education and the Workforce at Georgetown University. The median borrower now acquires around $50,000 in debt while completing their second degree, up from $34,000 20 years earlier (in 2022 dollars). Almost half of the money America's government lends to students goes to postgraduates, even though they are only 17% of learners. In Britain domestic master's students paid about £9,500 ($13,000) a year in 2021, some 70% higher than in 2011 after accounting for inflation.

Students have put up with these fees in part because they assume that lofty credentials will usually increase their earnings. "Gaining a financial return is not the only reason to pursue education," acknowledges Beth Akers of the American Enterprise Institute, a right-leaning think-tank. But "for the vast majority of students...that is the ambition." At first glance they are making a reasonable bet. In America full-time workers with a bachelor's earn about 70% more than high-school graduates. And those who tack on a master's can expect an additional 18%. ▸▸

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Yet earnings vary enormously by subject and institution. Moreover, postgraduates are usually from richer families and got better grades as undergraduates than did their peers. They would tend to do well in life, regardless of additional credentials. Working out the real returns requires comparing the outcomes of this brainy cohort with those of similarly impressive people who decided against further study.

Seen through that lens, the average master's student will bank no more than $50,000 extra over their lifetime as a result of their qualification, reckons Preston Cooper, an analyst formerly of FREOPP, a think-tank in Austin, Texas, who also considered fees paid and potential earnings forgone while studying. Worse still, students enrolled on about 40% of America's master's courses will either make no extra money or incur a financial loss. That is a higher risk than for undergraduate courses, which Dr Cooper believes provide positive returns about 75% of the time.

Because American data remain somewhat patchy, reaching conclusions such as these still involves vast amounts of guesswork. Things are a bit clearer in Britain, where researchers who ask nicely may crunch a database linking the tax histories and educational achievements of millions of young adults. In 2019 analysts at the Institute for Fiscal Studies, a think-tank in London, concluded that one-fifth of undergraduates would be better off if they skipped university all together.

More recently the institute has investigated returns from master's courses—with even more striking results. It has found that by the age of 35, master's graduates earn no more than those with just a bachelor's (after accounting for their better-off backgrounds and higher previous attainment). That finding was "genuinely surprising" says Jack Britton, one of the study's authors. It also differed markedly from research that used less-granular data.

On both sides of the Atlantic, choice of subject is the single biggest factor determining whether a master's boosts earnings. In America returns are especially large in computer science and in engineering. They are slightly smaller in other science subjects, in part because an undergraduate degree in these already bumps up salaries by quite a lot. Teachers who bag graduate degrees in education tend to earn more, even if wages for the profession as a whole are fairly low, because many American school districts automatically raise the pay of those who have them.

More striking are the large negative returns in some subjects. British men who complete master's degrees in politics earn 10% less in their mid-30s than peers who do the same subject at undergraduate level only. For history the hit to earnings is around 20%; for English it is close to 30%

The wages of sloth 1

Britain, earnings returns* to master's degrees† compared with bachelor's degrees only, 2013-17, %

*At age 35, after adjusting for socio-economic background and prior academic achievement †Same subject in both degrees
Source: Institute for Fiscal Studies

(see chart 1). Many of the people on these courses are targeting careers that they know will be low-earning, but which they think they will enjoy, explains Dr Britton. But some drift into advanced study because they have not yet decided what profession to pursue. It should probably not be a surprise that these people tend to earn less in the medium term than peers who have rocketed straight from bachelor's courses into jobs.

Choice of institution matters, though in most cases less than is commonly assumed. In America costs range widely by university. But there is no strong connection between the price of a master's course and the amount its graduates go on to earn, according to Tomás Monarrez and Jordan Matsudaira from the US Department of Education (see chart 2). "Brand-name schools have realised that they can trade on their reputation to offer programmes that look very prestigious on paper," says Dr Cooper, "but which don't have outcomes that justify the hype."

Cheap and cheerful 2

United States, master's courses*, by median debt and earnings of their graduates†, $'000

*At private non-profit institutions †Who completed their courses in 2016-17 and took out federal loans ‡Three years after completion
Source: Department of Education

MBA courses are a notable exception: graduates from the most celebrated institutions make far more than everyone else. But in other walks of life, acquiring swanky networks while studying is not quite so crucial to success. The upshot is that splurging on an elite university is not nearly as clever as picking a well-priced course somewhere less fancy.

Women have a higher chance than men of getting a boost to earnings from doing a master's. The British study finds that these qualifications increase earnings for women in 14 out of 31 subject areas; for men that is true in only six of them. This seems surprising: men's hourly earnings are higher than women's and the gap widens further with education. But women with higher qualifications do better than women without them because they also tend to work longer hours, particularly when they become parents and are put under pressure to go part-time or stop working.

The poor returns from many master's degrees should worry applicants. But they also raise thorny questions for governments. In Europe and America politicians have been accused of inadvertently pushing up costs. In 2016 master's students in Britain became eligible for government-backed loans with generous repayment terms. America's federal government limits how much it will lend to undergraduates—but since 2006 has allowed postgraduates to borrow whatever their universities choose to charge. In both cases easy money has led to price inflation.

A related debate is whether governments ought to be more picky about which postgraduate courses they fund. In America credit is offered as freely to people studying "underwater basket-weaving" as to those who study law, says Dr Akers. In 2026 profit-making universities could be prevented from enrolling students who borrow federal money in courses that have saddled graduates with unmanageable debt, or which have not boosted their incomes. But the new rules will not be applied to public and non-profit universities, which enroll most students. These institutions will instead simply have to warn applicants about courses with poor returns.

Americans from both the right and left of politics agree that graduate education is "a bit out of control", says Mr Shireman. That could make it easier to make changes to, say, the postgraduate loan system. But it remains to be seen how the incoming administration will choose to handle these issues, says Dr Akers. The worry, she says, is that Donald Trump's team might "focus more on publicly shaming institutions that are bastions of progressivism, than on thoughtful reform". ■

THE TELEGRAM

The perils of appeasing Russia

Finland's cold-war past offers timely lessons for Ukraine's future

IN BARRACKS SQUARE in old Helsinki stands an unusual monument to a war. A towering sculpture of a soldier's winter snowsuit, its polished steel body is pierced with large round holes, as if still standing after a strafing by cannon fire. It is Finland's national memorial to the winter war of 1939-40. During that conflict, Finnish troops withstood a huge Soviet force for 105 days, inflicting heavy casualties on the invaders before succumbing to the Red Army's larger numbers. The Soviet Union imposed harsh terms, taking 10% of its neighbour's territory. Peace proved fragile, and Finland was soon swept up into the second world war, fighting with Nazi Germany against the Soviet Red Army from 1941 to 1944.

Unveiled in 2017, the memorial's message is more timely than ever. The winter war has new resonance for Finns. Their country has known 80 years of peace. It boasts one of Europe's most capable armies, backed by extensive military service for young men and large reserves. Yet even after ditching decades of neutrality to join NATO in April 2023, Finland remains haunted by Russia, its former imperial ruler and neighbour along a 1,340km shared border. "When Russia attacked Ukraine it was as if Finland's wars were happening yesterday," says a member of Finland's tight-knit establishment. Indeed, this old hand worries about younger Finns being "too bold" in denouncing Russia. Membership of the European Union and NATO is all very well. But Finland is a small country whose fate has often been decided by great powers, and Russia will always be there. "We know that the big guys can always agree things above our head. We can always be alone."

This is a moment for all Europe to ponder that memorial in a Helsinki square. For that battered but still-recognisable uniform—hollow and headless, with the sky visible through its many holes—presents an important question. What can a country afford to lose, and what must it preserve, and still be true to itself?

When the cold war divided Europe, Finland made many sacrifices to survive as an independent nation. To preserve its capitalist system and parliamentary democracy, it became a neutral buffer state between the West and the Soviet Union. Until 1956 the Soviet navy was allowed to lease a base on the Finnish coast, within artillery range of Helsinki. KGB officers meddled shamelessly in Finland's politics and society (though some Finnish officials and military officers quietly sent intelligence to the West, too). Bound by treaty to take Soviet security interests into account, the country's compromised form of sovereignty was dubbed "Finlandisation" by critics. Finnish defenders of close relations with the USSR described their mission as "co-operating without losing one's soul".

Today, Finlandisation is back, this time as a model for Ukraine's post-war relations with Russia. On a doomed peace mission to Moscow, days before Russia's invasion in 2022, France's president Emmanuel Macron called Finlandisation "one of the options on the table" for Ukraine. Mr Macron might not use the term now, for his line on Russian aggression has hardened greatly since then. But if the war ends soon, as America's president-elect Donald Trump insists it must, leaders in Kyiv can expect pressure from many quarters to make painful compromises. A loss of some territory will surely be one price of peace. Then will come a hard question: how to secure Ukraine's sovereignty in the future. Some Western governments may put their faith in deterrence of Russia, encouraging Ukraine to build a strong army and economy and to align its political system with European values. Other world leaders may push Ukraine to appease its neighbour by declaring itself neutral and accepting a place in Russia's sphere of influence.

In Helsinki foreign-policy thinkers have strong views on those seemingly opposite approaches to security, because cold-war Finland tried both at the same time. Finland maintained armed forces strong enough to make Soviet leaders recoil from the potential costs of trying to occupy the country formally. At the same time, it bought peace with many compromises, some of which look distinctly shabby in hindsight. In Helsinki today, the term Finlandisation is taken as a slur.

Realism but not fatalism

Circumstances imposed foreign-policy realism on Finland. The country's survival could not be taken for granted in the late 1940s. It focused on preserving the essential elements of its sovereignty, without provoking the superpower next door. But this was realism with a purpose, rather than defeatism. Finland turned its agrarian economy into an industrial powerhouse and worked hard to expand its trade with Nordic neighbours and the wider world. The country signed a free-trade pact with Europe in the 1970s, despite growling opposition from Moscow. The post-war history of Finland saw "a step-by-step inching of our way towards the West", says Hiski Haukkala, a former chief of staff to Finland's president and incoming director of the Finnish Institute of International Affairs. "If a Ukraine peace is predicated on allowing Russia to dictate the terms, that would not be the Finnish lesson," he adds. "That would be capitulation."

A plaque next to the winter-war memorial offers a strikingly geopolitical take on those long-ago horrors. It blames the conflict on Hitler's and Stalin's secret agreement in 1939 to push Finland into "the sphere of influence of the Soviet Union". The loss of over 25,000 Finnish lives is presented as an investment in a better tomorrow: a sacrifice to preserve Finland's "independence, freedom and potential to develop into the Nordic welfare state that it is known as today". Finland did not choose its geography. But—even in its darkest hour—it fought to choose its own fate. Literal Finlandisation would be a terrible model for Ukraine, turning it into a Russian satellite. But Finland's sense of itself as a nation, and its will to survive, is an example worth studying. ■

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Sculpture: Ruby Re-Usable/Diane Kurzyna

Business

Global business

How Chinese is Shein?

GUANGZHOU

For the fast-fashion giant, nationality has become a vexed question

TO WHICH COUNTRY does Shein belong? The online apparel giant, headquartered in Singapore, is expected to list its shares in London in the coming months. Earlier this year Donald Tang, its executive chairman, proclaimed it to be American, by virtue of its values and the fact that it makes most of its money there. Meanwhile, most of Shein's employees are in China, where the company was founded in 2012. All this might suggest Shein is multinational, beholden to no single country. Unfortunately, the matter is not so straightforward for a firm that straddles China and the West.

Shein is part of a new generation of innovative Chinese companies that has taken the rich world by storm. It now accounts for half of fast-fashion sales in America, and is expected to sell around $50bn-worth of cheap blouses, skirts and other clothing and accessories globally this year, up from roughly $32bn in 2023 (see chart on next page). That is about as much as H&M and Zara, the West's two biggest fast-fashion brands, combined. Temu, an overseas offshoot of Pinduoduo, a Chinese e-commerce company, has had similar success. Some 170m Americans use TikTok, a video-sharing app controlled by ByteDance, a Chinese tech firm. Chinese companies in industries from gaming to electric vehicles have also been expanding in Western markets.

Consumers in the West have lapped up these new offerings. The enthusiasm, however, has not been shared by their governments, which fear that Chinese firms will pilfer citizens' data or undermine national security. Last year America passed a law requiring ByteDance either to sell TikTok or leave the country (though its future is uncertain under Donald Trump, who has flip-flopped on the issue). American lawmakers are investigating Shein and Temu over allegations of forced labour in their supply chains (which the companies deny). And in September America's government said it planned to remove a trade rule that exempts imports worth less than $800 from customs duties, which would hurt the two firms. At the same time, Chinese officials have also grown suspicious of these globe-trotting companies, fearing that they will leak sensitive information to foreign adversaries or wriggle their way out of the Communist Party's grip.

In response, many Chinese multinationals are playing down their ties to the country. On November 14th BeiGene, a drugmaker whose name is a nod to China's capital city, said it would rebadge itself as BeOne Medicines. Hundreds of Chinese firms have, like Shein, moved their headquarters to Singapore. But Shein has gone ▸▸

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further than most in its efforts to redefine itself as a global, rather than a Chinese, company. It does not sell its wares in China (where it goes by the name Xiyin) and says that it increasingly resembles any other global firm that sources its products from the country. Yet its experience shows just how difficult it is for companies born in China to untether themselves from it.

Consider first Shein's operational footprint. About 10,000 of its 16,000-strong workforce were based in China at the end of last year, according to regulatory disclosures. Partly that is because Shein relies heavily on Chinese factories. The company's former headquarters in Guangzhou, still its biggest office globally with almost 5,000 staff, is focused mainly on logistics and managing relations with its suppliers. In a nearby area known as "Shein Village", tens of thousands of people work in factories making garments for the company (they are not directly employed by Shein). The office in Guangzhou is nondescript; there is no logo on the building identifying its main tenant. When your correspondent visited last month the only indication of Shein's presence was a large cake-shaped balloon inflated in the entryway to celebrate the company's 12th birthday.

Shein's base in China is about more than managing its supply chain, though. The company's ability to use data to develop algorithms that can accurately predict customer demand has been central to its success. The vast majority of that work still happens at home. It would be very difficult, says a consultant familiar with the company, to replace or relocate the people needed to maintain those operations.

In Nanjing, where the company was founded, executives work on its branding strategy. Shein still refers to the office there as its "global operations centre" in some documents. Two subsidiaries in Shanghai, which employed around 500 people between them at the end of last year, work on product design, digital marketing and managing relations with TikTok influencers who are paid to advertise for the company. What is more, Shein's footprint in the country is expanding. As of last month the firm was hiring for nearly 1,900 positions in 13 cities, including Shenzhen and Shanghai, where it is adding to a team that processes data and helps develop its algorithms.

A second illustration of the difficulty of Shein's position comes from its proposed overseas listing. Foreign initial public offerings (IPOs) by Chinese firms have plummeted in recent years as China's government has shown its disapproval, most visibly by forcing DiDi, a ride-hailing firm, to delist in America in 2022. Chinese businesses raised a record $53bn through foreign listings in 2014, according to LSEG, a financial-markets group. This year they have raised less than $5bn.

Shein may have hoped that, having forgone the domestic market, its IPO would attract less scrutiny from China. Firms with fewer than 1m online Chinese users do not need to submit to a review by the country's cybersecurity administration before listing their shares abroad. Shein has also been careful to keep a low profile in China. Xu Yangtian, its founder and chief executive, has eschewed media interviews; few photos exist online of the 40-year-old billionaire. The company's reluctance to shift work abroad may further reflect its wariness of incurring the government's displeasure. A person close to the business says that Chinese authorities keep tabs on what digital operations are done within the country and what is moved overseas.

Never gonna give you up

Despite all this, Shein has not been spared. The cybersecurity watchdog has launched a review of how the company manages data on its suppliers and logistics within China, according to the *Wall Street Journal*, and Shein has had to seek permission from China's government for its foreign flotation. The murky, unofficial process it must now go through highlights the "embedded political risks" that investors will have to consider when valuing the business, says Drew Bernstein of Marcum-Asia, an accounting firm.

Growing concern over those risks has contributed to the downward revisions to Shein's valuation over the past two years. A funding round in 2022 that included General Atlantic and Tiger Global, two American private-equity firms, valued Shein at around $100bn. Last year it was valued at just $66bn, and private share sales earlier this year are said to have put the figure at less than $50bn. Shein's base in China has helped it develop an innovative service that millions of shoppers around the world enjoy, with little care for its nationality. As long as both Washington and Beijing view it as Chinese, though, investors may have to do the same. ■

Fast fashion

Shein, revenue, $bn

Source: Coresight Research *Forecast

Nvidia

All's well that's Blackwell

SAN FRANCISCO

For Jensen Huang, there is no AI wall

When Sam Altman, boss of OpenAI, posted a gnomic tweet this month saying "There is no wall," his followers on X, a social-media site, had a blast. "Trump will build it," said one. "No paywall for ChatGPT?" quipped another. It has since morphed from an in-joke among nerds into a serious business matter.

The wall in question refers to the view that the forces underlying improvements in generative artificial intelligence (AI) over the past 15 years have reached a limit. Those forces are known as scaling laws. "There's a lot of debate: have we hit the wall with scaling laws?" Satya Nadella, Microsoft's boss, asked at his firm's annual conference on November 19th. A day later Jensen Huang, boss of Nvidia, the world's most valuable company, said no.

Scaling laws are not physical laws. Like Moore's law, the observation that processing performance for semiconductors doubles roughly every two years, they reflect the perception that AI performance in recent years has doubled every six months or so. The main reason for that progress has been the increase in the computing power that is used to train large language models (LLMs). No company's fortunes are more intertwined with scaling laws than Nvidia, whose graphics processing units (GPUs) provide almost all of that computational oomph.

On November 20th, during Nvidia's results presentation, Mr Huang defended scaling laws. He also told *The Economist* that the first task of Nvidia's newest class of GPUs, known as Blackwells, would be to train a new, more powerful generation of models. "It's so urgent for all these foundation-model-makers to race to the next level," he says.

The results for Nvidia's quarter ending in October reinforced the sense of upward momentum. Although the pace of growth has slowed somewhat, its revenue exceeded $35bn, up by a still-blistering 94%, year on year. And Nvidia projected another $37.5bn in revenues for this quarter, above Wall Street's expectations. It said the upward revision was partly because it expected demand for Blackwell GPUs to be higher than it had previously thought. Mr Huang predicted 100,000 Blackwells would be swiftly put to work training and running the next generation of LLMs.

Not everyone shares his optimism. Scaling-law sceptics note that OpenAI has ▸▸

not yet produced a new general-purpose model to replace GPT-4, which has underpinned ChatGPT since March 2023. They say Google's Gemini is underwhelming given the money it has spent on it.

But, as Mr Huang notes, scaling laws not only apply to the initial training of LLMs, but also to the use of the model, or inference, especially when complex reasoning tasks are involved. To explain why, he points to OpenAI's latest model, o1, which has stronger reasoning capabilities than GPT-4. It can do advanced maths and other complex tasks by taking a step-by-step approach that its maker calls "thinking". This enhanced inference process uses far more computing power than a typical ChatGPT response, Mr Huang says. "We know that we need more compute whatever the approach is," he says.

The more AI is adopted, the more important inference will become. Mr Huang says that Nvidia's previous generations of GPUs can be used for inference, but that Blackwells will make performance dozens of times better. Already at least half of Nvidia's infrastructure is used for inference.

Mr Huang clearly has an interest in portraying scaling in the best possible light. Some sceptics question how meaningful the advances in reasoning are. Although a handful of business models are being disrupted (see next story), many firms are struggling to adopt AI at scale, which could eventually weigh on demand for the technology. These are early days, though. Tech giants continue to spend big on GPUs, and Mr Huang points out that new technologies take time to digest. Nvidia's back is not against the wall yet. ■

AI and business

Death by LLM

The first casualties of generative AI offer lessons for other businesses

IN LESS THAN four years the share price of Chegg, an online education service, has dropped by 99%. A post-pandemic slump in digital learning is partly to blame for its tumble. A bigger problem for the company, though, is artificial intelligence (AI). Its customers are mostly students who want help answering their homework assignments, which often involves the virtual support of a human tutor. The rise of ChatGPT and its kind have created a free substitute for that service. On an earnings call on November 12th Nathan Schultz, Chegg's boss, admitted that "technology shifts have created headwinds". The same day the firm said that it would fire a fifth of its workforce.

Chegg is one of an emerging group of firms that have already been pummelled by ChatGPT-like generative AI. Two others stand out: Stack Exchange, which runs Stack Overflow, an online forum for software developers, and RWS, a translation service. These emerging AI victims offer clues as to when a business may be strengthened by the technology and when it will be upended.

For years Stack Overflow was the go-to place for developers to get help with tricky coding problems. Many are now turning to code-writing AI assistants instead, such as Microsoft's Github Copilot. Two-fifths of coders say they use such tools. According to Similarweb, a data provider, Stack Overflow's monthly internet traffic has fallen by half over the past two years. Last year the company went through two rounds of layoffs, firing about a third of its workforce in total. "Death by LLM," is how Elon Musk described the company's fate on X, the social media-site he owns, referring to the large language models that underpin generative AI.

Translation services have been hit by AI, too. In the six months to March RWS's revenue fell by 4%, year on year, while profits fell by 16%. Investors, fearful of AI's impact, have sent its share price down by 57% since the launch of ChatGPT in November 2022.

Last year the company held an event for investors where it sought to convince them that AI will benefit its business; few, it seems, were convinced. Other problems, such as the launch of a new EU-wide patent scheme which hurt RWS's patent-translation business, have not helped the firm. Earlier this year, Ian El-Mokadem, its boss, said he would resign in 2025.

Examining these AI victims suggests three lessons for businesses. The first is that the threat to incumbents from the technology is greater in industries where the potential damage done by AI hogwash (known as hallucinations) is low. Error-strewn code is a worry for developers, but problems are typically easy to spot before the software is deployed. Flawed translations can be easily corrected. If an AI tool makes up facts when writing an undergraduate's history essay, the ramifications are small (though perhaps less so for the student if they are caught using an AI tool). Errors when writing up a legal contract or a medical prescription, by contrast, are more costly. AI services will take longer to gain ground in industries that are more sensitive to made-up nonsense.

A second lesson is that businesses are most at risk when off-the-shelf AI can replicate what they do with little customisation. Tools like ChatGPT can already help with translating text, writing code or rattling off events from history. There is a long tail of things that, with further tailoring, an AI tool could potentially do, such as planning and booking holidays or finding and liaising with job candidates. But for now, travel agents and recruiters look safe.

A final lesson is that, if your company is squarely in the AI firing line, using the technology to develop an original product may help shield you. Chegg is working with Scale AI, a startup, to offer students machine-generated answers to questions that would have previously been written by humans. RWS has an AI-powered translation tool. Stack Overflow now helps users perform an advanced search of its website, among other things.

The problem is that these applications are rather uninspired. But consider Duolingo, a language-learning app. ChatGPT can imitate a half-decent French tutor and the cost to users of an AI-induced error is low. Nevertheless, shareholders are starting to think of Duolingo as an AI winner. In September it unveiled a video-chat feature that lets customers practise their language skills with an AI-generated character called Lily. On November 6th this sarcastic, purple-haired avatar joined the firm's earnings call and presented its results. Analysts and investors swooned; the firm's share price rose by 6% over the next few days. As AI upends more industries, clever innovation is the best way for would-be victims to escape their fate. ■

Private prisons

Hard line, hard cash

Donald Trump's victory has boosted shares in private prisons

As the dust settled on Donald Trump's election victory, what businesses did investors think would benefit most from his return to the presidency? Tesla? Big oil? Rustbelt manufacturers? No: two firms that lock people up. Shares in GEO Group and Core Civic, which own and run prisons, soared by two-thirds in the three days after the election, beating the rest of America's 1,500 most valuable firms.

Investors' reasoning may be cold, but it is clear: Mr Trump takes a hard line on criminal justice. He is expected to revoke Joe Biden's executive order phasing out the federal government's use of private prisons, having rescinded a similar edict by Barack Obama in his first term. Other votes from election day may also provide a boost. Californians approved a ballot measure increasing penalties for some thefts and drug crimes, including prison terms for sellers of certain drugs.

More important is Mr Trump's promise to secure America's borders by deporting a record number of illegal immigrants. Although privately run prisons hold less than one-tenth of the country's inmates, private owners and operators supply almost all the detention beds used by US Immigration and Customs Enforcement (ICE), the agency responsible for removing migrants. GEO and Core Civic already earn 43% and 30% of their revenue, respectively, providing detention centres, electronic monitoring and more to ICE.

Mr Trump's ambition implies much more business. Between them GEO and Core Civic have about 36,000 unused beds suitable for ICE (thanks in part to Mr Biden's order on prisons). That would almost double ICE's current funded capacity of 41,500. GEO's boss, Brian Evans, has estimated that contracts for 18,000 extra beds would reap his firm around $400m a year—a 15% rise in total revenue. Electronic monitoring, he added, could be scaled up too.

Investors, though, may be too optimistic about the divisive industry. Similar enthusiasm abounded after Mr Trump's first victory in 2016: Core Civic's shares rose by as much as 60% in the hours after the election. And before the pandemic, ICE did detain more people. But amid public distaste, especially at the separation of immigrant children from their families, social activists applied pressure. The value of GEO and CoreCivic sank after a string of banks ceased doing business with the industry.

Will this time be different? GEO and CoreCivic have worked to insulate themselves from squeamish investors, paying down debt and reducing their reliance on banks. The wave of socially activist investing has receded since Mr Trump's first term. Still, the private-prison industry could again come under fire. Mass deportations may prove harder to watch on the news than they were to vote for.

Indian business

Adani in crisis

MUMBAI

One of India's richest men faces bribery charges from America

For the second time in two years, the Adani Group, one of India's largest conglomerates, has been accused of criminal activity from the other side of the globe. The first barrage came from Hindenburg Research, a short-seller in New York which accused the group of fraud last year. The second came on November 20th, when federal prosecutors in New York filed a 54-page indictment against Gautam Adani, chairman of the group and one of India's richest men, along with his nephew, Sagar Adani, and six others. The prosecutors allege that "senior executives and directors" engaged in a scheme "to pay over $250m in bribes to Indian government officials, to lie to investors and banks to raise billions of dollars, and to obstruct justice," according to Lisa Miller, the deputy assistant attorney general for the case.

The indictment centres on the connection between the conglomerate's renewable-energy arm, referred to as the "Indian Energy Company", and the Solar Energy Corporation of India, a state-controlled business that was created to increase the use of renewables in India. The prosecutors allege that officials at Indian state-controlled electricity-distribution firms were promised more than $250m to enter into contracts with the Solar Energy Corporation of India under which power would be provided by the Adani company and its subsidiaries.

The indictment says that Mr Adani ▸▸

Under siege

himself met with the Indian government to "advance" the bribery scheme, and that the defendants had discussed the plot on messaging apps. The prosecutors also allege that Mr Adani and others misrepresented the company's anti-bribery practices to American investors and international financial institutions when it sought financing for the project in America, where the firm raised $3bn in funds through syndicated loans and private-bond offerings. A parallel civil lawsuit has been put forward by America's Securities and Exchange Commission.

The Adani Group has rejected the charges. "The allegations made by the US Department of Justice and the US Securities and Exchange Commission against directors of Adani Green are baseless and denied," it said on November 21st. It plans to pursue "all possible legal recourse".

As we published this, share prices for Adani Group companies had fallen by as much as 20%. Adani Green Energy also announced that it would suspend the planned issuance of a bond in America. Foreign financing will be hard to achieve for as long as the case continues.

The case sheds light on just how complex India's energy industry is. It involves a bewildering mix of national and local entities, both public and private, that control the generation, distribution and—importantly—purchasing of power. This often leads to stalled projects, litigation and unpaid bills.

The Adani company was pursuing a contract in which it would sell power to the Solar Energy Corporation and, through it, to the state power-distribution companies. The second part of that contract, however, was being stymied by the proposed price, according to the indictment, leading to the offers of bribes. The largest amount was allegedly to be paid to officials in Andhra Pradesh, a state in south-eastern India, but other states the indictment also says were involved include Odisha, Jammu & Kashmir, Tamil Nadu and Chhattisgarh.

Another striking point is where the case is being prosecuted from. The indictment relies on a detailed investigation into the nuances of India's power industry conducted from thousands of miles away. The prosecutorial office involved, the Eastern District of New York (Brooklyn), is across the river from the Manhattan-based Southern District, whose jurisdiction covers New York's investment banks, making it the usual source for big prosecutions tied to financial crimes.

Prosecuting the case is likely to take time. Whatever happens next, though, it could have a lasting impact on more than just the Adani Group. Businesses around the world may tread more carefully before they turn to America's financial markets for investment. ■

Flying

Spirit of the times

What a low-cost airline's bankruptcy says about America's aviation industry

BUDGET AIRLINES are rarely loved by passengers. Cutting costs to the bone and charging for every conceivable extra makes for cheap fares but often unpleasant journeys. Few will therefore have much sympathy for the tribulations of Spirit Airlines, perhaps America's most despised low-cost carrier (LCC), which filed for chapter 11 bankruptcy protection on November 18th. Yet its failure, which illustrates the parlous state of America's budget airlines, should worry travellers.

Spirit is the first big carrier in the country to go bust since American Airlines in 2011. Back then American blamed high fuel and labour costs, sagging demand and growing competition as LCCs expanded rapidly on domestic routes. Spirit, currently America's seventh-largest flyer by passenger traffic, can also blame pricey fuel and labour. But this time demand for flying is growing, and the competition is coming instead from legacy carriers.

Mayday

Spirit Airlines, net profit/loss, $m

Source: Bloomberg

A busy year for flying in America has not translated into profits for most budget airlines. Passenger numbers in North America are forecast to hit 2.2bn in 2024, a 7% increase on 2023, the year when flying regained its pre-pandemic altitude. Yet with the exception of Southwest, which now operates more like the legacy carriers it once sought to disrupt, America's other big budget airlines—Frontier, JetBlue and Allegiant—all made losses or the slimmest of profits in the third quarter.

Spirit has not turned an annual profit since 2019 (see chart). It has suffered alongside other LCCs from a glut of seats and a resulting slump in ticket prices; its average fare was down by 19% in the first half of the year, compared with a year earlier. Since then the LCCs have made swingeing cuts to capacity. Although analysts at Deutsche Bank expect overall domestic airline capacity in America to grow by 1.6% in the three months to December, compared with the previous year, capacity is projected to contract by 5.3% for LCCs.

The problem for Spirit and other LCCs has been a change of strategy by legacy airlines, which have been doing comparably well. Legacy carriers are filling up their planes by offering cheap fares of their own. They are also in a better position to cater to ▸▸

the shifting preferences of consumers who have tired of budget flying. More passengers are now willing to pay extra for a little pampering, such as a drink or two. Attempts by LCCs to offer more upmarket travel, such as introducing business fares and more lenient rules about luggage, seem to have had little impact so far.

Spirit's difficulties were compounded by the hefty debts it took on during the pandemic and a level of service frequently among the worst in the industry when it came to late flights and lost luggage. Its managers may also have been distracted by a failed effort to merge with Frontier Airlines, announced in early 2022. That deal was scuppered by a counter-offer from JetBlue, which then abandoned its courtship in March after a judge deemed that the deal was anti-competitive, given the overlap between the pair's routes.

Spirit hopes to emerge from bankruptcy early next year and will continue to operate while it restructures. Frontier has dismissed rumours that it will revisit the idea of a merger. Such a deal could have given the two budget carriers a fighting chance against America's ascendant legacy carriers. As Keith McMullan of Aviation Strategy, a consultancy, notes, a tie-up would have created a carrier with 75m passengers a year, nearing half the size of Ryanair, Europe's budget champion. An American LCC with such competitive heft would surely have been appreciated—even if not loved—by the travelling public. ■

BARTLEBY

How to behave in lifts

An onboarding guide to the etiquette of elevators

CONGRATULATIONS ON JOINING our internship programme. For most of you this is your first experience of the workplace, and with that in mind we have prepared a guide to office etiquette. Other chapters cover what to wear (more), when to use emojis (less) and when to speak in meetings (it depends).

The first chapter is on lifts. If this is your first job, you may have a vague idea that this is where people make elevator pitches. Wrong. However much time you spend in a lift, you will never hear anyone proposing ideas that will change the world or ignite their careers. Instead, you will be exposed to a mixture of disappointment, incompetence and awkwardness as you gradually make your way to your destination. As a way of understanding what it's like to be at work, in other words, it's an ideal place to start. Here are a few basic tips.

When people are waiting for a lift, someone will stand right in front of the doors, so close that their breath mists the metal. In the lift that is descending towards them, someone else will be standing as close as possible to their set of doors. When the doors open, these two individuals will be utterly shocked by the proximity of the other. They will then perform an elaborate little dance, like bowerbirds ducking and bobbing in search of a mate, before moving out of the way. You should always stand well back and let people out first.

When you enter a ground-floor lift on your own, there will be an agonisingly long wait for the doors to close. This wait will be prolonged enough that you will assume the lift is broken. Do not do anything. If you try to step out, the doors will start to close and you will curse and step back inside. When they finally start to shut again, someone unseen will put an arm into the gap, causing the doors to open once more. A body will eventually follow. This may well be repeated several times until you want to cry. If you are prone to stress, take the stairs or, if that is not feasible, listen to a meditation app.

When you are catching a lift back down, someone will come out of it on your floor while looking at their phone. They will eventually look up and realise that this is not where they were meant to get out. They will emit a small, high-pitched noise and scurry back into the lift. They will then describe what has just happened, even though you were there. "I thought that was the ground floor," they will say. When this happens you must laugh in a friendly way. It is an oddly disturbing experience for people to enter another company's territory without permission, a bit like being parachuted behind enemy lines in error.

Deciding whether to start a conversation in a lift depends on three factors: familiarity, fullness and floor. If you are in a lift with someone you don't know, it's very simple: say nothing, smile thinly and then look fixedly at the ceiling. If you must, say "Good morning", but nothing more. You cannot network or form friendships in a lift; you can only make strangers fear for their safety.

If you get in with someone you work with and know well, chat away. But if there are other people in there, tailor your behaviour to take account of who might be earwigging. Do not say "Isn't Keith amazingly short?" when Keith's friends might be in there with you. Or, buried deep among the crowd, Keith.

If you get in a lift with someone you know vaguely, you are in very tricky territory. A nod may suffice but you may have to speak to them. You must calibrate conversation to the length of the journey. If you have just two floors of ascent or descent together, do not ask for their views on the Geneva Convention. (Actually, no matter what the circumstances, don't ask for their views on the Geneva Convention.)

Whenever a crowd is entering a lift, the person who has to exit first must stand at the very back. No one knows why this rule exists but it is crucial. So if you are getting out on the second floor, make sure to squeeze right in.

Offices are tribal places, and so are lifts. Entering a crowded lift on the way down is the equivalent of going into a saloon in a Western. No one is pleased to see you; the air crackles with hostility. Do not take it personally: just get in and take up as little space as possible. By the time someone on the next floor tries to enter, you will be part of the in-group and can glare at them.

There are other rules. That mirror is not actually for getting dressed. Reaching across someone to press the buttons requires extreme care. But these will do for starters. Let's move on to tattoos.

SCHUMPETER

The great Dallas bull ride

Welcome to Utopia for the Trump-curious CEO

ASK ORDINARY Americans about Dallas and you are likely to elicit a few common responses. American-football fans will tell you that the Dallas Cowboys, once the country's most formidable team, have seen better days. Soap-opera junkies, at least those alive in the 1980s, may reminisce about the long-running series named after the north-Texas city. The few who paid attention in history class may recall that it is where Lee Harvey Oswald shot John F. Kennedy. You will probably not hear breathless comparisons to the world's industrial capitals.

Unless, that is, you are talking to captains of industry, especially those who are happy to see Donald Trump back in the White House. Dallas is their idea of heaven. Forget snooty New York, libertine Los Angeles or woke San Francisco. In America Inc's fever dreams, more cities turn Dallas-like in their pro-business temperament—and America as a whole transforms into a continent-size small-government Texas.

There is, therefore, no better place than Dallas to understand why many chief executives held their noses and voted for Mr Trump, despite his various shortcomings. And also why they did so regardless of the ideas he campaigned on, such as trade wars and mass deportations, that could hurt the city, and its home state, disproportionately.

Dallas may lack physical topography—pancakes have starker reliefs—but its commercial ascent in recent years has been about as breathtaking as it gets. Public companies collectively worth $1.5trn are based in the Dallas-Fort Worth (DFW) "metroplex", which encompasses Dallas's sister city 30 miles (48km) west and spills into the surrounding towns and prairies. That is double the amount from five years ago. And unlike Houston (an oil boom-town in south Texas) or Austin (which has the state capitol and a tech cluster), Dallas's big businesses are among the most diverse of any American city.

DFW's five most valuable listed firms make diggers (Caterpillar), manufacture chips (Texas Instruments), run telecoms networks (AT&T), offer brokerage services (Charles Schwab) and distribute drugs (McKesson). Three moved there in the past five years: Caterpillar from Illinois, Charles Schwab and McKesson from San Francisco. Toyota put its North American headquarters nearby in 2017. Goldman Sachs is increasing its local headcount from about 970 in 2016 to a planned 5,000, behind only New York, at a new campus it is building uptown. "It's fun living in a growing city," says Aasem Khalil, who runs the bank's office there.

In contrast to Tesla and Oracle, two Californian tech giants whose right-leaning founders relocated them to Austin in part to troll progressives, corporate newcomers to DFW are driven by pragmatic considerations. Some of these are Texan more broadly. The state levies no tax on corporate profits or personal income (which amounts to a 5-10% pay rise for Californians or New Yorkers earning over $70,000 a year). It hates red tape and has a can-do attitude to building things. Roads, pipes and cables are typically in place before new homes arise from the featureless prairie. Oncor, the state's biggest grid operator, is investing $27bn over the next five years to that effect. "When a six-lane highway gets congested, we put in a seventh lane," points out a local honcho.

Other attractions are DFW-specific. These include a handful of excellent universities, a vast freight hub and the world's third-busiest airport, with direct routes just about anywhere in America in under four hours and as far afield as Sydney, Shanghai and São Paulo. By next year Dallas may have its own stock exchange, with lower fees and fewer rules than in New York.

The city boasts an enviable standard of living. Scorching summers are a small price to pay when a typical house costs a fifth less than in Austin and half as much as in San Francisco. "You don't need to know some secret handshake to get your kid into a private school," gushes a banker. Co-workers raise eyebrows when you do not go to your child's 2 o'clock school play, marvels another.

Best of all, enthuses a venture capitalist, Dallas is "unabashedly American" in its embrace of meritocracy and free enterprise. "If you are successful, any prejudice melts away," agrees a CEO. The result is a virtuous circle. Business begets growth, growth brings people, people draw restaurants, culture and buzz—in the past week or so Dallas got its first Michelin star and a satellite town hosted a Netflix-sponsored boxing match between Mike Tyson, a 58-year-old former heavyweight champion, and Jake Paul, a YouTuber half his age. This attracts more businesses, and so on.

The consensus view among corporate chiefs is that this process was sped up by the leftie lunacy of coastal cities, which kept schools shut and faces masked for too long during the covid-19 pandemic. They are equally unanimous in their belief that Mr Trump and his Republican Party, which controls all levers of power in both Washington and Austin, will not be so stupid as to derail it with their own right-wing madness.

Don't mess with Texas. Please!

Dallas business elites acknowledge that, at the state level, anti-abortion and pro-gun laws could scarcely get nuttier. But so far these have not scared away their liberal employees. Deporting millions of migrants? Impossible to pull off. And the chaos at the border really does need to be stopped, even if the resulting labour shortages cost Texas half a percentage point of output in the short run. Although Mr Trump's idea of slapping a 10-20% tariff on all foreign goods would hurt a state which imported $383bn-worth of them last year, second only to California, it is seen by many bosses as little more than a threat to be used in negotiations. "The fly is circling the ointment," acknowledges a financier. The belief in Dallas is that it will never land. ■

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- Building Southern Europe's largest 2G biofuels complex.
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Since 2022, Moeve has sold approximately 70% of its oil production assets. Biofuels complex where facilities already in operation will include a new plant being built by Moeve and its partners with a €1.2billion investment. Objective to produce green hydrogen with a capacity of 2,000MW by 2030, as the largest project presented in Europe to date.
More than 160 ultra-fast chargers currently connected and the objective of installing 400 by 2024.
*According to Moeve's internal taxonomy for classifying its sustainable activities.

Finance & economics

American government

A memo to DOGE

WASHINGTON, DC

How to make Elon Musk's budget-slashing dreams come true

ELON MUSK and Vivek Ramaswamy plan to whip the American state into shape. On November 14th their newly created Department of Government Efficiency (DOGE) announced that it wants to hire "super-high-IQ small-government revolutionaries" to work on cost-cutting. It is easy to ridicule the enterprise. Mr Musk has talked of ripping $2trn from the federal budget, an amount that, if done in a year, would exceed the government's entire discretionary spending. His focus on deregulation, job cuts and fraud is unlikely to provide the requisite savings. Donald Trump has given DOGE less than two years. The entity is an advisory body. And its name is inspired by a joke cryptocurrency.

But it would be a mistake to make light of DOGE's mission, because it does get at two essential truths. First, America's fiscal trajectory is unsustainable. The national debt is approaching 100% of GDP, up from 35% in 2007. With the federal deficit running at 6% of GDP—a level once associated with wars and economic downturns—debts are bound to climb higher still, raising the risk of a crisis. Second, the situation is not actually hopeless. There are plenty of ways that American officials can, in theory, put the country on a sounder fiscal footing, even if getting budget cuts through Congress is another matter.

None of the small-government revolutionaries at *The Economist* has applied for a job at DOGE, as far as we know. We do, though, have a few suggestions. One point is that time matters. Whereas cutting $2trn in a year is absurd—it would leave public offices incapable of performing basic functions, and most likely involve slashing the defence budget—achieving those sorts of savings over the course of a decade is eminently doable. Moreover, DOGE would not be starting from scratch. There are already plenty of well-researched blueprints for sorting out America's finances. It is useful to break them into four categories: conventional spending cuts; tweaks to entitlement eligibility; changes to health-care spending; and tax reform.

Across-the-board spending cuts appear to be what Messrs Musk and Ramaswamy mainly have in mind when they rail against government waste. This raises an obvious problem. Consider the $6.8trn spent by the federal government in the last fiscal year. After excluding interest on existing debt as well as mandatory allocations to pensions and health insurance, just 25% or so—around $1.8trn—remains. These are the discretionary funds at the heart of the annual budget process. Almost half goes to defence, which Mr Trump is loth to cut. So that leaves roughly $900bn allocated annually by the federal government to transport, education, science, national parks and law enforcement.

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Nevertheless, paring back discretionary spending ought to be part of the solution. It has grown by nearly a third since 2019, propelled by big increases during the covid-19 pandemic. Rather than making outright cuts, DOGE could call for strict caps on future discretionary allocations, a simple budgeting technique used on and off since the 1990s. If, for instance, discretionary-spending growth were capped at 2% a year (in line with expected inflation) until 2035, it would work out to a saving of about $500bn over the next decade relative to the forecast of the Congressional Budget Office (CBO), a non-partisan scorekeeper. That would be a good start.

Next is a recognition that America cannot fix its finances without tackling Social Security and Medicare, two giant programmes that together gobble up more than a third of the budget. Although Mr Trump vowed in his campaign platform he would make no cuts to them, that should not stop DOGE from weighing the options. America is experiencing much the same demographic pressure as other rich countries: people are living longer, and assets meant to support them in their retirement are being stretched to cover more years. One response would be to raise the age of eligibility. To be sure, this would not be politically easy, as demonstrated by the backlash in France when Emmanuel Macron raised the retirement age there. But Mr Trump is no stranger to controversy.

Barking up the right tree

The Penn Wharton Budget Model, a research group, has examined the effects of delaying Medicare coverage to the age of 67, up from 65 today. Such a change would be phased in by two months a year, meaning that it would take a dozen years to fully implement it. The savings would come to about $50bn a year. Similarly, the Penn Wharton modellers looked at raising the age for full Social Security benefits (in effect, a national pension) to 70 from 67. Doing so would also reduce the government's obligations by about $50bn a year. Over the next decade, the combined savings from these two delays to when programmes start would be around $1trn.

DOGE could then get to work on the government's broader health-care spending. States design and operate Medicaid—health insurance for lower-income Americans—but the federal government funds about two-thirds of the programme. This leads to a misalignment in incentives: the federal commitment is open-ended, so if spending at the state level rises, federal spending does, too. The CBO has examined tweaks. One would set a federal cap on payment per person enrolled. Were the cap to increase at the rate of inflation, it would reduce the federal deficit by almost $900bn over the next decade.

Much else can be done to reduce medical spending. There is ample evidence of waste in parts of America's fiendishly complex Medicare system. DOGE would do well to get acquainted with MedPAC, an independent commission that advises Congress on how to manage health care. Among the commission's many recommendations, it has called for closer scrutiny of billing, more competitive bidding between providers and mandating that the same medical service costs basically the same at every facility (currently, hospital outpatient departments charge more than clinics). The Committee for a Responsible Federal Budget, a non-partisan group, totted up several such ideas and concluded that they could save the federal government about $550bn over a decade. And if Mr Trump were to build on the Biden administration's efforts to negotiate lower prices for prescription drugs, there could be another $200bn-worth of savings.

If DOGE were truly courageous, its final target would be America's tax system. Given Mr Trump's oft-professed desire to slash taxes, it is unrealistic to expect him to raise them instead. But it would be irresponsible to look at America's fiscal health today without considering whether, and how, to generate more revenue. The good news is that the government does have options short of outright tax increases. Reducing tax deductions for health-insurance plans bought through employers could lower the deficit by at least $500bn over a decade, according to the CBO. Covid-era tax credits for companies that retained employees are, shockingly, still being processed; ending these would save another $80bn. Arguably the best investment the government can make, in terms of its potential return, would be to modernise and strengthen the Internal Revenue Service (IRS), in order to crack down on fraud and make filing tax returns less onerous. If Mr Trump sustains funding increases approved by Mr Biden, tax collectors could bring in about $850bn in extra revenue over the next decade, according to the Treasury. Alas, many Republicans would rather shrink the IRS.

Implementing the various proposals laid out above would save the government about $4.5trn over the next decade. And there is much more that can be done: in a report in 2022 the CBO offered 76 different policy options for reducing the deficit. The main obstacle, therefore, is not intellectual firepower but political will. Budget cuts are never popular. What is more, the White House cannot act on any of this alone. Serious fiscal policies must go through Congress. That may end up being the biggest test of DOGE and Mr Trump: not whether they can draw up cost-cutting proposals, but whether they can win the support of their fellow Republicans. ■

American energy

Europe's revenge

NEW YORK

Donald Trump will spark gas wars, annoying his most loyal supporters

IN THE BARREN, post-apocalyptic setting of the "Mad Max" film series, the outpost of Gas Town plays a vital role. It is swimming in fossil fuels, meaning that holding it confers great power in a world of ultra-violent, road-based conflict.

Even the most zealous free-traders do not foresee such a scenario when Donald Trump returns to the White House on January 20th. But gas will almost certainly feature heavily in the trade wars that will begin then. Disputes over it could upset a tight-knit alliance between the energy industry and the Trump administration.

America is now a gas-exporting superpower—a development that has transformed the global energy market. Last year the country sold over four times as much natural gas overseas as it did in 2015, when Mr Trump previously announced his intention to run for the presidency. The rise has largely been driven by shipments of liquefied natural gas. Because LNG does not require pipelines to be transported, it can be sold all over the world. And Mr Trump has pledged to reverse a restriction introduced by President Joe Biden that paused approvals for new LNG export facilities.

Mr Trump has also suggested broad tariffs of 10-20% on imports of goods, as well as higher tariffs on countries including China and Mexico. Most of America's LNG exports go to places that have trade surpluses with America, and will thus proba- ▸▸

Rough seas ahead

Readying their arsenals

United States, liquefied natural gas

Sources: EIA; Institute for Energy Economics and Financial Analysis

*Re-export hub

bly be the target of the incoming president's protectionist ire. South Korea buys 6% of America's LNG exports, for instance, while Japan takes 7%. China, the destination for 4% of America's LNG last year, deployed duties on American energy exports as part of the tit-for-tat tariffs imposed by the two countries in 2018 and 2019.

This time, though, the most obvious source of energy strife is Europe. More than half of America's LNG exports went to the EU last year, up from less than a quarter in 2021. The share of American exports going to Europe rose rapidly after Russia's invasion of Ukraine in 2022, which led to reductions in flows of Russian energy.

America appears to have the upper hand going into a gas war. Europe's memories of energy-price spikes in 2022, and the desire of the continent's policymakers to reduce Russian imports, limit its ability to take a tough line with Mr Trump. Ursula von der Leyen, the president of the European Commission, has even suggested that Europe could buy more American LNG, in the hope of avoiding tariffs.

But this calculation is likely to change over the course of Mr Trump's presidency, since a wave of new LNG supply—the largest yet—is forecast to hit the global market between 2025 and 2028. As well as new export facilities in America, others will open in Canada, Qatar and across Africa. New suppliers will make it considerably easier for America's trading partners to threaten and deploy retaliatory tariffs.

At the same time, European appetite for gas will probably shrink. The Institute for Energy Economics and Financial Analysis, a research firm, suggests that demand will fall by 11% from 2023 to 2030, partly as a result of the transition to renewable energy sources. As a consequence, Capital Economics, another research firm, expects European natural-gas prices to drop from around €45 ($47) per megawatt-hour to nearer €25 by the end of 2026.

If gas prices fall, and America is hit by European tariffs, American suppliers would struggle to find new buyers. Parts of the developing world, like India, could become purchasers. But the International Energy Agency, an official think-tank, estimates that prices of $14 per megawatt-hour—around half the price required to make recent investments profitable—would be needed to make LNG competitive with coal. If the forecasts of a gas glut prove to be right, the coming trade wars will frustrate a promising export industry. In doing so, they will irritate some of Mr Trump's most vociferous supporters. ■

Time use

Lying flat

HONG KONG

Is China really a nation of slackers?

CHINA IS FAMOUS, even infamous, for hard graft. Prodigious amounts of toil and elbow grease helped the country become the workshop of the world. More than 175m migrant workers labour in cities far from home, often leaving their children in the care of relatives. And the sacrifices are not confined to the poor. Even some of China's more sophisticated firms are known for their "996" office culture, encouraging unfortunate employees to work from 9am to 9pm, six days a week.

Many Chinese people therefore reacted with surprise and no little scorn to a new official survey of how they spend their time. The study, only the third of its kind, claimed that the average resident devotes less than three and a half hours a day to paid labour. "They must have surveyed government workers only," quipped one on social media. "Did they go to kindergartens and care homes?" asked another.

Many official statistics in China invite scepticism or even ridicule because they appear to unduly flatter the government. However, this result would appear to do the opposite. China's leaders would like citizens to remain industrious and diligent even as the country advances. Indeed, they worry that prosperity will induce decadence and indolence. Many younger Chinese have, for example, rebelled against the rat races of professional employment and decided instead to "lie flat", resigning themselves to low-key, bit-part jobs that at least offer a less stressful life. Is this phenomenon now showing up in the national statistics? Does the survey show that China is beginning to slack off?

The survey was certainly thorough. China's National Bureau of Statistics got in touch with more than 100,000 people, asking them to record what they were doing at 15-minute intervals, both on a weekday and at the weekend. But this introduces the first complication. One reason why China's daily workload appears surprisingly light is because the hours are averaged across all seven days of the week. If someone works a regular eight-hour shift and enjoys a two-day weekend, their paid labour averages less than six hours a day in the survey. Even a slavish 996er would log not 12 hours a day, but ten hours, 17 minutes, once their solitary day off was taken into account.

Although online critics were wrong to suggest the survey extended to children in kindergarten, they were not that wrong. The survey encompasses children as young as six, as well as the retired. That is another reason why the headline average appeared low: it was dragged down by people not in the labour market at all. When the young and the old are excluded, China's work hours still look onerous by international standards (see chart). Working weeks tend to shorten as countries get richer, but China's hours are longer than you might expect given its level of economic development. Excluding non-workers, Chinese people aged between 18 and 59 logged six hours and 32 minutes a day ▸▸

Sleepy for a reason

*Data from 1998-2019. 2023 for China
†15+ for Australia, 18-59 for China, 20-64 for Lithuania
‡Averaged across a seven-day week, includes non-workers
§2021 dollars at purchasing-power parity
Sources: National Bureau of Statistics of China; OECD; *The Economist*

on average, an amount that produces an average working week of over 45 hours.

On top of paid work, of course, is the unpaid kind. The survey shows that more than four in five women and two in three men carried out child care, housework, shopping or some other form of unremunerated labour. The women put in almost three and a half hours on average; the men did only half as much. The gender split was even worse than in the last survey in 2018, when men did 60% as much as women.

The survey does not therefore reveal China to have transformed into a nation of slackers. At the same time, its people do genuinely seem to be working a little less intensely than they were last time they were surveyed. All told, they are spending nine fewer minutes on housework, and 23 minutes less on caring for other family members. They also sleep for 27 extra minutes on average. But the biggest change in their daily habits is not lying flat but logging on. Chinese people spend five hours and 37 minutes a day surfing the internet, up by almost three hours since 2018.

Apart from extra minutes in bed and online, Chinese people have also increased the time devoted to less sedentary and perhaps more worthwhile activities. Almost half of Chinese residents now take part in sports and exercise, compared with less than one-third in 2018. Maybe the country's exacting leaders need not fear: when the Chinese people are not working hard, more of them are working out. ■

BUTTONWOOD

Keep the faith

Investors should not give up on stocks listed outside America

SPARE A THOUGHT for the analysts, bankers and fund managers who make a living from European shares. If your salary depends on talking up the stockmarkets of the continent that invented them, you have learned to live with disappointment. For much of the past two decades, you could have pointed out that European stocks were cheaper, relative to earnings, than American stocks. You could have reasonably argued that this portended better investment returns and less risk of crashes. And for all that time you would have been utterly, gloriously wrong.

Suppose you had invested in an index of American shares at a trough in 2009, and held on to it until today. Your portfolio would now be getting on for triple the size it would have been if you had instead picked a basket of stocks listed on the old continent. Just about whenever American share prices crashed, European ones fell about as far or further; when American prices rocketed, European ones trailed them.

Even considering this dismal record, the past few weeks have tested the most battle-hardened European equity bulls. Investors greeted Donald Trump's re-election by sending American share prices to record highs. European stocks have dropped by 4% since the morning of the result, and by 5% since a peak in September. They are not alone—stocks in much of Asia fell alongside them. It is enough, after so many years of American outperformance, for investors to finally throw in the towel and give up on the rest of the world altogether.

The case for doing so is certainly compelling. Firms listed in America now constitute nearly two-thirds of the value of MSCI's broadest index of global stocks. Higher valuations (and higher salaries for executives) have long enticed the most exciting international companies to complete initial public offerings in the world's biggest economy. Europe's latest kick in the teeth came on November 12th when Klarna, a Swedish fintech star and once the continent's biggest startup, announced that it had filed regulatory documents for an American flotation. If the fastest-growing firms keep fleeing bourses elsewhere, those markets will have good reason to remain cheap.

What is more, investors are right to think that Mr Trump's second term bodes better for American businesses than for their rivals overseas. He will most probably extend the cuts to personal income tax he made in his first term, which might otherwise have expired next year, and may slash corporation tax, too. The combination would boost both American firms' revenues and post-tax profits. Meanwhile, their large—and rich—domestic hinterland stands them in better stead to weather tariffs and other trade barriers than, say, companies in Asia's and Europe's poorer, more fragmented markets.

Time for investors to go all in on America, then? Not quite, though not because of the familiar argument about the power of diversification to de-risk portfolios. America's stockmarket, after all, is increasingly the world's, owing to its sheer size and tendency to poach other countries' star firms.

Rather, the reason to look beyond America is the disparity between how exposed its stockmarket is to the rest of the world and how differently it is valued. Some 40% of American firms' earnings come from abroad. Meanwhile, foreign firms receive 20% of their earnings from America. Thus a big chunk of the profits of the two groups are made, broadly speaking, in the same places.

In spite of this, American companies are valued eye-poppingly higher, relative to earnings, than non-American ones. The difference is often justified by their fatter profit margins, better management and stronger growth. Fair enough. However, another way of looking at the valuation gap is that, in order to get from earnings to share prices, the market scales them up by radically different multiples based on whether they are made inside or outside America. This is peculiar, and much harder to justify, suggesting that valuations may have fallen out of whack and may eventually be subject to a correction. With American shares more expensive than at almost any other time in history, that would hardly stretch belief.

It is a lot more difficult to believe, after such a long and consistent spell of exceptionalism, that American stocks might no longer be investors' best bet. For a while, they may well be. But do not write off the chances that, sooner or later, those European fund managers will be singing a cheerier song.

Financing conflict

The 21% war

Russia's reliance on China is becoming an economic problem

MOST CENTRAL BANKS are cutting interest rates. Not Russia's. Last month policymakers raised rates to 21%, a two-decade high; markets expect them to reach 23% by the year's end. The shift is all the more unusual as it is happening at a time of war, when central bankers are normally loth to suppress economic activity.

Russia's economy has confounded analysts since the country invaded Ukraine in February 2022. Despite facing one of the tightest sanction regimes in modern history, it has undergone its fastest expansion in more than a decade. Russia enjoyed growth of 3.6% last year and is expected to maintain such a pace this year. Yet rather than being a demonstration of strength, the central bank's decision to lift interest rates is a warning of trouble to come.

Government outgoings are increasingly difficult to sustain. Russia's budget, unveiled in September, included a plan to increase defence spending by a quarter next year. Taken together, annual expenditures on defence and security—a separate budget item that covers the intelligence services—are now expected to rise to 17trn roubles ($170bn), an amount representing more than 40% of all government spending or 8% of Russia's GDP. Defence spending alone will be 6% of Russian national income, the most since the cold war.

Although that is a lot, it is not unusual for a country at war. America's defence spending, for example, was 8-10% of GDP during the Vietnam war. In the second world war the great powers devoted 40-60% of their economic output to military ends. The crucial difference is to be found in monetary policy. British policymakers in the early 1940s endeavoured, and mostly succeeded, in fighting what they termed "a 3% war", keeping interest rates near that level. America's Federal Reserve held rates at 2.5% during the same conflict. Lower borrowing costs helped keep the large deficits affordable. By contrast, in Russia, the yield on ten-year sovereign debt has risen from around 6% before the war to 16%.

Hard labour

Conscripting prisoners and hiring North Korean soldiers is an unconventional indicator of a hot jobs market, but it is one nonetheless. Russia's unemployment rate sits at a mere 2.4%. Spare capacity has been used up and the economy is showing all the classic signs of overheating. Annual inflation is running at more than 8%. Although increasing interest rates is the textbook response to such a situation, it raises borrowing costs. In the 1940s America and Britain kept inflation in check through a combination of steep increases in personal taxation, designed more to hold back household spending than to raise revenues, and rationing. In today's Russia such measures would be deeply unpopular, as well as difficult to square with Vladimir Putin's propaganda.

There is another reason why the country has been forced to tighten monetary policy. For most of the second world war neither Britain nor America had to be especially concerned about the external value of their currency. The dollar benefited from being seen as a haven, while America's "Lend Lease" programme provided Britain with both military equipment and resources such as oil and food, doing so pretty much for nothing. Had Britain lacked an ally with the deep pockets and industrial capacity of America, willing and able to supply two-thirds of its imports, then the fall in the value of the pound would have become a military problem.

Mr Putin's difficulty is that he lacks such an ally. China has become Russia's most important trading partner, providing a third of all imports and more than 90% of microelectronics, which are used in drones, missiles and tanks. Yet such support is not being offered free. Russian officials must therefore keep an eye on the value of their currency in terms of the yuan; this year it has fallen by 7%, to near its lowest since shortly after the war began. Russia, unlike the allies in the second world war, faces an external vulnerability. That, rather than inflation, is ultimately what has pushed interest rates to record highs.

Until recently, the Russian government had cushioned the economy from higher borrowing costs. A variety of schemes made it easier for households to suspend debt payments and for firms to borrow at lower subsidised rates, with the government stepping in to compensate banks for lost income. There are signs, though, that such programmes are becoming unaffordable. A mortgage-subsidy scheme, which had allowed borrowing at a cost of just 8% when official rates were much higher, ended on July 1st. Mortgage volumes fell by half the next month. Corporate bankruptcies have risen by 20% this year. The Russian Union of Industrialists and Entrepreneurs, a trade body, reckons investment plans for next year are being put on hold because of heavy borrowing costs.

Higher interest rates will crimp spending by both companies and consumers. The IMF expects Russian economic growth to slow sharply to 1.3% next year. Even VEB, the state-run development bank, has cut its growth estimate to 2%. A combination of lower investment and manpower lost to the front is taking a toll. The need to maintain the value of the rouble in order to pay for crucial imports is a vulnerability for Mr Putin, and one which could soon undermine his ability to fight. He may be hoping that Donald Trump keeps his promise to bring the conflict to an end. Waging a 3% war is one thing; a 21% war is quite another. ■

ChatGPT at two

Dotcom dreaming

WASHINGTON, DC

Will the AI age offer the same benefits as the computer age?

ALMOST TWO years have passed since OpenAI released GPT-3.5 to great fanfare. Bill Gates, co-founder of Microsoft, compared the technology's arrival to his first encounter with the graphical user interface—a breakthrough that reshaped personal computing—in the 1980s. Others predicted that generative artificial intelligence (AI) would rapidly transform economies around the world, leaving many millions unemployed. Yet despite the hype and the worries, AI's impact has been muted thus far. According to America's Census Bureau, only 6% of businesses use AI to produce goods and services. Output and labour-productivity growth, meanwhile, remain far below the soaring heights of the computer age in the 1990s.

Why has AI so far failed to live up to its promise? Lessons from the computer age can shed light on the question. As with AI today, the early years of the computer age were marked by predictions of economic transformation. In 1965 Herbert Simon, a giant of computer science, declared that "machines will be capable within 20 years of doing any work that a man can do." Two decades after Simon's prediction, the promised productivity revolution remained elusive. In 1987 Robert Solow, a Nobel laureate, famously quipped that "you can see the computer age everywhere but in the productivity statistics." Only in the late 1990s did the economic transformation at last materialise, leading Solow to acknowledge—three decades after the initial exuberance—that computers had begun to reshape the economy.

Three main factors contributed to the eventual arrival of a computer-age productivity boom: companies ramped up investment in information technology, computer and software prices fell rapidly (see chart), and bosses found new ways to integrate the tech into their operations. Are these factors in evidence today?

Begin with IT investment. Starting in 1995, firms ramped up spending on computer hardware, network infrastructure and software. Between 1995 and 2000, their investment in information-processing equipment and software rose by an average of 20% a year in real terms. Research by Kevin Stiroh of the Federal Reserve Bank of New York has found that firms were investing nearly $400bn in such technologies by 1999, accounting for over 30% of all non-residential fixed investment.

Cheap as chips

United States, price index of information-processing equipment and software
Q1 1970=100

Source: Bureau of Economic Analysis

By contrast, recent capital expenditure has been underwhelming. Over the past two years, business investment in information-processing equipment and software has grown by around 4% a year. AI investment may be more focused on intangible assets, such as algorithms and data, which are more difficult to measure than physical capital. Payments to startups for custom tools may show up as operating expenses in the statistics, for example. Even so, you would expect at least a rise in software investment. Instead, spending on both prepackaged commercial software—such as Microsoft 365—and custom-built systems, including AI tools tailored to specific workflows, is surprisingly low. Growth in software investment over the past year was about three times lower than in the late 1990s in real terms, and remains well below the long-term average.

The second half of the 1990s also witnessed a dramatic fall in the quality-adjusted price of computer hardware and software. From 1995 to 2000 prices for information-processing equipment and software dropped by a third, producing cheaper and better computers. The AI era has yet to see a corresponding decrease in prices: over the past five years, those for software and information-processing equipment have barely budged. Indeed, in the most recent quarter, the price index for these goods rose at an annualised rate of 4%. Even as the underlying technology is becoming cheaper, middlemen who repackage AI tools are increasingly adding margins and driving up prices.

What about the final ingredient in the economic revolution of the 1990s? For a technology to provide productivity gains, companies must retool operations and business models to integrate it. Consider the example of Walmart. In the 1990s the retailer boosted productivity by embedding a new software system—Retail Link—into its operations, granting suppliers real-time access to sales and inventory data. AI adoption today remains largely confined to narrow applications within existing operations, such as a financial-services firm using an AI app for fraud detection. Most firms do not have the data infrastructure required to train custom firm-specific models. To unlock AI's full potential, more fundamental changes will be required.

Given these constraints, it might be prudent to recall the words of Rudi Dornbusch, an economist who spent his career at the Massachusetts Institute of Technology: that in economics things happen slower than you thought they would and then faster than you thought they could. AI may eventually produce extraordinary productivity growth, but at present it appears to be some distance from the take-off experienced in the 1990s.

Perhaps a more fitting comparison is to the 1970s—a period when technological promise mingled with disappointing productivity growth. The memory chip and silicon microprocessor, which powered the personal computer, were introduced around 1970. Yet 20 years later, less than 10% of the world's businesses were using computers. As the world moved into the information age with the arrival of email, mobile phones and the internet, productivity growth remained stubbornly low. From 1975 to 1994 labour productivity in America averaged a lacklustre 1.7%. Then things finally got going. The AI revolution seems to be following a similar path. ■

FREE EXCHANGE

Missing the points

What Donald Trump and Bernie Sanders get wrong about credit cards

DEMOCRATS SPENT much of the presidential-election campaign calling Donald Trump a fascist. Mr Trump is hardly known for his conciliatory nature. So few American politicos expect there to be much bipartisanship in his second term. Yet in one place there is already a flicker of cross-aisle agreement: a proposal to cap interest rates on credit-card repayments at 10% has won the support of both Mr Trump and Bernie Sanders, perhaps the most prominent left-wing Democrat.

Sadly, the policy is unwise. Like most price controls, capping interest rates would distort the market and hurt ordinary punters. Card issuers would probably respond by locking out less reliable borrowers, not by offering cheaper rates. Worse still, Messrs Trump and Sanders are looking past genuine problems with American credit cards. That may be because the problems stem from something stupendously popular: ultra-generous rewards.

Credit-card rewards are meagre in much of the rich world, especially Europe. But in America they are chunky, and many are hooked. The Points Guy, a website with the strapline "Maximise your travel", which recommends strategies to accumulate and spend credit-card points, has garnered almost 30m visits in the past three months. More than 600,000 people subscribe to the r/churning forum on Reddit, a social-media site, where members construct elaborate strategies to "churn" through different cards, capitalising on introductory offers. A common piece of advice for would-be churners is to beware the "5/24 rule". JPMorgan Chase, a bank, is thought to issue blanket denials to anyone who has signed up to five or more cards over the previous 24 months.

Options run from relatively straightforward cashback cards, which might offer 1.5% back on each transaction, to jazzier, more expensive ones. Some charge hefty annual fees: $695 for the American Express Platinum card, for instance. Customers can, in theory, recoup these with points and benefits such as credits for flights, food delivery and subscriptions. In practice, clawing back fees can be tricky and distort spending. Your columnist, desperate to spend a $50 American Express voucher for Saks Fifth Avenue, a department store, before it expired, once found himself ordering an entirely unnecessary $49 geranium-scented-soap dispenser.

To the sufficiently obsessed, optimising credit-card spending can be a lucrative hobby. However, beneath the bonanza is a problem: the rewards are funded by the least well-off. This happens in two ways. First, customers who do not use credit cards subsidise those who do. Half of all transactions by households earning more than $150,000 a year are done by card, compared with just one in ten for those earning less than $25,000. The subsidy occurs because every time a card is used, merchants are charged an interchange fee. In America that is usually around 2% of the value of the transaction, though it can easily be higher for premium cards. The fee then gets split three ways: between the credit-card company (most often Mastercard or Visa), the issuer (usually a bank) and the customer (via cashback or rewards). Each beneficiary, unsurprisingly, enjoys this arrangement: banks and credit-card companies make a tidy profit; shoppers get a little closer to funding that business-class flight to the Maldives. Merchants are rather less grateful, but they generally fold the fee into their prices—meaning those who do not use credit cards share the pain.

Merchants could, in theory, demand higher prices from credit-card users. This happens occasionally; for instance, some stores offer discounts when payments are made by cash or else only accept card payments for larger transactions. Rent payments often cannot be done by credit card, or at least not without sizeable additional fees. But until recently adding surcharges for credit-card payments was banned, both in retailers' agreements with credit-card companies and, in some states, by legislation. In 2013 a class-action lawsuit put an end to surcharge bans by Mastercard, Visa and the like. Most state-level laws are also getting pared back. In New York credit-card surcharges were outright illegal until 2018, when the state Court of Appeals ruled that surcharges were permitted as long as they were adequately disclosed. Still, a widespread shift in pricing norms looks unlikely. Americans are too used to the current way of doing things.

A second issue is that rewards function as a tax on those with credit cards but without the ability or inclination to keep up with the panoply of options. Sumit Agarwal of the National University of Singapore, Andrea Presbitero of the IMF, and André Silva and Carlo Wix of the Federal Reserve find that American credit-card-reward programmes redistribute around $15bn a year from "naive" to "sophisticated" consumers. In cash terms, the biggest losers are actually the unsophisticated well-off. Yet financial sophistication, which the researchers approximate with credit-rating scores, also correlates with education, income and race. High-school graduates, the poor and ethnic minorities are the least likely to earn credit-card rewards.

The Brussels route

What could Mr Trump do? One answer lies on the other side of the Atlantic. In 2015 the European Union capped credit-card interchange fees at 0.3%. Research by the European Commission estimates that 70% or so of the reduction has been passed on to consumers in the form of lower prices. At the time, *The Economist* was sceptical of the EU's move. Better, we thought, to let competition yank down fees than to do so by state diktat: startups could profit by undercutting incumbents. Although that is still the best solution, there is little sign of such disruption. If Mr Trump can stomach taking inspiration from Europe, and is willing to incur the ire of r/churning, he could support legislation to lower interchange fees—ideally by enough to scupper reward programmes. ■

Science & technology

The Human Cell Atlas

Containing multitudes

How placentas and skeletons develop in the womb—the first results of an international effort to map all the types of cell in a human body

AN ADULT HUMAN body consists of some 37trn cells. Not so long ago, these were thought to come in 220 different types. That number, the product of painstaking decades spent peering through microscopes at slides bearing tissue sections coloured by chemical stains, gave a sense of the division of cellular labour needed to keep a body running.

A sense, but only a superficial one. Tools now exist that are capable of looking inside the cells, breaking them open one at a time to release their complements of messenger RNA (mRNA), the molecule which carries genetic information from a cell's nucleus to its protein factories. Molecules of mRNA indicate which genes are active, thus revealing a cell's inner nature. Cells that look alike under a microscope often turn out to be quite diverse. The cell-type count has thus risen above 5,000.

The leader of this histological revolution is the Human Cell Atlas (HCA) consortium, which was set up in 2016 and currently involves more than 3,600 collaborators in 190 laboratories in 102 countries. Other cell-atlas projects are limited to mapping particular organs or types of tissue. The HCA aspires to catalogue the whole caboodle: identifying and locating all the cell types, healthy and diseased, in every human tissue over the course of a lifetime. Its remit extends even to "organoids", science's fumbling first attempts to grow living simulacra of organs.

The hope, according to Sarah Teichmann of Cambridge University and Aviv Regev of Genentech, an American biopharma firm, who set the whole thing up, is to have a first draft of the atlas available next year. Their latest progress report has just been published as a set of papers in *Nature* and several of its sister journals.

As Dr Teichmann and Dr Regev point out, HCA maps are of two sorts. One, similar in concept to geographers' maps, ties each cell type to a four-dimensional site in the human body (sampling at different stages of life adds the dimension of time to those of space). The other sort are less familiar. These, called manifolds, are normally used by mathematicians to represent multidimensional mathematical hyperspaces. In the case of the HCA, the numerous dimensions in question are not space and time but, rather, molecular features, such as mRNA profiles, characteristic of different cell types. By plotting different cell types on the same map, charts of manifolds thus enhance understanding of their similarities and differences.

No cell left behind

The geography of the real world also plays a part. From the start, Dr Teichmann and Dr Regev have been determined not to oversample parts of the world (Europe, North America and certain bits of Asia) where scientists are concentrated. Instead, they have sought participants from all six inhabited continents—a decision that has already been rewarded with insights into the cellular basis of geographical differences in immune responses and susceptibility to breast cancer.

The subjects of this week's papers show the scope of the endeavour. Placentas, the ▸▸

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embryonic development of the skeleton, gut inflammation and the formation of the thymus (the organ which generates the immune system's T-lymphocytes, the cells ravaged by AIDS) are all discussed.

The findings of these studies break new ground. They confirm earlier suspicions that some cellular processes involved in the formation of cancerous tumours are involved in the placenta's rapid growth. They identify genes expressed in developing bone and cartilage cells that may lead to arthritis in later life. They show, by comparing healthy and unhealthy guts, that one source of disease-causing inflammation seems to be intestinal cells accidentally developing into a type normally found in the stomach. And they give a detailed description of the thymus based on a standardised representation of that organ.

Perhaps the most intriguing paper of the lot, though, is on brain-mimicking organoids. Organoids composed of human brain cells, themselves derived from laboratory-created stem cells, are the sort of thing to give bio-ethicists jitters. At the moment, bereft of the blood supply needed to grow, they reach only three or four millimetres across, so are unlikely to develop any form of consciousness. But some worry that larger versions might.

They are, however, useful for research, as they permit the study of living human brain tissue without the need to remove any. But they would be even better if the particular types of neuron in particular versions of them could be reliably predicted—for neurons collectively make up a large fraction of known cell types, and each has a different job to do.

The HCA will make this easier. A paper co-ordinated by Barbara Treutlein of the Federal Institute of Technology in Zurich looked at mRNA data from 36 such organoids, created using 26 different protocols. The researchers involved were able both to identify the neuron types generated in each organoid and to determine how closely they resembled their natural equivalents. The results, stitched together, create a single manifold chart for such organoids that shows the strengths and weaknesses of the various protocols, and will help with planning future research.

Besides publicising the project members' latest findings (though the raw data have been online since they were collected), the papers also allow Dr Teichmann and Dr Regev to set out their vision for using artificial intelligence (AI) to turn the atlas into something closer to a model of how a human being works.

Both are computational biologists by training, and it was this background which led them to conceive the HCA in the first place. Without the software underpinning the project, which turns data into maps and permits those maps to be interrogated, the project would not exist. But the pair have bigger visions. They were early adopters of foundation models, a class of AI (such as the large language models that have gained prominence in recent years) which feeds on vast quantities of training data in order to recognise patterns not discernible to humans.

The HCA's foundation models are trained not on passages of text, but collections of cells. And their goal is not human-like composition but the creation of better and more useful maps. Some learn from mRNA data about cell types. Others rely on conventional histology slides and more modern iterations thereof—such as light-sheet imaging, which scans sections through three-dimensional samples. These models are now good enough to be used to annotate the cells in new specimens, to search for similar cells in different specimens and to discover the gene programs behind particular characteristics. In the future they should be able to predict how cell lineages will develop and even to envisage as-yet-unknown varieties of cell. Such models are not only faster than human researchers, but can also perform tasks beyond human capability.

The result is a system that can be (and has been) used not just for enhancing the atlas, but putting it to work. Drug companies are already, for example, using HCA data and models to screen potential drugs "virtually" before they are tested experimentally; to predict side-effects by discovering non-target tissues where the gene a drug candidate interacts with is expressed; and, conversely, to spot opportunities in such non-target tissues to extend a drug's range of therapeutic targets.

One day all this effort may contribute to a human "digital twin", which would also incorporate foundation models about how proteins work (such as AlphaFold, a protein-folding model developed by Google DeepMind) and how bodies develop. That day is still far distant. But it now seems more likely to arrive. ■

Academic publishing

Paper trails

The quantity of scientific papers has increased rapidly. Quality may not have

SCIENTIFIC PUBLISHING has long been a money-printing operation, with many big publishing houses reporting profit margins of between 30% and 40% year after year. The long-standing business model is watertight. Articles, which are written and reviewed by academics, are locked behind paywalls. Universities and research institutions then pay through the nose for access to them via subscriptions that cost millions of dollars a year.

In the past decade, however, this model has been challenged by a rise in funders mandating that the research they pay for must be free for anyone to read. A host of publishers have, therefore, adopted a new ▸▸

business model to enable "open access": levying an article-processing charge—ranging from $1,000 to $10,000 per paper, paid for by the scientists submitting the research—to cover their publishing costs.

Both business models continue to do well; the number of academic papers published each year has doubled since 2010 (see chart 1). In a new study published in *Quantitative Science Studies*, Mark Hanson of the University of Exeter and colleagues set out to identify where this explosion of papers has come from and—if possible—to assess whether a drive for quantity has affected quality.

For their paper, entitled "The strain on scientific publishing", the authors analysed publicly available data from journal websites managed by ten big publishing houses. According to the paper, of the ten publishers in their data set, all those operating for profit had increased their output since 2013. But the authors found that this increase occurred in different ways depending on the publishers' business model.

Roughly half of the new papers since 2013 came from the large traditional publishers Elsevier, Taylor & Francis, Springer, Nature and Wiley (although these publishers operate some journals that have a fully or partially open-access model, the majority still require subscriptions). Together, these five increased their yearly output of papers by roughly 61% between 2013 and 2022. They did so by increasing both the number of journals in their portfolio and the number of papers per journal.

The study found that the remainder of the increase came from the newer for-profit open-access-only publishers, Frontiers, Hindawi and MDPI. A decade ago, these companies published around 4% as many papers as the traditional publishers. By 2022 they were publishing a third as many. Dr Hanson and his colleagues determined this rapid growth was achieved mainly through the embrace of special issues: groups of articles published together and focused on a single topic outside the journal's usual publication schedule.

Paper-pushers 2

World, new scientific papers published, '000

*Frontiers, Hindawi and MDPI
†Data only available for Nature, Springer and Wiley
Sources: "The strain on scientific publishing", by Mark Hanson et al., 2024; *The Economist*

Speed bumps 3

World, new scientific papers by turnaround time

*Frontiers, Hindawi and MDPI †Elsevier, Nature, Springer, Taylor & Francis and Wiley
Sources: "The strain on scientific publishing", by Mark Hanson et al., 2024; *The Economist*

Rather than being managed by the journal's permanent editorial staff, special issues are typically the responsibility of guest editors. These temporary editors solicit submissions from other scientists in their network. According to Dr Hanson's team, between 2016 and 2022 the number of special-issue articles produced by the three largest for-profit open-access publishers rose by a factor of 12. These companies now publish four times as many special issues as regular papers (see chart 2).

This rise in special-issue papers comes alongside signs that they are being edited more quickly. For traditional publishers the median turnaround time for articles across all issues is roughly 130 days, but with huge variability (in some cases, reviewers may ask for an experiment to be rerun from scratch). In the for-profit open-access journals the median turnaround time was squeezed down from around 74 days in 2016 to just 38 in 2022, with markedly reduced variability (see chart 3). The researchers also found that, within MDPI and Hindawi's portfolio of journals, those with more special issues were rejecting fewer submissions.

The worry is that lower-quality articles could be slipping into these special issues. In May this year Wiley, which bought Hindawi in 2021, announced it would be shutting down 19 former Hindawi journals after more than 11,300 papers, mostly published in special issues, were retracted.

The publishers themselves reject any suggestion that these data imply a decline in quality. Wiley stressed its commitment to research integrity. MDPI attributes its shortened turnaround times to more staff and new tools to improve efficiency. A spokesman from Frontiers said that "Review turnaround time cannot be used as a simple proxy for either research integrity or quality." Both MDPI and Frontiers insist that special issues are subject to the same peer-review process as regular papers. And there are upsides to special issues: they can be valuable ways for scientists to aggregate information from different research communities, for example, said Hannah Hope, who leads open-research initiatives at Wellcome, a funder.

Still, some funding bodies are trying to stem how much science is published in such journals. In February this year the Swiss National Science Foundation (SNSF) stopped paying processing charges for papers published in special issues. Previously, according to Matthias Egger, the president of the National Research Council of the SNSF, 80-90% of the publishing fees paid by the SNSF went towards such special-issue articles, to the tune of around SFr10m ($10.6m) between 2018 and 2023.

From January 2025 the Gates Foundation will stop paying open-access fees altogether—any researchers they fund must instead use free-to-access preprint servers to share their work. The foundation says the move will help avoid some of the issues Dr Hanson and his team have identified. By making it more expensive for researchers to place their work in open-access journals, it may also limit the number of papers these journals publish. Until more funders join in, however, the tide of new papers is likely to keep on rising. ■

Psychology

Laughing matters

Humans laugh in two distinct ways

ANGLOPHONE NOVELISTS describing amusement are laughing all the way to the bank. Depending on context, characters can chortle, chuckle, titter, hoot, giggle, snigger, howl or guffaw. This richness of language may suggest to some that laughter, itself, is a phenomenon of infinite variety, one that lends itself to endless subcategorisation. The joke would be on them.

New work led by Roza Kamiloglu, a psychologist at the Free University of Amsterdam, provides evidence that there are just two primary types of laughter: one generated when people find something funny and one that can be induced only through the physical act of tickling.

The work started with the serious business of laugh collection. Dr Kamiloglu in- ▸▸

structed research assistants to search YouTube, a video platform, for footage featuring spontaneous laughter. They collected a total of 887 videos that were then categorised based on the inciting comic incident, ranging from tickle attacks to Schadenfreude and verbal jokes.

Roughly 70% of these videos were then used to train a laughter-categorising machine-learning algorithm to connect different forms of laughter with the activities that caused them. The algorithm was then asked to deliver its verdict on the remaining 30%. After a quick listen, Dr Kamiloglu and her colleagues thought the different laughs would be too varied for any connections to be made. The algorithm disagreed.

Based on acoustic traits like loudness, rhythm and changes in frequency brought about by vocal-cord vibrations, the algorithm was able to correctly identify laughter produced by tickling 62.5% of the time. All other forms of laughter, whether they came from viewing stand-up comedy or watching someone pour salt into their tea instead of sugar, were nowhere near as easy to tell apart. This suggested there was something unique about the post-tickling laugh. When Dr Kamiloglu ran the experiment again, this time asking human observers to categorise the laughs, a similar phenomenon presented itself: the observers correctly identified tickling laughter 61.2% of the time.

The findings, published this week in *Biology Letters*, are more than light entertainment. They could, instead, point scientists towards the evolutionary roots of laughter. After all, many mammals including dogs, squirrel monkeys, Barbary macaques and chimpanzees produce vocalisations during play that sound remarkably like laughter. One of the first things that infants do early in life is laugh. Even babies born deaf spontaneously produce laughter. Humans are not the only animals that tickle either. Macaques and chimpanzees both engage in the activity too.

All this suggests that laughter from tickling evolved over 10m years ago with the common ancestor that humans shared with these other primates. Dr Kamiloglu suspects that this early sort of laughter probably evolved to help primates build friendly relations, especially during play. With this in mind, she is now keen to study how infectious different sorts of laughs are. If the tickling laugh is one that truly evolved to bring primates together, it ought to be particularly infectious—but nobody has yet tested if it is.

As for all the other forms of laughter that only people produce, these probably evolved millions of years after tickling came along, when the human brain became complex enough to understand irony, slapstick and puns. But he who laughs last, it would seem, laughs longest. ■

Drug delivery

Moving the needle

The way squid propel ink is inspiring an alternative to syringes

NEEDLES, THOUGH essential for delivering a great many vital medications, are not universally popular among patients. This distaste has serious consequences: an aversion to needles leads one in six American adults to skip vaccinations, and is an important reason why people who rely on injectable drugs such as insulin fail to keep up with their dosage. Now new work led by Giovanni Traverso at the Massachusetts Institute of Technology is revealing a way to get medication into patients without having to jab them at all, by copying the jet-propulsion techniques used by squid and their kin.

This is not Dr Traverso's first foray into the field of alternative drug delivery. Most of his previous inventions, however, have involved tiny automated syringes packaged inside capsules that can be swallowed. Once in the digestive tract, the capsules dissolve, leaving the syringes free to inject a drug payload through the mucosal surface layer of the stomach or the intestines and into the subsurface tissues below. As the walls of the digestive system are extremely rich in blood vessels, it is an excellent place to deploy drugs. Patients treated in such a way need never feel or even see the needle.

Such techniques, though usable, are far from reliable. For a syringe to properly deliver a drug, it must be nearly perpendicular to the target tissue. This is as true for shots going into arms as it is for those jabbed into the lining of the gut. When it comes to penetrating the skin, a medical professional can set the alignment manually. In the depths of the digestive tract, such alignment is extremely challenging.

Keen to find a better way forward, Dr Traverso considered the cephalopod. Just as cephalopods are able to propel ink and water at high pressure in all directions, Dr Traverso theorised a similar system might be able to propel drugs with sufficient force to penetrate the soft tissues lining the digestive tract without needing the perfect angle required by needles. To build such a device he worked with a team of colleagues at Novo Nordisk, a pharmaceutical company, as well as researchers at Brigham and Women's Hospital in Boston and the Royal Institute of Technology in Stockholm. The collaboration resulted in tiny spring-loaded devices capable of releasing high-velocity jets when triggered.

To test the efficacy of the system, the team loaded the devices with green dye and tested them out on digestive tissues taken from pigs and dogs. Microscopic analysis revealed that the green dye was frequently able to cross the mucosal layer. Crucially, the team found that the devices were still able to propel most of their dye into tissues even when the angle between the spring-loaded device and the tissue layer dropped below 70°.

Eager to try the devices inside living animals, the researchers designed two versions of their drug-propulsion technology. One, bearing a resemblance to a miniature lunar lander, is designed to navigate the cavern of the stomach and squirt its contents downwards as soon as it makes contact with a surface. The second, designed to deliver its cargo in long narrow spaces such as the oesophagus, looks like a cylinder that can launch drugs out of its sides.

The team armed both sets of devices with a range of drugs including insulin and an analogue for GLP-1 (a hormone that helps the body regulate blood sugar) and inserted them into the digestive tracts of pigs (which are very similar to those found in humans) for testing. In results published this week in *Nature* the researchers reveal the jets were, once more, able to consistently deliver their drug payloads to a range of sites, including the oesophagus, the stomach and the intestines.

Though tests in humans have yet to be carried out, Dr Traverso and his colleagues hope that individuals with diabetes will be able to make use of this technology soon. Given that proper management of the condition involves multiple insulin jabs a day, a more convenient delivery mechanism could transform treatment. But the technology will hardly be limited to this group. The researchers expect that similar devices could one day be used to administer vaccines. If all goes well, needle anxiety may be a thing of the past. ■

Culture

Love or loathe him?

The cult of Jordan Peterson

What the Canadian intellectual gets right about young men

We Who Wrestle with God. By Jordan Peterson. *Portfolio; 576 pages; $35. Allen Lane; £30*

JORDAN PETERSON'S new book is titled "We Who Wrestle With God". Quite what God has done to provoke this fight is not clear. Open it, and two things become apparent. First, this is a friendly skirmish: the Canadian psychologist is less wrestling God than trying to understand him.

He retells the big hits of the Bible—the fall, the flood—through a mixture of theology, psychology and symbolism. Often, alas, that symbolism comes from Disney. So the story of Adam and Eve is compared to "Beauty and the Beast", and Cain is likened to evil Scar in "The Lion King". The overall effect is as if a Victorian vicar had been given a streaming subscription to Disney+ (and possibly some opium), then sat down to write his sermon.

The second thing that becomes clear is that by far the greater struggle here is between Mr Peterson and his prose. Mr Peterson has never been an easy read: even an academic review once described one of his books as a "tome". This doorstopper is little easier. Flip it open at random, and your eye will invariably light on phrases such as this one: "The modern meta-Marxists, the post-modern power players, have, as it were, metastasised Marx." Got that? Good. Because there are hundreds more pages where that came from.

Those of you who wrestle with Jordan Peterson might wonder why you would want to fork out good money to wade through nearly 600 pages of Mr Peterson wrestling with God. For many the answer will be celebrity. Both sides are well known. God is God. Mr Peterson is a contrarian who has hitherto wrestled with students over free speech (he won); feminists over whether you can compare lobsters to men (it was a draw); and Richard Dawkins, an atheist biologist, over the reality of dragons (it was excruciating).

These fights have propelled Mr Peterson from academia to celebrity. He has been called both "the world's most famous public intellectual" and "the stupid man's smart person". He is certainly hard to place. His most famous work, "12 Rules for Life", offers a strange mix of humdrum domesticity and existential philosophy, as if a nanny was mixed with Nietzsche and started barking orders: Stand up straight! Shoulders back! Consider the existential void of modernity! His (mostly male) fans loved it and bought over 10m copies.

Millions despise him. In 2017 academics at the University of Toronto signed an open letter to take away his tenure, in part because he objected to being required by law to use gender-neutral pronouns. He later resigned. For a time, to have an opinion on him felt both socially necessary (he came up so often) and socially dangerous (the wrong answer could bring odium). No mere man, he was a purity test personified.

Like Donald Trump and Joe Rogan, an American podcaster, he is one of a group ▸▸

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of men who despite—or perhaps because of—being disdained by intellectual sorts are beloved by their "bro" followers. The number of authors who can, as he does in this new book, use phrases like "the collective meta-space of human imagination", and also fill arenas with fans, is tiny. Probably it totals one. Few, least of all him, saw this coming. "In a sensible world", he has said, "I would have got my 15 minutes of fame." That was in 2017. He is still going.

On November 18th a crowd gathered for the first night of his book tour in a village near New York City. It felt more like a concert. There was merch (Peterson posters and mugs) and a guitar warm-up act. When he came on stage, in a three-piece linen suit, the crowd—by no means all young or male—whooped. The subject for this evening's sermon, he told the congregation of fans, was sacrifice.

An entire Peterson industry has flourished for those willing to sacrifice their money: there is a Jordan Peterson newsletter ("Mondays of Meaning"), a "Peterson Academy" ($500 a year gets you lectures on manly things by people with beards) and a "self-authoring programme". People who spend time writing about themselves, it promises, "become happier, less anxious and depressed". Who knew? Certainly not Ernest Hemingway or Virginia Woolf—or, apparently, Jordan Peterson. As he reached the climax of the evening's talk, his voice cracked. He is famous for weeping in speeches: YouTube offers a video compilation of "Jordan Peterson crying".

Mr Peterson's new book is as old-fashioned as his appearance. It reads as if it "could have been written in the 1950s", says a publisher. Or, indeed, the 1850s. It refers to sermons and Victorian biblical scholars. The reader has to wade through pages of archaisms from the King James Bible such as "liveth", "heareth", "beeves" (an old plural of "beef") and phrases like "an handful" of grain. The reader's "beeve" with this is not that the King James version lacks beauty. It does not. But when added to those metastasising post-modernists, it is all a bit of an handful.

However, to really understand Mr Peterson, forget his books. Do not look at the "supply side", but instead consider the "demand side", urges Richard Reeves, author of "Of Boys and Men", a book about how the modern male struggles. In other words: look at his fans. Not long after Mr Peterson came to prominence in 2016 with a public debate about gender-neutral pronouns, the #MeToo movement started to spread. Phrases like "toxic masculinity", "mansplaining" and "manspreading" were gaining ground, and there was anger at men's treatment of women.

But young men also had problems. The world has long been moving to an information economy that favours brains, not brawn. Women thrived. Men? Not always. In America and Britain boys lag behind girls in primary, secondary and university education. The appeal of Mr Peterson, and even Mr Trump, is "really driven by a big...socio-economic shift", says Francis Fukuyama, a professor of political science at Stanford University.

Discussing men's problems can prompt pushback and questions of "Is there a violin small enough?" according to Mr Reeves. But not for Mr Peterson. "Boys", he wrote in "12 Rules for Life", "are suffering, in the modern world."

After America's recent election, the consequences of all this are well known. We "rolled our eyes at young men when they said 'I'm suffering'," says Mr Reeves. So "of course they went somewhere else." Mr Trump is one beneficiary. Mr Peterson is another, because he was "offering something people needed". Which—in true nanny style—was partly sympathy and partly a dose of stern advice. As he wrote in "12 Rules": "Toughen up, you weasel."

From the stage in New York, he spoke for well over an hour about pain, death, "the void" and the "full existential catastrophe of life". Then he told his rapt fans how to deal with these things. Broadly speaking it was a softer version of: "Toughen up, you weasels." His audience scurried into the November night, looking absolutely delighted. ■

America's 28th president

Dove or raven?

Once adored, Woodrow Wilson continues to be reappraised

Woodrow Wilson. By Christopher Cox. *Simon & Schuster; 640 pages; $34.99*

How will Joe Biden and Donald Trump be remembered a century from now? Presidential legacies change over time. For decades, Woodrow Wilson, America's president from 1913-21 who died 100 years ago, enjoyed a reputation as an enlightened internationalist. He established the Federal Reserve and the Federal Trade Commission; he backed the creation of the League of Nations, a precursor to the UN, and was a staunch advocate for democracy abroad. In 1948 Arthur Schlesinger senior, a historian at Harvard, asked 55 other historians to rank the presidents in order of greatness: Wilson came fourth, behind Abraham Lincoln, George Washington and Franklin Roosevelt.

More recently Wilson has been downgraded, with his racism and sexism eclipsing his accomplishments. In 2020 Princeton stripped his name from its public-affairs school; Washington, DC's biggest high school did the same in 2022. In "Woodrow Wilson", Christopher Cox, a Republican who served in Congress for eight terms before running the Securities and Exchange Commission, offers a doggedly researched and soberly told story of American progress—and the president who stood in its way.

A Democrat and the first president from the South since the civil war, Wilson ▸▸

Opponents-in-chief

opposed constitutional amendments that extended citizenship and voting rights to all, arguing that it "put the negroes upon a footing of civil equality with the whites". He allowed the white supremacists he chose for his cabinet to resegregate the federal workforce.

Prickly and arrogant, Wilson was also hostile to women voting. Two weeks after assuming office Wilson held his first meeting with suffrage activists; he ended it peremptorily after ten minutes. A more confrontational meeting a year later ended similarly: Wilson stormed out after being asked a question, telling the assembled women, "I cannot permit myself to be cross-examined."

His response stemmed in part from his character: he hated being challenged or questioned, especially by those he considered inferior. While teaching at Bryn Mawr, a women's college, he wrote that teaching women history and politics was "about as appropriate and profitable as would be lecturing to stonemasons on the evolution of fashion". Later, as governor of New Jersey, he revealed he was "strongly against" women's suffrage, because of "the social changes it would involve".

As president, he framed suffrage as a question for states rather than the federal government. When he assumed office, women could vote in only nine states. From 1914-17, another eight states, including New York, extended to women the right to vote. But as activists grew bolder, Wilson's government grew more repressive. Pro-Wilson newspapers called for curtailing free speech during wartime. Mobs assaulted suffrage demonstrators (often with police complicity), and judges imposed lengthy sentences for the dubious crime of "obstructing traffic". Wilson may not have directed these crackdowns, but he did not stop them.

Eventually, however, the tension between supporting democracy abroad and denying it at home grew too great, and in late 1918 Wilson tepidly endorsed what would become the 19th Amendment, which granted women the right to vote. After Congress's approval, it went into effect in time for the election in 1920, which Republicans won handily, due in part to the influx of female voters. Wilson's presidency is a reminder of Congress's essential role as a change-maker. It is where "so many of the nation's important victories have been won", writes Mr Cox.

Years later, noting the zeal with which American women picked up their ballots, he wrote to a colleague, "I shall be very much disappointed in them [if] they have forgotten that they are chiefly indebted to me for the suffrage." It was he who was being forgetful: Wilson had been an opponent only until that stance became politically untenable. ■

The best podcasts of 2024

In earshot

Standout podcasts this year cover AI, war and mass hysteria

"Broomgate"
Subcultures often make for podcast gold. This show relives the greatest controversy in curling, a sport that marries ice hockey and shuffleboard. John Cullen, a comedian and former curler, narrates the scandal with authority.

"The Butterfly King"
Most true-crime podcasts explore recent history. Here Becky Milligan, a former BBC journalist, examines a very cold case: the possible murder of King Boris III of Bulgaria in 1943.

"D-Day: The Tide Turns"
The Allied invasion of Nazi-occupied France 80 years ago changed the course of history. This beautifully produced series tells the story of D-Day by focusing on the people who made it possible.

"Hysterical"
In 2011 a Tourette's-like syndrome affected a group of teenage girls in New York. Dan Taberski, an American podcaster, dives into the history and mystery of mass hysteria, speaking to victims and doctors.

"Not All Propaganda is Art"
A look at how culture became entwined with cold-war politics. Benjamen Walker, a radio host, corrals unexpected case studies. For example, to promote American interests, the CIA funded a film adaptation of George Orwell's "1984" and a journal aimed at left-wing intellectuals.

"The Rest is Entertainment"
One of the latest shows from Goalhanger, a production company behind "The Rest is History", is devoted to film, journalism and television. Those industries take themselves so seriously that it is a relief to spend time with people who do not.

"Shell Game"
Evan Ratliff, a journalist, clones his voice and lets his AI counterpart speak to scammers, spammers and even his wife. "What will it do to us," he asks, "when more and more of the people we encounter in the world aren't real?"

"Strangers on a Bench"
Ever wonder what those people sitting on a bench are thinking about? Tom Rosenthal, a singer-songwriter, joins them and finds out.

"Thief at the British Museum"
A curator at the British Museum stole objects and offered them for sale on eBay. Katie Razzall, the BBC's culture editor, meets Ittai Gradel, an antiquities dealer who uncovered the crime.

"The Wonder of Stevie"
In an age of fleeting fame, Stevie Wonder abides. Wesley Morris, a Pulitzer-prizewinning critic, interviews an eclectic cast of experts and fans (including Barack Obama). The show focuses on 1972-77, when the artist evolved from boy wonder to, well, Mr Wonder. ■

Religion and technology

Valley and the gods

Tech Agnostic. By Greg Epstein. *MIT Press; 368 pages; $29.95 and £27*

"ENTIRE SUBWAY CAR mesmerised by small gizmo clutched in hand. Some sort of worship?" The tweet by Joyce Carol Oates in 2019, alongside a photo of riders holding mobile phones, as if in prayer, neatly captures the way that society holds technology sacred. Most people check their phones on waking and just before sleeping (and glance at the screen throughout the day), replacing an earlier generations' ritual of prayers.

"Technology has become religion," writes Greg Epstein, a "humanist" (atheist) chaplain who works at Harvard University and Massachusetts Institute of Technology, in a provocative new book. Believe him?

There are plenty of parallels. Both tech and religion have gods, which in Silicon Valley might be mythical leaders such as Steve Jobs or Elon Musk, and reverential followers. Tech firms and religions are also considered all-powerful (by some) and claim institutions that have amassed almighty riches. Any journalist who has spent time in Silicon Valley can attest that tech companies are secretive and boast unique cultures and rules, like monastic orders. They also demand vows of allegiance—in the form of non-disclosure agreements and non-compete clauses.

Techies can sound as if they are spouting religious principles, too. Google's original motto—"Don't be evil"—has biblical overtones. Mr Musk has described his interplanetary ambitions as aiming to "extend the light of consciousness to the stars". Marc Andreessen, an investor in Silicon Valley, has compiled a list of the "patron saints of techno-optimism" who are "liberating...the human soul" in a manifesto that contains the words "we believe" almost 115 times.

The first half of "Tech Agnostic" does an excellent job of teasing out how tech companies have persuaded people to faithfully believe in their mission and people. It includes portraits of figures who have held great influence. One is Sam Bankman-Fried, the head of a once high-flying crypto firm, later found guilty of fraud. Another is Nick Bostrom, formerly a professor at Oxford University, who posits that there is a good chance everyone on Earth lives in a computer simulation.

Mr Epstein is at his best when he brings religious scholarship to his research on tech to offer original analysis. His observations are intriguing and perceptive, for example, when it comes to the "effective altruism" movement, a philosophy (read: eschatological doctrine) espoused by Mr Bankman-Fried that urges focus on long-term existential harms rather than short-term problems to save humanity.

But such insights are rare in the second half of the book, where the author recites a litany of familiar worries about technology, blaming it for too much screen time, "toxic masculinity", the precarious lives of workers in the gig economy and heavy surveillance through facial recognition and online advertising. Whatever the technology, Mr Epstein has found a person to interview who will criticise it in an overstated way, only for the author to soften it a smidgen (to give the devil his due), but let the point stand.

This represents a missed opportunity. Too few have examined the theism of tech leaders, from several AI pioneers' interest in the golem of Jewish mysticism to Jobs's practice of Zen Buddhism. Meanwhile, Pope Francis has convened several high-profile meetings in Rome with AI experts. At the start of the book, Mr Epstein asks: "Am I speaking literally, or have I written this book to weave the most elaborate and annoying metaphor you'll ever read in your entire life? Yes." He does not bear false witness. The book posits an intriguing thesis that is marred by a failure to do justice to the subject. ■

Musicals and money

Sing it from the rooftops

The arbitrage between Broadway and the West End

WHEN "HADESTOWN", a musical that sets the myth of Orpheus and Eurydice to New Orleans-style jazz, was produced in 2019 and opened on Broadway, it took an initial investment of $11.5m. Since then American consumer prices have risen by more than 20%. But one producer of "Hadestown" has estimated it would cost $18m to put on today—a rise of 57%. Talk about hellish inflation.

Mounting a show in New York has become so astronomically expensive that it is there, where the modern musical was born, that producers and investors are more afraid to take risks. Increasingly they are looking to London, where it is unexpectedly cheaper, to open musicals instead.

According to documents seen by *The Economist*, the revival of Andrew Lloyd Webber's "Sunset Boulevard", which

Rethinking centre stage

opened on Broadway on October 20th, starring Nicole Scherzinger (formerly of The Pussycat Dolls, a band), required investors to stump up $13.5m before the curtain could rise. The same revival's initial run in London, also starring Ms Scherzinger, at the Savoy Theatre in late 2023, took an upfront investment of just £2.3m ($3m). Operating costs told a similar story: the Broadway production was forecast to burn through $950,000 each week, nearly three times more than the West End one had.

Why have theatre costs in particular spiralled so much higher of late? One reason is dearer raw materials. The price of timber, which theatre sets tend to use a lot of, has risen by some 40% since the end of 2019. Electricity costs have risen too, by around 40% per kilowatt-hour in New York. Yet energy costs have soared even higher in Britain, and productions on both sides of the Atlantic need timber.

The biggest factor explaining the difference between New York and London is the price of labour, and in particular the effectiveness of American theatre-worker unions in bargaining it up. This started during the covid-19 pandemic. Many cite a desire to fight racial inequality as a reason for demanding better pay and working conditions, since junior technical staff with the worst deals are disproportionately from ethnic minorities.

In theory such negotiations take place between unions and representatives from the Broadway League, a trade body. Some producers, however, describe pay deals as being struck in effect between unions and theatre owners. The owners are more worried about strikes that would send their theatres dark than they are about wage costs. (Strikes would force theatres to give up money from tickets they have already sold; the wage bill can simply be passed on to producers and their investors.) And so salaries have continued to crescendo.

Unions in London, meanwhile, are less ▸▸

prevalent and far less aggressive in calling for strikes. Seen from New York, the result is a bemusing degree of naivety on the part of British actors. An American producer describes congratulating one of the young stars of "Next to Normal", a musical about mental health, on an outstanding performance in London, only to later find out they were being paid "something like £500 a week"—an unthinkably low sum for any Broadway lead.

The incentives to develop new shows and revive old ones away from Broadway are growing. That is in spite of a deep bench of theatrical and technical talent, and the fact that New Yorkers tend to be more enthusiastic about musicals than just about anyone else. "I know lots of producers with projects in development who are saying they'll just go to the UK," says Heather Shields, an American producer of a recent revival of "Cabaret" that started in London before heading to Broadway. "It might be less convenient for me, but I can jump on a plane."

The higher costs mean Broadway will continue to become a less attractive place to take the sort of risks that are a prerequisite for brilliant, ground-breaking theatre. Shows by the likes of Lord Lloyd Webber will always find a home there, as will those fronted by stars whose names can pull in punters. But if you want to catch the next Stephen Sondheim, it is increasingly likely that you will need to turn your back on Times Square. ■

Canadian football

Can you catch the difference?

MONTREAL AND OTTAWA

Smaller, scrappier but more entertaining than the American version

THE NATIONAL FOOTBALL LEAGUE (NFL) in America is not known for being understated. Military jets sometimes fly in formation over stadiums; many games feature orchestrated flag presentations and deafening firework displays to celebrate home-team touchdowns and victories. Pop divas sing "The Star-Spangled Banner", and players take the field at a healthy distance from fans.

Football is different up north. A recent game in Ottawa between the home team, the Redblacks, and the Hamilton Tiger-Cats featured a couple of fireworks when the home team was introduced, but they were the sort a daring dad might set off impromptu outdoors. Fans stood for the national anthem, but there were no flyovers or ostentatious displays of patriotism. Before the game, players and fans chatted casually over the low fence separating the field from the stands. When the Redblacks scored, a man in flannel resembling the team's lumberjack mascot chainsawed a disc off a giant wooden log. The whole experience, in other words, was friendly, a little goofy, low-key and fun.

On November 17th the Toronto Argonauts and the Winnipeg Blue Bombers competed for the Grey Cup, as the Canadian Football League (CFL) championship is known. The Toronto Argonauts were victorious (pictured). Although the Grey Cup came first—this was the 111th, compared with just the 59th Super Bowl—the game is much less popular and well known than the NFL's championship match. Two days beforehand, tickets to the Grey Cup were still available for around C$200 ($143), whereas tickets for the Super Bowl in February could easily cost 60 times that, if they can be found at all.

This reflects a more general disparity: the NFL draws more fans, pays players more, makes more broadcast revenue and has more teams (32, compared with the CFL's nine) that are worth more money. But Canadian football has one huge advantage: it is a better game.

The CFL field is 30 yards longer, including end zones, and nearly 12 yards wider, than an NFL field. Each team has 12 rather than 11 players, and has three downs (chances to advance the ball ten yards) rather than four. CFL teams can score a single point if they kick or punt a ball into their opponent's end zone, and the opponent's team fails to advance it out (no such chance exists in the NFL).

These differences in rules make for a passing-friendly, higher-scoring game, in which possession changes more often, as well as who is in the lead. Micah Awe, a linebacker for the Calgary Stampeders and former NFL player, explains, "No team is ever out of it. If there's three minutes left and you're down by two touchdowns, that's plenty of time" to come back.

Mr Awe is American, as are many CFL players. More than 80,000 students play college football in America each year; a minuscule share make it to the NFL, where the average career lasts just over three years. The CFL is an enticing alternative for those who just miss the cut. According to the league's bylaws, each team is allowed just 19 Americans (not including quarterbacks) on their 45-man roster; 21, including eight starting players, must be Canadian.

Americans tend to play most of the skilled positions, such as quarterback and running back. For decades, the CFL was more hospitable to black quarterbacks than the NFL. Not until 2023 did two black starting quarterbacks face each other in a Super Bowl, 42 years after J.C. Watts and Warren Moon faced off in the Grey Cup (Mr Watts later served four terms in Congress, while Mr Moon thrived in the NFL).

Even with this history and faster-paced game, the CFL sometimes struggles. In its biggest markets—Toronto, Montreal and Vancouver—football competes with hockey, which is more popular, and other types of entertainment. Toronto, Canada's biggest city, is just a couple of hours' drive from Buffalo, home to the NFL's Bills, which advertise heavily north of the border. The Lions and Vikings, in Detroit and Minneapolis respectively, also cultivate loyal fan bases in Canada.

This has led to very different fortunes. Two of the three most popular teams, the Blue Bombers and the Saskatchewan Roughriders, are "community-owned" non-profits; some teams have faced financial difficulties, and ownership tends to change more often than for NFL franchises. CFL teams remain heavily dependent on game-day revenue from tickets and concessions, which means they can suffer during a bad season, if fans stay away (as they did during covid).

One former executive suggested stabilising the CFL by making it the NFL's minor league, where players not quite good or healthy enough could develop. However, he says he "got so much hate mail from Canadians" accusing him of wanting to give away a source of national pride. Such a merger seems unlikely.

Randy Ambrosie, the outgoing CFL commissioner, argues that game-day revenues, TV ratings and team revenues are all rising just as television rights are up in 2026, positioning the league well for a more lucrative deal than it has now. And as long as Americans who love football but do not quite make the NFL head north each year, the game will remain great fun to watch. As Mr Awe, the linebacker, notes, "We don't have million-dollar contracts. None of us will retire off the money we're making in the CFL, but that's not the point. It's really for the love of playing." ■

A hands-down win

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 $ Nov 20th	% change on year ago
United States	2.7	Q3	2.8	2.7	2.6	Oct	2.8	4.1	Oct	-3.4	-6.6	4.4	-1.0	-	
China	4.6	Q3	3.6	4.9	0.3	Oct	0.5	5.0	Oct‡§	0.7	-4.4	1.7 §§	-83.0	7.24	-1.0
Japan	0.3	Q3	0.9	0.2	2.5	Sep	2.6	2.4	Sep	3.7	-4.7	1.1	31.0	156	-4.7
Britain	1.0	Q3	0.6	1.1	2.3	Oct	2.9	4.3	Aug††	-2.9	-4.0	4.4	28.0	0.79	1.3
Canada	0.9	Q2	2.1	1.2	2.0	Oct	2.3	6.5	Oct	-1.2	-1.2	3.3	-34.0	1.40	-2.1
Euro area	0.9	Q3	1.5	0.8	2.0	Oct	2.4	6.3	Sep	3.2	-3.1	2.4	-26.0	0.95	-4.2
Austria	-0.9	Q2	-0.2‡	-0.5	1.8	Oct	2.9	5.6	Sep	2.3	-2.3	2.8	-39.0	0.95	-4.2
Belgium	1.1	Q3	0.8	1.1	4.5	Oct	4.0	5.5	Sep	-0.9	-4.6	3.0	-29.0	0.95	-4.2
France	1.3	Q3	1.5	1.2	1.6	Oct	2.5	7.6	Sep	-0.6	-6.1	3.3	44.0	0.95	-4.2
Germany	-0.2	Q3	0.7	-0.1	2.4	Oct	2.4	3.5	Sep	6.3	-1.6	2.4	-26.0	0.95	-4.2
Greece	2.7	Q2	4.4	2.2	3.1	Oct	2.9	9.3	Sep	-6.4	-1.3	3.2	-65.0	0.95	-4.2
Italy	0.4	Q3	-0.1	0.6	1.0	Oct	1.2	6.1	Sep	1.5	-4.3	3.6	-76.0	0.95	-4.2
Netherlands	1.7	Q3	3.3	0.6	3.3	Oct	3.4	3.7	Sep	9.6	-1.9	2.6	-34.0	0.95	-4.2
Spain	3.4	Q3	3.4	2.7	1.8	Oct	3.0	11.2	Sep	2.6	-3.2	3.0	-54.0	0.95	-4.2
Czech Republic	0.9	Q2	1.5	1.1	2.8	Oct	2.2	2.9	Sep‡	0.3	-2.5	4.0	-31.0	24.0	-6.8
Denmark	3.6	Q3	5.1	1.8	1.6	Oct	1.3	2.9	Sep	10.8	2.1	2.1	-74.0	7.09	-3.8
Norway	4.2	Q2	5.7	1.0	2.6	Oct	2.2	4.0	Aug‡†	17.0	12.3	3.7	7.0	11.1	-3.2
Poland	2.7	Q3	-0.8	3.1	5.0	Oct	3.8	5.0	Oct§	1.4	-5.7	5.6	5.0	4.12	-3.4
Russia	3.1	Q3	na	3.7	8.5	Oct	8.5	2.4	Sep§	3.1	-1.7	16.2	440	101	-12.1
Sweden	0.2	Q3	-0.4	0.7	1.6	Oct	2.0	7.8	Oct§	7.3	-0.9	2.1	-65.0	11.0	-5.2
Switzerland	1.8	Q2	2.8	1.2	0.6	Oct	1.2	2.6	Oct	7.4	-0.9	0.4	-54.0	0.89	nil
Turkey	2.5	Q2	0.3	2.9	48.6	Oct	57.7	8.6	Sep§	-1.8	-4.5	28.2	140	34.5	-16.6
Australia	1.0	Q2	0.9	1.1	2.8	Q3	3.1	4.1	Oct	-0.6	-1.0	4.7	-1.0	1.54	-0.7
Hong Kong	1.8	Q3	-4.2	3.1	2.2	Sep	2.3	3.1	Oct‡‡	11.9	-3.1	3.4	-47.0	7.78	0.1
India	6.7	Q2	4.5	7.0	6.2	Oct	4.7	8.7	Oct	-0.5	-4.9	6.8	-40.0	84.4	-1.3
Indonesia	4.9	Q3	3.8	5.1	1.7	Oct	2.2	4.9	Q3§	-0.1	-2.5	6.9	29.0	15,865	-2.6
Malaysia	5.3	Q3	6.3	5.1	1.8	Sep	1.9	3.2	Sep§	2.6	-4.5	3.8	-10.0	4.47	4.5
Pakistan	3.2	2024**	na	2.8	7.2	Oct	13.6	6.3	2021	-1.2	-7.4	12.2 †††	-289	278	2.7
Philippines	5.2	Q3	7.0	5.5	2.3	Oct	3.2	4.7	Q3§	-2.9	-6.1	6.0	-42.0	58.9	-5.7
Singapore	4.1	Q3	8.7	3.1	2.0	Sep	2.6	1.8	Q3	19.8	0.2	2.9	-11.0	1.34	-0.7
South Korea	1.7	Q3	0.5	2.3	1.3	Oct	2.4	2.3	Oct§	3.8	-1.8	3.0	-73.0	1,391	-7.2
Taiwan	4.0	Q3	4.4	4.2	1.7	Oct	2.1	3.4	Sep	14.1	0.5	1.5	19.0	32.5	-2.6
Thailand	3.0	Q3	4.9	2.5	0.8	Oct	0.6	1.0	Oct§	1.9	-3.7	2.4	-56.0	34.7	1.1
Argentina	-1.7	Q2	-6.8	-3.5	193	Oct	221.2	7.6	Q2§	0.9	nil	na	na	1,003	-64.7
Brazil	3.3	Q2	5.9	3.0	4.8	Oct	4.3	6.4	Sep§‡‡	-1.6	-7.6	12.9	194	5.77	-15.8
Chile	2.3	Q3	2.7	2.1	4.7	Oct	4.0	8.7	Sep§‡‡	-2.6	-2.4	5.9	15.0	970	-9.6
Colombia	2.0	Q3	0.8	1.6	5.4	Oct	6.7	9.1	Sep§	-2.7	-5.7	10.4	-33.0	4,409	-8.6
Mexico	1.5	Q3	4.1	1.4	4.8	Oct	4.8	2.7	Sep	0.3	-5.2	9.9	43.0	20.2	-15.2
Peru	3.6	Q2	9.8	3.0	2.0	Oct	2.4	5.9	Oct§	1.0	-4.0	6.7	-33.0	3.79	-1.1
Egypt	2.4	Q2	12.6	2.4	26.5	Oct	28.5	6.7	Q3§	-5.2	-3.7	na	na	49.8	-37.8
Israel	-1.0	Q3	3.8	0.1	3.5	Oct	3.2	2.5	Oct	4.6	-7.2	4.7	43.0	3.74	-0.3
Saudi Arabia	-0.8	2023	na	1.5	1.9	Oct	1.7	3.3	Q2	-0.9	-2.4	na	na	3.75	nil
South Africa	0.3	Q2	1.8	1.1	2.8	Oct	4.6	32.1	Q3§	-1.8	-5.2	9.0	-101	18.1	1.5

*% change on previous quarter, annual rate. †The Economist Intelligence Unit estimate/forecast. §Not seasonally adjusted. ‡New series. **Year ending June. ††Latest 3 months. ‡‡3-month moving average. §§5-year yield. †††Dollar-denominated bonds. Source: Haver Analytics Note: Euro area consumer prices are harmonised.

Markets

In local currency	Index Nov 20th	% change on: one week	Dec 29th 2023
United States S&P 500	5,917.1	-1.1	24.1
United States NAS Comp	18,966.1	-1.4	26.3
China Shanghai Comp	3,368.0	-2.1	13.2
China Shenzhen Comp	2,037.7	-3.9	10.9
Japan Nikkei 225	38,352.3	-1.0	14.6
Japan Topix	2,698.3	-0.4	14.0
Britain FTSE 100	8,085.1	0.7	4.5
Canada S&P TSX	25,036.5	0.2	19.5
Euro area EURO STOXX 50	4,729.7	-0.2	4.6
France CAC 40	7,198.5	-0.3	-4.6
Germany DAX*	19,004.8	nil	13.5
Italy FTSE/MIB	33,227.7	-1.4	9.5
Netherlands AEX	858.6	-0.5	9.1
Spain IBEX 35	11,589.5	1.9	14.7
Poland WIG	77,894.2	-3.1	-0.7
Russia RTS, $ terms	816.29	-7.8	-24.7
Switzerland SMI	11,539.6	-1.4	3.6
Turkey BIST	9,031.8	-2.9	20.9
Australia All Ord.	8,579.1	1.5	9.6
Hong Kong Hang Seng	19,705.0	-0.6	15.6
India BSE	77,578.4	-0.1	7.4
Indonesia IDX	7,180.3	-1.8	-1.3
Malaysia KLSE	1,598.2	-0.8	9.9

	Index Nov 20th	% change on: one week	Dec 29th 2023
Pakistan KSE	95,546.4	2.3	53.0
Singapore STI	3,743.6	0.6	15.5
South Korea KOSPI	2,482.3	2.7	-6.5
Taiwan TWI	22,688.4	-0.8	26.5
Thailand SET	1,462.5	0.8	3.3
Argentina MERV	2,145,971.8	5.1	130.8
Brazil BVSP*	128,197.3	0.4	-4.5
Mexico IPC	50,168.9	-1.1	-12.6
Egypt EGX 30	30,588.0	-2.7	22.9
Israel TA-125	2,280.9	-1.1	20.9
Saudi Arabia Tadawul	11,867.9	-0.5	-0.8
South Africa JSE AS	85,274.8	1.8	10.9
World, dev'd MSCI	3,739.0	-0.7	18.0
Emerging markets MSCI	1,094.9	0.1	7.0

US corporate bonds, spread over Treasuries

Basis points	latest	Dec 29th 2023
Investment grade	96	154
High-yield	313	502

Sources: LSEG Workspace; Moscow Exchange; Standard & Poor's Global Fixed Income Research. *Total return index.

Commodities

***The Economist* commodity-price index** 2020=100	Nov 12th	Nov 19th*	% change on month	year
Dollar Index				
All items	130.3	130.8	0.4	1.4
Food	141.0	142.5	3.9	6.2
Industrials				
All	121.5	121.2	-2.7	-2.9
Non-food agriculturals	134.5	134.4	1.2	7.6
Metals	118.2	117.8	-3.7	-5.5
Sterling Index				
All items	131.2	132.7	2.9	0.4
Euro Index				
All items	140.4	141.2	2.6	4.7
Gold				
$ per oz	2,599.8	2,625.2	-4.3	31.1
Brent				
$ per barrel	72.2	72.9	-4.1	-11.6

Sources: Bloomberg; CME Group; FT; LSEG Workspace; NZ Wool Services; S&P Global Commodity Insights; Thompson Lloyd & Ewart; USDA; WSJ. *Provisional.

For historical indicators data, visit economist.com/economic-and-financial-indicators

OBITUARY
Frank Auerbach

Britain's most obsessive figurative painter died on November 11th, aged 93

ALMOST EVERY day of the week, for more than six decades, Frank Auerbach would stride along Mornington Crescent. It was, and is, a typical North London street: tall terraced houses of soot-red brick and stucco, with a railed garden on one side. Often he carried a plain pad and a stick of graphite, to make sketches at sunrise before his neighbours stirred. He enjoyed the early, oily yellow light on the buildings and the sleeping cars.

This, with gritty Camden Town and the green slopes of Primrose Hill, was his complete world. He needed no other. Its radius was perhaps a mile and a half, but it contained all the things he most liked painting, over and over again. "His" chimney stack, at the back of the Black Cat cigarette factory; "his" Tube station, in original crimson tiles; Camden High Street, a chaos of awnings, signage, buses and vivid buildings; Primrose Hill in slabs of viridian, red and blue; and the little wicket gate, along the crescent, that led down to his studio. By 2023 a painting of the crescent, done in 1969, fetched more than $7m. But fame had not displaced him.

His studio was a paint explosion. On canvases, of course, but also on the walls and, inches deep, on the floor. Once a brush was in his hand, he was instantly happy. He worked in a sort of storm, often squeezing the paint-tubes directly on the canvas and leaving the squidges as they were. The paintings he became most famous for, from the late 1940s, were so thickly built up that they were as heavy as bas reliefs. His first portrait of his longtime lover, Estella Olive West, seemed to have been cast from wet cement. His paintings of London bomb sites, which he found intensely dramatic, even sexy, were nightmares of muddy disruption. Yet it was one of those, "Summer Building Site" (1952) with black and orange forms embracing two delicate yellow ladders, that seemed to declare he had broken a barrier and made art that was new. Steadily, though slowly, galleries and collectors caught on.

His task for the rest of his life was to make his art memorable. Just one image lodged in the public mind was all he wanted: one image that would also satisfy him and stand up by itself. But he was not a man to be satisfied. His muttered mantra as he painted was "Rubbish, complete rubbish." To prove the point, at the end of almost all his sessions he would scrape the canvas clean again. To produce one good picture, anything that was merely adequate had to be obliterated with more paint, or destroyed. One portrait took 300 sittings. His bills for paint—blacks, browns and dull greens, "Rembrandt and Hals colours", in the early years, bright chromium and cadmium colours once he had the money—were extraordinary, because he reckoned that 95% of it went into the bin. Charcoal and graphite were expunged with an eraser, leaving faces behind that were poignant in their ghostliness.

Enclosed in his studio with his ceaseless pursuit, often sleeping there, he might have been a gloomy recluse. Not so. He painted because it was fun, and much the most interesting thing he could think of doing. He resisted interviews and shows because they deflected him. His only memory of his early childhood (a Berlin childhood sharply interrupted by a Kindertransport journey to England and the murder of his parents in Auschwitz) was the good feel of a wet brush being plunged into a paintbox and the colour soaking through the paper. By the age of 16 he wanted to be an artist; when he left art college he started to sell his paintings from the pavement. For years he was extremely poor, and would take any job: acting, frame-making, or working in his friend Leon Kossoff's family bakery in Brick Lane. Leon took the cake side and he the bread side, two young artists hungering to excel. He was saved from penury when the Beaux Arts in the early 1960s gave him an annuity, and he could devote himself to art.

He was not a hermit, therefore, but he still demanded a tightly focused life. Just as he had his own corner of London, he had his own small circle of friends and sitters, half a dozen or so, including Estella and Julia Wolstenholme, his wife. For years they would come to the studio at the same time every week—he fretted if they were late—and sit for two sessions of an hour. Gradually they would emerge as impasto in a broken black outline, with slashes of colour contrast here and there. It was vital to keep to the faces he knew well, as to the places, so that he could seize more life and see more truth in them. (He kept using himself as a subject for the same reason, and he was infinite.) He thought how well Monet had known waterlilies, in order to paint them as he did.

Though his work did not often shout it out, his artistic influences were many: Titian, Rembrandt, Matisse, Monet, Ingres, Cézanne. It was impossible to match their standard and scope, as it also was to do anything that had never been done before. His most influential teacher was David Bomberg at the Borough Polytechnic; his circle included Francis Bacon and Lucian Freud, who collected his pictures from early on. Although he seemed in many respects a loner, his mind was crowded with painters he admired. Their presence made it all the harder to produce that one indelible image he was striving for.

Nonetheless, he kept grappling. He had analysed his task as a painter: not to reproduce the material object on the canvas, but to try to depict the way his mind had grasped it. Portraits demanded the same approach: he painted his friends as they felt, to him, to be. Depending on his mood, the context, the time of day, his subjects were continually changing, as were the colours they called for. As the years passed, his paint got brighter and lighter and his studio almost clean. He did not think he had ever been an Expressionist painter. But if his frantic thick layering had expressed impatience with the challenge he had set himself, his later works seemed more relaxed. He would never quite pin down his friends, his lovers, himself, or Mornington Crescent. The dawn light on brick and stucco was different every day. ■

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