

The Economist

China's other debt problem

Nuclear power: safe and essential

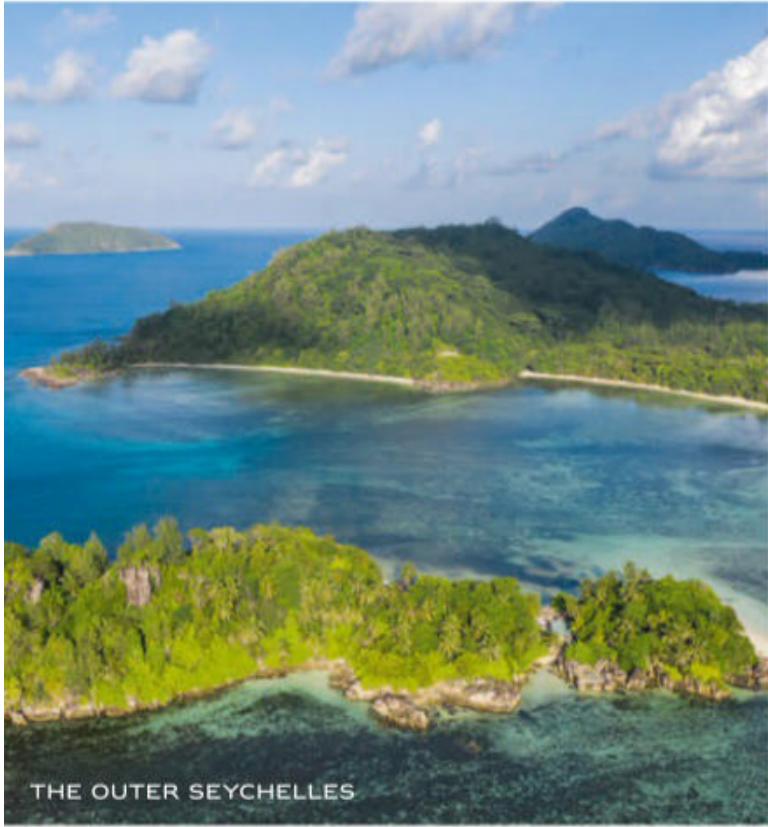
Biden's inflation headache

The welcome spread of the right to die

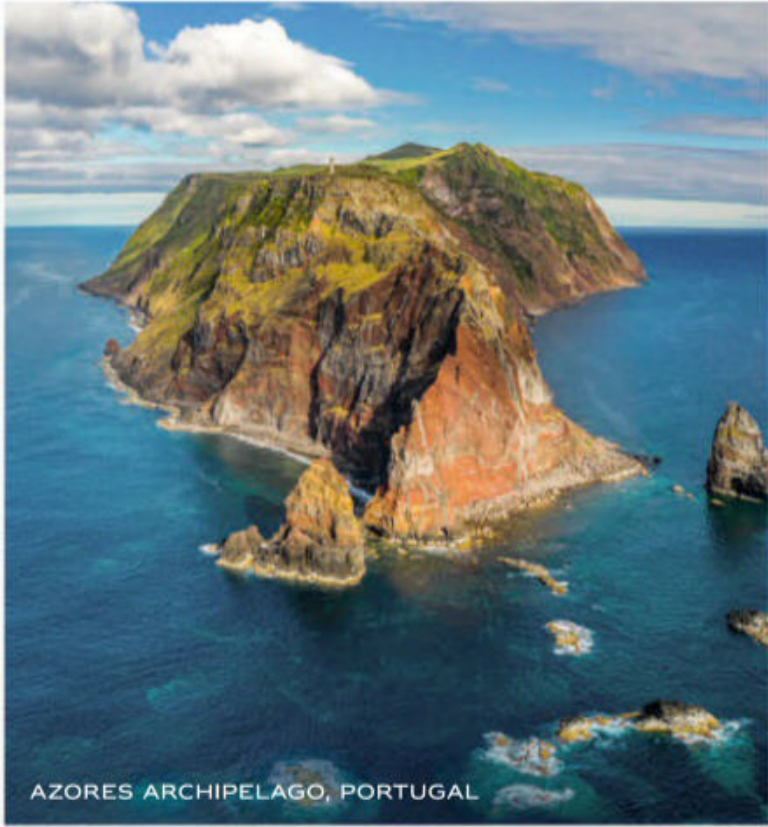
NOVEMBER 13TH–19TH 2021

Putin's new era of repression





THE OUTER SEYCHELLES



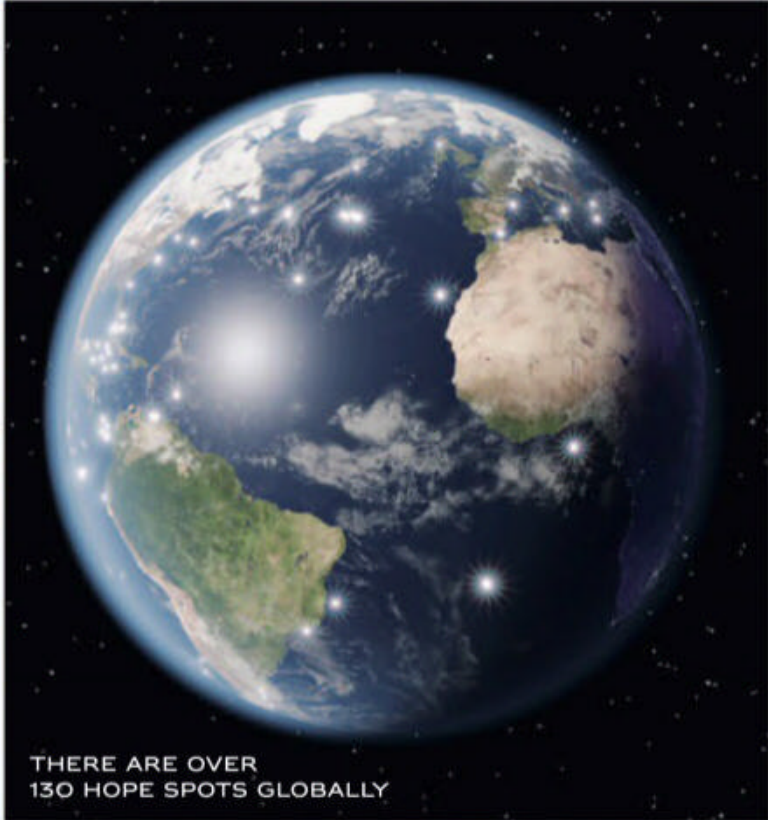
AZORES ARCHIPELAGO, PORTUGAL



FLORIDA GULF
COASTLINE,
UNITED STATES



SYLVIA EARLE EXPLORES
COCOS ISLAND, COSTA RICA



THERE ARE OVER
130 HOPE SPOTS GLOBALLY



SYLVIA EARLE WITH
VOLUNTEERS, THE
OUTER SEYCHELLES



GREAT BARRIER REEF, AUSTRALIA



MOBULA RAYS, AZORES
ARCHIPELAGO, PORTUGAL



SEA LION,
GALAPAGOS,
ECUADOR



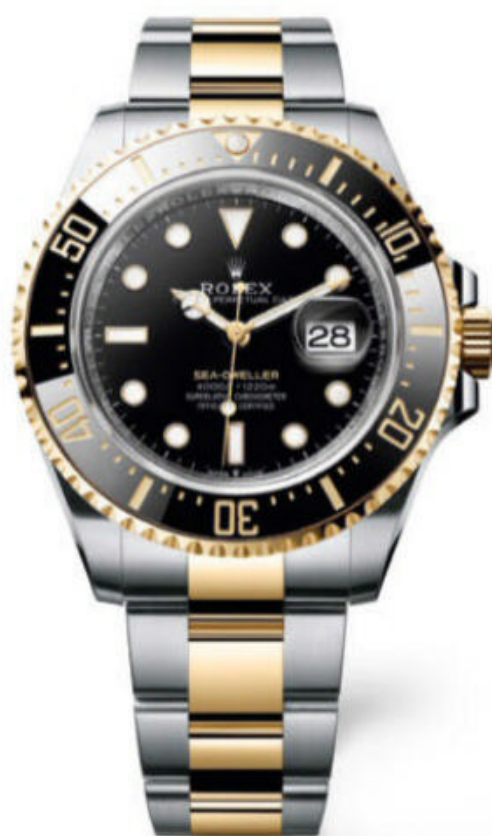
ON OUR WATCH

Hope can now be spotted across all our planet's seas and oceans. Sites are made into aquatic havens by local communities, to safeguard the richness and diversity of the ecosystems they depend on. Sylvia Earle's invaluable experience as an explorer and marine biologist continues to help further their goal, through her organisation, Mission Blue. Together, they have created over 130 Hope Spots and counting. Carrying a message of hope for generations to come.

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#Perpetual

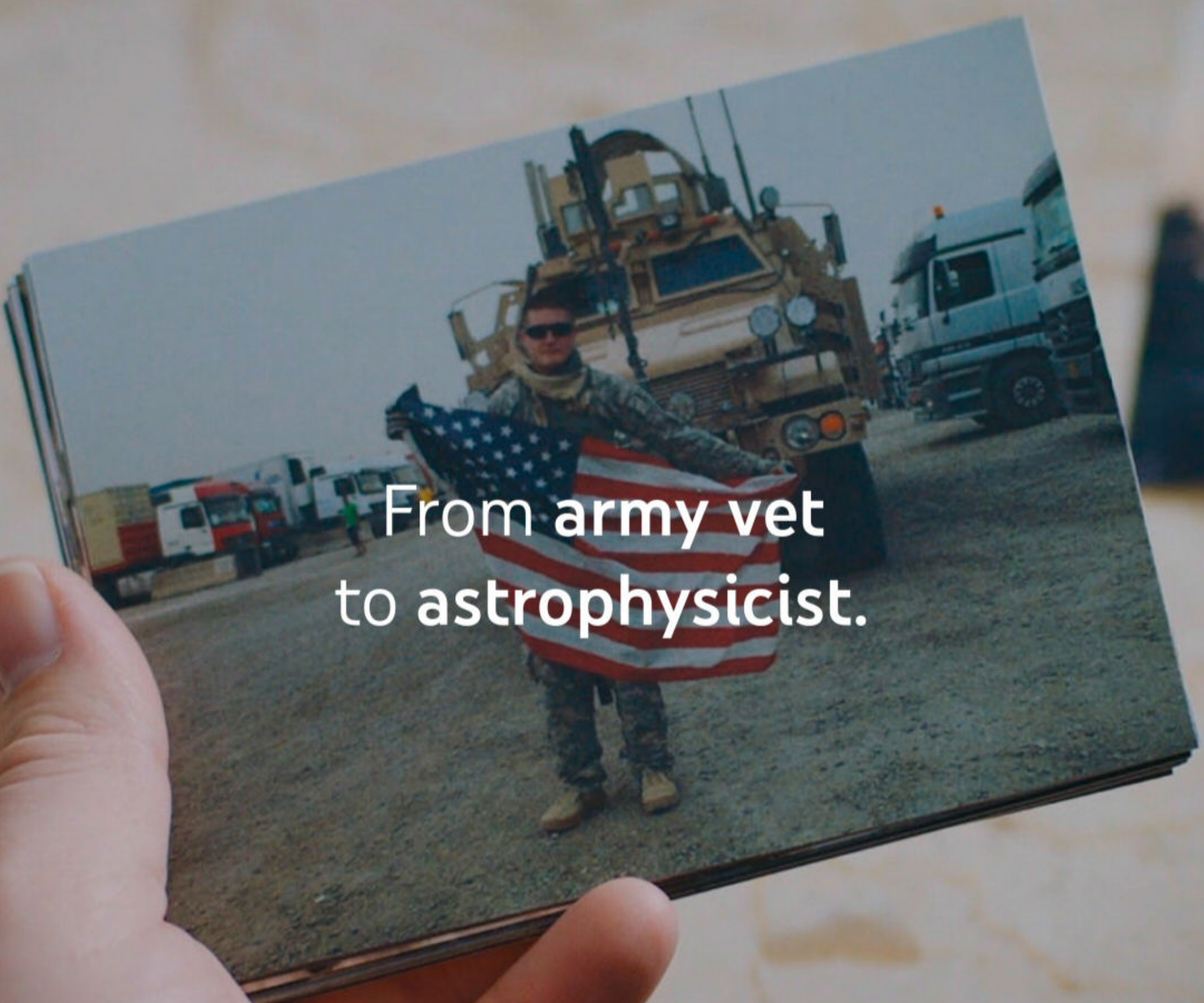


OYSTER PERPETUAL
SEA-DWELLER

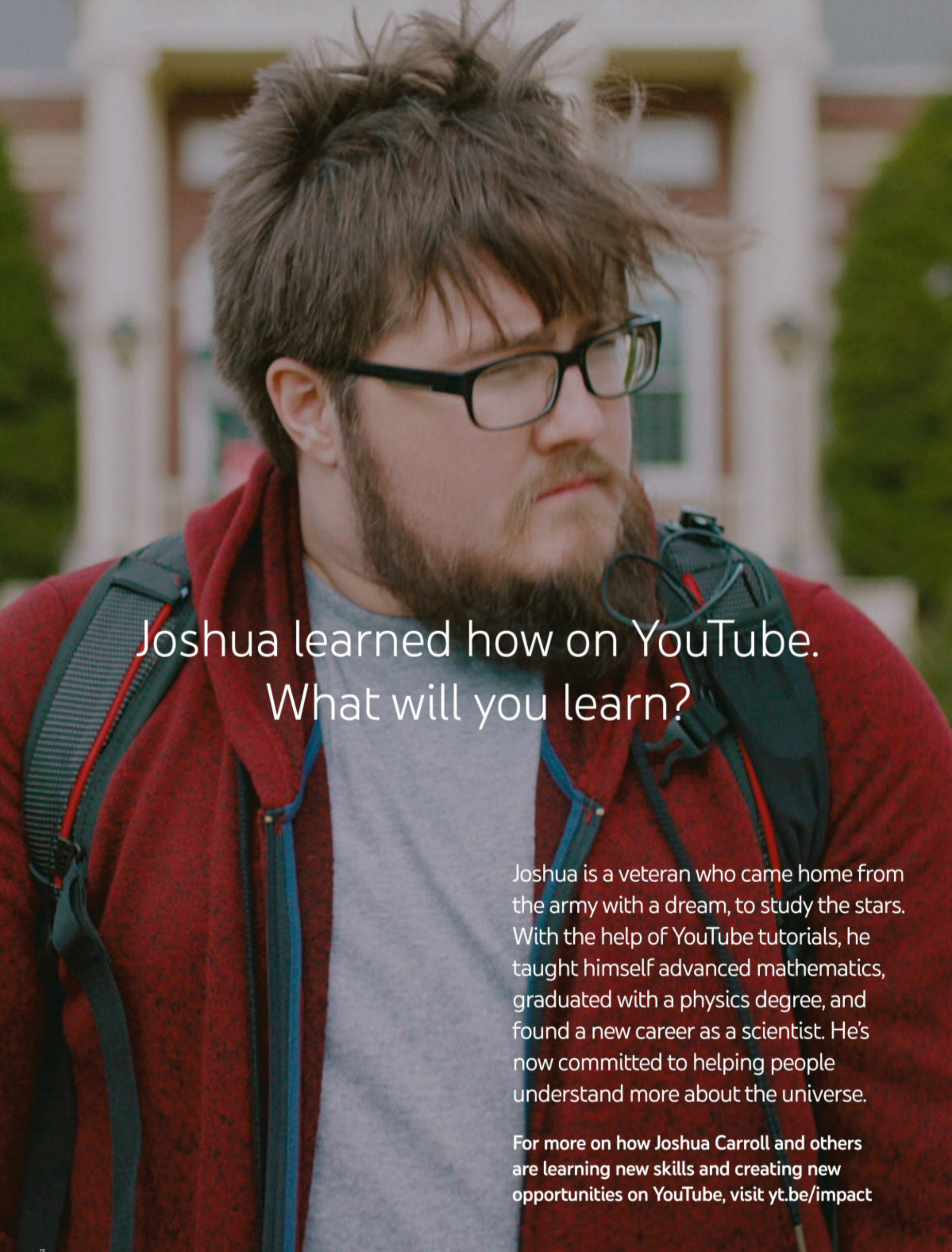


ROLEX SUPPORTS MISSION BLUE
IN ITS COMMITMENT TO PROTECTING
30% OF THE OCEANS BY 2030



A hand is holding a color photograph. The photo shows a soldier in camouflage uniform and sunglasses, holding a large American flag. The soldier is standing in front of a line of military vehicles, including a large tan armored truck and several white semi-trucks. The background is a dusty, open area under a clear sky.

From army vet
to astrophysicist.

A man with a beard and glasses, wearing a red jacket and a backpack, looking off to the side. The background is a blurred outdoor setting with buildings and trees.

Joshua learned how on YouTube. What will you learn?

Joshua is a veteran who came home from the army with a dream, to study the stars. With the help of YouTube tutorials, he taught himself advanced mathematics, graduated with a physics degree, and found a new career as a scientist. He's now committed to helping people understand more about the universe.

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KEEP UP WITH THE CLICKS.



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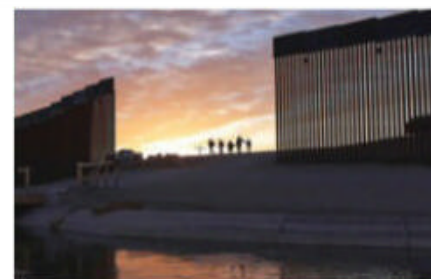


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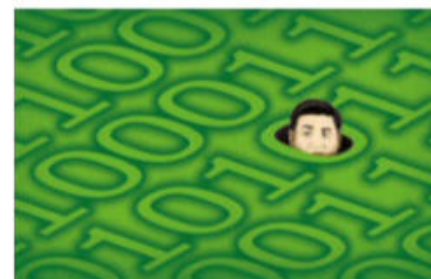
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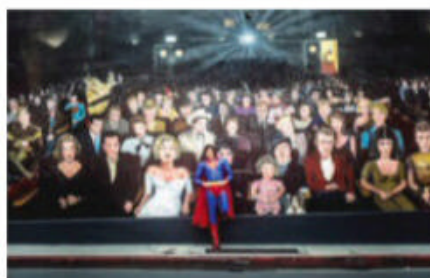
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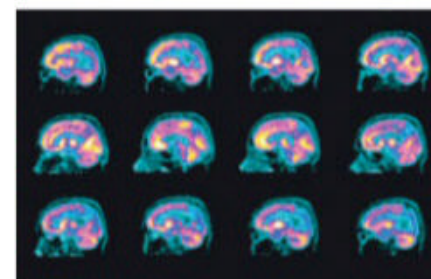
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As delegates haggled over the final drafts at the **UN COP26** climate-change summit in Glasgow, America and China issued a joint declaration to work together to reduce emissions. The two countries said they were committed to keeping the increase in Earth's mean surface temperature to "well below" 2°C compared with pre-industrial levels. China said it would come up with a national plan to curb methane emissions. Time will tell whether their statement was diplomatic showboating or the start of something more substantive.

Belarus kept dumping migrants at the border with Poland and barring them at gunpoint from retreating. It has been luring them onto flights from the Middle East with false promises of easy passage to the European Union. The migrants cannot enter Poland, and with winter coming, may soon freeze. The despotic regime of Alexander Lukashenko apparently hopes to cause another political crisis in the EU about refugees. Poland has sent 15,000 troops to the area.

The **British** government announced that National Health Service frontline staff in England will need to be vaccinated against covid-19 by April 1st. The latest government data show that 10% of all NHS employees are not fully jabbed. This week was the deadline for care staff to meet the requirement; around a quarter of those workers have not received their full dose.

The White House urged large companies to press ahead with plans to ensure their staff are vaccinated by early January,

after a federal appeals court temporarily suspended Joe Biden's **vaccine mandate**. The court said it had "grave statutory and constitutional" concerns about the order. The government asked it to reverse its decision.

Mr Biden was able to claim a big victory when the House of Representatives at last passed his \$1trn **infrastructure bill**. The bill had seemed in peril when left-wing Democrats insisted that welfare legislation should come up for a vote at the same time.

It'll still be there

NASA pushed back its planned mission to land astronauts on the **Moon**, its first since 1972, by at least a year, to 2025. A lawsuit brought by Jeff Bezos's Blue Origin over the contract awarded to SpaceX to build the Moon lander was one reason for the delay (a judge recently dismissed the suit).

Daniel Ortega, the authoritarian president of **Nicaragua**, won a fourth consecutive term. Joe Biden called the election a "pantomime". Over the past six months Mr Ortega has imprisoned some of his potential opponents and forced others to flee. Many hundreds of ordinary people who have protested against his regime in the past remain behind bars.

Chile's Chamber of Deputies approved impeachment proceedings against Sebastián Piñera, after leaked documents raised more questions about a mining deal that the president's family signed during his first term in 2010 (he denies wrongdoing). But the opposition will struggle to obtain the two-thirds majority needed to impeach Mr Piñera formally in the Senate.

The Central Committee of China's Communist Party held an annual meeting at which delegates discussed a resolution on the party's history, the first of its kind in 40 years. It appeared to be aimed at justifying

an extension of **Xi Jinping's** rule beyond a party congress in 2022.

America urged **China** to release Zhang Zhan, a citizen journalist who was sentenced to four years in prison for her reporting on the early days of the covid-19 pandemic in Wuhan. The government continued to battle a new outbreak of the disease that began in mid-October and has caused hundreds of infections.

Thailand's constitutional court ruled that three activists who called for reforms to the country's monarchy during protests last year were guilty of attempting to overthrow the king. The court focused on whether the speeches were constitutional, so no penalty was imposed, but the ruling will stifle debate about the monarchy's role.

The Duterte dynasty

Sara Duterte, the daughter of Rodrigo Duterte, president of the **Philippines**, withdrew her candidacy for re-election as mayor of Davao City, kindling speculation that she intends to run for a national post in the presidential election next year. Her father will have served the full presidential term allowed.

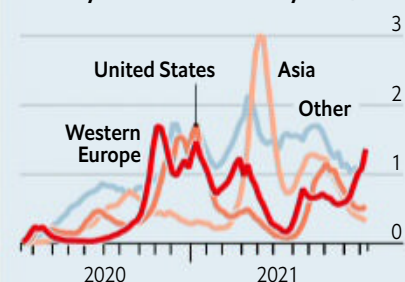
Mustafa al-Kadhimi, the prime minister of **Iraq**, was the target of an assassination attempt. The attack reportedly involved drones, one of which reached Mr Kadhimi's home. He was unharmed, though six of his guards were wounded. Suspicion has fallen on Iranian-backed militias.

Iran's top nuclear negotiator, Ali Bagheri-Kani, visited European capitals ahead of talks with America and European powers aimed at resurrecting the nuclear deal that Iran signed in 2015. Mr Bagheri-Kani seemed to rule out any discussion of Iran's nuclear activity at the talks, and said that instead they should focus on lifting sanctions. America, which walked away from the deal in 2018, disagrees.

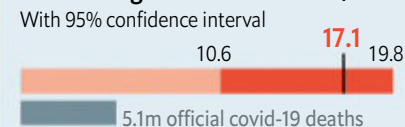
Coronavirus data

To 6am GMT November 11th 2021

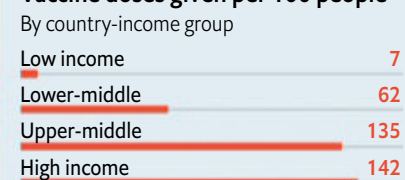
Weekly confirmed cases by area, m



Estimated global excess deaths, m



Vaccine doses given per 100 people



Sources: Johns Hopkins University CSSE; Our World in Data; UN; World Bank; The Economist's excess-deaths model

→ For our latest coverage please visit economist.com/coronavirus

France formally handed back to **Benin** 26 precious artefacts, including statues and a royal throne, that it had taken when it colonised the west African country in the late 19th century. Other former colonial powers are also under pressure to return looted items. These include Britain, which holds more than 900 "Benin bronzes" that were taken from Nigeria.

A South African court said that Manuel Chang, **Mozambique's** former finance minister, could be extradited to America. He faces charges there related to kickbacks from loans that funded, among other things, a tuna-fishing firm.

F.W. de Klerk, the last white president of apartheid South Africa, died at the age of 85. He once said that he should not be given the honour of ending apartheid, though Mr de Klerk was instrumental in laying the ground for Nelson Mandela's release and the subsequent transfer of power.

After years of complaints from investors that its sprawling empire of businesses was hindering profits, **General Electric** decided to split into three, independently run companies. Its health-care assets will be spun off in 2023; energy and power will be rolled into one and spun off in 2024; and aviation is to remain the sole focus of today's GE. The conglomerate has been shedding businesses for over a decade. The decision to split heralds the end of arguably the world's best-known conglomerate, a titan of American business throughout the 20th century.

On the road

Rivian, a maker of electric vehicles backed by Amazon, had a successful stockmarket debut on the Nasdaq. Its stock rose by 30% above the offer price, giving it a market capitalisation of over \$100bn, more than either Ford or General Motors. The company raised around \$12bn, making it the biggest IPO in America since Alibaba's listing in 2014.

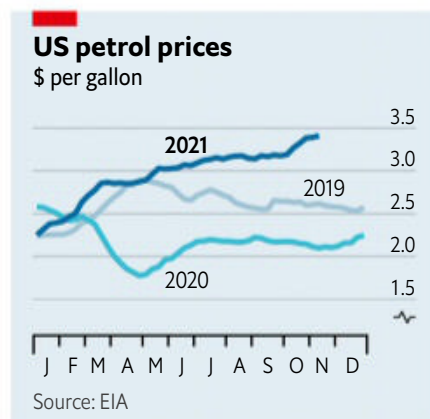
At the opposite end of the motoring business, **Hertz's** share price fell by 10% on its first day on the stockmarket since the company emerged from bankruptcy.

The European Union's General Court, the lower tribunal of the Court of Justice, dismissed **Google's** appeal against the €2.4bn (\$2.8bn) fine that the European Commission imposed on the company in 2017 for anti-competitive practices that favoured its own comparison-shopping service. In the one ray of light for Google, which is also appealing against two other blockbuster anti-trust fines in Europe, the court said that general search is not included in its ruling.

Rolls-Royce said it had received enough investment from private partners to start building small modular reactors, or small **nuclear power stations**, in Britain. The government is contributing to-

wards the project as part of its "green industrial revolution".

Britain's economic growth rate slowed in the third quarter, to 1.3%. As in other countries, supply-chain problems are hindering the recovery. GDP is still 2.1% smaller than in the final three months of 2019.



Oil prices climbed higher, with Brent crude once again over \$85 a barrel. In America the price of **petrol** at the pump hit an average seven-year high of \$3.41 a gallon. California remains the most expensive state in which to fill your car, with petrol averaging \$4.64 a gallon, according to the American Automobile Association.

The price of fuel is a big factor behind America's surging **inflation**. The annual rise in the government's consumer-price index leapt to 6.2% in October, up from 5.4% in

September, the largest jump since late 1990. Stubborn inflation is putting pressure on the Federal Reserve to bring forward an interest-rate rise.

Government relief

Meanwhile, the pace of hiring picked up in America, with employers creating 531,000 **jobs** in October. That is closer to the monthly average for this year and comes after two months of lower-than-expected jobs growth.

The board of **Sydney Airport** agreed to a A\$23.6bn (\$17.5bn) buy-out from a consortium of investors. The deal comes amid a sense in the aviation industry that business is really taking off following 20 months of pandemic gloom. America reopened its **borders** to most travellers this week. **Emirates**, one of the world's biggest airlines, reported that passenger numbers were up by 319% from April 1st to September 30th, year on year, though it still made a net loss in the first six months of this year.

After a little over a year as a publicly listed company, **McAfee** agreed to a buy-out from a consortium of private-equity firms, in a deal worth \$14bn. The computing-securi-

ty company is to refocus entirely on the consumer market, having sold its enterprise business in July.

Consumers' voracious appetite for ordering grub from home is feeding a wave of consolidation in the sector. This week **DoorDash**, America's largest food-delivery platform, agreed to buy **Wolt**, based in Helsinki and with operations in 23 countries, for €7bn (\$8bn).

Viasat, a satellite company based in California, is to take over **Inmarsat**, a British rival that counts the American armed forces among its customers, in a \$7.3bn transaction. The combined company will compete in the increasingly crowded space for providing satellite broadband.

Markets were once again left scratching their heads about the motives behind **Elon Musk's** latest stunt, when he asked his Twitter followers whether he should sell 10% of his stake in Tesla to pay tax, in a dig at a Democratic proposal to tax unrealised capital gains. They said yes. Tesla's share price swooned. Mr Musk then started selling stock. He had planned to sell at least some of his shares before seeking advice from the Twitterati.



Putin's new era of repression

It will lead to more confrontation with the West

ANDREI SAKHAROV, a Soviet dissident and physicist, used to argue that repression at home invariably becomes instability abroad. His own life was evidence of it. His internal exile was lifted in 1986 by Mikhail Gorbachev, the Soviet Union's last leader, who as the architect of *glasnost* released political prisoners and tolerated free speech. It was no accident that Mr Gorbachev's rejection of repression coincided with the end of the cold war.

Today Sakharov's thesis is being demonstrated once again—in reverse. According to Memorial, a human-rights group, Russia has more than twice as many political prisoners than at the end of the Soviet era. Memorial, which Sakharov helped set up to document Soviet abuses, has itself been branded a “foreign agent” and attacked by state-sponsored thugs (see Briefing).

At the same time, Russia's relations with the West have also entered a dark period. In order to justify repression at home, President Vladimir Putin is telling his people that Western policy is designed to obliterate the Russian way of life. Mr Putin now builds in cold-war confrontation to his dealings with the West. Its leaders need to prepare for what comes next.

The latest phase of repression began in 2020 with the poisoning of Alexei Navalny, Russia's most famous political prisoner, and winner last month of the European Parliament's Sakharov prize for freedom of thought. Mr Navalny survived the attack, only to be incarcerated and abused in Penal Colony No 2, one of the country's harshest jails.

Since then, Mr Navalny's organisation has been outlawed and much of his team chased out of the country. Those who stayed are being pursued. On November 9th Lilia Chanyшева was arrested and now faces ten years in prison for having worked for Mr Navalny while his organisation was still legal. The net is spreading beyond politics. The same day, Sergei Zuev, the 67-year-old head of the top liberal university in Russia, who is recovering from heart treatment, was taken from house arrest to a prison cell, perhaps to force a false confession in a fabricated case.

A third of the Russian government's budget is spent on security and defence. Much of this is directed inwards, at the sort of people *The Economist* features this week in a documentary film (see economist.com/russia-film): people who have had enough of Mr Putin's rule and the corruption of his regime. As incomes have fallen and discontent has grown, so Russia's many police and security services have swollen. With 10% more staff than in 2014, they now outnumber Russia's active-duty military forces.

For Mr Putin, repression does not have a reverse gear. He will not be able to restore the prosperity that helped buoy his ratings during his first decade in power. True, the fortress economy that the Kremlin has developed since 2014 can withstand sanctions, especially when energy prices are high, as now. But Russia, which is more like Iran than China, does not have the dynamism to generate sustained, robust growth.

Hence the logic of confrontation. Soviet rulers waged the cold war from atop the ideology of communism. Russia's securocrats assert that traditional values of family, culture and history are being corrupted by the liberal and licentious West and that

only they can defend them. Fighting back against the West lets the Kremlin portray all those who oppose it—journalists, human-rights lawyers and activists—as foreign agents. In this way, Mr Putin's regime depends on anti-Western ideology for its politics just as it depends on oil and gas for its prosperity.

Dictators insist that how they treat their subjects is a question of sovereignty. In fact, repression is everyone's business. One reason is that human rights are universal. The other is that violence at home spreads beyond a country's frontiers.

Both Russia and Belarus, where the dictator Alexander Lukashenko is propped up by the Kremlin, have murdered dissidents abroad. Russia shot down a passenger plane and Belarus hijacked one to arrest a local dissident. Poland and Lithuania have sheltered the Belarusian opposition in self-exile. Backed by the Kremlin, Mr Lukashenko is taking revenge by flying in refugees from the Middle East and shunting them to its borders to engineer a humanitarian crisis (see Europe section).

On a greater scale, Mr Putin meddles in Western elections, peddles anti-vaccine propaganda and fights proxy wars with America in Africa and the Middle East. He is using the promise of extra supplies of gas to weaken ties between the European Union and countries like Ukraine and Moldova. He has once again massed troops on the Ukrainian border and is flying nuclear-capable bombers to Belarus.

The good news is that just as most of the Soviet people did not believe in the advantages of communism over capitalism, so most Russians do not believe in the advantages of confrontation. For all Mr Putin's propaganda, two-thirds have a positive view of the West. Nearly 80% say Russia should see it as a partner and a friend. This is most pronounced among the young,

who reject state violence and favour human rights instead.

Western politicians should take note of this divergence between the Kremlin and the Russian people. One response is to harmonise sanctions and focus them on the powerful Russians who loot the state and abuse the people. That entails Western countries standing up to the lobbying of their own service industries, which get rich from helping Mr Putin's cronies launder their reputations, pursue their legal vendettas and shelter their illicit wealth (see Books & arts section).

Think ahead

They should also start laying the foundations for a post-Putin Russia. Nobody knows whether that will come in years or decades. But it is hard to see Mr Putin's system surviving him.

The West should therefore invest in people who share its values. It should speak out against human-rights abuses inside Russia. The flood of Russian students, journalists and intellectuals seeking a better life will increase. Western governments should accommodate them. Latvia and Lithuania are hosting independent media outlets and dissidents. Russian students should be welcomed to Western universities. By doing so the West would not just be helping the victims of Mr Putin's repression, it would also be helping itself. ■



The end of life A final choice

Assisted dying is spreading, but too many are still denied this basic freedom

IN 1995 AUSTRALIA'S Northern Territory enacted the world's first law explicitly allowing assisted dying. It said that terminally ill, mentally competent adults who wanted to die could ask a doctor for help, using lethal drugs. The law sparked outrage. Within months the federal government had overturned it. Yet today five of Australia's six states have assisted-dying laws.

The Economist first made the case for assisted dying in 2015. We argued that freedom should include the right to choose the manner and timing of one's own death, while also cautioning that the practice should be carefully monitored and regulated to avoid abuses. Since then, it has become more widely available. Assisted dying is now legal in one form or another in a dozen countries, and the trend seems likely to continue. Last week New Zealand enacted a euthanasia law for the terminally ill after 65% of voters backed it in a referendum. The same week Portugal's parliament passed a broader law. Assisted dying is still illegal in Britain, but the House of Lords is debating a bill to allow it.

The number of people who die this way is increasing, though still small. In the Netherlands it rose from roughly 1,800 in 2003 to nearly 7,000 in 2020, or 4% of all deaths. As more countries liberalise, the global total will rise further.

Many people object to assisted dying on religious grounds: some faiths deem suicide a sin. Others worry that safeguards will prove insufficient, or that legalisation is a slippery slope. Critics have long predicted that families exhausted by the demands of caring for sick, elderly relatives will place undue pressure on them to end their lives, or that cash-strapped states will encourage the most expensive terminally ill patients to hurry up and die.

Yet such horrors do not seem to have come to pass (see International section). In places with the longest experience of assisted dying, charities that represent the elderly or disabled have not reported any abuse. It is conceivable that some has taken place unobserved, but scrutiny has been intense and in most countries permission to help someone die is revoked if there is even a hint of coercion. Fears that the poor and marginalised might be hastened to their ends have also proved to be unfounded. In America, the Netherlands and Switzerland the overwhelming majority of those who choose an assisted death are educated and middle-class.

Far from being too lax, the rules have often been too restrictive. The Australian state of Victoria, for example, bars doctors from mentioning assisting dying to their patients. The aim is to avoid coercion, but the consequence is that many sufferers do not know that it is an option. In some jurisdictions only those with less than six months to live are allowed help to die. Thus, patients can be terminally ill and in intense pain, but unless a doctor estimates that the end is very near, they cannot end their own suffering. In some cases the diagnosis comes too late. In Victoria in the first six months of 2021 no cases were withdrawn because the patient decided not to proceed, but in 90 cases the patient died before receiving relief. Some countries, such as Spain and Colombia, have liberal laws in theory, but in practice health authorities are reluctant to let anyone make use of them.

Last week in Spain a desperate 83-year-old threw herself out of a window after her repeated requests for euthanasia were refused.

Canada offers a better model, because it provides more leeway for individuals to make their own choices. Anyone whose suffering is unbearable can choose an assisted death. They do not have to be terminally ill. And, uniquely, the question of what constitutes "unbearable" suffering is for the patients themselves to decide, so long as they are of sound mind. There is a cooling-off period of ten days, in case they have second thoughts. In many cases, simply having the option of an assisted death gives people a sense of comfort and control. In Oregon a third of those people who receive the prescribed lethal medication ultimately choose not to take it.

Even as more societies accept the principle of assisted dying, hard questions remain. Some people worry that its availability may prompt health services to skimp on palliative care. But that is not ordained. Canada's assisted-dying bill was explicitly linked to increased funding for palliative and long-term care.

If assisted dying becomes common, will old people who require round-the-clock care feel more social pressure to choose death? Many already worry that they are a burden on their children or carers. Some may feel additional guilt if continuing to live is seen as an individual choice, rather than the blind workings of fate. This is a genuine concern. But the possibility that some may agonise over whether to die should not trump the certainty that others will suffer unendurable pain if their freedom to choose is denied.

The trickiest questions arise when an individual's capacity to make an informed choice is in doubt. Some people with mental disorders have suicidal thoughts that come and go. For them, the bar should be very high. Doctors must be sure they can distinguish between a temporary mental-health crisis and a sustained, considered wish to die. If in doubt, they should offer treatment aimed at helping the patient to live.

Free to choose, to the end

Dementia poses the hardest problem of all (see Science & technology section). Someone diagnosed with the condition may make a living will, asking for an assisted death when it becomes severe. But they may change their mind. Such a document should never be used to kill someone against their wishes, and if those wishes are unknowable, they should be left to live. Assisted dying should be only for those who can make an informed decision at the time they take the drugs.

No rules in this area are perfect. All should be subject to revision in the light of new evidence about how they work in practice, or to take account of medical advances. But the overall principle—that individuals are entitled to choose how they end their lives—is, we believe, a sound one. The evidence from countries that allow assisted dying is that abuses remain largely hypothetical, whereas the benefits are real and substantial. It relieves suffering, and restores a measure of dignity to people at the end of their lives. ■



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Evergrande and financial contagion

China's other debt problem

Evergrande is not the only looming danger in the mainland's financial system

SCARES ABOUT toxic debt are an ever-present feature of China's economy. The latest involves Evergrande, a troubled developer that threatens to cripple the property sector. The firm also has tentacles that reach into the darkest corners of the Chinese financial system, wrapping around banks and shadow lenders. Yet even as Evergrande catches the eye, another risk is emerging: crony capitalism at smaller banks.

A government crackdown on leverage in property has pushed Evergrande to the brink of collapse. Other large developers are weighed down by \$5trn of debts. Speculation is swirling that one of them, Kaisa, is also struggling to make payments (it has asked investors for "time and patience"). The turmoil may intensify as more debts come due. According to Nomura, a Japanese bank, the property industry must repay \$20bn of offshore bonds in the first quarter of 2022, twice the level of this quarter.

Foreign investors have been quick to grasp the risks. The yield on Chinese junk dollar-bonds has reached a crippling 24%, shutting most issuers out of the market. Some home-buyers are holding off purchases, worried about handing over deposits to weak firms. Building has stalled at many of Evergrande's 1,000 or more projects.

It is unclear who is exposed to losses, and to what extent. Many developers use shell companies, masking their debts, while stockmarket regulators have allowed them to keep investors in the dark. On November 8th the Federal Reserve warned that China's property troubles threaten the global economy.

Losses on property loans will hurt the banking system, although by how much remains to be seen. But as we explain this week (see Finance & economics section), lenders also face another danger. Crony capitalism has flourished among the country's small and mid-tier banks. Because the biggest state-owned

lenders prefer to make loans to other state firms, private companies and entrepreneurs have bought stakes in banks in the hope of getting preferential access to credit.

Although the banks involved are often small they add up to a giant problem. *The Economist* calculates that up to 20% of the commercial-banking system may have close links with tycoons or private businesses. There have already been blow-ups. In 2019 the collapse of a small lender caused a spike in interbank borrowing rates; several more failures have followed. Evergrande was until recently the owner of a captive bank in north-east China and is said to be under investigation for some 100bn yuan (\$15.7bn) in related-party deals.

For Xi Jinping, China's leader, state control is the answer to both the property and banking threats. To keep building sites ticking over, local governments are taking control of some unfinished projects. At smaller banks many corporate shareholders are being forced out and replaced by local-government asset managers.

This reveals the limitations of Mr Xi's economic philosophy. The expanding reach of state control may prevent a full-blown panic, because it shows that almost all banks are underwritten by the government. But it fails to acknowledge an important truth about the economy.

Many of the distortions that plague China's markets were created by rigid state control. In plenty of private firms, insider dealing with lenders has been a way to cope with a state-dominated banking system that discriminates against them. Mr Xi may succeed in averting a sudden bad-debt crisis by reasserting state authority. But his reluctance to be bound by rules, treat state and private firms equally, and offer predictability to investors will ensure that the financial system is doomed to suffer yet more dangerous distortions in the future. ■



Afghanistan

War, drought, famine

The world must act now to stop Afghans starving

ON NOVEMBER 8TH the World Food Programme (WFP), a UN agency, said that its estimate of people "teetering on the edge of famine" worldwide had risen from 42m earlier this year to 45m. Remarkably, just one country accounts for almost all those 3m additional people. Afghanistan is on the brink of a humanitarian catastrophe.

Some 23m Afghans, in a country of 38m, face acute hunger. Of those, 8.7m are in a state of emergency, the second-highest category in the WFP's hierarchy of calamity. The classification manual explains that by the time the agency declares a famine, the highest category, it will be too late to avert the worst consequences "because many will have died".

Many are dying already. More than 3m children are malnour-

ished. Locals report cases of entire families starving to death in their homes. Hospital wards are taking in emaciated children, including 11-year-olds who weigh just 13kg. Poor Afghans are selling their remaining possessions for food. Some are selling their daughters. The misery is as bad in the cities as it is in the countryside. As the winter sets in, the agony will only deepen.

Afghanistan's condition was fragile even before the fall of the capital, Kabul, in August. Long periods of below-average rainfall and above-average temperatures have led to poor harvests and high prices. After decades of warfare, around 4m Afghans are refugees in their own country, with little means of support.

The Taliban takeover has made everything worse. Foreign aid, which funded three-quarters of government spending, has ►►

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► dried up. The country's foreign reserves of some \$9bn have been frozen. Half a million soldiers and police have lost their jobs, and civil servants have gone unpaid for months. Half the country was living on less than \$1.90 a day before the Taliban came to power. By next summer, reckons the UN, all but 3% of Afghans will be in the same position.

In September the UN held a "flash appeal" seeking over \$600m from donors, and received pledges of \$1bn. But just a third of it has arrived. The European Union promised €1bn (\$1.15bn) in October. Yet €300m of that had already been committed, and much of the remainder will go to Afghanistan's neighbours. The WFP reckons it may need as much as \$220m a month to avert a crisis over the lean winter months.

Even if the money arrives, it is at best a sticking plaster. "No humanitarian organisation can...replace the economy of a country," says Robert Mardini of the Red Cross. The economy is atrophying. The flow of dollars into Afghanistan has been stanching, the value of the domestic currency has plummeted and the banking system has ground to a halt. The IMF reckons formal businesses will shrink by 30% in the next few months.

Nonetheless, if aid were to resume and reserves were unfrozen, the pain would ease.

The trouble is that this would hand billions of dollars to the Taliban, yet to be recognised by any country as legitimate rulers of Afghanistan. The cabinet includes figures such as Sirajuddin Haqqani, whom the West considers a terrorist. America is adamant that the group must form a government that represents all Afghans and guarantee rights for women, girls and minorities.

Those are worthy aims. Yet withholding life-saving aid is reprehensible in almost any circumstances. It makes even less sense given that the Taliban show no signs of bowing to pressure. The West's demands for basic freedoms for Afghans are entirely justified, but allowing many of the intended beneficiaries to starve to death is not a good way to fulfil them.

There is no choice but to work with the Taliban, as distasteful as that is. That need not mean becoming chummy or supportive—just realistic. The Taliban's takeover is already terrible for Afghans. For the West to punish them further by leaving them to starve would be as cruel as anything the zealots with guns are likely to do. ■

Energy

The discreet charm of nuclear power

It makes fighting climate change a lot easier

IN THE NEGOTIATIONS which led up to the Rio Earth Summit in 1992, Saudi Arabia spent a great deal of time attempting to insert the term "environmentally safe and sound" in front of references to "energy sources" and "energy supplies". Given that the oil Saudi Arabia exports in greater quantities than any other country is now understood to be anything but environmentally safe, this seems bizarre. At the time, though, the aim was obvious to all concerned: the phrase was a way to keep nuclear power off the Rio agenda.

The oil shocks of the 1970s had led to many countries increasing their nuclear efforts. In the ten years to 1992 the amount of nuclear energy consumed worldwide had increased by 130%. What was more, some talked of using nuclear plants to produce not just electricity, but also hydrogen which could then form the basis of synthetic fuels. The Saudis may or may not have had real concerns about the environment. But they knew a competitor when they saw one.

Their scheming proved unnecessary. In contrast to the oil shocks, the threat of global warming has not served the nuclear cause well. After peaking in 2006, the amount of nuclear energy consumed in 2019 was just 18% higher than it had been in 1992. As a share of global primary energy, it had fallen from 6.1% to 4.3%.

Because nuclear power is expensive in ways that show up in profits, whereas damage to the climate is not priced into burning fossil fuels, this would be unsurprising even if it were popular with environmentalists—which, by and large, it is not. But it is still too bad. The paradigm-shifting drop in the cost of renewable electricity in the past decade is central to the decarbonisation pathway the world is fitfully following. But a clean-energy system requires redundancy and reliability in its electricity grids that are hard to achieve with renewables alone. It will prob-

ably also require lots of hydrogen for, say, powering aircraft and making steel and chemicals, which reactors could provide.

Nuclear power has its drawbacks, as do all energy sources. But when well-regulated it is reliable and, despite its reputation, extremely safe. That is why it is foolish to close down perfectly good nuclear power stations such as Diablo Canyon, in California, because of little more than prejudice (see United States section). It is why some countries, most notably China, are building out their nuclear fleets. It helps explain why others—including, as it happens, Saudi Arabia—are getting into the game for the first time. And it is why approaches to reducing nuclear energy's cost penalty are at last coming into their own.

France, which has found its newest generation of huge reactors impossible to build on time and within budget, and consequently also hard to export, has new plans for small, modular reactors (SMRs) that might do better on both counts. Rolls-Royce, a British engineering company, is touting a similar approach (see Britain section). On November 4th an American company, NuScale, signed a deal to sell six such reactors to Romania at the COP26 in Glasgow. Russia already has a floating SMR power station.

Such designs can in principle be produced in factories and shipped where they are required, keeping their costs down. These advantages have been extolled for decades without being realised, so caution is in order. But today's efforts are broader-based and have real impetus. They need regulatory approaches which, while not lax, permit their makers to learn as they build. That will allow competing designs to prove themselves against each other, making nuclear power, once again, a source of innovation—and adding to the world's capacity to ditch unsafe and unsound fossil energy. ■



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¹ Source: Global Cement and Concrete Association

² Annual global cement production in 2019: 4.1 billion tons. Source: IEA.

³ Precast industry is 30% of total. Sources: The Business Research Company & Fortune Business Insights.

⁴ Typical passenger vehicle emits around 4.6 metric tons of CO₂ per year. Source: EPA.

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¹ IEA (2017), The Future of Trucks, IEA, Paris

² IEA (2020) CO₂ emissions from heavy-duty vehicles in the Sustainable Development Scenario, 2000–2030

³ One young tree absorbs 5.9kg CO₂ per year. Source: Urban Forestry Network.

Data hoarding

You have a rosy view of the use of timely, high frequency data in economics, which you describe as a “third wave” in the discipline (“The real-time revolution”, October 23rd). However, there is a big downside. Not everyone has equal access to these figures, especially to data collected by the private sector. This unequal access will widen the divide between the “haves” and the “have nots”. Democracies cannot work properly if citizens do not have an opportunity to access the economic information that is necessary to make good economic and voting decisions. Basing policy on summary statistics from inaccessible micro data with many possible flaws will only lead to more distrust.

RALPH BRADLEY

Former division chief
Price and Index Number
Research
Bureau of Labour Statistics
Washington, DC

The connection you made between the value of real-time information and Salvador Allende’s Project Cybersyn is a reminder of a lost opportunity. One of Allende’s principal advisers when he was president of Chile was Stafford Beer, a visionary cyberneticist, then at Manchester Business School, who came up with the pioneering viable system model. Some of us were not entirely sure about Stafford’s connection with reality, but that was our mistake. Had Allende lived on we might now be much further ahead in this burgeoning field of analysis and administration. Still, better late than never.

TONY ECCLES

London

Structural differences

Ursula von der Leyen may have been a bit optimistic when she hailed the opening of the Svilaj bridge between Croatia and Bosnia-Herzegovina (“Bigger is still better”, October 9th). Bridges in the Balkans have unfortunate connotations. The

Peljesac bridge is lauded by its supporters for unifying Croatia but denigrated by its detractors for bypassing Bosnia. The Mitrovica bridge in northern Kosovo exists either as a tenuous link between Serbs and Albanians or as an insuperable barrier, depending on your perspective. The Mostar bridge was blown up in fighting between the Croats and the Bosniaks, who had been allies in the early stages of the Yugoslav civil war.

Before the European Union can even consider enlargement, it needs to deal with these and other festering sores, such as the disputed waters between Slovenia, Italy and Croatia. These may seem minor issues, but they matter hugely to those who live there.

RICHARD SCOTT

Exeter

Shakespearean phraseology

Echoing Hamlet, you said that vaccine mandates in poor countries are often “honoured in the breach”, suggesting that the edicts are not complied with (“Strictly come jabbing”, October 23rd). Shakespeare’s phrase has a more nuanced meaning. In the passage where Hamlet says that the Danish custom of boozy revelry is “More honour’d in the breach than the observance”, he means that it is more honourable to ignore the custom of drunken carousing than to follow it. So Shakespeare is referring to a practice that is best ignored than followed, not merely one that is often ignored.

JOHN DOHERTY

Stratford-upon-Avon

Dig deeper

After eight years in the American army followed by 20 years in business, I could not agree more with Bartleby’s scepticism about applying military mission values to business (October 30th). Shifting uncertainties and testosterone-infused competition are common to both worlds, but not much else. Over time I have found gardening and cooking

metaphors to be more useful for business than fighting and sporting ones.

RAY MORIN

Frankfurt

Thinking of corporate mission statements reminded me of Charles Mackay’s account of the South Sea Bubble in “Extraordinary Popular Delusions and the Madness of Crowds”, published in 1841. At one point in the frenzy Mackay mentions a bubble company with the mission statement of “carrying on an undertaking of great advantage, but nobody to know what it is”.

AURELIO ORTIZ CAMACHO

La Paz, Mexico

Financing for hydrogen

Uncertainty about future carbon prices can slow private investment in hydrogen (“A very big balancing act”, October 9th). The German government has proposed carbon contracts for difference (CCFDs) to mitigate the problem. Under these contracts the government and a company set a price at which its zero carbon hydrogen technology would be competitive. Until the agreed carbon price is reached, the government pays the price difference to the company. Once the price is exceeded, the payment direction is reversed.

CCFDs have three benefits. Carbon prices become predictable for the length of the contract. Subsidised technology can compete with carbon-emitting incumbents. And should carbon prices rise above the set price during the contract period, the government subsidies could be recovered and the necessity for the contract vanishes.

TIMOTHÉE HORNEK

Tuttlingen, Germany

Facebook fury

Your observations about the incoherence of Facebook’s many critics were helpful as far as they went (“Facepalm”, October 9th). But the most vexing question is why, after years of frustrated policymak-

ers calling for more regulation, and as many years of Facebook inviting them to dish it up, have lawmakers and regulators produced so little other than noise? Maybe their inaction betrays an implicit recognition that the same human failings that are distorted and amplified on Facebook are already legislated for, and that the social network’s worst transgression is that it is as unflattering but depressingly accurate as any hi-def selfie.

GREGORY FRANCIS

Managing director
Access Partnership
London

The true romance language

As an adult, I tried to learn the French language (Johnson, October 16th). Our teacher, a native French speaker, told us beginners to make over-exaggerated facial gestures in order to produce sounds common in the French language. Her reasoning was that we were trying to pronounce French with an English mouth, and we needed to retrain our mouth to move correctly to produce the right sound.

If we were ever in doubt on how to pronounce something, she had a standing rule: “When speaking French, you must always position your lips, so that if required, they are always in position to give a kiss on a moments notice.”

JIM MILLER

Minneapolis

A Polish Brexit?

Discussing Poland’s latest row with the EU, Charlemagne used the term “Polexit” to describe a potential outcome of the stand-off (October 16th). Polexit sounds clunky and doesn’t roll off the tongue. Might I suggest “Pout” instead? BENJAMIN TENNENBAUM

Chicago

Letters are welcome and should be addressed to the Editor at The Economist, The Adelphi Building, 1-11 John Adam Street, London WC2N 6HT
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Manacled in Moscow

MOSCOW

Vladimir Putin has shifted from autocracy to dictatorship

ON OCTOBER 14TH Twins Garden, in Moscow, was among the first Russian restaurants ever to be recognised with Michelin stars. In celebration it treated guests from the *beau monde* to magnums of Bollinger alongside its signature “sea urchins with citrus and *shiso* leaves” and innovative “3D-printed bean ‘squid’ with asparagus and black caviar”. From its rooftop terrace overlooking Pushkin Square guests could marvel at Moscow’s beautifully lit skyline. Below them pedestrians strolled along recently repaved streets lined with cafés and boutique shops, or rushed to catch the new production of “Tosca” at the Bolshoi. Delivery bikes sped back and forth attending to the needs of those staying at home—or stuck in their offices.

The diners might also have made out, less than a kilometre away, the building housing Memorial, Russia’s oldest human-rights organisation, which was at the time being stormed by masked thugs. Dozens of them, accompanied by state TV crews, crashed into a screening of “Mr Jones”, a film by Agnieszka Holland, a Polish director, about the famine Stalin inflicted on

Ukraine in the early 1930s. The thugs jumped onto the stage and pumped their fists in the air, shouting “shame”, “fascists” and something about Goebbels. When the police arrived, they used a pair of handcuffs to lock the building’s doors closed, sealing the staff inside until the small hours of the morning.

In 1987, when Memorial was set up to document Stalinist repressions, the state was holding about 200 prisoners of conscience. Today, according to Memorial’s count, Russia has at least 410 political prisoners. On the day the Michelin stars were awarded, Vyacheslav Egorov, an activist involved in protests against a landfill site in a historic town near Moscow, was sentenced to 15 months in prison. A few days earlier, Sergei Zuev, the rector of the Moscow

School of Social and Economic Sciences (known as Shaninka), one of the country’s leading independent universities, was taken to a prison cell from his hospital bed; the university faces closure. After being released and undergoing cardiac treatment he was jailed again on November 9th.

On October 27th Gleb Maryasov, a libertarian activist, was sent to a penal colony for ten months for blocking roads during a protest in January. On October 29th, the day on which the victims of Stalin’s repression are commemorated, four Crimean Tatars were sentenced to 12-17 years in jail. Hardly a day goes by without someone being fined, sent to jail, officially deemed “undesirable” or declared a “foreign agent”, as Memorial has been—a distinction which requires targeted organisations and individuals to preface every public utterance, in capital letters, with these exact words in Russian:

THIS MESSAGE (MATERIAL) IS CREATED AND/OR DISSEMINATED BY A FOREIGN MASS MEDIA PERFORMING THE FUNCTIONS OF A FOREIGN AGENT AND (OR) RUSSIAN LEGAL ENTITY PERFORMING THE FUNCTION OF FOREIGN AGENT.

The increasing number of political prisoners—there are eight times as many as there were six years ago, according to Memorial—is not a return to Soviet form, as the high life which surrounds the repression bears witness. But the people of late-1930s Berlin would find the mixture of the two quite familiar.



A 15-minute film, “How Putin is silencing his opponents”, is available to readers at economist.com/russia-film. A longer version, “Fearless: The Women Fighting Putin”, a co-production of *The Economist* and Hardcash Productions for ITV, is available to readers in Britain at itv.com

Echoes of that era are also to be found in Russia's official rhetoric of *ressentiment* and imperial nationalism. They can be recognised in media images of the male body beautiful, encouraging healthy living, and in laws against homosexual propaganda. They were voiced in a recent speech by Vladimir Putin, Russia's president, extolling the country's "spiritual values and historical traditions" and denouncing the decadence of Western liberalism. Mr Putin took the opportunity to praise Ivan Ilyin, a philosopher who in the 1920s embraced Italian fascism as a model for Russia.

Sitting pretty

For much of his rule, Mr Putin was more readily associated with kleptocracy, fakery and cynicism than with a coherent ideology which inserted the state deep into everyday life. During his first decade in power, the 2000s, economic growth—much of it to the benefit of his friends and former KGB colleagues, but significant amounts enjoyed more broadly—provided more or less all the support his regime needed. In his second decade, when growth faded and protests broke out in large cities, nationalist propaganda and anti-Americanism became more prevalent. The annexation of Crimea in 2014 and the war in Ukraine kept people entertained, excited and on-side. There was repression, but Russia's ruling elite was more interested in wealth than violence. Literary-minded Russians could take comfort in lines from "Letters to a Roman Friend" a poem by Joseph Brodsky: "You are saying procurators are all looters, But I'd rather choose a looter than a slayer."

Mr Putin's regime is now rendering that distinction moot. As Alexei Navalny, an opposition leader poisoned in August 2020 and jailed this year, recently wrote from his prison cell: "An official taking a bribe and a policeman pulling a bag over the head of a prisoner tied to a chair are one and the same person. His law is the superiority of the strong over the weak. The superiority of the interests of a corporation over the rights of an individual. The willingness to commit crimes as an act of loyalty."

Grigory Okhotin of OVD-Info, a media and human-rights organisation that monitors political repression and provides legal help to its victims, notes a shift in the government's tactics. Once it wanted to contain, and by doing so deter, political threats. Now it wants to eliminate them. Political power has shifted from civilian technocrats to militarised and often uniformed "securocrats" happier with violence. The regime has moved from being a consensual autocracy supported by co-optation and propaganda to a dictatorship resting on repression and fear.

This aspect of Mr Putin's power has deep roots. In 2015 it claimed the life of Bo-

ris Nemtsov, a liberal opposition politician. Having warned of the lethal danger of Mr Putin's corruption he was subjected to a hate campaign before being shot dead on a bridge next to the Kremlin. But since the summer of 2020 it has been applied more widely. According to a poll by the Levada Centre, also a "foreign agent", the fear of repression, now shared by 52% of Russia's population, and of state violence (58%), are at all-time historic peaks, trumping the fear of losing a job, falling into poverty or being struck by natural disaster.

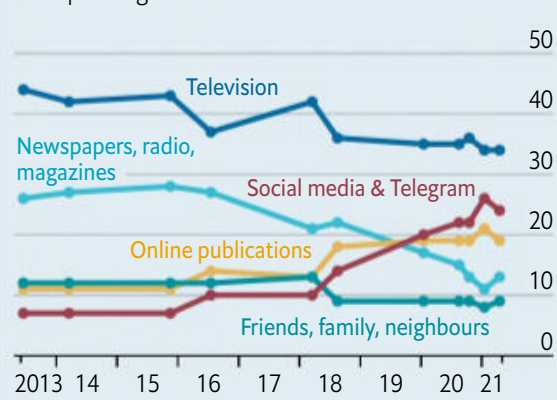
Politics has been banned. Mr Navalny's organisation has been crushed and declared "extremist". His entire team has been forced out of the country; their remaining relatives are harassed and persecuted. The father of Ivan Zhdanov, one of Mr Navalny's right-hand men, was put on trial in October. On November 9th Liliya Chanyшева, a 39-year-old politician who ran one of Mr Navalny's regional offices, was arrested on a retroactively applied charge of "extremism". She could face ten years in jail.

Open Russia, a pro-democracy organisation funded by Mikhail Khodorkovsky, a former billionaire once jailed and since exiled, has been declared "undesirable" and forced to close. Its former boss, Andrei Pivovarov, is facing six years in jail for Facebook posts. Thousands are denied the right to stand for election because of real or imagined association with Mr Navalny—as are 9m people (8% of the electorate) with previous criminal records or dual citizenship, according to Golos, an election-monitoring outfit that is also a "foreign agent".

One example is Violetta Grudina, who once worked for Mr Navalny in Murmansk, an Arctic port, and who is profiled in a film produced by *The Economist* and Hardcash Productions (see economist.com/russia-film). After Mr Navalny's organisation was banned, she decided to stand as an independent candidate in local elections. Her office was vandalised, she was forced into a covid hospital, and then disqualified for being part of an "extremist organisation".

The grapevines

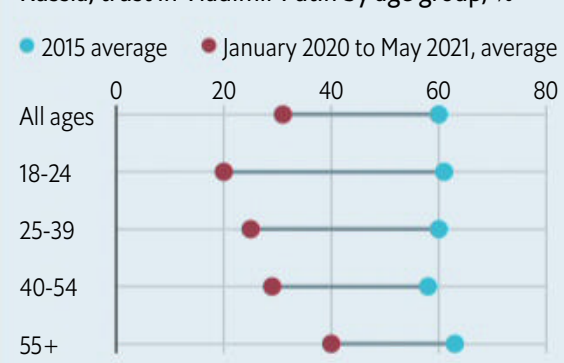
Russia, news consumption by source
% responding



Sources: Levada Centre; Rogov, "The Year of Navalny", Liberal Mission

Losing that loving feeling

Russia, trust in Vladimir Putin by age group, %



Sources: Levada Centre; Rogov, "The Year of Navalny", Liberal Mission

The crackdown has not been as harsh as some before it. The regime has not used lethal force—at least not in its own name. Many have been allowed—indeed encouraged—to leave the country. This is not a liquidation, nor is it a tyranny built on a cult of personality. Rather it is something cobbled together to retain power in the face of falling popularity and eroded legitimacy. It is similar in kind, if not yet in resistance and violence, to that of Alexander Lukashenko in neighbouring Belarus. It does not thrive on mass mobilisation and hysteria. Its aim is to suppress crowds not excite them. It neither inspires nor requires enthusiasm in the masses.

Maybe this time

Just as well. Mr Putin's access to the masses is not the easy matter it once was. He was brought to power by television, which then helped him consolidate his control. The public was dependent on the medium that he monopolised. Anything that was not televised did not exist, which was bad news for opposition figures. And that which did not exist could still, when necessary, be televised—as in the case of Ukrainian "fascists" in Crimea.

The rise of the smartphone changed all that. By 2018, 80% of the population was using the internet and 82% of 18- to 44-year-olds were watching YouTube. According to a recent report by Liberal Mission, a think-tank, the share of TV, radio and newspapers in overall media consumption has shrunk from 70% to 45% since the mid-2010s, while online sources' share has grown from 18% to 45% (see chart 1).

In the same period, trust in Mr Putin has fallen from 60% to 30%. In the 2000s members of the younger generation were among Mr Putin's most loyal supporters. That has now been reversed (see chart 2), and not just because of internet access. The young feel more disgust at corruption, which deprives them of prospects, and have a more positive view of Europe and America. They resent the state's increasing intrusions into their lives and they value human rights. But the internet has undoubtedly helped cement those feelings

▶ and bring together those who feel that way.

One way of looking at the change is by comparing the three waves of protest in 2011-12, 2017 and 2019. The protests of 2011-12, the largest up to that time, were a response to elections seen as rigged and to the return of Mr Putin, who had previously switched from president to prime minister, to his previous office. They were political protests spurred by political events.

The next protests of comparable size, in 2017, were triggered by a YouTube video. An account of the corruption of Dmitry Medvedev, Russia's prime minister at the time, put together by Mr Navalny, was seen by 4.5% of Russians within a couple of weeks, his supporters say, and its claims were heard by three times as many. Mr Medvedev's approval rating fell by ten percentage points. Encouraged, Mr Navalny called on people to take to the streets, and they did.

In the Liberal Mission report, Kirill Rogov, a political analyst, argues that "The biggest threat to the regime is not the protest itself, but the reaction of society." On that basis the 2019 protests were the watershed. Barred from standing himself, Mr Navalny nominated allies to run in Moscow's local elections. When the Kremlin blocked them, people took to the streets and violence ensued. After the 2017 protests, 40% of the public had sided with the police and only 27% with the protesters. In 2019, 41% sympathised with the protesters and condemned the police violence. The Kremlin lost nearly half of its seats on the city council. The protesters had, for the first time, garnered real support.

That did not mean they were winning. Though Mr Navalny had support in Moscow and some other places, only 20% of Russians approved of him. But 80% now knew who he was. One of the key assets of any autocracy—the apparent absence of any alternative—had been lost. The Russian elite started to talk about succession. So Mr Putin changed the constitution to let himself stay in power indefinitely and reinforced that change with repression.

It has been largely a pre-emptive strategy. Many Russians believe Mr Navalny's videos showing the extent of the regime's corruption and think him brave, but few are committed to doing anything about the situation. That is how Mr Putin wants to keep it. The difference in the treatment of those arrested during the protests of 2019 and those arrested in protests at the time of Mr Navalny's return in January is revealing. In 2019, the vast majority were quickly released with a fine, whereas in 2020 roughly half of the 11,000 arrested were held for up to two weeks. More than 130 criminal cases have been launched in the aftermath, according to OVD-Info.

Facial-recognition technology also allowed the police to make arrests weeks or even months after the main protests—a de-

layed response that adds to the anxieties of all who participated. Mr Okhotin of OVD-Info argues that such anxiety has become an important instrument of oppression in itself. So has the cynicism of jailing protesters during the pandemic for "violating epidemiological restrictions", in a country where 80,000 people can be gathered into Moscow's Luzhniki stadium to cheer Mr Putin. If Mr Navalny tried to inspire a sense of agency, the Kremlin wanted to plunge them back into a state of helplessness.

In 2019 Mr Putin signed a "sovereign internet" law which forced internet providers to install special equipment that allows the state to block, filter and slow down websites. Gregory Asmolov, an expert on the internet at King's College London, says the goal is not to build a Chinese-style firewall but to influence people's choices. If people don't know what they are missing, they will not look for it.

The Kremlin has cracked down on "influencers" and independent media outlets that feed interest in politics, while herding web users towards local social-media networks—which happily share information with the security services—and video-hosting platforms that are easy to control. International services are harried with fines and hobbled with slow download and upload speeds, making video sharing almost impossible. Most Russian opposition figures believe that within two years YouTube will not be available in Russia.

Tomorrow belongs to me

For now the Kremlin seems to have succeeded in applying enough repression, and thus generating enough fear of worse to come, to accomplish its needs. But the screw continues to be turned. For one thing, the repression is not limited to achieving the Kremlin's political aims; those close to Mr Putin are able to use this machinery for their own ends. Mr Zuev's persecution, for example, appears to be to some extent collateral damage in a fight

between a detained former vice-president of Sberbank, Russia's largest state bank, and Arkady Rotenberg, one of Mr Putin's closest business associates.

And Russia's securocrats are not going to pack their bags and go home when they control a significant and growing chunk of public expenditure. More than 10% of the national budget is spent on internal security. There are a third more police and security staff than active-duty soldiers.

Mariya Omelicheva of the National War College in Washington, DC, points to another self-perpetuating dynamic: she calls it a "repression trap". Expanding the role of the security services amplifies the Kremlin's perception of threat at home and abroad, justifying more repression. As long as the regime relies on the demonisation of foreigners—and "foreign agents"—this trap looks set to keep tightening.

So repression worsens even as resistance is held at bay. Protesters know that the people understand the regime's corruption. According to a Levada survey, 55% found the picture of Mr Putin's ostentatious wealth and corruption that Mr Navalny posted to YouTube on his return in January convincing. But they also understand that this in itself will not change things, at least not quickly. Only 17% said that the video changed their opinion of Mr Putin for the worse. And increased comforts provide a palliative for some.

On the eve of the last large protest in April, in a candle-lit Moscow café, members of the liberal intelligentsia sat huddled around small tables, bracing themselves for arrest at a protest the following day. Tatiana Gnedovskaya, an art expert, sang for them. Her normal repertoire is Russian and romantic. On that evening, though, she ended her set instead with night-club songs from 1930s Germany. No one needed to ask why. "We, too, have a sense of dark times coming" she said later, "but we continue to live and enjoy our lives while we can." ■





Biden and the border

Of walls and wobbles

SASABE, ARIZONA

Why the tumult on America's southern border is becoming harder to handle

THE SITE has an air of abandonment, like a half-finished apartment building whose developer ran out of money. Thirty-foot (nine-metre) steel rods rise from the desert sand. The area has been electrified and prepared for floodlights, but only half a dozen have been installed, so most of the structure is bathed in darkness at night. Thanks to Donald Trump the border wall, of which this is part, has become a charged symbol of nativism and exclusion. But the design of this stretch, with slats spaced four inches apart to let people see through, is similar to the 128 miles of wall built during Barack Obama's presidency, just taller. It was built hastily during the final months of Mr Trump's term. Strewn nearby are steel piles of the old, shorter wall, which have yet to be hauled away.

President Joe Biden, who has not visited the southern border since 2008, put a halt to all wall-construction on his first day in office. The wall here ends abruptly, in the middle of a mountain peak. Close by are several long gaps, where floodgates were

planned to allow water to flow through during heavy rains. Time ran out, and they were never added. Instead, a few low boulders and a thin string of wire serve as hurdles. At one break, a dozen water bottles are littered on the sandy ground, a sign of migrants' passage. "See, this is concerning for us," says Jesus Vasavilbaso, who works for Customs and Border Patrol (CBP). The nearest city is 45 miles away, a four-day walk through desert and mountains, he explains. Being out of water bodes ill for the migrants' prospects of survival.

Large construction trucks are still parked nearby, as if awaiting direction. Chris Magnus, the police chief in Tucson

nominated by Mr Biden to run CBP, has expressed tentative openness to completing "barriers, walls, other things". Mr Vasavilbaso is hopeful that Mr Magnus could at least persuade the president to finish the gaps in the Tucson area.

Today the gap-riddled wall represents not only Mr Biden's predecessor but also Mr Biden, who seems to know what he does not want—any more wall—but has yet to come up with a plan that is both "fair and humane", which is what he promised on the campaign trail. The result is frustration from immigration advocates and people living close to the southern border, as well as a political headache. In the mid-term elections next year Republicans will accuse Democrats of presiding over chaos at the border. Democrats do not yet have an answer to this, in part because they do not realise the criticism has some truth.

The number of illegal border-crossers is the highest for 21 years. The number of "encounters" in the 2021 fiscal year (which ended in September) was the highest on record. ("Encounters" and the number of border-crossers are different, since one person may attempt several crossings.) The perception that Mr Biden is less hostile to migrants than Mr Trump was one factor in the rise, but not the only one. Covid-19 has hit economies to America's south, adding to the poverty, violence, natural disasters and autocracy which many people are eager to escape. As more migrants arrive at

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► the border it becomes harder to manage them in a consistent way.

Until recently it was overwhelmingly Mexicans and people from the Northern Triangle—El Salvador, Guatemala and Honduras—who showed up at America's southern border. But in March arrivals from elsewhere began to spike (see chart). Brazilians, Ecuadoreans, Cubans, Haitians, Nicaraguans and Venezuelans are arriving in large numbers. In the 2021 fiscal year 47,000 Haitians arrived at the southern border, 23 times more than in 2019.

"The biggest story of 2021 is not the numbers but the diversity of origins of people," says Andrew Selee, president of Migration Policy Institute, a think-tank. Word has spread widely that people should try their luck. Some 4,000 Russians were encountered at the southern border by CBP this fiscal year, compared with 21 in 2019.

The variety of nationalities makes the border even harder to manage, says Mr Selee. America can return people to Mexico swiftly, but it is more complicated to return Haitians, Cubans and Venezuelans. In addition, around 28% of those encountered by CBP in fiscal 2021 were family units. As more families with children arrive, operations on the border are getting harder to manage, at a time when tolerance for long holding periods and detention space are in short supply. Unaccompanied children are universally being allowed into America, so some parents are making the difficult decision to send them ahead alone, stretching the ability of American facilities to process them.

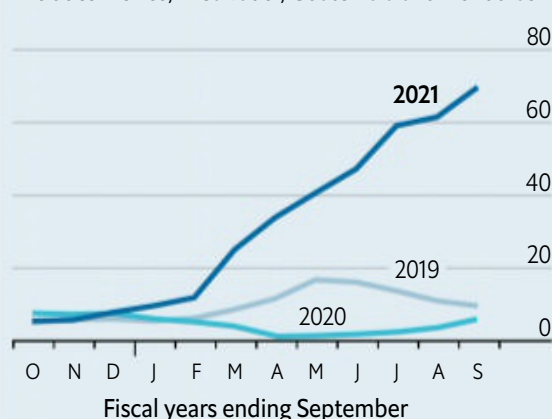
Mr Biden's administration is therefore under renewed pressure to show it can control immigration. Yet like the administration he served in as vice-president, he also faces pressure from immigration advocates, who question how different Mr Biden's policies are from Mr Trump's. The Biden administration has continued to rely on a public-health rule called "Title 42", which was first adopted by Mr Trump in March 2020. This enables America to quickly expel most migrants—even those trying to seek asylum—to Mexico or their home countries on public-health grounds. They are not formally processed or charged for illegal entry, which makes the process much faster. It also explains why border-crossers are making repeated attempts if they are apprehended the first time.

Immigrant advocates recently staged a walk-out during their virtual meeting with White House officials on border policy, due to their frustration with the continued use of Title 42 and the reimposition of the "Migrant Protection Protocols" (MPP) programme, says Gia Del Pino of the Kino Border Initiative, a non-profit. Mr Biden tried to end MPP, which was designed by Mr Trump as a deterrent and keeps asylum-seekers in squalid refugee camps in Mexi-

The unusual suspects

United States, migrant apprehensions at the south-western border, '000

Excludes Mexico, El Salvador, Guatemala and Honduras



Source: US Customs and Border Protection

co while their asylum claims are processed. However, a court order recently required it to be reinstated. "There is very little practical difference between Trump and Biden at the border," says Lee Gelernt of the American Civil Liberties Union, which is suing the Biden administration to end Title 42 for asylum-seeking families.

Lifting Title 42 would make it harder to deport people who cross the border illegally. But it is hard to justify keeping it on public-health grounds. On November 8th America reopened its borders to foreign, vaccinated travellers. "Someone can come to the border and say, 'I'm here, I'm Mexican, I'm vaccinated, and I'm here to go shopping at Walmart' and they'll be able to come in," says Aaron Reichlin-Melnick of the American Immigration Council, a think-tank. "But someone can show up and say 'Hi, I'm Mexican, I'm vaccinated, and I am here to claim asylum because I could be assassinated in the next 24 hours,' and they'll be turned away." This different treatment is "nonsensical", he says.

Migrants are experiencing widely differing treatment depending on where they come from, who they are and where they

try to cross the border. In January this year 88% of border apprehensions resulted in expulsions, 2% in a release into America and 5% in detention. In August 49% resulted in expulsions, 22% in release and 20% in detention. The main factor in the decline in the share of expulsions is the Mexican government's decisions about who they will take back, says Mr Reichlin-Melnick of the Immigration Council.

For example, Mexico said it would not accept Ecuadoreans who were expelled under Title 42, but single Ecuadoreans who pass into the El Paso sector are, in fact, being sent to Mexico, which seems to be the result of decisions by local officials in the Mexican state of Chihuahua, says Mr Reichlin-Melnick. Tamaulipas, another Mexican state, decided not to take back families with children under the age of seven, which has resulted in America releasing them into the United States. As a result, more migrants go to South Texas near Tamaulipas, anticipating easier entry.

In fiscal 2021 284,000 people were released from Border Patrol custody into America according to Henry Cuellar, a Democratic congressman who represents south-west Texas. He thinks Mr Biden is surrounding himself with the "wrong advisers". "The administration is paying too much attention to the immigration activists, and I don't think they're paying enough attention to the border communities and Border Patrol folks, who are on the frontlines of all this," Mr Cuellar says.

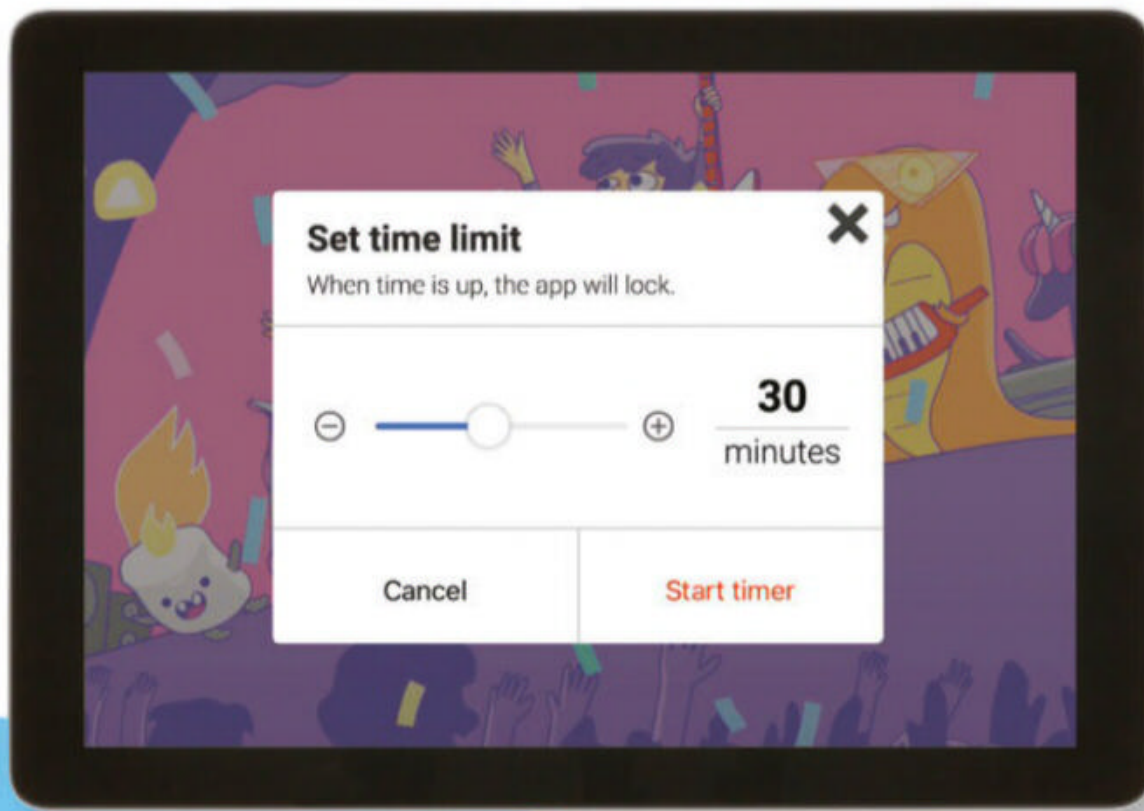
People working on the American side of the border, from non-profit employees to Border Patrol agents, struggle to explain why some people are being allowed in while others are sent away. "I wish I could say I see 100% consistency, but we do not," says Teresa Cavendish of Casa Alitas, a non-profit organisation that runs migrant shelters. "It could be a factor of volume or training, or just something that happened that day that made allowances for someone to pass who would have otherwise not had entry. The outcome for asylum-seekers crossing the border can vary wildly and depends more on their nationality and family status than on any policies or laws inside of the United States," she adds.

Things are getting bad when Mr Biden, the most devout Catholic president the country has ever had, is being criticised by nuns. "The lack of clarity about what the United States is doing gives people the wrong message," says Sister Norma Pimentel, who runs Catholic Charities of the Rio Grande Valley. "The more the US puts effort into clarifying what the immigration process is, it will help avoid great masses of people coming thinking they have a chance to enter when they don't." She adds that if the Biden administration has figured out its border policy, "they haven't voiced it yet". ■



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Infrastructure year

Unlocked

WINFIELD, MISSOURI

Joe Biden's infrastructure bill will boost competitiveness for decades to come

LOCK AND DAM 25 on the upper Mississippi River is testament to how good American infrastructure can be. Stretching nearly 1,300 feet (400 metres) across the water, the concrete-and-steel structure is a crucial link in the system that connects Midwestern fields to Southern ports and thence to Asian markets. Roughly 60% of America's corn and soy exports pass through it every year. But it is almost 100 years old, and engineers wage a constant battle to keep it operational. It has the same capacity as when it was built, while boats have grown bigger. "How many highways built in the 1930s still have the same number of lanes now?" asks Andy Schimpf, a manager at the lock.

Salvation may be at hand. On November 5th the House of Representatives passed a five-year, \$1trn bill to repair and upgrade America's ageing infrastructure. About \$2.5bn has been allocated to inland waterways, and Mr Schimpf is optimistic that some will go towards rebuilding Lock and Dam 25, doubling the size of its chamber. Today, workers sometimes need to break apart barges to get them through, and then reassemble them on the other side, which can take up to three hours. A bigger lock could reduce transit time to 30 minutes.

Hundreds of similarly delayed and neglected public projects around America will get a big boost from the infrastructure bill, which President Joe Biden will soon sign into law (it long ago passed the Senate). It includes \$40bn of new funding for fixing bridges, the largest investment since the construction of the interstate highway system. There will be nearly \$70bn for passenger rail, aimed both at clearing years-old maintenance backlogs and bringing service to new areas. Another \$65bn should ensure that every American has access to high-speed internet. And the list goes on and on, from highways to airports and the electricity grid to water pipes.

For years American infrastructure has suffered from under-investment. It would take \$2.6trn over the next decade to get it up to scratch, according to the American Society of Civil Engineers (ASCE), a professional body (albeit one with an interest in spending more). The bill will not fix everything. But it could be the beginning of a process that will make a real difference.

How big a difference? Roughly half the headline amount would have been expected as part of regularly budgeted mainte-

**A concrete achievement**

nance, meaning that about \$550bn actually constitutes new spending, to be disbursed over five years. That might not sound like much, but it is. From 2022 to 2026 federal infrastructure spending will rise from about 0.8% of annual GDP to 1.3%, well above the trend of the past four decades. Adie Tomer of the Brookings Institution, a think-tank, says that is nearly the same average level as during the New Deal, which helped lift America's fortunes after the Great Depression.

As a rough rule of thumb, an additional \$100bn per year spent on infrastructure could boost growth by about a tenth of a percentage point when the digging actually begins, and potentially more if it catalyses additional private-sector investment, notes Ellen Zentner of Morgan Stanley, a bank. In the longer term, she estimates, a sustained expansion of infrastructure spending could support productivity and raise America's potential growth by as much as a fifth of a percentage point, a big deal for a large, mature economy. "That's why whenever you talk to economists, infrastructure is the stuff that we go to bed at night dreaming of," says Ms Zentner.

Getting a positive return will, of course, require the money to be allocated well. Considering the shortfalls in investment over the years, it should not be hard to find good projects. On average a water main breaks every two minutes somewhere in America, while nearly half of all roads are in bad shape, according to the ASCE. In some cases the investments will not gener-

ate new growth so much as defend America's existing strengths. Take the locks on the upper Mississippi: they help American soybeans compete against Brazilian ones. Labour is much cheaper in Brazil, but transportation is better in America. Keeping the locks in good shape underpins that. "If you were to close any of them down for a few months, it would cost us billions of dollars," says Steve Censky, CEO of the American Soybean Association.

Just about doubling the federal government's expenditure on infrastructure overnight could lead to waste, however. Cost overruns often bedevil American infrastructure projects. It is more expensive to build rail in America than in almost any other country, according to Transit Costs Project, a research group. The price of building highways has also soared. That just about anyone can mount a legal challenge against public works in their vicinity is part of the problem, leading to delays and missed budgets. And the current backdrop is hardly propitious, with supply-chain congestion affecting even the most basic home-building projects.

On the positive side of the ledger, the bill creates space for private investors to join the government's efforts, which could both enlarge total spending and impose more financial discipline. Any city or state seeking federal funding for transport projects costing more than \$750m will be required to evaluate whether partnering with private-sector investors would deliver better results. Some projects, such as the development of the first-ever national network of chargers for electric vehicles, naturally lend themselves to co-operation with the private sector, given that is where the technology resides. The government also wants companies to pitch in to make infrastructure more resilient to climate change. Grant programmes, useful in attracting private investment in water systems, are likely to be expanded. "This bill can potentially create a framework for ongoing and necessary public and private investment in infrastructure," says Aaron Bielenberg of McKinsey, a consultancy.

But a dose of scepticism is also useful. Ultimately, the amount that America spends on infrastructure is a direct result of the amount that Americans are willing to be taxed. And that, by the standards of other rich countries, is not very much. "Ten years from now, I think we will look back and say that this bill was a historic investment, a great expansion of investments that were neglected," says Austan Goolsbee, an economist at the University of Chicago and a former adviser to President Barack Obama. "But people are still going to be saying, well, why don't we have high-speed rail all over the country?" Even so, better to fix roads, expand ports and lay broadband cables than not. ■

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The Durham investigation

You're in trouble

CHICAGO

The special counsel arrests one of the sources of the infamous Steele dossier

ON OCTOBER 17TH Christopher Steele, a former British intelligence officer who now runs a private research consultancy, appeared on ABC News. Mr Steele was being interviewed about a dossier that he had provided to the Democratic Party and to the FBI in the run-up to the 2016 presidential election. It reported on Donald Trump's business interests in Russia and his team's relationships there. But most explosively, it also alleged he had possibly been captured on video indulging curious sexual tastes in the presidential suite of the Ritz-Carlton hotel in Moscow in 2013. Mr Steele, asked whether he believes that this video exists, said, "I think it probably does."

That seems less and less likely. On November 4th John Durham, the special counsel for the Department of Justice, who was appointed by William Barr in 2019 to investigate the FBI investigation into Mr Trump's supposed links with Russia, indicted Igor Danchenko, a Russian national and professional Russia expert based in America. Mr Danchenko is alleged to have lied about how he collected information for the Steele dossier (knowingly lying to FBI agents is a crime). According to the indictment, Mr Danchenko got some of the rumours he sent to Mr Steele from a Russo-ophile American PR executive, named by the *New York Times* as Charles Dolan, who previously worked on Clinton campaigns. Mr Danchenko allegedly hid this from the FBI when he was interviewed (he denies it).

Right-wing media in America have turned this into a storm. Kimberley Strassel, a columnist for the *Wall Street Journal*, wrote that the indictments show that the Steele dossier ought to be called the "Clinton Dossier", and argued in effect that Mr Trump was a victim of a giant orchestrated conspiracy to make out that he was in (a rather damp) bed with Russia. Others, such as Fox News, have made much of Mr Danchenko's work from 2005 to 2010 for the Brookings Institution, a centrist think-tank in Washington, DC. Many also suggest that the Mueller investigation, a federal probe which looked into Mr Trump's team's links with Russia, began with the Steele dossier. Mr Trump himself said in a TV interview that the findings are "only going to get deeper and deeper"—and would implicate Democrats.

In reality, the conspiracy is not so deep. An earlier investigation by Michael Horowitz, the Inspector-General of the Depart-



Less than meets the eye

ment of Justice, revealed many of the shortcomings of the Steele dossier. But it also showed that it was not what sparked the FBI's investigation into the former president's Russian links. A tip-off from the Australian government in July 2016 did that. The Mueller investigation, which emerged from the original FBI investigation, made almost no mention of the allegations from the Steele dossier. Instead, it focused on the activities of various of Mr Trump's associates, who certainly did meet Russian officials, and also communicated with WikiLeaks over the release of emails hacked from the Democratic National Committee by the Russian state. A bipartisan Senate report released last year assessed that Mr Trump was aware of this. In

April, the Treasury department sanctioned an associate of Paul Manafort, one of Mr Trump's campaign managers, for feeding information to Russian intelligence.

So Mr Durham has very much not exonerated Mr Trump from having shady dealings with Russia. But he has underlined that the most lurid allegations were, at best, unsubstantiated rumour. That is embarrassing to the FBI, which used the Steele dossier in part to justify a wiretap on one Trump adviser, Carter Page.

But it is also damning of many journalists and Democrats. The Steele dossier was presented by many in the more left-leaning media as a highly credible investigation by a highly respected British former spook, involving "deep cover sources inside Russia" (in the words of one MSNBC anchor). In fact it was outsourced to people outside Russia such as Mr Danchenko, who seemingly gathered information by reading newspapers and drinking with pals.

What happens next? Mr Durham's investigation has been going on for over two years and, so far, has produced only three indictments: as well as Mr Danchenko, there is Michael Sussmann, a cyber-security lawyer also alleged to have made false statements to the FBI, and a junior FBI lawyer who has admitted altering a document to strengthen a wiretap request. There may well be more. Yet the main outcome of the investigation will be to help Mr Trump move the conversation about his Russian links on from his own actions to the tendency of liberal journalists to believe the absolute worst about him. For the former president, that is a pretty good result. ■

New nukes

Energy deficient

DENVER

Will the climate crisis force America to reconsider nuclear power?

THE DIABLO CANYON nuclear power plant lies about 200 miles north of Los Angeles on California's central coast. Its twin reactors sit between the Pacific Ocean on one side and emerald hills on the other. The Golden State's only remaining nuclear plant provides nearly 9% of its electricity generation, and accounts for 15% of its clean-electricity production. Yet despite California's aggressive climate goals and a national push to reach net-zero emissions by 2050, Diablo Canyon is set to close down by 2025. A new report from researchers at Stanford University and the Massachusetts Institute of Technology (MIT) reveals just how detrimental that would be.

Diablo Canyon came online in 1985 and

has operated without incident. But the plant is controversial. Diablo sits near several major fault lines, and locals have long feared that an earthquake could trigger a nuclear disaster. America's Nuclear Regulatory Commission (NRC) ordered utilities to evaluate their plants for flooding and seismic risk after the meltdown at the Fukushima Dai-ichi nuclear plant in Japan in 2011. Diablo Canyon was found to be safe.

Even so, in 2018 the California Public Utilities Commission approved a proposal put forward by Pacific Gas & Electric, the state's largest utility and the operator of Diablo Canyon, and environmental and labour groups to close the plant. PG&E argued that there was reduced demand for



Nuclear nipples nixed

► nuclear power because of the promise of renewables, such as wind and solar, and the growth of “community choice aggregators”, which allow local municipalities to decide where they get their power from.

Three things have changed since then. First, California passed SB100 in 2018, which requires the state to achieve 100% clean-power generation by 2045. Second, the south-west is suffering from what paleoclimatologists think is its second-worst megadrought in 1,200 years. Reservoirs across the region are drying up, limiting the supply of hydroelectric power. Just 11% of California’s in-state power generation came from hydro in 2020, a 44% drop from 2019 (see chart). Electricity from clean-energy sources (including nuclear) made up 51% of California’s power generation last year, down from 57% in 2019.

Third, a heatwave in August of 2020 led to rolling blackouts across the state as demand for electricity (to power air-conditioners) outpaced supply. California’s public utilities commission is scrambling to meet increased demand. The regulator recently ordered utility companies to buy up renewable energy and battery storage to try to offset the impending loss of Diablo.

These three trends led researchers to ponder how keeping the plant running might change California’s energy outlook. They found that to keep it going to 2035, ten years past its current operating licence issued by the NRC, would cut emissions, bolster the grid’s reliability and save the state \$2.6bn. The analysis shows that Diablo’s continued operation would reduce the carbon emissions from power generation by 11% each year from 2017 levels. And unlike wind and solar power, nuclear energy provides a stable source of electricity unaffected by changes in weather.

The researchers also suggest that Diablo could potentially help California make its power sector greener and tackle water shortages by producing hydrogen or po-

wering a salt-water desalination plant in addition to generating electricity. “You cannot afford to take technology solutions off the table” when pursuing net-zero goals, says Jacopo Buongiorno, one of the authors and a nuclear scientist at MIT. “All of the above is really the best strategy.”

It is one thing to prove Diablo’s value, and quite another to reverse its retirement. A law aimed at protecting marine ecosystems would force the plant to replace its water-intake system, which cools its reactors, with a new system that reduces the intake flow rate by 93%. It would also require PG&E to reopen its 2018 settlement and relicence the plant, which can be an onerous process; or sell Diablo to another utility.

Fission impossible?

The debate over Diablo Canyon reflects the recent rebranding of nuclear. Steve Nesbit, president of the American Nuclear Society, says three things happened in the 2000s to put a damper on nuclear power in America: fracking took off, the financial crisis of 2007-08 lessened demand for electricity and the Fukushima accident spooked politicians. The plants that were commissioned were delayed and over-budget. Yet

evidence shows that when nuclear reactors shut down, polluting fossil fuels make up the difference.

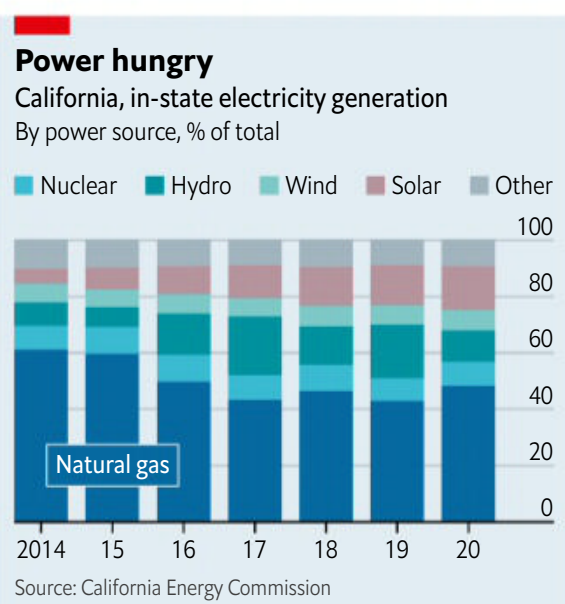
Even while plants are being shut down, nuclear power is gaining in appeal. Environmental groups have long been sceptical of nuclear because of the toxic waste it produces, or because they were against nuclear weapons. Jessica Lovering, the founder of Good Energy Collective, which aims to build the “progressive case for nuclear energy”, says today’s climate activists are more pragmatic, and focused on nuclear’s lack of carbon emissions. She cites the Sunrise Movement as a group that is not necessarily pro-nuclear, but is against closing down existing plants.

Nuclear is responsible for nearly 20% of America’s power generation and about half of its clean energy. A survey from ecoAmerica found that 56% of Democrats supported nuclear power in 2020, up from 37% in 2018. “Young people these days maybe don’t bring with them the baggage of their parents and grandparents, who were raised during the cold war, in their view of nuclear power,” says Mr Nesbit.

Policy is slowly catching up. Pro-nuclear groups point to the use of “clean electricity” or “zero-carbon” language in state and federal climate targets as a way to leave the door open for nuclear, rather than requiring renewables. Jennifer Granholm, President Joe Biden’s energy secretary, told a crowd at COP26, the global climate conference in Glasgow, that nuclear energy is an “essential tool” in decarbonising the grid. Republicans and Democrats alike are excited about the potential for converting coal plants into nuclear power stations. When TerraPower, a company founded by Bill Gates, announced that it would build a nuclear reactor at the site of a closing coal plant in Wyoming, Ms Granholm, the state’s Republican governor and its senior senator were in attendance. The federal government is also subsidising the project to the tune of \$80m.

But nuclear power still faces several obstacles. Experts say the biggest is the prohibitive cost of building a new plant. New designs, such as TerraPower’s, may help with this. Many states, including California, also have de facto bans on building new reactors until radioactive waste can be permanently disposed of. The federal government tried for decades to build a nuclear waste repository at Yucca Mountain in southern Nevada, but met stiff resistance from local politicians who didn’t want the stuff buried in their backyard.

The first of Diablo’s reactors will lose its licence in 2024. The report’s authors hope the Golden State will come to its senses before then. “The circumstances have changed,” says Ejeong Baik of Stanford. “Diablo Canyon presents an opportunity,” she adds. Will California take it? ■



Lexington | Latin hex

A large minority of Hispanic voters support Trump populism. This looks catastrophic for the left



WHEN DONALD TRUMP descended his elevator six years ago and inveighed against Mexican rapist immigrants, it was assumed that Hispanic voters would take offence. But a short hop across the Hudson river, in heavily Hispanic Passaic City, Angel Castillo loved what he heard. “Trump kept it real,” recalled the 43-year-old immigrant, over a cup of strong Dominican coffee in his one-room family restaurant, El Primito. “He didn’t say all Latinos are rapists. He said a lot of those coming over the border are rapists and drug-dealers and he’s right.”

Though a registered Democrat, Mr Castillo resolved to vote Republican thenceforth. Many of his relatives (a few of whom are illegal immigrants) were horrified: “People said you’re crazy, you’re voting for a racist.” Yet his wife, mother, brother, sister and teenage daughter followed his lead. This puts them in the most intriguing, hotly studied and potentially decisive cohort in American politics: Hispanic Trump voters.

Their emergence as a major electoral force was the big surprise of last year’s election. It saw a huge turnout by Hispanic voters, helping Joe Biden to victory in Arizona and Nevada. Yet it also featured a pronounced Hispanic tilt to Mr Trump. Initially thought to have been a localised phenomenon—which cost Mr Biden Florida and any hope of victory in Texas—it turned out to be nationwide. With around 38% of the Hispanic vote, Mr Trump won a higher share than any recent Republican presidential candidate apart from George W. Bush, a pro-immigrant Texan, in 2004. And last week’s elections in New Jersey—including Governor Phil Murphy’s brush with political death—suggests the shift may endure.

Passaic City, a decaying factory-town where seven in ten voters are Latino, helps illustrate it. In 2016 Mr Trump won 22% of the vote there, almost the same as Mitt Romney had. Four years of relentless immigrant-bashing and race-baiting later, he bagged 36%. Mr Murphy’s Republican challenger, Jack Ciattarelli, appears to have held on to that gain; when vote-counting finishes, a third of the commissioners of Passaic County could be Republican.

The overarching explanation for this development is suggested by the many alternative cuisines, Mexican, Colombian, Peruvian, Venezuelan, Puerto Rican, available within a few steps of El Primito. Hispanics are incomparably more diverse than the earlier

waves of immigrants—Irish, Italian, Polish, Hungarian—who turned Passaic from a 19th-century fur trading-post into an industrial hub. They also lack the labour unions that bound those hordes into the Democratic fold. The assumption that Mr Trump’s xenophobic rhetoric would make Hispanics recoil in unison took too little note of their differences. While some have done so—especially young, college-educated Hispanics—the extreme polarisation of the Trump era has pushed others to the right.

Ronald Reagan quipped that hard-working, religious, communism-hating Hispanics were Republican even if they didn’t know it. In his different way, Mr Trump has hammered those same issues. He endeared himself to Miami’s Cuban exiles by calling the Democrats socialists. His claim to defend Christianity wooed Hispanic evangelicals everywhere. Hector Fernandez, a 69-year-old evangelical minister in Passaic, was another first-time Republican voter in 2016. “I don’t love the Republicans but my Christian values compel me to vote for them,” he said—and estimated that over half his congregation voted for Mr Trump last year.

The former president’s strong ratings on the economy, based on his wealth and claim to be a job-creating genius, also attracted the community. “Imagine coming to America from a poor country and seeing Trump’s name on a building!” says Passaic’s thoughtful mayor, Hector C. Lora, a son of Dominican immigrants. Mr Trump’s pivot to raging against economic lockdowns after covid-19 hit probably increased that advantage. Hispanics typically own small businesses, which were hard-hit by the lockdowns, the mayor noted. They also have reason to dislike government diktat.

The excesses of Latin politics perhaps also made it easy for some Hispanics to shrug off Mr Trump’s bigotry. “We are used to vitriolic rhetoric,” says Mr Lora. Yet others liked it—as Mr Castillo illustrates. “Immigrants used to come here to work,” said the restaurateur. “Now they come here and jump straight into government assistance, just like other races in this country.” You need not be Anglophone or America-born to find Mr Trump’s white nationalism and nativism seductive. And Hispanic Trump fans are just as easily radicalised as whites. Mr Castillo is a covid anti-vaxxer who suggests that Mr Biden’s election was not on the level.

It is hard to exaggerate the importance of this development. Republican strategists had considered Mr Trump’s chauvinism incompatible with the coalition-expanding embrace of diversity many recommended after Mr Romney’s defeat. But it appears not to be—and for Democrats that looks disastrous.

The party’s decades-long decline in the white, conservative and electorally crucial Midwest appears irreversible. Even if it could excise its leftist fringe—a kiss of death in such places—mainstream liberal causes such as minority, immigrant and reproductive rights are too toxic there for Democrats to progress. To remain competitive, they must therefore build new strongholds in diverse states such as Florida and Texas. But, as Mr Biden’s failures showed, this requires them to maintain Obama-esque levels of Hispanic support.

The dwindling Democratic majority

Harping on immigration reform, the Democrats’ default response, will not deliver that. Millions of Hispanics are hardly concerned with the issue. Yet it is hard to identify a liberal approach to the diverse and fracturing Hispanic community that would be more popular. Democrats had hoped Hispanics would compensate for the illiberal drift of working-class whites. Yet a sizeable minority of them appear to be following the same inexorable course. ■



How to be a dictator (1)

By the book

CARACAS

Six ways Nicolás Maduro has subverted democracy in Venezuela

IDON'T SEE how Nicolás Maduro has the capacity to stay for an extended time in government," said Henrique Capriles, a former presidential candidate, in 2013. "It's near the end for Maduro," concluded Ian Bremmer, a political scientist, in 2017. "Maduro's days are numbered," promised Mike Pompeo, then the United States' secretary of state, in 2019.

Venezuela's president has had the satisfaction of proving them all wrong. Mr Maduro's demeanour during broadcasts on state tv these days is one of avuncular calm. In October he took viewers on a tour of the presidential palace to show off garish Christmas decorations. "How cute!" he exclaimed, as he pointed at a plastic deer.

Such festive cheer is rare outside the palace. Mr Maduro has overseen one of the worst recessions in world history. Under his incompetent management, Venezuela's economy has shrunk by 75%. Some 6m people have emigrated: more than a fifth of the population. If fair elections for president were held, it is almost inconceivable

that he would win. His support in opinion polls hovers near 15%. But Mr Maduro doesn't let the little people tell him what to do. Over the past five years his regime has turned from somewhat authoritarian to blatantly so. When Venezuelans go to the polls for municipal elections on November 21st, it is highly unlikely that the opposition—who, for a change, are taking part—will get very far. Here are six steps Mr Maduro has taken on the path to autocracy.

Step by step

Most importantly, he has continued and extended the subversion of institutions that began under his predecessor, Hugo Chávez, who was president from 1999 to 2013. After Mr Maduro's United Socialist Party lost control of parliament in 2015 (in

what most observers rate as the last remotely fair election), various measures were put in place to stop the opposition from achieving anything. The Supreme Court was stuffed with loyalist judges. In 2017 the elected parliament was dissolved and replaced with a rubber-stamp constituent assembly. The parliament was later re-established, with a socialist majority, after an unfair election. The electoral authority which oversaw all these changes is flagrantly biased.

Meanwhile, the regime has tightened its grip on broadcast media. Private channels are run by people who sympathise with the regime or who have decided to toe the line. The government has closed down almost all newspapers. Opposition parties are meant to be given equal access to the media ahead of elections, such as those in November, but in practice they are almost completely excluded. An analysis of recent coverage by the main state-owned television channel found that the opposition was not mentioned at all on three of the nine days examined. The rest of the time it is referred to only briefly and disparagingly, as "radical" or "extreme". Several websites that are critical of Mr Maduro's regime are blocked.

Having inherited his job from a military man who was both the perpetrator (in 1992) and target (in 2002) of attempted coups, Mr Maduro is keen to avoid any similar unpleasantness. Chávez, while president, ►►

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► created an army loyal to himself, not Venezuela. Mr Maduro gets help from Cuban spies to find and purge potentially troublesome officers. “Believe me, he can be totally ruthless if he needs to be,” says a former government official.

Dozens of officers have been locked up. Some have allegedly been tortured. Last month General Raúl Baduel died in a detention centre run by the security services. A former defence minister, who helped reinstate Chávez as president after the coup plot in 2002, he began to disagree with his former boss in 2007. For most of the rest of his life he was imprisoned on unproven corruption charges, despite pleas from his family for mercy. His daughter says he was murdered. (The government says he died of covid-19.)

Officers who support the regime tend to prosper. Under Mr Maduro, the armed forces have informal control of gold- and diamond-mining, for reasons no one can quite explain. Venezuela’s oil industry is not as lucrative as it used to be, thanks to sanctions and mismanagement, but the regime has other ways to reward loyalty. One is to grant cronies permission to build homes in national parks. Officers and officials are thought to be among the owners of lavish mansions that have sprouted in areas supposedly off-limits to construction, including the Caribbean archipelago of Los Roques and the supposedly protected mountain above Caracas.

Some speculated that when Mr Maduro wrecked the economy, it would provoke a mass uprising against his regime. It did not. Many of the angriest and most energetic Venezuelans fled abroad, and now send home cash that helps their relatives survive. Those who stayed have become increasingly dependent upon the state. If they were to rebel, they fear it would let them starve. In 2016 Mr Maduro introduced bi-monthly hand-outs of food. To qualify, recipients need to have an identity card which party loyalists often inspect on election days. The message is clear: with loyalty comes food.

Perhaps Mr Maduro’s most surprising move has been his embrace of the US dollar. Having previously denounced the currency as an imperialist tool, he now says “thank God” it exists. The change happened in 2019, during a six-day power cut which made electronic payments impossible. That forced people to accept the dollar, technically in breach of the law. Since then, the regime has abandoned price controls and a fixed exchange rate and instead embraced the greenback. As of June around 70% of transactions were carried out in dollars. The policy has reduced annual inflation from a peak of over 2,000,000% in 2019 to under 2,000%, which by Mr Maduro’s standards is a success.

The use of dollars has helped simplify

the sending of remittances. It has also made life for middle-class folk slightly more tolerable. Across the country, casinos are being re-opened. In the relatively wealthy bubble of eastern Caracas hard-currency stores sell everything from designer ski-wear to organic maple syrup. Cynics call the process *pax bodegónica*, or peace through delicatessens.

Unlike, say, Saudi Arabia or Afghanistan, Venezuela still pretends it is a democracy. At the start of the 24-day campaigning period before the elections this month Mr Maduro implored people to participate.

How to be a dictator (2)

A family affair

Daniel Ortega steals the election in Nicaragua

MONTHS BEFORE the polls in Nicaragua on November 7th the outcome was all too clear. Daniel Ortega, a former guerrilla, won his fourth consecutive term as president after jailing most of his potential opponents and forcing others into exile. With his vice-president, Rosario Murillo, who is also his wife, he will rule the country of 6.6m for an unbroken two-decade stretch.

“The election had no legitimacy,” says María Lilly Delgado, a journalist. Hard men from the ruling Sandinista party, who had gone from house to house telling people to vote, hung out at polling booths, menacingly. President Joe Biden denounced the poll as “a pantomime”. Several countries have refused to recognise the result. One organisation reckons that 80% of Nicaraguans boycotted the vote.

In the run-up to the election the regime

Voting was “the best demonstration of love for Venezuelan democracy”. But his regime has also shown that, when it is at risk of losing an election, it will cheat, ignore the results, or both.

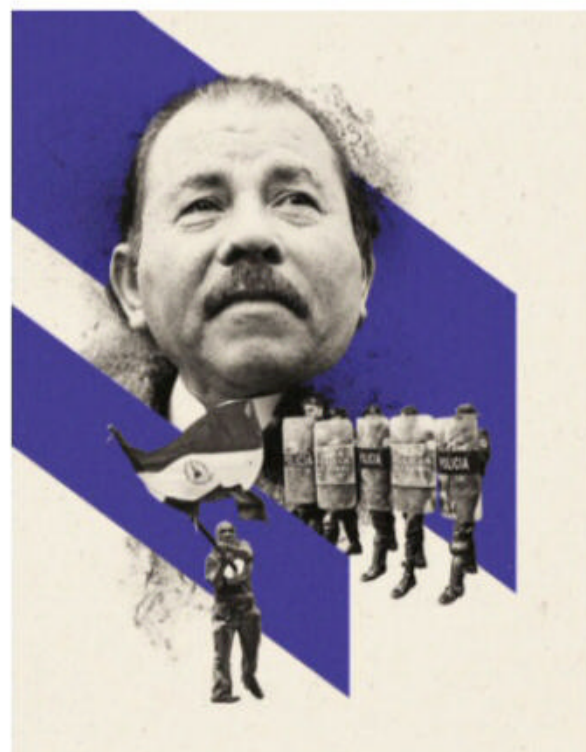
The tactic has not only enabled the regime to survive. It also appears to have convinced a lot of Venezuelans that democracy does not work. In a survey in October by the Andrés Bello Catholic University in Caracas, just half of respondents said democracy was their preferred form of government, a fall of 18 percentage points since Mr Maduro took office. ■

acted with a brazenness not seen in Latin America since the 1970s and 1980s, an era of military dictatorships. Since May it has arrested at least seven potential presidential candidates and scores of other critics, including former Sandinista comrades, charging them with vague offences such as “undermining sovereignty”. They include Cristiana Chamorra, the daughter of Violeta Chamorra (to whom Mr Ortega lost in 1990 after his first stint in power). At the time of her arrest she was the most popular opposition politician, and might have won the election, had it been fair.

The regime spreads disinformation. On November 1st Facebook said that, in the month before, it had shut down a “troll farm” of more than 1,000 fake social media accounts operated by state employees. Most media are controlled by the children of the Ortegas or their allies. Independent journalists are mostly in exile.

All this is the culmination of years of creeping authoritarianism. Mr Ortega looks more and more like Anastasio Somoza, the widely loathed dictator the Sandinistas overthrew in 1979. In 2000 he changed the law so that the presidency can be won with as little as 35% of the vote. This let him return to power in 2007. He subsequently increased his control over the police, armed forces and the courts.

Since 2018 the regime has relied more on brute force, says a political scientist (who, like many Nicaraguans, did not want to be named in this article). That year thousands of young people took to the streets to protest against proposed changes to welfare payments. Police and pro-regime thugs opened fire on them. More than 300 people died. Many more were locked up. Political prisoners are deprived of food and ►►



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Since the regime has shown its willingness to kill, most Nicaraguans are now too scared to take to the streets to protest. But it was an important sign that so many abstained from the vote, thinks Ms Delgado.

The ruling couple will shrug off criticism from abroad. The United States and the European Union have already imposed sanctions on the regime's inner circle, including Ms Murillo and at least three of the couple's nine children, and may add more. Mr Biden's administration is considering expelling Nicaragua from Central Ameri-

ca's free-trade agreement, but rather than harm Mr Ortega, that would mostly affect the lives of ordinary folk.

The Biden administration faces a quandary. It does not want to destabilise the country and send more Nicaraguans fleeing. Since 2018 at least 80,000 have requested asylum in Costa Rica, the nearest place of refuge. Almost 50,000 were apprehended at the United States border this year, up from just over 2,000 in 2020.

Several leaders in Latin America have refused to condemn Mr Ortega; some because they like his methods. Nicolás Ma-

duro, Venezuela's despot, congratulated Mr Ortega on his win. Mr Maduro's regime has provided cash to help the Ortegas consolidate their control of the media. Cuba's communist regime, too, has sent words of support. Cuban police have helped train their Nicaraguan peers in "self-defence" and interrogation techniques. Farther afield Sergey Lavrov, Russia's foreign minister, harrumphed at Mr Biden's criticism of the election. (His country supplies 90% of Nicaragua's military imports.) With friends like these, Mr Ortega and Ms Murillo's grip on power seems secure. ■

Bello Following the money



Jair Bolsonaro is bad for Brazil's economy

IN SEPTEMBER 2019 Paulo Guedes, Brazil's economy minister, told Congress that it could "make history" by keeping the budget under control, adding that "the political class shouldn't be chasing ministers, begging for money." Now Mr Guedes is backing an underhand government attempt to bypass the constitutional cap on public spending set in 2016, which was a crucial step towards righting the country's finances. He and Jair Bolsonaro, the president, are presiding not just over a return to fiscal incontinence but also to other economic ills that have dogged Brazil: rising inflation, high interest rates and low growth. And the budget shenanigans have in turn created uncertainty about the future of the country's flagship social programme.

In the election in 2018 Mr Bolsonaro's alliance with Mr Guedes, a free-market economist, did much to persuade business people to vote for a former army officer of the hard right who had never before shown any interest in liberal economics. Mr Guedes promised radical reform of Brazil's swollen and inefficient state. But this pledge has resulted only in some useful savings on pensions, legal independence for the central bank and minor regulatory simplifications. Now the reform drive is over, replaced by Mr Bolsonaro's scramble for money to buy political support and popularity.

To stave off impeachment over his mismanagement of the pandemic and his family's misdeeds (which they deny), Mr Bolsonaro allied with the *centrão*, a big coalition of conservative pork-barrel legislators. When covid-19 struck the government declared "a state of calamity", allowing it to offer big temporary handouts despite the spending cap. Poverty fell in Brazil in 2020, bucking the regional trend, and Mr Bolsonaro's pop-

ularity rose. In March the government won an emergency constitutional amendment, punching a hole in the spending cap, to allow at least some payments to continue. Now the president's plunging approval rating is reducing his chance of a second term in next year's election.

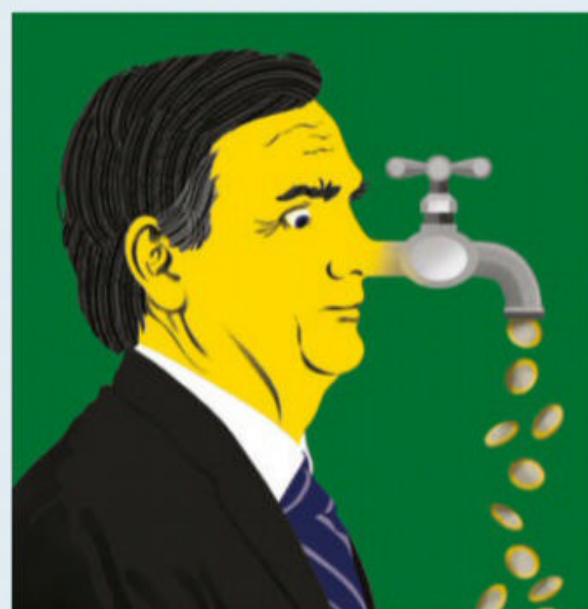
A new constitutional amendment would punch two further holes. It would allow the government to delay making payments ordered by courts (such as refunding excess taxes collected). And it would exploit a recent leap in prices by indexing the budget to December's annual inflation figure (likely to be over 10%) rather than to June's (8.4%). These changes would give the government an extra 100bn reais (\$18.2bn) to play with next year, reckons Marcos Mendes, a former economic adviser to the Senate.

Some of this money would go to Auxílio Brasil, a revamped anti-poverty programme. This will incorporate Bolsa Família, the successful anti-poverty scheme launched in 2003 by the president at the time, Luiz Inácio Lula da Silva. But it will add complexity and uncertainty to it,

notes Marcelo Neri, a poverty specialist at the Getulio Vargas Foundation, a think-tank. The government has raised the average permanent benefit by 18%, to 217 reais per month. However, Mr Neri points out that inflation had eroded 32% of its real value since 2014. Mr Bolsonaro has also promised a temporary bonus, so that all 17m families in the scheme will get at least 400 reais a month, but only until December 2022. Not coincidentally, that is just after the election.

Another large chunk of the extra money would go on less worthy causes, including around 18bn reais to finance opaque budget amendments that grant overpriced public-procurement contracts to individual legislators in return for their support for Mr Bolsonaro. These were an innovation devised by the *centrão*. This week a majority of the Supreme Court ruled these secret clauses illegal. That did not stop the lower house of Congress approving the constitutional amendment on November 9th. Whether it will get through the Senate is unclear.

Either way there will be costs. Defeat would cast doubt on the financing of Auxílio Brasil in the future. But victory would be pyrrhic. Four of Mr Guedes's senior aides resigned last month because they opposed the amendment (the official gloss was for "personal reasons"). Concern about fiscal policy is the "main fuel for inflation", says Zeina Latif, an economist in São Paulo. The purpose of the spending cap was to halt the remorseless rise in public spending to satisfy insiders, which is neither redistributive nor efficient in overcoming the bottlenecks that hold back growth. Its weakening shows that Mr Bolsonaro is not just bad for the environment, for human rights and for democracy, but also for Brazil's economy.





Climate and industry

Manufacturing a green revolution

GUNSAN AND ULSAN

South Korea's industrial centres will have to transform or disappear

"IF WE DO well, the country does well, and if the country does well, that is the way for us to do well," reads the inscription on the walls of the former Hyundai Heavy shipyard in Gunsan on South Korea's west coast. The quote from Chung Ju-yung, the late founder of Hyundai, one of the country's biggest conglomerates, is an apt summary of South Korea's development strategy. Equating manufacturing prowess with the national interest drove the massive state-led investment in heavy industry that made South Korea rich.

Today the fading letters are an ominous sign of things to come. Four years ago the Hyundai shipyard and the GM car factory in Gunsan shut within ten months of each other, resulting in the loss of tens of thousands of jobs. There is a risk of more such devastation in the future. The country's industrial behemoths have no clear plan to eliminate greenhouse-gas emissions by 2050, which the government has promised to do. How they do so will determine the future not just of South Korea's industries but of its industrial cities, too.

South Korea's coastal cities are the most

visible markers of the country's rapid industrialisation. Starting in the 1960s, sleepy fishing ports and trading posts turned into sprawling industrial centres, filled with shipyards, car factories, steel mills, oil refineries and container terminals. Industry generates 37% of GDP, compared with the rich-country average of 27%, and more than 80% of exports. GDP per person in Ulsan, the most important industrial city, is 75% higher than the national average. At a museum in the city you can wander around model versions of industrial installations to take in the story Ulsan wants to tell about itself. "We went from a GDP of \$100 per person to this," beams Shin Hyeong-seok, the museum's director.

But as South Korea joins the rest of the

world in the effort to curb climate change, its centres of heavy industry are turning from drivers of growth into liabilities. Their reliance on fossil fuels is one reason why South Korea is the world's seventh-biggest emitter of greenhouse gases. President Moon Jae-in has promised to reduce emissions by 40% below 2018 levels by 2030, and that South Korea will be carbon-neutral by 2050, a target that was written into law in August.

Environmental groups point out that Mr Moon's targets are still insufficient to meet South Korea's commitments under the Paris agreement. The government itself freely admits that it is lagging behind other rich countries in reducing emissions. But the announcement has alarmed industry representatives. They warn of production cuts and large-scale job losses unless businesses are given more time and support to reach the targets.

The transition to a low-carbon economy, if pursued seriously, will be the biggest challenge for manufacturers since the transition from light to heavy industry in the 1970s, says Park Sang-in, an economist who focuses on South Korea's conglomerates at Seoul National University. The fact that South Korea is so late to the game makes the task harder, because bigger reductions will now have to happen over a shorter period of time.

If the government is to achieve its targets, carbon-intensive manufacturing industries will have to reduce their emissions by as much as 80% over the next ▶▶

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▶ three decades (what carbon is still emitted will have to be captured and stored in facilities yet to be developed). De-industrialising and shifting towards less energy-intensive services would be one way to achieve that. But given the importance of manufacturing to the economy, the consequences for workers and the industrial centres where they live would be devastating. The only alternative is for industries to change. “We do not want to lose the role these industries play in the economic growth process, so it is critical that they be transformed,” says Kang Sung-jin, who studies industrial development at Korea University in Seoul.

What will this transformation look like? Factories that make petrol and diesel cars will have to switch to making batteries and electric vehicles. Shipbuilders will have to produce carriers that run on greener fuels, and the petrochemical industry will have to provide those fuels. Steel furnaces will have to run on something other than coke made from coal. Electricity for both industry and households, now produced mostly by coal-fired power stations, will have to come from renewable sources.

Just as during the switch from light to heavy industry, the change will be most visible in industrial cities. In the future the government envisions, places like Ulsan and Gunsan will be connected to huge offshore wind farms and covered in solar panels. Green hydrogen will power next-generation container ships and carbon-neutral steel furnaces.

Just reinvent yourself

The government’s most recent plans have spurred companies into action. Yet the lack of preparation means that the road to net zero is likely to be bumpy, with industries vulnerable to shocks. Moreover, there is no guarantee that the pledges will survive the next election. Climate change is not yet a big issue in the presidential-election campaign, and the next government may not feel the need to keep up pressure on the conglomerates.

That means that many of South Korea’s industrial centres could end up looking more like Gunsan, as investment in green tech yields results in other countries and higher emissions render some of South Korea’s industries obsolete. Government efforts to get Gunsan’s laid-off workers into new employment have progressed only sluggishly. Thousands have left the city.

At the site of the old colonial port, where city officials have launched a series of urban-regeneration projects, visitors to a large ship-shaped museum can relive the experience of trading rice in a 1930s version of the city. Unless South Korea’s green economy gets whirring, the museum in Ulsan on the opposite coast may soon acquire a similar old-timey vibe. ■



Education in South Asia (1)

Levelling up

Bangladesh is making a serious attempt to move away from cramming

FEW IN BANGLADESH would deny that their country has had remarkable success at getting kids into classrooms. Four decades ago less than a third of children finished primary school. Today, 80% do. Before the pandemic, more Bangladeshi girls than boys attended high school. In India and Pakistan, the reverse is true (see story on next page).

Improving the quality of education has proved trickier. More than half of Bangladeshi ten-year-olds in school are not proficient in reading, according to the World Bank, and more than a quarter of those aged between 15 to 24 are not in education, employment or training. A year and a half of pandemic-related school closures have made matters worse.

In some respects, unimpressive outcomes have not held back Bangladesh. The economy has been growing at an annual rate of 6% for the past decade, reaching 8% before the pandemic. The two main drivers of growth, the garment industry and remittances from overseas Bangladeshi workers, have boomed. But that is because labour is plentiful and cheap, not because it is skilled. Bangladeshi labourers in the Gulf often earn less than their Indian brethren. Garment workers in Dhaka, the capital, toil for lower wages than rivals in China.

Sustaining growth will rely on moving from cheap to skilled labour, says Hossain Zillur Rahman of the Power and Participation Research Centre, a think-tank in Dhaka. “Those skills need to be created now,” he says. The government is shaking up the

curriculum as a way to achieve that. The plans, which are due to be implemented by 2025, focus on shifting away from mindlessly memorising textbooks and regurgitating them during exams and towards building useful skills. All exams will be scrapped until third grade. Year-end public exams, which start in secondary school, will wait until tenth grade. Before that, students will be assessed on their knowledge and ability throughout the year.

The new curriculum, which comes after years of consultation, including with employers and workers, is designed to address the mismatch between education and the skills required in the economy, says Mohibul Hasan Chowdhury, the deputy minister for education. A choice of two vocational subjects from such options as woodwork, graphic design, car mechanics, child care and plumbing will be mandatory for high-schoolers. The government also plans to open more technical universities.

Though many education experts are in favour of the change, some worry parts of it amount to trying to run before learning to walk. How can coding be taught well when “we cannot ensure numeracy and literacy”, asks Niaz Asadullah, an economist who focuses on education inequality at the University of Malaya in Kuala Lumpur. Moreover, he says, tens of thousands of *madrasas*, which are unaffected by the changes, have no government oversight and teach little beyond the Koran.

Nor does changing the curriculum solve many of the other problems underlying Bangladesh’s poor learning outcomes, says Mr Asadullah. Teachers are poorly paid, inadequately trained and too few in number. Bangladesh has among the largest class sizes in the region, with one teacher to 45 pupils in secondary school.

Worse, the system is riddled with corruption. Many teachers bribe their way into staying in cities, ensuring that remote regions get fewer teachers. Appointments at all levels are often based on political influence or bribery, according to Transparency International, an advocacy group. Certificates are handed out on a similar basis. The bribe needed to secure a head-teacher job can be 1m taka (\$11,660).

Public funds flow less easily. At 2.1% of GDP, Bangladesh spends less on education than any other South Asian country, and falls well short of the 4-6% recommended by UNESCO, the UN body responsible for education among other things. Mr Chowdhury says that a chunk of education spending comes from different ministries, and so is unaccounted for in this figure.

As a result of all this, many of the curriculum changes introduced over the past decade are yet to be implemented. The recently announced reforms are “on the positive trend”, says Mr Rahman. But only if they actually happen. ■

Education in South Asia (2)

Levelling down

ISLAMABAD

A new national curriculum sparks a backlash in Pakistan

FEW IN PAKISTAN would deny that something needs to be done to improve its education system. The country is well behind Bangladesh, India and Iran, and just barely above Afghanistan, in UN education rankings. Less than 60% of people over 15 can read and write, having attended school on average for 5.2 years. In Bangladesh, by contrast, the literacy rate is 74%, with 6.2 years of education (see previous story).

The headline figures hide as much as they reveal. In the country's elite schools, the children of the wealthy study in English for international exams and set their sights on the world's best universities. At the other end of the spectrum, 23m children are not in school at all, with girls much less likely than boys to be enrolled. Government schools, where available, have a reputation for rote learning. Private schools of varying quality fill the gap. Many poor families send their children to *madrasas*, which tend to skip subjects like science and maths. Some are vehicles for extremist ideologies. Imran Khan, the prime minister, calls this divide "educational apartheid" and has vowed to get rid of it.

Such an aim is admirable, but the tool of choice has come in for criticism from academics, educators and parents. Earlier this year the government began rolling out a single national curriculum (SNC) for all schools, including *madrasas*. This set of minimum standards is meant to improve the quality of teaching and boost the prospects of pupils. But its ambitions are wider still. Among the objectives listed by the education ministry is to increase "social cohesion and national integration".

The new curriculum has so far been rolled out only in primary schools, but already some of its dictates are causing a backlash. The SNC has increased the number of subjects, such as general knowledge, which must use textbooks in Urdu or other local languages rather than English. Mr Khan, himself an old boy of Aitchison College, the country's most prestigious school, makes his case in punchy post-colonial terms. "When you acquire English-medium education, you adopt the entire culture," he argues, adding that "you become [a] slave to that particular culture."

Yet the resistance to the SNC's imposition of local-language learning is not just an elite phenomenon. There have been reports of schools unwilling to implement it. And there is huge demand for English from

parents who see it as a way for their children to stand out in the job market, according to teachers. Mariam Chughtai, the director of the national council drawing up the curriculum, says the aim is not to drop English but to elevate local languages. "When we think 'multilingual', we think French, German and English. But when you say bilingual in Urdu and English, the elites look down upon it," she says. Still, "no one is denying the importance of English. It's here to stay."

A bigger complaint is that conservatives are using the curriculum to increase religious teaching in schools. Rather than turning *madrasas* into schools, it will turn schools into *madrasas*, charge critics. Indeed, the education ministry's list of "key considerations" in drawing up the curriculum puts the teachings of the Koran at the very top. Non-Muslims need not take classes on Islam, but religious content is seeping into other subjects, such as Urdu-language lessons that include passages on Muslim caliphs. The government argues that there is nothing wrong with teaching religion in a religious country.

The third criticism may be the most pertinent. Pakistan's abysmal learning outcomes are not so much the result of content as of access, says Jasir Shahbaz, an educationalist in Lahore. A new curriculum will do little to fix that. "The issue is not so much what the kids are studying, so much as how many kids are actually studying, or are actually understanding what they are studying," he says.

The battles are likely to intensify as older pupils start the new curriculum next year. Ms Chughtai says it will take time for results to show. But the furore, she says, is because the changes affect even the elite: "Any time you try to bring a major policy change, for the small minority of people for whom even the broken system was working, they are going to get scared." ■



The write stuff

Politics in Myanmar

How to get a promotion

YANGON

Some civilian politicians are working for the murderous generals

BEFORE THE Burmese army took power in a coup last February, Aung Naing Oo was a well-spoken civil servant widely praised for spearheading economic reforms under the governments of Aung San Suu Kyi, the country's de facto leader until the coup, and her predecessor. When the army took over, it detained senior members of Ms Suu Kyi's government. Yet Mr Aung Naing Oo did not just remain free. He was promoted by the junta to the role of investment minister.

Once a darling of the international community, Mr Aung Naing Oo, an ex-military officer, now speaks the junta's language. He recently told Reuters that foreign executives of Telenor, a Norwegian telecoms firm, had been barred from leaving the country because of the regime's need to meet them in person. Myanmar's current economic crisis, he argued, was caused in part by "sabotage" backed by foreign states.

After previous coups, Myanmar's generals did not immediately invite civilians onto their ruling councils. This time is different. Several civilians sit on their council, and in their caretaker government, too. Nine of 28 cabinet ministers are civilians. Six ministers were senior civil servants in the ousted government, suggesting the junta wants to project a sense of continuity. Eight cabinet members served under the presidency of Thein Sein, an ex-general who, between 2011 and 2016, created a "business-friendly but military-controlled state", which the junta seems to want to recreate, write researchers at ISEAS, a think-tank in Singapore.

Why the top brass has included civilians in its government seems clear. Why civilians would want to work for the generals is less obvious. Some may not have had "much of a choice when asked by the military", says Ye Salween, the pseudonym of a Burmese analyst based in Yangon. They may also not have expected the coup to meet with the overwhelming public opposition that it did.

There are more petty reasons, too. Several ministers hold grudges against the junta's arch-rival, Ms Suu Kyi. In 2019 she reassigned Mr Aung Naing Oo from the government's investment agency, which he ran, to the investment ministry, making him permanent secretary. This was widely regarded as a demotion—though apparently not by Mr Aung Naing Oo, who says that it was a promotion and that he bears ▶▶

► no ill will towards Ms Suu Kyi.

Thet Thet Khine, the welfare minister, is a former lawmaker from Ms Suu Kyi's National League for Democracy (NLD). She bears "hatred" for Ms Suu Kyi, a former friend says, because she was made to feel unwelcome by Ms Suu Kyi and the NLD over her past leadership of the country's top business lobby, which engaged with previous military regimes. The party dismissed her in 2018, whereupon Ms Thet Thet Khine became one of Ms Suu Kyi's most vocal critics, branding her a "control freak". (Ms Thet Thet Khine denies that she hates

Ms Suu Kyi but says she's not a "huge fan".)

The turncoats also claim to believe that the junta can do some good. The army justified the coup by claiming that the NLD stole the election in 2020, even though observers found no evidence of widespread fraud. Ms Thet Thet Khine says that she "witnessed personally that NLD cheated". Days after the coup she justified working with the generals by arguing that the ousted government "did undemocratic things", whereas the army "is doing democratic acts" by taking charge until it can hold a fair election. For his part, Mr Aung Naing

Oo may have calculated that he could bring about more change from within government than outside.

The flaw in that argument is that the regime focuses not on good government, but on violently quelling resistance to its rule. It has killed more than 1,200 civilians so far, according to a local watchdog. The names of reformers like Mr Aung Naing Oo are now "manure", says Mr Ye Salween. If they thought siding with the army would ensure their safety, they may be thinking again. Low-level officials are assassinated almost every day. ■

Banyan The great board game

How the game of Go explains China's aggression towards India

IN THE ANCIENT Chinese game of *weiqi*, better known in the West as Go, the objective is not to knock out your opponent. Taking turns to add one stone at a time to the board's 361 spaces, what players firstly seek is to build the largest, strongest structures, and only secondly to weaken and stifle enemy ones. Better players shun contact, preferring to parry threats with counter-threats. Such unresolved challenges multiply, the advantage shifting to whoever poses the sharpest ones. Only when more stones than empty spaces fill the board can resolution of these tactical matters no longer be avoided.

The contest between China and India has unfolded in similar fashion. The two have lately engaged in sabre-rattling and name-calling. But such tension has been rare during their seven-decade rivalry as modern nations. As in a game of *weiqi*, so long as India and China were focused on building their own core structures, each largely ignored the other.

Far from their crowded coasts and plains, the Asian giants' 3,500km-long border region remained an empty section of the board. It contained not people or resources but the world's coldest, driest deserts and its highest mountains. India and China maintained overlapping claims, and their forces sometimes clashed, as in a brief war in 1962. But they both also judged that there was not enough at stake to fight a big war over. So territorial limits continued to be defined in many areas by a "Line of Actual Control" rather than an internationally recognised boundary. By mutual agreement their border patrols went lightly armed. They mostly avoided contact.

As a democracy bound by rules, India has repeatedly sought to end the ambiguity by negotiating a permanent border.

But perhaps because its strategists are steeped in the culture of *weiqi*, China has repeatedly rebuffed such efforts. For a player building formidable structures across the rest of the board, why foreclose on potential pressure points? Better to leave them open for use in the future, when you have more leverage and your opponent has more reason to fear you.

Under President Xi Jinping, China appears to have decided that this future is now. At several strategic spots along the border in the spring of 2020, Chinese troops marched into long-established patches of no-man's-land, setting up permanent forward positions. When India sent in soldiers to challenge the intrusions, fisticuffs ensued. One clash left some 20 Indians and at least four Chinese dead. China has since refused any return to the status quo ante. This leaves it in control of lands India regarded as its own and, more seriously, in control of vantage points from which to threaten crucial roads and other Indian infrastructure.

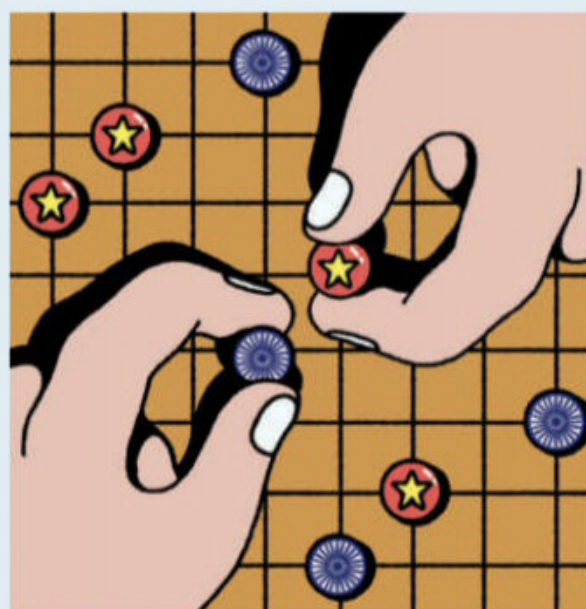
From a *weiqi* perspective China's boldness is understandable. In the 1980s its

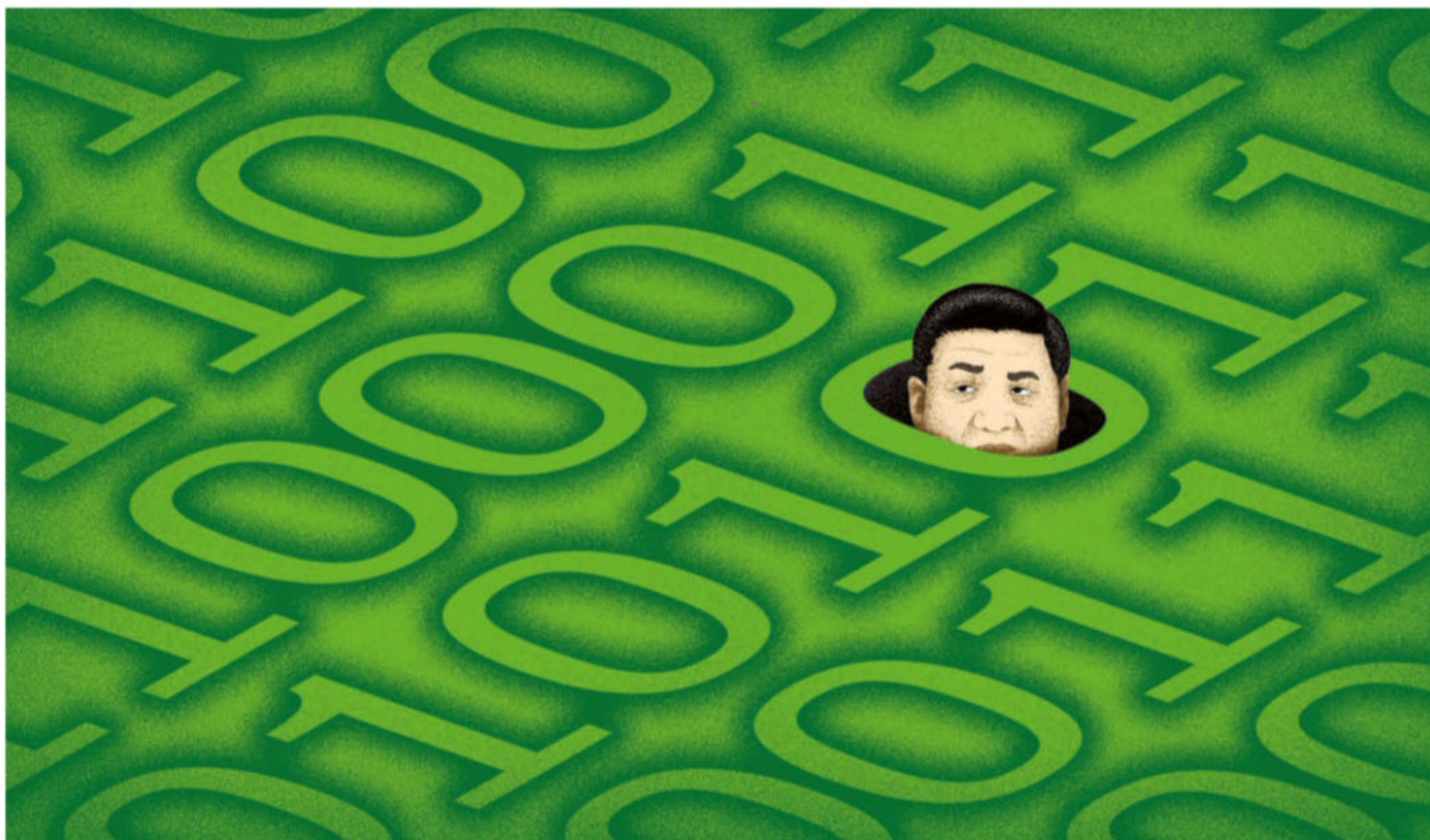
economy was roughly equal to India's. It is now five times bigger, and churns out ever-more sophisticated weaponry while India relies on imports. China's infrastructure has expanded towards its peripheries at a speed India has been unable to match.

As seen from Beijing, China's southern neighbour looks weak in other ways. Its democracy is messy and inefficient. Narendra Modi, India's prime minister, looks like a puffed-up bluffer. And even as China extends strength by tightening its alliance with India's arch-enemy Pakistan, Mr Modi dithers. In his dream of a Hindu golden age India needs no allies, only weaker satellites or rich friends. Despite fanfare over defence agreements with America or Japan or Australia, these remain largely notional. India's army has little functional interoperability with any other.

In short, as the board fills up and one player emerges dominant, there should be no surprise for it to push the advantage. But China has not yet won. Even if his opponent is erratic, the global game-board may prove wider, and India may turn out to have better-placed assets than Mr Xi realises.

Despite Mr Modi's failings India retains a big reserve of goodwill as a democracy and a decent global citizen; it would gain fast allies if it really tried to win them. India's core strength may run deeper, too. Its relative smallness is deceptive: the eastern third of China, where 95% of Chinese actually live, is no bigger than India. As China's economy matures, India's remains packed with upward potential. Besides, unlike a game of *weiqi* this contest between two great and ancient nations will never simply stop. It will keep on going long after Mr Xi and Mr Modi finish playing.





State-sponsored hacking

The spectral game

Despite pledging not to, China still uses hackers to steal business secrets

EARLIER THIS year Microsoft found that a group of hackers, which it called Hafnium, had broken into hundreds of thousands of computer servers around the world that were running the firm's mail and calendar software. The cyber-thieves were stealing emails, documents and other data from small businesses, NGOs and local governments in an enormous, seemingly indiscriminate, cyber-attack. In July America, Britain, other members of NATO and the European Union all blamed China. America was more specific. It named China's civilian intelligence agency, the Ministry of State Security (MSS).

Such co-ordinated condemnation of the Chinese government for allegedly hacking into foreign computer systems was unprecedented. But it was no surprise in the West that China appeared to be responsible (as always in such cases, it denied involvement).

In 2015, standing next to Xi Jinping at the White House, Barack Obama said the two presidents had agreed that neither country would "conduct or knowingly sup-

port cyber-enabled theft of intellectual property" for commercial gain. But cyber-experts say China remains hard at it. In September attacks allegedly mounted by the Chinese government included ones against Indian media firms, Microsoft's Windows operating system and Roshan, a telecoms network in Afghanistan.

Spy agencies everywhere hack into other countries' computer systems. What irks Western governments is that China also steals commercial secrets to pass on to its companies, whereas there is no evidence that the West's spies collude with business like this. Since Mr Xi took power in 2012, China's hacking capabilities have grown.

The Chinese army's signals-intelligence wing, the Third Department, used to be in charge of such work. It attacked everyone from American military contrac-

tors to Google. In 2014 America's Department of Justice formally accused five Chinese citizens from the Third Department's Unit 61398 of "computer hacking, economic espionage and other offences" against American companies involved in nuclear and solar power as well as metal production. (Those charged were believed to be in China and have not appeared in court.) By then, however, control over hacking activities was being transferred to the MSS. The army is still hacking, but its targets are now mainly government ones.

The MSS was first publicly linked to the hacking of foreign companies in 2017. Its involvement was exposed by an anonymous blog called Intrusion Truth, which monitors such attacks. Several cyber-security firms endorsed its analysis. Later that year the American government charged three alleged MSS hackers in absentia for attacks on foreign firms. Two of the accused had been identified by the blog.

Attributing cyber-attacks to China, let alone to specific government agencies, is tricky. Benjamin Read of Mandiant, an American firm that tries to keep tabs on who is hacking what, explains that he and his colleagues gather and analyse telltale tracks, such as the addresses of computers used to launch attacks. A single hacking incident usually does not leave enough information to identify the culprit: attackers can give their computers a false address. But that can be laborious, since, whenever they use a new address, the hackers must ▶▶

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▶ also reinstall all of the tools they use to carry out attacks. This creates an incentive to use addresses repeatedly, which facilitates the work of cyber-detectives.

Under military oversight, China's cyber-attacks often seemed haphazard. Hackers were given lists of targets at the beginning of each month, but there appeared to be little supervision or co-ordination of their efforts. The MSS has integrated the process more closely with other intelligence-gathering operations, says Mr Read. One team might grab a target's mobile-phone data from a telecoms firm, then hand the information to a different group that would use it to infiltrate the device.

Computer experts at Chinese universities have long co-operated with cyber-theft operations conducted by the army and the MSS. Such people have been obvious targets for recruitment by China's intelligence agencies as in-house talent. Now the government is expanding the potential supply of hackers by creating a vast new teaching and research facility in the central city of Wuhan, says Dakota Cary of the Centre for Security and Emerging Technologies at Georgetown University in Washington. The 40-square-kilometre campus, called the National Cybersecurity Centre, is under the direction of the Communist Party's Cyberspace Affairs Commission, led by Mr Xi. The centre will produce its first graduates—1,300 of them—next year.

Growing numbers of people are needed to sift through the huge volumes of data that are stolen by the hackers. Mr Brazil of BluePath Labs reckons there are probably several hundred thousand analysts working on this already. "The economy and military have greatly benefited from technology theft," he says. "Why stop just because those foreigners are feeling aggrieved?"

America's Federal Bureau of Investigation has been stepping up its efforts to curb the espionage. On November 5th an MSS officer was convicted in Ohio of conspiring to steal jet-engine technology from General Electric, an American conglomerate. In July two MSS spies living in China were formally accused of hacking into high-tech businesses around the world over the course of many years, most recently to steal pharmaceutical data related to covid-19 vaccines and treatments.

Companies that worry about China's hacking often use a private cyber-security firm to monitor their networks for subtle patterns indicating an attack, and try to cut it off before it goes too far. Encrypting as much data as possible helps them to minimise their losses. But it is extremely hard to fend off all cyber-spying. If China's hackers really want to break into a network, are willing to work slowly and are able to operate stealthily, they will often succeed. The entreaties of Western governments will not deter them. ■

Dissent in Hong Kong

New kids on the cell block

The city's jails are filling up with political prisoners

SOME NEW inmates in Hong Kong's prisons have reading wishlists that reflect interests beyond such common behind-bars topics as self-improvement and how to exercise in small spaces. Their requests include dystopian novels about totalitarianism, such as George Orwell's "1984" and "Brave New World" by Aldous Huxley, or books about struggles against authoritarian rule, including Vaclav Havel's "The Power of the Powerless" and "How To Feed A Dictator" by Witold Szablowski.

Such bookworms belong to a new breed of prisoner: the dissident. Before the pro-democracy demonstrations that roiled Hong Kong for much of 2019, few people were incarcerated for taking part in political protests. But the authorities have got tougher. More than 10,000 people have been arrested in connection with the unrest. Court proceedings have begun against a quarter of them. The government is building a megacourt to process a backlog of cases, including some involving a national-security law that was imposed in Hong Kong last year. Hundreds of people are now serving prison sentences or being held on remand for alleged offences related to the protests. Many Hong Kongers know someone in jail who has been accused of such crimes.

Conditions are better than in the mainland's jails, where political prisoners are allowed little, if any, contact with the out-

side world and are often treated brutally. In Hong Kong, volunteers collect books and organise letter-writing campaigns for detainees. Online guides provide advice to correspondents about what not to write: avoid slogans from the protests and any references to violence or sexually explicit material. Instead, write about trivial news, tell jokes, describe movie plots and draw sketches, suggests one manual. A bookseller recently ran an eight-part workshop. Participants wrote letters to inmates and read prison literature by Nelson Mandela, Havel and activists from Hong Kong. Joshua Wong (pictured, entering prison), one of the best-known faces of the pro-democracy movement, has written that he is grateful for "every word and every sentence" mailed to him.

Sympathy for political detainees is widespread in Hong Kong. During a heat-wave in May, a petition for the provision of cold water and more showers to those incarcerated garnered over 140,000 signatures. A cottage industry has emerged to help them in other ways. Some Hong Kongers transcribe popular YouTube videos for inmates, who cannot access the internet. Other pen-pals copy and paste posts from LIHKG, an online forum that attracts democracy enthusiasts, in order to create a physical newspaper for inmates. "As an avid user of LIHKG, these forum-post print-outs are my Bible," says a detainee quoted by a prisoner-rights group.

Well-known pro-democracy inmates pass the time by exercising, writing letters, helping fellow inmates with their appeals and publishing articles in local newspapers. Chow Hang Tung, a jailed barrister and human-rights activist, accepted her boyfriend's proposal of marriage, which was sent to her by letter. It was later published in *Ming Pao*, one of Hong Kong's leading newspapers. These young Hong Kongers are "learning to seek freedom in an environment where they have lost their freedom", writes Chan Kin-man, an academic who served 16 months in jail for his role in the Umbrella Movement of 2014.

Imprisoned activists are scattered throughout the city's jails to prevent them from communicating with each other. But officials still worry about their influence. In September an elite squad was used to quell a protest by 18 prisoners angered at the treatment of other inmates, including Tiffany Yuen, a district councillor who is on remand under the national-security law. They had been accused of acquiring a prohibited number of chocolates and hair clips. Bizarrely, officials feared they might give them to other inmates to win support for Ms Yuen. "This is how groups begin, like terrorist groups recruiting followers," said Woo Ying-ming, the head of Hong Kong's prisons. Even behind bars, officials keep Ms Yuen's type under close watch. ■



Joshua Wong, with more time to read

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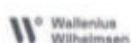


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Chaguan | Why China has a zero-covid policy

Harsh rules enjoy support, as long as a majority feels safe



N EARLY TWO years into the covid-19 pandemic, China's propaganda machine is locked in a futile argument with the outside world. The row is about whether this giant country is paying too high a price for its "zero-covid" policy. China's attempts to eliminate the virus, rather than merely manage it, are certainly costly. They have largely closed China's borders for 19 months. Dozens of city districts, towns and counties are enduring lockdowns as the highly contagious Delta variant and an early cold snap cause a flare-up of infections. There are several hundred cases of the disease nationwide. Many of them are local transmissions rather than imports from abroad, underscoring Delta's perils. Controls include roadblocks manned by police in protective suits, closed schools, cancelled trains and testing of millions of residents.

With officials facing punishment for cases on their watch, grassroots harshness abounds. The northern city of Heihe has declared a "people's war", with rewards of up to 100,000 yuan (\$15,600) for residents who report such pandemic crimes as illegal hunting. A county in Inner Mongolia locked nearly 10,000 tourists in hotels for two weeks to smother an outbreak. Two pharmacies in suburban Beijing lost their licences for selling fever-reducing medicines to a couple without logging their names in a virus-tracking database. The customers, who had earlier visited areas with covid cases and later tested positive, are being prosecuted for failing to report to a fever clinic. Citing possible transmission risks, officials in cities including Chengdu, Harbin and Wuxi entered the homes of quarantined locals and killed their pet cats.

Officials reject foreign reports that call such measures unsustainable. "It's simply not right to question China's efforts to eliminate the virus," complained Xinhua, a state news agency, citing the country's "robust" economy and calling travel curbs a "minor inconvenience". Hu Xijin, the editor of a tabloid newspaper, says foreigners are jealous of China's virus-fighting record, and charges that America has eased pandemic controls because it values "money over life". In fact, the two sides are talking past one another if they focus on how strict zero-covid policies are. It is more relevant to ask who feels the pain from those controls. They are best understood as a giant utilitarian experiment. To help the majority enjoy an orderly, covid-free existence, a hapless minority—notably

those who catch the virus or are suspected of contact with carriers—must sacrifice individual liberties, privacy and dignity.

A focus on the interests of the majority resonates with many Chinese. They remember images of chaos in Wuhan last year, as the virus overwhelmed hospitals in that city of 10m. They know that the health system is weaker outside big urban centres. Many doctors in rural clinics lack university degrees. Intensive-care beds are rare. American-style pandemic policies could have led to millions of deaths. As for closed borders, which cause anguish to expatriates and Chinese with family overseas, they do not greatly pain the 87% of the population without passports.

Many citizens of democratic countries would not tolerate half the rules imposed on China in this pandemic. But the collective sacrifices of the Chinese have produced something remarkable. In a country of 1.4bn people, the official total death toll from the pandemic is under 6,000, compared with almost 808,000 excess deaths in America, which has less than one-quarter of China's population. Some scepticism of China's statistics is reasonable, given that officials in Wuhan, where the outbreak was first detected, concealed the virus for weeks in late 2019 and early 2020. Yet if large outbreaks were still being concealed today, control systems would start breaking down, for they rely on tracking and tracing fresh cases. Instead, life in much of China is relatively normal.

Strictness for the greater good continues to enjoy unmistakable public support. But Chinese leaders do face a risk whenever public opinion suspects that overly harsh lockdowns actually serve the interests of a minority, ie, officials eager to cover their backs. There are signs of disquiet. Chengdu, for instance, recently broadened its pandemic controls, testing 82,000 people whose mobile telephones had spent ten minutes within 800 metres of a suspected case. Other cities have started copying this approach. But on November 8th two leading epidemiologists and a doctor in Chengdu wrote an open letter warning pandemic officials that such mass testing must be guided by science, and risks causing panic. That officials keep talking about punishing rule-breakers is a sign of at least some public fatigue. It also risks driving the weary to hide from the authorities.

The party calls pandemic control proof that it loves the people

To maintain support, strict controls must be seen to benefit everyone, though a minority will feel the most hardship. Foreigners in China, yearning for borders to open, often suggest that the sight of normality in the rest of the world will soon make Chinese citizens restless. For now, state media keep such envy at bay by presenting the West as a death-stalked hellhole. An online video promoted this week by state media is filled with images of Donald Trump when he was America's president, and the chaos abroad of those days. It calls American travellers "walking vectors of contagion".

To date, zero-covid's worst effects have been felt by luckless minorities, from locked-down residents to those whose livelihoods depend on free movement within and outside China. Fear, and the stigma endured by those who catch the virus, have ensured compliance with orders. Harsh policies have bought China's leaders time, as they wait for potent vaccines and antiviral drugs that might let them open up safely. Officials have arguably slowed an exit by refusing to approve foreign vaccines that are more effective than China's, in their eagerness to prove the superiority of one-party rule over Western democracy. Further mutations of the virus may one day challenge China's strategy. If they make lockdowns more frequent, the ranks of the unlucky will grow. ■



Saudi Arabia

No tourist Mecca

ABHA

The reinvention of the Saudi economy is going slower than planned

WERE IT NOT for the ubiquitous photos of the royal family, visitors to Abha might forget they were in Saudi Arabia. Gnarled juniper trees dot green mountains; mist clings to valleys where farmers grow crops and raise honeybees on terraced fields. Troops of baboons line the roads, foraging for food and occasionally stealing bags from unsuspecting visitors.

Saudis have long flocked to this city, 870km (541 miles) south-west of Riyadh, the capital, to escape the summer heat. Foreigners will soon discover it, too. The Public Investment Fund (PIF), the main Saudi sovereign-wealth fund, has pledged 11bn rials (\$2.9bn) to build 2,700 hotel rooms and dozens of tourist attractions in the region (pictured). By 2030 developers hope to draw 2m visitors annually.

Tourism is a key element of Vision 2030, an economic-reform plan meant to wean the kingdom off oil that was unveiled five years ago by Muhammad bin Salman, the crown prince. The government expects tourism to be the largest source of new jobs in the private sector, accounting for 10% of both GDP and employment within a de-

cade. "The industry is at the top of our 2030 agenda," says Ahmed al-Khateeb, the tourism minister, who hopes to see 100m local and foreign tourists in ten years' time.

Saudi Arabia has lots of untapped potential. It did not even offer tourist visas until 2019. But officials struggle to explain why a hoped-for 50m foreign visitors will choose the kingdom over other destinations each year. That points to a bigger question looming over the economic-reform effort. To achieve its goals, Saudi Arabia must attract foreign firms and investors. Yet officials struggle to make a compelling case for why they, too, should choose the kingdom.

Prince Muhammad will be judged largely on whether he can create decent jobs for

Saudi Arabia's 21m citizens, two-thirds of whom are under 35. The pandemic pushed the jobless rate up to 15.4% in the second quarter of 2020. Since then it has fallen (see chart on next page), dropping to 11.3% in the second quarter of 2021, the lowest level in a decade. That is in part because locals are taking low-skilled jobs that used to be the preserve of migrants. Saudis now work tills and brew coffee, sights unimaginable a decade ago. Women, too, are piling into jobs: they are now 28% of working Saudis, up from 16% five years ago.

Falling unemployment, however, comes partly from a lower participation rate, which dropped by 1.8 percentage points during the first half of 2021. At the high end of the labour market, there are not enough jobs for educated Saudis. Half of unemployed citizens hold at least a bachelor's degree. At the other end, grunt work is mostly done by foreigners, who are cheaper. Citizens are still just 24% of the workforce in sales and 20% in hospitality. Over 85% of the jobs in construction, the industry that employs the most people, are done by foreigners.

As the economy grows, the labour market will grow with it. But the foreign direct investment (FDI) needed for growth remains sluggish. By 2020 the kingdom had hoped to attract \$10bn in annual inflows. It fell far short, bringing in \$5.5bn last year. No matter: last month Prince Muhammad announced a new investment strategy that promised \$100bn in annual FDI by 2030 (more than the total for the past decade). ▶▶

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► This is a problem across the government. Officials set ambitious targets, miss them, then simply aim higher. “The crown prince doesn’t have enough feedback,” says a consultant to multinational firms. “There are too many yes-men.”

In private, would-be investors fret about the business climate in a country dominated by one man. They were unnerved in 2017 when Prince Muhammad detained dozens of businessmen and royals for alleged corruption (many traded assets for freedom). Tax was a big concern at this year’s Future Investment Initiative, a glitzy annual conference in Riyadh. The government has served several firms, including Uber (and Careem, its subsidiary in the Middle East), with hefty bills for unpaid taxes. Some executives wonder if this portends a private-sector shakedown.

Multinationals have already been told to move their regional headquarters to the kingdom by 2024 or risk losing juicy state contracts. Last month the Saudi government said that 44 such firms, including Siemens and Unilever, would open offices in Riyadh. The pressure has prompted grumbling from executives based in places like Dubai, which are less conservative and offer better amenities.

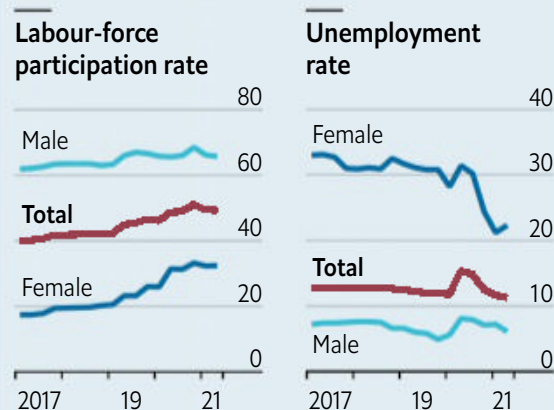
To Saudi Arabia’s credit, it continues to ease once-draconian social restrictions. The weekend before Halloween, young Saudis crowded a party-supply store, its shelves stocked with monster masks, devil tridents and sexy-nurse outfits. Not long ago such merchandise would have prompted a visit from the religious police. “They have no control over us now,” beams the store’s owner (whose only concern was that his “very, very conservative” relatives might discover what he does for a living).

Partitions that separated single men from families have come down in smart restaurants. Young Saudis crowd cinemas, banned for decades, to watch films like “Dune”, about a prince tapped to rule a resource-rich desert. On October 20th hundreds of thousands of people in Riyadh attended a concert by Pitbull, an American singer who is not for the prudish.

The government hopes fun will be lucrative. With few diversions at home, Saudi holidaymakers do most of their spending abroad. The pandemic offered hints of how much business escapes to London and Dubai. In the second quarter of this year, Saudi hotels logged 2.2bn rials (\$590m) in point-of-sale transactions, a 7% increase over the same period in 2019—even though the kingdom was largely shut to visitors. “It was pure Saudi spend,” says Princess Haifa Al Saud, who oversees the national tourism strategy. Yet there will be less money for them to spend as Saudis take lower-paid jobs and the government cuts once-generous benefits. Petrol prices have more than doubled since 2015. The govern-

Jobs for some

Saudi citizens, %



Source: General Authority for Statistics

ment introduced a 5% value-added tax in 2018 and raised it to 15% last year.

The tourism industry needs foreign visitors. Apart from Abha, they may come to enjoy long stretches of unspoilt Red Sea coast and historic sites like the Nabataean ruins at Al Ula. No one can accuse tourism bosses of lacking creativity. In October the PIF announced “The Rig”, a plan to repurpose an offshore oil platform into a resort and theme park.

But officials seem blithe about how all

of this will compete with other destinations. The first hotels to open on the Red Sea will be luxury brands, pricing out many prospective visitors. Officials are coy about whether they will legalise alcohol. “We know we have to be competitive in every aspect,” says one. Even if they do, some tourists may be put off by a sun-and-sand holiday in a country with such a conservative image. In the “halal tourism” market, meanwhile, Saudi Arabia faces stiff competition from cheaper, more established places like Turkey and Malaysia.

The same goes for the broader economy. Lower subsidies, higher taxes and pricier labour have eroded some of Saudi Arabia’s traditional selling points for firms. It is unclear what will replace them.

Until the government banned the practice, residents of Abha would chop down juniper trees for firewood, to stave off the winter chill. As part of the regional tourism project, developers plan to plant 1m trees to reforest the mountains. It will be a long time before visitors can appreciate them: they grow just 5cm a year in the region’s dry climate, says Turki al-Bishri, a local guide. For all the talk of rapid change, the slow-growing juniper may offer a better glimpse of Saudi Arabia’s economic future. ■

Prudery in Morocco

Get two rooms

RABAT

Hoteliers are backing Moroccans who want to legalise sex before marriage

IT IS BAD enough that the pandemic cut the number of foreign tourists by 80%; to make matters even worse, Morocco’s ban on extramarital sex is stifling the domestic market in hotel beds. Unmarried couples caught in the same room are liable to jail terms of up to a year under Article 490 of the penal code. Each week the police check hotel records to uphold the law. Receptionists-turned-private detectives require verification of marriage certificates before handing over the keys. “I get more calls from unmarried couples wanting to stay than anyone else,” says Meryem Zniber, who runs a resort in the Rif mountains. “I could fill my hotel 100% if only they’d lift the law.”

Hopes of change rose after the Islamist party heading the government crashed in elections in September, losing 90% of its seats. For a decade its leaders had squelched any policy deemed *haram*, or contrary to Islamic law. Aziz Akhannouch, the new prime minister, sounds more liberal. His government recently said it would review the entire penal code. But he has left out of his coalition the only party that publicly calls for Article 490 to be repealed.

The interior ministry is a big obstacle. “They fear turning hotels into brothels,” says a former minister. Others say the main concern is pecuniary: officials do not want to lose the bribes they extort from hotels and unmarried couples who canoodle in them.

Travel websites suggest workarounds. One proposes donning a wedding ring. “The offer of an additional payment may carry some weight,” it adds. Another suggests “the two-room method: rent single rooms, then scurry across the corridor after dark”. But others have tired of the expense and the hypocrisy. Hash-tag campaigns—“Love is not a Crime” and “Stop490”—proliferate online.

Conservatives urge young Moroccans to respect tradition. Youngsters retort that the precursor to Article 490 was introduced by France in 1953, near the end of the colonial era. And they point to other Muslim countries that are shaking off old mores. The United Arab Emirates decriminalised extramarital sex a year ago. Saudis say their hotels have stopped asking couples to show marriage certificates. Morocco’s latest hashtag campaign implores “Vote4Love”.

Iran's military tactics

The new predators

JERUSALEM AND WASHINGTON, DC

Why drones are becoming Iran's weapon of choice

USING DRONES to assassinate people has long been the preserve of the most advanced armed forces, such as America's and Israel's. But an attempt on November 7th to kill Iraq's prime minister, Mustafa al-Kadhimi, was a dramatic demonstration of how such "precision-strike" capabilities are spreading to less advanced countries and even to shadowy militias.

Several of Mr Kadhimi's bodyguards were hurt when at least one drone hit his home in the protected "Green Zone" of Baghdad. Other drones may have been shot down. The prime minister survived, appearing soon afterwards on television to denounce the "cowardly" attack.

The hit was so rudimentary, apparently involving quadcopters (of the sort that can be bought by hobbyists) rigged with small bombs, that it could have been staged by any one of Iraq's many armed groups. "If you can deliver pizza with a drone, you can drop a grenade," says James Lewis of the Centre for Strategic and International Studies, an American think-tank.

Yet suspicion immediately fell on Iran and its proxies, for two reasons. The first is that Fatah, the political arm of Shia militias aligned with Iran, is furious at losing most of its seats in Iraq's election last month. Loyalists have staged protests and on November 5th attempted to burst into the Green Zone. The following day, at the funeral of a protester killed by security forces, militia leaders vowed revenge against Mr Kadhimi.

The second reason is that Iran has become the most assiduous provider of drone technology to its proxies and friends, not only in Iraq but also in Lebanon, Yemen, Syria and the Gaza Strip. These are not the sophisticated machines operated by America, such as the Predator and the Reaper. Instead, they are often "craptastic" knock-offs, made with commercially available components, explains Aaron Stein of the Foreign Policy Research Institute, another American think-tank. But Iran is also making improvements, not least by reverse-engineering captured drones, such as America's stealthy RQ-170.

Like unmanned aerial vehicles (UAVs) from advanced countries, Iranian ones are used for both surveillance and strikes. Unlike them, Iranian UAVs do not usually carry precision-guided munitions. Instead the drone itself is the guided bomb, flying into the target and detonating like a robot-

ic kamikaze. Iran dispenses with the satellite links that allow Western forces to control drones from the other side of the world. Its UAVs are typically operated by line-of-sight radio control, or can guide themselves with GPS technology used in smartphones and automotive satnavs.

Iran achieves great range by distributing UAVs (or the techniques to make them) to its allies across the Middle East, thereby threatening targets from the Mediterranean to the Persian Gulf. The drones are often delivered in kits and assembled locally with little help from Iran, notes Mr Stein. "These drones allow Iran to orchestrate attacks while maintaining deniability and ambiguity," says an Israeli military official.

The simplicity belies the threat that the drones pose. Last month an American outpost in Tanf in Syria was hit by five GPS-guided drones. Nobody was hurt, but American officials later blamed Iran and the Biden administration imposed sanctions on people and firms associated with the drone programme. In 2019 several drones struck Saudi Arabia's oil facilities at Abqaiq and Khurais, interrupting about half of the country's oil output for a while. The Houthi militia in Yemen, which is allied to Iran and has been fighting against a Saudi-led coalition since 2015, claimed responsibility. But Western military sources believe the drones were dispatched from Iraq, or perhaps even from Iran.

Israel pioneered the use of disposable, self-destructing drones to destroy Arab air defences in the 1970s and 1980s. Now, though, it must ward off the drones of its enemies. It has resorted to everything from F-16 fighters to the Iron Dome anti-rocket system, but is looking for a better defence. So is America. "We no longer have air superiority," laments an American military source, referring to the Middle East. "Americans got used to owning the skies." ■



Up to no good

Congo's militias

No farewell to arms

MUBAMBIRO

The president does not know what to do with rebels who surrender

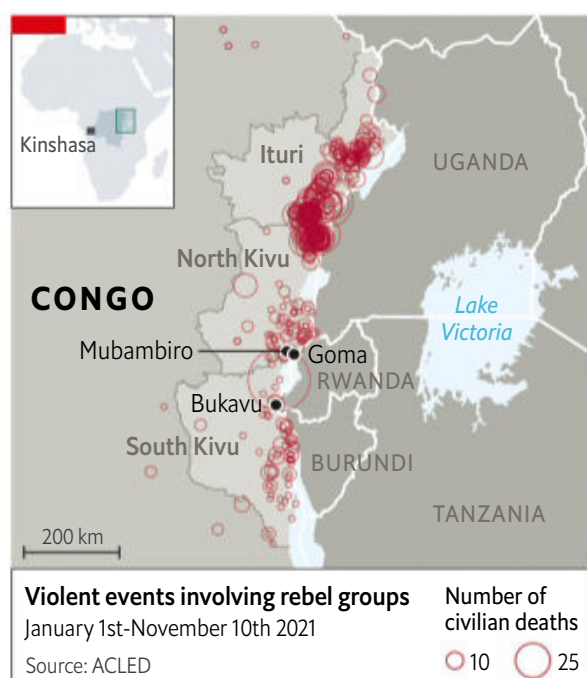
AT THE ENTRANCE to a base for ex-rebels in Mubambiro, a town in the east of the Democratic Republic of Congo, a young man paces to and fro, clasping a wooden replica of an AK-47, the rifle of choice for guerrillas everywhere. "I am the guard here," he explains, "And I am used to having a gun, it makes me feel comfortable."

Shukuru Bijadunia, aged 23, handed his real rifle to the Congolese authorities in 2018 and has languished in a dismal camp ever since. He sleeps without a mattress in a shabby tent with other former rebels. Last year no food was provided at the camp for nine months. "I sleep badly, I barely eat and there is no medicine when we get sick," says Mr Bijadunia. "Life in the bush was better." Hundreds of other former rebels agree. At its peak, the camp hosted more than 1,700 fighters, from 30 different militias, who had surrendered. Today, fewer than 400 of them remain. Some have gone back into the bush to rejoin their old armed groups. Others have been recruited into new ones.

Conflict has ravaged eastern Congo for over 25 years. More than 120 armed groups hide in the forests. Many are reportedly backed by Uganda and Rwanda, though both countries deny this. Militias that had surrendered or disbanded are regrouping, and new ones are forming. Some groups say they want to overthrow the president, Félix Tshisekedi, though he is usually more than 1,000km (621 miles) away in the capital, Kinshasa. In the meantime, many prey on local civilians or smuggle minerals.

On November 7th gunmen attacked two villages near the Ugandan border, killing Congolese soldiers. The attackers are believed to be members of the M23, a militia backed by Rwanda that in 2012 captured Goma, a city of 2m people, before being defeated and forced to surrender a year later by UN forces and the Congolese army. Now it seems to have reassembled. The American embassy recently warned its citizens in Goma to stay at home, fearing another attack on the city.

Also this month, members of a new group calling for Mr Tshisekedi to step down stormed the city of Bukavu. The attacks highlight the president's failure to make good on one of his main campaign promises before he came to power in 2019—to pacify the eastern parts of Congo. On his first presidential visit to the embattled province of North Kivu, Mr Tshisekedi ►►



► encouraged rebels to come out of the bush and start new, peaceable lives. “To all my brothers in armed groups, this is the hour for change,” he said. “The government is reaching out its hands to you.” But those who disarmed were left to rot in camps like the one in Mubambiro, which hardly encourages others to do the same.

Foreign donors have pumped millions into dysfunctional disarmament schemes. The World Bank alone has contributed \$171m to three programmes. Some have been laughable. The UN once offered rebels \$100 for each of their guns. But, as Séverine Autesserre points out in her book, “The Frontlines of Peace”, a Kalashnikov sells for \$40 on the black market. So a militiaman could hand in his rustiest gun, buy two more, and still have money left over for beer. Other programmes have been horrific. In 2014 over a hundred rebels and their family members died from starvation and disease at a government camp.

Mr Tshisekedi has recently launched yet another disarmament programme which, this time, is meant to reintegrate rebels back into the villages they came from. Yet the scheme lacks funds. Chastened by the failures of past projects, Western donors are reluctant to pay for it. What is more, the president has chosen a former Rwandan-backed rebel, Tommy Tambwe, to run it. Considering Rwanda’s continued interference in Congo’s conflict, this has been unpopular. Politicians and rebels alike have called on Mr Tshisekedi to change his mind.

When Mr Tshisekedi travelled to the east in June, he did not pay a visit to Mubambiro. However, emaciated former rebels from the camp tried to get his attention by blocking a main road nearby with flaming logs and branches. “We regret coming here, we don’t understand why the president called us here,” says Héritier Bahati, a former fighter, standing in front of the smoking barricade. “It’s as though he called us here to die.” ■

Liberia

Time and punishment

MONROVIA

Would a war-crimes court allow Liberia to move on?

“THERE WAS a lot of blood all over the place,” remembers Patricia, her voice cracking. She survived the night in 1990 when government soldiers shot and chopped to death about 600 civilians who had been sheltering from Liberia’s civil war in the Lutheran Church in Monrovia, the capital. “We saw the pregnant women, their stomachs open, the children on their mother, sucking, crying.”

Today, not far from the bullet-scarred church, gold letters on the Temple of Justice declare: “Let Justice Be Done To All”. Yet not a single person has been convicted in Liberia for the massacre—or for any war crimes committed during the back-to-back civil wars between 1989 and 2003, in which about 250,000 people were killed.

Much has changed since the conflict ended. Clinics and schools have sprung up, tarred roads hum with traffic and, above all, peace has endured. Yet Afrobarometer, a pollster, found that in 2018 half the population had paid a bribe in the previous year. Rapes of women and children are all too common. So are murders. Two sons of former presidents have been killed since September. Some human-rights activists blame a culture of impunity that dates back to the wars.

Impunity is not hard to spot. Prince Johnson, an influential senator, is a former warlord who, in a video available on YouTube, can be seen drinking a Budweiser beer and barking instructions as his men cut off the ear of a former president, Samuel Doe, in 1990. Mr Johnson, who has admitted that his men killed Doe, has declined to comment beyond saying, “There is no need to dwell in the past.”

George Boley, a congressman, is another former rebel leader who was deported from America because of allegations that his men had burned captives alive and raped villagers before slitting their throats. Charles Taylor, a warlord and former president, was convicted of war crimes at the International Criminal Court in The Hague for atrocities in neighbouring Sierra Leone’s civil war. He is now in prison in Britain. But he has never faced justice for his alleged crimes in Liberia itself.

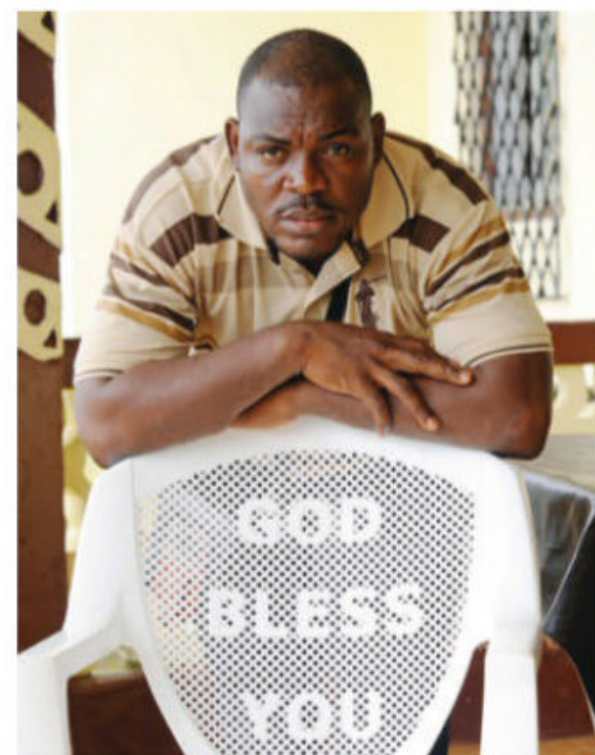
In 2009 the country’s Truth and Reconciliation Commission (TRC) recommended that some of the most violent warlords face trial. But that recommendation was not acted upon by the government of Ellen Johnson Sirleaf, who was then president.

Activists and politicians, including Rustonlyn Dennis, a congresswoman, are trying to revive the idea, through protest and by proposing draft legislation. “This country will never go forward if people don’t take responsibility,” says Ms Dennis. Others say a court is needed to deter people from taking up arms again. “In absence of punishment there will not be peace,” says Dempster Brown of Liberia’s Independent National Human Rights Commission.

Yet not everyone favours trials. Sam Walker of Liberia Peace and Reconciliation Forum, a group opposing the tribunal, says it would be a “witch hunt” and even claims it could renew conflict. He prefers alternatives, such as getting victims and perpetrators to talk. Others worry about the price tag, given that Sierra Leone’s special court cost about \$300m. “What do we prioritise?” asks Meo Beyan, the assistant minister of justice, listing pressing needs such as jobs, education and health care.

Still, many suspect President George Weah’s own worries are the real barrier. His run for president in 2017 was backed by Mr Johnson, whose support Mr Weah is thought to want in the next election, in 2023. In 2019 he tried to kick the question of a tribunal to the Senate, which advised against “reopening old wounds”.

Though the government drags its feet, a tribunal has some odd supporters. Joshua Blahyi (pictured), known as General Butt Naked, led a group of drugged child soldiers who often fought wearing nothing but sneakers and charms. He told the TRC he was responsible for the deaths of 20,000 people. Today he claims to be a repentant Christian and, despite his documented history of almost incomprehensible violence, is entirely at liberty. Is he in favour of a war-crimes court, even if it might jail him for the rest of his life? “Definitely,” he says. “It’s Liberia’s only hope.” ■



General Butt Naked’s new mission



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EU railways

Disoriented express

BERLIN

Trains could help Europe reach its climate targets. But daft rules block the tracks

THE CENTREPIECE of this year's European Year of Rail was the "Connecting Europe Express". Between September and October its cars whisked EU officials across the continent on a whistle-stop tour promoting the future of railways. But the train itself was a nostalgia trip: most of its wagons were built in the 1980s, since more recent models were less likely to be certified by the rail-safety boards of all 26 countries it visited. Without arm-twisting by the European Commission, said Alberto Mazzola of the CER, a rail-industry group, the trip would have been impossible.

It was a classic European story. The EU has grand ambitions for trains as a way of cutting carbon emissions, and its national railway networks are strong. But rail is the form of transport that requires the most co-ordination, and on a continent split into dozens of countries that is a problem. Governments pour money into domestic high-speed lines, but often leave just a winding bit of track linking to the neighbours. For the national carriers that dominate the sector, such as Germany's Deutsche Bahn and France's SNCF, cross-border

trips are a side business and competitors a nuisance. "The single European railway area exists in terms of a market opening," says Kristian Schmidt, the European Commission's director of land transport. "But we have a long way to go."

The EU's mobility strategy calls for making all scheduled travel of 500km (310 miles) or less carbon-neutral by 2030. The most obvious way to do that is with electric passenger trains. Even accounting for use of fossil fuels in power generation, trains average about one-fifth the greenhouse-gas emissions per passenger-kilometre of aeroplanes and less than half that of buses, says the European Environment Agency.

Gimme a ticket for an aeroplane

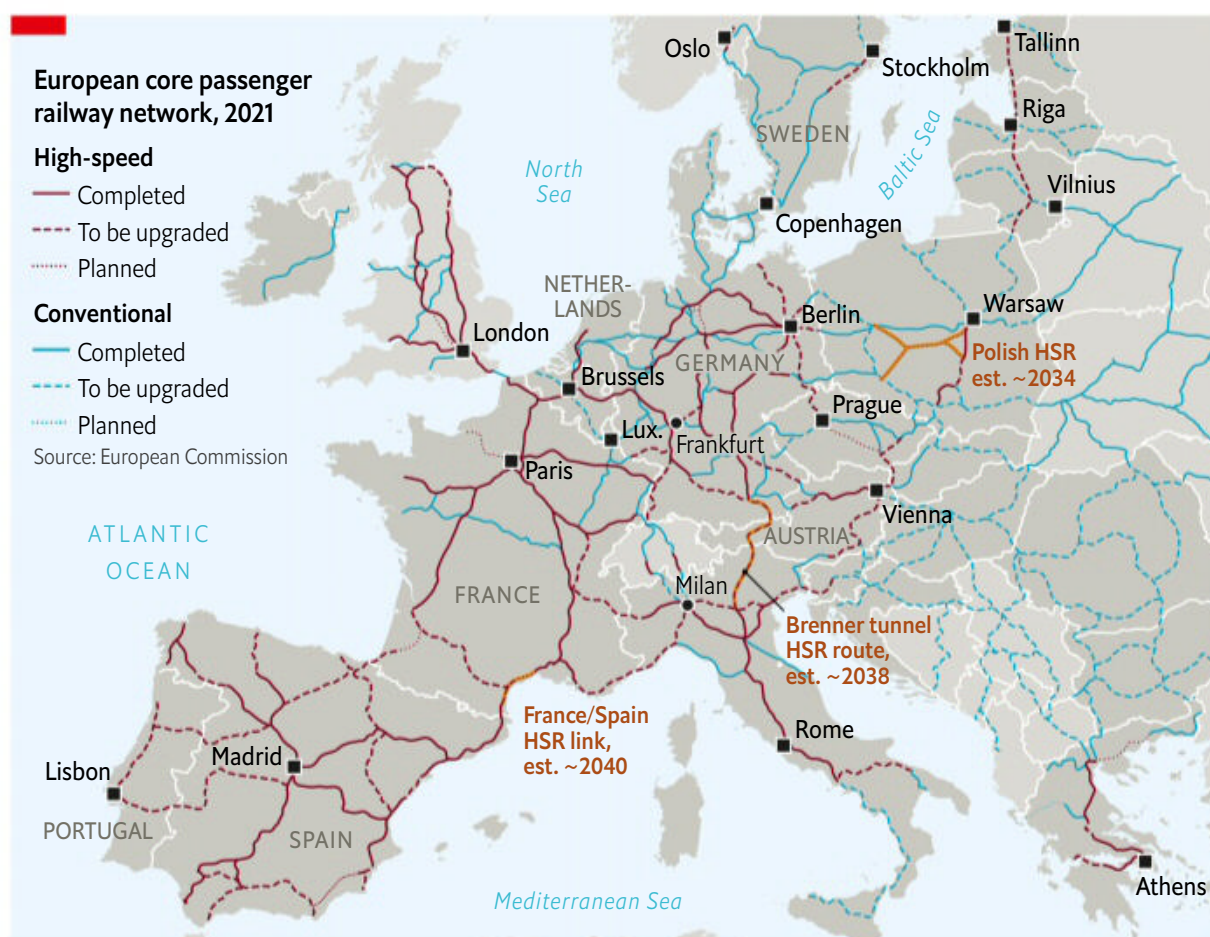
Yet only 8% of the distance travelled by land in the EU is by rail. Even in the most train-happy countries, Austria and the Netherlands, the figures are 13% and 11%. In those countries, more than 75% of land travel is done by car. Statistics on cross-border rail are patchy, but EU figures show that people made only 6.5m international trips by train from Germany in 2019. They made

110m by air, just to other countries in the EU. Shifting a significant share to rail will require huge investments.

More fast trains would help. The EU wants to double high-speed rail traffic by 2030. Because they deliver passengers to city centres rather than airports, trains can out-compete flights on routes of up to 800km, provided they run at 200kph or more. Flights between Milan and Rome fell by more than half after a high-speed rail line opened in 2007. The Eurostar carried nearly 80% of traffic from London to Brussels and Paris in 2019, and a big share of those travelling between Paris and Frankfurt go on French TGV or German ICE trains.

But such international high-speed routes are few. Spain and France each have extensive high-speed networks, but to get from one to the other trains must creep along old-fashioned tracks. France and Italy have scarcely begun tunnelling under the Alps to link their networks. High-speed routes between Berlin and central-European cities such as Prague and Vienna are still in the planning stage.

These tracks are part of a web of high-priority transport corridors known as TEN-T first sketched by the EU in the 1990s. But national governments, which bear most of the costs, have been slow to pony up the money. The EU's own Connecting Europe Facility and other programmes budget €86bn (\$100bn) for rail from 2021-27. But high-speed track can cost more than €40m per kilometre. On most routes countries would be better off improving ►►



► their conventional networks, according to the European Court of Auditors.

A less costly approach is to bring back the original long-distance rail technology: the night train. Sleeper cars were disappearing in Europe by the mid-2010s, but were revived between Brussels and Vienna in 2016 by ÖBB, Austria's national carrier. They have become a romantic fad, popping up again in France, Germany and Sweden. But their carrying capacity is small.

Berth of a nation

National divisions have always been a problem for rail. Sleeper trains were brought to Europe by Georges Nagelmackers, a Belgian banking heir who fell for the Pullman car while travelling in America in the 1860s. It took him years of negotiations with various governments to set up the Compagnie Internationale des Wagons-Lit, which ran sleeper coaches that switched between national operators' locomotives when they crossed borders.

In some respects European cross-border rail has gone backwards. The trip from Brussels to Luxembourg can take an hour longer than it did in 1980. Along the German-Czech border some timetables are not much better than those in *Hendeschel's Telegraph* of 1914. When Germany's transport minister last year announced "Trans Europ Express 2.0", it raised the question of why the original Trans Europ Express trains immortalised by Kraftwerk in 1977 were abandoned by the early 1990s.

One difficulty in reviving them is compatibility. Europe's electric railways use four different voltage levels. Signalling and safety systems are even worse: almost every country initially had its own. The Euro-

pean Rail Agency is gradually enforcing common specifications, but that effort has been under way since 1996. At Europe's edges, even the width of the track varies: the Baltic countries use the Russian Empire's wider gauge, and Spain and Portugal have one of their own.

Private rail entrepreneurs say that traffic would rise if countries actually lived up to their obligations to allow competition. Under EU law all member states have unbundled their rail infrastructure from their train operators, and must let outside players run on their tracks. But some countries are in practice more open than others. Germany's track owner is an arm of Deutsche Bahn and charges high service fees, which tends to deter competitors. Sweden charges only for the added maintenance that new users require, fostering competition from newcomers such as FlixBus and MTR that has cut prices.

Then there is ticketing. Because systems are incompatible, only a few agencies sell rail tickets across the entire continent. As for refunds, operators are responsible only for the portion of the trip on their own trains. High-speed rail tickets typically cost far more than a budget airfare on the same route. That is unlikely to change while jet fuel and most airline emissions are tax-free.

If Europe wants passengers to shift to rail, it will need to tax airlines' carbon emissions properly. Until then, many passengers will think of trains nostalgically. At a Connecting Europe Express event in Berlin, Christopher Irwin of the European rail passengers' union reflected that he first travelled to the city by rail from Britain in the 1960s. "It was easier back then." ■

The Belarus-Poland border

Caught at the wire

A scheme to use migrants to split the EU is likely to backfire

ALEXANDER LUKASHENKO, master tactician? The president of Belarus has brought thousands of migrants from the Middle East to the EU's doorstep on the eve of winter, daring the bloc to abandon its humanitarian instincts as the world looks on. Mr Lukashenko seems to have intended to reignite the internal division and political upheaval that followed the influx of migrants to Europe in 2015. He has instead forged a consensus in favour of the swift punishment of his regime.

The scenes that have unfolded at the Polish-Belarusian border since November 8th were his concoction. Belarusian travel agents in Iraq offer flights, a visa and the sham promise of an easy path to a new life in Europe in exchange for thousands of dollars. Arrivals in Minsk are whisked through the woods to a spot on the border where, far from swiftly crossing into Poland and embarking on the supposed opportunity to move around the Schengen free-travel zone, migrants end up squeezed between the EU's razor-wire fences and Belarusian men with guns, unable to go forward or back. As *The Economist* went to press on November 11th, some 2,000 were trapped near the current main point of concern, the Kuznica crossing (see map). There have been a number of attempts to breach the border there. An estimated 20,000 migrants are thought to be elsewhere in Belarus, with more still continuing to fly in via Istanbul and other Middle Eastern cities on Belavia, the Belarusian state carrier.

Mr Lukashenko's foreign policy has increasingly resembled that of a mafia boss since his theft of elections last year. He has sent goons after dissidents who fled ►



▶ abroad. He is angry at the countries sheltering them, chiefly Poland and Lithuania, and at the entire EU for the sanctions it has imposed on his regime. The ambition of those sanctions was scaled back thanks to lobbying by affected industries, from Austrian banks to Lithuanian railways. Now the political will to deter Mr Lukashenko has hardened. The EU is hinting at fresh sanctions, including on Belavia, possibly as soon as next week. The hitherto hesitant Irish government, whose firms lease planes to the airline, has come on board.

That does not mean that keeping migrants off the route to Belarus will be easy. The EU wants to install officials at airports across the Middle East to prod Iraqi passengers with awkward questions before they embark. But that will take time. Angela Merkel, Germany's outgoing chancellor, has asked Russia's president, Vladimir Putin, to talk Mr Lukashenko out of his plotting. Her chances of success seem slim.

Poland sees deterrence as the best way to stem the influx, and so is determined not to admit any of the migrants gathering at its gates. Its populist government has waved away offers of help from Frontex, the EU's border agency. A camp has sprung up on the Belarusian side, and a lengthy battle of wills is likely. Meanwhile, the migrants are in danger. A freezing winter approaches. And Mr Lukashenko is willing to make people suffer, if the television footage causes problems in Europe. ■

Coronavirus in eastern Europe

The arc of susceptibility

Countries with poor vaccination rates are suffering dreadfully

ON NOVEMBER 6TH teams of medics dressed in full protective gear packed equipment into a Romanian military transport plane before pushing beds with two severely ill covid-19 patients up the ramp and inside. As the propellers began to whirr, the back door slowly closed and the plane lumbered up the runway heading for Denmark. "There is no secret," says Raed Arafat, who is co-ordinating Romania's fight against covid: the country's hospitals are "overflowing". About 90 patients have been evacuated to Denmark, Germany, Hungary and elsewhere. Teams of doctors are also flying in from all over Europe to help their beleaguered colleagues.

Across Europe the numbers of people infected with the highly contagious Delta variant are rising, and many governments are contemplating or imposing new restrictions. But this wave is affecting some

countries far more than others. From the Balkans to the Baltics an arc of susceptibility has emerged, encompassing a swathe of countries with low vaccination rates.

In the past few weeks the death rate from covid-19 has hit record highs in Bulgaria, Latvia and Romania. In the week to November 8th there were 22.8 confirmed deaths in Bulgaria for every million people. In Romania the figure was 21.8 and in Latvia 18.8. Yet for the EU as a whole it was only 3.0. The number of cases is at last dropping in those three badly-hit countries, but it is now soaring in Croatia, Estonia, Lithuania, Slovenia and Ukraine.

All of the countries being clobbered are at the low end of the scale when it comes to vaccination. Only 23% of Bulgarians and 34% of Romanians have been double-jabbed. In Latvia the proportion is 57%, but it was much lower a month ago, when the current wave took hold. In the EU as a whole, 66% are double-vaccinated.

Low vaccination rates are not the result of a lack of vaccines. The countries of the arc have ample supply, but also loud anti-vaxxers. Distrust of government and medical staff is high. A Eurobarometer survey conducted earlier this year found that only 22% of Bulgarians and Croats, 26% of Latvians and 31% of Romanians tend to trust their governments. When asked if they trusted medical staff, 34% of Bulgarians said they did not, along with 32% of Croats, 31% of Latvians and 40% of Romanians.

It is ironic that relatively low levels of infection in the summer seem to have contributed to the scale of current outbreaks. Those with doubts about the vaccine saw little urgency in getting it, which left them vulnerable when the Delta variant hit. Of those now in hospital, says Dr Arafat, 92% are unvaccinated. The true share could be higher, as unknown numbers have bought fake vaccination certificates. He angrily denounces anti-vax disinformation, which is often propagated by rogue doctors, Orthodox priests and far-right nationalists, with the help of "Dr Facebook".

Inga Sprunge, a journalist with Re:Baltica, a news website, says that in Latvia prominent doctors have given ambiguous signals about vaccinations and some politicians are promoting themselves via anti-vax sites. Bulgaria goes to the polls on November 14th for the third time this year, and politicians there may fear alienating anti-vax voters.

According to Oana Popescu, director of GlobalFocus, a Romanian think-tank, Romanians' lack of enthusiasm for getting vaccinated is a direct result of what they perceive to be decades of neglect by the authorities. "When the government suddenly seems to care for you for the first time in 30 years, of course you become suspicious!" she explains. Alas, it is not just Romanians who feel that way. ■

Syrians in Turkey

Going bananas

ISTANBUL

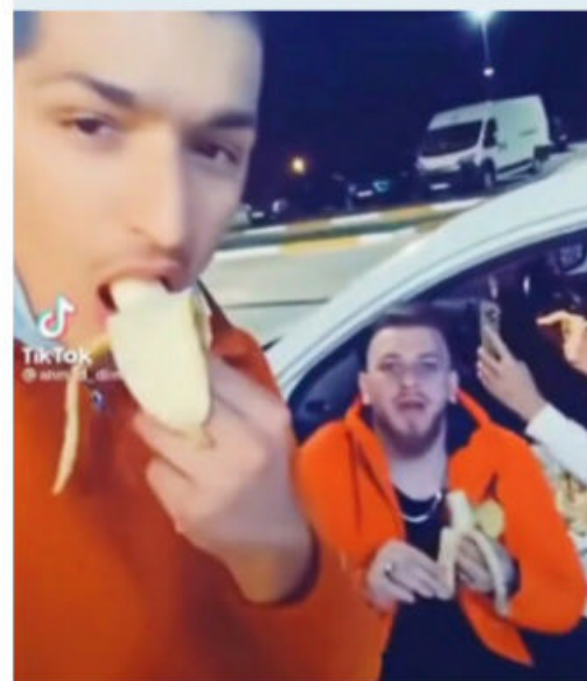
A fruity joke offends officials

TURKEY HAS deported Syrian refugees before. Some were sent back to their war-scorched homeland for failing to register with the authorities or for minor crimes. Some say they were tricked or forced into signing voluntary return forms. But none thought they would be thrown out for eating bananas. Until now.

In October the government said it would deport seven Syrians for sharing "provocative" videos on social media, which showed the young refugees staring into their phones and munching yellow fruit. This was in response to an interview with a Turkish man who had blamed Syrians for driving up rents and complained that they could afford bananas, which he could not.

The banana-eaters seemed to be mocking prejudice against refugees. But officials accused them of mocking the needy. And that was not the end of it. Turkish police arrested a Syrian journalist who had made light of the uproar in a video that showed him nervously buying bananas from a grocer, then hiding them under his sweater. (He was released on November 8th.)

Some 3.7m Syrians have made Turkey their home over the past decade. The Turkish welcome, once generous, has become grudging. As the lira plummets and inflation tests 20%, the refugees are becoming a target of frustration. With its poll numbers shrinking President Recep Tayyip Erdogan's government appears keen to prove that it can act tough. Even over soft fruit.



Don't tell the president

Charlemagne | Minimum wage, maximum rage

A fight about worker pay pits a Scandinavian duo against the rest of the European Union



EVERYONE WANTS to be a little bit Danish. *Hygge*, a sense of Nordic contentment attained via baking, candles and good company, became the philosophy *du jour* during lockdown. Danish dramas win garlands, while its comedies contain jokes so enjoyably dark that viewers may worry about finding themselves on a Euro-pol watch list. Even Danish semen has become a booming export, thanks to the country's combination of liberal rules for donors and reputation as a small nation of tall hunks.

But it is the Danish labour system that attracts the most plaudits. Leftists drool over a model that sees burger flippers in McDonald's paid the equivalent of \$22 per hour. Those on the right marvel that the country has no statutory minimum wage. Instead, employers and stakeholders sit down together and hammer out collective agreements that cover most workers. It is the same in neighbouring Sweden. Employees benefit from wages and benefits that are among the most generous on the continent; employers can hire or fire with ease during boom or bust. Denmark and its Scandi neighbours manage to be both a worker's paradise and a capitalist's dream.

Telling Scandinavians how to run a labour market is akin to teaching the French how to bake baguettes. Yet this is the position in which the Nordic countries have found themselves. Ursula von der Leyen, the president of the European Commission, wants all workers to be covered by a minimum wage, whether through national law (as in most of the club) or through collective agreements (as in Scandinavia). Proposals that will see the topic of minimum wages dragged into EU law are being negotiated among MEPs and national governments.

At first glance, Denmark and Sweden have little to worry about. A common minimum wage is not on the table. Indeed, that would be impossible for a club that includes Luxembourg, whose minimum wage is €2,202 per month (\$2,550) and Bulgaria, where it is €332. According to the EU's own treaties, only national governments can set a minimum wage. Indeed, the commission came to praise the Scandinavian system, not to bury it. It would rather everyone looked a bit more like Sweden or Denmark, with collective agreements galore.

Instead, the commission wants to shape how national govern-

ments guarantee decent wages, rather than to set their level. Under its proposals, countries would still be in charge of the details. Those with statutory minimum wages would be forced to ensure these are adequate when measured against average incomes. For those without a minimum wage, a group which includes Italy, Austria, Cyprus and Finland as well as the Scandinavian duo, the commission wants at least 70% of workers to be covered by collective agreements—a hurdle that the Scandinavians already meet.

Yet the Scandinavian duo are still fretting, and with some cause. All legislation comes with unintended consequences, particularly at the European level, where the European Court of Justice is a player as much as a referee. In Sweden about 60% of collective agreements do not include a minimum wage, points out German Bender, an analyst from Arena Idé, a Swedish think-tank. With EU law now encompassing minimum-wage rules, legal challenges would become possible. And peculiar things can happen. A case in the 1960s involving an unpaid electricity bill worth a few lira ended up establishing the primacy of EU law, which means EU rules trump national ones if the two clash. The so-called "no bailout" clause in the EU's treaties did little to stop a series of bailouts. A single judgment might upend the Nordic labour model.

When proposals start rolling, they are tricky to stop. Employment legislation gets agreed by a qualified majority of governments, so vetoes do not apply. Usually, though, the EU avoids topics that are sacred to national governments. Pleas that legislating—rather than issuing suggestions—on minimum wages violates the Scandinavian principle of no government interference in wage-setting fell on deaf ears. Denmark and Sweden "yellow-carded" the proposal for a directive on minimum wages, a formal protest, but to no avail. In the EU's ministerial council, where national governments haggle over a position, the lawyers say it is perfectly legal. The French government, which will shepherd negotiations on the topic from January, is keen to get it done sharpish.

Beyond the bare minimum

New rules on minimum wages are only the beginning of a wider push on workers' rights at the EU level. Laws to make pay transparent have been put forward by the commission. Proposals on how countries must treat "platform workers"—such as Deliveroo riders and Uber drivers—are in the works. For some it is a welcome shift in EU policy. During the austerity years governments were to be lean and mean. Angela Merkel was fond of noting that the EU was 7% of the world's population, a quarter of its economy, but about half of all its welfare spending. Today, the tune has changed. Generous welfare states and high worker protections were once held to be the cause of the EU's woes; now they are the solution.

For the Scandinavians, this shift is cause for concern. Their system is not broken, yet the EU insists on fixing it. There is little scope for dodging the legislation. Denmark has an opt-out on the euro, as well as on European laws on justice and home affairs. Sweden is in theory obliged to join the euro eventually, but uses a loophole to cling on to its krona. Such derogations are a thing of the past, however, and of no help in the present case. Europe is no longer *à la carte*. Systems that work well, such as those of Denmark and Sweden, may have to change in order to help systems that work less well, such as those of Cyprus or Italy. "United in diversity" is the EU's slogan. But unity increasingly trumps diversity as the EU delves ever further into the lives of its citizens. Everyone wants to be a bit like Denmark. But Denmark may soon start to resemble everywhere else. ■



Nuclear power

This time, it's different

Rolls-Royce and the government are betting that small reactors can fix nuclear power's tricky economics

BRITAIN IS keen on nuclear power—in theory, at least. In 2010 the government gave permission for eight new reactors to be built in England and Wales, as part of its efforts to decarbonise electricity generation. Things have proved harder in practice. A decade later only one—at Hinkley Point on the Somerset coast (pictured)—is being built. It is late and over budget. Construction only began at all because in 2013 ministers committed consumers to paying EDF, the French firm building the plant, a fixed price far above the going rate for its electricity for the first 35 years.

Rolls-Royce, a big engineering firm, thinks it can do better. On November 8th it said it had raised £195m (\$263m) from private investors including Exelon Energy, an American firm, and BNF Resources UK, a company backed by the Perrodo family, a French oil dynasty. The money will be used to develop and design a new generation of up to 16 smaller nuclear reactors that Rolls-Royce says will be both cheaper and quicker to build than existing ones, and which it hopes may evolve into a new business line. That will be particularly welcome because

its aerospace business suffered badly during the covid-19 pandemic, leading it to cut up to 9,000 jobs.

The private investment was enough to persuade the government to chip in another £210m. Ministers hope that a new round of nuclear power plants will help Britain meet its carbon-cutting goals by providing a steady source of low-carbon power to go

with the intermittent electricity generated by wind-farms and solar panels. Rolls-Royce reckons that the first ones could come online by the early 2030s.

Such “small modular reactors” (SMRs) are not a new idea. Countries from China and Russia to America, Canada and France are pursuing the concept. As the name suggests, they are designed to be smaller than most modern nuclear stations. The two reactors at Hinkley Point C, when they are finished, will supply 3.2 gigawatts (GW) of electricity. In summer that would be enough to cover around a tenth of Britain's electricity demand. Rolls-Royce's reactors, which are large by SMR standards, will supply 0.47GW each.

Smaller means cheaper. The latest estimate for Hinkley Point C is £23bn. Such a hefty price tag ensures that only the biggest, best-capitalised firms can build nuclear plants. Even then governments must often sweeten the deal. In 2017 the National Audit Office, a spending watchdog, said that EDF's fixed-price contract might amount to a subsidy of £30bn over the 35 years of the contract. By contrast Rolls-Royce reckons its first few SMRs might cost around £2.2bn apiece. That would put them within reach of smaller firms.

The “modular” part, in turn, refers to how the reactors are constructed. Rather than building a reactor on-site, says Andrew Storer, who runs the Nuclear Advanced Manufacturing Research Centre at the universities of Sheffield and Manchester, the idea is to make as much of the reac-

Small change

Britain, emissions from electricity generation
Gigatonnes of CO₂ equivalent per kWh



→ Also in this section

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61 Bagehot: Brexiteers' paranoid triumphalism

— Read more at: [Economist.com/Britain](https://www.economist.com/Britain)

► tor as possible off-site, in factories, before shipping the parts for final assembly.

Rolls-Royce thinks that should make construction faster. It reckons the build time for an SMR could be shaved to three or four years, shortening the time between forking out capital and beginning to earn a return. It also hopes that a combination of factory manufacture and a large production run will allow its engineers to take advantage of economies of scale and learn how to streamline production, just as makers of standardised goods from aircraft to fridges do. It reckons that the cost of later SMRs could fall to around £1.8bn.

It all looks good on paper. Rolls-Royce says there is interest from Poland, the Czech Republic and Turkey. Privately, though, even some of those associated with the project concede that history counsels caution. The nuclear industry has promised cheap reactors many times before; so far it has failed to provide them.

The price of wind and solar energy, meanwhile, continues to fall.

Ministers, however, may feel they have little choice but to hope that this time really will be different. Britain's nuclear plants produced 16.5% of its electricity last year. Yet they are mostly old and decrepit: all but one is due to shut by 2030. The country has installed fleets of wind turbines, but unusually calm weather this year has cut output and forced it to rely more heavily on polluting coal and gas-fired power stations, even as the price of natural gas has soared. Electricity bills are rising; carbon emissions from electricity generation, which had been falling for years, have crept back up (see chart on previous page).

Nuclear energy, despite its drawbacks, is low-carbon and more dependable than the wind. Its price is little affected by fluctuations in the cost of uranium. Ministers, Rolls-Royce and consumers will hope that a new twist on the idea takes off. ■

Environmental attitudes

Mustn't grumble

Britons are keen on greenery—especially the wasteful kind

ONE SIDE-EFFECT of hosting an international climate conference is an outbreak of navel-gazing. As the UN extravaganza in Glasgow nears its end, many opinion polls and studies have appeared, which provide a superbly detailed view of how Britons think about climate change. They reveal a country committed to tackling global warming, but unfortunately drawn to the priciest ways of doing it.

Perhaps sensing that they ought to set a good example for their international guests, Britons have swung firmly behind the view that anthropogenic climate change is both real and alarming. One pollster, Ipsos MORI, finds that 81% believe that an environmental disaster looms unless habits change quickly. Old people's opinions have changed most dramatically. A series of polls for the Department for Business, Energy and Industrial Strategy reveal that 80% of over-64s are now concerned about climate change, up from 56% in 2012.

Britons have a lot on their minds these days, what with Brexit, covid-19 and inflation. That does not seem to matter. Whereas the financial crisis of 2007-08 was followed by a years-long recession in concern about climate change, the coronavirus pandemic suppressed interest only briefly (see chart). Lorraine Whitmarsh of the University of Bath suggested a decade ago that people have a "finite pool of worry" and

that economic concerns had displaced environmental ones. She now thinks that climate change has become a core concern that cannot be pushed out of the pool.

What to do about it, though? Unsurprisingly, Britons are keen on climate mitigation policies in the abstract and less keen when they are presented with the probable costs of such policies. But if they must pay, they would rather do so, by a slight margin, through general taxation. Onward, a think-tank, reported on November 8th that 50% of people were prepared to pay higher taxes in order to reduce carbon emissions, whereas 46% would pay higher prices for

goods. Low-earners were especially opposed to higher prices.

Politicians amplify this view. Robert Halfon, the Conservative MP for Harlow, has for a decade campaigned successfully against any rise in fuel duty. That probably contributed to the fact that greenhouse-gas emissions from transport fell by just 2% between 2010 and 2019, even as emissions from all sources dropped by 26%. Mr Halfon is not a climate-change denier ("I believe in all of it," he says). And he supports subsidies for electric vehicles. He merely opposes attempts to reduce demand by raising prices.

Britons are keener still on banning things. Another poll, in August, found that people would prefer policies that restrict the number of flights they can take and the quantity of meat they can eat to policies that increase the price of flying and the price of meat. Sir John Curtice, a psephologist at the University of Strathclyde, and others found that 44% support a ban on powerful vacuum cleaners. The proportion rose to 64% following an online discussion of the issue.

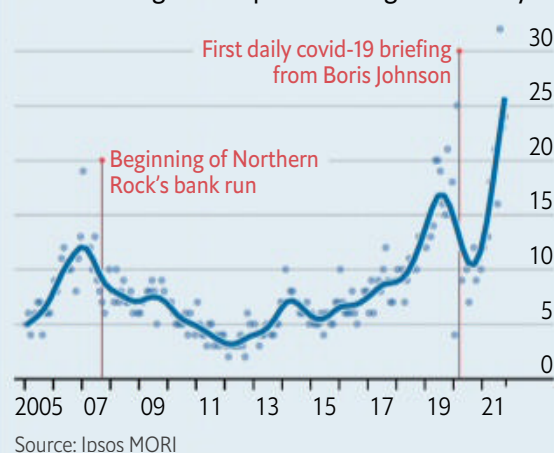
Economists usually favour market-based interventions such as carbon taxes, and disdain measures such as electric-car subsidies because of their inefficiency (some of the money goes to people who would have bought electric cars anyway). But ordinary Britons plainly disagree. Will Tanner of Onward suggests that is because they believe the cost of tackling global warming should be borne by society as a whole, and general taxation strikes them as a good way of achieving that. Blanket bans probably strike a nation inordinately fond of queuing as equitable, too.

This enthusiasm for inefficient ways of reducing greenhouse-gas emissions implies that Britain will end up spending far more than it needs to. That is frustrating. But the polls also suggest that Britons are in one sense ahead of their leaders. Adaptation to climate change has for years been the poor relation of mitigation. It is discussed less and often thought of as something that poorer countries need to do. Speaking at a session on adaptation in Glasgow on November 8th, Anne-Marie Trevelyan, Britain's trade secretary, touted a fund to assist Asian countries but said nothing about her own.

People seem to have noticed this, and are not happy. In late 2020 Ipsos MORI polled 30 rich and middle-income countries for the energy firm EDF. It found that just 30% of Britons believe that their government has taken measures to reduce the effects of climate change at home, such as building dams—the second-lowest proportion of any country after Italy. Politicians might call that judgment unfair. It would be better if they tried to change people's minds through their actions. ■

Financial slump, pandemic pause

Britain, % citing pollution, the environment or climate change as a top issue facing the country



Bagehot | Learning from Paterson

Boris Johnson needs to shake off the Brexit elite's triumphalist, paranoid mindset



SOME POLITICAL dramas flare up briefly; others redraw the political landscape. The debacle in the House of Commons on November 3rd and 4th, when Boris Johnson tried to tear up the system of parliamentary oversight to prevent the suspension of Owen Paterson, a friend and MP, only to reverse course, looks like the second type. As furious Conservative MPs complained about being treated as cannon fodder, it strained their faith in the prime minister's judgment and undermined the whips' authority. It also gave fresh juice to other inquiries into Tory conduct, including Mr Johnson's recent holiday at a Spanish villa, payment for seats in the House of Lords and the extra-parliamentary legal career of Sir Geoffrey Cox, a former attorney-general who earned £900,000 (\$1.2m) in the past year. A YouGov poll after the fateful vote on November 3rd found that a Tory lead of 6% had narrowed to 1%.

Marxist theoreticians argue that, as Hegel put it, beyond a certain point "merely quantitative differences...pass into qualitative changes". Mr Paterson has stepped down, but for the prime minister the affair may mark the moment when his accumulating errors and u-turns, from getting friends to pay for expensive wallpaper in his residence to changing tack repeatedly on lockdowns, becomes a qualitative shift in public opinion.

Explanations for such a catastrophic misstep range from generous (the prime minister merely wanted to protect a friend and ally) to cynical (he sought to neuter the standards commission before it pronounced on his own actions). But one is particularly compelling: that he was unduly influenced by a clique of ageing Brexiteers. Behind the Paterson debacle stands a group of brothers-in-arms who served shoulder to shoulder in the anti-European trenches for decades. The hard core, Sir Iain Duncan Smith, Sir Bill Cash, David Davis and Sir Bernard Jenkin, were critics of the Maastricht Treaty in the 1990s, "Vote No" warriors under David Cameron, stalwarts of the pro-Brexit European Research Group, self-styled "Spartans" under Theresa May—and champions of Mr Johnson as prime minister.

Dame Andrea Leadsom, who put forward the Paterson amendment, and Jacob Rees-Mogg, who did most to push it through, were too young for the Maastricht wars. But they were there in spirit (the infant Rees-Mogg was educated in Euroscepticism by

Sir Bill). Lord (Charles) Moore, a former editor of the *Daily Telegraph*, also played a pivotal role. He wrote columns in support of Mr Paterson, his friend for 45 years, and organised a dinner at the Garrick Club on November 2nd, at which Mr Johnson was fed pheasant and claret, and brought round to their point of view.

The clique's victory in the Brexit vote of 2016 has injected a toxic mix of triumphalism and paranoia into the heart of Conservatism. Its members see themselves as possessing a unique connection with the British people, and a rare strategic genius. They think they can achieve anything, as long as they exert sufficient pressure and plot sufficiently thickly. But they also regard themselves as beset by a hostile establishment that seeks to frustrate their will. Lord Moore's articles are textbook examples of the style. He has argued that the two-year investigation into Mr Paterson "smacks of political revenge", and that the parliamentary standards committee selectively targeted pro-Brexit MPs while going easy on Remainers. He urged MPs to reject the committee's sentence as a way of "reasserting the right of voters, not bureaucrats, to decide who should make [the] law and ensure that it works".

Successful political parties rely on their elders' accumulated wisdom to stop them making unforced errors. Even Margaret Thatcher, a radical to her fingertips, paid close attention to William Whitelaw, a moderate grandee—thus her immortal dictum that "every prime minister needs a Willie". But the Brexit wars have removed a generation of "Willies" from the parliamentary party, notably Sir Nicholas Soames, Sir Alan Duncan, Kenneth Clarke, Patrick McLoughlin and Dominic Grieve. Politics has been left in the hands of ageing zealots in the Commons and lightweight technocrats in Downing Street, such as Dan Rosenfield, Mr Johnson's chief of staff. The zealots appeal to Mr Johnson's worst trait, a tendency to believe that he is above accountability; the technocrats lack the strength to rein their master in.

Younger MPs were particularly furious about the Paterson mess, not because they are anti-Brexit saboteurs (most were fervently in favour of leaving the EU) but because they resent being treated so cavalierly by people who wouldn't recognise them in the corridors of Westminster, let alone say hello. The brewing row over extra-parliamentary income sharpens their resentment. To the ageing baby-boomers within the Brexit clique, £100,000 a year may sound like a reasonable second income; to the 2019 intake representing working-class "red wall" constituencies in the Midlands and north of England, it is serious money.

Mr Johnson now needs to break with the Brexit clique. He should stop listening to the likes of Sir Iain and Mr Davis, who are neither wise nor even particularly intelligent. Gargoyles like Mr Rees-Mogg should be cleared out of front-line politics. In their place, the prime minister should assemble a government of all the Tory talents. The brightest and best of the rising generation should be put on the fast track to high office.

They're not out to get you

Above all, he needs to break decisively with the triumphalist-paranoid mindset. Neither he nor anyone else has the right to force through controversial legislation in the name of some mystical connection with "the people". Not everyone who resists his actions is plotting to bring Britain back into the EU. The British establishment, by and large, recognises that Brexit is a *fait accompli* and the great task of the coming decades is to make the best of it. Mr Johnson can still repair the damage of the past week, but only if he takes it as a spur to party renewal. ■



Assisted dying

Death on demand

AMSTERDAM AND OTTAWA

In the West, assisted dying is rapidly becoming legal and accepted

SHORTLY BEFORE Ángel Hernández handed his wife the glass of barbiturates that would kill her, he asked her once again if she wanted to die. “The sooner the better,” she replied. Ravaged as María José Carrasco’s body was by multiple sclerosis, she struggled to swallow the poison. In the end she forced it down through a straw.

Ms Carrasco’s death in 2019 provoked a media storm in Spain. In Madrid the investigating judge initially referred the case to a court that specialises in violence against women. The prosecutor pushed for Mr Hernández, then 70, to serve six months in prison. But on June 25th Spain enacted a law allowing those with a “serious or incurable illness” or a “chronic or incapacitating” condition to seek help to end their own lives. Twelve days later, Mr Hernández was acquitted.

In much of the West public opinion has long favoured assisted dying. In 2002 60% of Spaniards supported voluntary euthanasia, a share which had risen to 71% by 2019. Writ large, secularisation and increasingly liberal values have solidified

support. But so has personal experience, particularly that of baby-boomers who, having witnessed their parents’ suffering, are fighting for the right to deaths of their own choosing.

Change has been rapid. Assisted dying is now legal or decriminalised in at least a dozen countries, with legislation or court challenges pending in many others (see map on next page). On November 5th Portugal’s parliament approved a revised bill which would allow those with “grave, incurable and irreversible” conditions to receive help to end their lives (the constitutional court had in March blocked an earlier version as being too imprecise). Other largely Catholic countries such as Chile, Ireland, Italy and Uruguay are also moving towards enshrining a right to die. In Belgium, Colombia and the Netherlands governments have broadened assisted-dying laws to include terminally ill children.

After years of struggle, activists and politicians have found ways through or around reluctant legislators. The right to die has been ticked through American bal-

lot boxes, squeezed through Australian legislatures, and gavelled through Canadian and European courts. Proponents are using public consultations and petitions to demonstrate public support. And growing evidence from countries with assisted-dying laws has assuaged fears it will become easy to “kill granny”. The changes are snowballing as advocates in one country learn from their counterparts elsewhere.

Assisted dying is still rare. Most cases are cancer-related, and the number of deaths is tiny. But they are nonetheless changing how people think about dying. In some countries assisted dying has been extended to those with mental disorders and dementia, and even to old people who feel tired of life. A clandestine network of baby-boomers who share methods to kill themselves has sprung up on the internet. Even some proponents are beginning to worry about a slippery slope.

Thirty years ago assisted dying was illegal everywhere bar Switzerland. But in 1997 the American state of Oregon approved the Death with Dignity Act, initiating a spate of liberalisation. In Oregon two doctors must agree that a patient is of sound mind and has less than six months to live before he or she can receive the lethal drugs. These must be administered by the patient (known as physician-assisted dying) rather than injected by a doctor (voluntary euthanasia). Around 2,000 people have died under the law (roughly 250 of them last year, see chart 1), with no wrongful deaths ►►

reported. Versions of the law are now on the books of ten states, home to a fifth of Americans, as well as in Washington, DC.

Oregon's rules are being copied internationally, with some modifications. New Zealand's Oregon-style law came into effect on November 7th. In Australia, the state of Victoria passed a similar law in 2017, and since then all but one of Australia's six states have followed suit. In Britain, an Oregon-style bill passed its second reading in the House of Lords in October. But to become law it would also need the support of the House of Commons and the government, which looks unlikely. Three-quarters of Britons support a right to die, but only 35% of MPs do.

Some campaigners are circumventing cautious representatives by going through the courts. In February Peru's constitutional court ruled that the Ministry of Health's refusal to help a woman with degenerative polio end her life violated her rights to "dignity" and "autonomy". Several countries, such as Austria, are beginning to flesh out a ruling by the European Court of Human Rights in 2011 that people have the right to decide the time and manner of their deaths. After Germany's highest court declared in 2020 that a ban on repeatedly helping others die was unconstitutional, Dignitas Germany, a non-profit organisation, began to help people kill themselves.

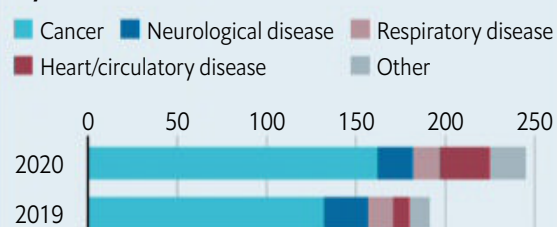
Even after a legislature or court opens the door to assisted dying, those pursuing the option can face high hurdles. With 68 safeguards, Victoria's law excludes some of the people it was intended to help. Doctors are forbidden to bring up assisted dying with their patients, so many do not know it is an option. Colombia decriminalised voluntary euthanasia in 1997, but is only now regulating the practice. As a result, many Colombian doctors refuse to get involved for fear of prosecution. Approval is rare and can be withdrawn.

Despite such strictures, the expansion

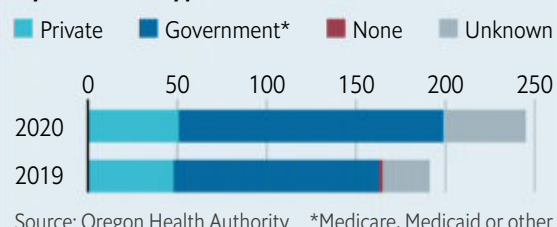
Final choices

Oregon, United States, patients who have died from ingesting a lethal dose of medication

By illness



By insurance type



Source: Oregon Health Authority *Medicare, Medicaid or other

of the right to die is not without controversy. In Canada, the Supreme Court ruled in 2015 that a ban on medical assistance in dying (MAID) violated the national Charter of Rights. Now MAID is available to all Canadians who suffer from chronic physical illness or disability. Uniquely, the law allows patients to determine what constitutes "unbearable" suffering. In 2020 only 6% of written requests for MAID were refused.

Some advocates for the disabled argue that the amended law devalues the lives of those with disabilities. It's "literally unthinkable" that MAID would be doled out instead on the basis of race, sex or any other protected characteristic, says David Shannon, a quadriplegic lawyer who campaigns against assisted dying. But others argue that the foundations of the disability movement lie in creating the freedom to make one's own choices.

Opponents also fear that Canada may end up helping people die before it has helped them live. Disabled people who do

not get enough support may choose to die because society has failed them, critics argue. They worry this may prove particularly true for people whose lives have been filled with abuse, racism and poverty, though data from America show that those who choose assisted death are overwhelmingly middle-class, white and educated.

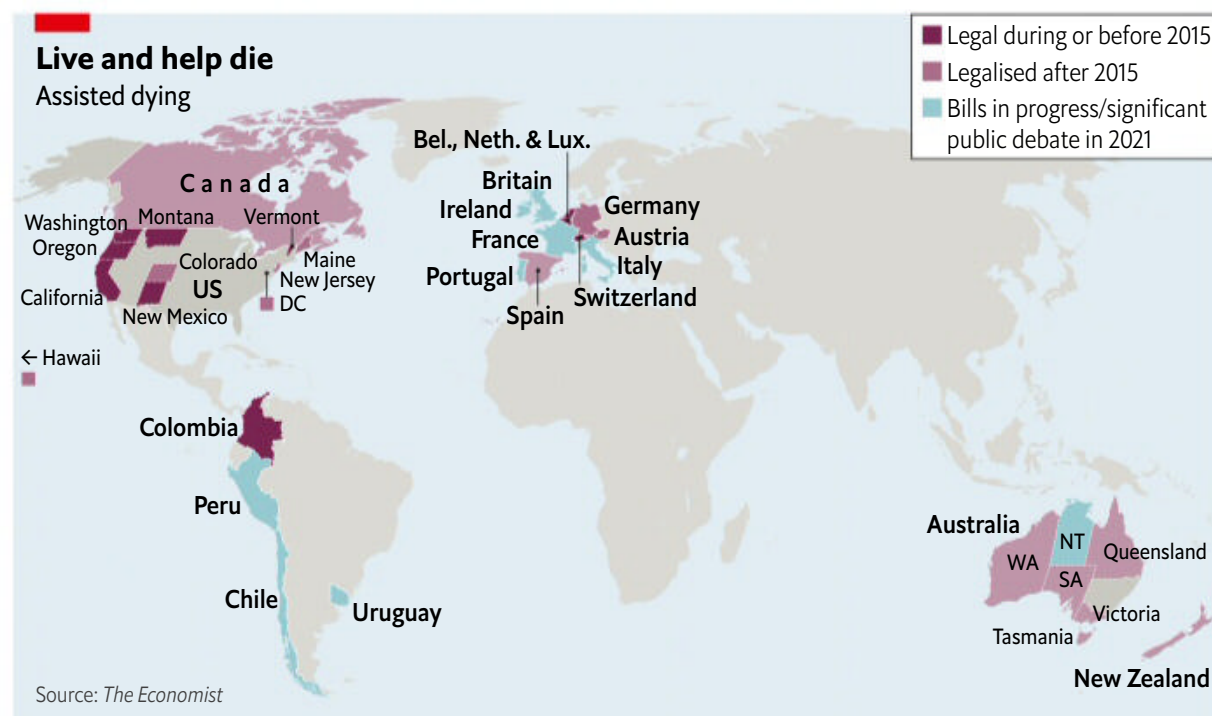
From 2023, Canada will extend MAID to those who suffer solely from mental illness, on the ground that to do otherwise would discriminate. Many Canadians find this troubling (see chart 2). They worry that doctors may indulge the suicidal urges that are a symptom of many psychiatric disorders: one in ten schizophrenics kill themselves, some studies reckon. Others question whether a patient could have tried every possible treatment when the medical and social understanding of mental illness is so rudimentary and mental-health services are so often inadequate. Most people underestimate how serious an intractable psychiatric condition can be, says Mona Gupta, a Québécoise psychiatrist and bioethicist. They see depictions of mental illness in popular culture but have never met anyone severely affected.

The only way out

John Scully, who has lived with severe depression and PTSD for decades, agrees. At home at night in Toronto, Mr Scully, who is 80, is haunted by the horrors he witnessed as a war correspondent: the dead torn apart by vultures, the AK47 scoped to shoot him. He also experiences physical pain. "There is no cure," he says. Nineteen shock therapies, countless medications and six stints as a psychiatric patient have failed to bring him relief. The "only help available", he believes, is assisted dying. He sees it as a far more dignified choice than suicide, which he has attempted twice, and he thinks it would be less painful for his family.

Like other bioethicists, Dr Gupta thinks mental disorders should be seen in the same light as other conditions that create chronic pain. For doctors, she says, the assessment process would be much the same: distinguishing between an impulsive death-wish and a considered one, and determining if a patient is mentally competent. Such cases are rare. In 2020 in the Netherlands, only 88 people with mental illnesses—12% of all those who made requests—had their requests for help approved by a euthanasia clinic. Many are heartened by simply having the option.

Canada is making the same mistakes as the Netherlands, reckons Theo Boer, a Dutch ethicist who once supported his country's euthanasia laws. Since Dutch doctors pushed to legalise assisted dying 20 years ago, he believes that voluntary euthanasia has gone from being a "last resort to prevent a terrible death to a last resort to prevent a terrible life". Voluntary euthana-



► sia is a shortcut to death, like a c-section is a shortcut to birth, he argues. In the Netherlands as a whole, one death in 25 is assisted, he notes, but in some cities that figure can be as high as one in seven.

The choice to die is often murkiest for those with dementia. In 2016 a Dutch woman with severe Alzheimer's awoke during her euthanasia and, as she struggled, her family had to hold her down. Before dementia overcame her, she had made a written request for euthanasia, and the doctor prioritised that choice. In 2020, after the doctor was cleared of wrongdoing, the Supreme Court clarified that doctors cannot be prosecuted for carrying out euthanasia on patients with advanced dementia, even if they no longer express an explicit wish to die. The Netherlands averages around two such cases a year.

Bert Keizer, a geriatrician who has carried out some of the Netherlands' most controversial euthanasia cases, is deeply uneasy about the new guidelines. Euthanasia usually happens with the agreement of the patient, doctors and the family. But in cases of dementia, he muses, "the one who it's all about" is "removed from the event". Implicit in the court's ruling is a judgment that the person one was has more value than the person one has become. A patient who wanted to live could be denied that choice.

What lies ahead

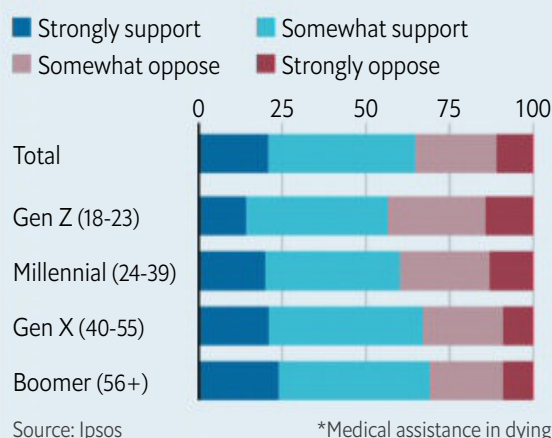
Swiss law, by contrast, mandates that those seeking to kill themselves be mentally competent. This can create a different fear. Alex Pandolfo has early-onset dementia. He has decided to die in Switzerland, yet he has postponed the day of his death once. If he waits too long, he will doom himself to the future he does not want.

Some proponents of assisted dying are pressing to expand eligibility, to include those who feel they have lived a "completed life". In 2020 the liberal D66 party in the Netherlands proposed a law to make suicide pills available to people over 75 who felt they were done living. Critics point to research from the University of Humanistic Studies in Utrecht, which shows that death wishes in older people are subject to change, and in some cases are caused by loneliness and isolation. Few truly want to die, and those who do often meet other criteria for euthanasia, a commission found in 2016. Supporters say it is important to offer the choice, even though few will take it in the end. Just 3% of the members of Dignitas, which campaigns for assisted dying, end up getting help to end their lives.

Some who are tired of life, or unwilling to endure its decay, do choose to press ahead. At 76, Dawn Voice-Cooper, who suffered from debilitating but not life-threatening ailments, saw her future and did not want to live it: the pain of having her ears

Mindful of the difficulties

Canada, access to MAID* for those with a mental illness, % responding by age group, February 2021



syringed; the indignity of swimming with a colostomy bag; the diminishing freedom to move as her arthritic joints stiffened. Life was exhausting and would only become more so. "I don't want to die but I can't live like this," she said. In October she travelled from her home in Britain to an industrial estate on the edge of a Swiss forest. After listening to Nick Drake's "Day is Done", she died, with her friend Mr Pandolfo (and a tabloid reporter) by her side.

"Many people are not waiting for laws to pass," warns Katie Engelhart, author of "The Inevitable", a book about the right-to-die movement. It reveals a secret world where people, fed up with restraints imposed by laws or doctors, order lethal substances over the internet. Their reasons are often existential rather than physical: a loss of purpose, fear of being a burden or of losing their dignity. People who seek death through legal channels have similar reasons. In Oregon the most common concerns among people who qualify to die owing to terminal illness include loss of enjoyment (94%), loss of autonomy (93%) and loss of dignity (72%).

Some shrug this off, arguing that "assisted dying is not suicide." But Ms Engel-

hart believes that such deaths are inevitably linked to the strictures around assisted dying. In New South Wales, Australia, for example, one in five people over the age of 40 who kill themselves have a terminal or debilitating illness. Yet many lonely suicides are not planned and considered, so a black market in suicide can bring terrible risks. Earlier this year a 28-year-old Dutch woman died after taking a substance from an affiliate of Last Will Cooperative, a right-to-die organisation, it seems impulsively. Several members of the group, including its leader, have since been arrested. Prosecutors suspect the group is involved in dozens of deaths.

In the West, assisted dying is helping to change the culture of death. People are talking about it more, and even scripting it, says Naomi Richards, a British anthropologist. Death is becoming an event to be scheduled, controlled, reached via a byway past ageing or suffering. In an Instagram age, it is possible to imagine a "good death" being idealised and curated. Ellen Wiebe, a Canadian doctor, says she has helped people die "on a beach, in a forest and in the middle of a party". Such deaths may seem particularly appealing when, for generations, dying has been medicalised and hidden, and during a pandemic in which so many have died alone in hospital.

For those left behind, an assisted death can feel like a blessing or a curse. Some, such as Tom Mortier, who has taken his mother's case to the European Court of Human Rights, feel angry and resentful that a relative was taken too soon. But most find solace. Heather Cooke's son, Aaron Ball, chose to die last year, at 42, while suffering from metastatic colon cancer. Ms Cooke suffers the agony of a mother who has lost her only child, but she is also comforted that he died in peace, at home, surrounded by his family. Medically assisted dying was a "gift" for us, she says. "But I understand why people fear it." ■





Hollywood's talent wars

Fading stars

Money is streaming into the movie business—but the biggest stars are losing out

HOLLYWOOD LABOUR disputes have a certain theatrical flair. When Scarlett Johansson sued Disney in July, claiming she had been underpaid for her role in “Black Widow”, the studio launched an Oscar-worthy broadside against the actress’s “callous disregard for the horrific and prolonged global effects of the covid-19 pandemic”. In September film crews marched to demand better conditions, brandishing placards designed by America’s finest propmakers. And when WarnerMedia decided to release “Dune” on its streaming service on the same day it hit cinemas on October 21st, the movie’s director, Denis Villeneuve, huffed magnificently that “to watch ‘Dune’ on a television...is to drive a speedboat in your bathtub.”

The streaming revolution has sent money gushing into Hollywood as studios vie to attract subscribers. Netflix boasts that its content slate in the fourth quarter will be its strongest yet, with new titles such as “Don’t Look Up”, starring Leonardo DiCaprio, and the final season of “Money Heist”, a Spanish bank-robbing saga. On

November 12th Disney will announce its latest commissioning blitz, with new shows expected to include “Star Wars” and Marvel spin-offs. In total, streaming firms’ content spending could reach \$50bn this year, according to Bloomberg.

Yet despite the largesse it is a turbulent time in Tinseltown, as everyone from A-list stars to the crews who style their hair goes to war with the film studios. Some of the disputes have arisen from the pandemic, which has upended production and re-

lease schedules. But the tension has a deeper cause. As streaming disrupts the TV and movie business, the way talent is compensated is changing. Most workers are better off, but megastars’ power is fading.

Start with the pandemic. As cinemas closed, studios scrambled to find screens for their movies. Some, like MGM’s latest James Bond flick, were delayed by more than a year. Others were sent to streaming platforms—sometimes without the agreement of actors or directors. Those whose pay was linked to box-office revenues were compensated, either behind the scenes (as WarnerMedia did in the case of “Dune”) or after very public spats (as with Disney and Ms Johansson).

Even before covid, streaming was changing the balance of power between studios and creatives. First, there is more work to be done. “There’s an overwhelming demand and need for talent, driven by the streaming platforms and the amount of money that they’re spending,” says Patrick Whitesell, boss of Endeavour, whose WME talent agency counted Charlie Chaplin among its clients. Three years ago there were six main bidders for new movie projects, as Netflix vied with five major Hollywood studios. Now, with the arrival of Amazon, Apple and others, there are nearer a dozen. Streamers pay 10-50% more than the rest, estimates another agent.

Below-the-line workers, such as cameramen and sound engineers, are also busier. Competition among studios has

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► created a “sellers’ market”, says Spencer MacDonald of Bectu, a union in Britain, where Netflix makes more shows than anywhere outside North America. In the United States the number of jobs in acting, filming and editing will grow by a third in the ten years to 2030, four times America’s total job-growth rate, estimates the Bureau of Labour Statistics.

The streamers’ hunger for variety means their seasons have half as many episodes as broadcast shows, and are less frequently renewed. That means “people are having to hustle for work more often,” says one script supervisor. A fatal accident on the set of “Rust”, a movie starring Alec Baldwin, has stirred a debate about the frantic pace of production. But the streamers’ short, well-paid seasons allow more time for cv-burnishing side-projects, and the work is more creatively rewarding. IATSE, a union which represents 60,000 below-the-line workers in America, has reached an agreement with studios for better pay and conditions; its members will begin voting on the deal on November 12th.

More controversial is the streamers’ payment model, which is creating new winners and losers. Creative stars used to get an upfront fee and a “back-end” deal that promised a share of the project’s future earnings. For streamers, a show’s value is harder to calculate, lying in its ability to recruit and retain subscribers rather than draw punters to the box office. Studios also want the freedom to send their content straight to streaming without wrangling with a star like Ms Johansson, whose pay is linked to box-office takings. The upshot is that studios are following Netflix’s lead in “buying out” talent with big upfront fees, followed by minimal if any bonuses if a project does well.

That suits most creatives just fine. “Buy-outs have been very good for talent,” says Mr Whitesell. “You’re negotiating what success would be...for that piece of content, and then you’re getting it guaranteed to you.” Plus, instead of waiting up to ten years for your money, “you’re getting it the day the show drops”. America’s 50,000 actors made an average of just \$22 per hour last year, when they weren’t parking cars and pumping gas, so most are happy to take the money up front and let the studio bear the risk. Another agent confides that some famous clients prefer the streamers’ secrecy around ratings to the public dissection of box-office flops.

For the top actors and writers, however, the new system is proving costly. “People are being underpaid for success and overpaid for failure,” says John Berlinski, a lawyer at Kasowitz Benson Torres who represents A-listers. The old contracts were like a “lottery ticket”, he says. Create a hit show that ran for six or seven seasons and you might earn \$100m on the back end; make a

phenomenon like “Seinfeld” and you could clear \$1bn.

A few star showrunners such as Shonda Rhimes, a producer of repeat TV hits currently at Netflix, can still swing nine-figure deals. But creators of successful shows are more likely to end up with bonuses of a couple of million dollars a year. And though actors are receiving what sound like huge payments for streamers’ movies—Dwayne Johnson is reportedly getting \$50m from Amazon for “Red One”, for example—in the past they could make double that from a back-end deal.

Some creative types grouse that the newcomers simply don’t understand showbusiness. With its “phone-company mentality”, AT&T, a cable giant that acquired WarnerMedia in 2018, turned Hollywood’s most storied studio into “one of the last stops you’d make”, complains one agent. Disney’s new boss, Bob Chapek, came up through the company’s theme-park division. The Silicon Valley streamers are more comfortable with spreadsheets than stardust.

But their unwillingness to venerate A-listers also has an economic rationale. The star system, in which actors like Archibald Leach were transformed into idols like Cary Grant, was created by studios to de-risk the financially perilous business of movie-making. A blockbuster, which today might cost \$200m to shoot plus the same in marketing, has one fleeting chance to break even at the box office. The gamble is less risky if a star guarantees an audience.

Today, studios are de-risking their movies not with stars but with intellectual property. Disney, which dominates the box office, relies on franchises such as Marvel, whose success does not turn on which actors are squeezed into the spandex leotards. Amazon’s priciest project so far is a \$465m “Lord of the Rings” spin-off with no megastar attached. Netflix’s biggest acquisition is the back-catalogue of Roald Dahl, a children’s author, which it bought in September for around \$700m.

What’s more, streaming’s approach to generating hits is different. Whereas winning at the box office required betting big on a few mammoth projects, Netflix’s method is “more like a random walk where ‘hits’ are first discovered by their users, then amplified by...algorithms,” notes MoffettNathanson, a firm of analysts. Netflix served up 824 new episodes in the third quarter of this year, more than four times as many as Amazon Prime or Disney+. Its biggest success, “Squid Game”, has a cast that is largely unknown outside South Korea. “Competition is not limited to who has the best content; it is also framed around who has the best tech” for discovering it, says MoffettNathanson. In the new Hollywood, stars are neither made nor born: they are algorithmically generated. ■

Commercial property

Lab rats

Science and technology lifts the gloom for property investors

OXFORD NANOPORE’S MINION is a tiny but powerful device. When a hotel worker in Sydney tested positive for covid-19 in March last year, the portable DNA sequencer traced the infection to a flight attendant for an American airline, avoiding a general lockdown. The success of biotech firms—another celebrity is BioNTech, of Covid-19 vaccine fame—is sucking capital into life sciences. When such companies expand, they do so not with offices or shops but by means of white-walled, shiny-surfaced scientific laboratories.

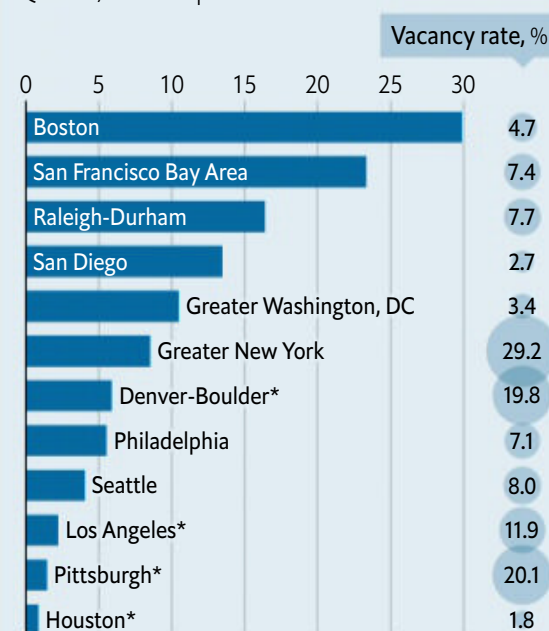
Commercial-property investors have long banked on offices, retail and industrial buildings. Less conventional assets like mobile-phone towers were the preserve of specialists. Now the big guns of real estate are competing over them too. Thus laboratory space has become commercial real-estate’s hottest property, along with other facilities that power the digital economy. Data centres and infrastructure that connect smartphones are booming.

The investors’ motivation is clear. The pandemic convulsed commercial-property prices globally. American retailers closed nearly 15,000 shops in 2020. By mid-October, with people attached to remote work, offices were only a third full. The risk profile of some conventional property assets has deteriorated sharply.

In contrast, demand for assets like labs and data centres has never been stron- ►►

Laboratory conditions

US, investor-owned laboratories, total inventory
Q3 2021, million square feet



Source: JLL

*Q2 2021

ger—a trend visible before the coronavirus began to spread. As rent collections for shops and restaurants plummeted last year, data traffic from virtual meetings and online shopping exploded. Companies that use the underlying data centres and mobile towers are demanding more of them. These digital-economy winners look as safe as houses.

The shift is reflected in the changing make-up of America's ten largest real-estate investment trusts (REITs). A decade ago the most valuable such vehicle was Simon Property Group, the country's biggest

mall owner. Today it is American Tower, a fast-expanding owner of tens of thousands of phone masts around the world. Five of the top ten REITs currently manage either data centres or mobile towers.

The loudest buzz currently surrounds life-sciences and lab space. Investors are flooding the health-care sector with capital. Drug makers, medical-equipment manufacturers and other life-sciences firms have raised a record \$103bn in venture capital so far this year, up from \$63bn in 2019, according to JLL, a property consultancy. A generous slice of capital is going

into property. JLL estimates that up to \$87bn is now being directed towards life-sciences real estate worldwide. That is equivalent to a third of all global spending on commercial property in the second quarter of this year.

Landmark deals are cropping up frequently. In October GIC, Singapore's sovereign-wealth fund, purchased a 40% stake in Oxford Science Park from Magdalen College, part of Oxford University; the deal valued the park at ten times its worth just five years ago. Blackstone, a private-equity firm, recently doubled its ownership of ▶▶

Bartleby The impossible job

The demands on chief executives require them to be weird

CELEBRITY BOSSES used to have nicknames that made a virtue of short fuses and brutality. "Chainsaw Al" and "Neutron Jack" sounded more like wrestlers than men in suits. That kind of moniker would jar today. Inclusivity and empathy are what matter: think "Listening Tim" and "Simpatico Satya". But just because chief executives seem more normal does not mean that they actually are. The demands of the job require an ever-stranger set of characteristics.

In some ways the path to the top of the corporate pyramid is unchanged. It requires people to compete with each other over an extended period. It demands evidence of financial and operational success. It uses the prospect of money—lots of it—as a lever to incentivise ambitious people. And it selects for familiar traits: hard work, impatience, self-confidence and extroversion. If you would rather stay in and watch "The Great British Bake Off" than wine and dine clients, the role is not for you.

A recent study by Steve Kaplan of the University of Chicago and Morten Sorensen of the Tuck School of Business looks at assessments conducted by ghSMART, a consulting firm, of more than 2,600 candidates for different leadership positions. Candidates for CEO jobs emerge as a recognisable type. Across a range of characteristics they have more extreme ratings on average: they shine in what the academics term "general ability".

They also differ from other executives in the particulars. Where aspiring chief financial officers are more analytical and focus on the detail, would-be CEOs score higher on charisma, on getting things done and on strategic thinking. These traits also seem to be predictive. By tracking the subsequent careers of candidates, the academics find that people who were



applying for a different position but had "CEO-like" characteristics were more likely eventually to wind up in the top job.

Yet firms today are after more than a type-A personality. Mr Kaplan and Mr Sorensen note that CEO candidates with better interpersonal skills are more likely to be hired. Another new piece of research, from academics at Imperial College London, Cornell University and Harvard University, analyses the lengthy job descriptions that companies draw up when they work with headhunters to recruit a new leader. Cognitive skills, operational nous and financial knowledge are prerequisites for success. But over the past two decades these descriptions have placed more and more emphasis on social skills—the ability of bosses to co-ordinate and communicate with multiple people.

Why are these softer skills prized? The answer, according to Stephen Hansen of Imperial College, lies partly in the rise of knowledge workers. Firms increasingly depend on developers, data scientists and IT managers who are used to operating independently. Chief executives are not

going to tell these kinds of workers what to do; their job is to make sure that people understand the firm's goals and toil together effectively. Sure enough, the paper shows that demand for these skills goes up in larger and more information-intensive firms. Social skills matter more when bosses need to persuade as much as instruct.

The wider environment also rewards softer skills. Polling by Edelman, a public-relations firm, suggests that majorities of customers and employees make choices on what to buy and where to work based on their beliefs. Chief executives must mollify politicians, respond to activists and dampen social-media firestorms. It helps if the boss comes across as a relatable member of society, not a volcano-dwelling villain.

It is not yet time to call time on old-fashioned narcissism. Another study, by a quartet of researchers at Stanford Graduate School of Business, surveyed 182 directors about the personalities of their chief executives. The answers suggest as many as 18% of bosses are considered narcissists by their own board members, a prevalence rate perhaps three times that of the general American population. The researchers also find that firms with narcissistic CEOs tend to have higher scores for their environmental, social and governance policies. What better way for an egomaniac to come across as empathetic than to save the planet?

The demands on chief executives make for an increasingly strange mixture. Be more talented than others in the firm, but don't tell them what to do. Crush the competition while exuding empathy. Listen charismatically. Be likeably aggressive. CEOs have always been abnormal. The trick now is not to show it.

► life-sciences floorspace in Britain, investing over \$1bn in two new sites. Shares of life-science REITS are booming.

By now, lab space is growing hard to come by. In Boston, where much of it in America is held, less than 5% of labs were available in the third quarter. In the Golden Triangle, as the area between London, Oxford and Cambridge is known, premises have run out. The Harwell life-sciences campus near Oxford will add 1.5m square feet over the next seven years to meet demand—equivalent to three-quarters of all the office space London's financial district will add this year. Chris Walters, director at JLL, estimates unmet demand for lab space in and around Cambridge at 1m square feet—equivalent to nearly a quarter of retail space on London's Oxford Street.

Where markets are tight, participants will seek to expand supply. In the case of sci-tech property that is harder than it sounds. Constructing new phone towers means navigating strict planning laws and NIMBYS. New data centres need land with access to cheap electricity and high-speed internet. Life-sciences firms like to cluster around top universities and academic medical centres that provide the chemists, microbiologists and other experts that populate their labs. One fix is finding secondary locations. Cities like Los Angeles, which is fairly near the San Francisco Bay Area, and Pittsburgh, home to Carnegie Mellon, a university known for prowess in artificial intelligence, are attracting start-ups awash with capital. In Britain, life-sciences hubs are springing up in the north, where pharmaceutical giants like AstraZeneca and GSK have manufacturing sites.

Another remedy is converting existing offices and industrial space. Boston Properties, one of America's largest office REITS, says it can convert 5m square feet of conventional sites and buildings into laboratories. It is no easy process, for labs are complex spaces governed by biosafety rules. They need four times the amount of air that offices do. Waiting lists in London for "wet" labs, facilities in which dangerous chemicals and other hazardous substances can be handled, are lengthening. But property investors are game to try. In New York conversions could almost double the city's lab space for rent, according to Newmark, a real-estate advisory firm.

Even empty shops are being repurposed. Savills, a British property firm, reckons London has at least 1.8m square feet of retail property that could be refashioned into laboratories. Shops' high ceilings mean plenty of room for high-performance ventilation, and service lifts for moving dangerous materials. It will doubtless take years for supply to catch up with demand. But as the locus of work and commerce moves, real-estate investors are shifting with it. ■

China and the pandemic

Seal of the realm

HONG KONG

The non-zero costs of China's zero-covid policy

THE TRADE war between America and China paradoxically brought some of the countries' citizens closer together. Ben Kostrzewa, a trade lawyer for Hogan Lovells, moved from Washington, DC, to Hong Kong to help his corporate clients navigate duties, sanctions and export controls. He used to travel two or three times a month to the mainland. If he timed it right, he could pass through the border checks in 20 minutes. "I got to know those border agents very well", he says.

The pandemic has changed all that. In the first half of 2019, China's busy agents recorded over 344m border crossings between the mainland and the rest of the world (including Hong Kong). In the first half of this year, that number was down by over 80%, according to official statistics. Mr Kostrzewa has not visited in almost 22 months. "It's funny to be talking about this in the past tense," he says.

Talks, in a future conditional tense, between Hong Kong and the mainland have so far failed to ease travel between the city and the rest of China. But officials now say a pilot scheme might soon allow small numbers of vaccinated people to travel to the mainland without quarantine. If the scheme works, some of Mr Kostrzewa's favourite checkpoints in Shenzhen could reopen by June, according to the *South China Morning Post*, although travel would be subject to quotas.

For the rest of the world, visiting China will remain an ordeal. It is like arranging a "state visit", says one banker who used to

make the trip 30 times a year. The documentary requirements can be onerous and inconsistent. One delegation of senior businesspeople, hoping to visit Shanghai, were asked for their primary-school transcripts. After the bureaucratic bother, the boredom of quarantine awaits: a minimum of 14 days, typically in a hotel not of one's choosing. One well-connected married couple were at least given the option of separate rooms. They took them without any hesitation.

The benefits of China's zero-covid strategy can be measured in lives saved and infections averted. The economic cost of the country's self-isolation is harder to quantify. The travel restrictions are making life harder for the international "facilitators" that make cross-border business tick, argues one investor in Shanghai. Remote communication can maintain existing relationships, but some things are better done face-to-face. The investor used to get to know his managers over dinners, drinks and cigars. "If you spend three hours a night together, by the end of that week, you know the guy." No one has the stamina to replicate that on Zoom.

Some know-how is also tacit, embodied in people or teams. To transmit this know-how it is necessary to move the minds that carry it. Increasing spending on business travel by 10% raises productivity by 0.2-0.5% in the visited sector, according to a study of American travellers by Mariacristina Piva of the Università Cattolica del Sacro Cuore and her co-authors. Another study by Michele Coscia of the IT university of Copenhagen, as well as Frank Neffke and Ricardo Hausmann of Harvard's Growth Lab, made use of aggregated, anonymised Mastercard data to map this movement of minds. They estimate that China's economy would be 13% smaller if it had not benefited from the know-how diffused by international business travel. The biggest contributions were made by visitors from Germany and South Korea (see chart).

Foreign direct investment in China has so far remained strong, thanks to the economy's early recovery from the pandemic. And few multinationals are leaving. Some foreign firms may even localise activities done outside China to keep doing business there. Companies are "battening down the hatches", according to the European Union Chamber of Commerce in Shanghai, bringing more of their supply chain onshore, because of geopolitical tensions, covid restrictions and new laws that limit data-sharing across borders. "Companies might be forced to have two different systems running: one for China, and one for the rest of the world," says Bettina Schön, the chamber's vice-president. "This will be horribly expensive." It is not that the world is leaving China; more that China is becoming a world unto itself. ■

Diffusion class

China, impact on GDP if business travel were to cease*, by place of origin, %



Source: Harvard's Growth Lab

*Based on 2011-16 aggregated and anonymised Mastercard data



General Electric

Not so general

NEW YORK

An iconic conglomerate breaks up

PERHAPS THE most remarkable characteristic of General Electric (GE) over its 129-year history has been how thoroughly it reflected the dominant characteristics of big American business. Most of its history was a chronicle of boisterous expansion, then globalisation—followed by painful restructuring away from the now-unloved conglomerate model. On November 9th Lawrence Culp, its chief executive, announced that GE would split its remaining operations into three public companies.

Each of these entities will be large, essential and very modern. One will make jet engines, which GE reckons already power two-thirds of all commercial flights. Its power business will provide the systems and turbines generating one-third of the world's electricity. The health-care division will continue to be the backbone of modern hospitals. Yet it speaks to GE's remarkable role that this is a modest reach given its past sprawl. From the late-19th to the late-20th century its products lit dark streets; provided the toasters, fans, refrigerators, and televisions (along with the stations beamed to them), which transformed homes; delivered the locomotives that hauled trains; and then built a huge business financing all that and more.

The ambition to be everything was enabled by the perception that it could manage anything. The 21st century punctured that perception. Jack Welch, an acquisitive chief executive reputed to be a managerial genius, retired in 2001 after receiving a mind-boggling \$417m severance package.

Ever-better results during his tenure beguiled investors and sent the share price soaring. But problems soon arose. The structure Welch left behind was in effect bailed out during the financial crisis. Losses at GE Capital, the sprawling financial unit he fostered, were blamed, though the company's industrial core turned out to have plenty of problems, too.

Recent years have been spent spitting out one notable business after another. The timing of the break-up announcement was determined by the sale of a large aircraft-financing unit. The transaction reduced debt by enough to provide the three soon-to-be independent companies with an investment-grade credit rating. Mr Culp, the firm's boss since 2018, speaks of the "illusory benefits of synergy" to be traded for the certain benefits of focus. "A sharper purpose attracts and motivates people," he says.

Having boasted of its management nous, it now seems that poor management is what did it for a unified GE. The contest to replace Welch was widely seen as pitting the best global executives against one another, with the losers hired to run other big firms. But his successors struggled. Jeffrey Immelt, Welch's hand-picked replacement, retired under a cloud in 2017. John Flannery, once seen as a wizard behind the rise of the health-care division, took over but was fired after little more than a year. Mr Culp was brought in from outside, a step last taken in the 19th century.

During much of Welch's tenure and its immediate aftermath GE was the most valuable company in the world, reaching a peak market value nearly five times its current \$121bn. It is tempting to conclude that GE's failure illustrates the demise of the conglomerate. That is refuted by the diversification of today's most valuable companies: tech firms that have branched out into driverless cars, cloud computing and so on. Rather, GE's story reflects how even the most valuable American companies may be flawed—and if flaws emerge, may be thoroughly transformed. ■

And then there were three

Share prices, January 1973=100



Volkswagen's labour relations

Golf's course

BERLIN

Unions and the boss are at it again

WHEN BERND OSTERLOH, the mighty boss of Volkswagen's council that represents workers, announced his resignation in April many investors breathed a sigh of relief. Frequent, acrimonious clashes between him and Herbert Diess, the group's no-less-mighty chief executive, had become a distraction from the big changes required to push vw into the electric age. The culmination was Mr Osterloh's attempt to topple Mr Diess.

Yet only six months after the departure of his near nemesis Mr Diess is again locking horns with labour representatives. This time observers say the brash Bavarian may have gone too far. After all, Volkswagen's workers have enormous clout. Their representatives occupy half the seats on the group's 20-member supervisory board. They can count on the loyalty of the two board representatives of Lower Saxony, the western German state that owns a fifth of vw. The Volkswagen law from 1960 that limits voting rights of any shareholder to 20% gives Lower Saxony a de facto veto on any big decision.

How did the relationship hit bottom so quickly? The biggest bone of contention is the extent of changes required to enable vw to rival Tesla as a leading maker of electric cars. In an email that was leaked to the works council, Mr Diess suggested cutting 30,000 jobs, which would mostly affect the bloated bureaucracy at vw's headquarters in Wolfsburg. Yet job losses are likely to be an unavoidable part of the electric-vehicle age, because EVs take less time to assemble than cars with internal combustion engines. Amid the ensuing outcry, Mr Diess toned down his plans for job cuts.

But the damage is done. A four-member mediation committee is discussing Mr Diess's future even though his contract was extended to 2025 only in July. Most agree he is the right man to steer change at vw, but say he lacks diplomacy. Various names of possible successors are circulating. Tesla, of course, faces no such headwinds. Its boss, Elon Musk, has used social media to warn workers against unionisation. The American firm, which is building a gigafactory not far from vw's headquarters, presumably views Germany's system of powerful worker representation on boards as a cautionary tale.

The corporate metaverse

Virtual world, Inc

SAN FRANCISCO

Companies want to build a virtual realm to copy the real world—and reshape it

CALL IT THE multiplication of the metaverses. Ever since Mark Zuckerberg, the boss of Facebook—sorry, Meta—laid out his vision in late October for immersive virtual worlds he thinks people will want to spend lots of time in, new ones are popping up all over. An entertainment metaverse will delight music fans, influencers will flock to a fashion metaverse to flaunt digital clothes, and there is even a shark metaverse (it has something to do with cryptocurrencies). Mostly these are the brainchildren of marketers slapping a new label on tech's latest craze.

One new virtual world deserves real attention: the “enterprise metaverse”. Forget rock stars and fancy frocks, this is essentially a digital carbon copy of the physical economy. Building living, interactive blueprints that replicate the physical world might, in time, come to shape it. The vision of what this might mean has become clearer in recent days. Microsoft, the world's largest software firm, earlier this month put it at the centre of its annual customer shindig, as did Nvidia, a big maker of graphics processors, on November 9th.

Corporate virtual worlds are already more of a reality than Meta's consumer version, where people will get to hang out with their friends at imaginary coastal mansions. Unlike that metaverse, which is populated mostly by human avatars, the corporate version is largely a collection of objects. These are “digital twins”, virtual 3D replicas of all sorts of physical assets, from single screws to entire factories.

Crucially, they are connected to their real selves—a change on the shop floor, for instance, will trigger the equivalent change in its digital twin—and collect data about them. This set-up enables productivity-enhancing operations that are hard today, for example optimising how groups of machines work together. Simulating changes virtually can then be replicated in the real world. And, its boosters hope, a path would be laid to automate even more of a firm's inner workings.

Whether the enterprise metaverse becomes a reality is not simply of interest to aficionados of corporate information technology (IT). Innovations unlocked through insights gleaned from digital mirror-worlds can help firms become more adaptable and efficient—helping them reduce carbon emissions, for example. Promoters of the concept even argue that it will put to

rest the old adage, coined by Robert Solow, a Nobel-prizewinning economist, that you can “see the computer age everywhere but in the productivity statistics”.

The concept of this “twinworld”, as the enterprise metaverse might be called (a spiffy moniker will surely be found), is not new. Some of the necessary technologies have been around for years, including devices with sensors to capture data, known as the “internet of things” (IoT)—another field still waiting for a moniker upgrade. Software to design detailed virtual replicas originated in computer games, the current benchmark for immersive worlds.

But other bits have only recently become good enough, including superfast wireless links to connect sensors, cloud computing, and artificial intelligence, which can predict how a system is likely to behave. “Digital twins aggregate all of these things,” explains Sam George, who runs the enterprise-metaverse effort at Microsoft.

As is its wont as a maker of corporate software, Microsoft has developed an entire platform on top of which other firms can develop applications. This includes tools to build digital twins and analyse the data they collect. But this “stack”, as such collections of code are known, also provides technology which allows people to collaborate, including Mesh, a service that hosts shared virtual spaces, and HoloLens,

**Getting lost in the twinworld**

a mixed-reality headset, with which users can jointly inspect a digital twin.

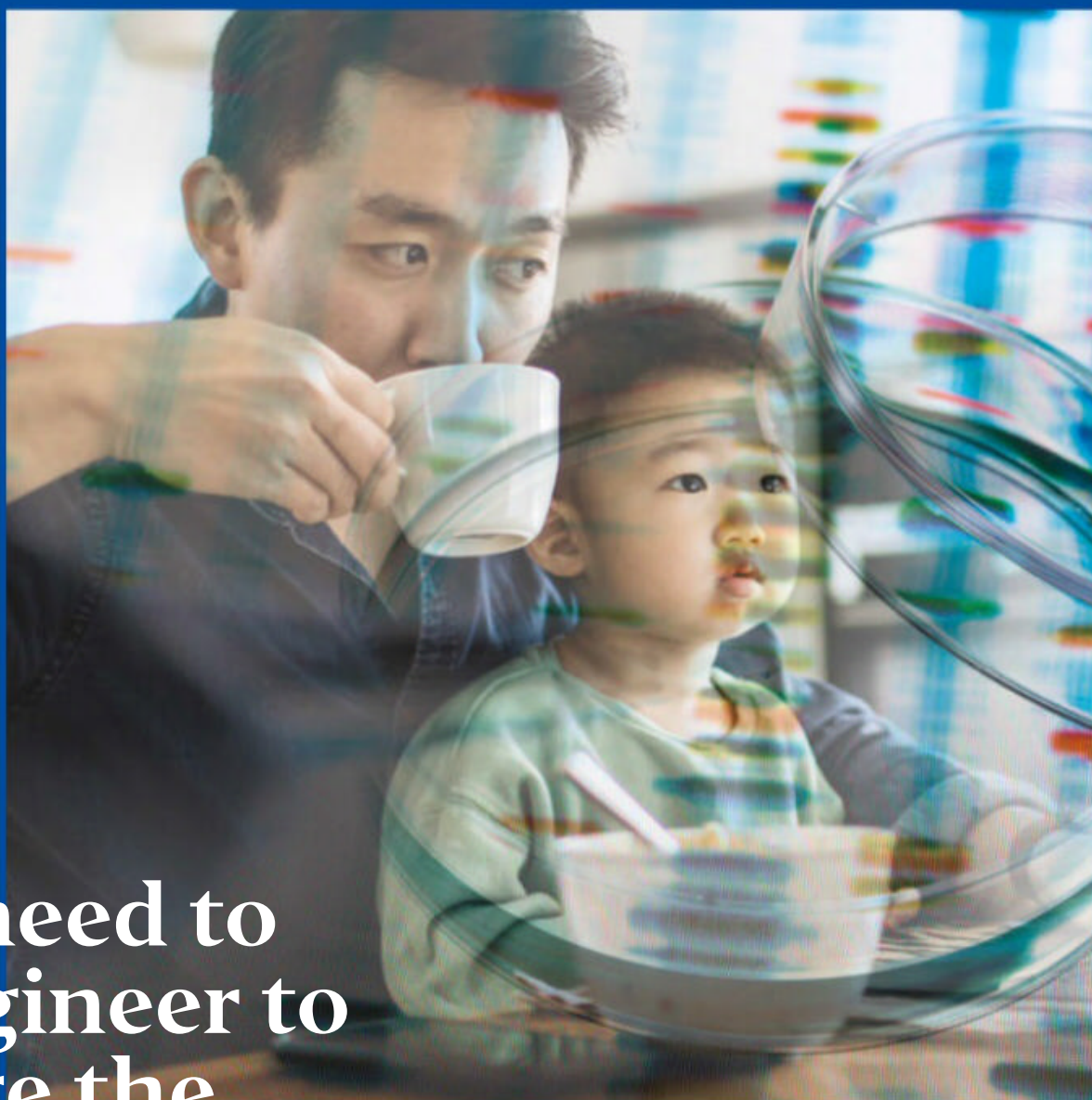
Nvidia's roots in computer graphics mean it focuses more on collaboration and creating demand for its chips. Its Omniverse is also a platform for shared virtual spaces, but one that allows groups of users to bring along elements they have built elsewhere and combine these into a digital twin they can then work on as a team. The common technical format needed for such collaboration will come to underpin digital twins in the same way HTML, a standard formatting language, already underpins web pages, predicts Richard Kerris, who is in charge of Omniverse.

Both platforms have already attracted a slew of startups and other firms that base some of their business on this technology. Cosmo Tech, for instance, takes Microsoft's tools to do complex simulations of digital twins to predict how they might evolve. And Bentley Systems, which sells engineering software, uses Omniverse to optimise energy infrastructure. Both Microsoft and Nvidia have also teamed up with big firms to show off their wares. AB InBev, a beer giant, collaborates with Microsoft to create digital twins of some of its more than 200 breweries to better control the fermentation process. In the case of Nvidia, the top partner is BMW, which uses Omniverse to make it easier to reconfigure its 30 factories for new cars.

Despite all this activity, it is not a given that the enterprise metaverse will take off as fast as its champions expect, if ever. Similar efforts have failed or disappointed, including many IoT projects. “Smart cities”, essentially attempts to build urban metaverses, turned out to use technology that was just not up to snuff and relied too much on proprietary standards.

If the enterprise metaverse does indeed take shape, though, it will be an intriguing process. Will it be based on proprietary technology or on open standards (there is already a Digital Twin Consortium)? And, asks George Gilbert, a veteran observer of the IT industry, how will software-makers such as Microsoft be paid for their wares? Since their code will be more embedded than ever in firms' products and services, some may ask for a slice of revenue instead of licensing or subscription fees.

And then there is the question of how the overall metaverse economy will function. Since most business activity will be digitally replicated, economists may have unprecedented insight into what is going on. Digital twins could exchange services between themselves and perhaps replace firms as the main unit of analysis. If digital twins live on a blockchain, the sort of platform that underpins most cryptocurrencies, they could even become independent and own themselves. Expect at least as many possibilities as metaverses to unfold. ■



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Schumpeter | The flywheel delusion

Uber, DoorDash and similar firms can't defy the laws of capitalism after all



IN THE REAL world a flywheel is a mechanical contraption that stores rotational energy. In Silicon Valley it has come to mean something else: a perpetual-motion business that not only runs forever but is self-reinforcing. Thanks to powerful network effects, the theory goes, a digital platform becomes more attractive as it draws in more users, which makes it even more attractive and so on. The end state is a venture that has gathered enough energy to self-levitate and throw off tons of cash.

The payout on one of the most richly funded bets of the past decade or so revolves around whether ride-sharing and delivery firms—which once were part of something known as the “sharing economy” but are better described as the “flywheel economy”—can actually ever live up to their heady promise. The outcome will matter to more than just venture capitalists who backed their growth. Whether these flywheels do gather unstoppable momentum is also of interest to regulators worried about technology’s propensity for winner-takes-all business models, not to mention paid-by-the-gig workers caught in its cogs.

Consider the results of Uber and DoorDash, the largest Western ride-sharing and delivery apps respectively. Optimists will have seen plenty to cheer them. On November 4th Uber proclaimed it was at last profitable, albeit only on the flattering metric of “adjusted EBITDA”. Strong third-quarter figures from DoorDash, which were released on November 9th, fuelled an already heady rally in its shares (the firm also announced the acquisition of Wolt, a Finnish food-delivery company, for \$8bn).

But look deeper and evidence is mounting that business flywheels are not defying the laws of capitalism. The money that went into building them recalls the railway mania among other past speculative investment crazes. The nine firms that have gone public so far—Uber and its American rival Lyft; Didi, a Chinese ride-sharing app; and six delivery firms, from DoorDash and Delivery Hero, which is based in Berlin, to China’s Meituan and India’s Zomato—collectively raised more than \$100bn. In most cases, the capital was intended to jumpstart those network effects and make market dominance a self-fulfilling prophecy. Seemingly bottomless pits of investors’ cash went to subsidising rides and deliveries to juice demand. This reached absurd points: a pizzeria

could make money by ordering its own food for a discounted price on DoorDash (which then paid back the regular amount). To justify such profligacy, interested parties pointed to the huge “total addressable market”, another popular term in Silicon Valley. Bill Gurley of Benchmark, an early investor in Uber, argued in 2014 that the firm could vie for as much as \$1.3trn in consumer spending if one saw it as an alternative to car ownership.

Measured against such visions, the flywheel economy has proven a dud. To be sure, the nine listed flywheel firms are still growing nicely—at 103% on average in their latest reporting period compared to the same period the previous year. This explains why they are collectively worth nearly \$500bn. But self-levitating they are not. Nor are they profitable. Sales for the group amounted to \$75bn over the past year and the operating loss to nearly \$11.5bn.

As the firms have discovered, their businesses are less perpetual motion machines than real-world flywheels that inevitably lose energy to friction, says Jonathan Knee of Columbia Business School and the author of a book entitled “The Platform Delusion”. The network effects in fact have proved much weaker than expected. Many users switch between Uber and Lyft. Drivers also flit between them, or to delivery apps, depending on which model offers the best pay. This bargaining power from both sides means the system does not become self-reinforcing after all.

Technology, too, has turned out to be less beneficial than expected. Data collected by the firms help optimise their operations, but are not the decisive factor some had hoped for. Regulators keep pushing back. In London they have forced Uber to pay drivers minimum wages and pensions. In San Francisco they capped the fees DoorDash can charge restaurants for delivering their meals.

Uber’s tortuous path to stemming losses should temper investor optimism. It eked out a profit of \$8m on revenues of \$4.85bn. That excludes expenses that are unlikely to disappear, such as stock-based compensation. The company has crawled out of its sea of red ink mostly by slashing costs, shedding technology assets such as its autonomous-car unit, charging higher prices and increasing its “take rate”, the share of the fares it keeps. As a result, an Uber is now no cheaper—and often more expensive—than conventional cabs, plenty of which can be hailed via apps these days.

What is more, the company, which has a market capitalisation of \$85bn, is now more of a delivery service than a ride-hailing app: Uber Eats generates more than half of sales. DoorDash’s own punchy valuation, of \$65bn, rests on revenue that has grown more than fourfold since the last quarter of 2019, albeit during a time when people dined at home more often. But it also bakes in success in new markets that it has recently entered, including groceries and pet food.

Circular economy

Real business flywheels do exist. Software makers have managed to lock users in and thus generate gross margins typically above 70%. Venture capitalists are hoping against all hope to find new ones. They are already pouring money into the next generation of flywheel contenders: instant-delivery startups, which offer gratification in 30 minutes or less. Coupon-collecting consumers in cities such as New York now get at least a week’s worth of groceries for nothing from such services as Buyk, Fridge No More and Go-puff. Eventually, these firms’ champions promise, their economics will be far better than those of an Uber or a DoorDash. In the flywheel economy hope and hype spring eternal, at least as long as interest rates remain low and capital is essentially free. ■



Chinese banks

Attack on the tycoons

HONG KONG

The government sets its sights on sleazy ties between businesses and banks

IT'S BEEN A bad year to be a big cheese in China. Billionaire entrepreneurs have been hounded. Over-extravagant entertainers have disappeared from the internet. Now a new type of tycoon is feeling the heat. The latest regulatory crackdown on what the government considers private-sector misbehaviour extends to businessmen with excessively cosy ties to banks. The fear is that insider dealing, preferential access to credit and lax corporate governance pose threats to stability, particularly in the regional and local underbelly of China's financial system.

The most prominent red flag is Evergrande, a debt-ridden property firm close to collapse that until recently had a 36% stake in Shengjing Bank, a local lender based in the north-eastern province of Liaoning. The authorities are said to be investigating whether Evergrande, which is run by a billionaire, Hui Ka Yan, took control of Shengjing, with about 1trn yuan (\$156bn) in assets, using illicit means, as well as conducting some 100bn yuan in related-party transactions.

Another notorious case involves HNA Group, an acquisitive conglomerate which took over Yingkou Coastal Bank in Liao-

ning in 2014 (see chart 1 on next page). HNA put new leaders into the bank and transformed it into a mill for shadow-banking products that provided it and related groups with copious amounts of credit. Its assets tripled in 2016, making it the fastest-growing bank in China that year—before it almost collapsed. Since February HNA has been in bankruptcy administration. Chen Feng, its co-founder and chairman, was arrested in September, as was its CEO.

The malaise goes far deeper, posing a potential threat to economic stability in some Chinese provinces, particularly rust-belt ones like Liaoning. The 134 metropolitan and 1,400-odd rural commercial banks in China make up about 32% of its commercial-banking sector, with some 90trn

yuan, or \$14trn, in total assets. That is almost the size of Britain's entire banking system. They exist in the shadow of China's six big national-level banks and 12 joint-stock banks, which are predominantly state-owned and have the most visibility. Unlike the bigger banks, during most of the past decade many of those in the lower tiers have sold ownership stakes to large private investors, to the point of being under the influence of them. In recent years some have become cesspools of bad debts, insider dealing and failures of risk management, which are often attributed to misaligned ownership incentives.

This has aroused the concern of regulators. The central government is expediting a reform to push out what it calls "problem shareholders" from banks. On October 15th the China Banking and Insurance Regulatory Commission introduced rules that extended supervision of those that it considered to be banks' controlling shareholders. According to *China Daily*, a government mouthpiece, that extended to anyone holding a 10% stake or more in a city or local bank, or those holding the largest equity stake in a bank or insurance company, with ownership of no less than 5%. The aim is to weed out over-cosy corporate interests.

If corporate shareholders are indeed the problem, the authorities will have their hands full. *The Economist* calculates that of 107 city commercial banks that disclosed financial information for 2020, 72 with about 20.2trn yuan in total assets had large corporate shareholders, many of which were property developers and manufactur-

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ers. Twenty-two of this group were controlled outright by corporations and tycoons, or had been until they were recently forced to restructure. But even those with more than one large shareholder have attracted the attention of regulators. The authorities are likely to be scrutinising the way investors compete with each other for preferential treatment.

The level of corporate ownership at rural commercial banks extends even further—to the point that it has shocked some researchers. Wang Chunyang of Peking University surveyed 1,295 rural banks and found that 1,122, or about 87% of them, had private companies as their largest shareholders. By our calculations, that level of private ownership implies that up to 39.4trn yuan in rural-banking assets could be controlled or influenced by private interests. For these banks, identifying problems early is a challenge. Smaller lenders are more likely to hide their bad debts, says Ruan Tianyue of National University of Singapore, creating a regulatory blind spot.

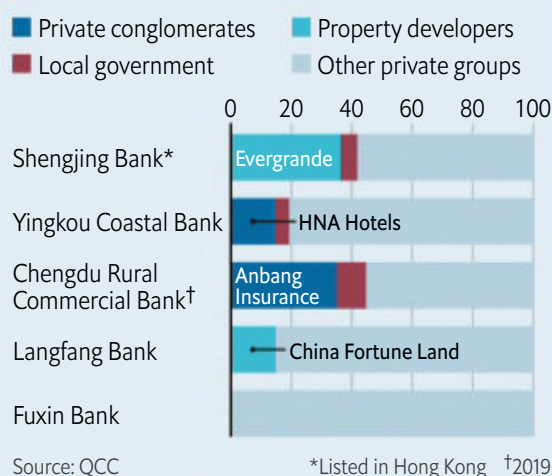
Private ownership of banks, by itself, is not the cause of the problem. Some privately held banks, such as the newly created Zhongbang Bank, have performed well. For their part, many small, government-controlled lenders have demonstrated abysmal risk controls. But in banks lacking in corporate governance, the risk is that the owners use their clout to extract loans on preferential terms, undermining prudent risk management and increasing the level of bad debts.

That could have economic consequences. Some experts liken the state of China's small banks to that of the more than 1,000 savings-and-loan institutions that collapsed in America in the mid-1980s due to deregulation and lax lending controls. They say bad-debt problems among city and rural banks could hurt regional economic growth.

Another problem is more political in nature. As evidence grows of tycoons' mur-

Piggy banks

China, ownership structure of tycoon banks
October 2021, % of total



ky relationships with banks, the more it plays into the narrative of President Xi Jinping that socialist command-and-control policies do a better job than private capital in allocating economic resources.

Signs of misbehaviour appear to be mushrooming. Besides Evergrande, which has been forced to sell some of its shares in Shengjing, Hong Kong-listed Bank of Gansu required a bail-out last year after it lent to and invested heavily in the debt securities of one of its shareholders, which eventually defaulted. Bank of Jinzhou, a north-eastern lender, required an emergency restructuring after its largest shareholder, to which it had extended many loans, could no longer pay back creditors. Anbang Insurance, the unwieldy conglomerate best known outside China for buying the Waldorf Hotel in 2014, controlled Chengdu Rural Commercial Bank until 2020. Xiao Jianhua, a tycoon who was kidnapped by Chinese agents from a Hong Kong hotel in 2017, controlled two lenders, Baoshang Bank and Bank of Harbin, both of which required expensive state bail-outs.

These problems are unlikely to abate as China's economy decelerates and more companies default. In September shares in

Fuxin Bank were put up for sale in an online auction meant to help raise capital for the struggling lender after a property developer with shares in the company could no longer repay its debts. Bank of Langfang faces a potential increase in bad debts after its second-largest shareholder, China Fortune Land, a developer, defaulted on a 5.3bn yuan bond earlier this year.

Regulators take several approaches towards weeding out miscreant owners—of varying severity. One is to push out problematic shareholders. In mid-2020 the banking regulator published a list of 38 “illegal shareholders” that it had forced to divest. Another is detention. Mr Xiao, for instance, is thought to be currently held in Shanghai, where he is assisting in the unwinding of his business operations. A third is the death sentence. Cai Guohua, former chairman of Hengfeng Bank, which required a bail-out in 2020, was handed a suspended death sentence for, among other things, taking illegal loans.

Authorities have no intention of forcing all private shareholders out of the banks, but they are moving to ensure that the largest shareholders come from the state, says Lian Ping of Bank of Communications, a large Chinese bank. This will mean an upheaval across the industry, given how prevalent large, private shareholders have become in recent years. Such regulatory actions will take time and will need to avoid undermining depositor confidence at banks.

In some regions, such as the north-east, the government has sought to restructure handfuls of banks at a time, possibly worried about a regional concentration of debt woes. S&P Global, a ratings agency, says that nearly 8% of the loan books of the most prominent city and rural lenders in the north-east were non-performing or of questionable status in 2020. The figure was just 3% for the loan books of similar banks in eastern China (see chart 2).

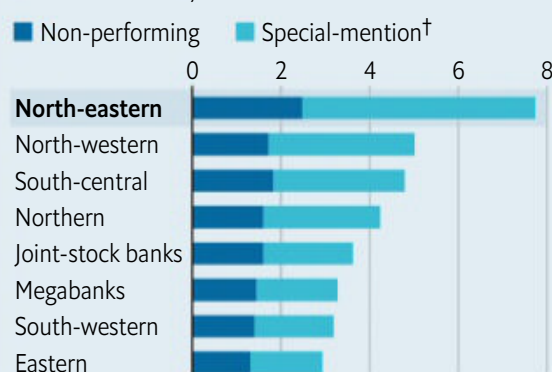
The north-east has one of the highest rates of private ownership in the country. In Liaoning province, for example, eight of its 15 city commercial banks are privately controlled. That produced a drive for consolidation. After the HNA debacle, Yingkou Coastal Bank became the central pillar of an effort to merge banks in Liaoning. At first regulators went so far as to attempt to bring together 12 of Liaoning's banks. But later this ambition was downsized to two, including Yingkou.

For all the regulatory overdrive, the neatest solution continues to evade Chinese regulators: allowing banks to fail and exit the market. Not since the collapse of Hainan Development Bank in 1998 has a lender been allowed to fail. And that was a convoluted bankruptcy that still drags on to this day. Rural banks would be fertile ground for such tests. ■

Rot in the rust belt

Chinese banks*

Non-performing and special-mention loans, as % of total loans, end-2020



Loan-loss reserves, as % of total non-performing and special-mention loans



Source: S&P Global Ratings

*Includes top 30 unlisted and 28 listed rural and city banks across all regions
†Loans flagged for potential repayment problems

Funding crypto ventures

The bitcom boom

A venture-capital craze feels like the glory days of the dotcom era

THE HONG KONG office of FTX, a cryptocurrency exchange, is a place where basic needs come second to business. Food and booze lie around desks fitted with six screens each. Sam Bankman-Fried, its boss, says he sleeps four hours a night on a bean bag next to his desk—if he's lucky. He sees little difference between breakfast and dinner, apart from "which restaurants are open for delivery".

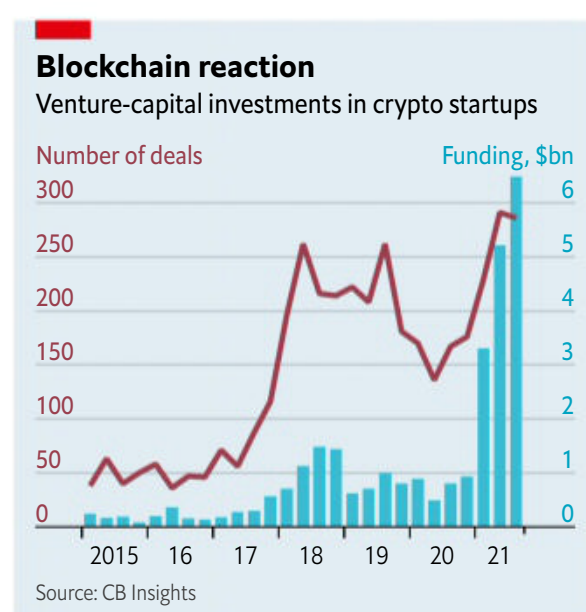
His restlessness mirrors that of crypto markets, which never sleep. But it also reflects the speed at which the two-year-old firm is growing. Last month FTX announced a \$420m funding round that valued it at \$25bn, just three months after investors gave it a price tag of \$18bn. The deal featured the *crème de la crème* of the investment universe, including BlackRock, the world's largest money manager, OTPP, a \$170bn Canadian pension fund, and Temasek, a sovereign fund from Singapore.

FTX's funding feast is symptomatic of investors' growing appetite for crypto startups, especially those that are creating the tools to build a blockchain-based future. In the first nine months of 2021 they raised \$15bn in venture capital (vc), five times their tally for the whole of 2020. In the third quarter 12 crypto unicorns—startups valued at \$1bn or more—were born, a record. The heady times remind some venture capitalists of the dotcom era. But they're not sure whether they are partying like it's 1994—or 1999.

One trigger for the capital flows is the rising demand for digital monies from retail speculators. That is influencing vcs to back crypto wallets and exchanges. Investors are also betting that, as regulation becomes clearer, institutions will take it more seriously, stirring demand for crypto tax advisers, analytics firms and asset custodians, says Matt Burton of QED, a vc firm. Red-hot indicators such as the bitcoin price, which flirted with a record \$69,000 this week, are turbocharging excitement.

The industry's boundaries are expanding, too. Blockchain startups are promoting new forms of financial services (decentralised finance), digital ownership (non-fungible tokens, or NFTs) or incentive models (as in gaming, where users can earn crypto as they play). NFT ventures have raised \$2bn so far this year, up from \$31m in 2020. Four-fifths of vc deals have been early-stage rounds.

Most intriguing is the entry of new in-



vestors. Successful crypto firms are reinvesting cash into younger ones. The most prolific is Coinbase Ventures, the investment arm of America's largest crypto exchange, which sealed 24 deals in the past quarter. On November 5th FTX and other firms launched a \$100m gaming fund.

Deep-pocketed investors from mainstream finance are also pitching in. They include well-known venture funds, such as Andreessen Horowitz, an early backer of Facebook and Skype. SoftBank, a trigger-happy Japanese group, made six crypto deals in the past quarter. They also feature some hedge funds and asset managers. Such investors helped complete 15 rounds of more than \$100m in the last three months. Together these accounted for two-thirds of total vc money spent.

Shan Aggarwal, who runs Coinbase Ventures, says the craze recalls the dotcom boom of the 1990s, when investors rushed to back the firms that would form the foundations of the web economy. In one respect the current era is even more impressive: while the internet bubble was mostly nurtured in Silicon Valley, the "bitcom" boom spans Asia (\$1.4bn raised this quarter) and Europe (\$1.1bn) in addition to America (\$3bn). Crypto unicorns are cantering ahead in Africa and Latin America, too.

Whether it will produce successes like today's tech giants is still an open question, though. It's early days. The bounty garnered by crypto firms in 2021 amounts to 16% of the sum raised by fintech firms and 3% of that raised by startups at large. Big deals have buoyed the average size of investment rounds to \$21m, triple the level of 2020, but the median, at \$4m, is small.

Some valuations look silly: in September Sorare, a fantasy-football game played on the blockchain, closed a \$680m round that valued it at \$4.2bn, or 22 times sales—more than Facebook's multiple when it did its initial public offering. All of which suggests that some investors will make out like bandits, while others will get their fingers burned. For good or ill, more sleepless nights beckon. ■

Inflation in America

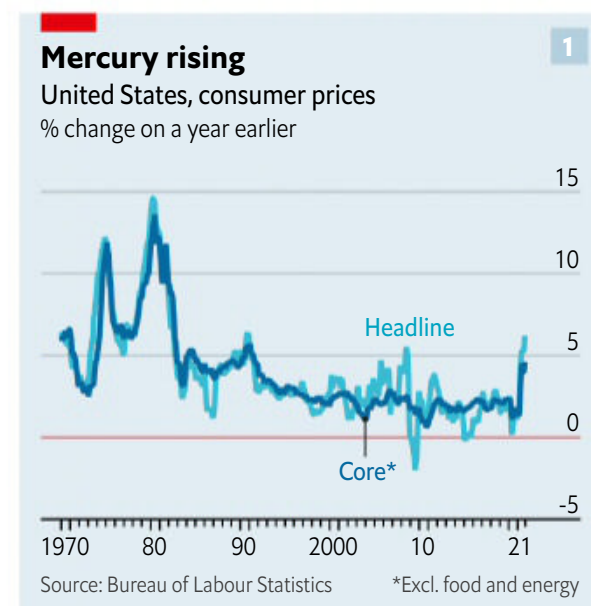
The wrong kind of hot

A broad pickup in prices puts pressure on the Fed to raise rates

IF AN AVERAGE American decided that last month was high time to buy a new sofa and then spent his evenings drinking beer on it, he would have been lucky. Both the furniture and the brew cost a little less than a few weeks earlier. Unfortunately, that same American may have been painfully aware that just about everything else—his rent, the petrol for his car, his food and even that new leafy plant next to the sofa—cost a fair bit more. The best level for inflation, economists joke, is when people do not notice it. In America it is becoming very noticeable. In October the consumer-price index rose by 6.2% compared with a year earlier, the highest rate in more than three decades (see chart 1).

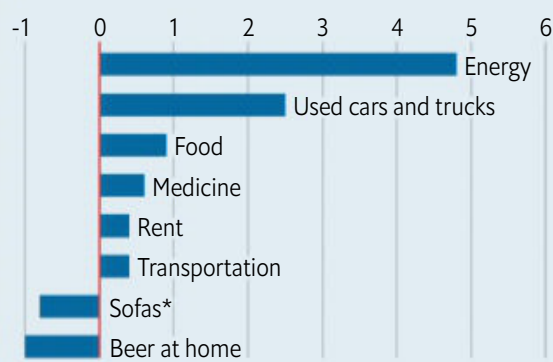
As inflation has accelerated economists and officials have debated whether it is a transitory phenomenon—reflecting overstretched supply chains—or a more persistent problem. It is far more than an academic debate. If inflation is short-lived, the right move for the Federal Reserve would be to look through it, aware that jacking up interest rates may do more harm than good. If, however, inflation is stubbornly high, the central bank is duty-bound to tame it. The big jump in prices in October tilts the debate in favour of "Team Persistent", as some have taken to calling it, and puts pressure on the Fed.

To be sure, a big chunk of America's headline inflation is still attributable to the lumpy post-pandemic recovery (see chart 2 on next page). Gasoline costs, for instance, are 50% higher than a year ago, tracking the surge in oil prices. Used cars are 26% dearer than a year ago, with a semiconductor shortage leading to slower



Fuelling the fire

United States, consumer-price components
October 2021, % change on previous month



*Living room, kitchen, and dining room furniture
Source: Bureau of Labour Statistics

► production of new cars and more demand for second-hand vehicles. And prices are rising globally, from Australia to Britain.

Nevertheless, optimism that supply kinks would be ironed out by now has vanished. Inflation is even hotter in America than in other countries because of the strength of the rebound there, with stimulus payments fuelling demand. Price pressures are getting broader. A gauge of core inflation, stripping out volatile food and energy prices, rose by 4.6% year-on-year in October, more than twice its trend rate of the previous quarter-century. Increasing rents suggest that elevated inflation will continue well into 2022. With wages also rising at their fastest in years, concerns are mounting about a feedback loop, in which higher salaries beget higher inflation.

In truth there ought to be little chance of a wage-price spiral in America. A sharp narrowing in the fiscal deficit will constrain growth in the coming quarters. And, crucially, investors still expect the Fed to take decisive tightening action if necessary, which is why longer-term bond yields have not moved much. Last week the Fed announced that it would start reducing its monthly asset purchases, the first step to unwinding its ultra-loose policies implemented at the height of the pandemic. Several prominent banks have moved forward their forecasts for rate increases. Goldman Sachs, for example, had previously expected the Fed to wait until 2023; now it expects two increases next year, starting in July. But the uncertainty around all these expectations is much greater than in normal times. The Fed itself has consistently underestimated inflationary trends over the past year, so its shift to tightening may end up being uncomfortably abrupt.

Politically, this is treacherous territory for President Joe Biden. His week had got off to a great start with the passage of America's biggest infrastructure-investment bill in decades, giving him something to crow about. On November 10th, shortly after the inflation data were published, he instead chose to adopt a defen-

sive posture. "Inflation hurts Americans' pocketbooks, and reversing this trend is a top priority for me," he said. His administration is trying to clear some of the backlogs at ports, which would help retailers stock their shelves more quickly, perhaps easing some of the pressures. Mr Biden also noted that the price of natural gas, a big contributor to inflation in October, has dipped in recent days.

Yet inflation is, ultimately, out of Mr Biden's hands. The government can only do so much to paper over global shortages. Knowledge that the Fed may feel compelled to raise rates before too long will offer Mr Biden little consolation. Historically, growth cycles tend to come to an end when the central bank tightens policy, so today's price pressures may augur economic disappointment a little farther down the road. Mr Biden, a teetotaler, cannot even soothe his sorrows with a modestly cheaper bottle of lager. ■

Debt-for-nature swaps

Reef relief

Belize trades one sort of riches for another

IF ECONOMIES WERE measured by their natural capital, as well as the physical and human sort, Belize would be a richer country than it is. What the tiny Caribbean state lacks in cold, hard cash, it makes up for in warm, tropical biodiversity. The Belize Barrier Reef, the second largest expanse of coral in the world, is packed with turtles, manatees and other threatened species. Holidaymakers flock to its coast to dive, snorkel or simply gaze at its waters from the comfort of a hammock. Or at least

they did before the pandemic. Last year tourism dried up, growth contracted sharply and public debt jumped from just under 100% of GDP in 2019 to over 125%.

That forced Belize, not for the first time, into a debt restructuring—one in which it is seeking to exchange one sort of riches for another. As part of the deal, concluded on November 5th, Belize bought back its only international bond, a \$553m liability misnamed the "superbond", at 55 cents on the dollar. It funded that with \$364m of fresh money, arranged by The Nature Conservancy (TNC), an NGO, which is insured by the International Development Finance Corp, an American agency. The transaction is backed by the proceeds of a "blue bond" arranged by Credit Suisse, a bank. The payback is due over 19 years with a coupon that begins below that of the superbond but rises above it over time.

It is called a blue bond because Belize has pledged to invest a large chunk of the savings into looking after the ocean. That includes funding a \$23m endowment to support future marine-conservation projects and promising to protect 30% of its waters by 2026.

It might be argued that Belize should do this anyway to support tourism, which accounts for 40% of economic activity. But at a time when governments and investors are looking at novel ways of funding environmental clean-ups, Belize was able to use its natural patrimony to gain leverage over bondholders. Whether it will be enough to stop it defaulting again in the future is another matter.

Debt-for-nature swaps are nothing new. Lenders have been offering highly indebted countries concessions in return for environmental commitments for decades. But these transactions have historically involved debt owed to rich countries, not commercial bondholders. As Lee Buchheit, a lawyer who specialises in sovereign-debt restructurings, points out, they were "neg-►



Lawsuits off, wetsuits on

► ligible in size". In total, the value of debt-for-climate and nature-swap agreements between 1985 and 2015 came to just \$2.6bn, according to the United Nations Development Programme. Of the 39 debtor nations that benefited from the swaps, only 12 negotiated debts of over \$30m. "It was really an exercise in public relations," Mr Buchheit says.

A lot has changed since then. Governments are now under immense pressure to make ambitious commitments on climate change and biodiversity. And investors are eager to show they can make money as well

as being committed to environmental, social and governance goals.

Other poor countries are trying to move in the same direction. At the COP26 climate summit in Glasgow Ecuador's president Guillermo Lasso proposed enlarging the country's Galapagos nature reserve through a debt-for-nature swap. And TNC is in talks with other poor countries interested in doing something similar. Once a blueprint is in place, agreement gets simpler. The last restructuring of the same sort that it took part in, which involved \$21.6m of debt owed by the Seychelles to the Paris

Club of creditors, took four years to thrash out. Negotiations in Belize lasted a year and a half.

Yet no amount of creative dealmaking can distract from the grim truth: many emerging markets still suffer from crushing debts. The pandemic has pushed half of the world's poorest countries into debt distress or heightened the vulnerability to it. And debt-for-nature swaps only help at the margin. Last week's restructuring reduced Belize's external debt by \$250m, or 12% of GDP. The success is for coral reefs more than debt relief. ■

Buttonwood For the duration

Why cash is now more appealing as a portfolio asset

EVER HAD the feeling that there is a party somewhere that you're not invited to? It is the same feeling investors have when they have capital sitting in three-month bills or on deposit at a bank. Cash is a safe asset, but a wasting one. The real returns on risky assets have been much greater. True, cash affords options—to buy cheaply when others are selling. But episodes of distressed selling have been fleeting, largely thanks to central banks, which have been liberal in supplying cash in emergencies. Why then should investors incur the opportunity cost of holding it?

In its favour, cash is at least now offering a small return, or the prospect of one. Overnight interest rates have risen, notably in Latin America and Eastern Europe. The Bank of England may raise its benchmark interest rate before the year is out. The Federal Reserve may follow at some time next year. But the rate of return in short-term money markets is still below the rate of inflation and is forecast to stay that way. For those seeking returns, holding cash remains a loss-making prospect in real terms.

The true appeal of cash as a portfolio asset lies somewhere else. More and more capital is tied up in investments where much of the payoff lies in the distant future. You see this in the huge market capitalisations of a handful of tech companies in America and in the money flooding into private-equity and venture-capital funds. Investors have to wait ever longer to get their money back. In the meantime their portfolios are vulnerable to a sharp rise in interest rates. A simple way to mitigate this risk is to hold more cash.

The concept of "duration" is a useful one in this regard. Duration is a measure of a bond's lifespan. It is related to, but

subtly different from, the maturity of a bond. Duration takes into account that some of what is due to bondholders—the annual interest, or "coupon"—is paid out sooner than the principal, which is handed over when the bond matures. The longer you have to wait for coupon and principal payments, the longer the duration. It is also a gauge of how much the price of a bond changes as interest rates shift. The greater a bond's duration, the more sensitive it is to a rise in interest rates.

You can also think of equity investment in duration terms. Take the familiar price-earnings ratio, or PE, the price paid by investors for a given level of stockmarket earnings. The idea is that if a stock has a PE of ten, based on recent earnings, it would take ten years to earn back the outlay of an investor who buys the stock today, assuming earnings stay constant. If the PE is 20, it would take 20 years. The PE is thus a crude measure of the stock's duration. On this basis, American stocks in aggregate have rarely had a longer duration. The cyclically adjusted price-earnings ratio, a valuation measure popular-

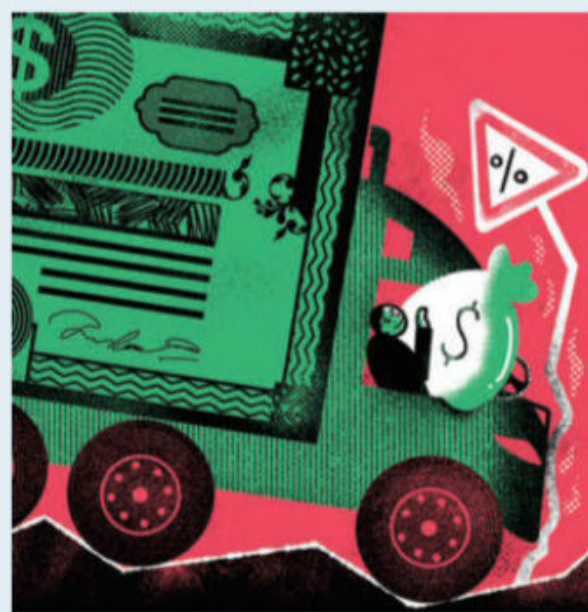
ised by Robert Shiller of Yale University, is now close to 40. It was higher only at the giddy height of the dotcom boom in 1999-2000.

The rationale for longer-duration assets is a familiar one. Real long-term interest rates are about as low as they have ever been. As a consequence investment returns even in the distant future, once discounted, have a high value today. It is not just stocks. Property is valued at a steep price relative to the stream of future rents. Investors are piling into private-equity and venture-capital funds that won't pay out for a decade or more. Everyone, it seems, is long duration. But with longer duration comes a greater risk that unexpectedly aggressive interest-rate rises will lead to a collapse in asset values.

A typical investment portfolio of stocks, bonds and property is vulnerable to this risk. There are not too many good ways to hedge it. Buying insurance in the options market against a stockmarket crash is expensive and fiddly.

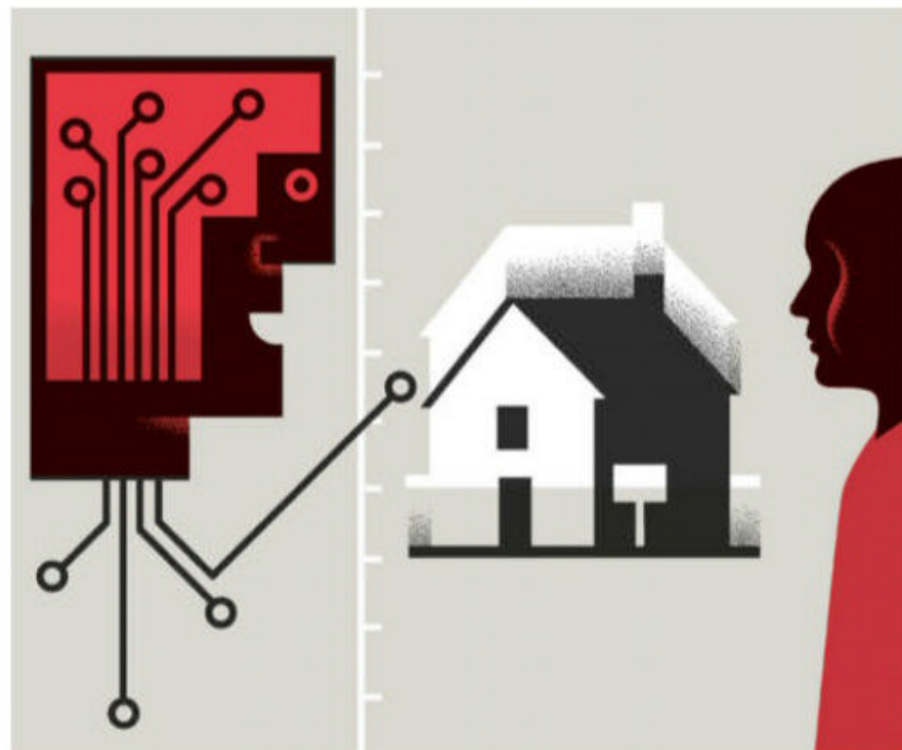
This is where cash comes in. Cash is by definition a short-duration asset. Were interest rates to go up sharply, cash holders would get the benefit quickly even as other assets suffer. So as the duration of your portfolio rises, it makes sense to raise your cash holdings too. By precisely how much will depend, as ever, on your risk appetite. Just as you are advised to sell down your stocks to the level where a night's rest is assured, you might also build up your cash holdings to the sleeping point.

Of course, such a strategy comes with an opportunity cost. As long as asset markets continue to boom, cash will be a drag on your portfolio. So be it. Missing out on some returns is the price you pay for mitigating duration risk.



Free exchange | Home-icide

A Zillow whodunnit



THE TIMING was apt. On November 2nd, just two days after Americans celebrated their scariest annual holiday, news of a suspicious death shocked the stockmarket. Zillow, a giant property and technology firm, said it would shut down its huge instant-buying, or i-buying, business, which uses big data and algorithms to make offers on homes in dozens of cities in America and then swiftly sells them on. The firm expects to lose in excess of \$500m in the second half of 2021 after it overpaid for thousands of homes. It will lay off a quarter of its 8,000 employees. It seemed like a business that should be in rude health. By and large it has been a fantastic time to buy a home almost anywhere in America—if you can only snag one: house prices have climbed between 16% and 25% during the past 18 months. So why is Zillow's i-buying business in the morgue? And whodunnit?

Finding the right suspect matters for reasons bigger than the fate of Zillow itself. The i-buying business is one of many examples of firms using a platform to collect big data, analyse it using advanced techniques and empower their algorithms to enable a market to work more smoothly. This trend has pushed down transaction costs in many asset markets, from stocks and bonds to camera equipment and clothing. The fate of Zillow's i-buying business might indicate that using technology to buy and sell something as idiosyncratic as a house is a flip too far.

Consider the most serious suspect first: the housing market. It has been in an unusual state of flux. At first the covid-19 pandemic caused a freeze in all property transactions. Then prices went berserk, rising at record levels year on year in April. Undoubtedly, volatile prices do no favours to algorithms trained on historical data. Still, in theory rising prices should help i-buyers by making it harder to sell a house for less than was paid for it. The reverse, falling prices, could be a more likely culprit but as yet the data are mixed. A house-price index compiled by the National Association of Realtors (NAR) finds that values peaked in June 2021, at 19% above pre-pandemic levels, and have since dropped by 2.8 percentage points. Another by S&P CoreLogic Case-Shiller suggests prices are still galloping ahead. Both are published with a lag (the NAR runs to the end of September, Case-Shiller to the end of August), which means the evidence is inconclusive.

The next suspect is the mathematical models. A handful of firms offer i-buying services, the first and biggest of which is Opendoor, founded in 2014. They charge a fee for the services they provide: buying and selling homes immediately, with zero fuss. The quick in-and-out makes them more like marketmakers than property investors, who buy to hold. To succeed, i-buying firms need two critical pieces of information: the current value of a home and a forecast of the price at sale time, typically two to three months in the future. To figure these out they need troves of data, ranging from the precise location of a home, to how many rooms it has, to whether it has a pool or not. They compare these with the closest comparable homes that have sold recently and look at recent trends to make a forecast. That enables them to make an "instant" offer to a homeowner. In the past the algorithms appear to have worked pretty well. Mike DelPrete, of the University of Colorado, found they offered homeowners about 1.4% below market value—not a bad outcome for a quick, hassle-free sale.

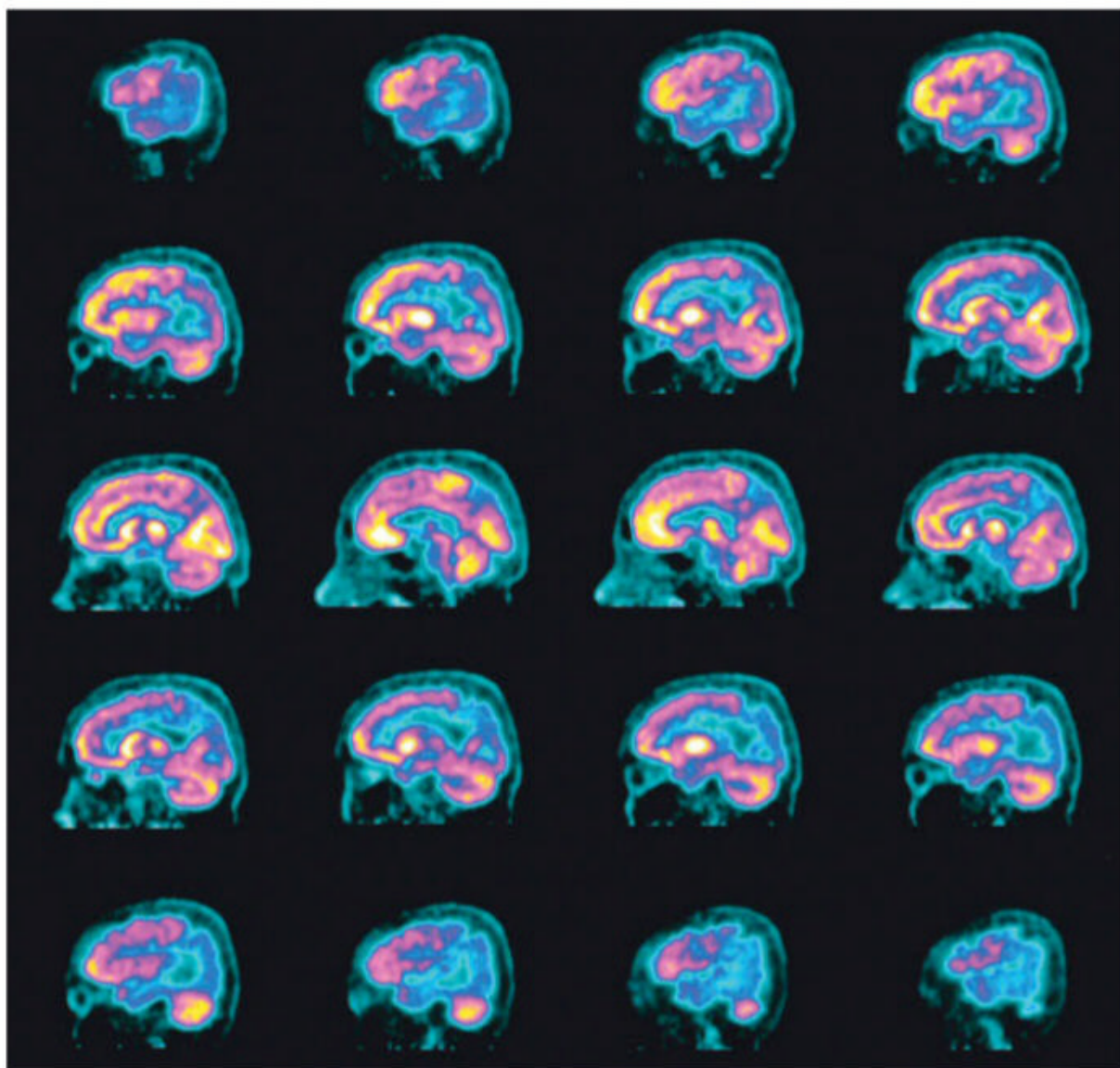
Zillow's boss, Rich Barton, said the big problem was with the firm's forecasts. He claimed it had found itself unable to predict prices three-to-six months into the future. In particular Zillow seems to have projected much rosier conditions than materialised. In Phoenix, where house-price appreciation has been particularly rapid but seems to be slowing, Zillow is listing homes for an average of 6.2% less than it paid for them.

This problem is exacerbated by the fickle economics of adverse selection. Even if the algorithms of i-buying firms are excellent at pricing homes at a fair value on average, they only need to be a little off for the risk to skew to the downside. Homeowners will probably not sell their home for much less than they think it is worth, but they will happily settle for a higher-than-expected price. Mr Barton revealed in a shareholder letter on November 3rd that "higher-than anticipated conversion rates" were part of the problem. One former Zillow employee has claimed that the company wanted around 50% of homeowners who sought an offer to take it, but as many as 74% of offers made in recent months were taken up. Zillow bought almost 10,000 homes in the third quarter, more than double the amount from the prior three-month period, which itself was more than double the amount in the first quarter. The suspicion is that Zillow's algorithm was making overly generous offers, and homeowners were rushing to take advantage.

This may have been a Zillow problem, not an i-buyer one, however. Some of Zillow's competitors seemed to realise before Zillow that the market was losing steam. OpenDoor and Offerpad, an i-buyer founded in 2015, both began making more conservative offers relative to their models' valuation around July as price appreciation began to cool. When they reported their earnings on November 10th neither Opendoor nor Offerpad exhibited anything like the problems suffered by Zillow.

Inside job

Perhaps the fatal blow was, in fact, self-inflicted. Zillow expanded its i-buying business aggressively. Opendoor expanded gradually. It offered i-buying services in only six markets after three years, taking its time to refine its algorithms. It is now operational in 44 markets. Zillow added almost as many markets in half as much time. A former Zillow employee told *Business Insider* that management had been hellbent on catching up with Opendoor, the front-runner. In order to compete, the employee alleged, the company pushed to offer generous deals to potential clients. It called this "Project Ketchup". Now it has its own fake blood on its hands. ■



Diagnosing dementia

Knowing the worst

It is becoming easier, cheaper and quicker to diagnose dementia

OF THE ESTIMATED 55m people living with dementia around the world, only one-quarter have been formally diagnosed with the condition. There are many reasons for this. Two are enduring: many patients and clinicians alike wrongly believe that dementia is an inevitable part of the ageing-human condition and, being incurable, is hardly worth diagnosing; and some people experiencing cognitive impairment fear hearing what sounds like a sentence of brain-death, and so do not seek help.

Some of the reasons for non-diagnosis, however, may be about to change. During the covid-19 pandemic many people have delayed consulting their doctors about non-urgent conditions, and as lockdowns ease, they may begin to ask for professional guidance (moreover, evidence suggests that covid itself heightens the risk of dementia). In addition, diagnostic techniques, hitherto unreliable, time-consuming and costly, are becoming available, and for some forms of dementia hopes are

emerging of more effective treatments.

Dementia is normally diagnosed by testing cognitive functions such as memory. If mild cognitive impairment (MCI), often a precursor to dementia, is detected, a patient may then be referred for tests to identify which of the dozens of causes of dementia are to blame. By far the most common is Alzheimer's disease, accounting for 60-80% of cases.

Fear of the needle

Identifying Alzheimer's normally requires a brain scan, and perhaps a lumbar puncture (the insertion of a needle into the lower spine), to extract cerebrospinal fluid, so as to measure its levels of two proteins that build up in the brains of people with Alzheimer's, known as beta-amyloid and tau. Some patients are reluctant to undergo the intrusive procedure. The scans are usually by magnetic-resonance imaging (MRI), to look at the size of the brain, along with a positron-emission tomography (PET) scan

to measure the build-up of beta-amyloid. PET and MRI scanners are expensive pieces of kit, running into the hundreds of thousands of dollars. For most people in the world, they are unobtainable.

That explains the excitement at the development of simple blood tests to distinguish Alzheimer's from other neurodegenerative conditions. One, announced last year and likely to be validated for routine use within 12 months, according to Serge Gauthier, professor of neurology and neurosurgery at McGill University in Montreal, measures a form of tau called p-tau217. It has been found to predict Alzheimer's with 96% accuracy.

It is already possible using mass spectrometry, which detects how atoms and molecules are deflected by magnetic fields, to measure the level of beta-amyloid in the blood. But it is not certain how this relates to levels in the brain. The accuracy of the procedure rises to 94% if two other risk factors are considered: age and the presence of a form of the APOE gene, known as APOE4, which heightens the risk of developing Alzheimer's (and also appears to increase vulnerability to heart disease and covid). This can also be detected by a blood test, so Dr Gauthier envisages symptomatic patients giving blood samples for simultaneous tests for both tau and APOE4.

Other approaches aim to detect asymptomatic people years or even decades be-▶▶

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fore they begin to show obvious symptoms. George Stothart at the University of Bath in Britain leads a team that has developed very quick passive tests that hold great promise for detecting cognitive impairment early. These tests use electroencephalographic caps which are worn on the head to compare brainwave responses to a series of images. The caps are relatively cheap and the test can be conducted using a tablet computer.

Taking the exam

Meanwhile, machine-learning and AI are enabling big improvements in cognitive testing, which, like other sorts of pencil-and-paper exams, has been prone to cultural and educational bias, and to a “learning bias” (lessened accuracy as practice improves the participants’ results). Cognetivity Neurosciences, for example, a firm launched by two academics at the University of Cambridge, produces an “integrated cognitive assessment” that has already been deployed by some regions of Britain’s National Health Service. It has also been approved by America’s Food and Drug Administration (FDA) and by regulators in the European Union.

The Cognetivity test relies on a series of flashing images, among which some animals have been embedded for the person being tested to identify—rather like the CAPTCHA tests used by some websites to weed out robots trying to log on, only these are conducted at rapid speeds. So rapid, indeed, that the tests cannot be conducted remotely, but are done on tablets in memory clinics or at doctors’ surgeries. Already, however, a variety of do-it-yourself cognitive tests of various standards are available online, and some of these could become important diagnostic tools.

Even before the explosion in the use of AI, scientists could detect evidence of dementia from how people use words. A study in 2011, for example, found clear retrospective evidence in the writings in her 40s and 50s of Iris Murdoch, a novelist, of the Alzheimer’s she was to die with in 1999, aged 79. The research arm of IBM, a computing giant, has used data from the Framingham heart study, which has tracked three generations of people in a town in Massachusetts since 1948 to improve knowledge of cardiovascular health. Ajay Royyuru, who heads IBM’s health-care and life-sciences research, says that studying the use of language by participants in the study suggests that changes over time can be used to predict which of them will acquire dementia, seven and a half years before they are diagnosed even with MCI.

Such data—and the massive amounts people compile every day on their smartphones, using various services such as messaging or navigation—could help enable much earlier detection of dementia.

This might be possible with apps, although the ethics of any non-consensual diagnosis and the willingness of people to use such services are another matter. One way or another, though, Paola Barbarino, chief executive of Alzheimer’s Disease International, an advocacy group, expects a “tsunami” of demand for treatment.

For health-care systems around the world all this may pose more problems than it solves. The main one is the lack of proven treatments. In June the FDA approved Aduhelm, the first drug to treat Alzheimer’s. A monoclonal antibody shown to reduce accumulations of beta-amyloid, it has so far been little used, because it is expensive and insurers are reluctant to approve reimbursement when there are

doubts as to whether it actually slows cognitive degeneration. But it is the first in a queue of drugs, for which Alzheimer’s specialists hold out great hopes.

The second difficulty is in assessing when MCI requires medical intervention. As Dr Gauthier points out, some mental decline is indeed part of ageing. People find ways of coping. Telling the difference is hard to do through blood tests or the use of AI. It still requires time and human intervention. This is part of the third and biggest difficulty: that, as the world ages, the number of people with dementia is going to rise rapidly, to more than 80m by 2030 and more than 140m by 2050. Even today health services are buckling. Who knows how they will cope in the decades ahead. ■

COP26

Are the climate goals dead or alive?

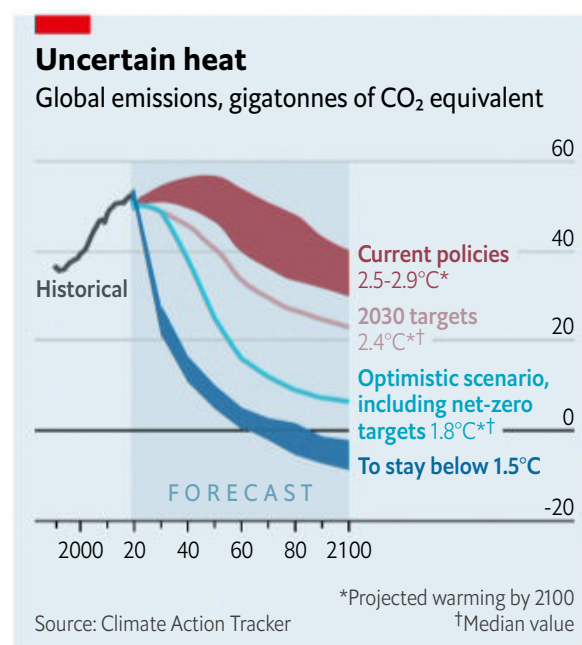
GLASGOW

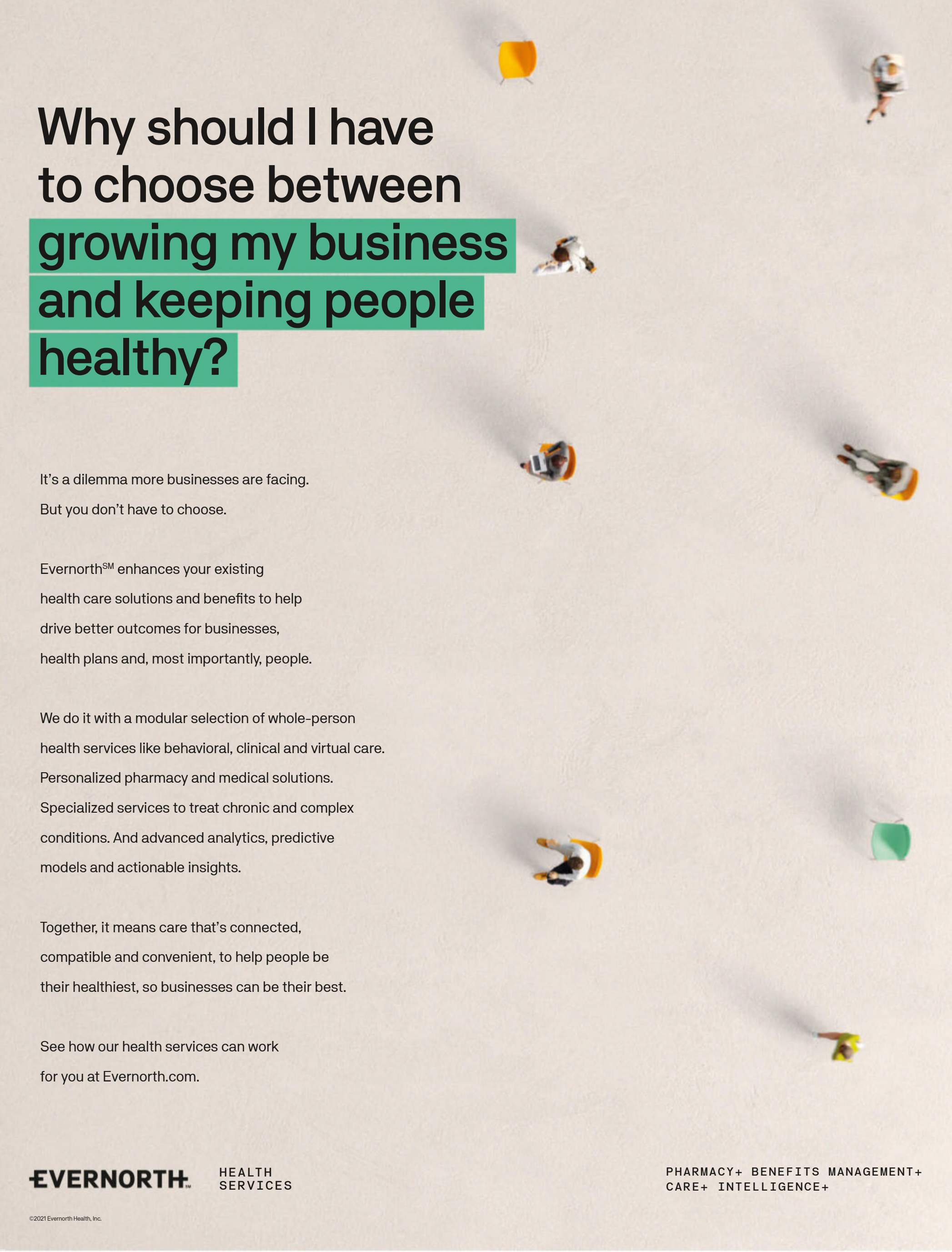
The lofty goals made in Paris seem like being left behind

“AT THE END of the COP we need to be in a position to say ‘We are still on track to be well below 2 degrees, we still have a shot at the 1.5 degrees.’ All our efforts this week should be directed at that.” Thus spoke Frans Timmermans, an EU commissioner, as the COP26 climate summit in Glasgow rolled into its final week. Unfortunately for Mr Timmermans, political resolve and climate plans do not currently add up to the demanding goals set out by the Paris agreement of limiting global warming to “well below 2°C” above pre-industrial averages, let alone to keeping it as low as 1.5°C. Instead, the latest number-crunching suggests that the plans of the 193 parties to the agreement collectively carve a path to approximately 2.4°C of warming by the end of the century.

That is only a modest improvement on where things stood when the Paris agreement was being negotiated in 2015. Under the deal that was struck at the time, governments offered up pledges to reduce their national emissions. Toiling away in the background, climate modellers estimated that the cumulative consequence of these pledges would be to bring about roughly 2.7°C of warming by 2100. Aware of the disconnect between this figure and the agreement’s overall goals, negotiators said they would present new, hopefully improved decarbonisation plans every five years, in the hopes that this “ratchet mechanism” would bring the overall 1.5-2°C Paris goals closer.

Hence the flurry of climate pledges that were made over the past year. They focus on what will be done by the end of the decade, by which time global greenhouse gas emissions must be roughly half what they were in 2010 in order to have a good chance of limiting warming to 1.5°C. So far, no country is on track to do this, says Niklas Höhne of NewClimate Institute, a think-tank. Dr Höhne is part of a consortium of researchers called Climate Action Tracker, which plugs national climate policies and pledges into models in order to give an idea of how they translate into temperatures. The group’s latest results (see chart), published on November 9th, say that if all 2030 decarbonisation plans were to be carried out as advertised but no further efforts were made, there would be a 68% chance that global average temperatures in 2100 would be between 1.9°C and 3.0°C warmer ▶▶





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their healthiest, so businesses can be their best.

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▶ than pre-industrial times, with a median estimate of 2.4°C.

At first glance this seems considerably more pessimistic than what the International Energy Agency (IEA), a think-tank that works for governments, said earlier: “COP26 climate pledges could help limit global warming to 1.8°C”. “BIG NEWS,” tweeted the agency’s director, Fatih Birol, “#COP26 climate pledges mean Glasgow is getting closer to Paris!”. In fact, the two numbers are entirely consistent with each other. It is just that the IEA’s modellers assumed not only that countries would deliver on their 2030 promises but also that those who said they would reach net-zero emissions by mid-century or soon after would actually do so.

Yet for now, talk of net-zero is mostly just that: talk. China, for instance, has said it would ensure its emissions hit a peak before 2030 and reach net-zero by 2060 in spite of the fact that it still generates more than 60% of its electricity from coal. Many other countries have made similar net-zero promises with very little if any detail of how they plan to get there.

COP26 has also seen plenty of multilateral deals and agreements announced on the sidelines of the UN talks. These dealt with some headline issues, like curbing methane emissions, deforestation and phasing out coal use, but none were reached unanimously. More than 100 countries have so far signed up to cut their collective methane emissions by 30% by 2030. Another group agreed to quit using coal in two decades. Last week, a team of independent climate researchers found that pledges to cut methane could shave 0.12°C off temperature projections for the second half of the century compared with cuts embedded in nationally determined contributions—but only if every country signed up. China, India and Russia, the three largest emitters of methane, have yet to do so. Phasing out coal by 2040 would further reduce temperature projections by 0.28°C, but again only if it were a global effort. Yet China and India, the two most coal-hungry nations, have not joined the “powering past coal alliance”.

COP26 was never meant to deliver the whole package—pledges sufficient to keep global warming to well below 2°C and national strategies to back up those promises—in one fell swoop. It was always going to be one in a series of stepping stones. Nevertheless, the slow pace of global climate ambition has left a huge gap between where the world needs to be in order to keep the hope of a 1.5°C world alive and where it is. If the gap is not rapidly reduced, which would require all large emitters around the globe to drastically accelerate decarbonisation, then all hopes will rest on wholly infeasible options to draw carbon dioxide out of the atmosphere. ■



Microbiology

Perilous plastic

Microplastics in household dust could promote antibiotic resistance

PLASTICS ARE man-made materials that are unnatural to this world, but that does not stop the natural world from interacting with them. Indeed, dozens of studies show that when plastics get into the sea many ocean-dwelling microorganisms aggressively colonise them. This might help break plastics down, but these oceanic colonies are also hotbeds of antibiotic-resistant genes. Now, it seems, something similar might be going on in the dark recesses of your home.

Lei Wang suspected as much, and along with his colleagues at Nankai University in Tianjin, China, set out to gather the necessary evidence. Their search began at an apartment building in Tianjin. The plastics Dr Wang was concerned about are the tiny bits that break away from synthetic fibres, like polyester and nylon, commonly found in clothing and other textiles. The microplastics then accumulate around the home as dust. He reasoned that if these particles were being colonised by bacteria then they too might be harbouring antibiotic-resistant genes.

The researchers chose ten homes in the apartment block, each with just one male tenant. Each apartment had hard flooring, rather than any carpets, and a similar general layout. A team used sterilised brooms to sweep the bedrooms and to collect dust samples as they went. These samples were then brought back to the lab and analysed for microplastics, bacteria and antibiotic-resistant genes.

As they report in *Environmental Science and Technology*, 21 types of microplastics

were found, the most common from polyester and nylon. Using DNA extracted from microbes, they identified 1,385 genera of bacteria along with 18 genes associated with antibiotic resistance.

The analysis also revealed that the apartments with dust that were rich in microplastics had bacterial communities that were different from those apartments with dust that did not contain as many microplastics. Crucially, the work also showed that the relative abundance of antibiotic-resistant genes was higher in the presence of microplastics than it was when these were less common.

Precisely why microbes dwelling with plastics are more likely to carry antibiotic-resistant genes is not clear. It is possible that plastics themselves are driving bacteria to develop this trait. The researchers suggest, however, that it is more likely that specific groups of bacteria are capable of eking out a living on plastics, and these bacteria also happen to be of a type that more readily develop antibiotic resistance.

To support this argument, Dr Wang points out that *Proteobacteria* is both highly antibiotic-resistant and also commonly found encrusting oceanic plastics. Members of this same phylum were the most common type found among the polyester and nylon fibres swept up in the apartments, too. This suggests that, just as plastics are changing the nature of bacterial communities out at sea, they are also changing them within homes. How much of a threat this will ultimately be to human health is not known, but it cannot be doing people much good. ■

Agriculture

Probiotic berries

Growing better blackcurrants with the help of bacteria

FEW FRUITS carry more health-promoting antioxidants than blackcurrants. Widely grown in cooler parts of Europe, they are in high demand from consumers seeking pesticide-free juices made from the berries. Farmers, though, can struggle to boost yields without relying on chemicals. That could change, not just for blackcurrants but other fruit too, with the judicious use of probiotics.

Probiotics is mostly known for its use of microorganisms, including certain bacteria, to restore or improve the gut flora in people and animals. But plants can benefit from a collaborative arrangement with bacteria too. Among other things, bacteria help plants produce antibiotics that keep ▶▶

▶ disease-causing microbes off their leaves, support them in collecting nitrogen from the environment and help them dissolve minerals found in the soil.

Knowing all this, Virgilija Gaveliene and Sigita Jurkoniene, of the Institute of Botany Nature Research Centre in Lithuania, set out to find a way to use probiotics to boost the yield of blackcurrant bushes, which are grown in that country. The researchers also knew from other work that the production of strawberries and raspberries could be increased by exposing plants to a carefully selected mix of bacteria from families like *Bacillus*, *Acinetobacter* and *Pseudomonas*. And they were aware of preliminary evidence that probiotics had the potential to enhance production of certain antioxidants, like anthocyanins and flavonoids.

Working with colleagues, they set up an experiment. Four blackcurrant fields, each one hectare in size, were exposed to different probiotic treatments. These were applied first when shoots were just starting to grow and then again as buds were beginning to flower. One field was sprayed with a mix of bacteria that the team suspected would improve growth and yield. Another field was sprayed with a mix of organic fertilisers and bacteria that the researchers expected would enhance the chemical composition of the berries and improve their nutrient content. The third field was sprayed with both mixtures while the fourth was left as a control and sprayed only with water. After the harvest, the team measured the biomass of the freshly picked berries and studied their chemistry.

As they report in *Agricultural Science and Technology*, the results were impressive. While a thousand blackcurrants collected at random from the control plot weighed just over 538 grams, the same number from the field exposed to both treatments weighed nearly 783 grams. A similar increase was also true for the field sprayed with the yield-enhancing bacteria.

The team were, however, concerned that enhanced berry growth might be coming at a cost of less antioxidant. To this end, their analysis showed that exposure to either of the probiotic mixtures on their own did significantly lower blackcurrant antioxidant activity from the control level of 73% to 65% and 60%. Only exposure to both probiotic mixtures allowed blackcurrant growth to be enhanced while maintaining a statistically identical level of antioxidant activity of 72.7%

All told, Drs Jurkoniene and Gaveliene are convinced that the right mix of bacteria can help blackcurrant farmers meet demand without using chemicals. And it could help other growers. What works for berries should, in theory, work for other fruit, like apples, pears and oranges. More experiments are needed to be sure. ■

Covid-19

Pills with promise

New antiviral drugs appear highly effective at fighting the disease

THE LATEST news in the fight against covid-19 is encouraging. Two new antiviral drugs have been deemed so effective that clinical trials ended early. Data from these trials have not yet been published. However, regulators are moving swiftly to consider general use of the drugs. They will fill a large gap in the toolkit doctors are using to fight the virus, and could well help end the global pandemic.

The new drugs are molnupiravir (Lagevrio), developed by Merck, a pharmaceutical company, working with Ridgeback Biotherapeutics, a biotech firm, and Paxlovid, which was developed by Pfizer. All three are American companies. Those most at risk from the serious effects of covid are far less likely to be hospitalised, or die, if they take a course of either of these pills in the five days after symptoms first appear.

Merck said in October that molnupiravir reduced the risk of hospitalisation or death by about half, when given to patients with one risk factor for covid, such as obesity or heart disease. Regulators in America, Europe and at the World Health Organisation are assessing the drug. Britain has approved it and will start using the treatment next month. On November 5th Pfizer said its pill reduced the risk of hospitalisation or death by 89% if taken within three days. (In fact, during its trial no patient died at all when taking Paxlovid within five days of symptoms.)

Molnupiravir is what is known as a pro-drug, which means that it is converted into

its active form when it arrives inside cells. Once there, it is incorporated into the genetic material of the virus whereby it disrupts its ability to replicate. Errors accumulate in the virus's genetic material, a process known as "error catastrophe". Trials in animals have raised concerns that the drug might pose risks to unborn children, hence the British government has advised against its use during pregnancy, or while breastfeeding. Other regulators may issue similar warnings.

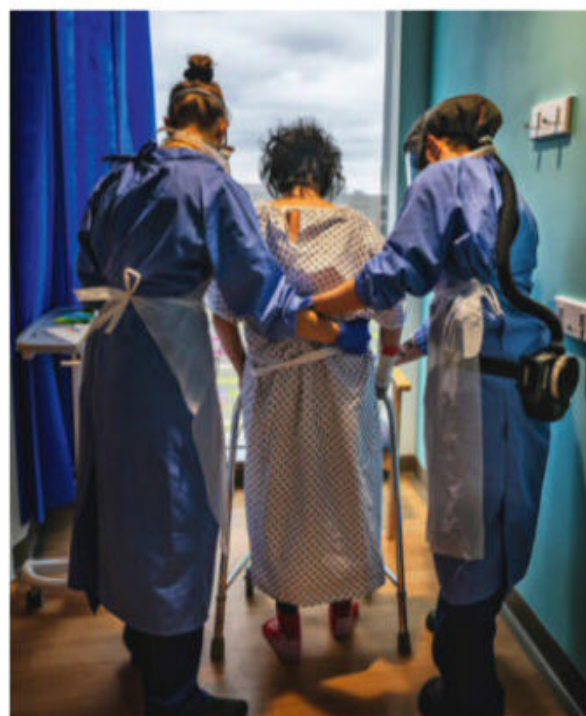
Paxlovid is in fact a combination of two drugs: an existing one called ritonavir, which is given alongside a novel protease inhibitor known as PF-07321332. The protease inhibitor was designed to bind and block the protease enzymes that sars-cov-2 uses to replicate. Ritonavir prevents the protease inhibitor from being broken down too quickly in the body.

Molnupiravir and Paxlovid are also known as "small molecule" drugs. These are molecules that are easy to make. Both firms say the price of the drugs will vary according to the wealth of the nation buying them. That will likely mean that rich countries will pay \$700 for a five-day course of pills, while poorer ones might pay around \$20, and maybe less as the cost of manufacturing comes down.

Although both firms have said they intend to make these drugs widely accessible around the world, Merck already has an edge. It has signed a number of licences which allow other manufacturers to produce the drug, and it has reserved 3m doses for low- and middle-income countries. This is to ensure that rich countries do not monopolise the supply of the new medicines as they have done for vaccines. Merck expects to make 10m doses this year, and 20m next year. Generic manufacturers will make many more. Pfizer, which has not yet received any regulatory authorisations, expects 180,000 packs of pills to be produced by the end of this year, and 21m in the first half of 2022.

These drugs herald a second big turning point in the pandemic (the first being vaccines). Rising case numbers across Europe suggest there will be a strong demand for such medicines to keep people out of hospital. While patients wait for them to arrive, it is also possible that doctors might consider the use of fluvoxamine, an antidepressant medicine which also appears to lower the risks from covid.

As the new treatments roll out for use, there will be concern among some scientists and doctors about the virus developing resistance, particularly if patients do not complete their course. Keeping one step ahead of sars-cov-2 will require planning for such an eventuality. That means deducing which antiviral drugs can be given in combinations to create a therapy that the virus will struggle to defeat. ■



A pill is coming to help



Dealing with dirty money

Hear no lies

Kleptocracy will flourish as long as Western countries welcome the loot—and Western professionals help to move and hide it

NEXT MONTH Joe Biden will host a virtual “Summit for Democracy”. The aim of the pow-wow is to galvanise like-minded leaders to counter the global growth of authoritarianism. One of its themes will be combating kleptocracy: the plunder and laundering of national wealth, typically using international banks as conduits for the ill-gotten gains and Western property markets as a destination. Campaigners hope the meeting will renew momentum in the fight against such looting—a fight Donald Trump did not exactly lead from the front. Leaked documents that highlight the use of offshore financial networks to move money in secret, from the Panama Papers in 2016 to the Pandora Papers this October, underline the urgency of the task.

Measuring the private wealth parked in “secrecy jurisdictions” is, by definition, impossible. Estimates range from a few trillion dollars to \$32trn. The proportion that is dodgy is also hard to estimate. At one extreme is perfectly legitimate money—personal funds seeking privacy, or cross-border joint-ventures using offshore structures for the purposes of neutrality. At

American Kleptocracy. By Casey Michel. St Martin’s Press; 368 pages; \$29.99. Scribe; £18.99

The Enablers. By Frank Vogl. Rowman & Littlefield; 216 pages; \$32 and £25

the other is black cash, stashed in shell companies or trusts to mask corruption or launder drug money. In between is a large grey area that includes legal but ethically dubious tax avoidance.

And where exactly is “offshore”? The stereotypical haven is a palm-fringed island with biddable politicians. Yet bigger states that harrumph at such places have questions to answer, too. The most comprehensive study of shell companies found that providers in members of the OECD, a club of mostly well-off countries, were more likely to offer true anonymity than those in classic offshore financial centres. British shell companies and partnerships feature prominently in giant “laundromat” schemes emanating from Russia and Azerbaijan. Several EU countries are conduits for tax trickery. And

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much of the world’s dirty money ends up invested in luxury pads in places like London, Paris and Miami.

Casey Michel’s title leaves no doubt where the journalist and fellow of the Hudson Institute, an American think-tank, believes much of the blame lies. For all its claims to moral leadership in finance, he argues, America has become “the world’s greatest offshore haven” and the largest provider of the “financial-secrecy services” that facilitate money-laundering. This has let it pull in unrivalled amounts of tainted cash from “the world’s worst”, from corrupt regimes to extremist networks.

America was one of the first countries to criminalise money-laundering and since the 1980s has been the most aggressive in trying to curb it. It drove efforts to create the Financial Action Task Force (FATF), a global anti-money-laundering standards-setter that was founded in 1989. Since the 9/11 attacks of 2001 it has taken the lead in disrupting terrorist-finance networks. It was an American law that instigated the global exchange of tax data to curb cross-border tax evasion.

Yet at home America tolerated many of the bad practices for which it hammered other countries. As American states competed against each other for corporate registrations, shell companies proliferated in Delaware, Wyoming and Nevada—the last being a crucial bridgehead for Mossack Fonseca, the law firm at the centre of the Panama Papers (and forced to close by those revelations). South Dakota devel- ▶▶

► oped a line in super-secretive trusts.

Mr Michel builds his book around two characters, both prolific users of America's financial-secrecy infrastructure, deftly weaving together their stories and his analysis. The first is Teodoro "Teodorin" Nguema Obiang Mangue, the free-spending son of the president of Equatorial Guinea, a small, klepto-blighted state in central Africa. The other is Ihor Kolomoisky, a Ukrainian oligarch accused by America of stealing billions of dollars from a bank he owned and rinsing them in American property (accusations he denies).

The gloves are on

Mr Obiang's story is the more lurid, and its outline is more widely known. He made headlines in 2011 when prosecutors moved to seize various assets he had acquired in America with allegedly corrupt money, including a mega-mansion, a fleet of supercars so extensive that he would try to match his ride with his shoes, and a trove of Michael Jackson memorabilia (including the star's famous white glove). He spent much of his money in and around Malibu, a swanky beach city in California.

Mr Kolomoisky did his alleged laundering in less salubrious places. His representatives swept into Cleveland, Ohio, wow-ing local officials with talk of regeneration. But much of the city-centre property, once purchased, was left to fall into disrepair. Why let your assets rot? "Think of American real estate as a kleptocratic rainy-day fund," explains Mr Michel. If money is stolen or illicitly earned, return on investment is secondary. The land beneath a crumbling building retains its value. As Cleveland discovered, this sort of calculus can devastate communities.

The co-founder of Transparency International, an anti-corruption NGO, Frank Vogl distributes blame more broadly in his book. The "enablers" of his title are the banks that move launderers' money; the lawyers who set up their brass-plate companies or, alongside public-relations firms, fend off prosecutors and the media on the kleptocrats' behalf; and the estate agents and yacht-dealers who help them procure trophy assets. Much of all this is legal, but, says Mr Vogl, it does not "serve the public interests of citizens in democratic nations, and indeed well beyond".

Few would argue with that. But Mr Vogl's book is a mess. Turgid lists of examples seem put together by an overexcited intern, not one of the anti-kleptocracy movement's wisest coves. It repeatedly veers off-topic, such as in an account of a banking scandal in Italy caused by a derivatives blow-up, not dirty money. It gets some things badly wrong: it is a mystery why Mr Vogl singles out the UAE as one of the countries prioritising the fight against illicit finance, when in reality it remains a

foot-dragger. He drops the names of a lot of people in finance, but doesn't reveal anything very interesting about them. Did you know that the daughter of John Bond, HSBC's former boss, set mountain-climbing records?

Mr Michel's book is more fluid, coherent and entertaining. It also has more to say on what is supposed to be Mr Vogl's big theme. American regulators have long worried about the enablers, but thanks to effective lobbying they have managed to crawl through loophole after loophole. Estate agents, luxury-goods vendors and others, for instance, won "temporary" exemptions from the Patriot Act (a post-9/11 law with strong anti-money-laundering provisions), which then became permanent. American lawyers are pretty much free to work with whomever they want—in many ways "the perfect friend to have if you're a kleptocrat", says Mr Michel.

His book has flaws, too. He sometimes gets carried away: the racy details of the Obiang story border on titillation. He devotes only half a dozen pages to Delaware, for so long America's leading shell-company jurisdiction. He barely scratches the surface of the many ways in which American double standards shape the geopolitics of dirty money, at the FATF and beyond.

Neither book gets to the heart of what is needed to clean up global finance. The nub of the problem is that though money-laundering networks are increasingly sophisticated and transnational, regulation and law enforcement remain balkanised. Mr Biden's priority at that summit should be to push for more co-operation. ■

Witchcraft

Toil and trouble

The Ruin of All Witches. By Malcolm Gaskill. Allen Lane; 336 pages; £20

BY THE SPRING of 1651 the residents of Springfield, Massachusetts, were convinced Hugh Parsons was a witch. He and his wife, Mary, were a troublesome pair. Hugh, a brickmaker, was given to sleeping in the fields and quarrelling with neighbours. Mary was a highly strung gossip. Two years earlier she had been convicted of slandering Mercy Marshfield, a widow, by accusing her of cavorting with the devil.

More opaque happenings clung to the couple, too. A young man was thrown from his horse after arguing with Hugh; flickering lights were seen at night in the marshland south of the town where he was



The mum of all fears

known to lurk. Worse, when Hugh was informed of the death of his infant son, he kept calmly puffing his pipe. Oppressed by the pair's own vicious arguments, Mary whispered that her husband had murdered their child with magic so that she would be free to work and relieve his debts.

Malcolm Gaskill, a historian of witchcraft, traces the fortunes of this unhappy couple. Drawing on an extraordinary collection of testimonies against them, he reconstructs everyday life in their "precarious frontier town" with novelistic texture. The result is a portrait of a community during one of the first Puritan witch panics in the New World—and a timeless study of how paranoia, superstition and social unrest fuel fantasies.

The arduousness of Puritan life is arrestingly drawn. The winter of 1649 was so harsh that beer froze solid in barrels and carriages could be driven across Boston harbour. Torrid summers brought disease and Indian raids; sodden harvests presaged starvation. One in six pilgrims braved a second Atlantic crossing to return home.

God demanded spiritual as well as physical stamina from his new Israelites. The Puritan self was its own battleground, caught between salvation and sin, flesh and spirit, and forever under siege. Like their rude civilisation hacked from the wilderness, the elect had to be eternally vigilant against outside threats—and internal division. Fear of witchcraft, writes Mr Gaskill, "settled along boundaries, including the line separating body and soul".

This fear did not arrive from nowhere. Instead, Mr Gaskill sees it as "a serious expression of disorder embedded in politics, religion and law". The previous decade had involved civil war in England and the execution of its king; conflict, disease and famine rattled the transatlantic world. Other forms of heresy and blasphemy were ►

► flourishing in the cracks of the shattered civil realm. “The pillars of the land seem to tremble,” a writer of the time lamented.

Mr Gaskill’s immersive approach brings the fate of his subjects movingly to life. Neither was convicted of witchcraft. Not that it did them much good: in different ways their lives were destroyed by the accusations of “fearful men and women”. By comparison, his final chapter feels breathless, dashing from the trial to the post-Enlightenment sense of witchcraft as a figment of mental illness and superstition.

More successful is an uncanny epilogue in which the author revisits Springfield, dowsing the ghosts of its past in its run-down present. He finds that fear of witchcraft never truly fades. “I am counted but as a dreamer,” said another of Springfield’s supposed witches. “But when this dream is hanged, then remember what I said to you: this town will not be free yet.” ■

The cold war

Method in the MADness

The War of Nerves. By Martin Sixsmith.
Wellcome Collection; 592 pages; £25.
To be published in America in July by Pegasus Books; \$35

ON APRIL 25TH 1945 American and Soviet troops, who had swept through Nazi Germany from west and east, met at the Elbe river. A photograph that shows an embrace between two lieutenants was staged, but the sense of comradeship was sincere. “A new atmosphere of friendship and co-operation”, says Martin Sixsmith, “seemed the inevitable outcome of years of toil and shared effort.” It did not last.

Josef Stalin’s cynicism and paranoia, and the tougher line taken by Franklin Roosevelt’s successor, Harry Truman, ensured that the (relatively) good relations at the Yalta conference of February 1945 had soured five months later at Potsdam. There, mutual suspicion and facts on the ground paved the way for the carving up of Europe. The immediate flashpoint was Berlin, which both sides saw as a proving ground for their ideologies and a cockpit for testing the other’s resolve with psychological warfare and dirty tricks. The Soviets could deploy superior conventional forces, but it would be four years before they would have an atom bomb to match America’s. The “war of nerves” became the *modus operandi* of the cold war.

The term “cold war” was already in use—to describe a new kind of conflict,

involving every instrument short of direct military confrontation—when, in April 1950, Truman received a document that became known as NSC-68. Eight months after the Soviet nuclear detonation, it called for a big boost in military spending and the development of the hydrogen bomb. It also framed the contest with the Soviets in Manichean terms: a global trial of strength between slavery and freedom that could be won only by appealing to hearts and minds. It became the template for America’s strategy for the next 40 years.

There have been many histories of the cold war, but the virtue and originality of Mr Sixsmith’s is to see almost every aspect of the stand-off in psychological terms. Deranged Stalin, volatile, bombastic Nikita Khrushchev, plodding, insecure Leonid Brezhnev, Mikhail Gorbachev’s desperate optimism—he sketches the leaders’ states of mind, and the means used to stimulate fear of “the other”. He chronicles the brinkmanship over Berlin and Cuba; the repression of the Hungarian and Czech uprisings; the propaganda and spying; the absurdities of the nuclear arms race and the effect on populations of living with the permanent threat of mutual extinction.

At every point the two sides were intent on demonstrating the superiority of their systems. The Soviet launch of the Sputnik satellite sent shockwaves through Washington; an agreement in 1959 to put on exhibitions in each other’s countries, showcasing economic and social achievements, backfired on Khrushchev when Muscovites were stunned by a gadget-laden American kitchen. Art, film and music were enlisted and exploited. The author, a Russian scholar and journalist who, as the BBC’s Moscow correspondent, covered Mr Gorbachev’s presidency and Boris Yeltsin’s, uses the tools of psychoanalysis to illuminate events and motivations.

He laments the swift dashing of hopes that liberal democracy would take root in post-Soviet Russia. In large part he blames the West (and the elder George Bush in particular) for triumphalism. Trampling over Russian sensibilities and pride, he thinks, helped ensure that the chaotic Yeltsin era gave way to the revanchism of Vladimir Putin and his gang of kleptocratic *siloviki*. In Mr Sixsmith’s view, such psychological factors have once again contributed to a tragic outcome.

Could the aftermath of the “war of nerves” have been happier? Mr Sixsmith also says that contrasting histories and national psyches would anyway have inclined America and Russia to divergent paths—one animated by the ideas of sturdy individualism and the rule of law, the other defined by autocracy and the collective efforts it demands. For all the differences in the two rivalries, something similar may now be true of America and China. ■

Access to art

The mixing pot

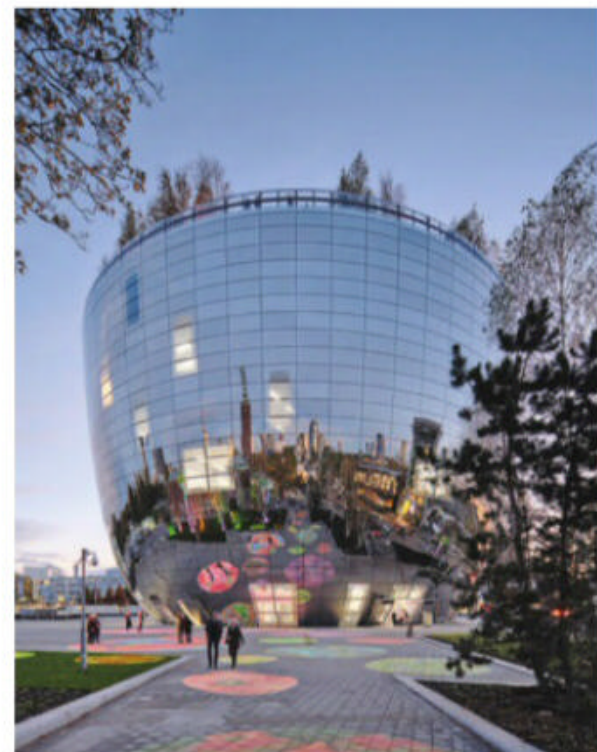
ROTTERDAM

A museum opens up its collection

THE NEW home for the collection of the Museum Boijmans van Beuningen, a gorgeous 40-metre-tall mirrored flower-pot that is set to become Rotterdam’s signature building, had its origins in an extremely Dutch emergency. The basement that held the museum’s undisplayed art—151,000 objects, among the Netherlands’ most important collections—was six metres below sea level, and kept flooding. The city had constructed a garage under an adjacent park which interfered with drainage. Sjarel Ex, the museum’s director, could have built a storage facility in a suburb, but wanted a way to keep the trove on site, and to open it to the public.

Mr Ex asked for ideas from Winy Maas of MVRDV, a leading Dutch architecture firm. The first concept was a gigantic table perched above the park, from which artworks could be lowered for spectators. This proved impractical, but during a brainstorming session Mr Maas plopped a tea cup onto a model of the park, then noticed a mirrored kettle nearby. The cup’s curve gave it a narrow base, which would leave more room for pedestrians; the reflective surface of the kettle melded with the surroundings.

More than a decade after that epiphany, the building known simply as “Depot” opened to visitors on November 6th. In Dutch “de pot” means “the pot” (as in the flowery kind), a lexical pun reinforced by the rooftop garden covered in birch trees. ►►



The cup runs over

► The mirrored exterior creates a fish-eye effect that reflects the city's skyline, curving down to show the park and viewers themselves. Mr Maas compares it to the drawings of Giovanni Piranesi. Rotterdam was bombed flat during the second world war, and has since prided itself on its geometric modernity. Depot fits right in, but also provides the city with a focal point.

Yet it is the inside that is most important. The six-floor-deep atrium is crisscrossed by suspended staircases reminiscent of M.C. Escher prints. Glass etalages showcase eye-catching pieces: fluorescent

dressers, inlaid furniture, abstract paintings by R.B. Kitaj. Along the sides are the storage halls. Canvases hang on rolling metal lattices in rows that can be pulled out for inspection. Sculptures and furniture are stacked on rolling motorised shelves. Organisation is alphabetical, chronological or by size and material. There are no labels; even with QR codes and the museum's smartphone app, identification is rarely forthcoming.

It is all a bit dazzling. A lattice-wall slides out: there is Breugel's "Tower of Babel". Another emerges with what looks like

a Jan Toorop, but who knows? On other floors photographers and restorers work in open labs. Visitors are led through by guides, not left alone to sample at random. But Depot still has an immediacy different from a curated museum.

Other institutions are also planning to open their collections: the Victoria and Albert Museum's new facility is scheduled to open in London in 2024. Meanwhile, for a few years Depot will be the only place to see the Boijmans van Beuningen's treasures, as the main museum is closed. They have to fix the basement. ■

Johnson Double trouble

Green-lit or greenlighted? Gaslighted or gaslit? Here's how to tell

A RECENT ARTICLE in *The Economist* on Germany's coalition talks was given the headline "Green-lit". Elsewhere, though, we have reported that ventures were "greenlighted". Another new verb is subject to the same confusion: to "gaslight"—to try to make someone think they are losing their mind and should not believe their own eyes—has two past-tense forms. A search of the web turns up hundreds of thousands of results for both "gaslighted" and "gaslit".

One reason verbs have two past-tense forms (or two past participles) is dialectal variation: in Britain words are "spelt", in America they are "spelled". Another is ordinary language change. Words have a tendency to become regular over time. "Help" once had the past tense "holp" and the past participle "holpen", as in the prologue of *The Canterbury Tales*: "that hem hath holpen, whan that they were seeke" ("that helped them when they were sick"). Now "help" is regular, though the Oxford English Dictionary says that "holpen" is "still employed by poets and archaists".

In rarer cases, verbs become irregular over time. The most famous may be "snuck", which was unknown before the 20th century. The past tense was "sneaked". But some clearly felt that "sneaked" sounded wrong and adopted "snuck". That was long disparaged until it suddenly began gaining respectability—data from Google Books show it rocketing in frequency in the 1980s and overtaking "sneaked" in about 2009.

Sticklers may stick with "sneaked", but they are probably stuck with hearing "snuck". "Pled", too, has crept into the language as an alternative to "pleaded". ("Pled" is probably modelled on "led", the past tense of "lead".) Here traditionalists have managed to keep "pleaded" as the



most common form in writing, but "pled" is in circulation as well.

Rarely, a verb will have two past forms with different meanings. To "hang" has the past tense "hung" when it refers to a painting, and "hanged" when it involves an execution. This rule is subtle enough that many people do not know it, meaning both pictures and the condemned (though hopefully only in historical writing) may both one day be "hung".

For one particularly common verb, American English has two past participles with distinct meanings. "I've got a car" means I own one; "I've gotten a car" means I have acquired one. ("Gotten" is the older form.) In yet another variation on the theme, two versions of a past participle can survive with different grammatical uses. "Thou hast cleft my heart in twain," Gertrude tells Hamlet. Today she would say "You have *cleaved* my heart in two." In its past-participle form, "cleft" is now primarily an adjective, as in "cleft palate".

None of these, however, is a precedent for "gaslighting" versus "gaslit". This is an unusual case in which speakers (usually

unwittingly) have in mind two different ideas of the origin of a word. The "gaslit" crowd work on the premise that "to gaslight" comes from the verb "to light". When you make a compound verb out of an irregular base verb, the compound inherits the irregularity: "override" becomes "overrode" just as "ride" becomes "rode". Hence the instinct for "gaslight" to become "gaslit" in the way that "light" becomes "lit". True compounds of the verb "to light" work this way: you can talk about a "floodlit" stage, because it is lit with floodlights.

But "gaslight" does not come from the verb "to light", meaning "to illuminate". It comes from the name of a play, *Gas Light*, which had its premiere in 1938, and its two film adaptations (both called *Gaslight*). According to an unwritten rule, when a new verb is coined from a noun, it is always regular. The name Google becomes the verb "to google", which conjugates as "googled", not "goggled" or something else exotic. The "gaslighted" lot have the (correct) intuition that "gaslight" is a verb of this type, not a compound of "to light".

The same applies in the case of "to greenlight". It does not mean to bathe in green light. It is a verb formed from the noun phrase "the green light", a metaphorical approval given to something. Under the logic described above, "greenlit" should never have been greenlighted.

In language, *norma loquendi*—what is actually said or written—is the highest authority. Here, though, the greenlit-gaslit people are trying to follow the logic. In fact they are committing a kind of snuck-pled error, inventing an irregular form. Like "snuck" and "pled" these alternatives may live on, but they violate the rules rather than obeying them. And that is not Johnson gaslighting you.

Economic data

	Gross domestic product				Consumer prices			Unemployment rate		Current-account balance		Budget balance		Interest rates		Currency units	
	% change on year ago				% change on year ago			rate	balance	budget balance	10-yr gov't bonds		change on year ago, bp	per \$			
	latest	quarter*	2021†		latest	2021†	%				% of GDP, 2021†	% of GDP, 2021†		latest,%		Nov 10th	% change on year ago
United States	4.9	Q3	2.0	5.5	6.2	Oct	4.4	4.6	Oct	-3.4		-12.4		1.6		58.0	-
China	4.9	Q3	0.8	7.9	1.5	Oct	0.8	4.9	Sep‡§	2.8		-4.9		2.7	\$\$	-36.0	6.39 3.3
Japan	7.6	Q2	1.9	2.3	0.2	Sep	-0.2	2.8	Sep	3.0		-8.8		nil		-8.0	114 -7.6
Britain	23.6	Q2	23.9	6.4	3.1	Sep	2.8	4.5	Jul††	-3.9		-10.9		0.8		50.0	0.74 1.4
Canada	12.7	Q2	-1.1	5.4	4.4	Sep	3.1	6.7	Oct	-2.3		-9.5		1.7		93.0	1.24 4.8
Euro area	3.7	Q3	9.1	4.9	4.1	Oct	2.2	7.4	Sep	3.1		-7.2		-0.2		25.0	0.87 -2.3
Austria	12.8	Q2	24.6	4.1	3.6	Oct	2.7	5.2	Sep	2.2		-7.4		nil		33.0	0.87 -2.3
Belgium	4.7	Q3	7.4	5.0	4.2	Oct	2.3	6.3	Sep	1.1		-7.1		nil		31.0	0.87 -2.3
France	3.3	Q3	12.6	6.1	2.6	Oct	1.9	7.7	Sep	-1.5		-8.5		0.1		44.0	0.87 -2.3
Germany	2.5	Q3	7.3	3.1	4.5	Oct	2.9	3.4	Sep	6.9		-5.7		-0.2		25.0	0.87 -2.3
Greece	16.4	Q2	14.5	6.5	3.4	Oct	0.1	13.3	Sep	-4.4		-9.6		1.1		20.0	0.87 -2.3
Italy	3.8	Q3	10.8	6.0	2.9	Oct	1.6	9.2	Sep	3.8		-9.6		0.9		21.0	0.87 -2.3
Netherlands	10.4	Q2	15.9	3.7	3.4	Oct	2.3	3.1	Sep	8.5		-5.2		-0.1		49.0	0.87 -2.3
Spain	2.7	Q3	8.3	5.5	5.5	Oct	2.5	14.6	Sep	0.9		-8.9		0.4		32.0	0.87 -2.3
Czech Republic	8.8	Q2	5.7	3.4	5.8	Oct	3.6	2.7	Sep‡	3.2		-8.3		2.8		161	21.9 2.2
Denmark	10.0	Q2	11.7	3.2	3.0	Oct	1.7	3.3	Sep	7.5		-0.3		nil		40.0	6.46 -2.5
Norway	6.1	Q2	4.4	3.0	3.5	Oct	3.0	4.0	Aug‡‡	6.9		-3.0		1.4		76.0	8.60 5.0
Poland	10.8	Q2	6.6	5.2	6.8	Oct	4.7	5.5	Oct§	2.1		-6.7		2.9		165	4.01 -5.2
Russia	10.5	Q2	na	4.2	8.1	Oct	6.6	4.3	Sep§	5.2		-0.7		8.0		186	71.0 7.7
Sweden	3.7	Q3	7.4	4.0	2.5	Sep	2.2	8.2	Sep§	5.2		-1.9		0.2		20.0	8.67 -0.7
Switzerland	7.7	Q2	7.4	3.5	1.2	Oct	0.5	2.7	Oct	5.3		-3.8		-0.2		24.0	0.92 -1.1
Turkey	21.7	Q2	na	8.0	19.9	Oct	17.1	11.1	Sep§	-3.0		-3.2		18.5		556	9.82 -16.9
Australia	9.6	Q2	2.7	4.2	3.0	Q3	2.4	5.2	Oct	1.8		-5.9		1.7		81.0	1.36 0.7
Hong Kong	5.4	Q3	0.4	6.2	1.4	Sep	1.6	4.5	Sep‡‡	3.0		-4.5		1.4		83.0	7.79 -0.5
India	20.1	Q2	-41.2	8.2	4.3	Sep	5.0	7.8	Oct	-0.9		-7.0		6.3		42.0	74.4 -0.2
Indonesia	3.5	Q3	na	3.0	1.7	Oct	1.7	6.5	Q3§	-0.2		-6.0		6.1		-4.0	14,252 -1.4
Malaysia	16.1	Q2	na	3.8	2.2	Sep	2.4	4.5	Sep§	2.6		-6.0		3.5		86.0	4.15 -0.7
Pakistan	4.7	2021**	na	3.8	9.2	Oct	9.2	6.9	2019	-4.4		-6.9		10.6	‡‡‡	79.0	173 -8.2
Philippines	7.1	Q3	16.1	4.2	4.6	Oct	4.5	6.9	Q3§	-1.4		-7.5		5.0		200	50.1 -3.6
Singapore	6.5	Q3	3.4	6.1	2.5	Sep	1.9	2.6	Q3	18.1		-4.2		1.7		86.0	1.35 nil
South Korea	4.0	Q3	1.2	4.1	3.2	Oct	2.2	2.8	Oct§	4.6		-4.4		2.3		69.0	1,181 -5.6
Taiwan	3.8	Q3	2.3	5.7	2.6	Oct	2.0	3.9	Sep	15.2		-1.2		0.6		25.0	27.8 2.7
Thailand	7.5	Q2	1.5	1.4	2.4	Oct	1.0	1.5	Dec§	-1.4		-7.8		1.7		49.0	32.8 -7.1
Argentina	17.9	Q2	-5.5	8.7	52.5	Sep	48.3	9.6	Q2§	1.7		-4.6		na		na	100 -20.7
Brazil	12.4	Q2	-0.2	5.0	10.7	Oct	8.0	13.2	Aug§‡‡	0.5		-5.4		11.5		429	5.48 -2.4
Chile	18.1	Q2	4.2	11.0	6.0	Oct	4.3	8.4	Sep§‡‡	-1.8		-7.1		6.0		344	792 -4.0
Colombia	17.0	Q2	-9.2	9.8	4.6	Oct	3.4	12.1	Sep§	-4.1		-8.5		7.7		269	3,878 -5.8
Mexico	4.6	Q3	-0.8	6.4	6.2	Oct	5.3	3.9	Sep	1.8		-3.3		7.3		152	20.5 -0.2
Peru	41.9	Q2	3.5	12.6	5.8	Oct	4.2	10.1	Sep§	-3.4		-4.4		5.7		180	4.02 -9.7
Egypt	7.7	Q2	na	3.3	6.3	Oct	5.4	7.3	Q2§	-4.4		-8.0		na		na	15.7 -0.4
Israel	17.5	Q2	16.6	6.1	2.5	Sep	1.7	5.2	Sep	4.3		-6.1		1.2		36.0	3.11 8.7
Saudi Arabia	-4.1	2020	na	2.2	0.6	Sep	3.1	6.6	Q2	4.6		-2.0		na		na	3.75 nil
South Africa	19.3	Q2	4.7	4.9	5.1	Sep	4.4	34.4	Q2§	1.8		-8.5		9.4		56.0	15.4 1.8

Source: Haver Analytics. *% change on previous quarter, annual rate. †The Economist Intelligence Unit estimate/forecast. §Not seasonally adjusted. ‡New series. **Year ending June. ††Latest 3 months. ‡‡3-month moving average. §§5-year yield. †††Dollar-denominated bonds.

Markets

In local currency	% change on:		
	Index Nov 10th	one week	Dec 31st 2020
United States S&P 500	4,646.7	-0.3	23.7
United States NAScomp	15,622.7	-1.2	21.2
China Shanghai Comp	3,492.5	-0.2	0.6
China Shenzhen Comp	2,430.1	1.5	4.3
Japan Nikkei 225	29,106.8	-1.4	6.1
Japan Topix	2,008.0	-1.2	11.3
Britain FTSE 100	7,340.2	1.3	13.6
Canada S&P TSX	21,461.9	0.9	23.1
Euro area EURO STOXX 50	4,348.8	0.9	22.4
France CAC 40	7,045.2	1.4	26.9
Germany DAX*	16,067.8	0.7	17.1
Italy FTSE/MIB	27,561.0	0.7	24.0
Netherlands AEX	814.6	-0.2	30.4
Spain IBEX 35	9,141.8	1.2	13.2
Poland WIG	72,794.9	-0.2	27.7
Russia RTS, \$ terms	1,853.6	1.5	33.6
Switzerland SMI	12,401.4	0.1	15.9
Turkey BIST	1,624.1	5.0	10.0
Australia All Ord.	7,737.4	0.3	12.9
Hong Kong Hang Seng	24,996.1	-0.1	-8.2
India BSE	60,352.8	1.0	26.4
Indonesia IDX	6,683.1	2.0	11.8
Malaysia KLSE	1,520.7	-0.7	-6.5

	% change on:		
	index Nov 10th	one week	Dec 31st 2020
Pakistan KSE	46,629.9	-0.9	6.6
Singapore STI	3,231.3	0.4	13.6
South Korea KOSPI	2,930.2	-1.5	2.0
Taiwan TWI	17,559.7	2.6	19.2
Thailand SET	1,630.5	1.2	12.5
Argentina MERV	95,130.6	3.3	85.7
Brazil BVSP	105,967.5	0.3	-11.0
Mexico IPC	51,704.4	-0.3	17.3
Egypt EGX 30	11,480.5	-1.8	5.9
Israel TA-125	1,966.2	nil	25.4
Saudi Arabia Tadawul	11,857.5	1.5	36.5
South Africa JSE AS	68,279.4	-0.4	14.9
World, dev'd MSCI	3,201.6	-0.3	19.0
Emerging markets MSCI	1,274.4	0.9	-1.3

US corporate bonds, spread over Treasuries

Basis points	Dec 31st 2020	
	latest	
Investment grade	111	136
High-yield	330	429

Sources: Refinitiv Datastream; Standard & Poor's Global Fixed Income Research. *Total return index.

Commodities

The Economist commodity-price index				
2015=100	Nov 2nd	Nov 9th*	% change on	
			month	year
Dollar Index				
All Items	149.4	145.9	-7.7	10.9
Food	133.1	131.0	2.6	20.4
Industrials				
All	164.6	159.8	-14.2	4.6
Non-food agriculturals	146.8	144.0	-3.8	34.1
Metals	169.9	164.6	-16.6	-1.1
Sterling Index				
All items	167.5	164.4	-7.3	8.4
Euro Index				
All items	143.1	139.7	-7.9	13.1
Gold				
\$ per oz	1,789.1	1,824.0	3.4	-3.2
Brent				
\$ per barrel	84.6	84.9	1.6	94.2

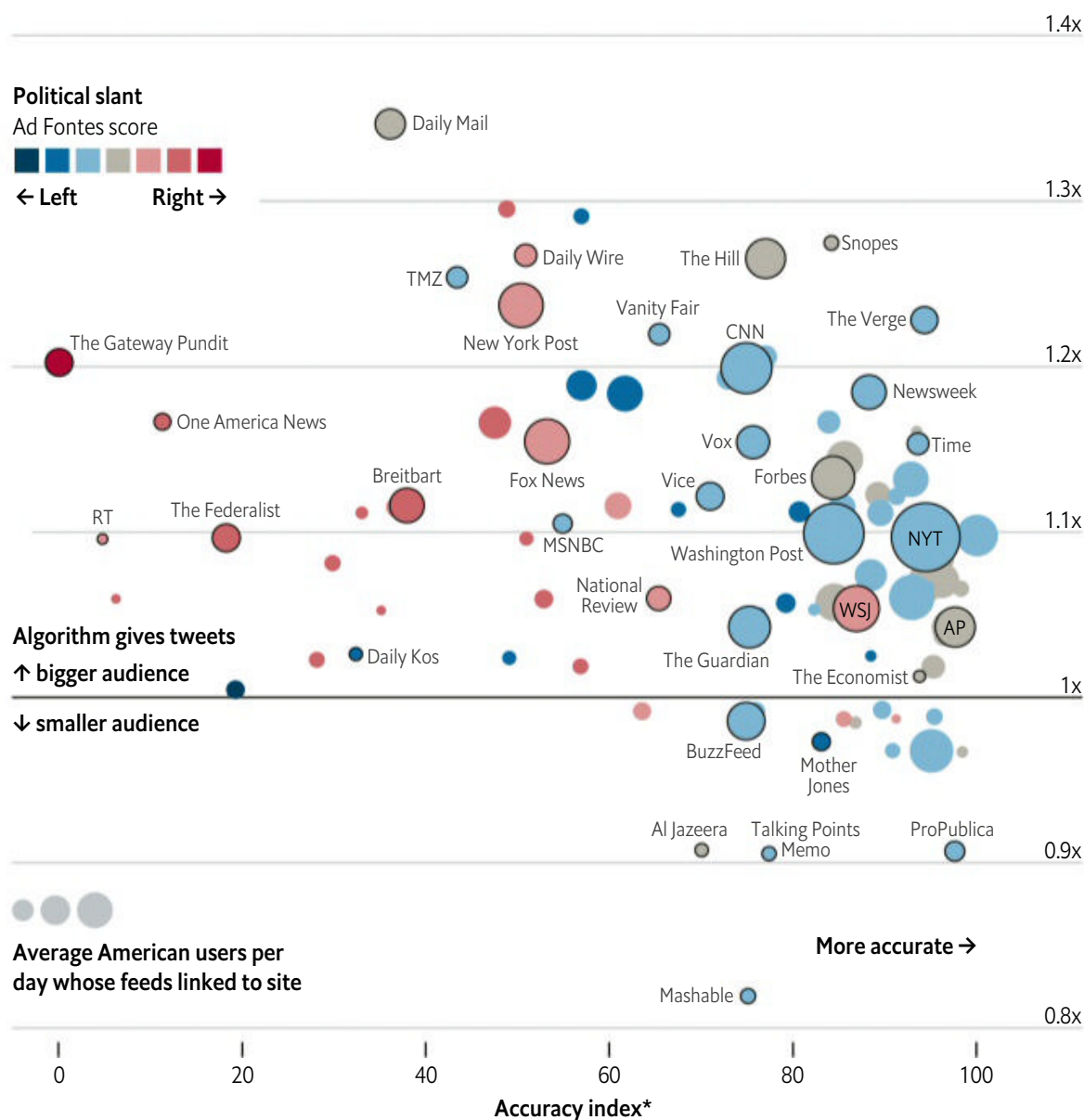
Sources: Bloomberg; CME Group; Cotlook; Refinitiv Datastream; Fastmarkets; FT; ICCO; ICO; ISO; Live Rice Index; LME; NZ Wool Services; Thompson Lloyd & Ewart; Urner Barry; WSJ. *Provisional.

For more countries and additional data, visit [Economist.com/indicators](https://www.economist.com/indicators)

→ Twitter gives its biggest boosts to right-wing legislators, and to less-reliable news sources regardless of ideology

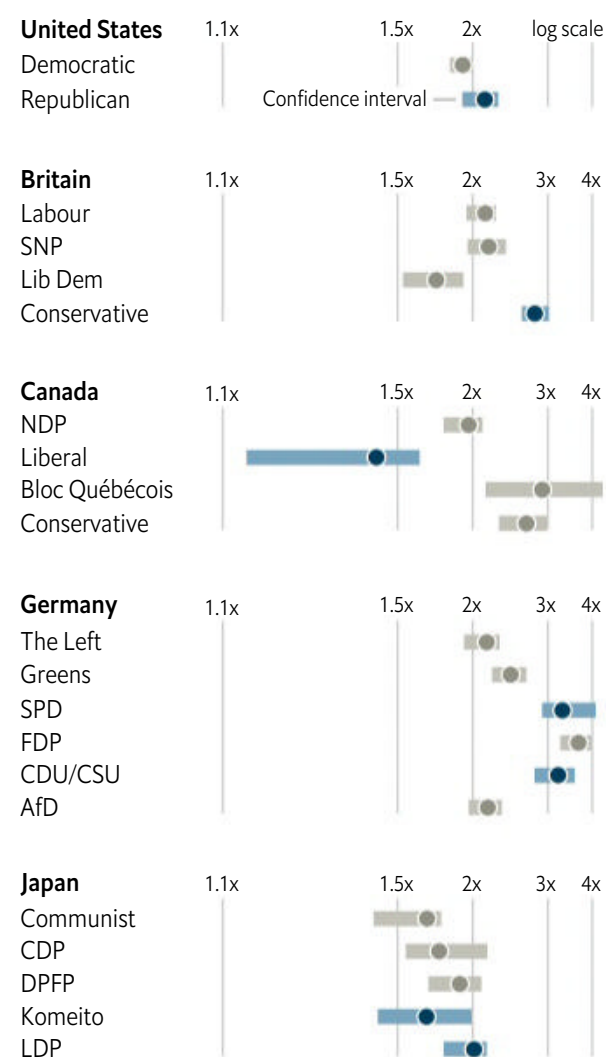
Audience reached on algorithmic timeline compared with chronological timeline, Apr to Aug 2020

Tweets linking to news sites



Tweets from legislators

Grouped by party and ordered from left- to right-wing



*Combination of Ad Fontes Media, Media Bias/Fact Check and NewsGuard scores (first principal component)
Sources: "Algorithmic Amplification of Politics on Twitter", by Ferenc Huszár et al.; Ad Fontes Media; Media Bias/Fact Check; NewsGuard

Coming clean

According to Twitter, Twitter's algorithm favours conservatives

AMONG THE most hotly debated questions on social media is how algorithmic bias affects social media. In America conservatives claim that Facebook and Twitter bury or outright censor their views. The left retorts that right-wing conspiracy theories like QAnon flourish on these sites.

An unlikely arbiter recently emerged in this debate: Twitter itself. In October it released a paper showing that its algorithm, which picks which tweets users see in which order, favoured right-leaning American news sites. In six of the seven countries studied, the algorithm also gave a disproportionate boost to lawmakers from conservative political parties. Twitter shared its data with *The Economist* this month, letting us test the authors' claims.

The study relied on a large experiment.

Until 2016 users saw tweets only from accounts they followed, shown in reverse chronological order. After launching its algorithm, Twitter kept 1% of users in the old system. This let it measure how often its algorithm served up certain tweets, compared with the "reverse-chron" method.

In April-August 2020 the authors used this approach on 3,634 accounts belonging to legislators from 32 political parties. Although they did not detect political bias in the treatment of individual lawmakers, they did find a slant when grouping accounts by party. In all countries but Germany, the algorithm's "amplification ratio" was lower for members of leftist parties than for members of right-wing ones.

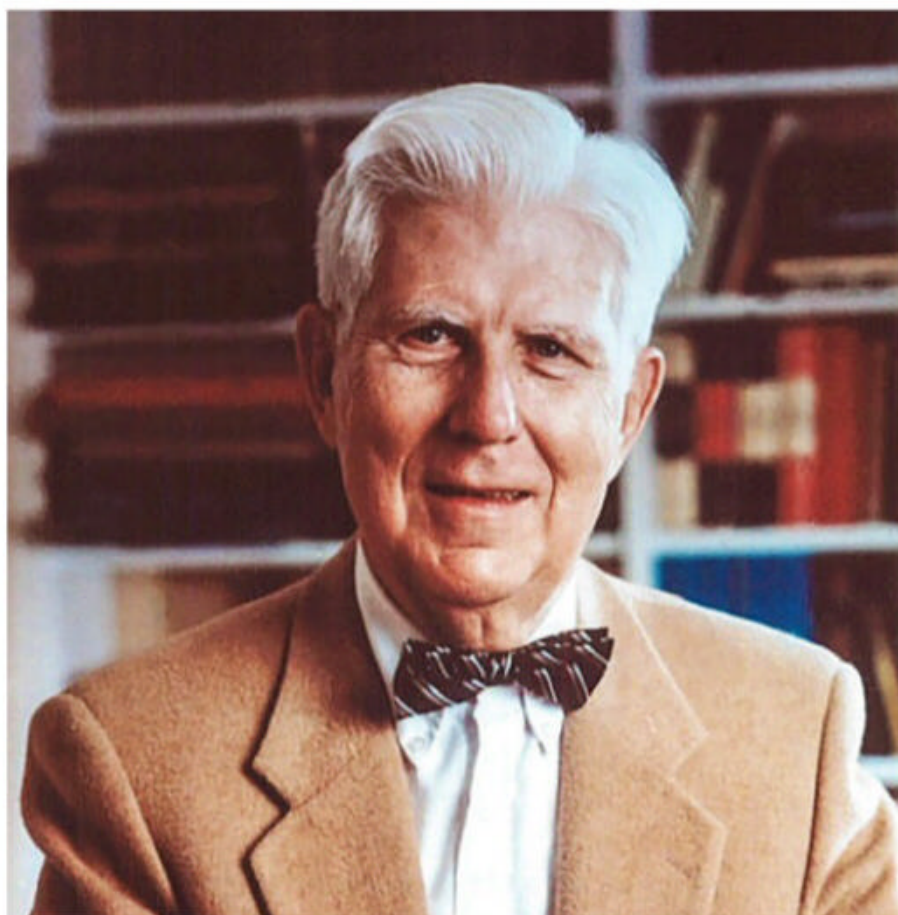
This discrepancy could arise for reasons besides ideology. To test alternatives, we fed Twitter's data into a model that accounted for the amount of amplification in each country, political parties' vote shares in the most recent elections and whether they were in government. Yet even after making these adjustments, the algorithm still favoured conservative parties.

In contrast, the evidence for bias aiding right-wing American media seemed less

robust. The algorithm did give extra amplification to news sources that independent groups like Ad Fontes Media classify as conservative. However, ideology and accuracy (which Ad Fontes, among others, also scores) are correlated to each other. And among the sites studied, those with the strictest sourcing and fact-checking also tended to have left-of-centre politics.

In 2019 we studied how Google ranks news stories, and found that accuracy, not ideology, explained its rankings. This is also true of Twitter. However, whereas Google gave higher rankings to more reliable sites, we found that Twitter boosted the least reliable sources, regardless of their politics. Left-wing sites with poor accuracy scores, like TMZ, were amplified more than credible, conservative ones like the *Wall Street Journal*. ProPublica, a non-profit focused on public-interest investigations, had one of the lowest amplification ratios.

Because Twitter did not share the tweets it studied, we could not identify the type of content that its algorithm rewards. But if the company wants to reduce misinformation on its site, making tweaks to favour rigorous reporting might help. ■



Up off the couch

Aaron Beck, the psychiatrist who developed Cognitive Behavioural Therapy, died on November 1st, aged 100

BY FAR THE youngest of Aaron Beck's subjects, in the very partial list of patients he had treated for anxiety and phobias in his book, "Cognitive Therapy and the Emotional Disorders" (1976), was an eight-year-old boy. This boy, after weeks in hospital with near-fatal septicaemia, became horribly squeamish about blood, and the smell of ether would make him faint. How was he treated? By learning, whenever he felt faint, to focus on other things, even just naming all America's presidents in the right order. The feelings still followed him into adulthood, but he then confronted them head-on: by going to Yale Medical School, where the smell of ether was more or less infused in the walls.

The eight-year-old boy was himself, and that childhood experience was his first brush with the idea that human thinking moved on two parallel tracks. Not conscious and deep subconscious, as Freud had taught, which was the accepted wisdom in the 1950s when he entered the field, but rational thoughts and "automatic" ones, both on the surface. Automatic thoughts were sometimes useful, as when he was driving the car and simultaneously composing the next lecture for his students at Penn University, where he was a professor for half a century. They told him to swerve at a bump, or slow down, without interrupting his flow of ideas. But such thoughts were often distorted, blocking out more rational explanations for the problems that inevitably cropped up in life.

A man might fret, for example, that his wife had not said goodbye to him as he left for work. Did it mean she no longer loved him? Was he actually unlovable? The rational explanation might be that she had left milk boiling on the stove. But the negative thoughts crowded in first, and could lead to full-blown depression. Just one misinterpretation could convince a beautiful woman that she was ugly and a teenager that she was fat, and the damage was done. Anxiety attacks and phobias were usually triggered not by the thing itself, such as a high balcony, but by a lively negative (and

statistically very unlikely) thought of tumbling over the rail.

He concluded that distorted surface thoughts, rather than Freud's long-buried childhood traumas and Oedipal desires, explained almost all emotional disorders. To each condition he applied scientific rigour and plain New England common sense, besides writing clear, simple manuals for therapists. As the years passed, his Cognitive Behavioural Therapy (CBT) was found to be widely effective—needing far fewer sessions than Freudian analysis, and lasting longer. It became, and remains, the most popular treatment for depression and anxiety in the Western world.

His method was gentle and collaborative. He dressed nattily, with colourful bow ties, and his bright blue eyes were kind. Rather than making his patients lie on a couch and free-associate, as Freudian analysts did, he invited them to sit at a small table just across from him, an intimate space that just had room for a large box of tissues. He was less a clinician than a friend who would help them sort things out together. Then, rather than staying silent, he asked constant questions, gently unpicking their thoughts to expose the distorted ones, and plumbing his patients for evidence. The basis of CBT was empirical, and it was Socratic: "You say you've lost everything, but what have you really lost?" "How likely is it that you would die if you went outside?" "When you told me that story, what was really going through your mind?" That was his keystone question, finding the parallel tracks.

Once the fallacies were exposed, patients could begin to help themselves. They were told to note their feelings day by day, and to gather countervailing evidence to their negative thoughts. Severe depressives were trained in "mastery" by being given tasks which, though easy for most people, had become impossible for them: getting out of bed, making a phone call. In 1952 he even successfully treated a young schizophrenic who was convinced he was being followed by government agents. "How would I know what they look like, to help you?" he asked the patient. The patient could not exactly say. But as he was asked each week to describe the agents they became fewer and fewer, until they disappeared.

Hard though it was to credit, this revolutioniser of psychiatry had once been a fervent Freudian. But he became increasingly bothered by the lack of hard science in it, its mantras and ritualism and its cult of celebrity practitioners. Depressives, for example, were said to have turned their hostility towards a parent inward on themselves, but his study of their dreams showed no more hostility there than in anyone else. Depressives and non-depressives alike might dream that they found only an empty Coke machine as they wandered in the desert.

He wandered in the desert for a while himself, retreating into private practice, mocked by Freudians and attacked by pharmaceutical firms whose profits from pills he threatened. In a trial in 1977 CBT showed better results than imipramine, the best anti-depressant of the time. So he kept going, busily recording patient data in his own journal, *Cognitive Therapy and Research*, when no one else would publish him. He was quite certain he was right.

But he was not immediately happy. For 40 years he too checked his mood twice a day in the Beck Depression Inventory, and stowed the results in his cellar. The fact was that, though he had a great job, a loving wife and four beautiful children (one of whom, Judith, became a CBT clinician and co-founded his Beck Institute), he still suffered from acute self-criticism. He cared too much for approval, and felt bound not to get it. The cure? Even more determined rationality.

By the end of his life, nothing daunted his positive outlook. As a boy, his distorted thoughts about blood and ether had been corrected by the actual fact that he had not died, and could busy himself with the future. As an old man, with his horizons narrowing, he had learned to see every mishap not as a loss or as confirmation of some defect, but as an opportunity. If it started to rain just when he was going out, great! All the more time to get that next paper written, and to spread the word still wider. ■

CSC:Miami

Content Supply Chains must be forensic in their detail.

Television broadcasters have long relied on instinct, market knowledge and spreadsheets to forecast TV viewership - but instinct needs to partner with information; market knowledge is never enough; and spreadsheets are no way to excel.

As witness to these challenges, Fractal undertook its own detective work.

By combining AI, data engineering and user-centric design, Fractal created an industry-first TV forecasting system for Europe's leading media and entertainment company. The result? Up to 30% improvement in forecast accuracy.

Fractal: perfectly targeted and timed TV, no drama.



fractal



TOWARDS A DREAM

LOUIS VUITTON