

Adventure capitalism

Startup finance goes global

The new geopolitical troublemakers

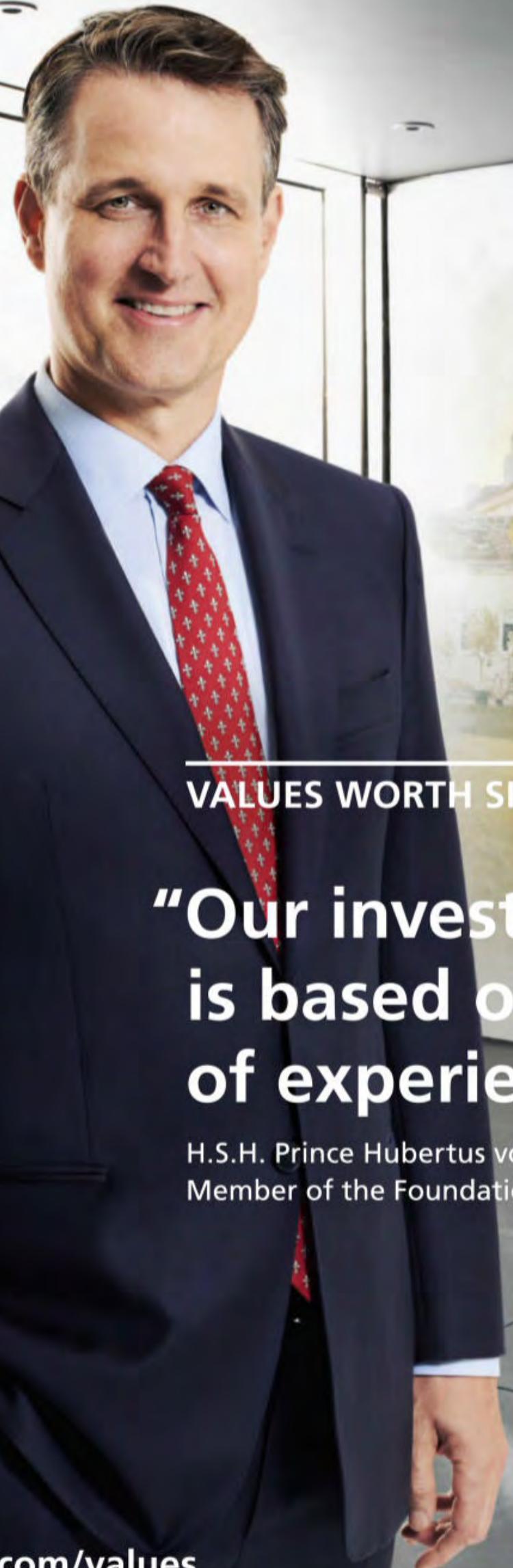
Can Germany's coalition succeed?

Coping with the Great Resignation

The end of the night sky

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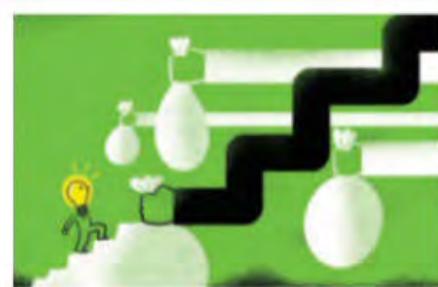
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The
Economist

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 and an unworthy, timid ignorance
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Two months after an election, a deal to form a new **German** government was unveiled. Olaf Scholz of the Social Democrats will lead a coalition with the Greens and the Free Democrats, a pro-business party. Mr Scholz will succeed Angela Merkel as chancellor in early December. The inclusion of the Greens has put climate change front and centre of the new government's agenda. It also pledges to build 400,000 flats a year to ease a housing crisis.

Stockholm syndrome

Magdalena Andersson resigned only hours after becoming **Sweden's** first female prime minister. Her brief tenure ended when the Greens quit a new coalition with her Social Democratic Party in a row over the budget. Ms Andersson is expected to regain the job with the support of parties that want to keep the populist Sweden Democrats out of power.

At least 27 **migrants** drowned off the coast of France trying to reach Britain. It was the biggest single loss of life in the English Channel since such figures started to be recorded in 2014. The number of illegal Channel landings, orchestrated by criminal gangs, is already three times higher this year than in all of 2020. The British and French governments promised to step up their fight against people-traffickers. But it is not yet clear who will pay to patrol the waves.

Protests erupted in several European countries against fresh pandemic restrictions, as the continent battled another wave of infections. Rioting flared up in Rotterdam and The

Hague after the **Dutch** government reintroduced lockdown measures. A big demonstration in **Brussels** turned ugly, causing the police to deploy water cannon. Marches also took place in Croatia, Italy and Switzerland. **Austria** reimposed a lockdown and made vaccinations mandatory for all its citizens from February, the first rich country to do so.

After months of stalemate, **Romania's** president asked Nicolae Ciucă, a former army general, to be prime minister, heading a coalition government comprising the Liberals and Social Democrats. With one of Europe's lowest vaccination rates, the country is struggling to contain covid-19.

José Antonio Kast, a candidate of the hard right, took first place in the first round of **Chile's** presidential election. He will face Gabriel Boric, a candidate of the left, in a runoff next month. For the first time since the return of democracy in 1990 Chile will not be governed by a president from one of the established centre-left or centre-right parties.

Venezuela's opposition took part in elections for the first time in four years. The process was "grossly skewed", said America's secretary of state. The ruling party won 20 of 23 state governorships. Cuba congratulated Nicolás Maduro, Venezuela's dictator, before the results were declared.

El Salvador's president, Nayib Bukele, announced that the country would build a circular "bitcoin city" at the base of the Conchagua volcano. The mountain's geothermal energy will be used to power bitcoin mining. In September El Salvador became the first country to make bitcoin legal tender.

Abiy Ahmed, the prime minister of **Ethiopia**, said he would personally lead frontline troops fighting against rebels from the northern region of Tigray who are advancing towards the capital, Addis Ababa. Several countries

have urged their citizens to leave Ethiopia immediately.

Sudan's civilian prime minister, Abdalla Hamdok, who was ousted in a coup in October, was reinstated. He had reached a deal with the coup leaders after days of protests and 41 deaths. He agreed to allow the army to stay in charge and to postpone elections. He said he made these concessions, which appalled the protesters, to avoid further bloodshed.

The British government sought to declare the whole of Hamas, the **Palestinian** militant group that controls the Gaza Strip, a terrorist organisation. Britain had already proscribed the group's military wing.

Global tennis stars voiced concern about a Chinese peer, **Peng Shuai**, who had accused a former vice-premier of China of sexual abuse. The allegation was scrubbed from the Chinese internet. Chinese media released videos of Ms Peng and an email purportedly by her retracting it. But doubts persisted about her well-being.

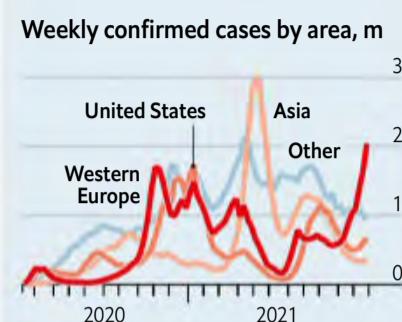
China downgraded its diplomatic relations with Lithuania after the Baltic state allowed a Taiwanese trade office to open there using the name **Taiwan** instead of Taipei, the name often used by the island's missions abroad.

Narendra Modi, **India's** prime minister, announced the repeal of three contentious bills designed to reform India's agricultural sector. The u-turn is the biggest of his time in office. It comes after a year of protests by farmers and just months before elections in the farm-heavy states of Punjab and Uttar Pradesh.

Barisan Nasional, **Malaysia's** ruling coalition, triumphed in elections in Malacca, a bellwether state south of Kuala Lumpur. The result is seen as a vote of approval for Ismail Sabri Yaakob, the new prime minister, who is likely to call a general election next year.

Coronavirus data

To 6am GMT November 25th 2021



Estimated global excess deaths, m

With 95% confidence interval
17.4
10.8
20.1

5.2m official covid-19 deaths

Vaccine doses given per 100 people

By country-income group	
Low income	8
Lower-middle	68
Upper-middle	141
High income	147

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

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America's House of Representatives passed Joe Biden's \$1.7trn **Build Back Better** bill of welfare and climate-change spending. Unlike the president's infrastructure act, this bill currently lacks the votes for approval in the Senate.

The Biden administration asked the federal court of appeals in Cincinnati to lift a different appeals court's suspension of its **vaccine mandate**. The Cincinnati court has been given the task of overseeing the dozens of appeals against the mandate.

Floundering Father

A statue of **Thomas Jefferson** was removed from New York's City Hall, after black council members complained that it was a reminder of slavery. The author of the Declaration of Independence also owned 600 slaves. The statue, a copy of the sculpture in Congress given as a gift to America in 1834 by its first Jewish naval commodore, has a new home in the city's historical society.

Joe Biden nominated Jerome Powell for a second term as chairman of the Federal Reserve. Left-wing Democrats had sought to boot Mr Powell out of the job; Elizabeth Warren, a fiery senator, had described him as "a dangerous man" because of his past support for financial deregulation. Their preferred candidate for the top job at the central bank, Lael Brainard, was promoted to vice-chairwoman. That could produce some differences of opinion on bank regulation and Fed policies focused on climate change; Ms Brainard wants more of both.

America's prices were 5% higher in October than they were a year earlier, according to the personal consumption expenditures index, which the Fed uses to measure **inflation**. Excluding food and energy, prices rose by 4.1%, still more than double the Fed's long-run inflation target of 2%. Both measures were higher than they were in September; neither has been so high at any point in the past three decades.

New Zealand's central bank raised its benchmark interest rate by a quarter of a percentage point, to 0.75%. It was the second increase in as many months, with predictions of more to come amid a buoyant economy and rocketing housing market.

Under pressure over soaring petrol prices, the White House announced that it would intervene in **oil markets** by releasing 50m barrels from America's strategic oil reserve in the hope that the additional supply will cause prices to drop. In a co-ordinated effort, Britain, India, Japan and South Korea are also releasing oil and China "may do more as well". Some questioned whether America's extra 50m barrels, equivalent to less than three days of American oil consumption, were enough.

KKR, a private-equity firm, made a bid worth €33bn (\$37bn) for **Telecom Italia**, in what could be Europe's

biggest-ever buy-out. Italy's legacy telecoms firm is crippled by debt, hampering efforts to expand broadband in the country. If the board agrees to a takeover, the government will then decide whether it is in the national interest and should be allowed to go ahead.

Government intervention



The **Turkish lira** plunged again against the dollar, euro and other currencies, before recovering somewhat. The latest run on the currency is the worst in decades, taking its loss for the year so far to 40%. The rout intensified when Recep Tayyip Erdogan, Turkey's president, defended interest-rate cuts despite the fact that inflation is running near 20%. Mr Erdogan has piled pressure on the nominally independent central bank to cut rates—it has taken four percentage points off its

main rate since September—even though monetary policy is tightening around the world.

Zoom's share price slid, after its latest earnings marked another slowdown in sales. Revenue for the three months ending October 31st rose by 35%, year on year, down from 54% in the previous quarter and 367% in the same quarter last year. The company is facing increased competition amid a tail-off in demand for video-meetings, as fewer employees work remotely.

The perils of overpromising

The share price of **Paytm** started to recover after a disastrous IPO. Despite being backed by SoftBank, Ant Group and Alibaba in what had been an eagerly awaited flotation, the Indian fintech company's stock dropped by 27% on the first day of trading in Mumbai, as investors evaluated the offer price to be too high. It fell by 13% on the second day before recouping ground.

A federal jury in Ohio found that cvs, Walgreens and Walmart were liable for the spread of **opioid painkillers**, which caused tens of thousands of fatal overdoses in America. The verdict was the

first time that pharmacy retailers have been held accountable for contributing to the opioid crisis and could open the floodgates to further litigation.

Samsung Electronics selected Taylor, a town in Texas that abuts Austin, for the site of its new \$17bn chipmaking plant. The state's capital is attracting more and more tech jobs. Tesla is building its new \$1bn carmaking factory in Austin.

Ericsson agreed to pay \$6.2bn for **Vonage**, a cloud-communications company that helped pioneer voice calls over the internet at the start of the century. It was the Swedish telecom-equipment maker's biggest acquisition to date.

Uber got into the growing business of providing **cannabis** (where it is legal) by launching a service in Ontario whereby customers can order the weed and pick it up from a dispensary within the hour. Orders are placed over the Uber Eats app, perfect for tokers with a case of the munchies.

In a sure sign of the effects of inflation, **Dollar Tree**, one of the last of America's retail chains to actually sell items for \$1, said it would increase most of its prices by 25%, to \$1.25.





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Adventure capitalism

The venture-capital industry is being supersized by a colossal boom. Good

Vladimir Lenin believed that a tiny vanguard could, through force of will, harness historical forces to transform how global capitalism works. He was right. However, the revolutionaries have not been bearded Bolsheviks but a few thousand investors, mostly based in Silicon Valley, running less than 2% of the world's institutional assets. In the past five decades, the venture-capital (vc) industry has funded enterprising ideas that have gone on to transform global business and the world economy. Seven of the world's ten largest firms were vc-backed. vc money has financed the companies behind search engines, iPhones, electric cars and mRNA vaccines.

Now capitalism's dream machine is itself being scaled up and transformed, as an unprecedented \$450bn of fresh cash floods into the vc scene (see Finance & economics section). This turbocharging of the venture world brings significant risks, from egomaniacal founders torching cash to pension pots being squandered on overvalued startups. But in the long run it also promises to make the industry more global, to funnel risk capital into a wider range of industries, and to make vc more accessible to ordinary investors. A larger pool of capital chasing a bigger universe of ideas will boost competition, and is likely to boost innovation, leading to a more dynamic form of capitalism.

The vc scene has its roots in the 1960s and has been a misfit in the financial world. In contrast to Wall Street's suits, sophistication and Hamptons mansions, it prefers fleeces, nerdiness and Californian villas. Its distinctiveness is also a matter of intellectual emphasis. As mainstream finance has grown bigger, more quantitative and more preoccupied with slicing and dicing the cashflows of mature firms and assets, vc has remained a cottage industry that cuts against the grain, seeking to find and finance entrepreneurs who are too callow or strange to sit in a room with staid bankers, and ideas that are too novel for MBAs to capture in financial models.

The results have been striking. Despite investing relatively modest amounts over the decades, America's vc funds have seeded firms that are today worth at least \$18trn of the total public market. This record reflects the dizzying ascent of the big tech platforms such as Google. More recently vc-backed unicorns (private startups worth over \$1bn) have come of age in a bonanza of public listings, ranging from the spectacular (Rivian) to the everyday (Slack). Over the past golden decade, an index of American vc funds has made compound annual returns of 17%. A few have done much better than that.

This success is now spilling over into the broader financial industry. As vc-backed firms list, the resulting windfall is being redeployed into new funds. Meanwhile, with interest rates still low, pension schemes, sovereign-wealth vehicles and companies have got a feverish dose of vc-envy, and are scrambling to allocate more cash to dedicated funds or setting up their own vc arms. So far this year almost \$600bn has been deployed in deals—ten times the level of a decade ago.

As money pours in, vc is permeating the economy more deeply and broadly. What once was an American affair is now a

global one, with 51% of deals by value in 2021 happening outside America. China's vc scene has tapered off recently because of a consumer-tech crackdown by Xi Jinping, the country's president. However, the industry is booming in the rest of Asia and after decades of slumber, innovation in Europe is awakening, with 65 cities hosting unicorns (see Business section).

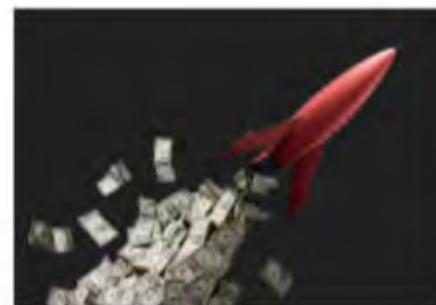
The vc boom has so far focused on a narrow cohort of consumer-tech firms, such as Airbnb and Deliveroo. Now more cash may finance areas where disruption is less advanced. This year investments in clean energy, space and biotech were double those of 2019. And the industry is becoming more open. Whereas once a cosy elite of funds had unusual power, now mainstream financial firms are involved and there are vehicles that allow ordinary investors to gain exposure cheaply. Competition is forcing vcs of all kinds to experiment with new strategies, including tracking the careers of individual creators.

Obviously, there are dangers. One is that money corrupts. Soaring valuations and abundant capital can make firms and their backers self-indulgent. Of the top 100 firms listed in 2021, 54 are in the red, with \$71bn of cumulative losses. Governance can be abysmal. SoftBank's \$100bn Vision Fund, which pioneered writing vast cheques to startups and goading them to grow faster, has been beset by conflicts of interest. Founders go off the rails. Adam Neumann of WeWork built a beer-fuelled personality cult.

Another danger is that, as in any asset class, returns are diluted as money pours in. Mainstream funds may find that, as well as having to cope with vc's notorious booms and busts, long-run returns are lower than they hoped.

Yet what is humdrum for investors can still be good for the economy. It is better that a marginal dollar goes to fledgling companies than to bloated housing or a flooded bond market. A vc crash triggered by rising interest rates would not destabilise the financial system, because startups have low debts. Even if vc-backed firms recklessly burn money, much of it will flow to consumers: think of all those subsidised car rides and home-delivered meals. At a minimum, the boom will enhance competition. vc investment this year will exceed total capital spending and research-and-development spending by the five biggest tech firms, which are also being discouraged from buying up potential competitors by the threat of tighter antitrust rules (see United States section).

The biggest prize would be more innovation. It is true that no amount of cash can create raw brilliance. And governments often fund basic scientific breakthroughs. Yet the global supply of entrepreneurs is hardly fixed and plenty of ideas remain under-exploited. The previous vc boom saw investors extend the horizon of risk-taking to more difficult and adventurous areas. As venture investment spreads around the world, entrepreneurs outside America will have a better chance of joining in. And the barriers to creating new businesses are falling, thanks to cheap cloud computing and remote working. Venture capital aims to take good ideas and make them bigger and better: it is only right to apply that logic to the industry itself. ■



Germany

Green shift

The new German government holds great promise. It will need luck, too

NO ONE LIKES waiting for a traffic light. But for Germans the wait is over. On November 24th a new ruling coalition was unveiled. Forming it took only two months after an election. (In the Netherlands parties are still haggling after eight.) Nicknamed “traffic light” after the colours of the parties that will make it up, it is a three-way contraption, Germany’s first since the 1950s, with the Social Democrats in the lead backed up by the Greens and the Free Democrats. But whether the incoming chancellor, Olaf Scholz, will offer dynamic leadership, rather than more of Germany’s recent drift, is hard to say.

We choose to be optimistic. The entry into the government of the world’s fourth-largest economy by the mainly pragmatic Greens is good news at a time of environmental peril. The devil is in the detail, and there is a lot of it already; the coalition deal comes in the form of a 177-page document laying out its pre-agreed policies. On climate change, these include a pledge to end the burning of coal for electric power by 2030 (eight years earlier than had previously been planned) and to raise the share of renewables to 80% by 2030, from a previous goal of 65%. There is also welcome attention to the nuts and bolts of how all these commitments will actually be achieved.

More than that, it is now reasonable to expect that Germany, whose new foreign minister is set to be Annalena Baerbock, one of the Greens’ co-leaders, will push much harder than before for the EU to do more to fight climate change, and for the EU’s weight as the world’s second-largest consumer market to be used to urge others on. Germany cannot routinely get its own way in the EU, of course; but it is still the most influential member of the club. Likewise, Europe does not always prevail. But its commitment to achieve net-zero greenhouse-gas emissions by 2050, though it binds no one else, has become a global standard that others are under increasing pressure to meet.

The carbon news is therefore good, and other parts of the

package are as well. NATO allies may fret that Germany now plans to attend the first meeting of signatories to the Treaty on the Prohibition of Nuclear Weapons. But it will be as an observer only and, more important, the new government will continue with “nuclear sharing”: the positioning of American nukes on German soil and Germany’s commitment to maintain aircraft to drop them if need be. (A failure to commit itself firmly to NATO’s defence-spending target of 2% GDP is a bigger, but hardly new, worry.) Other pluses include measures to reform Germany’s creaking bureaucracy and a vow to legalise cannabis. A tougher line against Russia and especially China is also on the cards.

There are trickier elements. The expected appointment of Christian Lindner, leader of the Free Democrats, as finance minister suggests that ditching Germany’s outmoded debt brake or loosening the EU’s purse strings beyond its €750bn (\$840bn) covid-recovery package is unlikely; Mr Lindner has been an opponent of both. Still, none of this looked likely to change much, whoever got the job. Mr Scholz is thrifty, like most German voters, and Germany belongs to a group of frugal northern EU countries. Even so, the deal contains signs of flexibility here, too. And Mr Lindner’s involvement could well be a plus. He is strongly pro-business, and his presence will reassure conservatives if such flexibility is employed.

Perhaps the biggest worry about the new coalition is that it may spend too much of its time arguing. On many issues, Mr Scholz can expect his liberal partners to pull in one direction, and his Green partners in another. The laboriously hashed-out plan provides a baseline of agreement, but there will always be things it failed to foresee, or simply ducked. Covid-19 is again raging in Germany (see Leader) and Vladimir Putin is a menace. But the methodical and disciplined way the three parties have worked through their differences gives reason to hope that they will be able to go on doing so. *Viel Glück!* ■



Geopolitics

March of the midsized menaces

America’s retreat has let smaller countries wield more hard power. It is not going well

TALK ABOUT geopolitics and people think of great-power rivalry: America v the Soviet Union or, more recently, China. Fair enough. Great powers are, as the name suggests, important. But as America retreats from its role as globocop, it has opened space for medium-sized powers to become more assertive.

Turkey has occupied a chunk of Syria, sent troops to Libya, helped Azerbaijan vanquish Armenia and dispatched its navy in support of dubious claims to Mediterranean waters. Iran backs militias that prop up Syria’s despot, have a chokehold on Lebanon and were accused this month of trying to murder Iraq’s prime minister with an explosives-laden drone. Pakistan helped

a group of misogynistic jihadists take over Afghanistan. Belarus hijacked a plane and has been giving migrants bolt-cutters and ordering them to cut through Poland’s border fence. Cuba trains Venezuelan spooks. Saudi Arabia bombs Yemen. Medium-sized menaces are on the march (see Briefing). They are making the world more confusing and more dangerous.

The leaders of such countries do not all have a free hand. Belarus’s dictator has lately become a Russian puppet; Pakistan is hugely in debt to China; everyone is wary of direct military confrontation with America. But for the most part they are pursuing their own agendas, not those of a great-power sponsor. ►

► They are promoting what they see as their national interests or, in many cases, their own selfish ones.

Some have national-security concerns. Turkey wanted a buffer zone in Syria to stop Kurdish fighters setting up bases near its border. Pakistan was afraid of Indian influence in Afghanistan. Egypt is meddling in Libya because it wants to avoid chaos there. But other less respectable motives are also common.

Some leaders, mostly autocrats, are venturing abroad to distract attention from their dire record at home. Turkey's president has presided over economic blight and political repression, but Turks cheer his artfully televised military victories. Likewise, the rulers of Saudi Arabia, Iran, Egypt and Pakistan all hide their failings behind a vigorously waved national flag.

Profit plays a role, too. Some leaders offer arms and loans to war-scorched countries on the understanding that their own firms will be first in line for contracts to rebuild them. The financial beneficiaries are often the leader's cronies, not his people.

A final motive, and perhaps the most important, is that autocrats tend to support other autocrats. Cuba's mambo-dancing Marxist rulers have little in common with Iran's austere mullahs, but they all support Venezuela. Regimes under American sanctions trade with each other to survive. Despots swap tips on how to crush democrats and coup plots. Sometimes, all these motives are combined. An autocrat may send troops to help another autocrat, dress it up as a patriotic war, and win construction deals later that oil his patronage machine.

The results have been catastrophic. In Venezuela medium-sized menaces have propped up a regime under President Nico-

lás Maduro so corrupt and inept that the economy has shrunk by 75%. In Ethiopia arms and cash from medium-sized meddlers gave its prime minister, Abiy Ahmed, the confidence to wage all-out war on domestic rebels, causing tens of thousands of deaths and forcing millions to flee their homes. All around the world, the fraying of American deterrence and the American security guarantee are prompting neighbours to look more fearfully at their traditional foes, and to re-arm.

None of this is good for global stability. The world would be safer if America were more engaged, not less. But that is for a different leader: this one is addressed to the medium-sized meddlers themselves. Each case is different, but most of these newly assertive countries will find that the costs of adventurism outweigh the benefits. Wielding hard power is expensive, and hard to do effectively.

Turkey has gained swagger and territory, but alienated nearly all its allies. Saudi Arabia is stuck in a quagmire in Yemen (see Middle East & Africa section). The UAE's missions failed not only in Yemen but in Libya, too. Pakistani colonels gloated over President Joe Biden's hasty retreat from Afghanistan. The Taliban are friendly with Pakistan and hostile to India. But Kabul's new rulers have no idea how to govern. Afghanistan is in economic meltdown and their ruthless, exclusive approach could provoke another war on Pakistan's doorstep.

The men who run all these countries no doubt see things differently. Autocrats love having an external enemy, and sometimes believe their own propaganda. So they will keep up their military meddling. But they will often blunder, as even great powers do, and in the end this may bring them down. ■



Covid-19 in Europe

Winter wave

A fourth surge is causing panic and muddled thinking

OVER THE next few years covid-19 will probably settle down as a seasonal disease, a lethal threat to the elderly and the poor in health, but to everyone else mostly a nuisance. However, as Europe is discovering, getting there will be perilous. The European Union is recording nearly a quarter of a million cases a day, more than at any time in the pandemic. Eleven months after vaccination first got under way, intensive-care wards in some regions are almost full. The World Health Organisation warned this week that 700,000 more Europeans could die by March.

Amid growing alarm, governments are once again locking down. Austria has become the first rich country to demand that all of its citizens must be vaccinated or face a fine; Germany may follow. Demonstrators are taking to the streets to protest against new restrictions, including in the Netherlands, Belgium and Italy. As the disease spreads, confusion reigns about what measures are justified in the campaign to slow it.

Dealing with the fourth wave begins with understanding what is causing it. Covid is surging in Europe because winter weather sends people indoors, where the virus spreads easily. In the EU slightly over 60% of the population over 12 years old is fully vaccinated. That leaves roughly 150m people unprotected, unless they have already acquired immunity from having survived

an infection—as many have in Britain. It is a warning to places like China with large immunologically naive populations.

At the same time, immunity starts to wane from around ten weeks after the second dose. Booster shots are vital, but the EU has been slow to administer them. In Germany infections are doubling every 12 days. One reason is that, even now, only 8% have received a third dose, compared with 23% in Britain.

As so often in the pandemic, governments have been caught out by the exponential growth in cases. Because they are acting late, they must resort to more extreme measures. Protesters say their liberties are being trampled. Many of those who reject vaccination argue that the state has no right to coerce them.

Those arguments are flawed. Two years into the pandemic, it is clear that your behaviour really is your neighbours' business. One reason is that you are more likely to infect other people if you are unvaccinated. Even if they are protected, some of them will fall gravely ill and die—albeit a small proportion. Also, if the state does nothing, the unjabbed will swamp the health service, causing a lot of deaths, including many that have nothing to do with covid. And more than one liberty is at stake. If governments have to resort to lockdowns to slow the spread of the disease, anti-vaxxers are depriving the vaccinated of freedom.

► What makes government intervention hard is not the question of principle, but the practical business of being effective and proportionate: of knowing what works at what cost and how this varies from one country to the next. The aim is not to eradicate covid—that would be impossible—but to slow its spread so that cases are manageable. Flattening the curve in this way saves lives by protecting health systems and buying time to administer vaccines and procure powerful new anti-covid medicines, such as molnupiravir.

The easy steps are promoting handwashing and demanding mask-wearing in public indoor spaces. Both reduce the spread of disease, but neither impinges greatly on anyone's freedom. Next comes accelerating boosters, which protect individuals and society at large by rapidly restoring the partial ability to block transmission. This should be simple, because vaccine hesitancy should not be a factor with those who have already been jabbed.

Countries can also enforce existing measures, such as requiring vaccination or a negative test for access to public places.

That may not be enough to contain the surge in places like Germany and Austria, where most of these measures have been in force even as the disease has spread. In principle there is nothing wrong with demanding universal vaccination. In practice, however, it has enough drawbacks to give governments pause. A two-dose course will take weeks to become fully effective, even if anti-vaxxers comply. Austria is not requiring vaccination until February, when the wave is likely to be abating. In addition, if you believe that vaccination is a conspiracy by the state, compulsion only confirms your suspicions and attracts money and people to anti-vax campaigns. The policy could undermine faith in all vaccines for years to come. When, as in some European countries, government policies have failed, the only emergency brake is the misery of more lockdowns. ■

Indian politics

Heir today, gone tomorrow?

For the Congress party to recover, the Gandhis must quit

THE INDIAN NATIONAL CONGRESS is the grand old party of the world's biggest democracy. Its president is Sonia Gandhi, the 74-year-old widow of Rajiv Gandhi, a former prime minister who was also the son and grandson of prime ministers. Its de facto leader is Rahul Gandhi, Rajiv's and Sonia's 51-year-old son. Priyanka Gandhi, their 49-year-old daughter, is a general secretary. Somebody named Gandhi has run the party for all but six of the past 43 years.

Small wonder the ruling Bharatiya Janata Party (BJP) calls Congress nepotistic. It also calls it corrupt and feudal, and this resonates with voters. The BJP, by contrast, presents itself as meritocratic, modern and welcoming to all comers (as long as they are Hindu nationalists). Narendra Modi, the prime minister, constantly reminds his compatriots that he is the son of a humble tea-seller.

The Gandhis are descendants not of the Mahatma but of Jawaharlal Nehru, India's first prime minister. Their party dominated Indian politics for decades. It was responsible for great abuses of power (the state of emergency in the 1970s) and great reforms (notably India's economic liberalisation in 1991). But now it looks exhausted. It took electoral batterings in 2014 and 2019, but has failed to reform or seek new leadership. (Rahul resigned as party president in 2019, but was replaced by his mother.) Far from being a vote-winner, the Gandhi family is now Congress's biggest liability.

This is not because Indian voters are allergic to dynasties in general. The chief ministers of the prosperous states of Maharashtra and Tamil Nadu are both sons of former regional-party bosses. Nearly a third of lawmakers in India's lower house come from political families. Rather it is the Gandhis themselves who are the problem. Their circle is rife with venality and self-dealing. Worse, their immovable presence repels talent. Ambitious types see no future in a Gandhi-dominated Congress. Defections are common.

It is no longer clear what the Gandhis stand for, other than a

vague secularism and not being Mr Modi. Congress's most recent manifesto was heavy on socialist-era handouts, public-sector employment and loan waivers, but woefully light on policies to promote growth or create private-sector jobs. For all the faults of the BJP, it offers a clear vision of the India it wishes to make, disagreeable as that vision may be to liberals or non-Hindus.

India, like any country, needs a strong opposition to hold the government to account. Without one, checks and balances are left to citizens, civil society and street protests. That is a recipe for unrest. Mr Modi's biggest recent reverse came when farmers furious about his (largely sensible) agricultural reforms demonstrated outside Delhi for a year (see Asia section).

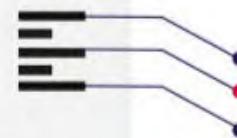
An enormous, diverse and still-poor federal country such as India is ill-served by an overbearing central government. The

BJP faces plenty of challengers at state level, but Congress remains its only plausible national opponent. In general elections it still attracts 20% of the ballots—though these secure just 10% of seats—a little more than half the BJP's vote share but five times more than the next party. It needs to do much better.

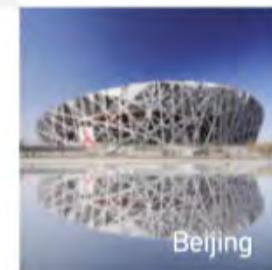
For this reason, the Gandhis should go, taking their cohorts of septuagenarian yes-men with them. Rahul, the face of the party, is widely seen as a decent man. But he is holding the party—and India—back. That there is no obvious candidate to replace him is a sign of how poor a job he has done of promoting capable lieutenants.

With Rahul gone, the Congress party could start the difficult process of root-and-branch reform, turning itself from a club for family retainers into an outfit that attracts the best and brightest and promotes them speedily to positions of power. The next general election is about three years away. It is not too late for Congress to become a big-tent national party, capable of representing all Indians, as its founders intended. The Gandhis face a choice: they can either do the honourable thing, or they can lead Congress to extinction. That would give Mr Modi a free hand to shape India more or less as he pleases. ■





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Assisted dying

Your claim that "scrutiny has been intense" in cases of assisted dying is astonishing ("A final choice", November 13th). Few data are available on the quality of death and we mostly rely on the doctor to self-report. The Dutch, world experts on assisted dying, are clear that the procedure can fail and requires a euthanasia "rescue". We have no useful data on drug safety. Using death as the sole endpoint is like claiming a successful drug cure for baldness but ignoring the vomiting and seizures. Doctors will be expected to prescribe untested drugs.

Increasing numbers of abuses are appearing. In one Dutch euthanasia clinic, requests for an assisted death were more likely to come from single women with a lower educational background, a depressive disorder and a history of sexual abuse.

Moreover, palliative care does not flourish with assisted dying. The Belgian and Dutch growth in all palliative-care services has stalled since 2012. As for public support, a recent survey found that 42% of the public in Britain thought assisted dying meant refusing or stopping life-sustaining treatment, which are already legal in the country; 10% thought assisted dying was hospice-type care. Less than half understood it was about giving lethal doses of drugs to end life.

Assisted dying is no panacea and will not stop bad deaths, especially when 118,000 people every year in Britain fail to get the palliative care they desperately need. That is the real scandal.

CLAUD REGNARD
Honorary consultant in palliative medicine
St Oswald's Hospice
Newcastle-upon-Tyne
AMY PROFFITT
President
Association for Palliative Medicine
Fareham, Hampshire
ROB GEORGE
Professor of palliative care
King's College London

Comprehensive Dutch surveys have disclosed that thousands of patients have been given lethal injections without an explicit request, and that thousands of cases have gone unreported, both in flagrant violation of the legal "safe-guards". Five years ago the government proposed a further relaxation: assisted suicide for old people who think their life is "completed".

Abuse and the slippery slope are the realities. Indeed, the reality of the slope is inherent in the very case you make for legalisation. If the guiding principle is "that individuals are entitled to choose how they end their lives", why not give any competent person who wants to be killed, whether sick and dying or young and healthy, a lethal injection?

PROFESSOR JOHN KEOWN
Kennedy Institute of Ethics
Georgetown University
Washington, DC

As the technological capacity to manipulate our human condition increases so must our appreciation of life's variety and possibilities. Developments in pre-natal testing for Down's syndrome have led to no Down's births in some European countries for a number of years. Parents who wish to continue a pregnancy following a positive test are viewed, more or less covertly by medical practitioners, and overtly by Richard Dawkins, as irresponsible and deviant. Yet I remember my experience, while at Cambridge, of working with Down's syndrome people who revealed a great deal about what it meant to be fully human in ways that the university did not.

Having kept company as a priest with many people after a terminal diagnosis I have discovered the tremendous surprise of life-enhancing experiences, both for patients themselves and lastingly for those who love them, in precisely those places where control over our lives breaks down. If we are to legalise assisted dying it must be within a genuinely mixed system in which religious

conviction (whatever we understand by that slippery term) is not viewed with patronising derision. Beyond our mental and technical control, as Hamlet told Horatio, lie undreamed things; the cracks Leonard Cohen sang about where the light breaks in.

REV. CHRISTOPHER SWIFT
Coreglia Antelminelli, Italy

One in six elderly people experience some form of abuse in community settings, according to the World Health Organisation. If the living cannot be guaranteed protection, what hope is there for the dying? You offered the defence that no apparent abuses of euthanasia have occurred in countries where it is legal. But there is always governmental mission creep. The global population of people aged 60 and over will more than double by 2050. What greater incentive will governments have for seeking the easy way out for costly pensioners?

HENRY HARRINGTON
Lucombe, Somerset

My wife was racked with a fatal disease that stripped her muscles of their ability to function but left her mind intact. When she could no longer do enough of the things that gave her life meaning, her only legal option was to stop eating and drinking. Despite the best hospice care, it took her 11 uncomfortable and painful days to die. Our pets normally have faster, painless deaths.

RAYMOND SMITH
New Paltz, New York

Life, after all, is a terminal condition, and as such is "an unprofitable episode disturbing the blessed calm of non-existence" (Schopenhauer). As our birth, genetics and place are purely random we should all be allowed the certainty of the manner and timing of our own death. A truly civilised society based on rational thought would provide the opportunity and conditions to enable its citizens to exercise this choice.

STEPHEN LACEY
Chelmsford, Essex

The wrong advice on covid-19

Regarding the low take up of the covid-19 vaccine in some parts of Europe ("The arc of susceptibility", November 13th), I live in the south-eastern fringe of Bavaria, an affluent area with one of Germany's lowest inoculation rates and highest number of infections. Here, just like in eastern Europe, intensive-care units are chock-full. Alas, we can hardly blame official neglect or misinformation for our unwillingness to get jabbed. Rather, a peculiar penchant for feeble-minded quack-cures, typified by the exorbitant number of homeopaths offering their services, is to blame.

CHRISTOPHER STEHBERGER
Traunstein, Germany

Trans-Europe espresso

"Disoriented express" (November 13th) reported on the difficulties of interconnected rail travel in Europe. One successful service is the Léman Express, a border train that connects part of the French network with the Swiss one, helping people leave happily in the morning after a tasty croissant and coffee, to get to work to enjoy a good Swiss chocolate at their desk. Who says the train's charm is over?

GOETZ GUILBEAU
Annecy, France

Rights and responsibilities

I read with interest that an American court had recognised animals as people ("Wallow on", October 30th). As soon as possible, I plan to call the police to arrest the criminal gang of mice in my garage, who are trespassing, vandalising and stealing from me, as well as attempting to break-and-enter my house.

JOHN ASTELL
Holden, Massachusetts

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The closing date: 9:30 am Monday 24 January 2022. Interviews will be in London on Wednesday 23 February 2022.

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The menace of midsized meddlers

ADDIS ABABA, BASRA, CARACAS, DUBAI, ISLAMABAD AND ISTANBUL

As America retreats, regional rogues are on the rise

IN AUGUST SAMANTHA POWER, America's aid chief, visited Ethiopia. Not long ago, such an important official from the world's only superpower would have been welcomed with deference. Instead, her request for a meeting with Ethiopia's prime minister, Abiy Ahmed, was ignored. However, Abiy did find time that day to appear on television inspecting drones apparently made by America's arch-enemy, Iran.

It was an extraordinary snub. America until recently enjoyed friendly relations with Ethiopia. It has been a big donor to a government that depends heavily on aid, and energetically backed the democratic reforms that Abiy had promised when he came to power in 2018. But relations have now soured. America has criticised Abiy for his increasingly authoritarian ways and for waging a brutal civil war. Abiy has responded by thumbing his nose at Uncle Sam and finding less preachy friends.

Turkey, Iran, Israel and the United Arab Emirates (UAE) have all reportedly been selling weapons to Ethiopia. Eritrea has sent troops. The UAE has been accused of flying drones for Abiy. It also pledged bil-

lions in aid, and has reportedly trained Abiy's personal bodyguard. Such help may have given him the confidence to wage total war on rebels in Tigray, a northern region, rather than negotiate with them.

The results have been ugly. Jemal Ibrahim (not his real name) was hiding in the Tigrayan mountains when the drones came. One night he saw what he believes were unmanned spy planes buzzing across a cloudless sky. The next morning, he heard explosions in the fields below.

When he went down to look, "what I saw was really dreadful," he says, his voice faltering. The charred remains of tanks lay twisted by the side of the road. Once, he says, he saw a Land Cruiser ferrying journalists working for a Tigrayan broadcaster explode before his eyes.

Bombs and bullets were supposed to cow the Tigrayan rebels. Instead they have enraged them. The rebels have regrouped, repelled the Ethiopian army and advanced towards the capital, Addis Ababa, which is also threatened by insurgents from the south. The government is arresting ethnic Tigrayans and urging other civilians to arm

themselves. Because of the war, millions of Ethiopians are at risk of going hungry.

The disaster unfolding in Ethiopia cannot wholly be blamed on outside interference. But it has not helped. Like many autocratic rulers, Abiy likes dealing with other autocrats. They don't fuss about democracy and human rights. Their diplomacy is personalised and transactional—we'll sell you arms, and perhaps our firms will win construction contracts in your country.

Abiy's refusal to listen to America, which counselled restraint, has cost Ethiopians dearly. And the support of a clutch of medium-sized autocratic powers has hastened Ethiopia's descent into the abyss.

It is also part of a broader trend. As America retreats from the world, midsized powers are throwing their weight around more. No one is surprised that China and Russia project hard power abroad. What is new is that smaller menaces like Belarus, Cuba, Egypt, Iran, Pakistan, Turkey and Saudi Arabia are doing so more brazenly than at any point in recent history. Middle-sized powers now have "an enormous capacity for messing [things] up", laments a senior UN official.

America is still the world's greatest power. But since the late 2000s its ability to deter foes and reassure friends has waned. George Bush's invasion of Iraq ended in failure. Barack Obama drew a "red line" against the use of chemical weapons but did nothing when Bashar al-Assad crossed it in Syria. Donald Trump scorned America's allies. Joe Biden ditched Afghanistan. ►

Other countries sense, not exactly a vacuum, but many areas of the world where American power is unlikely to be deployed vigorously. Mr Biden says he had to ditch Afghanistan to concentrate on China. If all his attention is on China, other regimes may calculate that they are free to flex their muscles elsewhere.

They do so for a variety of reasons. Some have legitimate security concerns, and no longer feel they can rely on a superpower to protect them. Some venture abroad to distract attention from failures at home. Some leaders trade military support for commercial advantage—typically for their cronies, not their people. Some are driven by ideology, but more are driven by something cruder: an understanding that if autocrats help each other, they can stay in power longer.

Probably most meddlers have multiple motives, which is why the new world disorder is so much more complicated than the cold war. Consider Venezuela. Under President Nicolás Maduro, its economy has collapsed by 75%. Yet his awful regime survives, with the help of two medium-sized malefactors (Cuba and Iran), and two large ones (Russia and China).

It is hardly surprising that Russia would have the means and motive to back a regime America loathes, or that China would lend it money. But what of Venezuela's littler helpers? Cuba's leaders support Mr Maduro because they are soulmates: autocratic, far-left and brutal. Venezuela sends Cuba cut-price oil; Cuba sends back thousands of doctors and spies. The Cubans train Venezuelan medics and interrogators. They also help Mr Maduro snoop on his own security services, to weed out potential coup plotters.

Iran supports his regime for different reasons. At first glance, Shia theocrats have little in common with the hard-drinking, pork-guzzling socialists who rule Venezuela. But they are united by their hatred of the United States and contempt for the wishes of their own people.

Iran is a "mentor" to Venezuela. It teaches it how to dodge United States sanctions, to which it has been subject for far longer, says a former official of Mr Maduro's government. Since 2019 trade between Iran and Venezuela has risen sharply. Iran sends Venezuela food and fuel in exchange for gold, which has been smuggled via Turkey. Passengers joke that even near-empty flights between Caracas and Istanbul seem strangely heavy at take-off.

In Ethiopia and Venezuela midsized meddlers have emboldened dismal regimes. In Afghanistan a midsized meddler helped install one. Three weeks after the Taliban seized power, reporters spotted a suave guest in Kabul's swankiest hotel. Though the Afghan capital was overrun by gun-toting jihadists, Lieutenant-General



Faiz Hameed, who was then Pakistan's chief spy, seemed relaxed. "Don't worry, everything will be OK," he told a reporter.

Pakistan meddles for geopolitical reasons. The military men who really call the shots there are afraid of India, their great enemy to the south, and also have an interest in exaggerating that fear, since they use it to justify their huge budget, unaccountable power and splendid perks. They long argued that India wanted to encircle Pakistan by forging ties with Afghanistan. So they supported the Taliban, not least by allowing them to use Pakistan as a rear base.

In August, as America pulled out of Afghanistan, the Taliban took over. Pakistani military officers are crowing. India has lost its influence (which was never as great as Pakistan said it was) and Pakistan has gained a friendlier neighbour.

Meddlers are often muddlers

Yet Pakistan's victory in Afghanistan could prove pyrrhic. "Pakistan is too poor to support a satellite state," says Husain Haqqani of the Hudson Institute, an American think-tank. The Taliban are woeful administrators. Under them, Afghanistan's economy is collapsing. Some families are selling their daughters to buy food. Pakistan has no wish to host another surge of Afghan refugees, but if the Taliban provoke another civil war it may have no choice. Fearful of this, Pakistan is pleading with the West to resume aid to Afghanistan, and with the Taliban to be more inclusive. Neither has given much ground yet. Of the two, the Taliban may prove more obstinate.

Turkey, like Pakistan, has real security concerns, even if its ruler, Recep Tayyip Erdogan, often exaggerates them. Kurdish fighters in Syria, allied to Turkey's homegrown Kurdish separatists, tried to carve out a statelet on Turkey's border. Turkey saw this as a threat. Mr Erdogan responded

by invading and occupying much of northern Syria. Shops there now sell Turkish goods, the Turkish lira has replaced the Syrian dinar, and Turkish flags hang from government buildings rebuilt by Turkish contractors. Locals complain about abuses by the Syrian mercenaries Turkey uses to police the area.

Until the early 2010s Mr Erdogan tended to rely on diplomacy and mediation to defuse complex regional disputes. Today, he seems to think Gordian knots are best torn apart by a Turkish drone. He has deployed warships to the eastern Mediterranean to lay claim to waters Greece and Cyprus consider their own. He has sent troops to Libya. He has helped Azerbaijan win a war against Armenia.

Mr Erdogan does such things partly because nationalism plays well at home. Even the opposition goes quiet when he wraps himself in the flag. And displays of martial prowess take voters' minds off the economy, which has suffered under his erratic management. Yet Turkey's new foreign adventurism also derives from a conviction that the country should deploy its army, NATO's second biggest, to get its way, no matter what its allies think. Mr Erdogan does not want to leave NATO. But he is ready to push relations with the West to breaking point.

Many Turks began to question their reliance on America after its debacle in Iraq, says Alper Coskun, a Turkish ex-diplomat. The questioning accelerated when, in Syria, America outsourced the ground war against Islamic State to Kurdish forces that Turkey considers terrorists. "There is a feeling we're not getting anywhere with our traditional partners," says Mr Coskun.

The Turkish government, which detests Mr Assad, was disappointed when Barack Obama failed to punish him for using chemical weapons in 2013. Russia's subsequent intervention to prop up Mr Assad ended Turkey's hopes of toppling him, but also taught Mr Erdogan that Turkey too needed to move fast and break things. The thinking in Ankara was that "If the Russians can get things done with hard power, we can follow their path," says a Turkish official.

In some ways, Turkey's interventions have succeeded. Turkey helped Azerbaijan win back territory previously occupied by Armenian forces. The armistice gave Turkey a land corridor to Azerbaijan and the rest of the Turkic world. In Libya a government saved from overthrow by Turkish troops recognised dubious Turkish claims in the eastern Mediterranean. By deploying gunboats, Mr Erdogan showed that Turkey was ready to use force to defend what it considers its maritime borders.

But these victories have damaged relations with Europe, America and Middle Eastern powers. "Trust with allies has been

▶ completely lost,” says Soli Ozel, of Kadir Has University in Istanbul. Also, stepping into the vacuum left by American inaction and European weakness means having to deal more with Russia. “When Turkey is left alone in the room with Russia, its hand is not as strong as it once thought,” says Asli Aydintasbas of the European Council on Foreign Relations, a think-tank. It was Russia that greenlit three of the offensives Mr Erdogan launched in Syria—and also set limits on how far Turkish troops could go.

From minnow to mischief-maker

The trailer for “The Ambush” starts like a Hollywood action flick. Soldiers swap jokes and lift weights before setting out on patrol in an armoured vehicle. Insurgents surround them in a valley. Comrades rush to the rescue, while helicopters swoop overhead. Viewers will have to wait until November 25th to find out if they survive.

The good guys in this film, however, are not from America but from the United Arab Emirates (UAE). And the war they are fighting, as part of a Saudi-led coalition battling rebels in Yemen, is one in which America played only a supporting role.

With just 1m citizens in a population of 10m, and a standing army smaller than the Delhi police, the UAE is surely one of the tiniest countries to make a big-budget blockbuster about its martial exploits. Until recently, when the UAE sent troops abroad, it did so as part of larger Western-led missions. Its troops helped America liberate Kuwait and served with NATO in Afghanistan; its warplanes helped America bomb Islamic State. Like the other Gulf states, the UAE long felt comfortable under an American security umbrella.

Lately, though, the Emiratis have struck out on their own. They deployed thousands of ground troops to Yemen. Emirati drones have bombed faraway Libya. Emirati bases have popped up in Eritrea and Somaliland. The country introduced conscription for male citizens in 2014, and in 2018 extended it from 12 to 16 months.

The UAE is not the only Arab country to get involved in regional conflict. Saudi Arabia is still fighting in Yemen, a battle the Emiratis largely quit in 2019. Egypt has intervened in Libya’s civil war. But both acted against what they saw as neighbouring countries’ threats to their own security.

The UAE’s motives are more diffuse. One is ideological: the UAE views political Islam as an existential threat. It has bankrolled anti-Islamist politicians in Egypt and Tunisia. It has sent countless planes stuffed with weapons to Khalifa Haftar, a warlord who in 2019 nearly overthrew the Islamist-aligned government of Libya.

The UAE’s military policy is intertwined with commerce. Tahnoun bin Zayed al-Nahyan, the national-security adviser, also oversees a business portfolio that includes

ports and arms. DP World, a Dubai ports conglomerate, runs terminals in the Horn of Africa. And where it goes, so too goes its army. A base in Assab, on the Eritrean coast, served as a jumping-off point for the war in Yemen. The UAE has trained military and police forces in Somalia. It views the region as strategic, not only for defence but also for trade and food security.

Interventions boost the UAE’s mostly state-owned arms industry. The UAE is one of the world’s ten biggest arms importers, says the Stockholm International Peace Research Institute, a think-tank. By 2030 it aims to produce a third of its military kit at home. Emirati-made armoured vehicles have already been spotted in Libya.

Yet for all its swagger, the UAE has found foreign intervention hard. Since its withdrawal from Yemen it has dismantled part of its base in Assab. It has also scaled back its role in Libya. Officials cast this in high-minded terms—a pandemic-era effort to focus on the home front. In reality, the UAE is pulling back because it has been unsuccessful. The war in Yemen has become a quagmire; Mr Haftar’s march on Tripoli, the Libyan capital, ended in failure.

The master meddler

Early this month a drone laden with explosives crashed into the Iraqi prime minister’s house, injuring seven bodyguards. No one claimed responsibility, but fingers were pointed at Iranian-backed militias.

Iran is perhaps the most successful medium-sized meddler. It backs Hezbollah, a Shia militia with a chokehold on Lebanon, and Hamas, a Sunni Islamist group that rules Gaza. It helped save Mr Assad in Syria and arms the Houthi rebels in Yemen.

In 2003 America toppled Saddam Hussein, an Iraqi despot, thereby removing a crucial (if odious) counterweight to Iran. Now Iranian-backed militias in Iraq are so strong that the state fears to confront them. America has occasionally pushed

back, most notably when Donald Trump ordered the assassination of Qassem Suleimani, the mastermind of Iran’s covert foreign policy. But his influence lingers.

At home, Iran is a mess. Iranians have been growing poorer for a decade. Most are so frustrated that they boycotted an unfair presidential election this year. Yet the foreign armed groups that Iran supports are thriving. Much of the Middle East is now under their sway.

They are not lavishly funded. Nor are they popular. Most avoid elections, or do badly in them. And yet Iran has proved adept at setting up ideological franchises. These are not mere automatons. Iran could not tame the Houthis in Yemen even if it wanted to. In Syria Mr Assad flirts with Iran’s Arab foes. Even Hezbollah, Iran’s most loyal Arab offshoot, controls its own arsenal and decides when to launch wars.

But loose control lets Iran’s franchises dig local roots. Iran may provide seed capital, arms and a guide to assembling drones. Its clients are then expected quickly to start financing themselves, through smuggling, extortion or drug-dealing. Mr Assad, Hezbollah and the Houthis peddle amphetamines, hashish and *qat* (a narcotic leaf). Iran’s main clients have also captured states, wholly (Syria) or in part (Lebanon, Iraq). The Iraqi state pays the salaries of the pro-Iranian militias that undermine it, handing lump sums to their commanders—hardly a recipe for curbing graft.

Franchising violence spares Iranian blood as well as treasure. Iranians fight for Palestine to the last Palestinian, Israelis quip. Fewer Iranians died fighting in Syria and Iraq than other Shia foreigners. Iran has recruited Shia refugees from Pakistan and Afghanistan to join their ranks.

Iran sometimes works with Sunnis but its main aim is to inspire Shias, of whom there are some 100m in the Middle East, to fight its wars. At a warehouse near Basra in Iraq, it signs up volunteers and schools them in its revolutionary creed. Portraits of Ayatollah Ali Khamenei, Iran’s supreme leader, line the walls, along with poems about martyrs. Most Shias reject Iran’s ideology. But those who embrace it have missiles. Indeed, Iran’s franchises add up to what is arguably the Middle East’s most powerful military force. Certainly it can upset the world’s oil supply. In 2019 Iran’s allies in southern Iraq disabled Abqaiq, the world’s largest oil refinery, in Saudi Arabia.

In a multipolar world, the influence of medium-sized powers will surely grow. Many will be benign: think of Japan, Germany or Canada. But as the constraints on midsized malefactors slip, expect more trouble, too. Kori Schake of the American Enterprise Institute, a think-tank, puts it bluntly: “The international order is going to get a lot messier as a result of the US being less involved.” ■



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Indian politics

With enemies like these

DELHI

A feeble opposition is Narendra Modi's secret weapon

IN A SHORT speech on November 19th Narendra Modi, India's prime minister, made a humiliating u-turn. Barely a year after pushing a trio of laws reforming agriculture through parliament, he announced their repeal. The shame was not only to have handed victory to the horde of tractor-mounted peasants doggedly protesting at the gates of India's capital since last November. It was to have bungled the issue from the start.

Indian farming does indeed desperately need reform. Yet Mr Modi made no effort to build consensus for his three new laws last year, instead ramming them through without debate. When north Indian farmers, many of whom happen to be Sikh, protested, he doubled their fury by tagging them thugs and traitors. The most powerful Indian leader in a generation then did nothing for months, as if the stand-off were someone else's problem. That is, not until elections in a couple of important farm states drew uncomfortably near, whereupon Mr Modi crumpled completely.

In any other democracy a leader who flouted parliament, broke trust with an in-

fluential religious minority and insisted on—and then scrapped—controversial reforms would pay a heavy political price. But although the farm-bill fiasco is only the latest link in a long chain of embarrassments under Mr Modi, the prime minister remains largely unscathed. Admirers ascribe his staying power to personal charisma. They say he projects the strength and dignity Indian voters crave in their own lives. Detractors point instead to the deep pockets, ruthlessness and military discipline of his Bharatiya Janata Party (BJP), quietly buttressed by a web of allied Hindu-nationalist organisations and noisily amplified by relentless propaganda.

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All this surely counts, yet would not suffice without another secret weapon: the opposition. Throughout Mr Modi's tenure, the BJP's opponents have remained divided, weak and largely ineffectual. This does not mean they have given the prime minister a free ride. Mr Modi's withdrawal from circulation in 2016 of high-denomination currency notes, the BJP's stoking of Islamophobia in a country with 200m Muslims, and the erratic handling of covid-19 made it easy for opposition politicians to fire up disgruntled constituents. But despite landing the odd blow against Mr Modi, and beating the BJP in the occasional state election, they have so far failed to shift India's broader narrative.

For three decades two big trends have marked the country's politics. One is the rise of the BJP, which is itself the spearhead of a century-old movement based on the idea that India's essentially Hindu nature has been unjustly suppressed for a thousand years. This idea of victimhood has helped to consolidate a so-called Hindu vote behind the BJP and made it hard for other parties to challenge it without being smeared as less nationalist, or as pandering to minorities.

The other trend has been the slow disintegration of the Congress party, which carries the legacy of India's secular independence movement. Congress was the party of government for the first decades of the Indian republic, but its efforts to keep its tent as wide as possible led to fragmentation. From running virtually all of India's

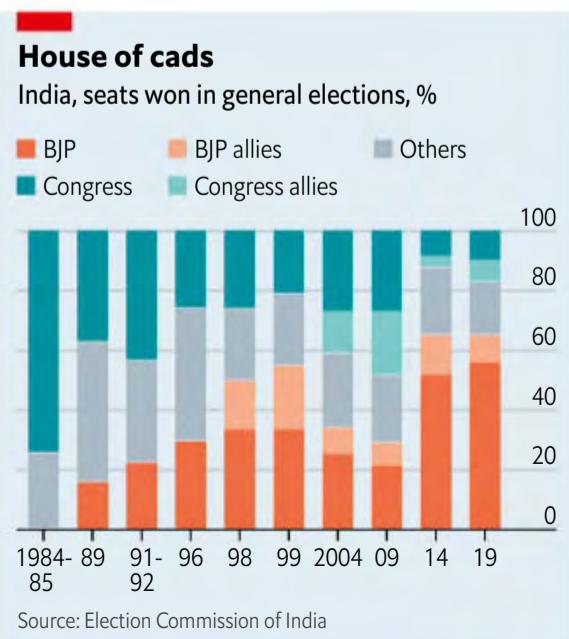
► states in the 1950s and 1960s, it has been reduced to running just three out of 28 today, compared with 12 for the BJP.

The leading rival to the BJP in many states is no longer Congress itself, but rather local spin-off parties led and largely manned by former members of Congress. In some big states these parties have mostly supplanted the mother party. In others, local parties have sprung up on their own and poached Congress's electorate. Their success has left Congress with barely a vestigial presence across much of India, and helped reduce its share of seats in the lower house to below 10%, compared with 56% for the BJP (see chart).

At the state level, all these opposition parties amount to a strong challenge to the BJP. The country's diversity means that ethnic, caste or religious sensibilities create perpetual pushbacks against a too-dominant centre. The trouble is that compared with the BJP's simple core message of Hindu pride and nationalism, its scattered and multiple opponents have no shared story to tell.

But Congress in particular suffers from yet another handicap: the Gandhi family. These are not descendants of Mahatma Gandhi but of Jawaharlal Nehru, India's first prime minister, via his daughter Indira's marriage to Feroze Gandhi, a journalist and politician. It was under the dictatorial rule of Indira Gandhi (prime minister from 1966 to 1977 and 1980 to 1984) that the family's dominance of the party was consecrated. It extends now to her grandchildren Rahul (51) and Priyanka (49), although it is their Italian-born mother, Sonia (74), who remains the party's official head.

The younger Gandhis are personable and capable, but their pedigree exposes them to the celibate Mr Modi's barbs about nepotism. Party insiders grumble about ideological drift, the lack of internal democracy and the overweening influence of courtiers rather than street-level vote-getters. The party has lost a stream of defectors and frustrated workers in recent years,



and repeatedly been outfoxed—in the small state of Goa, Congress won more seats in a recent election, but woke to find the BJP had lured its allies into a coalition overnight. The fact that Rahul Gandhi has frequently been proved right—he called early for action on covid, and declared a year ago that the BJP would be forced to scrap farm reform—has impressed Indians less than his lack of gravitas. He has twice led his party to defeat in national elections, losing in 2019 the seat that he had inherited from his uncle, father and mother.

Mr Gandhi seems ill-suited to propping up a big but sagging tent in a raging storm, yet he shows no inclination to hand the role to anyone else. Without a better vote-

catcher at the helm of Congress, the opposition's only other hope for defeating the BJP in 2024 would be to form a broad coalition of regional parties. But little unites them except loathing for the BJP. Even this is suspect: many regional politicians would be happy to be bought off.

It is also a fact that regional leaders, however popular on their own turf, have little national stature. Perhaps it will prove that just as Mr Modi's best ally has been the weakness of his opponents, so the opposition's best chance to capture power may stem from the actions of the prime minister himself. But it will take a gargantuan mistake to undo the seemingly unassailable Mr Modi. ■

South Korean history

A dictator's demise

SEOUL

The death of Chun Doo-hwan revives a debate about the pre-democratic era

THE ERA of strongman rule in South Korea receded a little further on November 23rd when Chun Doo-hwan, the country's last military dictator, died at home in Seoul at the age of 90. His death follows that last month of Roh Tae-woo, Mr Chun's close associate and successor as president.

Mr Chun's stint in power was characterised by rapid economic growth and the violent suppression of political dissent. It is the latter that is better remembered. A high-ranking member of the junta led by President Park Chung-hee, Mr Chun, aided by Mr Roh, took power in a coup after Mr Park's assassination in 1979. He imposed martial law and closed universities. When protests against that policy erupted in the southern city of Gwangju in 1980 he sent in troops, resulting in hundreds of deaths.

Mr Chun ruled until 1987, when protests against his attempt to have Mr Roh succeed him through an indirect vote forced him to hold elections. With the opposition split, Mr Roh ended up winning. After democratisation both men were tried on charges related to their coup, the Gwangju massacre and corruption. Mr Chun received a commuted death sentence; Mr Roh was sentenced to a long stint in prison. Both men were pardoned by President Kim Young-sam in 1997 in a gesture of national reconciliation. In later years Mr Roh kept a low public profile. Mr Chun, though, was unrepentant, denying that there had been indiscriminate killings of civilians.

The government, whose political base is made up of people who rejoiced at the dictatorship's passing, organised a state funeral for Mr Roh in recognition of his



Unrepentant to the end

shepherding of the country towards democracy. But it issued a terse response to Mr Chun's death, expressing regret that he had neither told the truth nor shown remorse. The president would not be sending flowers.

By contrast the conservative opposition, some of whose supporters retain a degree of fondness for the achievements of the pre-democratic era, was more equivocal. Lee Jun-seok, the opposition leader, said the party would send a wreath, and individual members were free to attend the funeral. Left-wing outlets denied Mr Chun his presidential title in their obituaries, but right-wing media made allowance for his successful economic policy and his eventual voluntary retreat from power. Mr Chun may be dead, but the debate over the generals' legacy will live on for a while yet.

Covid-19 protests

Globalising discontent

SYDNEY

Antipodean anti-vaxxers are finding inspiration in America's far right

TWO HUNDRED and sixty-two days of lockdown are enough to nurture some grievances. Protesters in Melbourne, the world's most locked-down city, have been marching in opposition to its stringent covid-19 restrictions almost ever since the measures were first imposed. But of late the mood has turned nasty.

More than 200 people were arrested at a rally in September for hurling bottles and golf balls at police. This month anti-vaxxers outside the parliament of Victoria, of which Melbourne is the capital, hanged in effigy Daniel Andrews, the state's premier. An unmasked crowd of some 10,000 unvaccinated Victorians marched through Melbourne on November 20th. Some waved nooses and held placards of Mr Andrews dressed in Nazi gear. He accused "extremists" and "rabid anti-vaxxers" of "making all sorts of threats" against his family.

Victoria has one of the world's highest vaccination rates and recently removed most of its covid restrictions. Yet its government is trying to rush a "pandemic management" law through the state parliament, to grant it extraordinary powers to enforce lockdowns, close businesses and detain citizens. It says the bill is needed because a state of emergency imposed last March is expiring on December 15th, stripping the government of its power to enforce covid rules. The bill is intended to create a transparent legal framework to manage future outbreaks.

The bill would give the state's health minister the authority, upon declaring a pandemic, to issue "any order" which is "reasonably necessary to protect public health", with a minimum of oversight. The state's bar association complains that "it authorises extreme limitations of basic liberties of all Victorians." It would "entrench rule by decree as a long-term norm", wrote a group of barristers. (The government has agreed to some amendments, but independents, whose support it needs to pass the bill, were pushing for more as this article was published.)

Anger about covid restrictions is not limited to Melbourne. Thousands of Australians marched against vaccine mandates in Adelaide, Brisbane and Sydney on November 20th. There is no national requirement for Australians to be inoculated, but states are making life hard for those who refuse the jab. Some insist on vaccination for those in high-risk jobs. Others ban

the unvaccinated from public places.

State measures are becoming a point of contention in the federal Parliament, too: rebel conservatives angry about vaccine mandates are holding up the passage of government legislation in the Senate. In New Zealand, where the government has made vaccines compulsory for 40% of the working population, a similar debate is brewing. Protesters there took to the streets on November 9th waving signs saying "Kiwis are not lab rats."

Anti-vaxxers are only a tiny minority in both countries. More than 85% of over-11s in Australia and New Zealand are fully immunised, compared with 69% in America and 60% in the EU (which is seeing its own violent protests; see Europe section). Most support their governments' strict handling of the pandemic. But widespread acquiescence may only make the fringe angrier, says Paul Spoonley, a sociologist at Massey University in New Zealand. So will new vaccine mandates, which are coming into force in Queensland and New Zealand as other restrictions are lifted.

There are signs that anti-vaxxers in both countries are being radicalised. MPS in New Zealand, where politics is usually pacific, have had to beef up security after a slew of death threats. The minister in charge of its pandemic response, Chris Hipkins, says his office has been "the target of repeated and ongoing attacks". The authorities in Victoria have brought charges against a man who encouraged protesters to "bring out rifles and shotguns" and shoot the state's premier. Two men have been charged in the state of Western Australia after they allegedly threatened to behead its premier.

Protesters are taking inspiration from America's far right, says Mr Spoonley. Some wave flags featuring Donald Trump, wear red hats and threaten journalists. They have started calling politicians "traitors" and calling for lynchings. Placards



Adelaide to the party

mentioning QAnon, an incoherent conspiracy theory which is taking off in the Antipodes, are increasingly common.

Opposition to vaccine mandates is uniting anti-vaxxers with conspiracy theorists and far-right nationalists, says Josh Roose, a researcher at Deakin University in Melbourne. Police in Victoria warn, "Online commentary on covid-19 has provided a recruiting tool for right-wing extremist groups." A recent paper from Te Punaha Matatini, a research centre in New Zealand, says that vaccinations "are being used as a kind of Trojan Horse for norm-setting of far-right ideologies". A federal election is due in Australia early next year. A noisy minority will make itself heard. ■

Migration scams

No way out

Fraudsters are preying on Afghans desperate to leave their country

AISHA SULTANA is a 25-year-old Afghan woman who worked in her country's parliament until mid-August. That was when Kabul, the capital, fell to the Taliban. She has been in hiding ever since, moving between relatives' homes with her younger sisters. The family has reason to fear. Their father was an officer in the Afghan army (he was killed in a suicide-bombing). Their brothers, who are also in hiding, served in the special forces. These links do not endear them to their new rulers.

Their mother and an older sister were able to flee to Canada during the chaotic evacuation that followed the Taliban's takeover. Ms Aisha Sultana (not her real name) would love to follow. So when a friend sent her the phone number of a Canadian immigration official, she jumped at the opportunity. The man at the other end of the WhatsApp chat promised that he could get her and her sisters to Canada for a mere \$2,500 each. Their lack of passports was no obstacle. And just \$500 needed to be paid upfront, with the rest due only when they reached Canada.

It was too good to be true. Though the phone number appeared to be Canadian, it was in fact a virtual one purchased from Google Voice, which allows people to set up a North American number from anywhere in the world. The photos its owner posted on Instagram, apparently of him welcoming refugees he had helped get to Canada, were stolen from the account of Michael Levitt, a former Canadian MP who served on the foreign affairs committee. The first Mr Levitt heard of it was when he was contacted by *The Economist*.

Such scams have long existed in other poor, migrant-exporting countries. Criminals in Ghana even set up a fake American embassy in Accra that issued (useless) visas to victims. They are now proliferating in Afghanistan, which provides rich pickings among the former government officials, activists and army officers desperate to leave. Many who were approved for evacuation to Britain, Canada or America find themselves trapped in Kabul. They are vulnerable to tricksters promising, for example, safe passage to Qatar for \$3,000 per person. Somebody using the name Noor

Bagam pretends to be an official in the Canadian High Commission in Pakistan, and says she can get families to Canada for \$5,000 a head. Travel agents charge \$200 to apply for Pakistani electronic visas, which are free, promising that they get better results. In reality, most are still refused.

Ms Aisha Sultana was lucky. She took the bait, but was unable to send any money. Her scammer demanded payment in Bitcoin, or else via Moneygram, a money-transfer service, to a Ponik Natalya in Russia. She could not do either, because withdrawals from Afghan bank accounts are

frozen. But she was still incensed to realise that she had been given false hope. Since she backed out, "he still texts me every day and asks for money". She ignores the messages, but remains desperate to leave.

In the grim calculus of everyday life in Afghanistan, however, losing a few thousand dollars may be the better fate. In recent weeks, several prominent female activists have been murdered. One, Forouzan Safi, a 30-year-old feminist in Mazar-i-Sharif, a northern city, was lured out of her home by somebody who claimed to be able to help her leave Afghanistan. ■

Banyan Oh no, it's UMNO

One of the sleaziest former prime ministers in history is making a comeback

WHO, AT THE time, did not see the resounding defeat in 2018 of the scandal-drenched prime minister, Najib Razak, and his United Malays National Organisation (UMNO) as a watershed for Malaysia? And who, after a state election in Malacca on November 20th in which the UMNO-led coalition, Barisan Nasional, won 21 of 28 seats, does not wonder whether all the hopes for reform generated in recent years will come to naught?

Malacca is a bellwether for southern peninsular Malaysia, the country's political heartland. A general election due by July 2023 will probably be called next year. Not only might UMNO regain its old grip; so, even, might Mr Najib. He is appealing against his convictions for corruption. Out on bail, he has rebranded himself the people's champion and was omnipresent in the Malacca campaign.

UMNO had ruled since independence thanks to nasty identity politics pandering to the ethnic-Malay majority, which also helped enrich its business friends. In 2016, under Mr Najib, Malaysia was second only to Russia in *The Economist's* crony-capitalist index. During his tenure some \$4.5bn was bilked from a state investment fund, 1MDB, while the prime minister's own bank balance rose by nearly \$700m (an unrelated gift, he said).

Yet for reformist Malaysians who want more racially inclusive politics and an end to all the cronyism, the victory in 2018 of a multiracial alliance, Pakatan Harapan, soon proved a giant disappointment. First came bickering over power-sharing between its two lions, the nonagenarian Mahathir Mohamad, Mr Najib's successor as prime minister, and his protégé-turned-enemy-turned-frenemy, Anwar Ibrahim.

Then came machinations within Dr Mahathir's party that in early 2020 saw

him ousted in favour of a deputy, Muhyiddin Yassin, whose Perikatan Nasional cobbled together a government with elements of UMNO. It was a miserable stint, which ended in August with backroom dealings and another weak government, this time with an UMNO prime minister, Ismail Sabri Yaakob, propped up by Mr Muhyiddin's party.

As for Mr Anwar, with power eluding him, he has variously sought deals with some of UMNO's sleaziest elements; claimed to have a majority in Parliament when he probably did not; and, in September, struck a deal offering the government support in return for a say in the budget and a promise not to call a snap election. Both sides promised not to poach members. Party-hopping "frogs" were behind Pakatan Harapan's fall in 2020.

Mr Anwar intended such moves to keep Pakatan Harapan in contention. Instead, they dismayed backers for whom Mr Anwar was once a beacon for a new, transformational politics. The final straw came in Malacca, where Pakatan Harapan welcomed exactly the kind of frog-hopping he

supposedly deplored, leading to the state government's fall and a new election. Pakatan Harapan paid the price. Many of its supporters stayed away, whereas UMNO's long-established machine got its voters to the polls.

Pakatan Harapan will also be punished in a state election in Sarawak in December, predicts James Chin of the University of Tasmania. Then attention will turn to the next general election. Mr Najib is not the only UMNO heavyweight to fancy his chances of succeeding Mr Ismail Sabri, who is not part of UMNO's "mainstream". But he has strong reason to wish for an early election—his convictions can much more readily be overturned under an UMNO government. Meanwhile, his political resurrection continues: his party, Mr Chin says, values Mr Najib for his political nous.

Is it all over for reform? Bridget Welsh of the University of Nottingham Malaysia says that the next general election will see a sharp increase in first-time voters, owing to a lowered voting age and new, automatic voter registration. Younger Malaysians are those pushing hardest for change. As covid-19 restrictions ease, anti-corruption protests will grow.

A groundswell for change exists. But for it to be channelled through Pakatan Harapan, Mr Anwar should now give up his bid of more than two decades to become prime minister. No doubt that he has personally suffered in the attempt, spending nearly ten years in prison on politically motivated charges, first under Dr Mahathir (in his UMNO days) and then under Mr Najib. And more than any other politician, he has reminded Malaysians that change is possible. But the 74-year-old is no longer the solution. Like other leaders of his generation, he is now part of the problem.



Climate change and emigration

How green was my valley

KHARNAK AND KHARNAKLING

Ladakh's pashmina-goat-rearing nomadic tribes are dwindling

CITY LIFE is easy, scoffs Tsetan Paljor, whirling a prayer wheel as he sits by a stream where, on a little island, three crimson-robed lamas snooze. City people don't have the stresses we have, he says: are the goats eating enough? Are snow leopards on the prowl? Mr Paljor, 69, is a member of the Kharnak, one of three tribes of the Changpa, who live in Ladakh in the extreme north of India. For as long as anybody can remember, these tribes have raised the goats native to the Changthang plateau—the only ones that produce pashmina, the most prized and pricey type of cashmere.

To call life here harsh is, for this city-dwelling correspondent, an understatement. The Changthang plateau is 15,000 feet above sea level. The air is so thin it makes heads ache and noses bleed, and leaves visitors gasping for breath. Winter temperatures drop to -35°C and, apart from the lush green on the banks of the stream, there are few signs of plant life. It is a barren landscape, the mountains rising naked on all sides.

It was not always so. "There used to be grass on that mountain," says Tsering Phuntsog, the 65-year-old head of the tribe, gesturing towards a nearby slope. But over the past decade temperatures have risen and precipitation has diminished. "It doesn't rain when it's supposed to rain. It doesn't snow when it's supposed to snow," he says, and when it does, it doesn't do enough of it.

The result is that there is no longer enough grass for the animals to graze on. What little scrub does emerge is not ideal for the goats. Less grass means less pashmina. It also means lower-quality pashmina. It makes the animals weaker: they fall ill more frequently and premature births are increasing. What is more, tribal elders complain, the fodder that the state government used to send has dried up since an administrative change in 2019 separated Ladakh from the rest of the state of Jammu & Kashmir and made the two new "union territories" ruled directly from Delhi, the capital of India.

What can be done? One answer is prayer: the napping lamas are visiting because the locals are in the middle of a week's worth of chanting to the Buddha. "But still very little falls," says Mr Phuntsog. A more immediate solution is to move every month in search of greener pastures, up from six or seven times a year in the past.

The dearth of forage is exacerbated by a shortage of manpower. Barely 20 families remain among the Kharnak, rearing between them some 13,000 animals: mostly goats but also sheep for trading, horses for transport, yaks for wool, and dri—female yaks—for their milk, which is churned into butter and added as a calorie-booster to the tea the nomads drink all day. Up here, the body needs as much energy as it can get. The youngest adult member of the tribe is 28. Most are in their 60s. There are not enough men to mind the grazing herds.

Outward migration started about 15 years ago, says Mr Paljor, when young people started leaving to study in Leh, Ladakh's biggest town, some 150km away. They rarely returned. "But in 2009 eight or ten families left together, and that was when we realised it was a demographic crisis," he says. Granted, the winters are brutal, and until the state recently built an all-weather road the valley was cut off from the world for part of the year. "But if they keep leaving the whole culture will be gone."

Goaterdämmerung

Nor is it just the young who are moving to the city. The latest loss was Tsering Angchuk, 68, who left the tribe in August to be with his daughter and son-in-law in Kharakling, a settlement just outside Leh where many Kharnaks have built homes ("ling" is the Ladakhi equivalent of "-ville" or "-town"). "It is right to be there. Actually one should be there," says Mr Angchuk, re-

ferring to the valley, as he sips butter tea. "But as you get older there is no one to look after you or after the herd. So there is no choice but to come here." It is true that life is easier in the city: "You don't have to worry about feeding the goats or the sheep getting eaten." But there is a difference, he adds, between ease and happiness.

As the tribe dwindles, it must rely on outsiders to fill the gap. For the past several years, the elders have employed migrants to graze their animals, paying 25,000 rupees (\$335) a month, a 40% premium on the cost of day labour in Leh. But coronavirus restrictions over the past two years reduced the supply of workers, who are now demanding higher wages.

The nomads will pay up. They have recently realised how valuable their wool is, after years of trading it with travelling merchants for apples and jaggery (a type of sugar), or selling the animals whole to butchers for a fifth of the price they get now.

Living conditions ought to improve too. Last year the local government announced 2.5bn rupees in development aid for Changthang, to be spent on things like all-weather roads, electricity, mobile towers and fodder. "This is the 21st century. The nomads now learn how to read and write. After all that you can't tell them to go back to do livestock and grazing," says Tashi Gyalson, the head of the Ladakh Autonomous Hill Development Council. "Those who want to stay with the livestock, we are doing for them what we can."

Mr Angchuk, the latest emigrant, is optimistic too. For one thing, he says, the Buddha will never allow their culture to become extinct. For another, you never know—the youngsters may eventually realise that they belong back in their motherland, where they have their own identity. But most importantly, he says, "these are modern times. The winters may be harsh. But now we have ways of dealing with it." ■



Ruminating on the roof of the world

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Education abroad

The West's allure

China's globetrotting students are getting back on the road

QIN YIBO is half way through a science degree at the University of Auckland in New Zealand. But she has not been in the country since early 2020 when it closed its borders to prevent the spread of covid-19 (she was back in China at the time). Instead the university has arranged for Ms Qin and other stranded students in China to take up residence on campuses in their own country while they continue their studies remotely. Ms Qin has thought about transferring permanently to a Chinese university, but she still plans to return to New Zealand when it eases its border controls.

Ms Qin is relatively lucky. She has enjoyed seeing parts of her country that she had not visited previously. She spent the early months of this year at a university in Heilongjiang, a north-eastern province with bitter winters. Then, for a change of scenery, she moved to a campus in Fujian in the balmy south. Many thousands of Chinese students who had not yet enrolled at universities abroad when the pandemic began have found their plans upended by covid-related travel restrictions. Universities in the West have lived in fear that young Chinese, whose tuition fees are a lu-

crative source of revenue, would give up the dream of studying aboard.

There are good reasons for Western universities to be anxious. In 2019 around 700,000 Chinese headed abroad to study, more than three times the number a decade earlier. Most joined universities in English-speaking countries. Chinese students have had several reasons to reconsider their destinations. Foreign travel is difficult during a pandemic, and covid is still rife in Western countries. China has grown more unpopular in recent years, and some Chinese people in the West have suffered racist abuse. Anti-Western sentiment has also been rising in China, sometimes stoked by ruling-party propaganda. Many Chinese chafe at Westerners who blame China for its initial cover-up of covid, or who fail to give it credit for its subsequent success in curbing the virus.

But the pandemic's impact on Chinese

demand for study abroad has not been as bad as many had predicted. Before the crisis about 370,000 Chinese were studying at American universities, where they made up about a third of foreign students. In 2020 the number of Chinese enrolled, including those studying online from abroad, fell by around 15%. That is not the collapse that some in the industry had predicted, says Martin McFarlane of the University of Illinois at Urbana-Champaign. The fall was caused almost entirely by a reduction in the number of foreign students starting new courses, which now seems to be rebounding. The Institute of International Education, an American NGO, says that this autumn the number of foreigners who began studying at American universities for the first time was only 9% lower than in 2019 (though about 35% were taking their classes online).

Australia has kept its borders shut to most foreign students throughout the pandemic. Even now, roughly half of them are studying online from outside the country, including about 65% of those from China. Yet, in Australia, total Chinese enrolment in higher education has fallen only 7%. Chinese students—nervous of the virus but keen to burnish their cvs with a Western degree—have proven more willing to put up with online learning than peers of other nationalities. Enrolments by Indians, for whom in-person classes are a high priority, have fallen by more than a third.

Britain's universities have fared the best. The number of Chinese students was rising fast in the years leading up to the

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► pandemic. This summer the country began allowing foreigners to remain longer after graduation to work or look for a job. Britain's rules on post-study employment are now among the most permissive in the West. Since the pandemic began, Britain's borders have stayed mostly open to foreign students, as long as they are willing to endure quarantine. In 2020 the number of Chinese accepted for undergraduate studies increased by 30%. This year the number of Chinese applying to start undergraduate courses rose again, by 17%.

In some countries, Chinese demand for tertiary education may yet falter. America is likely to remain the single most-popular destination for several more years. It is still widely regarded in China as having the largest number of great universities. But some Chinese have been put off studying in America by the xenophobic rhetoric of American officials during Donald Trump's presidency, which fuelled perceptions of Chinese as potential spies. Such concerns may have abated a bit since Joe Biden took over. But surveys of Chinese considering study in America have shown that they view America's handling of covid as the worst in the English-speaking world. Chinese students show growing interest in studying in Asia, says Simon Emmett of IDP, a multinational agency that helps universities recruit them. Asian countries are deemed to have a better record with covid.

In Australia there have been big falls in the number of Chinese students taking non-degree courses such as English-language lessons, says Peter Hurley of Victoria University's Mitchell Institute, a think-tank in Melbourne. Students often use these courses as preparation for study at Australian universities. This may suggest that Chinese enrolment at universities in Australia will keep on falling, at least for a while, even after the country reopens.

In China there is another indication of unsettled demand. A large share of the Chinese who leave the country to study commit to doing so at the end of their compulsory education, when they are about 15. At that stage they opt out of preparation for China's university-entrance exam and instead join senior high schools that offer curriculums focused on study abroad. Francis Miller, a college counsellor at one such school in the city of Xi'an, says the number of 15-year-olds entering its international programme fell sharply in 2020, before recovering somewhat this year. He thinks other, similar schools are having a harder time recruiting students. Xiaofeng Wan, who manages international admissions at Amherst College in America, notes that last year more Chinese children than usual elected to sit the entrance exam for senior secondary schools. Pupils aiming to study abroad sometimes skip this.

There are other, long-term, challenges.

The number of Chinese of university age is no longer growing. Amid economic headwinds, fewer families will have the resources to splash out on foreign tuition. Meanwhile, China's own universities are improving. About 47m people are enrolled in tertiary education there, up from around 6m in 1998. Before the pandemic an expert at the British Council, a state-funded cultural organisation, estimated that the number of Chinese seeking a foreign degree could start falling in 2023.

China does not appear keen to deter study abroad. During the pandemic Chinese officials have supported foreign universities' efforts to help Chinese students continue their studies online, says Brett Berquist of the University of Auckland. The Chinese government has stopped issuing passports to most people, but has given them to those planning to study abroad.

Officials still want clever young Chinese to get the best training in science, medicine and engineering, wherever in the world it can be found. After all, about 80% of such students return to China after graduating. For many of them, China's allure ultimately trumps the West's. ■

Birdwatching

Shout it from the rooftops

BEIJING

Why birders are a rare breed

AMONG THE capitals of big economies, Beijing enjoys a surprising distinction. Despite its sometimes harsh weather and chronically polluted air, it hosts more species of birds than any other such city apart from Brasília. Remarkably, however, bird-watching remains uncommon.

In many countries, birders play an important role in spotting changes in bird populations and avian behaviour. A British enthusiast in Beijing, Terry Townshend, has recently set up a means of doing so without needing to stand for hours outdoors. It involves a digital listening device, installed on the roof of a 15-storey building in northern Beijing. For several months until mid-November it recorded the night-time calls of migratory birds flying above. The sounds will be used to identify night-flying species, some of which are not commonly seen overhead by day. The technique has been used in America and Europe, but Mr Townshend thinks this is its first known application in Asia.

Such dedication is rare among amateurs. China has little history of birdwatching. Only in the 19th century, led by Western ornithologists, did the scientific study of birds begin. Birdwatching as a pastime has emerged only in the past two decades, helped by rising incomes that have allowed people to buy spotting scopes, binoculars and cameras.

In other countries, enthusiasts have played a big role in drawing public attention to human threats to birds. Chinese officials sometimes pay attention to gentle recommendations about ways to improve the environment. But they frown on activism. So harm caused to birds or their habitats can go unremarked. One British birder laments the recent draining of supposedly protected paddies by the Wenyu, a river in Beijing that had been a place of rest for about 200 migratory species.

Birdwatching groups in China mostly avoid campaigning. Many of their members stick to taking photographs and do not even bother with binoculars. There is, however, a small but growing number of local birders who closely monitor bird migration. Mr Townshend's listening device may provide other valuable insights. He plans to install more. ■



Rare birds watching rare birds

Chaguan | The silencing of a tennis star

A wall of censorship cuts China off from the world



IT IS HARD to see a good ending to the story of Peng Shuai, a Chinese tennis champion who on November 2nd accused a former Communist Party grandee more than twice her age of subjecting her to a coercive sexual relationship. In theory, the party deplores all immorality in office. When it suits the regime, propaganda outlets denounce purged officials for keeping mistresses as well as taking bribes. But China's rulers care still more about asserting their authority, and their exclusive right to decide which rotten corners of their system to expose and which to keep hidden.

Ms Peng, who is 35, was doomed from the moment she posted her late-night essay. In it she accuses a former member of the party's most powerful body, the Politburo Standing Committee, of imposing unwanted sex on her during an on-off decade-long affair. It is not the writing of an anti-party dissident. It is personal, even anguished in tone. It is filled with appeals to her alleged abuser, Zhang Gaoli, a former deputy prime minister in his mid-70s, as well as to her 588,000 followers on Weibo, a social-media platform. She notes that she left her family as a young child to enter intense sports training, and calls herself "extremely deprived of love". She also describes herself as a "very bad woman" but insists that she never took money from Mr Zhang. Nor did she try to collect evidence of their liaison, she adds, though she recalls his paranoia about secret recording devices.

Only a small minority of Chinese saw her essay, which was deleted within half an hour. Then censors moved to suppress discussion of it. Within the Great Firewall of censorship, online searches for Ms Peng or Mr Zhang pull up old news stories, with their comments functions disabled. It is difficult to estimate how many Chinese know of her allegations. It is clear that a large number do not.

The fate of Ms Peng could yet become grimmer. Other women have been punished harshly for challenging much less powerful men. When #MeToo campaigns emerged in China in 2018, feminist groups at universities were closed down and activists detained. True, some academics accused of gross abuses were fired. Sexual harassment was added to the country's civil code. But to preserve the party's grip on power, several women who went public with complaints were also crushed. When Zhou Xiaoxuan, a former intern at China Central Television, the main state network,

accused a star presenter of groping her, police in Beijing initially urged her to drop the complaints for the sake of society, and for that of her parents' jobs in the public sector. In September Ms Zhou lost her suit against the presenter.

Sporting fame has given Ms Peng's case a double existence: censorship at home and intense attention overseas. After the Women's Tennis Association (WTA), her sport's America-based governing body, said it had tried and failed for days to reach her by telephone, text or web message, champions including Serena Williams, Naomi Osaka and Novak Djokovic expressed worry about her safety, as did several governments. In Beijing, the embassies of France and the European Union, among others, aired concerns.

In a bid to kill the story overseas, Chinese media outlets took to platforms such as Twitter, which are blocked inside China. This has not gone well. International alarm was fuelled, not soothed, by an English-language tweet on November 18th from CGTN, China's international television network. It claimed to show an email in which Ms Peng disowned her claims of sexual assault and said she was not missing, but "resting at home". The editor of *Global Times*, a party tabloid that is a favoured outlet for exclusives from state-security services, tweeted in English that foreign media should stop speculating that Ms Peng is in danger for accusing Mr Zhang of, as he coyly put it, "the thing that people talked about". His tabloid then tweeted what looked like staged videos of Ms Peng having dinner at a restaurant with her coach and meeting children at a tennis event.

Double fault

Ms Peng's case is revealing. Protected by a monopoly at home, Chinese propagandists struggle in foreign markets which enjoy competition in ideas. They have become reliant on stoking nationalism among the Chinese public and blaming all ills on hostile foreign forces. This time, because Ms Peng cannot be spoken of at home, jingoistic reinforcements are not available. The strain showed on November 20th when a commentator for CGTN accused foreigners of racism for demanding evidence of Ms Peng's safety. "Funny how some in the West feel people in China should be at their beck and call. Just another form of white male entitlement and privilege?" the commentator tweeted—a charge that might puzzle supporters like Ms Williams and Ms Osaka.

China remains skilled at using market power to browbeat foreigners. On November 21st Ms Peng spoke by video to officials at the International Olympic Committee (IOC). Olympic bosses said that the tennis player seemed well, while failing to address the reason why she might not be well, namely her assault allegations against a former Chinese leader. With the Winter Olympics opening in Beijing in February, the IOC and corporate sponsors have multi-billion-dollar reasons to help China make the Peng Shuai story go away. Therein lies a bleak lesson. The WTA has been brave in challenging China, given that it has organised lucrative tournaments there. But as a women's sports association, it depends on retaining the confidence of women players. Sometimes there are incentives larger than China's market.

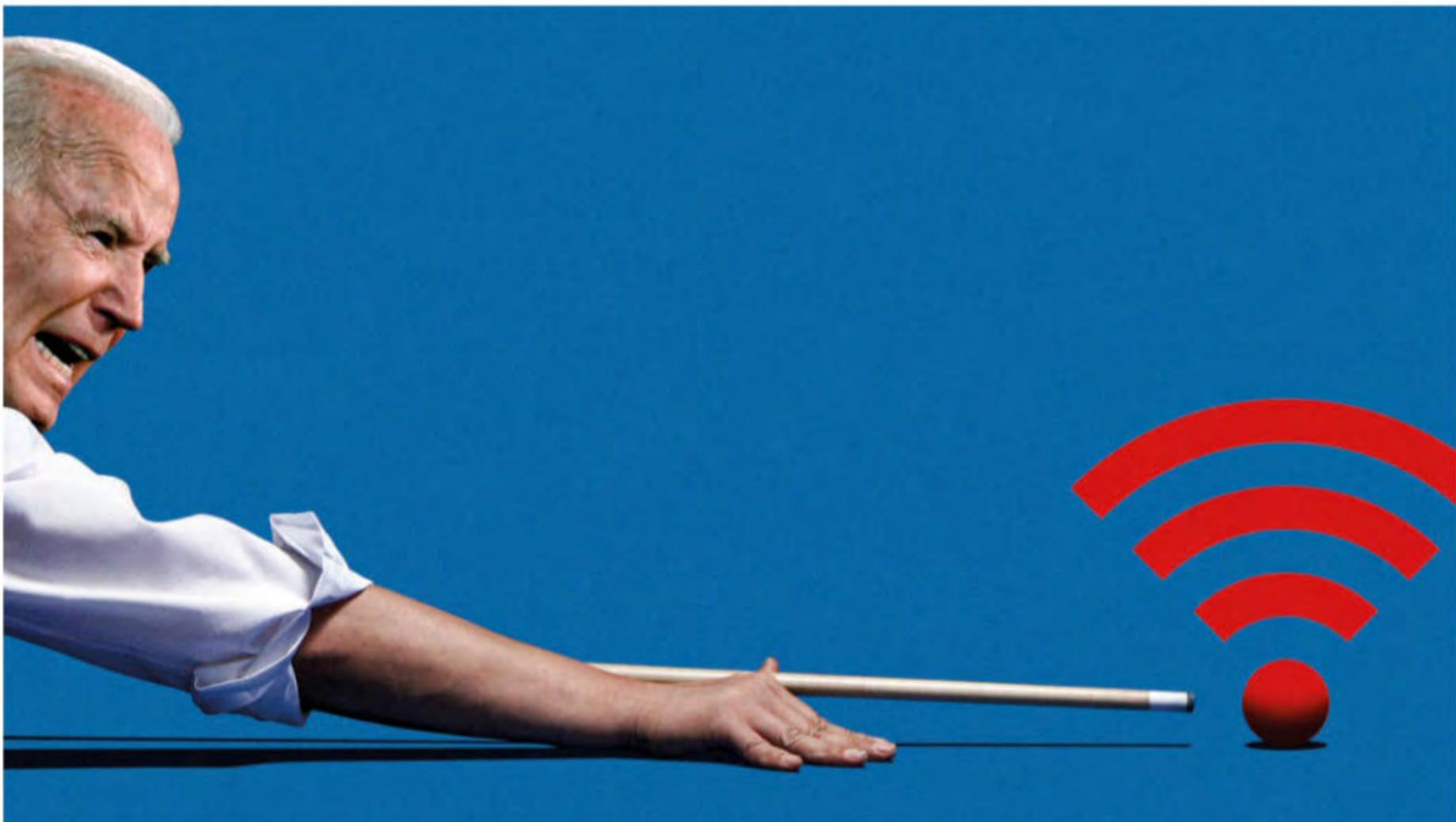
The silencing of Ms Peng does not just expose the ruthless, self-serving nature of one-party rule. It shows how reliance on China saps the ability of outsiders to stand up for individual rights. There is no evidence that Ms Peng wrote her essay for foreign eyes. But thanks to Chinese censorship, foreigners have ended up as her only witnesses. The world will draw lessons about the true nature of the party from her fate. ■

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**Biden's technology policy**

In tech we don't trust

DALLAS AND WASHINGTON, DC

Joe Biden is pushing back harder against big tech than anyone expected. His impact could be greater, too

TO UNDERSTAND how much technology behemoths' standing in Washington, DC, has changed in the past four years, ask Barry Lynn, founder of the Open Markets Institute, an anti-monopoly group. In 2017 he was allegedly kicked out of the New America Foundation, a think-tank that hosted his team, for being too critical of big tech. At the time, Mr Lynn's work decrying "platform monopolists" and advocating for breaking up tech giants was provocative but niche. He was like a protester with a megaphone, loud but mostly tuned out.

Today, when Joe Biden talks about corporate "concentration", he sounds a lot like Mr Lynn, and he has named Mr Lynn's friends to top posts. Lina Khan, who worked at the Open Markets Institute for seven years, now chairs the Federal Trade Commission (FTC), an agency charged with protecting consumer privacy and enforcing antitrust law. Tim Wu, formerly on Mr Lynn's advisory board, has a post advising the White House on competition and technology policy. Operating out of a WeWork space a short walk from the White House, Mr Lynn is part of the in-crowd. "For an it-

ty-bitty think-tank, we have a lot of our people in the administration," he says.

Beyond Mr Lynn's colleagues, more tech-bashers hold passports to power. Jonathan Kanter, confirmed to lead antitrust efforts at the Department of Justice, is a staunch opponent of Google and is expected to bring enforcement actions against tech firms. Rohit Chopra, head of the Consumer Financial Protection Bureau, has asked tech titans to turn over records about their payments systems.

How did Mr Biden decide to go big on

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big tech? Unlike opponents in the Democratic primary, such as Elizabeth Warren, a Democratic senator who has urged breaking up tech monopolies, Mr Biden did not spend much time bashing tech. However, once Mr Biden was in office, Ms Warren had the most advanced tech plan and pushed for key positions for people such as Ms Khan, Mr Wu and Bharat Ramamurti, who headed economic policy for her campaign and now serves on the White House's National Economic Council. "Biden's tech policy is his nominees," Ms Warren says. "He has put people in positions of power who understand tech at a whole new level and are deeply sceptical about many of the current practices," she adds.

Many believe that Barack Obama's administration, of which Mr Biden was a part, became too enamoured with large tech firms and failed to scrutinise mergers, like Facebook's purchase of Instagram. This is Mr Biden's chance at a do-over. The mood in Washington is "180" degrees different, according to Luther Lowe, who runs public policy for Yelp, an internet firm that has long been complaining about Google's bullying of smaller rivals. "It's a really exciting time if you are a complainant who's hoping for government enforcement," he says. Congressional staffers from both parties are now loth to take meetings with large tech companies, especially Meta (née Facebook), perceived to be the most toxic.

In July Mr Biden bared his trustbusting teeth when he issued a strongly worded executive order, written by Mr Wu, bemoan-

ing corporate concentration. No previous president has issued such a detailed order on competition, says Paul Gallant of Cowen Washington Research, which tracks tech policy. Big tech was not an exclusive focus but a prominent one. Alphabet (Google's parent), Amazon, Apple and Meta are among the country's most valuable firms.

With Mr Biden's troops now assembled, the focus will turn to which battles against large tech firms his administration can win. Break-ups and antitrust enforcement might get headlines, but those are longer-term plays with uncertain outcomes, given the pro-business bent of the courts. New laws targeting tech firms could have a faster impact. If that fails, the administration could rewrite the rules of business through newly empowered government agencies.

Take congressional action first. Just about the only issue on which Republicans and Democrats in Washington agree, besides China, is that tech firms have become too powerful. At least 14 tech-focused bills have been introduced in Congress this session. Many are bipartisan. One co-sponsored by Amy Klobuchar, a Democratic senator, and Tom Cotton, a Republican, targets tech companies with market values of \$600bn or more, and proposes establishing a presumption against new acquisitions of smaller firms. "We're not talking about destroying these companies; we're talking about putting some reasonable rules in place, when they have said 'trust us', and no one does," says Ms Klobuchar.

Mr Biden has not made passing tech legislation a priority, but he is expected to after the Senate decides the fate of his Build Back Better social-spending package. (Built into it is \$500m in funding for the FTC to establish a new bureau to investigate privacy violations.) "Be on the lookout" for stronger involvement from the White House, predicts Ms Warren.

The most obvious place for bipartisan agreement is on a bill that further constrains online-data collection about children. But Mr Biden is likely to be more ambitious. He could press for a ban on the giants' ability to ensure preferential treatment for their own services. While campaigning, he expressed support for doing away with "Section 230", which offers legal immunity to platforms for hosting objectionable content. He could also push for a national privacy bill that would establish more consumer control over data.

Congressional action is far from guaranteed: partisan politics may still get in the way. Among Republicans, there is "disagreement" about how strongly to intervene in markets, says Ken Buck, a Republican congressman from Colorado. The president's critics could also oppose legislation they might otherwise support, just to kneecap him. "I don't see eye-to-eye on anything with Joe Biden," says Mr Buck,

who has co-sponsored six bipartisan tech-focused bills with which Mr Biden would ostensibly agree. Democrats, too, could stymie legislation. Tech executives are big Democratic funders. Already some Californian Democrats in Congress have opposed several tech bills.

Even if Congress fails to act soon, Mr Biden's tech agenda will not be halted. Under the 107-year-old FTC Act, Ms Khan has wide latitude when it comes to rule-making to address "conduct that is unfair or deceptive". Mr Biden's executive order on competition encouraged the FTC to set rules on "surveillance and the accumulation of data", rules "barring unfair methods of competition on internet marketplaces" and rules against "anticompetitive restrictions on using independent repair shops" to fix cell phones and other devices.

For example, the FTC could try to outlaw certain conduct, such as platforms giving preferential treatment to their own services over others'. The commission could also move to minimise data-collection and sharing between apps, which would limit tech firms' firepower to track users across the web and combine sources of consumer information, as Meta does through Facebook, Instagram and WhatsApp.

"Rule-making presents a bigger risk to the tech companies than traditional antitrust lawsuits, which get all the attention," says Mr Gallant. Tech firms would surely fire back, suing both over whether the FTC has the right to set such sweeping rules and over the legality of specific measures.

Gulliver's travails

Antitrust enforcement is the final front of Mr Biden's campaign. This will involve scuttling proposed mergers and attacking firms for anticompetitive behaviour. Those running competition policy for Mr Biden believe that the scope of antitrust law has been artificially narrowed over the past 40 years. They argue that a focus on

consumer welfare, popularised by Robert Bork, a conservative judge, from the late 1970s, fails to take into account other harms from increased concentration.

Mr Biden "grew up under antimonopoly enforcement regimes that were extremely aggressive" and is old enough to remember the world before Bork, says Mr Lynn. In 1987, as chair of the Senate Judiciary Committee, he oversaw the rejection of Mr Bork's elevation to the Supreme Court.

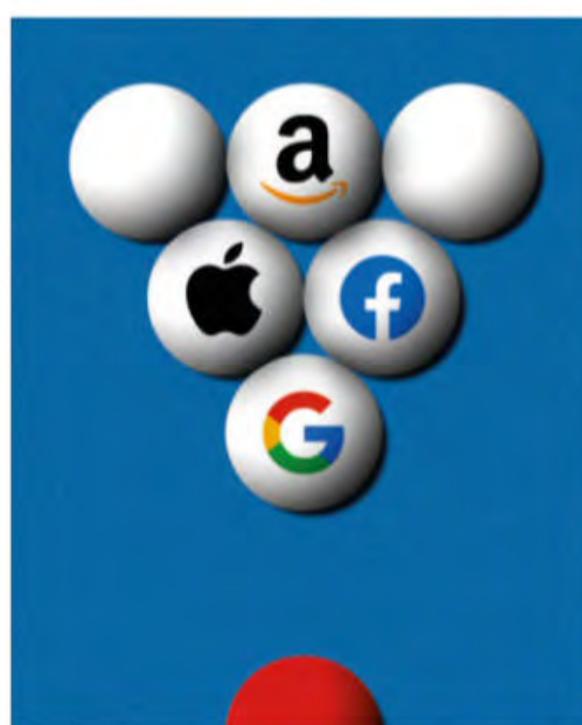
Antitrust lawsuits have two downsides: they are always long and unpredictable. Mr Biden's administration inherited lawsuits from Donald Trump's: one filed by the Justice Department against Google, another by the FTC against Facebook. Such cases take longer than a single presidential term. A trial in the Google case is set for 2023, and a decision and appeal will add another year at least. Most expect Ms Khan and Mr Kanter to try to build an additional case against a tech giant, perhaps Amazon or Apple.

The first big test of Ms Khan's agenda will come from whether the FTC will approve Amazon's proposed \$8.5bn acquisition of MGM, a Hollywood studio with the rights to James Bond. Some of Ms Khan's supporters hope she blocks the deal, but doing so could be risky in court, given how diverse the media market is in America. So far the most high-profile deal to be blocked during the Biden administration is an old-media one: the Justice Department sued to stop two book companies, Penguin Random House and Simon & Schuster, from merging, arguing this would hurt authors' abilities to gain advances.

Whether or not Mr Biden breaks up a large tech firm, the threat of trustbusting "is already changing the world", says Ms Warren. Mr Biden's impact can be seen "partly in deals that don't get announced, and it's also in the tech giants' reviewing their own internal practices," she says. Recently Apple announced it was going to make it easier to repair devices, which appears to be a direct response to Mr Biden's executive order on competition.

In Silicon Valley, there is more optimism than a few years ago about startups being able to reach a larger scale without being stamped out by giants (see Finance section). Some believe that without the Biden administration's reinvigoration of antitrust, sectors that are starting to see more competition, such as social media, would already be further consolidated. Knowing they could be scrutinised or sued, firms go on their best behaviour, as Mr Wu describes in his book, "The Curse of Bigness", in which he argues for a revival of the big-case tradition of antitrust.

Several states are also taking aim at big tech with new laws and lawsuits. Mr Lynn relishes this swarm attack. "We may be Lilliputians," he says, "but there are enough of us that we can drag these folks down." ■



Treatment for covid-19

Worms v virus

Ivermectin may help covid-19 patients—but only those with worms

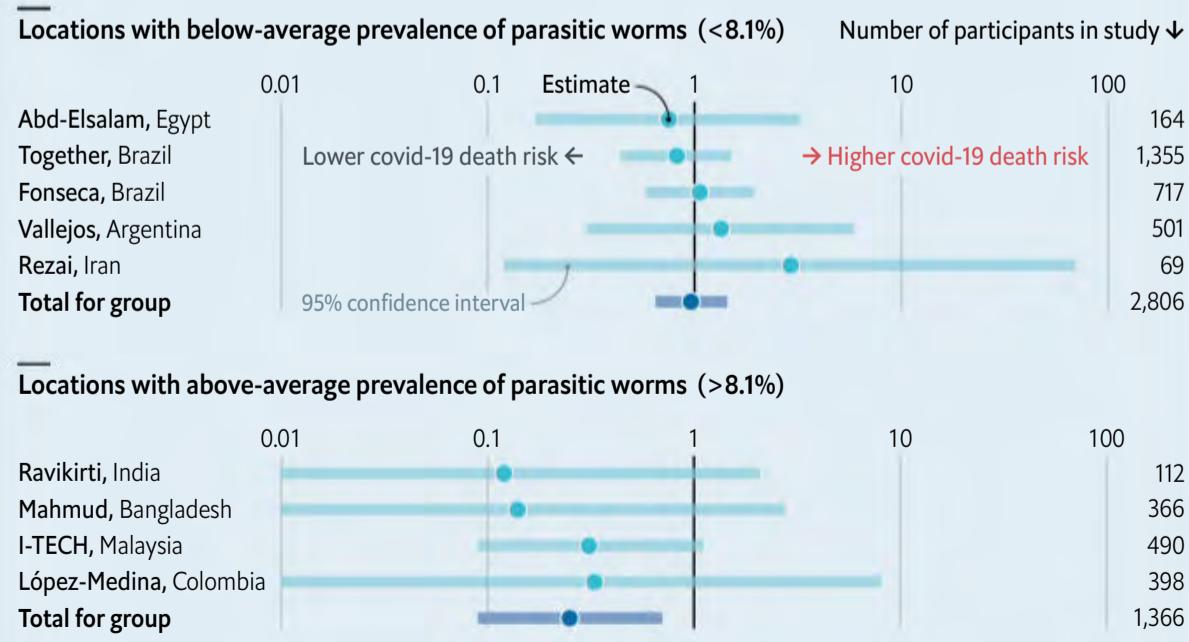
YOU ARE not a horse. You are not a cow. Seriously, y'all. Stop it." As the message from the Food and Drug Administration (FDA) implies, ivermectin—a drug used to treat parasites, including in horses and cows—has never become part of the standard of care for covid-19.

Many think it should be. At last count doctors in America prescribed more than 100,000 tablets of the drug a week, a 30-fold increase since 2019. Ivermectin's advocates insist that there is solid science showing its efficacy. One website lists 67 papers on the subject. Could they all be wrong? Recent analysis suggests ivermectin probably does help one subset of covid patients: those also infected by the worms it was designed to fight.

Wading through the papers whose methodologies seemed sound (many were not), Avi Bitterman, a dermatologist, noticed that the studies that looked best for ivermectin clustered in regions with high rates of infections by *Strongyloides*, parasitic worms. Common in Africa, Asia and Latin America, *Strongyloides* can cause diarrhoea, fatigue and weight loss. They pose a graver threat only if their numbers grow out of control. Such "hyper-infection", often fatal, becomes far more likely if a patient is receiving corticosteroids, which suppress the immune system and may make female worms more fertile. Dexamethasone, a corticosteroid, is now a standard treatment for severe covid-19.

From worm to man

Estimates of death risk in covid-19 patients treated v not treated with ivermectin*, risk ratio, log scale



*Excludes trials with suspected fraud or without proper randomisation into control and treatment arms

Source: "Ivermectin trials and covid-19: disseminated strongyloidiasis as a lethal confounder", by Avi Bitterman (Nov 2021, under review)

Covid-19 and Thanksgiving

Seasonal spread

WASHINGTON, DC

Blame vaccine hesitancy and home-test scarcity for putting more people at risk

THE THREE-DAY festival in November 1621 that gave rise to the American holiday of Thanksgiving was a celebration of survival. Through the generosity of the Wampanoag Native Americans, about half the English religious separatists who arrived in Massachusetts the previous year had overcome scarcity and disease and lived to see their first successful corn harvest. As Americans prepared for their first Thanksgiving of the covid-vaccine era, disease was once again on their minds.

Surges of coronavirus infections in America tend to follow waves in Europe. Several European countries have been grappling with an alarming new surge (see Europe section). Sure enough, cases are now climbing in America too. On November 22nd it recorded 162,000 cases, the most in two months.

This does not bode well for Thanksgiving. Some 53m people were expected to travel for the holiday, up by 13% from 2020—close to pre-pandemic levels. Air travel was forecast to rise by 80% compared with last year. A covid spike is all but certain.

Although jabs are available for all Americans who want them, many have headed into the holiday unprotected. Only 59% of Americans are fully vaccinated, compared with 68% of Britons and 76% of Canadians. New antiviral drugs are expected to become available imminently, though probably not soon enough to contend with the consequences of a Thanksgiving wave.

Americans are struggling to get their hands on another effective tool: quick testing. Rapid antigen tests, though less foolproof than the more laborious PCR ones, can provide reliable results in minutes. People can administer their own examinations at home, with a nasal swab. Testing before mingling with friends and family would help Americans control infections. Yet these kits are still hard to come by in local pharmacies, and they are costly. The Quidel QuickVue test is priced at \$23.99 on Amazon, and the On/Go one at \$34.99—and even then they are not available until after the holiday. A family of four would need to spend about \$100 or more.

By contrast, Britain lets each person order packs of seven rapid tests free. "In other countries, we see it's become the norm for friends and family to get tested before a party, before dinner, before celebrations," says Leana Wen, a former health commissioner of Baltimore. "We need to get to that

► point in this country."

Some say the Food and Drug Administration (FDA) has unnecessarily delayed authorising rapid tests with a regulatory process that is too stringent—"letting perfect be the enemy of the good", in the words of Dr Wen. The FDA has taken steps to streamline its authorisation process. But the focus should be not on the number of authorised test developers, but on the number of tests available, says an official at the administration. For that, he says, the federal government is responsible.

In October the Biden administration announced its intention to quadruple the supply of home tests by the end of the year, providing greater access and potentially reducing cost through a \$3bn investment. Rapid tests could be readily available in time for Christmas. By then, maybe, Americans will be able to give thanks for the freedom to gather with less fear of covid. ■

The murder of Ahmaud Arbery

Crime and punishment

CHICAGO

A jury delivers a verdict against vigilante justice

LAST YEAR Marcus Arbery, the father of Ahmaud Arbery, a 25-year-old black man shot dead in Georgia last February, told CNN that his son was "lynched by a racist mob". "When you come at a young man, you jump on the back of a pickup truck with a shotgun...and you follow him like he was an animal, and you gun him down", that is a lynching, he argued. On November 24th a jury agreed, convicting three white men, Gregory McMichael and his son Travis, and William Bryan, a neighbour, of murder.

In their pickup trucks, armed with a pistol and a shotgun, the three had followed Mr Arbery as he jogged through their neighbourhood, Satilla Shores, in south-eastern Georgia. They confronted him, a scuffle ensued, and Travis McMichael shot Mr Arbery three times with his shotgun.

The defence had claimed that the McMichaels acted in self-defence. (Mr Bryan's lawyers argued he had just tagged along and was "irrelevant" to the killing.) "Ahmaud Arbery was not an innocent victim," argued Laura Hogue, one of Gregory McMichael's lawyers. In the defendants' account, they were trying to conduct a legal "citizen's arrest" because they suspected Mr Arbery of burgling homes.

Several times the young man had been spotted on security cameras in the unfinished nearby home of Larry English. (Mr English's lawyer had suggested Mr Arbery

was getting water from a tap.) Mr Arbery tried to run away when asked to stop, the defence said, so the three men boxed him in with their pickups. According to the defence, Mr Arbery then tried to punch Mr McMichael and steal his gun, forcing him to shoot. "He chose to fight," Ms Hogue said of Mr Arbery. The shooting was caught on camera by Mr Bryan.

Under the law in Georgia at the time, the circumstances in which people could make citizen's arrests were loosely defined. There had to be "reasonable and probable grounds of suspicion" that the person had committed a felony and was fleeing. After the murder, Brian Kemp, Georgia's Republican governor, described this as a "civil-war era" law, and new bipartisan legislation more tightly specified the grounds for a citizen's arrest.

In contending with the previous law, the prosecutors successfully argued that the three men did not have reasonable grounds to suspect Mr Arbery. He had trespassed on Mr English's property, but trespass is not a felony. In trying to arrest him, Messrs McMichaels and Bryan were in fact committing felonies—false imprisonment and assault—so forfeited any claim of self-defence. "They shot and killed him, not because he was a threat to them, but because he wouldn't stop and talk to them," argued Linda Dunikoski, the lead prosecutor.

Ms Dunikoski thus sidestepped the problem that faced the prosecutors in the trial of Kyle Rittenhouse, an Illinois teenager acquitted on November 19th of murder in Kenosha, Wisconsin. Mr Rittenhouse had taken up a gun in what he said was an effort to protect property, in his case against rioters during protests against a police killing. He, too, claimed self-defence.

But there was little evidence Mr Rittenhouse started the fight he ended up finishing with his rifle. The jurors had to judge whether he reasonably believed himself to be in serious danger at the moment he pulled the trigger. The jurors in Glynn County, Georgia, merely had to agree that the attempted "arrest" was unlawful.

The prosecutors declined to pursue whether racism motivated the killers, perhaps because 11 of 12 jurors were white. Yet the question of race permeated the trial. It took 74 days, and the release of the shocking video, for the killers even to be charged. In the end, it was not the local police but the Georgia Bureau of Investigation, a statewide agency, that arrested the three suspects. That hardly suggests an environment conducive to justice for black men.

Another trial of the defendants, in a federal court, on hate crimes and attempted kidnapping, is due in February. But these convictions will come as a relief to many. An acquittal would in effect have endorsed vigilante justice, even when it leads to the death of an innocent man. ■



Food rules

Reaping what you sow

DRESDEN, MAINE

Maine's new "right to food" could sprout legal challenges

LIKE EVERY farmer Courtney Hammond, who grows blueberries and cranberries in Washington County, Maine, has a lot of worries. He frets about weather, invasive species, failed crops and global prices. To abide by federal food-safety laws, he has had to do training, maintain meticulous records, have insect- and rodent-control plans and document daily the sanitation of his processing equipment. It is a tremendous amount of work but it means, he says, "I don't have to worry about anybody getting sick from eating anything that leaves my farm." Now he is worried that a new law may put his hard work in jeopardy.

Earlier this month 61% of voters opted to change the state constitution to ensure that all Mainers had a "right to food", the first law of its kind in America. The constitutional amendment's main proponents included a conservative lobsterman, a liberal raw-milk organic farmer, the Sportsman Alliance (a hunting group) and Cumberland County Food Security Council. The pandemic has shone a light on food insecurity in Maine. Now, Mainers have the "unalienable right to food...to grow, raise, harvest, produce and consume the food of their own choosing".

The amendment sounded innocuous, but sceptics are wary of its impact. Marge Kilkelly, a former state lawmaker who raises turkeys as well as pigs and goats, points out that most people don't know much

► about farming: "It does not happen in an instant. You don't just get the turkey seed and put water on it. Poof, there's a turkey."

Opponents of the amendment worry that its vague wording opens towns to legal challenges over local zoning and other ordinances. Rebecca Graham of the Maine Municipal Association expects everything from hunting laws to food programmes to be challenged, at great cost to the taxpayer. Rules like the one in Portland, the state's largest city, which allows residents a maximum of six hens (no roosters) could be ignored or challenged in court—never mind cows grazing in front gardens.

Janelle Tirrell, head of the Maine Veterinary Medical Association, is concerned about the treatment of farm animals by people ill-equipped to look after them: people will "use that right-to-food defence to justify the keeping of animals in ways that violate our current laws". Others foresee environmental impacts, such as contaminated water supplies. Some farmers fear that amateurs will introduce invasive species that could damage their crops.

Billy Bob Faulkingham, the Republican state representative who championed the measure, pooh-poohs these concerns. He thinks court challenges are unlikely. Frivolous ones will be dismissed. The law will give Mainers more ownership of the food supply, he argues: some 90% of the state's food is imported. Alluding to the constitutional right to bear arms, he says: "I call this the second amendment of food." His partner across the aisle, Craig Hickman, a Democratic state senator and an organic farmer, says not everyone is going to start farming or raising animals, but this will "inspire people to shop locally" or even share their land with their neighbours.

This chimes with local culture. Despite its relatively small farm industry, Maine supports its producers. The state's constitution gives farms property-tax breaks. Some communities pay people to farm their land. The state has been experimenting with food sovereignty. More than a hundred towns have adopted ordinances that allow food "self-government", letting towns make their own rules for food products. Producers in these places can sell directly to customers, offering, say, unpasteurised milk without a licence (meat and poultry are excluded).

Farm-to-table restaurants are immensely popular. Maine is a "foodie" destination. Tourists flock there for its lobsters, blueberries and cranberries. Julie Ann Smith, of the Maine Farm Bureau, wonders how food safety can be maintained without regulations. That is why Mr Hammond is so anxious about the new amendment. It will take only one tourist sickened by blueberries sold by an amateur to taint all Maine farmers, not just "the guy with three tomato plants on his porch". ■

Anti-abortion protests

Clashing at the clinics

JACKSON, MISSISSIPPI

Confrontations in the streets ahead of a battle at the Supreme Court

AMERICA'S ABORTION war is increasingly being fought in the courts. More anti-abortion laws have been passed in 2021 than in any year since *Roe v Wade* half a century ago, in turn prompting a record number of legal challenges, and on December 1st the Supreme Court is due to hold one of the most important hearings on the issue in decades. However, every day across the country a noisier battle is being waged on the pavements outside abortion clinics, as pro-life protesters clash with pro-choice volunteers.

This may be one of the few public spaces in which representatives of America's left and right exchange views directly. In some places clinic escorts, who usher patients past protesters crying "Murder!", mock demonstrators about their religious beliefs. "Is that the validation you want from Sky Daddy?" a volunteer yells at a protester outside a clinic in Charlotte, North Carolina, in a TikTok video that went viral. Protesters, meanwhile, provide what might be a caricature of the white Christian right. "You a feminist!" a young man wearing a "Repent or Perish" beanie hat tells an escort in another video. "Feminism has led to murdering babies."

Such clashes are becoming more common. At most clinics, volunteer escorts do not confront the protesters. The role took off in the 1990s when some antiabortionists became violent. But more escorts are now calling themselves "defenders" and shouting back.

This adversarial approach is a response to a rise in the number of demonstrations. The National Abortion Federation says incidents of anti-abortion picketing rose from 6,347 in 2010 to 123,228 in 2019. Though rarely violent, such protests are often aggressively loud and intrusive.

At the only abortion clinic in Mississippi, which is at the heart of the Supreme Court case, *Dobbs v Jackson Women's Health Organisation*, the Pinkhouse Defenders, named after the bubblegum-pink building in which the clinic is housed, take on anyone who challenges women as they arrive. "Nope, nope, nope and nope!" bellows an escort at a protester who is pleading with a woman, walking head-down into the clinic, not to "shed innocent blood" ("She's already inside, sweetie.")

Kim Gibson, a co-founder of We Engage, a non-profit organisation that raises money for the group, is a loquacious defender. She says she wants to "let antis know there is no welcome mat on the clinic sidewalks where they can spew their shame and propaganda with ease".

The main purpose, though, is to assist the clinic's patients. By confronting protesters, escorts hope to deflect attention away from them. And by calling demonstrators by name, and often mocking them, escorts hope to make them seem less threatening. "Patients can see we are confident in our space, and we believe that helps," says Ms Gibson. She says most of the Pinkhouse protesters are regulars; she ►



Face to face at the Pinkhouse

worries about ones she hasn't seen before.

At times the interaction between escort and protester can slip into banter, a little like joshing between colleagues. "You're late," one escort says to a protester as he arrives and starts unloading grisly posters of third-trimester abortions (which are not performed at the clinic) from the boot of his car. Minutes later he is reciting bloody passages from the Old Testament and she is hurling insults at him.

The impression that, for some protesters at least, all this is about more than abortion is strengthened by the lack of in-

terest they show in the looming legal battle. If it upholds Mississippi's ban on abortions after 15 weeks of pregnancy, which was blocked in 2018 because it violated *Roe*, the Supreme Court will have to sharply curtail the constitutional right to abortion—or abandon *Roe* altogether. But Coleman Boyd, a medical doctor who demonstrates at the Jackson clinic several times a week, says he isn't interested in what the justices decide about a "wicked" 15-week abortion ban. "We're not just here for the babies," he says. "We're here to turn them towards Jesus." ■

the "tree army" nickname literally, arguing that the corps is a front for lefties to "wage war" on the fossil-fuel industry.

To get a sense of what a revamped CCC would actually do, turn to Colorado. The state recently announced the creation of its own climate corps, which supporters hope will act as a pilot for the federal programme. It awarded the Colorado Youth Corps Association (CYCA) a new AmeriCorps grant worth \$1.7m a year for three years, creating 240 new positions for young people. The idea that the CCC is a brand-new programme isn't true, says Scott Segestrom, executive director of the CYCA: "It is building on existing infrastructure." Each year between 1,400 and 1,800 people serve in Colorado's conservation corps. The new grant will merely swell their ranks. Funding for a federal corps would similarly beef up existing programmes across the country.

Climate work conjures up images of physical labour in the backcountry. In Colorado, some new corps members will train as wildland firefighters or rip out invasive plants that suck up more water than the parched West can afford. But the Mile High Youth Corps, which serves 23 counties on Colorado's Front Range, also offers an example of the work a federal climate corps could perform in cities and suburbs. Workers often install energy- and water-saving equipment, such as high-efficiency toilets or shower aerators, in poor communities.

All this sounds good in theory. But there are roadblocks to implementing a programme like Colorado's in every state. When Roosevelt started the CCC in 1933, some 13m Americans were out of work. The Depression had squashed livelihoods and farmers had abandoned their fields as dust storms suffocated the Plains. The corps was meant to lift its workers and their families out of poverty. Shannon Dennison, a preservationist who is restoring the old CCC camp near Red Rocks, points out that corps members had to send \$25 of the \$30 they earned each month home.

In the early months of the pandemic, when at least 20m Americans were unemployed, the circumstances seemed comparable. But now firms across industries are scrambling to find workers. Even proponents of Mr Biden's corps admit that recruiting enough young people to toil in labour-intensive jobs for little pay will be difficult. Joe Neguse, a Democratic congressman from Colorado who led the push for the CCC in the House of Representatives, says increasing pay and benefits is crucial to recruiting a more diverse corps than that of the 1930s, which consisted mostly of single white men. Still, half of Americans under 45 surveyed by Data for Progress, a left-leaning pollster, said they would consider working in a climate corps. Some may soon get their chance. ■



A Civilian Climate Corps

The new tree army

MORRISON

To understand what a federal climate corps would do, turn to Colorado

LOOK EAST from the benches on top of Red Rocks Amphitheatre and Denver's skyline is just visible in the distance. The venue, ringed by sandstone cliffs, is where many Coloradans saw their first concert and where fitness junkies gather for early-morning yoga. Less well known is the role the amphitheatre played in American history. It was built by President Franklin Roosevelt's Civilian Conservation Corps (CCC), a New Deal programme that put some 3m men to work building infrastructure and parks during the Great Depression. Now "Roosevelt's Tree Army", as the corps was called, may be getting a 21st-century makeover. President Joe Biden, who has not been coy about his admiration for FDR or his desire to emulate the New Deal, wants to fund a new version of the CCC aimed at tackling climate change and its effects.

There is no shortage of work to be done.

In 2020 nearly \$12bn in maintenance was needed in America's national parks. Western states want to increase controlled burns and forest thinning so blazes do not turn into megafires. The infrastructure bill Mr Biden signed doubles as a climate to-do list, allocating money to clean up abandoned mines, help communities prepare for and recover from natural disasters and set up charging stations for electric cars.

Mr Biden's Civilian Climate Corps would be funded by the \$1.7trn "Build Back Better" bill that lawmakers are haggling over. As it stands, about \$15bn of the roughly \$500bn devoted to climate measures would create 300,000 jobs through AmeriCorps, a national-service agency. Sceptics say the corps' mission lacks focus. What exactly counts as conservation or resilience anyway? John Barrasso, a Republican senator from Wyoming, has interpreted



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Colombia

Still armed, still dangerous

BAJO CAUCA

Five years after the government ended its war with the FARC, militias still plague the country

THERE ARE two ways to make a decent living in Bajo Cauca, the poorest region of Antioquia province, in northwest Colombia. Both are outlawed. The first, illegal mining, goes on in plain sight along the Nechí river, on the eastern edge of the region. Countless rickety boats dredge the river bed in search of gold and dump mountains of sediment on its banks.

The second, planting coca, the leaf used to make cocaine, is not quite as visible. Coca bushes grow a few kilometres from the Nechí river, close to patches of jungle that have survived deforestation. Bajo Cauca is home to more than 9,000 hectares of coca, which help make Antioquia province the fourth-largest source of cocaine in Colombia. Colombia, in turn, produces two-thirds of the world's supply.

Both these shadow economies were brought to the region by groups that eventually formed the United Self-Defence Forces of Colombia (AUC), an alliance of right-wing paramilitary groups founded in the early 1980s by cattle ranchers, drug lords and other members of the regional elite. They fought Marxist guerrillas, most

notably the Revolutionary Armed Forces of Colombia (FARC), often with the implicit backing of local army commanders. They also planted vast swathes of coca and set up their own illegal mining enterprises. (Trafficking cocaine was a lucrative business for the FARC, too.)

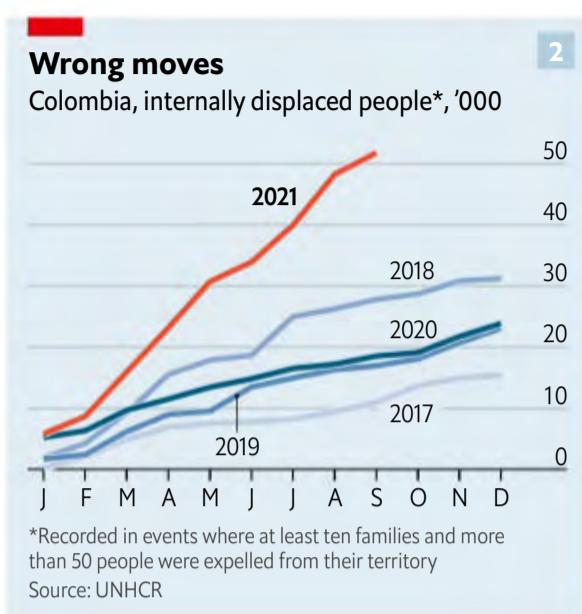


The AUC officially disbanded in the 2000s. The FARC, for its part, signed a peace deal with the government in 2016. Yet many parts of Colombia are still racked by conflict, fomented by successors to older armed groups and by new ones. Around 14% of demobilised AUC combatants—some 5,000 people—have joined more than a dozen “neo-paramilitary” groups. Another 5,200 fighters have joined the “dissidents”, armed groups founded by former FARC members who reject the peace deal. None of these successor groups promotes an ideology.

Colombia's journey to becoming a peaceful country was never going to be easy. The war involving the government, paramilitary groups and the FARC was the longest-running conflict in the western hemisphere. Over 52 years more than 200,000 people were killed, the vast majority of them civilians. Around 7m were displaced. The deal struck between the Colombian government and the FARC on November 24th 2016 was the fourth attempt at peace, and took four painstaking years to negotiate.

The deal was also incredibly ambitious. It included large-scale rural-development schemes and a programme to compensate coca farmers who give up planting the crop. One diplomat has likened it to a Colombian Marshall Plan, but with nowhere near the same amount of cash behind it.

Much progress has been made. Violence is lower than during the height of the conflict (see chart 1). Many former FARC



► members live in or near camps, which provide programmes to reintegrate them into civilian life with varying degrees of success. In January this year a “peace tribunal” (JEP) set up four years earlier made its first ruling, indicting eight FARC leaders for war crimes and crimes against humanity. They include Rodrigo Londoño, alias Timochenko, the guerrilla group’s top commander. (They will not be put on trial because they gave detailed confessions and accepted responsibility as part of the “transitional” system of justice under the peace deal, and are awaiting a sentence from the JEP now.) The United States is expected to acknowledge this week’s anniversary by removing the FARC from its list of terrorist outfits.

But in other respects progress seems to have stalled. In 2020 76 “massacres” took place, according to the UN Office of the High Commissioner for Human Rights, the highest number since 2014. (A massacre is defined as the murder of at least three civilians in the same event.) Since 2016 some 1,200 activists for various causes have been killed. The number of mass displacements of people is also up, to its highest since the peace deal was signed (see chart 2). And although the peace deal was supposed to curb coca production, Colombia produces more cocaine now than at the height of Pablo Escobar’s power in the 1990s. It is perhaps little surprise that most Colombians have long thought the deal is on the wrong track.

In Bajo Cauca two new paramilitary groups are fighting each other for control of the region’s drug trade: the Gaitanistas Self Defence Forces of Colombia (AGC) and a splinter group, the Caparros. They threaten and kill activists, journalists and left-wing politicians. Residents complain that the groups extort cash from every business in the region, no matter how tiny. A man who sells coffee on the streets of El Bagre, a town along the Nechí river, pays 10,000 pesos (\$2.53), to the AGC every month. Coca farmers who receive stipends from the government to help them switch to legal crops also pay extortion fees.

Part of the problem is that the government of Iván Duque—who opposed the deal with the FARC and campaigned on a platform of modifying it—is being slow to implement parts of the accord and has cut spending on the associated programmes. Some critics argue that the pandemic gave the government an excuse to drag its feet.

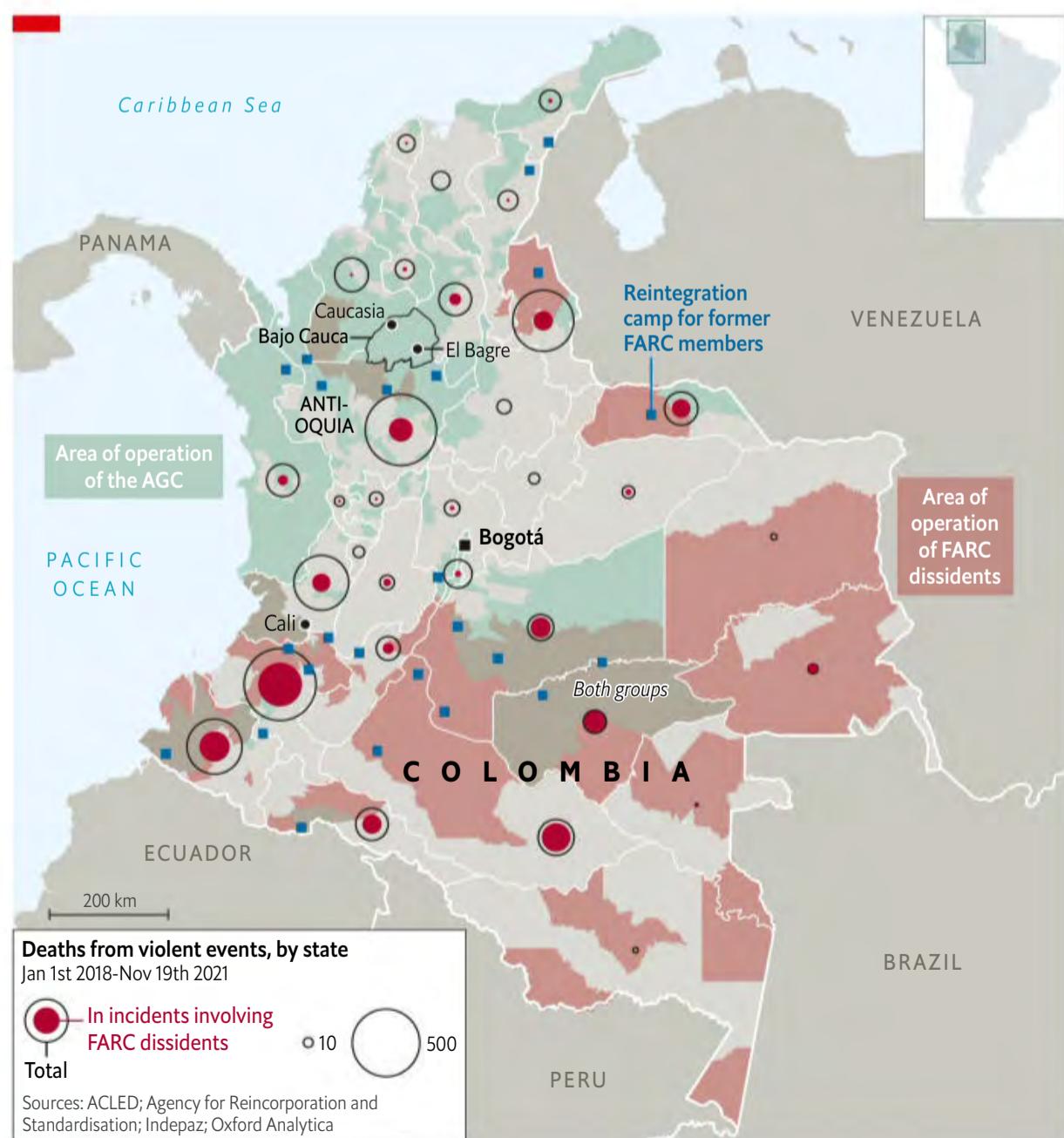
Covid-19 gave armed groups new ways to squeeze people. Some enforced a lockdown during the first wave, threatening to kill anyone who stepped outside after a curfew. According to Daniel Rico, a crime analyst, this year in certain regions armed groups allowed people to move around only in exchange for a fee, citing the pandemic as their reason. Because teenagers were stuck at home rather than going to school, many were easy targets for recruitment by paramilitary groups. They do menial tasks in exchange for fake Nike shoes, mobile phones, motorcycles and cash, says a teacher in the town of Caucasia.

Huge countrywide protests, sparked in April this year by a tax reform proposed by Mr Duque, also emboldened illegal armed groups. They strengthened their control over some areas in the country as Colombia’s armed forces were distracted trying to quell chaos in cities like Cali. Protesters set up weeks-long roadblocks that made it

hard for the army to get around the country to combat drug-trafficking.

A bigger problem is that Colombia’s government refuses to recognise the AGC and other neo-paramilitary groups as descendants of the AUC. They control whole swathes of territory and the people who live there. But the government treats them as if they were merely drug-trafficking gangs. Admitting that the groups are “paramilitary” might suggest that they are colluding with the state, thinks María Teresa Ronderos, the author of a book on the groups, and so the government avoids it. (In Colombia the government only indirectly sponsored the paramilitaries in their heyday, mostly by passing laws that allowed ordinary folk to arm themselves, whereas in Argentina and Chile paramilitary groups were part of the security services of military regimes.)

Mr Duque seems to think that the main way to defeat these groups is to eliminate their leaders. Last month Colombia’s armed forces captured Otoniel, the leader of the AGC. Mr Duque said his arrest was the “toughest blow to drug-trafficking in Colombia this century”, comparable to when Pablo Escobar was killed in 1993. But eliminating kingpins is not working, says Eduardo Álvarez, a conflict analyst. There



► is no shortage of criminals willing to take the place of a deposed boss. When a leader is not easily replaced, his subordinates scatter, sparking a war of succession.

Worst of all, says Mr Álvarez, is the government's failure to go after crooked politicians, soldiers, police officers and prosecutors who have had links with the paramilitaries since the AUC was founded. Although the government has also created programmes to reduce poverty and foster opportunity in regions where paramilitaries thrive, results have been lacklustre.

The violence in Colombia could soon

get worse. The "dissidents" have revived kidnapping, a practice they learned from the FARC. Nicolás Maduro, Venezuela's dictator, grants them a haven from Colombia's armed forces. Meanwhile, armed groups are growing stronger as the price of gold rises and as they export record amounts of cocaine. Many AUC leaders imprisoned in the United States have now served their sentences and are returning home. Some are calling former subordinates back into their service. Indeed, the threat of extradition is no longer powerful, says Mr Rico. Prosecutors in the United States have re-

duced the sentences of the leaders who were extradited; they are more concerned with Mexican drug lords.

Mr Duque's term will end next year, which does not give him much time to deal with these groups. He should beef up spending on development programmes to help weaken shadow economies, says Mr Álvarez. That is unlikely to happen. Mr Duque's defence minister and the army's top commanders all support a tougher stance, even though their approach is yielding the wrong results. Colombia is no longer at war, but it is not yet at peace. ■

Bello Waiting for the tourists to return

Until they do, economic recovery will be incomplete

PERÚ, DESPEGUEMOS nuevamente" ("Peru, let's take off again") pleads the slogan in big letters across the glass front of Lima's airport terminal. In the Plaza de la Independencia in the colonial heart of Quito, Ecuador's capital, a small group of blond tourists stands out like an exotic species in a sea of dark-haired street vendors. From the beaches of the Caribbean to the lakes of Patagonia, the question being asked is that posed earlier this year in a cartoon by El Roto in *El País*, a Spanish newspaper. He drew two empty sun loungers with one asking the other, "Do you think they'll come?"

The answer matters. Tourism plays a big role in most of the economies of Latin America and the Caribbean. On a simple average of all 34 countries in the region, it accounts for around 20% of GDP, according to an index drawn up by the Inter-American Development Bank (IDB). The figure ranges from more than a third for several Caribbean islands to 15% in Mexico and 8% in Brazil. In addition, tourism provides a large share of employment, from 80% or so in the likes of Aruba and Antigua to 13% in Mexico and 8% in Brazil. The Caribbean is similarly dependent on tourism for foreign exchange, and it accounts for around 10% of export earnings in Ecuador and Peru.

Foreign tourism to the region has dipped in the past because of international crises. In 2009, during the financial crisis, it fell by 5%. But this time "tourism was shut off like a tap," says Henry Mooney of the IDB. Arrivals fell by 70% in 2020 as both destination and source countries closed their borders. The World Travel and Tourism Council (WTTC), an industry body, estimated that the region's tourist industry as a whole lost \$230bn and 12.4m jobs in 2020. Latin America's airlines have taken a beating.

Latam and Avianca, two of the three biggest carriers, sought bankruptcy protection. Tourism revenue in the Caribbean last year was only a quarter of what had been forecast.

Now a modest revival is under way, especially in the Caribbean, as vaccination progresses and borders are reopened. Cruise ships are sailing again, though they are struggling to adapt to health regulations. Americans are venturing back to the beaches. The WTTC says that tourism is recovering faster in the Caribbean than in other parts of the world, with forecast growth of 47% this year from last, meaning an extra \$12bn in revenue.

The reopening is slower in South America, a longer flight from most big markets. Latin Americans and Americans are trickling back but not Asians or Europeans, says Pedro Morillas, who owns a 350-room four-star hotel in Cusco in Peru. "We had a lot of bookings for the second half of this year but many cancelled," says Roque Sevilla, the boss of Metropolitan Touring, a large tour operator in Ecuador, which owns three ships in the Galápagos

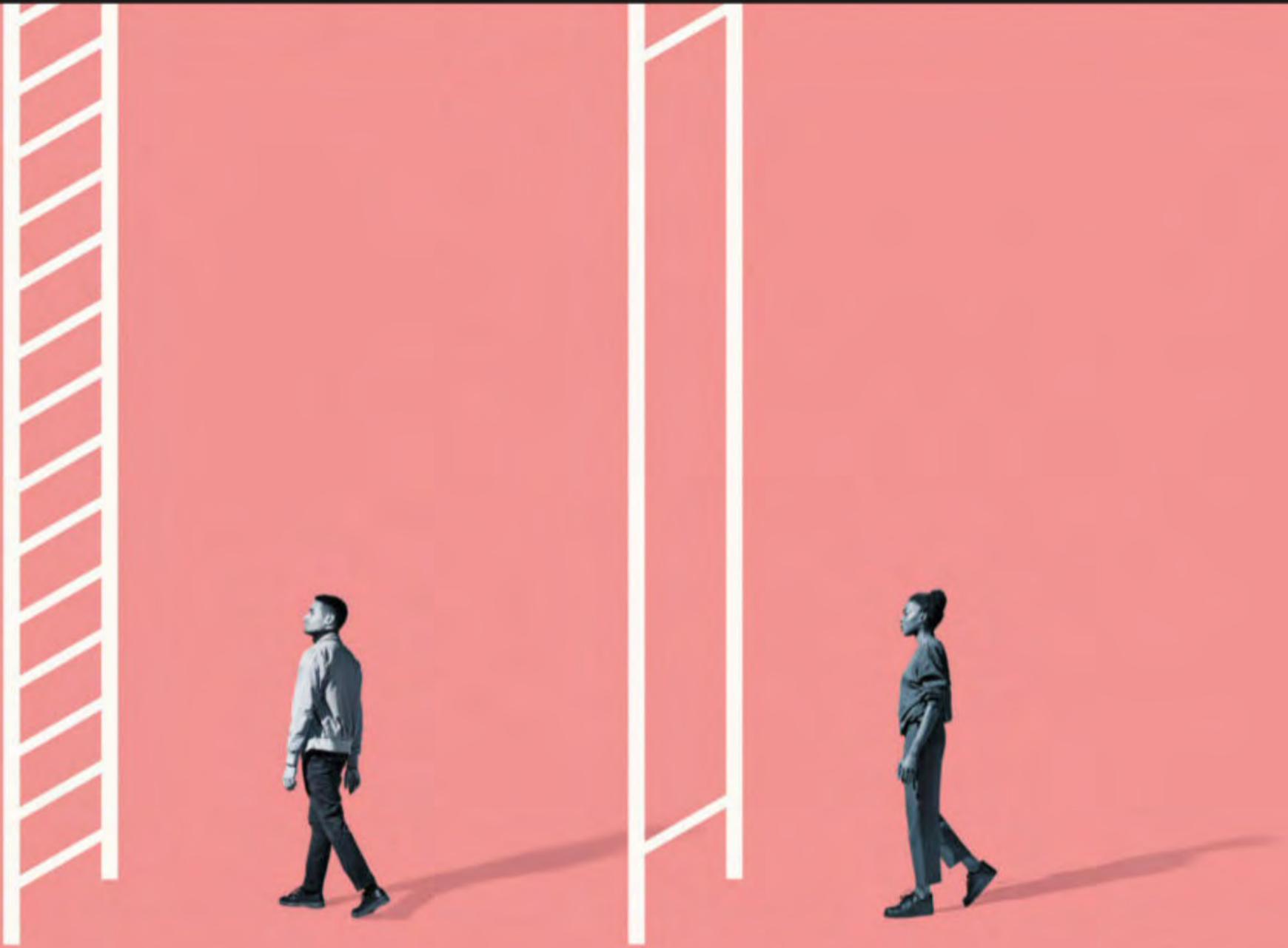
Islands and a retreat in a cloud forest. With tours starting at \$5,000, excluding international flights, for many "Ecuador is the trip of a lifetime and they want to be sure they won't suffer restrictions and will be safe." Many in the industry think travel won't reach its pre-pandemic level until 2024.

For some, that will be too late. A survey of 255 businesses by the Caribbean Hotel and Tourist Association in February found that 14% of them were unlikely to reopen. For others the slow recovery means a struggle to adapt. The occupation rate at Mr Morillas's hotel, normally 85%, with foreign tourists nearly all the guests, went to zero, forcing him to lay off his 150 staff. "The blow was sudden and drastic," he says. With no revenue coming in, interest charges on his debt to the bank piled up. But the hotel is open again, he has rehired 15 staff and negotiated a grace period on the bank loan. "The hotel will survive," he says.

As part of a large conglomerate with deep pockets, Metropolitan Touring was better placed. Mr Sevilla carried on paying its 850 workers 75% of their wages for a year before reluctantly laying off 85. He has cut prices and found a new market in Ecuadorean tourists. Latam and Avianca are about to emerge from bankruptcy.

Governments can help to speed recovery, says Mr Mooney, by working with the industry to co-ordinate health-protection measures throughout the tourism chain and to conduct marketing and market research. "People will travel differently and require different things," he says. Many Latin American countries are close to overtaking their pre-pandemic level of economic output. But employment is lagging behind. The sooner tourists come back the quicker that will change.





Now & Next

The Class Ceiling

How to boost social mobility

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Health care in Africa

Picking their shots

DAKAR, KAMPALA AND MOROTO

Africa is getting more covid-19 vaccines. Should it use them all?

OVER THE summer a lack of supply was the main problem. Africans queued from dawn for jabs of covid-19 vaccine, but most doses were going to rich countries. India, a big producer, banned exports. The results were grim. Senegal saw seven times the number of funerals as in normal times, according to some estimates. Gravediggers in other African countries were working overtime, too. Today only 7% of Africans are fully vaccinated against the disease.

In recent weeks, however, vaccine shipments to Africa have greatly increased. About 50m doses arrived in October, almost double the number that had landed in September. Uganda, which has administered 6m doses so far, expects to have received 21m doses by the end of this year—enough to inoculate almost every adult. With more shots on the horizon, the World Health Organisation is calling on all countries to vaccinate 70% of their total populations by mid-2022. Several African countries have set goals accordingly.

Yet the 70% target may not be achiev-

able in much of sub-Saharan Africa, where large portions of the public seem reluctant to get the vaccine or are difficult to reach. Moreover, striving to reach it by mid-2022 may not be desirable. The median age in the region is less than 20. Building up herd immunity against covid is a worthy goal, but vaccinating loads of slim young Africans, who are at little risk of dying from the disease, often means diverting resources from more pressing health campaigns. The target “does not make much sense” for Uganda, where half the population are children, says Alfred Driwale, who manages the country’s vaccine programme.

Africa’s health workers are already

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overstretched. Among their priorities are delivering catch-up vaccinations for diseases like measles and tetanus. Millions of children missed these jabs during lockdowns, because their parents could not travel or were afraid of getting covid in clinics. In Moroto, a district in Uganda some 400km from the capital, Kampala, Hans Lokale, the local health officer, says that normally about 10% of children do not return for follow-up doses. Since the pandemic that figure has doubled. Kwaku Agyeman-Manu, Ghana’s health minister, says his covid programme has not distracted from other public-health efforts. But that may be because only 8% of Ghanaians have received a jab since the vaccines began arriving in March.

Jabs against covid and those for other diseases may end up competing for more than health workers’ time. In order to mount covid campaigns, some African countries have already dipped into their emergency stockpiles of syringes, which are usually reserved for outbreaks of infectious diseases such as measles and yellow fever. Just to replenish these stocks they will have to get hold of 25% more syringes than usual, reckons Unicef. That does not even take into account the syringes needed for the billions of covid jabs that would have to be administered to hit the 70% target. Compounding the problem is the nature of syringes used in Africa. These are specially designed to draw exactly the

► standard covid-vaccine dose and to disable the needle after one use. Both are crucial features because jabs are often given by poorly trained community health workers who may unintentionally spread infections such as HIV by reusing old needles.

When mulling priorities, some African health officials may note the growing evidence that covid has already swept through much of the region. A study in Mali, for example, found that about 60% of people had already been infected by January—and thus have some level of natural immunity. Covid may also be less deadly in Africa. Even when the outbreak was at its worst in Mali, hospital admissions among those with covid were rare. One obvious reason is that fewer people in Mali are obese or have diabetes, two conditions that exacerbate covid. Some studies suggest another reason: covid appears to be less severe in people who have had malaria in the past.

Whether or not the 70% target is desirable, many countries in sub-Saharan Africa will struggle to reach it. As of early November most of them had used less than half of the doses they had received (see chart). One reason is that many of the doses were donated by rich countries shortly before their expiry date. "They bring vaccines that are going to expire in two weeks," says Dr Lokale. He has 2,000 doses that must be put into arms in the next fortnight. That would require nearly 4% of adults in his district to turn up at short notice.

Outside a health centre in Moroto, four people are sitting in the thin shade of an acacia tree waiting for more people to come before they can get a jab. Each vial of the vaccine given here contains 15 doses. Once it is opened it has to be used that day. In some places health workers urge people to gather friends and come as a group. A recent delivery of Sinovac's vaccine has helped reduce this problem because it comes in single-dose vials.

Many people in Moroto are cattle herd-

ers who move periodically in search of fresh pasture. That can make it hard to track them down for a second dose. Dr Lokale is hoping for a shipment of Johnson & Johnson's single-dose vaccine, which would solve that problem. As global vaccine supplies increase African countries could become more selective, choosing those that are better suited to their needs, says Gian Gandhi from Unicef.

A jab and a prayer

A harder problem may be persuading people to get a jab. In surveys taken in 15 African countries by Afrobarometer, a pollster, only 47% of respondents on average said they were likely to be inoculated and 39% believed that prayer is "much more effective" than the vaccine at preventing covid (though some were asked before jabs were available). When shots were offered to health workers at Moroto's hospital, only half had them. Rumours that the jabs make people sterile, that Western countries are sending them to kill Africans and similar

nonsense, circulate on WhatsApp. Even in villages with no internet, the same messages are relayed on the radio.

Low trust in government, a chronic state of affairs across Africa, is part of the problem. Fewer than half of respondents in the Afrobarometer surveys said they trusted their government to ensure vaccines were safe. But many people have more prosaic misgivings that could be solved with better outreach campaigns. Sayou, a 52-year-old guard in Dakar, the capital of Senegal, says he trusts the vaccines but is unsure that clinics are open on Sunday, his only day off work.

All this helps explain why the plastic chairs outside the covid vaccination room at a clinic in Dakar are empty. There is no shortage of vaccines, but only about ten people a day show up, compared with 50 or more not long ago. Cases of covid are low, says a nurse, "but if there is another wave, the whole world will come again." Meanwhile, health officials must decide how best to deploy their limited resources. ■

Music censorship in Congo

Zapping the rap

KINSHASA

An increasingly paranoid government bans songs that annoy it

"I CONSIDER MYSELF to be like a mosquito," says Bob Elvis, a musician, from his studio in downtown Kinshasa, the sprawling capital of the Democratic Republic of Congo. "I may be small but I can annoy you all night long, by singing, biting and not leaving you alone."

Mr Elvis's latest rap song, "Letter to Ya Tshitshi", has rankled the president of Congo, Félix Tshisekedi, so much that it was banned days after being released. The song addresses Étienne Tshisekedi, the president's dead father, a firebrand opposition leader, by his nickname. It laments his son's incompetence.

In the video, Mr Elvis raps to a photo of Mr Tshisekedi senior, surrounded by flickering candles. He repeats the refrain "since you left" and describes the country's woes, from the scarcity of clean water to the abundance of corruption, electoral fraud and conflict. "Since you left, war in the east goes on," he raps. "We are fighting for the rule of law."

The Censorship Commission banned another six of Mr Elvis's songs as well as a track called "What we have not done" by MPR, a hip-hop group. This song is about the failings of every Congolese president since independence. The ban on MPR's track was rescinded a day later when fans kicked up a fuss.

Mr Elvis has not been so lucky. Broadcasters that play his forbidden tracks risk

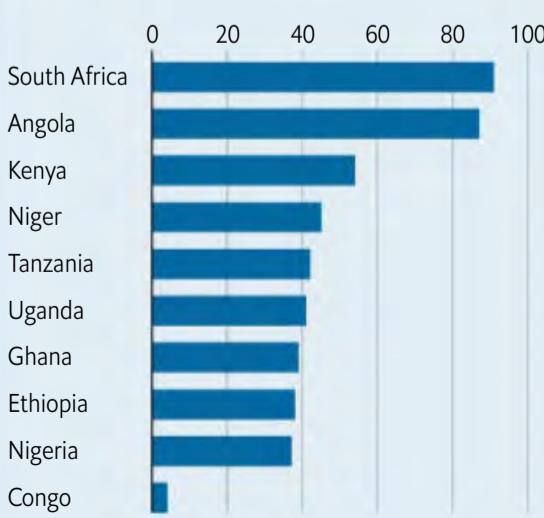
having their licences revoked. Other musicians have been targeted, too. A rapper from southern Congo, Sébastien Lumbwe, known as "Infrapa", fled the country two weeks ago after being harassed by officials over his songs, which poke the government. "It is part of a pattern of shrinking civic space," says Jean-Mobert Senga of Amnesty International, a watchdog. "It goes against President Tshisekedi's commitment to respect human rights."

The legal authority to ban the songs comes from a decree issued by a crooked dictator, Mobutu Sese Seko, 54 years ago. The current president's father, were he still alive, would be appalled. He spent much of his life campaigning against Mobutu's champagne-gargling tyranny. Now his son is using the kleptocrat's diktat to stifle dissidents of his father's sort, albeit funkier.

Still, the Congolese government has not yet figured out how to make censorship effective in an age of social media. Although Mr Elvis says he is incensed by the ban, he is probably quite pleased about the buzz it has created. "Letter to Ya Tshitshi" has received more than four times as many hits on YouTube as some of his other recent tracks. It sounds tinnier played out of mobile phones than on the radio, but at least it is not a flop. Unlike the government that banned it.

More haste, less waste

Covid-19 vaccines used, as % of doses received
Selected countries, 2021*



Source: TBI Africa Covid-19 Vaccine Tracker

Sudan

Coup de grâce

ADDIS ABABA AND KHARTOUM

The army tightens its grip on Sudan's political transition

THE FIRST the Sudanese public saw of their leader in almost a month was a visibly strained Abdalla Hamdok, the civilian prime minister, attempting to put a positive spin on the agreement he had just signed with the man who had briefly ousted him in a coup. In a short televised ceremony Mr Hamdok (on the right) said he had accepted the deal to end the bloodshed that had roiled Khartoum, the capital, since his arrest on October 25th. Joining hands with the very men who had locked him up, would, he insisted, "prevent our country from plunging into the unknown". In response, jeering demonstrators outside the presidential palace burnt tires, erected barricades and chanted, "Hamdok has sold the revolution." Police fired tear-gas. A 16-year-old protester was shot dead.

For the man who upended Sudan's transition to democracy by launching the coup, things are going swimmingly. Lieutenant-General Abdel-Fattah al-Burhan, Sudan's de facto president (on the left), praised Mr Hamdok, declaring that the agreement was a "clear defence of the revolution" of two years previously, when demonstrators toppled Omar al-Bashir, a ruthless Islamist despot who had ruled Sudan for three decades. Back then the generals had seized power in a coup only to begrudgingly sign a coalition agreement with the leaders of the protests a few months later. This time, though, the men with guns who have ruled Sudan for almost all its post-independence history have largely got their way.

The deal reinstates Mr Hamdok as prime minister and reaffirms the principle of partnership between civilians and the armed forces that underlies the power-sharing pact of 2019. People detained in the coup, among them members of the cabi-



A bad deal

net, are to be released. But the elections once promised for 2022 will now take place no earlier than mid-2023. In the meantime Mr Hamdok serves at the pleasure of Mr Burhan, who appears to have the power to dismiss him or any of his ministers. This rather undermines what Dr Adam Elhirai-ka, an adviser to the prime minister, describes as a benefit of the new arrangements: that Mr Hamdok can appoint a cabinet of civilian technocrats.

The generals are in a stronger position now in other ways, too. In the weeks since the coup Mr Burhan has stacked the bureaucracy with loyalists. The "sovereign council", which oversees the cabinet, was originally conceived as a joint military-civilian body, but now consists almost exclusively of men with guns. It includes Mr Burhan's deputy, Muhammad Hamdan Dagalo (known as Hemedti), a warlord from the country's Darfur region who heads a notorious paramilitary unit. And it contains several rebel leaders from Darfur and southern Sudan who joined the government as allies of the generals after a peace agreement last year. The civilian coalition that led the protest movement no longer has a seat at the table.

Foreign governments have cautiously welcomed the deal. America, which responded swiftly to the coup by freezing some \$700m in aid, said it was "encouraged", but warned the junta not to use excessive force against protesters. "The West seems basically happy so long as Hamdok is back," says Magdi el-Gizouli of the Rift Valley Institute, a think-tank with offices in London and Nairobi. The African Union, which suspended Sudan after the coup, is considering reinstating it. Pushing for this is Egypt, which, along with Saudi Arabia and the United Arab Emirates, is a staunch ally of Mr Burhan and is thought to have encouraged his putsch.

The Sudanese Professionals Associa-

tion, which spearheaded the previous uprising, denounced the deal as "treacherous". In Khartoum and other towns resistance is mounting. Barricades have sprung up across the capital, where neighbourhood committees are organising protests. "We've been betrayed," says Mona Awad, a demonstrator who narrowly dodged being hit by a tear-gas canister in front of the palace. Since the coup 41 people have been killed and hundreds more detained. Ms Awad is not deterred: "Either we die like them or we get our rights." ■

The war in Yemen

Slouching towards an exit

DUBAI

Saudi Arabia is struggling to find a way out of Yemen

DURING THE Korean war an American general quipped that his beleaguered troops were not retreating, just "advancing in a different direction". So too it was for the Saudi-led coalition in Yemen, which in mid-November withdrew its forces from Hodeida, the main port on the country's Red Sea coast. The Houthis, a group of Shia rebels who have been fighting the coalition since 2015, swept in to seize it.

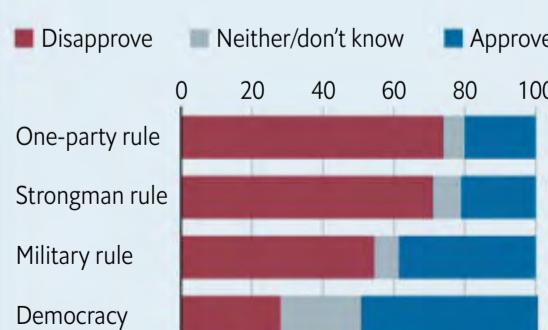
The pull-out was a surprise to almost everyone, even the UN observers deployed to monitor a ceasefire in the area since 2018. "[This] represents a major shift of the front lines", the observer mission noted, a remarkable exercise in understatement.

In the coalition's telling, withdrawal was a strategic choice (probably influenced by the United Arab Emirates, a coalition partner that backs the local fighters). The old ceasefire deal, signed in Stockholm,

Yearning to choose

Sudan, February-April 2021

% responding



Source: Afrobarometer

► was meant as a first step towards a broader peace between the Houthis and the internationally recognised government. Instead, it locked in the status quo. The combatants never withdrew from Hodeida, as required, and while the truce did reduce violence, it was routinely violated. With a stalemate on the ground, coalition troops were perhaps better deployed elsewhere.

Hodeida was once a priority for the coalition. Today, though, it is almost a sideshow to the bigger fight happening 260km (162 miles) to the north-east, in Marib. Once a relative oasis of peace, the city, controlled by the coalition, hosts some 1m internally displaced people. Northern Yemen's sole oil refinery is there; so is a highway that connects Yemen to Saudi Arabia. Seizing Marib would be a victory both symbolic and strategic—and the Houthis increasingly seem to have the upper hand.

Since the rebels escalated their push for Marib in February, both sides have settled into a long war of attrition. Coalition forces have dug into the hills that ring the city, backed by Saudi jets roaring overhead. Pro-Saudi media run frequent stories about air strikes that kill scores of Houthis.

The group does not deny the cost: the Houthi-controlled defence ministry says that 14,700 of its fighters have been killed in Marib just since June. Many were no doubt conscripts, including children, pressed into service and pushed forward in "human-wave" attacks that have worn down the city's defences. The UN says more than 40,000 people have been displaced in Marib over the past two months.

The fighting has added to Yemen's misery. Some 80% of its 30m people need aid to survive; more than 2m young children are severely malnourished. The rial, Yemen's currency, has hit record lows several times this year in government-controlled areas, leaving many families unable to afford food and other essentials.

Tim Lenderking, the American special envoy for Yemen, travelled to the region for talks in November. He has little to show for a dozen such trips this year. The UN representative has fared no better. Blame for the diplomatic impasse lies largely with the Houthis, who think they are winning and see little reason to negotiate.

The Saudis, by contrast, are growing desperate to end the war, if only for self-interested reasons. A conflict sold to the public in 2015 as a quick romp has instead become a quagmire, one that has cost the kingdom untold billions and damaged relations with key partners, particularly America. It has also invited frequent drone and missile attacks by the Houthis. The coalition says it intercepts 90% of attacks (a figure that is hard to verify). Still, a few have hit airports and other vital infrastructure. The Saudis are moving to shore up their border defences in expectation of



Marib's last line of defence

more Houthi advances in Marib.

With American and UN-led talks faltering, the Saudis have begun negotiating with arch-rival Iran, which has supported the Houthis with arms and cash. The two regional powers held low-level talks earlier this year. Yet the Saudis have little to offer Iran, which is happy to see its foe bleed.

Even if Iran wanted to help, it probably does not have enough control over the Houthis to force them to strike a deal. The Saudis are eager to cut their losses, but they cannot find a way to do so. ■

Israel and NSO Group

Hacked off

JERUSALEM

A lawsuit from Apple piles pain on a controversial Israeli hacking firm

ISRAEL'S CYBER-SECURITY industry is booming. In July the National Cyber Directorate, a government agency, said that startups in the field had raised \$3.4bn across 50 separate deals. Seven had become "unicorns", or privately held firms worth at least \$1bn.

But not everyone is enjoying the good times. On November 23rd Apple, a big smartphone-maker, announced that it would be suing NSO Group, an Israeli firm founded in 2010 and a one-time member of the unicorn club, accusing it of "weaponising powerful state-sponsored spyware" against its customers. It was the latest blow in an awful year for a firm which, despite the clandestine nature of its business, has become one of Israel's best-known—and most controversial—companies.

Whereas most cyber-security firms focus on defence, NSO Group sells hacking

software to governments. Its best-known product, Pegasus, is designed to gain undetected access to smartphones. Targets can have their messages read, their locations tracked and microphones and cameras activated clandestinely.

NSO Group has said that it exports its software only to trusted governments. It says it has saved "thousands of lives" and is used to combat "terrorists and paedophiles". Yet a list of 50,000 phone numbers considered for targeting, which leaked earlier this year, included those of Emmanuel Macron, France's president; Roula Khalaf, the editor of the *Financial Times*; and hundreds of politicians, journalists and campaigners in dozens of countries, such as India, Mexico and Hungary.

Apple is not the only company pursuing NSO Group through the courts. Its list of opponents reads like a "who's who" of Silicon Valley firms. Last year Microsoft, Google, VMWare and Cisco filed briefs in support of another lawsuit brought in 2019 by WhatsApp, a secure-messaging service owned by Meta, the parent company of Facebook. On November 8th an American court said that lawsuit could go ahead, ruling that NSO Group was not covered by the immunity to civil lawsuits enjoyed by national governments.

Israel's government has, until recently, backed the firm, using its capabilities as a way to boost ties with allies. After the leak of the target list, the government put out a determinedly dull statement assuring readers that export licences complied with international law. (In private some Israeli exporters ridiculed the outrage the leaks provoked.) The firm's notoriety served as a sort of backhanded compliment to the technical abilities of Israel's broader technology industry.

But official support may be cooling as foreign governments join the chorus of displeasure, says John Scott-Railton of Citizen Lab, which is part of the University of Toronto and has done much of the technical-analysis work on Pegasus. On November 3rd America added NSO Group to the same sanctions list to which it has banished Huawei, a big Chinese telecoms firm, barring the use of American technology in NSO Group's products. After Mr Macron's name appeared on the leaked list, Israeli officials jumped on planes to Paris to try to smooth things over.

The bad publicity seems to have been bad for business. On November 22nd Moody's, a credit-rating agency, downgraded NSO Group's debt to CAA2, one of the lowest grades available, and warned that it might default on \$500m of loans. "NSO was seen as a win-win for both investors and Israel's government so long as it wasn't getting too much attention," says Mr Scott-Railton. "But these days it looks like an investment that's blowing up in everyone's face." ■



Germany's next government

All systems go

BERLIN

Olaf Scholz's coalition prepares to take office

THREE-AND-A-HALF years ago German politics looked exhausted. Angela Merkel had just assembled her third “grand coalition”, a tired centrist alliance that left no one satisfied. Today, two months after an election that saw Mrs Merkel’s Christian Democrats booted from office, the mood is markedly brighter. On November 24th the leaders of Germany’s Social Democrats (SPD), Greens and Free Democrats (FDP), a pro-business party, exuded optimism as they gathered in a converted Berlin warehouse to hail their new “traffic-light” coalition (named after the parties’ red, green and yellow colours). In 177 pages and 52,000 words—a shade more than “The Great Gatsby”—their three-party deal lays out a policy agenda for the next four years.

Seeking to conjure coherence from an unwieldy project, the parties are pushing a narrative of “modernising” Germany after 16 years of Mrs Merkel’s conservative rule. The notion that three disparate parties might so quickly sand away their differences looked dubious. But their leaders in-

sisted that the two-month coalition negotiations—which proceeded relatively smoothly, on time and mostly without leaks—built a bedrock of trust. Olaf Scholz, the SPD’s taciturn chancellor-to-be, says he hopes the parties will campaign jointly at the next election. People were sceptical of traffic lights when they were introduced in Berlin in the 1920s, he noted, but they are indispensable today.

The parties’ modernising promise finds expression in a raft of legislative proposals. These include a liberalisation of Germany’s archaic citizenship laws, streamlining of bureaucracy, electoral reform to shrink the bloated Bundestag, improve-

ments to gay and trans rights, and the legalisation of pot. Negotiators say they struck agreement on these issues quickly. The deal’s language on other themes bears the hallmarks of trickier talks.

A commitment to keep Germany on the “path to 1.5 degrees” (ie, to limit global warming) is threaded throughout. A pledge to bring the coal phase-out forward to 2030 from 2038 is welcome though symbolic, as carbon-pricing is already killing the stuff. More significant is a planned increase in the share of renewables in Germany’s electricity mix to 80% by 2030, up from the current 65% target (and 45% today). The agreement is thinner on transportation, says Alexander Reitzenstein, a climate expert at Das Progressive Zentrum, a think-tank, and, to his surprise, offers nothing on raising the domestic carbon price.

The parties bickered over fiscal policy and public investment. A constitutional “debt brake”, strongly backed by the FDP, limits deficit spending. A raft of complex tools will be used to get around it, including beefing up the state development bank, extending debt repayments and tweaking the calculation of Germany’s structural budget deficit. Details on all this are thin, but the coalition will probably struggle to meet the Greens’ target of €50bn (\$56bn) a year in fresh money. Next year this national discussion will bleed into a European one on fiscal rules, a touchy subject in Germany. Here, the deal’s vague commitment

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► to use the rules to secure growth and foster investment in the EU offers more than some had dared hope.

"The foreign-policy chapter is stronger than I'd expected," says Jana Puglierin of the European Council on Foreign Relations. A vow to attend the first meeting next year of signatories to a new anti-nuclear weapons treaty will worry NATO allies. But it is balanced by a strong commitment to NATO's nuclear-sharing arrangements, under which Germany consents to host American nukes and maintain aircraft that can deliver them. The Russia talks were especially contentious, and the coalition agreement ducks explicit mention of Nord Stream 2, a Russian gas pipeline detested in America and much of Europe. But Germany's China hawks are delighted with the deal's robust language, including support for Taiwan's involvement in international organisations. Mrs Merkel's engagement-first approach to China looks set to expire with her chancellorship.

The agreement is weaker on reforms to Germany's pension system, which faces chronic pressure from an ageing population. Easing restrictions on labour immigration from outside the EU is welcome but cannot plug the demographic gap. On asylum the new government offers carrot (easier family-reunification rules) and stick (quicker deportations). Yet for a country squat in Europe's middle, national policies can only do so much in the absence of a deal to bolster the EU's common asylum rules. A fresh migrant crisis on Europe's borders could strain the traffic-light government as it did Mrs Merkel's.

Many of the 17 ministerial posts still need to be divvied up, but the most important are already known. One crucial relationship will be between Christian Lindner, the FDP leader and Mr Scholz's presumed finance minister, and Robert Habeck, the Green co-chair, who will run a beefed-up climate and economy ministry (Annalena Baerbock, the Greens' other leader, will be Germany's first female foreign minister). The tax-cutting liberal and the statist Green claim to be united in the mission of managing Germany's energy transition. Reality will test that promise.

Yet unforeseen events will prove the biggest challenge. In that sense, the pandemic once again raging inside Germany offers the traffic-light coalition a grimly fitting welcome. Mr Scholz's government will be sworn in during the week of December 6th. By then, with thousands of Germans dying from covid-19 every week, many hospitals will be under severe strain. The new chancellor is already contending with demands for another national lockdown and an Austria-style vaccination mandate (see next story). The wedding went as well as can be expected. But the honeymoon will be brief. ■

Covid-19 in Europe

The fourth wave

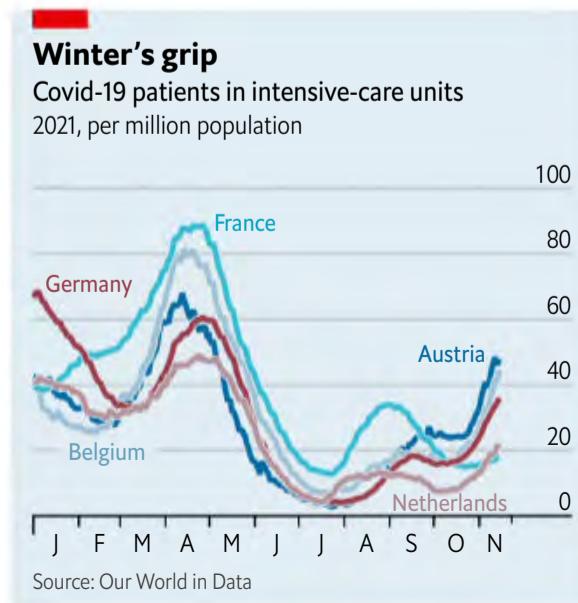
BERLIN

A deadly surge in infections is met by popular fury over lockdowns

THE SIGHT of 40,000 unvaccinated Austrians marching through their capital, Vienna, in recent days was troubling twice over. The tightly packed opponents of lockdown measures were at risk of spreading the coronavirus. They also threatened to stir up an already tense political situation. Karl Nehammer, Austria's interior minister, warned that anti-vaxxers in the Alpine republic are growing more radicalised. He called the demonstration's mood "incensed" and "aggressive". Some protesters were extremely provocative, carrying placards likening Alexander Schallenberg, Austria's new chancellor, to Josef Mengele, the sadistic physician at the Nazi concentration camp in Auschwitz.

The protesters were marching against Austria's increasingly tough measures against anti-vaxxers. On November 22nd the government imposed a full lockdown once again, to last for at least ten days. That compels Austria's 9m people to hunker down at home, leaving only for work, essential shopping and exercise. Austria is also the first Western democracy to make covid-19 vaccinations mandatory for all, starting on February 1st 2022. "For a long time—maybe too long—I and others assumed that it must be possible to convince people in Austria to get vaccinated voluntarily," said Mr Schallenberg when he announced his "very difficult" decision.

Europe, once again, is at the centre of the pandemic. Cases are surging as the highly contagious Delta variant makes its way, belatedly, through Europe's population. The World Health Organisation said on November 23rd that deaths from covid-19 across the continent could exceed



2m people by March. (*The Economist*'s own tracker suggests this number was long ago surpassed.) Last week reported deaths increased to close to 4,200 a day from 2,100 at the end of September. The disease has become the leading cause of death in Europe.

Will more countries respond with the sort of strict measures seen in Austria? As hospitals in central Europe fill up, anxiety grows. Around 66% of the total population in the European Union is fully vaccinated, but vaccination rates vary greatly between countries. Farther west, they are remarkably high. Among the over-12s in Portugal, more than 88% of the population is fully vaccinated. By contrast, in Bulgaria the share is below 25%. Within Germany there are also large east-west variations.

Other governments have imposed compulsory covid vaccinations for specific groups. Italy made them obligatory for all workers in public or private companies, unless they can prove they are immune or have tested negative in the past 48 hours. Similarly, France made vaccination compulsory for health staff as well as police and firefighters. This week Germany made vaccinations compulsory for its army.

Support for a nationwide vaccine mandate, previously a taboo, is now rising in Germany. Prominent politicians had repeatedly promised that such a mandate would not be considered. But several state premiers, including Daniel Günther of Schleswig-Holstein, Markus Söder of Bavaria and Volker Bouffier of Hesse, now back such a measure for the entire country. Many Germans agree. A survey of 7,500 respondents, conducted in the past few days by Civey, a pollster, suggests that 72% would favour an Austrian-style vaccine mandate, and only 20% would oppose it.

As such mandates become likelier in many places, the polarisation between rival camps is growing. Anti-vaxxers consist mainly of supporters of populist and far-right parties, but also acolytes of alternative medicine, hippies and libertarians. Over the weekend thousands of opponents of anti-covid measures marched in the Benelux countries, Italy, Switzerland and Northern Ireland. In Belgium and the Netherlands rioters clashed with the police over three days. The mayor of Rotterdam lamented "an orgy of violence".

Andrea Ammon, the head of the European Centre for Disease Prevention and Control, has warned that vaccine mandates could provoke more resistance from anti-vaxxers, which seems plausible. But officials made their full-throated promises to keep vaccinations voluntary when taming the pandemic looked easier. Now, however, as winter forces more people together indoors and the Delta variant runs rampant, the pressure to return to lockdowns and impose tougher vaccine mandates may grow harder to resist. ■

Russia

Poseidon's jewels

Riches lie below the waters of the Arctic. Exploiting them is risky

RUSSIA'S LARGEST component republic is Yakutia. It extends well into the Arctic Circle and is as big as Germany, France, Britain, Italy, Spain, Sweden, Finland and Romania combined, but with a population of just 1m people. Over the past decade retreating sea ice has opened up a new shipping lane along its coast, the Northern Sea Route (NSR). This is the shortest passage between the ports of east Asia and western Europe, but its icy waters also offer something even more precious: geological bounty, in the form of cobalt, tin and rare-earth metals, deep below the surface.

Hostile weather and other obstacles to extraction make prospecting along the NSR a daunting venture. Nonetheless, numerous arms of the Russian state as well as private investors have already set their sights on these underwater minerals, in addition to the area's oil and gas. Discoveries of deposits on land give hope of further bounty offshore. Nodules—tiny balls of oxides scattered across the ocean floor, and first identified off the coast of Siberia—hold special promise. They contain minerals that can be used in everything from electronics to rechargeable batteries.

But there is a problem. The nodules are formed when seawater penetrates magma chambers deep below the sea floor. This water is heated to extreme temperatures before it ascends back towards the surface through chimney-like vents—in effect, submarine volcanoes. The process leaches metals out of the earth's crust and deposits them on the sea floor. But the vents also warm the water in their vicinity, which sustains remarkable ecosystems on the seabed. These habitats are little understood and would take decades to study fully. In the absence of proper environmental controls, biologists and oceanographers fear that mineral extraction around the vents could destroy irreplaceable habitats.

"Impact assessment is easier to do on land," says Javier Escartin of the Laboratoire de Géologie, an academic institution in Paris. "We don't have data on the ocean, where ecosystems are often so fragile they don't recover in human timescales." An evaluation along the NSR would require sophisticated robots to collect samples and map the sea floor—endeavours that some argue would be so expensive that they would make exploitation of undersea resources unviable.

For now, Russian mining companies



are guarded. Alrosa, Russia's largest diamond producer, describes Yakutia as "a northern frontier for short-term exploration", though the company provided no specifics. Norilsk Nickel, a big producer of nickel off the Taimyr peninsula, stresses the need for green construction standards

but "does not conduct deep-sea mining and currently has no plans to do so". Yet in 2001 Russia submitted a claim to expand its exclusive economic zone from 200 nautical miles from the coast to as far, in some places, as the North Pole.

Completely icebound just 20 years ago, Yakutia's waters are now navigable by ordinary ships for four months a year, and global warming will probably widen that window. As the passage becomes busier, many see alarming risks: in addition to environmental impact studies, there are calls for greater protections for indigenous people, restrictions on dredging and pollution, and transparency regarding mining operations. "Regulation is insufficient, especially now that the Arctic is open for business," says Malte Humpert, founder of The Arctic Institute, an American think-tank. The NSR, it seems, is an emerging economic and environmental flashpoint, both above water and below. ■

Video games Console sisters

All the top e-sports players are male. Could that change?

YOU WAIT, rifle in hand. An enemy appears. You kill him, and whoop for joy. Welcome to VALORANT, a popular video game that some people play professionally. This year the VALORANT Champions Tour, a series of contests that ends next month, will offer \$1m in total prize money. Eighty players are competing; all are men.

Some 42% of gamers who watch e-sports (at least occasionally) are female, and women often commentate on tournaments. But of the 300 highest-earning e-sports players, not one is a woman. Why so few women make it to the top is poorly understood. E-sports do not require physical strength. But they do require dedication, and the pool of avid female gamers is smaller than the pool of males.

It may be that girls are on average less keen than boys on video games, or have better things to do. Certainly, young males tend to play such games for longer hours than their sisters, which irks their parents but is essential if one wishes to turn pro. Some women may find the culture uncongenial: amateur shoot-em-up gamers linked via headsets often shout obscenities at each other and the screen. Some female gamers face hazing.

All-female e-sports tournaments do exist, but are less competitive, less popular and less well rewarded. An all-female VALORANT tournament in September offered €20,000 (\$23,000) in prize

money. This is not much, but more than the players could have earned elsewhere.

Some in the industry are trying to promote more female participation. G2 Esports, based in Berlin, recently announced its first-ever all-female team. David Beckham's Guild franchise now includes Guild X, a team of five women. They will enjoy the same tournament preparation as male players, to help them compete at a higher level. Klaudia "Cinnamon" Beczkiewicz, the captain, says: "It's like we have a family...that believes in us." Whether that is enough to transform e-sports remains to be seen.



Three mouseketeers

Charlemagne | The Franco-Italian job

A new treaty between Paris and Rome upends EU politics



THE LIST of things France and Italy have argued about in the past decade ranges from the serious to the silly. Nicolas Sarkozy and Silvio Berlusconi scrapped over migrants crossing from Italy into France. When the *gilets jaunes* popped up in France, Luigi Di Maio, then deputy prime minister, offered his support to the protesting petrolheads. “The wind of change has crossed the Alps,” said Mr Di Maio. France responded by pulling its ambassador across the Alps back to Paris in protest. In Libya, Italy and France found themselves backing opposite sides in a civil war on Europe’s doorstep. An Italian minister even complained that the French were trying to claim Leonardo da Vinci was French and spelling his name wrong to add insult.

Such rows have disappeared in the past year. Cosy dinners have replaced diplomatic slanging. In September President Emmanuel Macron and Mario Draghi, the Italian prime minister, chatted past midnight in a four-hour meeting at Le Petit Nice, a three-Michelin-star restaurant in Marseille that offers a €590 (\$665) set menu, wine included. Populist stirring of French politics by Italian politicians is a thing of the past, replaced by Mr Macron and Mr Draghi violently agreeing. To cement the improved relations, Mr Macron and Mr Draghi were set to sign a long-mooted Franco-Italian treaty as *The Economist* went to press. The treaty will cover everything from defence integration to migration to inducements for young people to experience *la belle France* and *la dolce vita*.

The model is the Elysée Treaty, which the French and German governments signed in 1963, and which has provided the backbone of relations across the Rhine ever since. Such comparisons may look overdone. Burying the hatchet after a continental war is a bigger deal than making up after some undiplomatic diplomacy. But this ignores the speed and cynicism that drove the Elysée Treaty’s signing. Charles de Gaulle saw the document as a way of driving a wedge between Germany and America. It was not mentioned in a meeting between the German and French leaders the month before. Indeed, it was thrown together in such haste that a German diplomat had to race to Hermès in Paris to find a suitably grand leather folder for its signing.

For such treaties are often about something else. If the Franco-German treaty was really about America, then the Franco-Italian

treaty is about Germany. Or so say officials from other countries, watching closely. Each party in the new German government provides something for France to worry about, whether it be the feeble defence policy of the Social Democrats, the frugality of the Free Democrats or the virulent opposition to all things nuclear of the Greens. France needs options, and Italy is a good one.

A glimpse of the potential of a Franco-Italian tie-up came in 2020, when a joint push on common debt—a French and Italian dream, but a German nightmare—shoved the German government into dropping its long-held opposition to the idea. The departure of Angela Merkel’s Christian Democrats from government throws the EU’s power relations into flux. But no matter how much things improve between France and Italy, Germany will remain the main ally of France. A deal acceptable to both France and Germany is probably acceptable to most EU countries; a deal acceptable to Italy and France may struggle for support beyond the Mediterranean. Any major shift in policy requires Franco-Italian persistence. But it still needs German permission.

Instead, a more even relationship between the EU’s biggest three countries is the most likely upshot of the treaty. Germany is the EU’s biggest member and France is its most politically dynamic, at least under Mr Macron. But Italy is the most consequential. Whether Italy, the club’s third-largest economy, can return to real growth after decades will determine the club’s economic health. How Italy copes in a post-Draghi era when polls suggest nearly half of Italian voters will support Lega (hard right), the Brothers of Italy (further right) and Forza Italia (the vehicle of the ever-present Mr Berlusconi) will shape the club’s politics. An Italy that is able to shape EU debates—such as on looser spending rules or on migration—is better placed to deal with both problems.

Treat me well

For Italy, the treaty says more about itself than its ties with France. While at Italy’s finance ministry, Mr Draghi worked on preparations to join the euro. The rationale was one of *il vincolo esterno*, the external constraint: roped into monetary union, Italy would no longer suffer from self-inflicted problems such as high inflation. Now a technocratic politician rather than a political technocrat, Mr Draghi has followed a similar strategy in government. Under Mr Draghi, Italy has maxed out its €190bn share of a €750bn recovery fund, pledging wide reforms that will take years to carry out. If Italy wants the money, it must continue to follow the policies Mr Draghi set out, regardless of who is running the show.

A deal with France is another constraint. With a treaty in place, a serene bureaucratic relationship should carry on even amid the stormiest politicking. Both Mr Draghi and Mr Macron know they will not be around for ever. Their successors may make Mr Sarkozy look Zen and Mr Berlusconi resemble a statesman. Mr Macron faces elections in the spring. Meanwhile, Mr Draghi is still coy about whether he will stay as prime minister or try to become Italy’s president, floating above Italian politics—less a politician than St Mario, the patron saint of bond-market credibility.

Treaties are not foolproof. A determined enough future government could let the arrangements wither, or rip them up altogether. After signing the Franco-German treaty in 1963 de Gaulle watched as his hopes of driving a wedge between Germany and America were dashed by the German parliament inserting a flowery dedication to NATO. The general shrugged it off: “Treaties, you see, are like girls and roses: they last while they last.” Sometimes, though, that is a long time indeed. ■



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Immigration

Desperate measures

LONDON AND PARIS

Migrants crossing the Channel are both a humanitarian issue and a political one

ON NOVEMBER 24TH an inflatable dinghy capsized off the coast of Calais, France. At least 27 people drowned; a few others were picked up by the French coastguard. They had been trying to get to Britain via an increasingly popular but perilous route. After years of effort by the authorities to stop migrants arriving from the continent stowed away in lorries, rising numbers have turned to small boats. On November 11th the total arriving on the Kent coast hit 1,185, a daily record.

The deaths turned a political row into a tragedy. In recent weeks the crossings had become the government's biggest headache. MPs say that, even as Parliament is consumed with scandal about second jobs, contacts by constituents concerned about immigration in small boats outnumber those about sleaze. Nearly 60% of Conservative voters say that immigration or asylum is one of the top three issues facing the country, and nearly 80% that the government is handling it poorly.

The drownings highlighted the human cost of what had up until then been discussed in terms of crude electoral calculus.

The prime minister, Boris Johnson, who campaigned to leave the EU on a pledge to "take back control"—including of Britain's borders—feared being outflanked on his right by a resurgent anti-immigration movement. Nick Thomas-Symonds, Labour's shadow home secretary, called the drownings the "most poignant of wake-up calls" for the government.

The previous week Mr Johnson ordered a review aimed at stopping small boats from attempting the crossing. But this is easier said than done. In the run-up to the 2019 election Priti Patel, the home secretary, said she would halve the number of migrants arriving by that route; instead it has increased nearly 14-fold. Migrants set out in the face of extreme risks, and for reasons that no destination country can control, such as war and famine. Aid, which donors hope may keep recipients at home, can instead give them the means to leave.

Many in Calais's camps want to go to Britain to join family members, says Frances Timberlake of the Refugee Women's Centre, an aid organisation. Others want to move on because of poor conditions. The

European Council on Refugees and Exiles, an NGO network, estimates that fewer than half of applicants for asylum in France in 2019 were provided with housing.

Those migrants who make it to Britain's shores have the right to seek asylum. As an EU member Britain could invoke the Dublin Convention, a deal struck in 2013 that requires claims to be made in the EU country of first arrival. In fact, returning those who moved on proved difficult. But in any case, Britain is no longer covered.

Many of the migrants who crossed the Channel this year are likely to qualify for asylum. According to the Refugee Council, a charity, arrivals by boat tend to originate in countries with high approval rates. Between January 2020 and May 2021, Iranians were the biggest group. Their approval rate before appeal is 67%, compared with 52% for all nationalities. For Syrians, the fourth-biggest group, it is 88%.

Since the Brexit referendum voters have become less concerned about immigrants arriving for work or to join family. But 56% have an unfavourable view of those who enter illegally. Other routes are, however, largely closed. Britain has no humanitarian-visa scheme for asylum-seekers. A plan announced in August to resettle Afghans who worked for Western countries and agencies has yet to get off the ground.

Ms Patel has considered using Britain's border force to push boats back into French waters. But that may be illegal under maritime law. Another idea is to hold asylum-seekers offshore while their claims are

► processed. The Home Office says that it is in talks with Albania's government—a claim its prime minister has denied.

The centrepiece of Ms Patel's plans is a draft nationality and borders bill, which Mr Johnson declared was all the more urgent after the latest tragedy. It would create a two-tier system, with arrivals through informal routes granted less time to stay and denied opportunities for family reunification. It has faced sharp criticism. According to a legal opinion commissioned by Freedom from Torture, an NGO, some parts violate international law. That is unlikely to stop the bill passing, but may delay it in the House of Lords. And in any case, there is little evidence that the harsh asylum policies influence migrants' choices. An assessment of the draft bill by the Home Office concluded that evidence for the effectiveness of deterrence was "limited". Researchers who interviewed migrants who crossed the Mediterranean during the crisis of 2015 came to a similar conclusion.

Reducing the toll of lives will take co-operation between Britain and France. On November 24th Mr Johnson and the French president, Emmanuel Macron, agreed to work together more closely and do "everything possible" to catch the smuggler gangs. "France will not let the Channel become a graveyard," Mr Macron declared.

But co-operation requires trust, which is in short supply. The two countries are embroiled in Brexit-related rows, notably over fishing permits. Mr Macron is fighting for re-election in April and needs to be seen standing up for national interests. After the drownings Mr Johnson expressed frustration at France's failure to stop the beach launches, and reiterated a request to allow British police to patrol beaches in northern France, which has so far been refused. According to the Elysée, Mr Macron said the British should "stop exploiting a dreadful situation for political ends".

And the French authorities argue that they are already doing all they can to stop departures. So far this year 31,500 migrants have set off, they say, with 7,800 rescued and brought back to France. On November 23rd they arrested 15 people connected to a people-smuggling ring that had brought 250 migrants across the Channel for a fee of €6,000 (\$6,700).

Seen from countries such as Greece and Italy, which are more accessible from some of the world's trouble spots, the numbers of migrants arriving on Britain's beaches is tiny. And as the weather grows colder and the seas choppier, the cross-Channel flow is likely to subside. But at least ten migrants have died in the past few weeks, not counting the latest tragedy. The government, already keenly aware of the likely electoral cost of a resurgence in the spring, has been reminded that failing to stop the crossings has a human cost, too. ■

Medical cannabis

Hard cases

A tussle over treatment for severely epileptic children turns ugly

IN 2018 THE suffering of Billy Caldwell, a 12-year-old with epilepsy, forced the government to issue a licence for medical cannabis. His seizures were controlled with a pharmaceutical-grade oil from Canada. That set a de facto precedent. In July that year cannabis products were made legal for patients with "exceptional clinical need".

But legal does not mean available. Although adults for whom medical cannabis is appropriate can usually get it on a private prescription, children cannot. Neither of the two doctors willing to prescribe privately is taking on new patients. The parents of Jorja Emerson, a five-year-old who lives in Northern Ireland, say the family may be forced to move to Canada now that the prescribing doctor has retired. Just three children, including Billy Caldwell, have been given prescriptions by the National Health Service (NHS).

For most epileptic children there are other, better options. Yet for a few, nothing seems to help. They may have hundreds of seizures a week and suffer neurological damage, which can prove fatal. Some parents say products with small amounts of tetrahydrocannabinol (THC), the psychoactive ingredient in cannabis, have transformed their children's lives.

Tussles about what works are common in medicine. And parents at their wits' end sometimes turn to unwise, ineffective options. But cannabis is known to help with some forms of epilepsy: a treatment li-

censed for two forms of the condition contains the non-psychoactive compound cannabidiol. Many well-run studies, and some trials (though not randomised controlled ones, the gold standard in medicine) support the case for THC.

The health minister, Maria Caulfield, says the problem with access is clinical, not political. Some blame new guidelines from the British Paediatric Neurology Association (BPNA). The organisation does not advise the use of unlicensed cannabis products because it feels there are not enough data on safety and efficacy. It counsels waiting for the results of a trial by the NHS. These would not come before 2024.

Alasdair Parker, a consultant paediatric neurologist at Addenbrooke's Hospital in Cambridge, is the BPNA's president. In animal trials, he warns, small quantities of THC have made seizures worse, not better. THC has been associated with psychological problems in teenagers, and some fear long-term effects on developing brains.

But for desperate parents, such caution cuts little ice. Worries about long-term effects feel by-the-by when weighed against a very poor quality of life and the risk of death, says Hannah Deacon. Her son Alfie (pictured) is one of the three children with an NHS prescription, and she says he has seen nothing but improvement in the four years he has taken it. Other parents are turning to the black market, she adds, to buy a plant product that contains much higher levels of THC.

In tough cases clinicians may exercise judgment when using medicines "off-licence". But the guidelines leave little room for it. David Jennings, a policy expert with Epilepsy Action, a charity, says more flexibility had been expected, and that what emerged not only tightened the rules on private prescriptions but also tacitly suggested to clinicians that "if anything goes wrong they will be held accountable".

The argument is turning ugly. Mr Jennings says parents are frustrated. Dr Parker, meanwhile, says that some paediatric neurologists feel "threatened, bullied and harassed", and suggests that some proponents of medical cannabis have "financial interests in us withdrawing our guidance". David Nutt, a professor of neuropsychopharmacology at Imperial College London, thinks the BPNA is being obstructive, even unethical. He says he has heard of children dying for lack of accessible, affordable medical cannabis and that his research, as yet unpublished, will show a 50-fold decrease in seizures when using a product that contains both THC and cannabidiol.

It remains to be seen how long the experts will take to resolve their differences. In the meantime, expect to hear more from vocal and distressed parents. That will make the issue political again—whether or not the health minister likes it. ■



Judgment call

Bagehot | Some modest proposals

A farewell—and three ideas for improving Britain



YOUR COLUMNIST joined *The Economist* in 1988, at Thatcherism's high tide. Sluggish institutions were being electrified, and long-suppressed energies unleashed. He is leaving during another Conservative revolution. But this time the chance of success looks slimmer. Boris Johnson lacks Margaret Thatcher's self-discipline and command of detail, as demonstrated by his bizarre speech to the Confederation of British Industry, a lobby group, on November 22nd. The prime minister lost his place, mimicked car sounds and waxed lyrical about a children's television character, Peppa Pig.

Mr Johnson is struggling against stiffer headwinds than faced by his predecessor. Britain's population is older than in the 1980s, meaning that state spending on health and social care is crowding out investment in the future. The Conservative Party is older still. In 1983 more 18- to 24-year-olds voted for Thatcher's Tories than for Labour under Michael Foot; Mr Johnson relies on support from retired people who want nothing to disturb their quiet lives. Thatcher had clear plans based on simple principles: privatisation, deregulation, value for money. Mr Johnson's self-appointed task, to "level up" Britain, is vague, even Utopian. Voters could judge Thatcher's progress in red tape untangled and state enterprises privatised. The path to being levelled up lacks similar milestones.

Here are some ideas for giving Mr Johnson's policies Thatcherite bite. Pick institutions that stand in the way of levelling up. Subject them to rapid and wholesale reform. And confound your enemies by choosing targets on the Tory end of the political spectrum, namely the great "public" (that is, private) schools, the City and the House of Lords.

Britain's private schools are a troubling mixture of excellence and social exclusivity. At any given moment just 7% of all pupils, and 15% of those aged 16 and over, are being educated privately. Yet that 15% gains half of all A and A* grades at A-level, and a third of all Oxbridge places. It is also over-represented in elite sports (especially cycling, rugby and rowing), acting and—how John Lennon must be spinning in his grave—popular music. Fees at public schools are so high—a year at Eton now costs almost £50,000 (\$67,000)—that they have become playgrounds for the offspring of global plutocrats and oligarchs.

This is a disgrace. Public schools were founded to educate

"poor and needy scholars", to quote from the founding document of one, Winchester. They enjoy charitable status because they supposedly serve the common good. In 1941 Winston Churchill argued that they should be obliged to give 60-70% of their places to poor scholars on bursaries. Mr Johnson, a scholarship boy himself, should revive his hero's idea. This would not only end Britain's educational apartheid, but also give the country a welcome injection of diverse talent.

One great beneficiary of Thatcher's reforms was the City of London, shaken from its claret-induced slumbers by global competition. But as the tyros of the Big Bang became lords and ladies of the Establishment, it nodded off again. The London Stock Exchange (LSE) increasingly looks like a care home for old-economy companies, rather than a cradle for new-economy ones. Less than 2% of the FTSE 100's value is accounted for by tech firms, compared with 40% of the S&P 500's. Overly fussy regulations mean that British companies must support an army of ageing, out-of-touch non-executive directors. The City's refusal to countenance dual-class share structures means fewer options for founders who want to tap public markets without bowing to the dictatorship of quarterly earnings. Allowing dual-class firms to join the LSE's premium segment could reconnect the bourse with the new economy and help the City do for today's high-tech companies what it did for the railways in the Victorian age.

It is not unusual to meet foreigners who say that they admire Britain's private schools or financial services (in many areas other than equities, the City is still world-leading). But whoever says that about the House of Lords? For most of its history it embodied the hereditary principle: aristocrats exercised veto power over legislation because an ancestor had shed blood for William the Conqueror or slept with Charles II. That changed with the introduction of life peerages in 1958 and the reduction of the "hereditaries" to a rump of 92 in 1999—but only by replacing one bad principle with another, political patronage.

Now party bosses nominate whomever they like to sit on the red benches: ex-ministers, cronies, relatives—and moneymen. Fifteen of the past 16 Tory party treasurers, all of whom donated at least £3m to the party, have been given seats in the House of Lords. But this is not only "Tory sleaze": Labour under Tony Blair was equally keen on "cash for honours". And inter-party competition has swelled membership of the Lords to around 800, all of them entitled to more than £300 a day simply for turning up.

A case can be made for abolishing the second chamber and entrusting legislative scrutiny to committees of the House of Commons, backed up by outside specialists. If it is to stay, it should be rebuilt from the ground up. Germany gets by with just 69 members in its upper chamber and America with 100, so Britain could surely cope with, say, 200. And the principle of patronage needs to go. Why not replace it with something fitted to Mr Johnson's self-appointed task of regional rebalancing? Allocate seats in the New Lords to regional mayors and selected members of the devolved parliaments in Belfast, Cardiff and Edinburgh, and move it from London to Manchester, the emerging capital of the North.

Get motoring

An education system that offers greater opportunities to talented children; a financial system in step with the tech economy; a political system that is less corrupt and more representative of the entire country—and all at no cost to the Treasury. What is Mr Johnson waiting for? Vroom vroom. ■

The
Economist

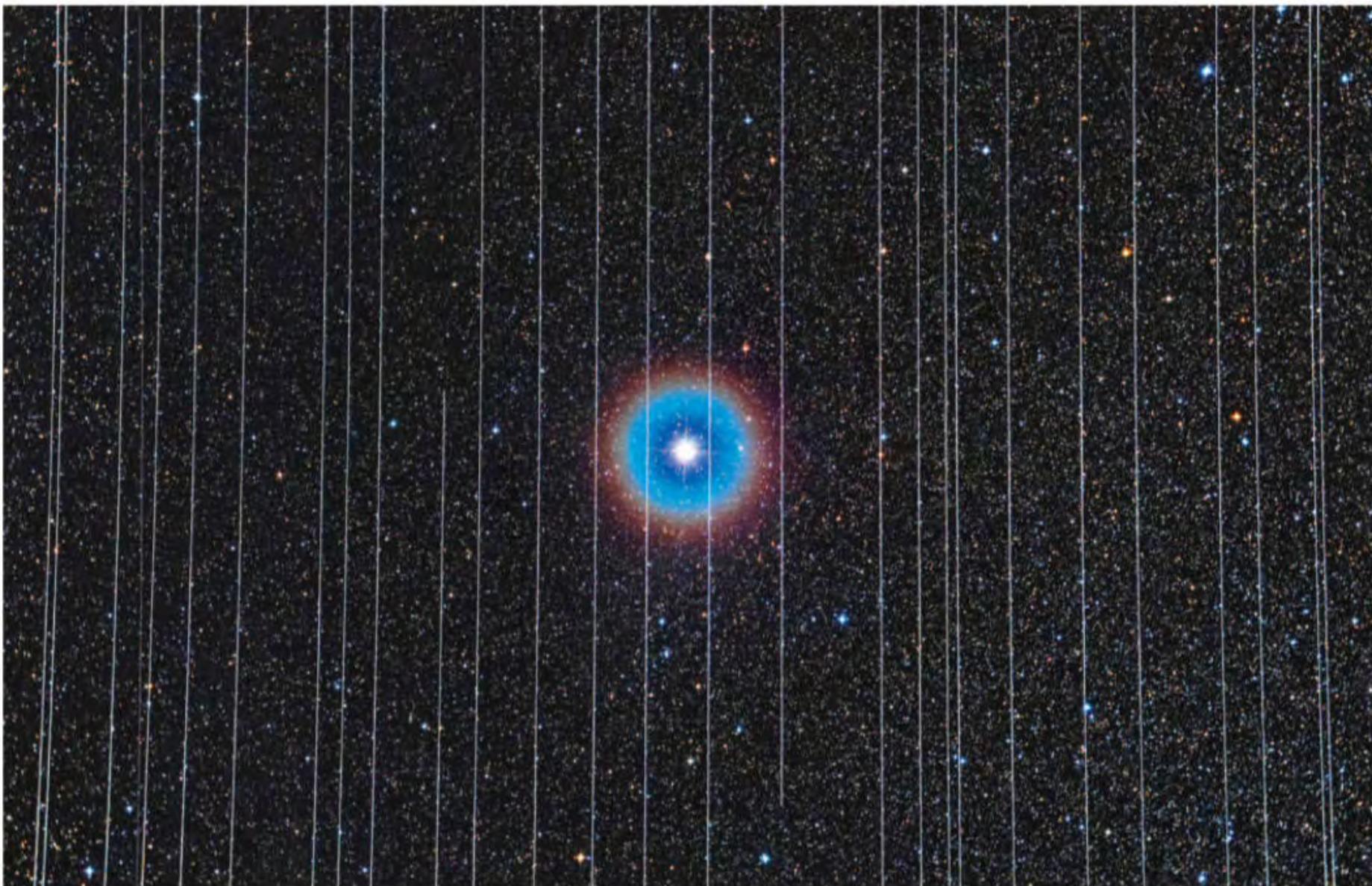


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Astronomers v satellites

Goodbye darkness, my old friend

Vast satellite constellations are endangering the most ethereal of global commons: the night sky

ON MAY 24TH 2019 a Falcon 9 rocket built by SpaceX launched 60 communication satellites into a low orbit around the Earth. That evening they appeared as a string of sunlit dots moving across the sky, many of them as bright as the brightest stars, a source of passing wonder and mystery to casual observers—and a portent of doom to astronomers.

"There were all these panic messages," remembers Olivier Hainaut of the European Southern Observatory (ESO): "Oh my God, it's the end, it's the end of astronomy as we know it!" Jonathan McDowell, an astronomer at the Harvard-Smithsonian Centre for Astrophysics, says he was "gob-smacked" by how bright the satellites were. "I did some quick mental arithmetic and realised that thousands of satellites that bright would be a substantial fraction of the visible things in the sky...I felt an increasingly large pit in my stomach."

The panicked messages and the abdom-

inal unease stemmed from the knowledge that those 60 lights were just the beginning. Up until that point communication satellites dealing with large amounts of data had been, for the most part, few and distant, sitting high and invisible over the equator. The largest "constellation" in low Earth orbit was that of Iridium, a satellite phone company, which had around 70 of the things. With 60 satellites SpaceX had almost equalled that with one launch. And there were a lot more launches to come.

As originally proposed, the company's plan for a system that could provide fast internet access to almost all parts of the globe called for 12,000 satellites. In subsequent plans a second phase has been added which brings the total to 40,000 satellites arranged in orbital "shells" at altitudes from 335km to 614km.

The company's reusable rockets have allowed it to act on those plans at unprecedented speed. The first shell, consisting of

1,584 satellites, was completed in just two years; its services have beta testers over much of the world. SpaceX plans to put up more than a thousand a year from now on, and to pick up the pace when it replaces its Falcons with its next-generation Starships.

The satellites seen on that first evening were, astronomers now know, anomalously bright. And the company has gone some way to making its more recently launched satellites less visible. But Starlink is not the only mega-constellation around town. According to filings made with the International Telecommunication Union (ITU), which regulates the use of different radio-frequency bands, and with national regulatory bodies, 100,000 non-SpaceX communication satellites could be launched into low orbits by 2030.

OneWeb, a firm the British government recently took over, has launched more than 200 already and has filed a request to America's Federal Communications Commission (FCC) for a total of almost 6,400. The FCC has also approved 3,000 satellites as part of Amazon's Project Kuiper. China, which has added "satellite internet" to its list of needed infrastructures, has filed with the ITU for 13,000 satellites at altitudes from 500km to 1,145km. The largest ITU filing was made in early November by Greg Wyler, founder and former executive chairman of OneWeb. In partnership with

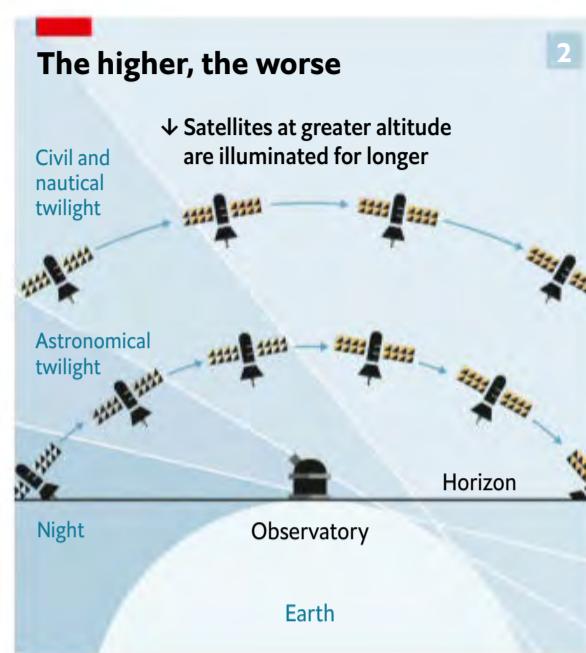
► the Rwanda Space Agency he has applied to send up a constellation of 327,000 communication satellites.

The reason that providing high-bandwidth services from space requires satellites in such large numbers is basically geometrical. Moving large amounts of data quickly is much easier if the receiver and transmitter are quite close. But satellites close to the surface move across the sky very quickly. So to be sure there are always a few in the sky over every user means you have to have a very large number of them.

Big constellations offering broadband-internet services were first proposed in the 1990s. But there was neither the technological base to mass-produce satellites of sufficient sophistication nor the launch capacity to spread them across the sky in sufficient profusion. Now there is. And the smartphone revolution which is partly responsible for producing the robust and highly capable electronics such satellites need has also increased the world's appetite for their services. According to the UN Development Programme only one in five people in developing countries is online. Morgan Stanley, a bank which predicts that the global space economy, worth \$350bn in 2016, will be worth \$1trn by 2040, thinks that 50-70% of that growth will be in satellite-internet services.

That does not mean all the schemes can make a profit, or even get off the ground. But even if only some go ahead, the boom in the satellite population could transform the appearance of the evening and morning sky. How visible they would be to the naked eye and thus the general population is hard to say. If all the operators follow SpaceX's example, maybe not too much; if not, the hours after sunset and before dawn could see dozens of faint lights racing through the sky.

But in either case they will transform the practice of amateur and professional astronomy. A study by the ESO shows that at Paranal, a site in Chile which is home to the organisation's magnificent, if prosai-



cally named, Very Large Telescope (VLT) there might typically be over 500 satellites visible in the sky at the beginning of the night (see chart 1). In long astronomical exposures, as pictured on the previous page, the paths of such satellites streak the sky like the bars of a jail cell.

The flash that split the night

"It's very much a paradigm shift," says Robert Massey of the Royal Astronomical Society, a British institution. "[The] large-scale utilisation of low Earth orbit is very different from anything we've had in the previous six decades in the space age." That new paradigm raises the urgency of a range of problems: concerns about collisions and debris, the removal of defunct satellites, the effects of that much launch activity on the stratosphere, the allocation of radio frequencies, the need for arms control and so on. As Dr McDowell puts it, "Every time humanity moves into a new domain—the oceans or the air or space—we go, 'Wow, this is enormous and really empty, we can throw as much garbage here as we want, and it'll never fill up, right?' Then pretty soon we go, 'Oops, that wasn't quite true.' And we're reaching that point in space."

Because the worries concerned are not

entirely novel, for most of the issues raised by the satellite boom there is at least some sort of pre-existing setting for negotiation or arbitration, and some sense of who is responsible to whom. The Outer Space Treaty requires countries to take responsibility for objects launched from their territory while they are in orbit. Satellite radio emissions are regulated by the ITU. The Vienna convention is where you go to talk about any possibility of damage to the stratosphere. There are evolving procedures for avoiding collisions, and norms for how to dispose of satellites after their lives are over. But there is no forum for discussing what satellites look like from the surface. It is an externality which has never previously been a worry.

This may seem a small thing. Astronomy is not a matter of life or death. But governments and philanthropists spend billions of dollars on it, thereby satisfying some of the world's welcome appetite for wonder. Amateurs in their unknown tens or hundreds of thousands derive great joy from it. Astronomers may not have an inalienable right to an unobstructed sky. But a meeting on the subject, Dark and Quiet Skies, which was organised by the International Astronomical Union (IAU) and the UN last month, made clear their dismay at companies being able to take it away from them without so much as a by-your-leave.

Conflict between star-gazing and communications is not entirely new. Radio astronomers have had to deal with interference from broadcasters for decades. But radio waves beamed from an antenna, whether on Earth or in orbit, can be regulated. Radio telescopes often sit in "radio-quiet zones" where the use of mobile phones and other devices is either limited or banned to ensure that incoming celestial signals are not drowned out; the ITU sets aside some wavelengths specifically for astronomical use.

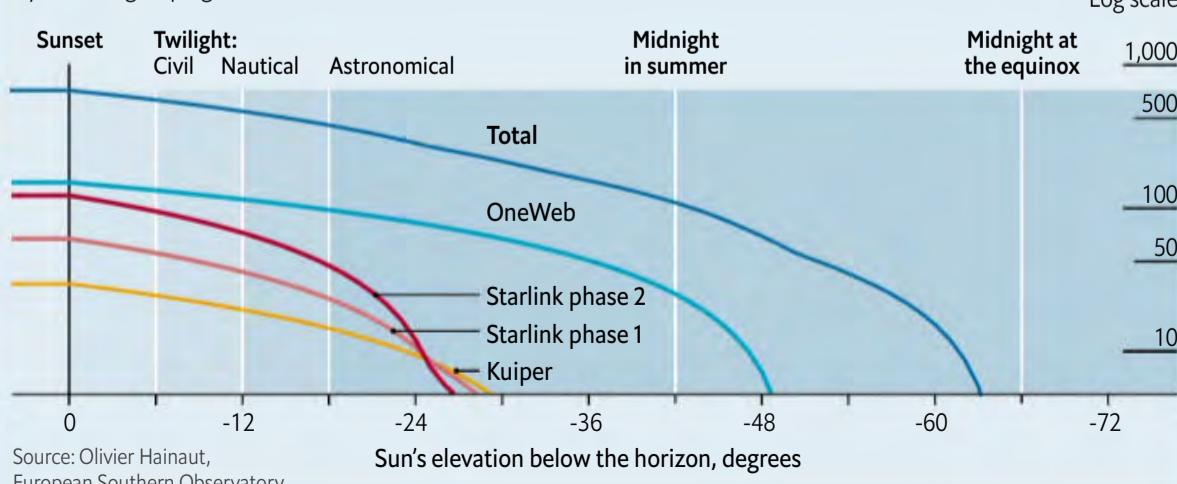
This does not mean that radio astronomers do not moan, nor that they do not have cause to. Emissions can often leak out of the intended frequency range. Scientists working on radio astronomy's next big thing, the Square Kilometre Array, are very worried about the new constellations. The SKA is a €1.8bn (\$2bn) project of 14 countries which will combine thousands of antennae of various types spread across South Africa and Australia into a single vast instrument.

A study released by SKA scientists in 2020 showed that a constellation of 6,400 satellites using frequencies between 10.7 gigahertz and 12.7GHz—the frequencies Starlink is licensed to use—would reduce that instrument's sensitivity in a neighbouring frequency band allocated to radio astronomy by 70%. By the time the number of satellites reached 100,000, that band would be unusable. That would make some

Well-identified flying objects

Number of satellites visible above 20 degrees elevation, from Paranal Observatory, Chile

By satellite groupings



► distinctive signals the array will look for impossible to spot. The scientists want to get the satellites' beams directed away from their antennae.

Radio astronomers have to worry about the satellites all day and all night. Their optical peers focus their concerns on the twilight, or rather the twilights: night-sky professionals recognise a civil twilight, a darker nautical twilight, and a more velvet still astronomical twilight. At these times satellites remain illuminated by a sun which, from the observatory's point of view, is already well below the horizon. The higher the satellite, the longer it remains illuminated, which makes OneWeb and the Chinese plans, both of which use orbits above 1,000km, more worrying than Starlink (see chart 2 on previous page).

Dr Hainaut reckons that the VLT could lose about 2% of its overall data to satellite streaks during the evening and morning: galling, but not incapacitating. But a revolutionary instrument elsewhere in the Andes will fare considerably worse. America's Vera C. Rubin Observatory is designed not just to survey the whole of the sky in more detail than ever before, but to do so on a weekly basis, thereby capturing telltale changes and one-off events. Looking at lots of sky with a sensitive eye maximises the problems posed by satellites. "All of the features that make Rubin Observatory amazing for discovering unknown things are the exact same features that make it highly vulnerable to lots of bright satellite constellations," says Meredith Rawls, an astronomer at the University of Washington who works at the observatory.

Dr Hainaut reckons up to half of the Rubin Observatory's images at twilight and dawn could feature streaks. Software should be able to remove them without losing more than 30% of the data, and possibly as little as 10%. But the streaks themselves are not the only problem. The chips

in the camera's light sensitive focal array—the largest in the world—can get overloaded if too much light hits them, creating electronic overtones and echoes that spoil the whole frame, not just the bit with the streak in it. For a programme devoted to looking for brief glimpses of rare events, that is a serious problem.

Dialogues between astronomers and SpaceX engineers have mitigated the worst of the problems by tweaking the satellites' design. In operation each of the Starlinks looks like a cross between a windsurfer and a junk. They consist of a three-metre-long rectangular board, known as the bus, on the bottom side of which are the antennae used to pick up and transmit signals, and a nine-metre rectangular solar panel that stands above the bus like a sail.

Words like silent raindrops

The reason the first Starlinks looked so bright was that when deployed from their Falcon 9 at an altitude of about 300km—they climb to their final orbits under their own steam—their solar panels spread out horizontally, thus maximising the reflecting surface as seen from Earth. Now the satellites keep their solar panels out of sight as much as they can. To minimise reflections from the bottom of the bus once the satellites are in their final orbit SpaceX engineers came up with the idea of a visor mounted to one side that casts a shadow over most of the Earth-facing side. This makes them considerably less visible.

Dr McDowell welcomes these workarounds, but notes that they are not perfect, and that other operators may not be as amenable. The possibility of bright satellites in truly sky-spoiling numbers persists, he says, "even if none of the currently proposed constellations are going to do it. We have to plan for it and we have to regulate against it."

Regulation, though, will take time. The

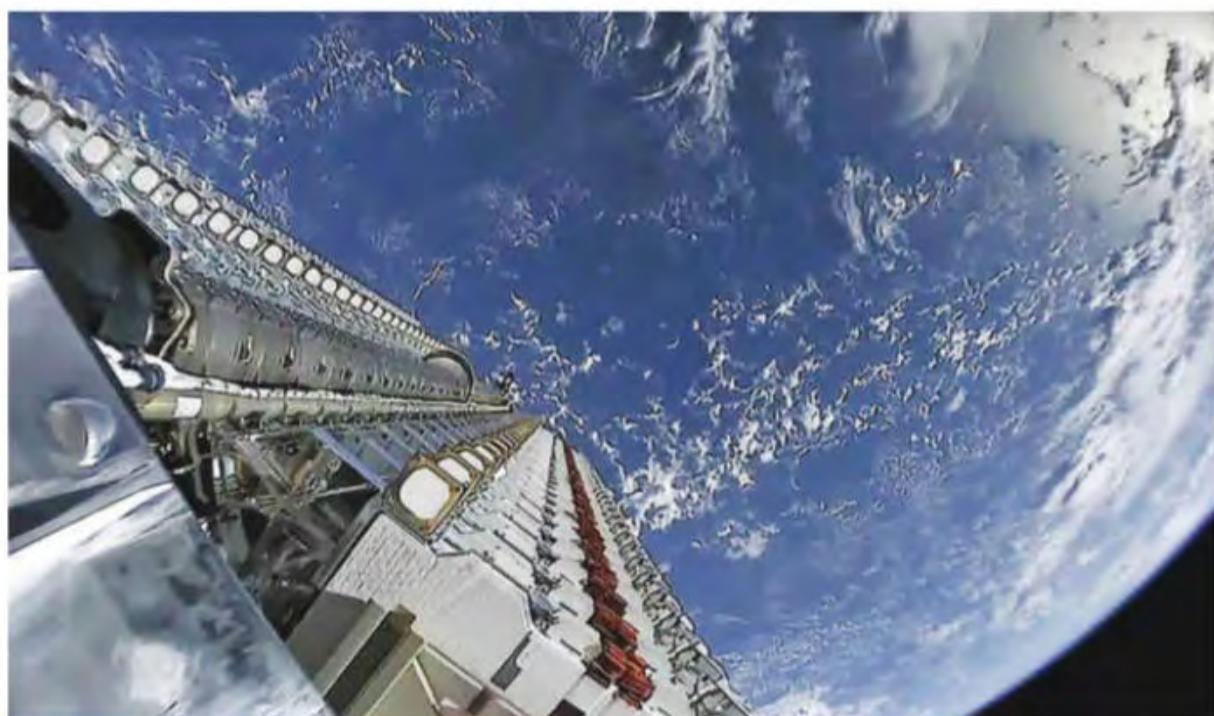
IAU plans to make recommendations—possibly stipulating that the brightness of space objects in future should be dimmer than magnitude 7 (ie, invisible to the naked eye)—to the UN's Committee on Peaceful Uses of Outer Space. That body may, one day, turn the package into a recommendation for a vote to better protect astronomy at the UN's General Assembly. Such a vote might then lead to a new protocol under the Outer Space Treaty. But even if that all happens, it will not do so any time soon—not least because other issues raised by the mega constellations, such as risks from debris, will doubtless seem more pressing.

For professional astronomers an alternative solution to the problem might be to get over it not metaphorically, but physically: make ever more of their observations from space. This is not a perfect defence. If the telescope is in a low-ish orbit itself, satellites can still get in the way. A team led by Mark McCaughrean of the European Space Agency has found that in the 2010s the number of 11-minute exposures on the Hubble Space Telescope's widest-field camera scarred by a satellite streak was 3.6%. In the first half of 2021 it was 6.6%. "It's gone up 80% in the space of a year," says Dr McCaughrean. "And that's just at the beginning." And because the Hubble is closer to the satellites in question, the streaks are out of focus; some show up as bands of light which fill up half the image.

Higher orbits are available. The James Webb Space Telescope (JWST), due to launch next month, will sit 1.5m kilometres from Earth free of all such concerns (see Science section). Radio astronomers have long fantasised about setting up shop on the far side of the Moon, the only place in the solar system which none of Earth's radio chatter can reach. But these are terrifically pricey projects. The JWST cost around \$10bn—putting it in the same ball park as the entire Starlink constellation.

The same factors which allow commercial operators to launch many more and cheaper satellites could in time help science, too. But astronomy tends to depend on one-off flagship missions that simply do not respond to the same economies of scale. Changing its culture, and the expectations of its professional practitioners, would be a hard task.

And no satellite can replace the delight of star-gazing from your own back garden, or a local hilltop, with just a telescope or a pair of binoculars and the whole universe to look at. The intrusion of space-age infrastructure will not worry all such observers all the time—to see a satellite can be a thrilling thing. But the more routine the sight gets, the less likely it will be to elicit a frisson of the technological sublime. Eventually, it will become just another of the mundane ways in which the world obscures its wonder. ■



Here come 60 more, stowed as flat packs



PAPER LOVES TREES

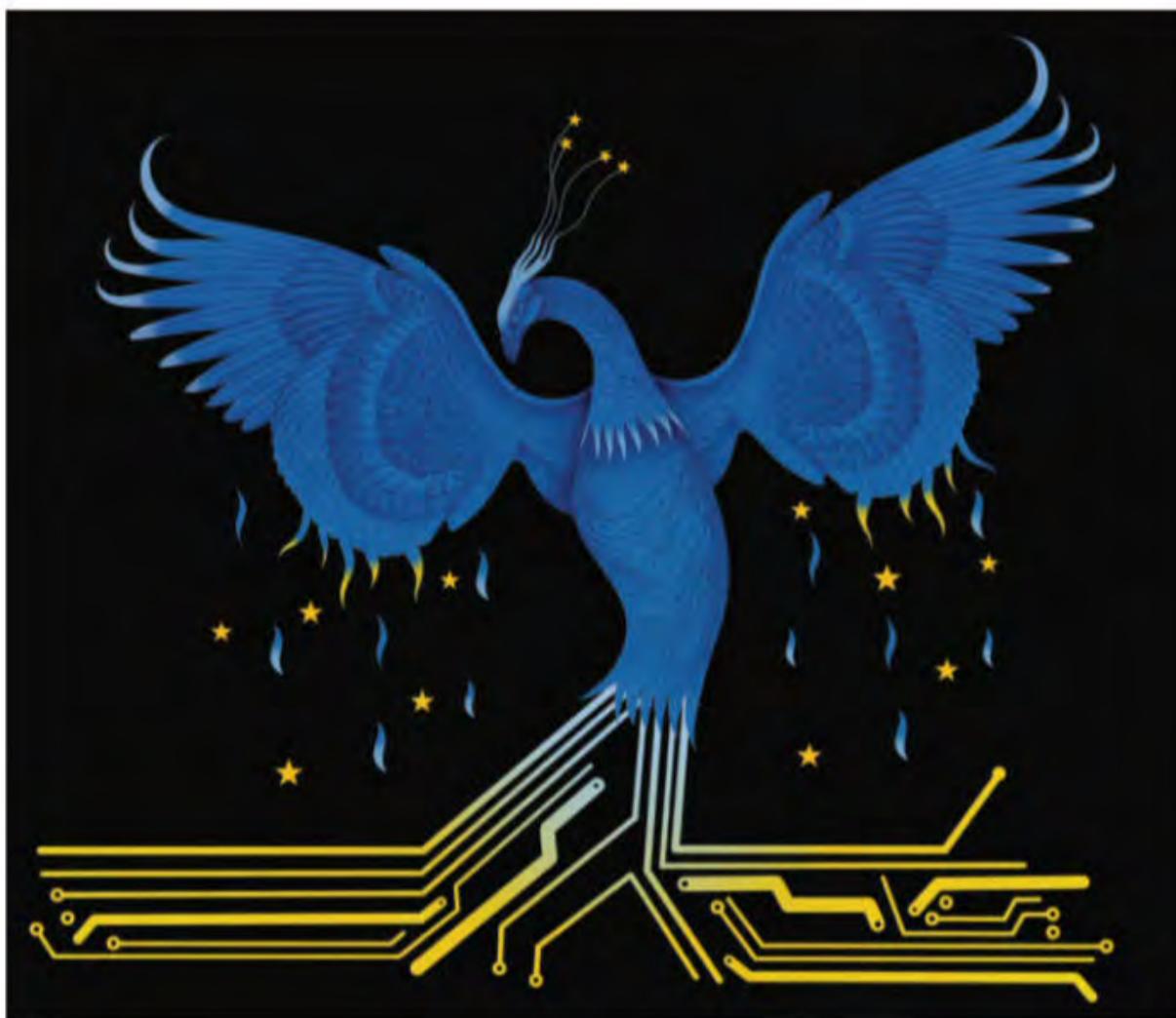
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European entrepreneurs

Renaissance

After a long slumber, Europe's animal spirits are stirring once more

THE IDEA of a Europe hostile to entrepreneurs would once have seemed laughable. At its 17th-century peak the Dutch East India Company's appetite for capital was so voracious that it demanded the invention of the public stockmarket. Investors then did not balk at its violent treatment of native peoples. The turn of the 20th century saw the founding of giants like L'Oréal, today's highest-earning beauty empire, and Denmark's AP Moller Maersk, the largest container-shipping line. Most of Germany's *Mittelstand* firms, employers of more than half of all the country's workers, were born at the same time.

That a continent shattered by two world wars produced far fewer businesses destined for high growth in the second half of the 20th century is perhaps unsurprising. But Europe never recovered its appetite for high-growth business creation. In the past three decades, America has spawned four behemoths—Google, Amazon, Tesla and Facebook, now known as Meta—whose valuations have topped \$1trn. Not one of Europe's corporate youths, meanwhile, has risen as high as \$100bn. One champion of

the 2000s, Skype, was in 2011 bought for \$8.5bn by Microsoft. The other, Spotify, is today worth only \$48bn. SAP, the closest thing the continent has to a tech giant, was founded three years before Microsoft and is worth less than a fifteenth of it.

Yet change is in the air. Venture capitalists, who want to sniff out the next Google while it is still being run from the founders' kitchen tables, are homing in on European startups. There are many more to choose from. European entrepreneurs who would once have gone west to start a business are now likely to start up at home rather than in Silicon Valley.

A new influx of capital is proof of an altered mood. Ten years ago, European firms grabbed less than a tenth of all venture capital (vc) money invested globally, though Europe's share of global GDP was a little over a quarter. This year has seen dealmaking volumes soar in many regions, but particularly in Europe, which now attracts around 18% of global vc funding, says Dealroom, a data provider (see chart 1 on next page). That funding is at an all-time high (see Finance & economics), pumping up values

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for European startups. The continent now boasts 65 "unicorn cities", or those which have produced a privately held startup worth more than \$1bn. That is more than any other region.

The continent's previous paucity of funding was not for lack of returns. Measured by total value (cash returned to investors plus current portfolio value) as a multiple of capital risked, the average European vc fund founded in the past two decades has not fared materially worse than the average American one (see chart 2). Nevertheless, American venture capitalists thought of Europe as "a place to take their families on summer holiday not somewhere to start a business," says Danny Rimer of Index Ventures, a vc firm headquartered in San Francisco and London.

Now they are voting with their feet. Sequoia, an American firm that was an early backer of Apple, Google, WhatsApp and YouTube, announced last year that it would open its first European office in London, and started recruiting local partners. Among native investment houses, the muttering is about when, not if, other American vc outfits will follow.

Venture capitalists are chasing a generation of startups that has benefited from the trail blazed by their predecessors. The likes of Skype and Spotify may not have reached the dizzying valuations of their American peers, but they showed it was possible to start a successful tech company in Europe and scale it at speed, explains Michael Moritz of Sequoia. Now, says Mr

► Moritz, "it's no longer frowned upon if you're young and bright to leave university and join a tech company, or to drop out and found one." They also provided startups with a pool of potential employees and board members with prior experience of fast-growing, innovative companies.

The combination of seasoned executives and access to experienced talent has fuelled the growth of a cluster of European firms founded after the ructions of the financial crisis that are now reaching maturity. More importantly, notes Hussein Kanji of Hoxton Ventures, another vc firm, they include companies starting to dominate their respective niches. The huge new category of social media was won by Facebook, he notes. "Now Spotify is the winner in music streaming, Klarna is the winner in buy-now-pay-later and UiPath is the winner in robotic process automation—they're all European," he says. With returns in the world of tech flowing disproportionately to the firms in first place, that makes Europe too attractive a prospect for global investors to ignore.

The boom extends far beyond a few of the largest companies. For Xavier Niel, a billionaire French tech founder-turned-investor, repeat founders in Europe are key. They are launching new waves of firms, he says, meaning "more entrepreneurs, more talent, more capital, more success, it's a flywheel in progress". Rachel Delacour sold her first business, BIME Analytics, a business analytics platform, in 2015 for \$45m, six years after co-founding it in Montpellier. She started Sweep, which helps companies track carbon emissions, last year. "Now that I'm starting this second business, I know right from the off that it can be a global story," says Ms Delacour.

It also helps that Europeans working for startups are becoming owners. A recent analysis by Index Ventures of 350 European startups found that 15-17% of firms on average is owned by employees. That is up from 10% five years ago, although still below the comparable figure of 20-23% for American startups. Workers' willingness



to be part-remunerated with stock options makes it easier for startups to compete with bigger firms for talent, says Mr Rimer.

Technological trends have also been driving costs down and enabling would-be founders to get their firms off the ground at home in Europe rather than leaving for California. Starting an internet business used to involve buying banks of servers and the space to store them. The advent of cloud computing means firms can instead rent processing power from hyperscale clouds like Amazon Web Services, and rent smaller offices. The pandemic has forced fund managers to accept doing due diligence and deals over Zoom. That lowers the importance of geographical proximity.

Two big questions hover over Europe's entrepreneurial renaissance. The first is the extent to which the capital being poured into it is spillover from the liquidity that has flooded markets since the onset of the pandemic. Since then, the world's four largest central banks have collectively pumped more than \$9trn-worth of cash into the global financial system, driving down bond yields. That has sent investors into ever-riskier asset classes in pursuit of returns. Early-stage equity investment in a previously calcified continent is a prime candidate. As central banks dial back, the yields on safer assets will start to look less anaemic, putting Europe's ample vc funding at risk.

Another question is whether the boom results in Europe building its own, American-style tech behemoths, or a cluster of middling firms that are gobbled up by larger, possibly non-European acquirers. That, in turn, will determine whether the continent's entrepreneurial moment flares out or ignites something bigger. Governments have devised schemes to catalyse business creation for decades, but the answer turns out to be simple. "There is nothing that beats examples of success to inspire confidence in people," says Mr Moritz. It is up to today's European giants-in-waiting to decide how much inspiration to provide. ■

European telecoms

Tim's troubles

MILAN

Can KKR fix Telecom Italia?

ITALIAN HIGH finance usually starts winding down for the year in the first week of December when Milan, the country's business capital, celebrates Ambrose, its patron saint. Not so this year. Over the weekend a new dossier dropped into the in-tray of Mario Draghi, the prime minister, that will keep him and bankers busy into the new year.

On November 21st KKR, a New York-based private-equity firm, launched a €10.8bn (\$12bn) bid to buy Telecom Italia (TIM), Italy's biggest telecoms operator. The friendly bid would be the biggest private-equity buyout ever in Europe. It needs both the approval of the firm's board members and of the government, which can veto a takeover of a national champion.

Shares in TIM gained 30% after the announcement, but Vivendi, TIM's largest shareholder, threw a spanner in the works, saying it had no intention to sell its 24% stake. The French media firm says the offer is too low. That is a more than usually moot point. The cash offer gives an enterprise value (including debt) of €33.2bn, and represents a 46% premium on the closing price before KKR bid. But the €0.50 per share KKR could offer is only about half of what Vivendi spent, on average, when it bought its first stake in mid-2015.

TIM has been in terrible shape for years. Its shares had fallen by 70% since Vivendi bought in; under its current boss, Luigi Gubitosi (pictured) it has issued two profit



Did Gubitosi summon KKR?



warnings since July. KKR could take control of TIM without Vivendi's shares by buying at least 51% of shares. Yet the two big shareholders would have to agree broadly what is needed to overhaul TIM as KKR needs a two-thirds majority of shareholder votes if it is to perform radical surgery.

TIM's problems date back to 1999 when a leveraged buyout by Roberto Colaninno, boss of Olivetti, a smaller telecoms firm, saddled the company with huge debts. After that it was unable to invest enough in its infrastructure to eventually fend off foreign entrants Wind, Iliad and Vodafone. At

home Telecom Italia is notorious for political interference, bad governance and squabbling shareholders. As if that were not enough, its workforce is bloated, with around 50,000 employees in Italy.

KKR wants to spin off the firm's infrastructure business from its services business. The hope is that a separation would give more focus to each unit and allow each to claim the right amount of investment. Analysts expect KKR to move the infrastructure unit into a separate holding firm where it will be the majority investor. Cassa Depositi e Prestiti, Italy's state devel-

opment bank, which owns 10% of TIM, is expected to remain a minority investor, letting the Italian state keep a hand in a strategic sector.

Mr Draghi is widely believed to favour the deal. Yet he would not welcome a fight between KKR and Vivendi, which is controlled by Vincent Bolloré, a French corporate raider. Such a scrap could boost populist rivals. Matteo Salvini, leader of the far-right Northern League party which is part of the coalition government, is calling for TIM's management to be changed, to block a takeover. ■

Bartleby Managing the Great Resignation

High staff churn is here to stay. Retention strategies require a rethink

IN THE NOT-SO-DISTANT past, bosses did not have to worry as much about their workforces. Newcomers could absorb the corporate culture osmotically. Workers' families were invisible, not constantly interrupting Zoom calls. Employees had a job, not a voice. Now firms have to "be intentional" (management-speak for thinking) about everything from the point of the office to how staff communicate with each other. Retention is the latest area to require attention.

The spike in staff departures known as the Great Resignation is centred on America: a record 3% of the workforce there quit their jobs in September. But employees in other places are also foot-loose. Resignations explain why job-to-job moves in Britain reached a record high in the third quarter of this year.

Some of the churn is transitory. It was hard to act on pent-up job dissatisfaction while economies were in free fall, so there is a post-pandemic backlog of job switches to clear. And more quitting now is not the same as sustained job-hopping later. As Melissa Swift of Mercer, a consultancy, notes, white-collar workers in search of higher purpose will choose a new employer carefully and stay longer.

But there is also reason to believe that higher rates of churn are here to stay. The prevalence of remote working means that more roles are plausible options for more jobseekers. And the pandemic has driven home the precariousness of life at the bottom of the income ladder. Resignation rates are highest in industries, like hospitality, that are full of low-wage workers who have lots of potentially risky face-to-face contact with colleagues and customers.

One conventional solution—identifying a few star performers and bunging them extra money—is not a retention

strategy if large chunks of the workforce are thinking differently about their jobs. What should managers be doing?

First, they should systematically gauge the retention risk that their firm faces. Working out what has driven people to quit is too late; rather than exit interviews, forward-thinking firms conduct "stay interviews" to find out what keeps employees. Focusing on teams cut back during the pandemic is another tactic: burn-out rates are likely to be higher in departments that took lay-offs. Understanding a firm's vulnerability to other employers is also key. When behemoths like Amazon or Walmart raise wages or add perks, the effects ripple beyond retailing.

Second, managers need to pull different levers to retain different types of people. Salaries matter to everyone but for lower-wage workers in particular, benefits like health care have also become central. A recent survey of young Americans by Jefferies, an investment bank, found that health concerns were the prime reason why people with only a high-school education had quit their jobs.



It's a similar story for flexible working. For white-collar types the split between office and home is what counts. For blue-collar workers, single parents especially, scheduling matters—when their shifts start and end, and how much leeway they have to manage their time.

Firms also need to think harder about the career paths that entry-level employees can take. In a recent survey of large firms conducted by the Institute for Corporate Productivity, a research outfit, a majority admitted they did not have adequate data about the skills of their workers, making it harder to spot talent. A quarter reckoned that LinkedIn knew more about their workforce's capabilities than their own firms did.

Third, managers should plan for how to find new workers. Remote working makes it easier to lose people but also to bring freelancers on board quickly. Qualification demands can be relaxed. In recent years IBM has removed the requirement for undergraduate degrees from over half of its American job openings. And there is no better time for firms to take aim at dim-witted regulation. In response to a shortage of lorry drivers, Britain's government has decided to combine separate tests for driving rigid and articulated lorries into one.



The Great Resignation should also prompt a question that rarely gets asked—exactly what level of churn is right? It is more expensive to hire new employees than to keep current ones. Yet by that logic, companies would never want anyone to quit. The mix of old and new is what matters. Existing hands provide cultural ballast; joiners bring fresh skills and perspectives. Keeping good employees happy is vital. But people are like water: there is such a thing as too much retention.

The firearms industry

Reloaded

LONOKE, ARKANSAS

American bullet-makers race to relieve a pandemic-triggered ammo shortage

JUST TWO companies, Vista Outdoor and Olin Corp, meet the bulk of America's demand for ammunition, and chiefly through two long-established brands. Remington, part of Vista, was founded in 1816, and Winchester Ammunition, owned by Olin Corp, started in 1866. Because of soaring demand for bullets, both firms are enjoying the sort of heady growth that only new businesses usually enjoy.

Three times a day, queues of pick-up trucks appear outside Remington's ammunition plant on the outskirts of Little Rock, Arkansas, to bear away the fruits of round-the-clock shifts. It is a sharp reversal from last summer, when Remington went bankrupt for the second time since 2018. Production had been reduced to a trickle of bullets made from whatever raw materials could be coaxed from suppliers, who had no certainty of being paid.

Even as Remington languished—it was then owned by a private-equity firm, Cerberus Capital, which appeared more focused on complex financial transactions than on expanding the firm's sales—the ammo market took off. The biggest factor was covid-19 and associated restrictions, which encouraged millions of people outdoors to hunt and target-shoot. Background checks on gun purchases, a measure commonly used to track the market, had been increasing annually, but last year they shot up by an unprecedented 40%.

Remington has been able to increase prices seven times. It has unfilled orders worth billions of dollars. Retailers of ammunition surveyed by the National Shooting Sports Foundation (NSSF), a trade group, said they could have sold three times more ammunition during the first half of 2021 had it been available. Vista, Remington's new parent, has infused working capital and increased the size of its workforce. The unit's operating profits this year are expected to be similar to the \$81m that Vista paid for the business. As for Winchester Ammunition, its revenues for the third quarter nearly doubled year on year, to \$400m, and its gross operating profits nearly quadrupled.

The ammunition and gun industries pray the good times will last. In the past demand surges came when gun-owners—mostly white and male—feared new restrictions. Now it is about new demographic groups. A survey by the NSSF shows that the proportion of recreational

shooters who are female has increased from 19% to 25% between 2006 and 2019. By now 28% of gun owners are Hispanic, 25% are black and 19% are Asian. Gun clubs are springing up for every niche. The Pink Pistols, for example, a shooting and social group for sexual minorities, has 48 chapters across America. Its motto: "Pick on someone your own calibre".

Political opposition to firearms remains strong, causing businesses to shift operations of late to places that might be a tad friendlier. Remington's licensed firearms division is moving from New York to Georgia, where gun laws are more permissive, and Smith & Wesson, another legendary brand, has recently said it will up sticks from Massachusetts to Tennessee. But customers for guns and ammo seem to be popping up everywhere. ■



Electronic waste

iMac, iPhone, iRepair

SAN FRANCISCO

Apple performs an unusual U-turn

APPLE'S PURPOSE has always been to empower the users of its wares. "People are inherently creative. They will use tools in ways the toolmakers never thought possible," once opined Steve Jobs, the computer maker's late co-founder. So it was always odd that the firm went to great lengths to stop customers fixing its products. Repair manuals were kept secret; genuine replacement parts were hard to come by; and, most recently, replacing the screen of the latest iPhone disabled the gadget's facial-recognition feature.

No longer. In a series of moves that sur-

prised many, Apple earlier this month promised a software fix to make the new iPhone model more repairable, and on November 17th announced that it will allow individuals to mend their devices and provide manuals, tools and parts. Even its critics applauded, especially the leaders of a growing global "right-to-repair" movement including Kyle Wiens, the boss of iFixit, a website that sells parts and publishes free repair guides.

Yet the likely impact of the "Self Service Repair" programme is unclear. A new online store will open from early next year. Owners who return used parts for recycling will get credit toward a purchase. Independent repair shops can join in, without signing onerous agreements with Apple. And, crucially, repairs by individuals will no longer void the warranty (damage done while tinkering is not covered).

But the toolmaker is ceding less ground than first appears. Apple's replacement parts, like its premium devices, cost a pretty penny. A new screen for the iPhone 12 is priced at \$268. Nor is it clear to what extent Apple will make its devices easier to repair. Because even swapping a battery requires removing the easily breakable screen, not many will try this at home.

Still, if Apple went further, its repair programme could become a model for the smartphone and, perhaps, the wider electronics industry. Even its current form will push rival device-makers to follow suit. "When it comes to repairs, Samsung Electronics is doing even worse than Apple," says Mr Wiens. Apple's move, he adds, has in one fell swoop given the lie to many arguments that electronics firms use against making gadgets easier to repair, such as that people might hurt themselves.

Apple has also managed to get ahead of the regulatory trend, says Nabil Nasr of the Rochester Institute of Technology, who is working on a study for the Group of Seven (G7) wealthiest democracies about the life cycle of consumer-electronics products. Regulators, he explains, are tackling the problem of e-waste—it may soon become difficult for firms to comply with all the mandates. In America, for instance, legislatures in 27 states are now discussing right-to-repair bills. The European Union is also moving towards passing such rules.

Apple-watchers wonder if the firm will try the same strategy elsewhere in its business. It could make pre-emptive concessions, for example, in the heated controversy about how it governs the app store on the iPhone. On November 9th a federal judge in California denied Apple's request to stay part of a recent ruling. This requires it by December 9th to allow app developers to inform their users how they can pay them directly and avoid Apple's fees of up to 30% of the purchase price. Perhaps Apple might loosen up there, too. ■

Vietnamese tycoons

Back from the USSR

HONG KONG

A new class of billionaire entrepreneurs has emerged in Vietnam

THE ECONOMIC development of Vietnam now has a permanent monument in one of the world's most prestigious seats of learning. After a \$207m investment announced early this month by Sovico, a Vietnamese holding firm, the University of Oxford's Linacre College (for graduate students) is set to be renamed after Nguyen Thi Phuong Thao, its chairwoman.

Thao College is a marker of a significant shift. As recently as 2012 Vietnam was a land without dollar billionaires. Today six are thought to have joined the club, according to *Forbes*, a magazine. A surging stock-market means the list is likely to get longer. Whereas American and Chinese billionaires are in the cross-hairs from their respective governments, Vietnam's wealthy entrepreneurs are the beneficiaries of the authorities' ambition to foster internationally competitive national champions.

Top of the list is Pham Nhat Vuong, founder of Vingroup, a sprawling conglomerate—and the first to enter the billionaires' club, in 2013. It is hard to find parts of the domestic-services sector that Vingroup has not touched, from tourism to hospitals, from pharmacies to education to car-making. It vies with Vinhomes, the

property arm it spun off in 2018, as Vietnam's largest private firm by market capitalisation. Each is worth a little over \$15bn, a scale that could admit an American firm to the S&P 500 index.

Mr Vuong has since been joined by more tycoons, including Ms Thao. Masan Group, a consumer-focused conglomerate, and Techcombank, one of the country's largest lenders, have close links through their founders, Nguyen Dang Quang and Ho Hung Anh. All four share a curious start to their entrepreneurial stories: they originally launched commercial ventures in the former Soviet Union.

The Soviet link is a function of Vietnam's modern economic and political history. In 1985 Vietnam had a GDP per person of around \$500 in today's dollars, one of the lowest in the world at the time. Until the collapse of the Soviet bloc, bright and politically connected students in Vietnam gained opportunities to study in Russia and its various satellites; in 1980 around 3,000 did so, alongside youngsters from other communist-run places.

Those who found themselves in the region in the late 1980s and early 1990s uncovered more opportunities for profit than

in Vietnam. Mr Vuong launched a brand of instant noodles, Mivina, which became a domestic staple in Ukraine. Ms Thao made her first million dollars at university in Moscow, importing office equipment and consumer items from East Asia.

Later, as Vietnam's development continued, they were some of the few citizens outside the country with starter fortunes to invest at home. The government welcomed back this so-called "patriotic capital," according to Bill Hayton, author of a book on the country's rapid rise. "They were getting bigger at the time the party state needed them, so it became a sort of symbiotic relationship," he says.

In recent years the state's relationship with the tycoons has grown even closer. Nguyen Xuan Phuc, the prime minister, spoke recently of Vietnam's need to produce internationally competitive business giants to continue its rapid growth. That friendly attitude can translate into an easy ride; such unofficial government assistance is particularly handy for gaining use rights to prime plots of land, which—as in mainland China and Hong Kong—is technically owned wholly by the state. While most of the firms led by the billionaires cater to Vietnam's middle class, much of their wealth comes from property and banking, according to research by Nguyen Xuan Thanh of Fulbright University Vietnam. Finance and property are the typical domains of oligarchs across the world: operating in a one-party state in such industries requires permissions, licences and close political relationships.

While useful in its own right, diversifying beyond areas that benefit from political patronage can serve as a signal to sponsors that they are backing exciting entrepreneurs. Outside investment brings a further sheen of credibility. This month SK Group, one of South Korea's largest conglomerates, announced a \$340m investment in Masan Group's consumer-retail arm. That follows a \$400m investment from Alibaba, a Chinese e-commerce giant, earlier this year. SK Group also owns 6% of Vingroup.

Former oligarchs who stuck to the old-school playbook of banking and property have not felt the warm glow of state support consistently. Nguyen Duc Kien, founder of Asia Commercial Bank, and Ha Van Tham, chairman of OceanBank, were given lengthy prison sentences for corruption in 2014 and 2017 respectively. Mr. Tham's deputy was sentenced to death at the same time. As the experience of many oligarchs both in Vietnam and around the world shows, being in government's good books can be a tremendous advantage but also carries risks. For the current crop, their reputation as valuable entrepreneurs and innovators will be key to remaining in the state's good graces. ■

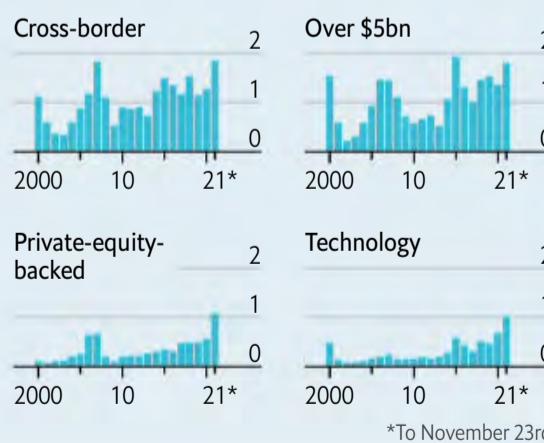
Coming together

Worldwide mergers and acquisitions

Total



Value, by type of deal, \$trn



Party hearty

Supply glitches may be holding up transactions in much of the global economy but one area where purchasers can run riot is corporate acquisitions. Refinitiv, a data firm, tots up \$5.1trn of deals this year, up 44% over all of 2020 and 21% over 2015, the previous peak. The reason for the boom? Low interest rates reduce financing costs while a recovering economy suggests profits to come. Exhausted bankers might like a dry stretch but worry about just how dry things can get. Prior booms in 2000 and 2007 ended not with a whimper but a bang.

Schumpeter | In the flesh

In a recoupling of global business leaders, decoupling is the last thing on their mind



IF YOU WANT to understand how Asia's view of the world order has changed, consider the remarks of Lee Hsien Loong, Singapore's prime minister. Asked recently if China was rising and the United States was declining, he replied in a qualified way: "If you take a long view, you really have to bet on America recovering from whatever things it does to itself." Across the region firms and politicians are adapting to a new geopolitical reality, as was evident at the Bloomberg New Economy Forum in Singapore last week.

Designed to be more useful than Davos, less Utopian than COP26 and less wooden than China's Boao forum, the summit convenes some of the figures who built Sino-American links over the past decades, and bosses and investors responsible for over \$20trn of market value. Amid hygienically controlled flesh-pressing, and relentless nasal swabbing, you could get a sense of the tensions between the world's two biggest economies. It was clear that calls to divide them into two camps are wildly unrealistic.

Asia matters because of its size, with 36% of the world's GDP, 31% of its stockmarket capitalisation, and 11% of the sales of S&P 500 firms. The region is likely to grow faster than the rest of the world. It is also where the struggle between America and China is played out overtly, with the two systems competing side by side. China dominates trade. Of the 20 major Asian economies, 15 have China as their largest goods-trading partner. Yet most countries also rely on America. In many cases it is their defence partner and the dollar is the currency in which most Asian trade and capital flows take place (in contrast to Europe, which has the euro).

The region's balancing act has got harder as America and China have turned inward, partly in response to the perceived shortcomings of freewheeling global capitalism. A widely held view is that America's system of government has been permanently impaired by cronyism and populism. As a result its promises are taken less seriously. Gina Raimondo, the commerce secretary, said America would launch a new Asian economic "framework" in 2022 (it has not joined CPTPP, a regional free-trade deal). Her proposal was greeted only politely, given the Biden administration's protectionism and the risk that Donald Trump wins the election in 2024.

China has also become unpredictable. Most executives and officials are sanguine about the crisis at Evergrande, a property firm.

They believe that China's technocrats are in control and can avoid a systemic financial crisis. Many sympathise with China's anti-trust crackdown on big tech. But there is deep unease at Xi Jinping's totalitarian impulses and his broader assault on business. Whereas before, well-connected foreigners would have been given reassurances by China's economic reformers in private meetings, now they have to make do with stilted video calls monitored by the Communist Party. Ties are fraying even within companies. One founder of an Asian firm with a Chinese parent company has not met the owners for two years. Few expect China to reopen its borders until after the Party Congress in late 2022, and even then only if the population has been re-jabbed with better vaccines.

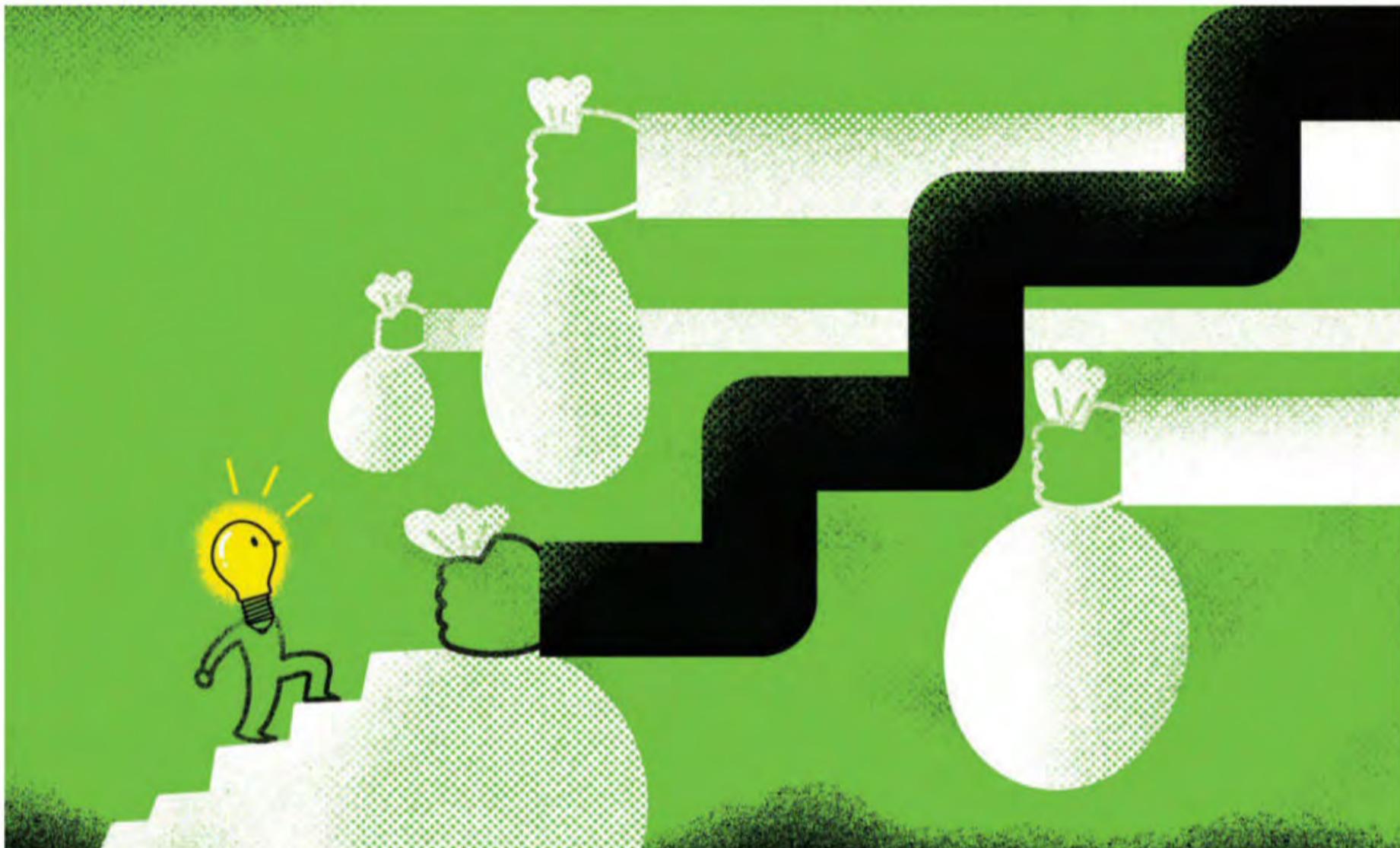
One response to estrangement is separation. America's Trumplian right and progressive left would like their country to be more self-sufficient, while Mr Xi's "dual-circulation" campaign is aimed at producing more goods at home. There are some signs on the ground of Asia's investment patterns shifting and becoming less centred on greater China. India's biggest business, Tata Group, is investing in electric vehicles and battery production at home. On November 9th TSMC, the world's largest semiconductor company, said it would build a new plant in Japan in co-operation with Sony. Most banks are wary of expanding in turbulent Hong Kong.

But the overall picture is still one of intense interdependency. China has 75% of global battery manufacturing capacity. Even after its new investments, TSMC will have over 80% of its plant in Taiwan, which China claims as its territory. The impossibility of Asia decoupling from China is brought home by a tech boss who reckons 80% of goods sold on South-East Asia's booming e-commerce platforms are from the Middle Kingdom. Were multinational firms to spend as they are today, they would need 16 years to replace the cumulative stock of cross-border investment in Asia. Even if they could, few firms want to exit China's economy.

As you might expect, most firms want to be geopolitical hybrids that hedge their bets. Singapore's firms lead the way. DBS Bank has a third of its deposits in dollars and is expanding in India and China. Temasek and GIC, two sovereign-wealth funds, have about a third of their combined assets in America and a fifth in China. SGX, the exchange, is integrated with Western markets but makes a fifth or so of its business from Chinese investors. American and Chinese firms are adopting Singapore-style dexterity. TikTok, an app owned by ByteDance, a Chinese firm, has an army of staff in Singapore: the idea is to show that it is independent of the Chinese state. Jamie Dimon, the boss of JPMorgan Chase, has just visited Hong Kong and said he was "not swayed by geopolitical winds": the bank has boosted its exposure to greater China by 9% since 2019, to \$26.5bn. On November 24th he apologised for joking that the bank would outlast the Chinese Communist Party.

Testing times

If the worst relations between China and America for decades have not prompted decoupling in Asia, what might? The confrontation could yet escalate but both sides seem keen to avoid that for now. Wang Qishan, China's vice-president, declared that "isolation leads to backwardness". Regulatory and technological shifts could eventually end American dominance in finance and drag Asia more firmly into China's orbit. One boss reckons the opening of China's capital markets will ultimately be as consequential in finance as its membership of the World Trade Organisation in 2001 was for trade. But for now investors and firms—and Singaporean prime ministers—face years of carefully straddling the divide. ■



Venture capital

The next stage

The business of funding disruptive businesses is booming—and is itself being disrupted

YOUNG COMPANIES everywhere were preparing for doomsday in March 2020. Sequoia Capital, a large venture-capital (vc) firm, warned of Armageddon; others predicted a "Great Unwinding". Airbnb and other startups trimmed their workforces in expectation of an economic bloodbath. Yet within months the gloom had lifted and a historic boom had begun. America unleashed huge stimulus; the dominance of tech firms increased as locked-down consumers spent even more of their time online. Many companies, including Airbnb, took advantage of the bullish mood by listing on the stockmarket. The market capitalisation of American vc-backed firms that went public last year amounted to a record \$200bn; it is on course to reach \$500bn in 2021.

With their pockets full, investors are looking to bet on a new generation of firms. Global venture investment—which ranges from early "seed" funding for firms that are only just getting going to funding for more mature startups—is on track to

hit an all-time high of \$580bn this year, according to PitchBook, a data provider. That is nearly 50% more than was invested in 2020, and about 20 times that in 2002.

The type of investor piling into venture activity has changed just as dramatically. It was once the preserve of niche venture-capital firms run in Silicon Valley. These raised funds from and invested on behalf of pension funds and other end-investors, often relying on their vast networks of connections with company founders. Now, however, only three of the ten biggest venture investors by assets under manage-

ment are traditional vc firms.

Instead, deals led or solely struck by private-equity shops, hedge funds and others that used to conduct little venture activity are on track to nearly double from \$144bn in 2020 to \$260bn this year (see chart 1 on next page). That accounts for a staggering 44% of global vc activity, up from 20% in 2002. "Crossover" funds like Tiger Global Management, which straddle public and private markets, are deploying capital at a breakneck pace. Behemoth pension funds are increasingly directly investing in startups.

The flood of money from deep-pocketed investors has helped swell valuations. But it is also flowing to once-neglected corners and new opportunities. Venture activity now extends well beyond Silicon Valley and America more broadly, and is financing enterprises working on everything from blockchains to biotech.

The wave of capital is also transforming how vc works. vc firms are adopting new strategies as they seek to differentiate themselves in some respects, and to mimic their Wall Street competitors in others. That comes with both benefits and drawbacks for the business of innovation.

The modern venture-capital industry sprouted from a laboratory at Fairchild Semiconductor, a Silicon Valley chipmaker, in the 1960s. Arthur Rock, the first to leave Fairchild for investing, raised \$5m in his first fund and returned \$100m over sev-

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en years. Eugene Kleiner and Don Valentine soon followed, setting up Kleiner Perkins and Sequoia respectively. Both are still large vc firms today.

The approach was to back risky startups in the hope that the big successes, like Google, would carry an entire portfolio. Seed investments were often made before a startup earned any revenue. Then came an alphabet soup of successive funding rounds, typically ranging from series A to C, as a company matured. The vcs' funds were closed-ended, meaning they distributed returns to investors, usually pension funds, endowments and other long-term-oriented investors, within seven to ten years, after taking a cut of their own.

Veni, vidi, vc

The venture capitalists did not just provide finance. They also played *consiglieri*, often taking a seat on a company's board. They offered a wealth of experience and access to a network of contacts, introducing startups to professional chief executives, for instance. Entrepreneurs flocked to Sand Hill Road, the home of many Silicon Valley vc firms, in the hope of being funded. The industry's reliance on personal connections made it rather like an old boys' club.

The model proved astoundingly successful. Although vc-backed companies represent less than 0.5% of American companies created every year, they make up nearly 76% of the total public-market capitalisation of companies started since 1995. Over time vcs increasingly bet on slightly older "late-stage" startups (which, for their part, delayed going public). Some vc firms opened offices abroad. Andreessen Horowitz, also based on Sand Hill Road, was founded in 2009 and rose towards the top.

Why, then, is the model being disrupted? The frenzy is a result of both the entrance of new competitors and greater interest from end-investors. That in turn reflects the fall in interest rates across the rich world, which has pushed investors into riskier but higher-return markets. It has no doubt helped that vc was the highest-performing asset class globally over the past three years, and has performed on a par with bull runs in private equity and public stocks over the past decade.

End-investors who previously avoided vc are now getting involved. In addition to alluring returns, picking out the star funds may be easier for vc than for other types of investment: good performance tends to be more persistent, according to research in the *Journal of Financial Economics* published last year. The success of big tech, much of which was backed by vc dollars, may have been another attraction. Investors may have previously underestimated the earning potential of the tech industry, says Fred Giuffrida of Horsley Bridge, a fund that invests in vc funds. They may

now be correcting for this.

The rush of capital has pushed up prices. Seed-stage valuations today are close to where series A valuations (of older companies that may already be generating revenue) were a decade ago. The average seed valuation for an American startup in 2021 is \$3.3m, more than five times what it was in 2010 (see chart 2 on next page).

But funding is also reaching new terrain. In 2002 84% of venture activity, in terms of value, took place in America. That share is now about 49%. China's share grew from below 5% in the 2000s to 37% in 2018, before its tech crackdown brought it down to nearer 20%. Capital has instead sought greener pastures in Europe (see Business section). Keith Rabois of Founders Fund, a vc firm, argues that, if done right, investing in less heated sectors can help produce attractive venture returns.

Software startups continue to be popular with venture capitalists. But "you're seeing a broadening of who gets funded," says Josh Lerner of Harvard Business School. Riskier biotechnology, crypto and space ideas are being backed. Moderna, a pharmaceutical company that produces covid-19 vaccines, was spun out of Flagship Pioneering, a vc firm. Green tech, which saw a boom and bust in the 2000s, is resurgent. PwC, a consultancy, estimates that between 2013 and 2019 climate-tech venture deals grew at five times the rate of overall startup funding.

For many old-school venture capitalists, this new competitive world is unsettling. "We need to react," acknowledges Roelof Botha of Sequoia. Though rising valuations bolster returns on current portfolios, they dry up future returns. Crossover funds are less price-sensitive than traditional vcs. And for later-stage startups, investors' money is more fungible, says Mr Giuffrida. It matters less who is investing than how much they are willing to pay. Furthermore, the market for orthodox vc firms is becoming tougher. Despite the venture boom, fundraising by new niche vcs in America has fallen from a peak of

\$14bn in 2018 to an expected \$5.5bn in 2021.

One part of the traditional firms' response is differentiation. Many crossover investors tend to take a data-driven approach, building portfolios of startups that resemble an index of top performers in each sector. They eschew playing large roles in their portfolio companies. To contrast with this, some vcs are emphasising their personal touch. Crossover funds "are transactional capital. We are relationship capital," says one early-stage investor.

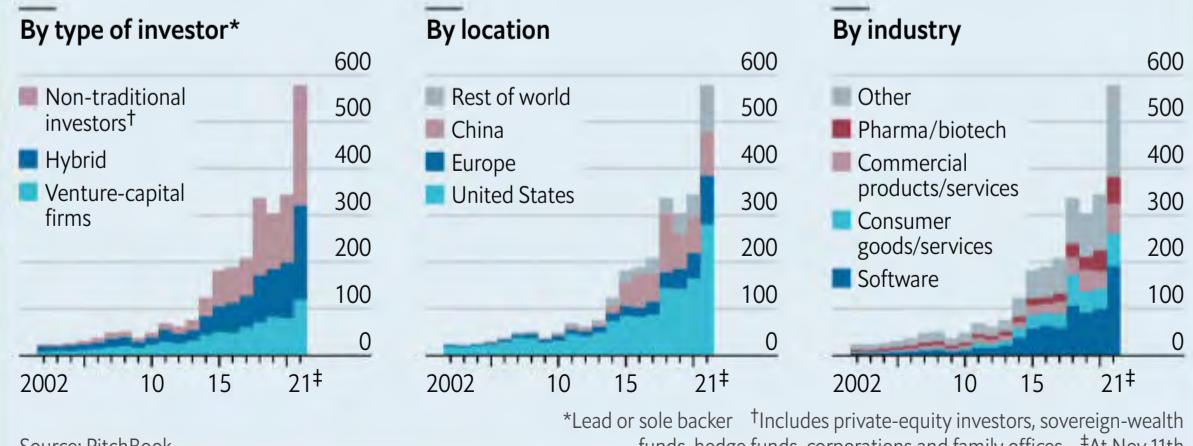
One fund in Austin, Texas, 8VC, is expanding its startup "incubator", which currently nurtures and spins out five or so companies a year. Slow Ventures, another vc firm, is even investing directly in the career paths of individuals, such as online-content creators, who may not yet run a proper business. Without a compelling offering, says Ben Horowitz, co-founder of Andreessen, vcs either need to be willing to overpay or close up shop altogether.

Another response is to scale up. Some angel investors, who invest their own money without a team or firm, are spreading their wings and evolving into solo venture capitalists, who invest external funds. They can move fast—there are no other partners to convince before doing a deal. Elad Gil, a prominent solo vc, made around 20 investments in the first half of 2021 and is raising a \$620m fund, an astonishing sum for an individual investor.

The biggest and best-known vc firms are also expanding. Andreessen has grown its investment team from about 25 to 70 in the past four years. It offers companies support on everything from diversity and inclusion policy to a vast network of potential hires and customers.

The line between vc and other investors is also blurring further, and not just because Wall Street is encroaching onto Sand Hill Road. Big vc firms are becoming more like other asset managers, too. Sequoia is expanding its presence in public markets. In October it said that its American and European venture funds will sit within a larger, timeless fund. When portfolio firms

Something ventured
Global venture-capital activity, \$bn



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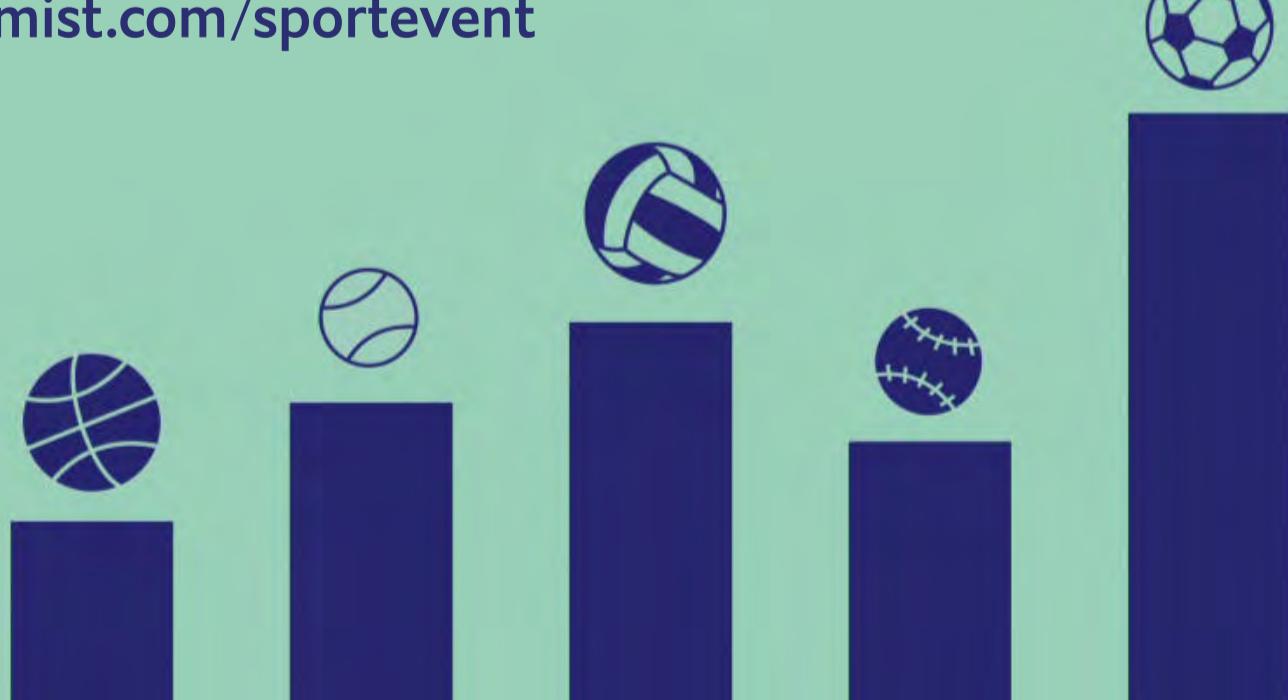
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► go public, their shares will flow to the superfund instead of to end-investors. This allows Sequoia to capture returns even after an IPO. Crossover funds like Tiger already seamlessly transfer holdings from their private to public funds. Other large vc firms may follow suit.

Sequoia's superfund mirrors Wall Street's fascination with permanent capital. "Many of the dynamics in private-equity markets are now spilling over into venture markets," says Mr Lerner. vcs and private-equity funds used to raise money from investors every few years, which can be costly and prevent them holding on to investments. Leading buy-out firms like Blackstone and KKR found ways around this. Nearly a third of KKR's assets under management are now permanent.

Sequoia is also becoming a registered investment adviser, joining Andreessen and other large funds, like SoftBank. That allows it to hold more "secondary" shares—stakes that are not bought directly from the issuing company. (vcs' secondary holdings are usually capped at 20% of their portfolios.) Andreessen's status as an adviser allowed it to launch a \$2.2bn crypto fund in June that mainly invests in digital tokens, rather than startups.

The biggest funds are best placed to benefit from the new world. Funding from a top vc firm sends a signal of a startup's quality, argues Mike Volpi of Index Ventures. And because non-traditional investors often rely on such signals to guide their dollars, their value has only risen. The result is that the industry has become more unequal: although the average American vc's assets under management rose from \$220m in 2007 to \$280m in 2020, that is skewed by a few big hitters. The median, which is less influenced by such outliers, fell from \$70m to \$48m. But this is not to say that the industry has become dominated by a few star funds. Market shares are still small. Tiger Global, for instance, led or co-led investments worldwide worth \$5bn in 2020, just 1.3% of total venture funding. Startups have diverse enough needs so there is plenty of scope for a variety of vc firms to exist, reckons Mr Volpi.

Company founders, for their part, have gained bargaining power as investors compete. "There's never been a better time to be an entrepreneur," says Ali Partovi of Neo, a vc firm based in San Francisco. Ten years ago, most new founders had not heard of a term-sheet, a document describing the terms and conditions of an investment, says one venture capitalist. Now, many startups work with "accelerators" like Y Combinator to learn the basics. Cloud computing and other software-as-a-service (SaaS) tools allow some firms to expand without much capital investment.

The time taken to strike a deal has shrunk from several weeks to days, if not



hours. Zoom has changed the nature of fundraising. Biocell, a microscopy startup, had ten calls with vcs scheduled in a day, which gave it more power in negotiations, reckons Michael Lee, its founder. Founders receive "refreshes", top-ups of equity during fundraising rounds. To get ahead of the rush, some investors are offering companies cash even before they start looking for more funding.

The shift in power away from investors is welcome in some respects. The outsized returns of vc firms will be competed down. Moreover, tech is no longer terrain that only well-connected venture capitalists in Silicon Valley can make sense of. The performance of SaaS firms, for instance, can be assessed using data on users' behaviour. The relationship between founder and venture capitalist might matter less than it used to, particularly as the startup grows.

But there are costs, too. Shortened deals can lead to FOMO (fear of missing out) for investors and, sometimes, worse investment decisions, says Mr Partovi. The shift has also weakened governance. As the balance of power tilts away from them, vcs get fewer board seats and shares are structured

so that founders retain voting power. Founders who make poor chief executives—such as Travis Kalanick, the former boss of Uber, a ride-hailing firm—can hang on for longer than they should. The relationship between vc firms and a founder lasts about ten years, longer than many marriages, notes Mr Partovi. You wouldn't choose your spouse in a hurry.

Another risk is that the market is too frothy. Some investors point to bumper profits for tech companies and the financial health of even the youngest startups as reasons for being optimistic about valuations. But "companies are being priced on the assumption that everyone will win. Statistically that won't happen," says Mr Giuffrida of Horsley Bridge.

Stellar returns for investors, then, are not assured. But the broader question is whether the innovation that is taking place is worth the risk. "If too much stuff gets funded, that's generally good. It's much better than nobody funding Moderna," says Mr Horowitz. And capital can drive new ideas, not just the other way around. Investors have typically been willing to bet on riskier but more innovative startups during past venture booms, finds a study by Ramana Nanda of Imperial College London and Matthew Rhodes-Kropf of MIT Sloan School of Management. Resilience, a capital-intensive drugmaker founded last year, has raised \$800m and already bought several factories. This would not have been possible even two years ago, says Drew Oetting of 8vc. Venture activity in the space sector grew by 70% globally to \$7.7bn in 2020. "There are more moonshots," reckons Mr Lerner of Harvard.

In tech the result could be more vibrant competition. The big-tech firms used to gobble up challengers: acquisitions by Amazon, Apple, Facebook, Google and Microsoft rose after 2000 and hit a peak of 74 in 2014. But they have fallen since, to around 60 a year in 2019 and 2020, perhaps owing to a fear of antitrust enforcement (see United States section). More startups are making it to public markets. Listings, rather than acquisitions or sales, now account for about 20% of "exits" by a startup, compared with about 5% five years ago.

Wherever valuations go, it looks like the changes to the structure of vc will last. Outsized returns in early-stage investing were bound to be bid down eventually. As vc firms themselves are forced to innovate, a broader range of ideas is being backed in a wider variety of places. The pandemic was not the disaster that venture capitalists had first expected. It has nevertheless transformed what they do. ■



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The Federal Reserve

Still in the hot seat

WASHINGTON, DC

What Jerome Powell must do next as Fed chairman

OF ALL AMERICA'S many job openings, this was the most important. On November 22nd President Joe Biden announced that he would renominate Jerome Powell as chairman of the Federal Reserve when his current term expires in February. After a drawn-out selection process, it was reassuring that Mr Biden at last made the obvious choice, opting for a steady pair of hands at a time of economic danger.

Mr Powell must confront two broad challenges. The first, and by far the most pressing, is how to tame inflation, now running at its highest rate in more than three decades (see next story). Mr Powell was rightly commended for presiding over a strong response to last year's pandemic-induced slowdown. Unwinding stimulus will be more treacherous.

Before raising interest rates, Mr Powell has all but pledged to halt the Fed's monthly purchases of bonds that helped reinvigorate the economy over the past 20 months. The Fed has started to reduce, or taper, its purchases this month, but it is only on track to stop them altogether by June 2022. This means that a first rate increase is at least half a year into the future.

The immediate question for Mr Powell, then, is whether to taper more quickly. As it stands, even if the Fed is reducing its purchases, it is still pumping cash into the financial system when the stockmarket is near record highs. Moreover, an earlier completion of the taper would give the Fed more options. It need not commit itself to raising rates early next year, but it would be wise to have that on the menu.

Yet it would take courage for Mr Powell to do this. "If suddenly you have a new taper schedule and, critically, it has clear implications for rates, you are rolling the dice as to the market reaction," says Krishna Guha of Evercore ISI, an advisory firm. But sticking to gradual tightening as inflation gallops higher is just as big a gamble.

The other big challenge for Mr Powell is how to define the central bank's role amid ever-increasing demands on it. The alternative candidate to lead the Fed was Lael Brainard, a governor on the Fed's board who was favoured by the progressive wing of the Democratic Party. Mr Biden has nominated her to be vice-chairwoman, giving her more influence. She and Mr Powell have differing views on three questions that are now coming to the fore.

First, under Mr Powell the Fed has

chipped away at the most onerous rules erected around the banking system after the global financial crisis of 2007-09. This deregulation earned Mr Powell the enmity of left-wing Democratic politicians, and Ms Brainard regularly voted against it. Now that she is second only to Mr Powell, the signal is that regulation may tighten.

On climate, Mr Powell has said that global warming poses economic risks but is not a big factor in the central bank's own decisions. That is defensible: the Fed should leave the environment, in the main, to other parts of the government. But Ms Brainard wants the climate to figure more prominently in the Fed's calculus. Mr Powell must accommodate that demand.

Similarly, Ms Brainard has called for the Fed to launch a "central bank digital currency", to ensure that the dollar remains the dominant global currency. Mr Powell's position is that he wants the Fed to study the matter further, saying that it is better to be right than to be first. At least he need not worry about being first: China is already well ahead of America in the digital race.

Mr Powell will, in short, have a crowded agenda over his second term. At the top of it is quelling inflation without crashing the economy. Time to get to work. ■

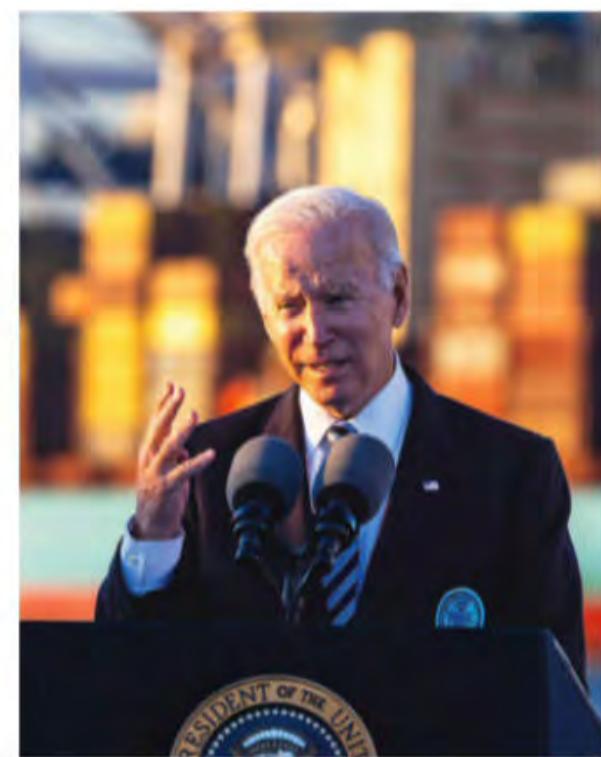
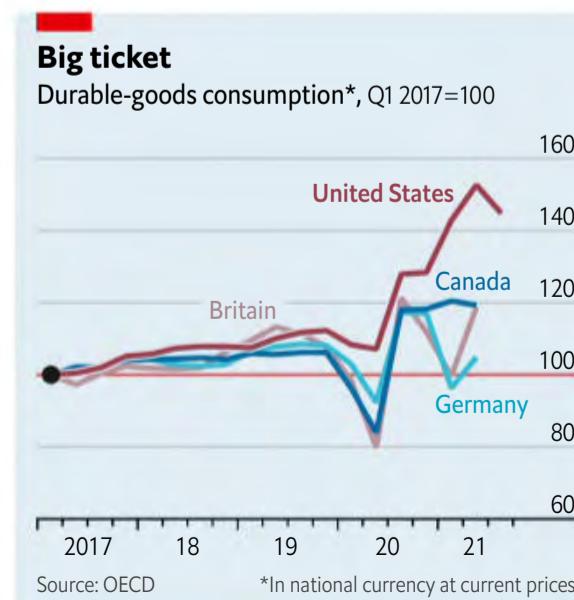
Inflation in America

Homegrown headache

WASHINGTON, DC

Why it is wrong to deny the domestic roots of surging inflation

THE FRISSON of relief among some of America's most outspoken left-leaning economists is unmistakable. Whenever other countries report high inflation figures, they seize on it as evidence that America's own bout of price rises is part of a global trend. "I hate to ruin the victory lap of all the people boasting that Biden's Re-



Talking tough on prices

covery Act would be inflationary, but the UK also had a big jump in inflation, with no big stimulus," tweeted Dean Baker of the Centre for Economic and Policy Research, a think-tank, on November 17th. A few days earlier Paul Krugman, a Nobel-prizewinning economist, made a similar comparison between Europe and America. "What's happening in the United States isn't mainly about policy," he concluded.

That argument, if correct, matters a great deal. The implication would be that inflation is largely out of the hands of American officials. Like their counterparts elsewhere, they are hostage to the pandemic-blighted global economy. Central bankers, in this view, should be cautious about increasing interest rates, because that would do nothing to boost production, the nub of today's problems.

Are these economists right? Is America's inflation, now running at its fastest in three decades, global or homegrown? The case for the former is straightforward. Most rich countries, from Britain to Australia, face similar price pressures. One common denominator is snarled supply chains, which have made everything from cars to furniture scarcer and dearer. Another commonality is the pandemic's lingering impact on the labour market. On November 19th Christine Lagarde, the head of the European Central Bank, said that higher services prices reflect job vacancies in contact-intensive workplaces such as restaurants. The diagnosis applies just as well to America. Simply put, life is not yet back to normal, and inflation is a symptom.

This global perspective is unquestionably important. Yet it is insufficient: inflation is now higher in America than in any other advanced economy, by some distance. The clearest comparison is to look at prices today and those 24 months ago, to iron out data distortions from the pandem- ►

ic. On this basis, consumer prices are up by about 8% in America, twice as fast as in the euro area.

The case that this is at least partly homemade points to America's unusually forceful pro-growth policies throughout the pandemic. Over the course of 2020 and 2021 America's fiscal deficit is on track to average about 14% of GDP, according to the Congressional Budget Office. That is higher than in any other G7 country.

The Federal Reserve has also stood out for its ultra-loose policies, such as its bond-buying. The assets on the Fed's balance-sheet have doubled over the past two years as a share of GDP. This month the Fed started to pare back bond purchases, but financial conditions remain loose, with real interest rates in negative territory.

The remarkable degree of stimulus helps explain the boom in American retail sales. There is no doubt that the pandemic has shifted consumption from services towards goods. Yet even allowing for this distortion, the American data are jaw-dropping. In the second quarter of 2021 spending on durable goods was roughly a third higher than in the final quarter of 2019, far outpacing the increases in other big economies (see chart on previous page).

Indeed, buoyant American demand may well have exacerbated global shortages and spilled over into higher inflation elsewhere. Consider maritime shipments. Port throughput in America was 14% higher in the second quarter of 2021 than in 2019. Other parts of the world have been more subdued: throughput in Europe was 1% lower. But shipping rates everywhere have soared as capacity has been diverted to transpacific trade.

Recognising that inflation in America stems in part from its stimulus does not mean that those policies were bad. They catalysed its vigorous economic rebound and its rapid drop in unemployment. Yet as time goes on, the inflationary dangers have become apparent.

If ultra-loose policies helped cause inflation, tighter policies ought to figure in the solution. The Fed is gradually moving in that direction. On November 19th two of its governors, Richard Clarida and Christopher Waller, speaking at separate events, said that the central bank's next meeting in December may include a discussion on whether to scale back its monthly asset purchases more swiftly. That, in turn, could clear the path for interest-rate increases in the first half of 2022.

President Joe Biden, for his part, has adjusted his tone on inflation. As recently as July he described the jump in prices as temporary, a by-product of the pandemic. In recent weeks he has instead been forthright in saying how much inflation hurts Americans and declaring that "reversing this trend is a top priority".

What can the president do to lower prices? Some of his actions have been more performative than substantive. On November 23rd Mr Biden announced that America would release 50m barrels of oil from a national strategic stockpile, in a bid to lower prices at the pump. But that is not enough to truly move the needle. On November 9th the White House announced an "action plan" to expand port capacity, but that could take years to bear fruit. Mr Biden could remove tariffs on Chinese products to help lower import prices. Yet that could be construed as a win for China, politically untenable in America these days.

In one respect, however, Mr Biden has done the right thing, if only by default. As his pandemic stimulus expires, fiscal policy is naturally getting stingier. The Hutchins Centre, a think-tank, calculates that this tightening could lop about two percentage points off America's growth rate next year. Critics have argued that an ambitious social-spending and climate package—the cornerstone of Mr Biden's agenda, currently wending its way through Congress—would add to inflationary pressures. But its investments will be spread out over a decade, adding up to less than 1% of GDP each year. That will deliver only a modest upfront kick to growth and have a negligible impact on prices. "My landmark legislation is relatively insignificant in the near term" would not make for a great political slogan. But after 18 months of big government spending, it is just what the American economy needs. ■

Erdogan v markets

Going for broke

ISTANBUL

A zany monetary experiment is impoverishing Turkey

BY THE END of the month the only food Emer can prepare is plain pasta. Occasionally she goes to bed hungry. "I can't even afford anchovies," the retired nurse says outside a vegetable market in Maltepe, a middle-class neighbourhood in Istanbul. She and her two sons have to get by on her monthly pension of 3,000 lira, or about \$250. Emer is behind on gas and electricity bills and loan payments. She is not alone. Soaring prices and a plummeting currency are turning the savings and incomes of most Turks to dust.

Turkey's crisis is beginning to spin out of control. The latest rout began after the president, Recep Tayyip Erdogan, defended recent interest-rate cuts, foresaw new ones and suggested he was pursuing a weaker currency to drive growth. "The



competitive force of the exchange rate leads to increase in investment, production and employment," Mr Erdogan said on November 22nd. He got what he bargained for the next day, when unnerved investors began dumping the lira. Within hours the currency had fallen by 15%, its worst showing in years, before erasing some of its losses the next day. Small protests erupted in parts of Istanbul and Ankara. Mr Erdogan says Turkey is waging an "economic war of independence". It is causing grave collateral damage.

Egged on by Mr Erdogan, who has sacked three of its governors in under three years, the central bank has slashed interest rates by a cumulative four percentage points since September, to 15%, despite an official inflation rate of nearly 20%. (Four out of five Turks are convinced actual inflation is much higher, according to one survey.) The result is that the lira has lost nearly 40% against the dollar since the start of the year (see chart). Mr Erdogan's latest comments poured fuel on the fire.

There is some method to the president's madness. A weak currency and negative real interest rates may help borrowers who do not have foreign-currency debt, exporters who do not have to rely on foreign suppliers, and the construction sector, says Selva Demiralp of Koc University. But almost everyone else will suffer. Many potential investors will shy away from taking out loans because the economic climate is simply too volatile.

Meanwhile, Turks will be scratching their heads, wondering why, if a weak currency is desirable, their central bank has burned through at least \$165bn in precious reserves to prop up the lira for more than two years. "After the exchange rate explodes and everything gets more expensive, the government says it knows what it's doing and that now we will grow because exports will increase," says Ali Babacan, a former economy minister now at the head of Deva, an opposition party. "It's like falling off your horse and saying you were going to dismount anyway."

Buttonwood Full tilt

Why the bond market has become jumpier

AMES MADDISON was sure he had scored. As his free kick arced over the wall of Arsenal players, a goal seemed certain. Somehow Arsenal's goalkeeper, Aaron Ramsdale, got a hand to the ball and kept it out. "Best save I've seen for years," said Peter Schmeichel, a former goalie. Others noted a crucial detail. Before the ball was struck, Mr Ramsdale was on his toes, his weight distributed evenly, ready to jump in either direction. By keeping perfectly balanced, he made a wonder-save possible.

Balance (or the lack of it) matters in financial markets, just as in football. A market in which bets are slanted in one direction is vulnerable to a big swing in prices the opposite way. Where positions are lopsided traders can be wrong-footed by even a tiny change in sentiment or in the news. Some of the recent volatility in global bond markets can be put down to skewed positioning. When liquidity is patchy, as in today's Treasury market, the results can be some surprisingly large shifts in bond yields.

To understand all this, imagine you are pondering a trade. You notice that covid-19 infections are rising in Europe and that governments are imposing partial lockdowns. Meanwhile there are signs that America's economy is picking up steam. You conclude that the Federal Reserve will have to raise interest rates sooner than people expect and a lot sooner than the European Central Bank. A way to profit from this analysis might be to sell the euro against the dollar.

Before you go ahead, you would be wise to check how other traders are positioned. America's Commodity Futures Trading Commission publishes regular reports on the positions of traders in currency futures and options. If, say, there were already a lot of euro

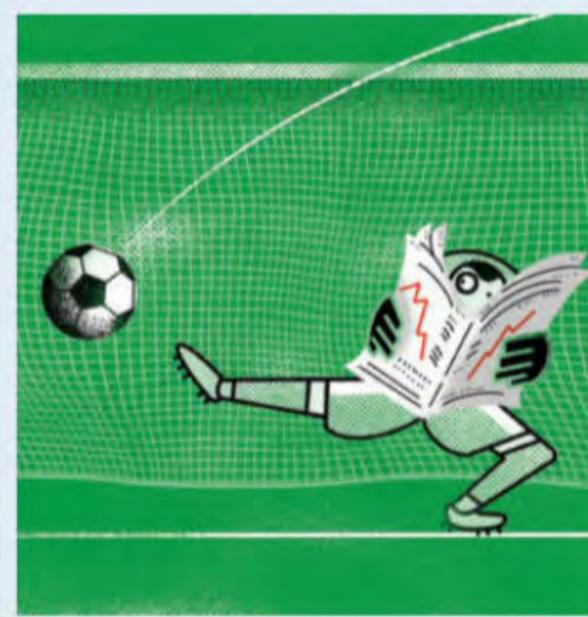
shorts, you should feel less gung-ho. After all, if many traders have already sold the euro, there are fewer potential sellers to drive it down in the future. And there are perils when a lot of investors are betting one way. In the event of unexpected news that is positive for the euro, the speculators who are short the currency would be nursing losses. Some would be forced to buy back the euros they had sold. As more traders scrambled to cover their short positions, the euro would appreciate sharply. This is a classic "short squeeze" or "position washout".

That brings us to bond-market volatility. Inferring traders' positions from bond futures is tricky, says Kit Juckles of Société Générale, a bank. The nature of finance is to borrow short and lend long. This "natural positioning" will tend to obscure other speculative bets, says Mr Juckles. Perhaps this is why a lot of the recent discussion of volatility has been focused on liquidity—how easy it is to get in or out of a position quickly. A report this month by a working group drawn from America's Treasury, the Federal Reserve and other regulatory

bodies provides an example. It blames evanescent liquidity for the dramatic jumps in bond yields in, for instance, March 2020 and in February this year. It puts this down to a change in market structure. New regulations in the aftermath of the global financial crisis of 2007-09 made it costlier for banks to hold large inventories of bonds to facilitate client trading. A small group of electronic high-frequency traders has since supplanted the banks. These firms keep the market super-liquid most of the time. But they are thinly capitalised, and cannot hold a lot of bonds for long. In volatile markets, they are forced to take less risk. So when liquidity is most needed, it tends to vanish.

These and other changes in market structure have tended to make positions more extreme. Bond-buyers are less heterogeneous, says George Papamarkakis of North Asset Management. Funds are bigger. Information flows more quickly. And momentum trading, the buying of recent winners and selling of recent losers, is a more prevalent feature of bond markets. In the halcyon days before the financial crisis, there were marketmakers who were willing and able to lean against momentum, to take a view based on fundamentals, and to hold bonds for more than a day (or a few seconds). But not anymore. So positions become crowded. When a piece of news goes against a popular trade, the washout can be quite dramatic.

A market that leans too far one way is eventually forced to reverse. In this regard, the bond market is like a goalkeeper who gambles on where a free kick is going. He shifts his weight to one side of the goal in anticipation. But he is often left flapping in despair as the ball heads for the other corner.



An even more alarming prospect is that Mr Erdogan has decided to test his conviction, which turns basic economic thinking on its head, that cutting rates is the way to tackle inflation. As the central bank dances to his tune, the strategy risks plunging Turks into poverty. Many blue-collar workers, students and pensioners are no longer able to buy meat or basic household necessities. Attempts by the pro-government media to put a positive spin on this sound like cruel jokes. A television pundit recently celebrated the impact of the crisis on the minimum wage, which had sunk from the

equivalent of around \$380 monthly at the start of the year to \$220, as a chance for foreign companies to move production to Turkey. One ruling-party parliamentarian helpfully suggested Turks should eat less.

For middle-class Turks, holidays abroad and scores of imported goods are out of reach. Many young professionals say they no longer see a future in Turkey. Since the start of last year, some 3,000 doctors are believed to have moved, mostly to Germany. Another 8,000 are planning to join them. Newlyweds Taner and Busra, he a physician and she a paramedic, both in

their late 20s, say they can no longer dream of buying an apartment or a new car. "We're getting poorer each day," Taner says. They are starting to take German classes.

Turkey has confronted currency collapse before. On a few occasions, most recently late last year, Mr Erdogan eventually gave in and let the central bank raise rates. This time he seems determined to hold out. Ordinary Turks will continue to pay the price. "Interest is the cause and inflation is the result," Mr Erdogan likes to say. The true cause is the president, and the result is a broken economy. ■

Free exchange | A universe of worry

Is property really 29% of China's GDP?



TEN YEARS ago Chinese property was described as “the most important sector in the universe” by Jonathan Anderson, now of Emerging Advisors Group, a consultancy. Property was a big source of China’s growth, household spending and appetite for commodities, like iron ore. Today the sector has become a source of universal concern, as housing sales have dropped, developers have defaulted and the price of iron ore has tumbled. China-watchers are eager for a rigorous measure of the sector’s importance to the country’s economy. And in recent months, the world’s press has converged on a number: 29% of GDP.

That estimate, which has been cited in this newspaper, the *Financial Times*, the *Wall Street Journal*, *Bloomberg* and elsewhere, comes from a paper by Kenneth Rogoff of Harvard and Yuanchen Yang of the IMF. Both economists have impeccable credentials. But their number (28.7%, to be precise) does not count what most people think it counts. The most prominent measure of the most important sector in the universe is widely misunderstood. So how should it be interpreted? To grasp it properly requires a gentle walk through the ins and outs of inputs and outputs.

Imagine an economy that makes a house and nothing else. The house is the output of the construction industry. But to make it, builders require inputs. They need steel, which is the output of the metals industry. And the steel requires iron ore, the output of the mining industry. Assume these are all that is required. The house sells for \$1m, the steel for \$600,000 and the iron ore for \$500,000. Now ask yourself, how important is the construction industry?

One narrow answer is 40% of GDP. In making the house, builders add \$400,000 to the value of the steel they buy. They therefore account for two-fifths of the home’s \$1m value. Since the house represents the entirety of the economy’s GDP, a narrow measure of the construction industry’s importance is 40% of GDP.

A broader answer is 100% of GDP. The house is the economy’s only “final” product. Everything else the economy makes is just an ingredient in that cake. The only reason to make ore is to make steel. And the only reason to make steel is to make houses. These “upstream” industries are therefore intimately linked to construction. If housing demand wavers, so will demand for steel and ore. So 100% of the demand for final products in this economy is de-

mand for the things the construction industry makes.

How would Mr Rogoff and Ms Yang measure the importance of property? Those who have not read their paper might assume their figure is similar in spirit to the first, narrow answer. They may think it refers to the value added by the property sector (which in their paper includes services like estate agents as well as developers). People who have glanced at the paper may assume their approach instead conforms to the broad answer. The property sector has tight links with upstream industries. Therefore its importance includes not just the value it adds, but also the value added by its upstream suppliers (of steel and other inputs) and their suppliers (of ore and other materials).

In fact Mr Rogoff and Ms Yang do not exactly follow either approach. Applied to our simple economy, their method would yield an answer of \$1.1m or 110% of GDP. It would count the iron ore (\$500,000). It would also count the full value (\$600,000) of the steel (even though that includes the value of the ore, an input to the input). But it would not count the \$1m value of the house or even the \$400,000 of value added by the construction industry.

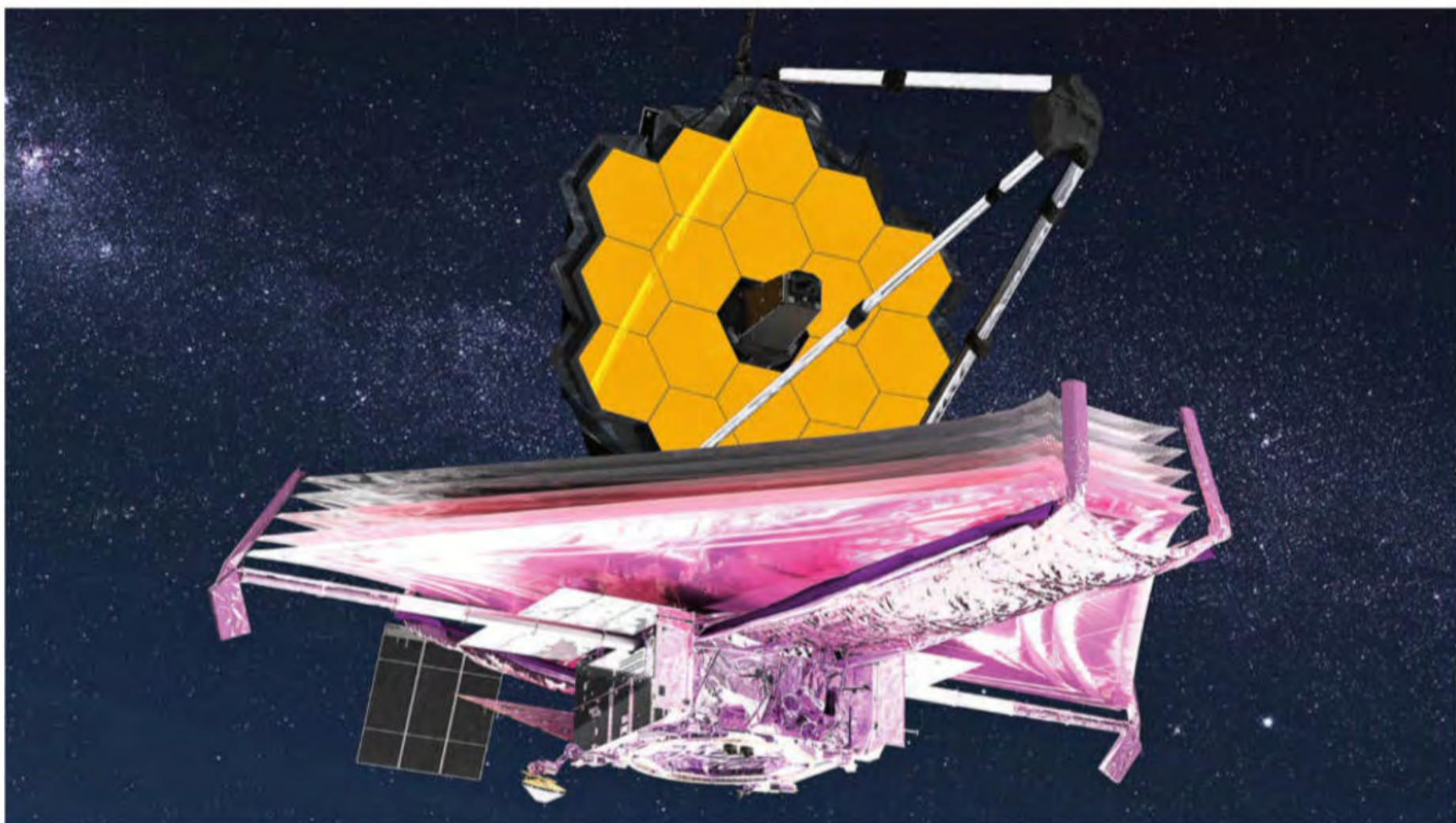
Why not? Their approach is an unusual attempt to correct for double-counting. If you were to add construction output (the \$1m home), steel output (\$600,000) and mining output (\$500,000), you could be accused of double- or even triple-counting. You would have counted the steel twice and the ore three times (once on its own, a second time when it is embedded in the steel, and a third time when the steel is embedded in the home).

The typical, intuitive way to avoid this problem is to count only the value that is added at each stage of production (\$500,000 plus \$100,000 plus \$400,000 in our simple example). That method yields the “broad” answer of 100% of GDP in the one-house economy. The method employed by Mr Rogoff and Ms Yang includes some things not counted in this measure and excludes others that are. In the one-house economy their approach would count the steel once, the ore twice and the construction not at all. In the case of China’s economy, they argue, these inclusions and exclusions cancel out in practice. “The direct construction value added we did not include and the inputs of input we did include...are very similar in scale, and offset,” writes Ms Yang. “The alternative (perhaps more intuitive) approach does not change our message.”

Steel yourself

In a forthcoming comment on Mr Rogoff and Ms Yang’s paper, a team of economists at the Asian Development Bank (ADB) including Mahinthan Mariasingham and John Arvin Bernabe has taken the more intuitive approach, totting up the value added by construction and property services, as well as the value added by other industries in supplying them, and by the suppliers of their suppliers. Using the same numbers as Mr Rogoff and Ms Yang for real-estate investment and services (albeit for 2017 not 2016) they reckon that China’s property sector accounted for 15.4% of GDP in 2017. Excluding imports, the number fell to 13.8%.

There is another wrinkle, however. The investment numbers used by Mr Rogoff and Ms Yang, and the ADB, may miss some buildings constructed by enterprises that are not officially classified as property developers. Including them, while using the more intuitive approach, increases the property sector’s importance to a little over 23% of GDP in 2018, according to Andrew Tilton and his team at Goldman Sachs. The sector remains of cosmic significance. But anyone alarmed by the 29% figure can rest about six percentage points easier. ■

**Astronomy**

The great, late James Webb Space Telescope

After a two-decade-long gestation, a superb scientific instrument will soon soar into the heavens

IT IS A majestic beast. Its primary mirror, a tessellation of golden hexagons, resembles a honeycomb sitting on a pile of silver-paper wrappers. But the mirror is six and a half metres across and the wrappers, each as big as a tennis court, are actually a sun-shield. This shield divides the craft into a cold side and a hot side. On the cold side sit the primary, a tripod-mounted secondary that reflects light gathered by the primary back through a hole in its centre, and a pack of instruments behind that hole to parse and analyse the incoming light. The hot side carries a solar array and the craft's control systems. And all these things must fit into a rocket fairing a mere five metres across and then unfold in space, with nanometre precision, into the shape above.

The beast in question is the James Webb Space Telescope, named after NASA's boss in the glory days of the 1960s, when the destination was the Moon and money was no object. The mirrors' surfaces, made from gold-plated beryllium, are so smooth that, scaled up to the size of America, their irregularities would be mere centimetres high. Were the sunshield bottled and sold

in high-street chemists, it would boast a protection factor of a million. One of the instruments behind the primary is so complicated that it has 250,000 individually controlled shutters, to ensure its illumination by the correct narrow slice of the sky. No uncrewed science mission so sophisticated has previously been sent into orbit.

Tangled Webb

And none so late and so far over budget, either. The project that would become the JWST, as it is known for short, was first mooted in the 1990s. But it was not until 2001, when a survey conducted each decade by America's National Academies of Sciences, Engineering and Medicine marked it as a priority, that work began in earnest. To provide many of the instruments, the launch vehicle and the launch site (the spaceport at Kourou, in French Guiana), the space agencies of Europe and Canada were quickly recruited, and in 2002 a launch date eight years away was set. After those years had passed, though, the launch was still six years away. And now, five years further on from that new

date, the device remains on the ground. The price, meanwhile, has risen from \$500m in 1996, when the idea was first proposed, to \$9.7bn. And every day's delay adds a million dollars to the bill.

Those delays, moreover, continue. The most recent scheduled launch date is December 22nd. That is a postponement, announced on November 22nd, from December 18th. But at least the thing is now at the launch site. Eventually, it must take off.

The Hubble Space Telescope, perhaps the JWST's most famous predecessor, scans the universe mainly in the part of the spectrum visible to human eyes, and in the ultraviolet. It makes only a small foray into the infrared. But besides having a primary more than seven times as big as the Hubble's, the JWST also has sensors optimised specifically for these longer wavelengths. The fact that the project was not simply cancelled at some point in its chequered career is testament in part to the potential this infrared capability grants—for much infrared is absorbed by Earth's atmosphere, so ground-based telescopes do not work well in this part of the spectrum. It will enable the device to scry three crucial types of objects more effectively than the Hubble can: the old, the cold and the dusty.

The old objects are those from so long ago that their ultraviolet and optical-frequency emissions have been stretched by the expansion of the universe into the infrared's longer wavelengths. A more mundane version of this phenomenon is the Doppler effect, noticeable when the pitch ➤

► of a siren drops as the vehicle blaring it goes by. The cosmic equivalent is “redshift”, and becomes more pronounced the farther back you go. The JWST will be sensitive to redshifted photons dating from 13.5bn years ago, a mere 300m years after the universe’s birth, and thus old enough to have come from the first generation of stars and galaxies.

The cold objects are those with temperatures as low as 100° above absolute zero (100K). All bodies in the universe radiate electromagnetic waves in a spectrum related to their temperature. For hot objects like stars this peaks in the wavelengths of visible light. For cooler bodies, like newly forming planets, it peaks in the infrared.

The dusty objects are those hidden in so-called “dark” nebulae. These nebulae are composed of grains of matter that scatter visible light. But the effect of their dust on the infrared is less pronounced, meaning that the JWST will be able to scan their interiors in unprecedented detail, witnessing the nurseries of young stars which some of them contain, and the clouds of matter falling into the black holes found at the centres of others.

Pillars of creation

Accomplishing all this requires precision instruments. The many-shuttered device, called the Near-Infrared Spectrograph, is one. It will split incoming light into its constituent wavelengths to reveal information about its source. There is also the Near-Infrared Camera, which will generate most of the images that will, no doubt, adorn coffee cups and screensavers in years to come. The Fine Guidance Sensor/Near Infrared Imager and Slitless Spectrograph will provide reference points used to stabilise the telescope, and will study its brightest targets, including stars orbited by exoplanets. And the Mid-Infrared Instrument will look at wavelengths from five to 28 microns instead of the 0.6 to five microns to which the Near-Infrared devices are sensitive. This will let it see the oldest, coldest and dustiest objects of all.

The Mid-Infrared Instrument, a late-comer to the party, has proved particularly problematic. Capturing such wavelengths needs a detector even colder than the others. The sunshield ensures they are cooled below 40K, but the Mid-Infrared Instrument must be a far chillier 7K. It is therefore fitted with a helium-based “cryocooler” that takes it down to this temperature. And that has caused trouble.

Inventing the cryocooler proved expensive. In 2003, in an attempt to cut costs, NASA suggested that the Mid-Infrared Instrument be amputated to keep the rest of the telescope alive. After much petitioning by project scientists, it survived—and is indeed now regarded by astronomers as the most exciting of the JWST’s instruments. It

has nevertheless continued to cause delays, and to eat up more than its fair share of the time and budget reserves held back for emergencies. By 2014, leaks in the cooler’s valves had swallowed up 18 of an allowance of 26 months of contingency time. And in 2015, 50% of the financial reserve went on staffing costs associated with cryocooler maintenance.

When the JWST does start sending back images, among the most eagerly awaited will be those of the first few hundred million years after the universe was born. These may reveal how galaxies emerged from a flat and shapeless cosmos, as places with slightly higher densities of matter attracted other matter towards them, to form ever larger agglomerations. These galaxies hosted the first generation of stars, formed from hydrogen and helium created in the Big Bang. Those would then have become factories for heavier elements, formed by fusion in their cores and distributed by supernova explosions that ended the lives of many of them—though a few may survive, hiding in plain sight among their younger brethren in the galaxies of nowadays. Indeed, the JWST might find some.

A second stellar generation would have repeated this, producing yet-heavier elements as it did so and paving the way for a third generation, of which the sun (at 4.55bn years, almost exactly a third of the age of the universe) is part.

Stars of the first generation are thought likely to have had a huge impact on the rest of the cosmos by emitting radiation that blasted apart its primordial hydrogen atoms to create a plasma of electrons and protons. Unblasted, those atoms would have interfered with the passage of light. So the advent of stars made the universe transparent. This is the epoch of “reionisation”, sometimes called the cosmic dawn. The JWST should not only make this dawn

visible, but also help understanding of the details of how it happened.

The new telescope will also peer into planetary origins. When stars form, they are surrounded by discs of leftover material that condense into planets and smaller bodies, such as asteroids and comets. The farther this material is from the star, the cooler it will be. And the frequencies the JWST will best detect tally nicely with those emitted by dust grains in the bits of the disc that are optimal for planet-forming.

Observations of these regions will put the Solar System in context. One problem faced by planetary scientists is information imbalance. Despite the discovery in recent decades of thousands of exoplanetary systems, these are known about in nothing like as much detail as the Solar System is. Yet generalising from this single, well-studied example is hazardous. For example, based on pre-existing assumptions about the Solar System no one expected to find gas giants akin to Jupiter and Saturn orbiting close to their parent stars. But that is actually quite common.

The JWST will look for exoplanets in two ways. It will take pictures of some of them directly—blocking out the parent star’s light with a special mask in order to do so. Others it will watch as they pass in transit in front of their parent stars, thus diminishing those stars’ apparent brightness.

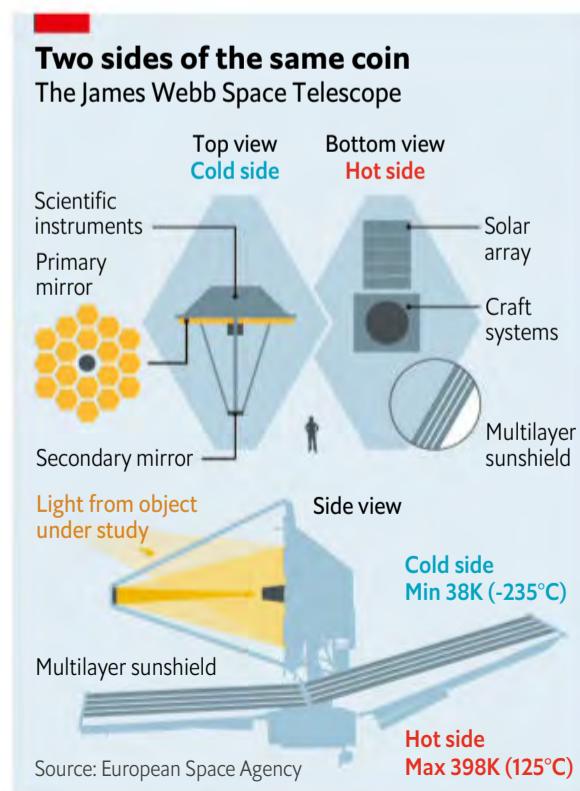
The transit approach may be particularly fruitful. It will permit study of the composition of a planet’s atmosphere by analysing the light which travels through it during a transit. That will let people look for molecules of interest, such as methane, water and carbon dioxide. They will also be able to identify unusual weather patterns: sapphire clouds, for example, or iron rain.

Closer to home, the JWST will also be able to study objects in the Solar System itself, though only those from Mars outward, for looking at anything closer in would risk the device absorbing too much solar heat. Within this range it will examine the asteroids, comets and dwarf planets which survive from the Solar System’s earliest days, and aim to identify the composition and surface appearance of planetary moons as-yet-unvisited by spacecraft.

Cosmology’s dark side

This is already quite a long “to do” list, and will certainly keep the telescope busy for a while. But some researchers have plans to add yet more items to it. One of the biggest questions in modern cosmology, for example, is the nature of dark energy. This is the name given to an unknown 68% of the universe’s content, which is somehow responsible for its accelerating expansion. The JWST may be able to reveal more about this substance’s mysterious workings.

A big problem with understanding dark energy is that the expansion rate can be



► measured in two ways. This would be good if the answers agreed, but they don't.

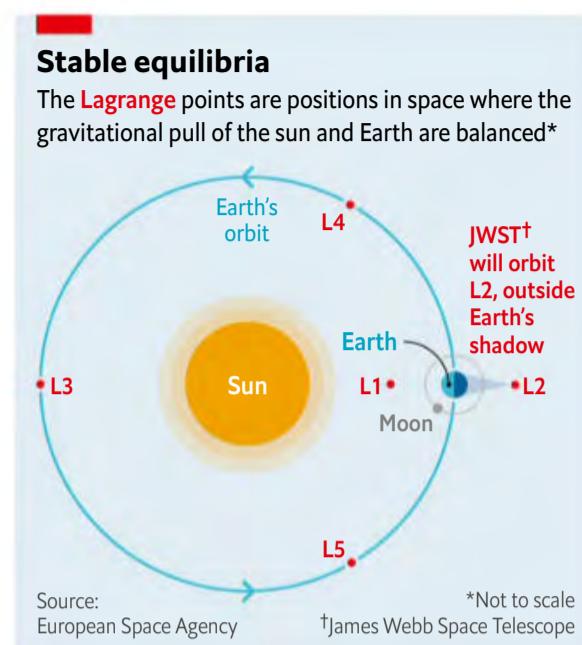
One approach, used since the 1920s and gradually refined since then, measures the distances to far-off stars and stellar explosions of known absolute brightness (so-called "standard candles") by comparing that brightness with their perceived brightness from Earth. It then calculates the expansion rate from the redshift of this light. The other method looks at the cosmic microwave background, a sky-filling signal from the early universe discovered in the 1960s. Measuring irregularities in this allows the expansion rate at the time it formed (380,000 years after the Big Bang) to be determined. The current rate can then be calculated by feeding that number into an equation based on cosmologists' understanding of fundamental physics.

The JWST should help with the first method by measuring the distances of stars up to five times farther away than is now possible. That may resolve the puzzle, by bringing the first method into line with the second, or—if the discrepancy persists—force a rethink of the basic science.

Another mysterious entity that the JWST may help explain is dark matter. This substance is reckoned by most researchers to make up a further 27% of the cosmos (the familiar matter of atoms and so on constitutes less than 5% of the total). It, too, is elusive, for it interacts with familiar matter only via the force of gravity.

Dark matter is believed crucial to galaxy formation. Measurements suggest that most, if not all, galaxies are really just accumulations of dark matter with a sprinkling of stars scattered through them. Dark matter's true nature, however, remains disputed. Some think it consists of black holes left over from the universe's early days. Others favour a set of as-yet-undiscovered subatomic particles. And a few hold-outs believe it does not actually exist, and that the effects ascribed to it can be accounted for by clever tweaks to Einstein's equations of gravity. By observing those effects in greater detail, the JWST may help distinguish between these alternatives.

Dark matter was first hypothesised in the 1930s, to explain odd behaviour by stars in the Milky Way and by galaxies in clusters. A more recent conundrum concerns Fast Radio Bursts (FRBs). These are unexplained flashes of radiation, first spotted in 2006, that last for milliseconds and are detectable from billions of light-years away. Over time, more and more FRBs have been discovered, with different sets of idiosyncrasies, suggesting that no one type of source is responsible for them all. The bulk, however, are likely to come from extremely young stars still embedded in the dust clouds whence they sprung. By peering into these dusty areas the JWST could pinpoint their locations more accurately.



All this does, however, depend on the telescope successfully deploying itself. Unlike the Hubble, which circles Earth, the JWST will orbit around a point known as L2 (see diagram), remaining just out of Earth's shadow. This spot, one of five so-called Lagrange points where Earth's gravity balances the sun's, is a popular destination for space telescopes. Keeping at a more or less constant distance from Earth helps with communications. Having the sun always in the same direction makes it easier for a sunshield to do its job.

Christmas unwrapping

Once it arrives at L2 the JWST will undergo a six-month process of unfolding and calibration, to prepare it for action. With over 300 mission-critical components, the failure of any one of which would doom the enterprise, ground-testing was a priority. Which was just as well, for the tests found many faults. Fasteners fell off the sunshield while it was shaken. The wrong solvent was used to clean the thrusters. Actuators did not fire as planned. And 501 bolts were deficient. All told, these problems cost nearly a billion dollars to fix, and delayed things by two and a half years.

Northrop Grumman, the project's principal contractor, did not come out of all this covered in glory. Regular reports from the Government Accountability Office, set up by Congress to keep an eye on public spending, identified problems with workmanship and data collection.

In March 2018 NASA commissioned an independent review board to inspect the project. This recommended that Northrop Grumman review its internal processes. In July of that year, the firm's chairman and chief executive agreed to take no profits from the project until the telescope was operational. For all the flaws their review identified, though, the board declared that the JWST "must now be completed within the principle that mission success is the top priority and is more important than cost and schedule". The latest National

Academies' decadal survey, released on November 4th, thus recommends that in future targets should be set that would lead to a project's automatic cancellation if not met, to stop something like this happening again. It emphasises, too, the importance of small- and medium-scale missions, which have been overshadowed by the likes of the delayed space telescope.

This survey is also the first to examine American astronomy's culture. It emphasises the need to gather talent beyond the mainly white, male scientists who founded and still dominate the field (though women have certainly made important contributions, including Henrietta Leavitt, who established the idea of standard candles, and Vera Rubin, who provided evidence for dark matter). One small step for women will come in 2027, when the name of Nancy Grace Roman, NASA's first chief of astronomy, will be emblazoned on the side of its next flagship telescope.

The worthiness of Webb himself for such an honour is also being reassessed. Eyebrows were raised in 2002, when his name was suggested, because until then scientific spacecraft had been called after scientists, not bureaucrats. More recently, aspects of his career, both before and during his time at NASA, have come under scrutiny. In the late 1940s he was an under-secretary in the Department of State, and as such is accused by some of having been involved in the cold war "lavender scare", an anti-gay witch-hunt that coincided with Joseph McCarthy's anti-communist "red scare" activities, and which saw many State Department employees purged. Also, at least one NASA employee was dismissed on his watch for being gay. But Webb's actual complicity in any of this is disputed, and, pending the conclusion of further investigations, NASA has rejected requests to rename the instrument.

The cloud of delay, meanwhile, has had silver linings. Scientific experiments inconceivable at the time of the telescope's approval have subsequently been developed and integrated into the project. Exoplanet science, for example, was virtually non-existent in 1997. There is also a chance that the wait will permit the telescope's lifetime to be extended. It will probably use up the thruster fuel needed to keep it on station within a decade. In the past, that would have been that. In light of advances in space technology, however, NASA has installed an arrangement which would let a service vessel dock and offer a top-up.

If all goes well on the 22nd—or whenever lift-off actually happens—and with the subsequent unwrapping and deployment, useful data should start returning to Earth some time in the middle of 2022. Regardless of the exact date, though, for the scientists involved it will be as if 20 years' worth of Christmases have all come at once. ■



From bills to gills: a sustainability approach

100 global leaders explore shifts in regional innovation and collaboration and discuss how to reframe our relationship with the ocean.



Kate Walsh
Actress, entrepreneur, and activist
Oceana



Mahinda Rajapaksa
Prime minister
Sri Lanka



Manumatavai Tupou-Roosen
Director-general
Pacific Island Forum Fisheries Agency



Mark Brown
Prime minister
Cook Islands

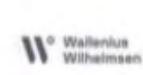


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**Safeguarding art**

Grab and go

In preparing for disasters, museums face tough decisions over their holdings

IT IS 3AM. You are the director of a gallery and you are woken by the phone call you dread. Your gallery is on fire. Each of its rooms contains around ten works of art. Each work is worth millions, perhaps tens of millions. From the moment a fire alarm sounds, you have "a matter of minutes", says William Knatchbull, head of heritage planning at the London Fire Brigade, to get your artefacts out. Ideally, you would save them all. But you can't: the fire is burning, the temperature is rising and the clock is ticking. It is time to choose.

This is the world of "grab lists"—though not everyone calls them that. The Louvre in Paris prefers the more considered-sounding "priority lists"; others call them "salvage lists" or "snatch lists". The Natural History Museum in London refers to the whole process as "salvage planning". But whatever term an organisation uses, it comes to the same thing. These are the lists of holdings that—when the fire starts to burn, the floodwaters rise or the terrorist

bomb explodes—will be saved first. They are lists of last resort; lists that all museums hope never to have to use.

And they are surprisingly short. A single gallery or museum might contain hundreds of thousands, even millions of objects (the British Museum has "at least" 8m). Grab lists ideally include "ten, 20 items", says Mr Knatchbull; more in a bigger gallery, perhaps, but not many more. Ten objects from millions, worth billions of pounds, to be rescued in minutes. Think of grab lists as a version of "Supermarket Sweep", a game show in which contestants fill a shopping trolley in a hurry, but for high culture and far higher stakes.

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Whatever curators call these lists, they do not like to talk about them. Museums strive to present themselves as stately and semipartial. "Grab lists" sound hasty and chaotic. The Louvre—which always has 14 firefighters on duty—is unusually open. It not only acknowledges having them, but confirms that each of its departments—paintings, sculptures, Egyptian antiquities, Greek, Etruscan and Roman antiquities, Islamic art and the rest—chooses its own list. The items on them are then ranked again, from "major works" (to be saved first) to lower priorities. The Louvre will not say what is in each category, but it is a fair bet that the "Mona Lisa" and the Venus de Milo would be among the first treasures to be rescued.

Deciding what to put on a list, says Mr Knatchbull, with the air of a man who has witnessed some spats, is "a really hard decision". In a single museum you might have several heads of collections, "all saying their items are just as important as the others." These are not the sort of arguments curators are used to having. Questions of artistic value are usually slow-burn discussions with no fixed conclusion: art professors can spend decades delicately disagreeing over the relative merits of Manet and Degas. Fires, however, burn fast and end, conclusively, in ashes.

As some curators squabble, other places decline to accept that such lists are neces-

►sary. The Smithsonian in Washington says it "would not go through objects and decide what deserves to be saved after a disaster" since "our buildings are secure". That sort of confidence is risky.

Under a darkling November sky, the fire alarm starts to sound at Ham House (pictured below), a 17th-century country pile in Richmond, south London, owned by the National Trust, a conservation charity. Parakeets scatter in alarm. The estate's massive gates swing open. Minutes later, fire engines appear, scrunching over the gravel en masse. The pace is calm, not panicked; this is merely a salvage practice. But it is serious. As the alarm clangs, officials direct firefighters to the objects to be rescued: go up nine steps here, turn left, and there it is. Hoses slither and hiss over the flagstones.

"Every single National Trust property will have a priority list," says Hannah Mawdsley, the curator in charge of this rehearsal. After all, staff in historic buildings have seen the fires at Notre Dame cathedral, Windsor Castle and Clandon Park, a Palladian mansion in Surrey. Tom Conlon, commander of the fire station conducting the drill, is sceptical about the idea that some buildings are safe. "Everything burns," he says grimly.

The burden of history

Beyond overconfidence, though, museums have a good reason to be reticent about grab lists: they are invidious. "How do you choose between your children?" says Karole Vail, director of the Peggy Guggenheim Collection in Venice. Just as parents may surreptitiously have favourite offspring, so museums have favourite objects—but, as with children, it can be undiplomatic to name them. Putting the works from ancient Greece on your list while omitting, say, most of the Asia section, may cause ructions inside your museum and beyond. Donors might be miffed to find that a munificent gift was not earmarked for rescue.

Grab lists also involve grubby considerations of money. Museums are generally reluctant to put prices on their holdings, for pragmatic reasons as well as high-minded ones. Many rare or unusual works are literally priceless. Moreover, though it may be useful for curators to know which are most valuable and must be saved, ranking them could let others know too. If thieves were aware that, say, a hoard of Viking gold was a museum's most prized possession, they might be more tempted to plunder it. So, in the case of public institutions, might a government in lean times. The British Museum has long declined to assign price tags to its treasures.

And all museums hate discussing insurance, not least because many have none. Of Britain's "National Museums"—a group of 14 institutions that includes the

British Museum and the National Gallery—none has any insurance for its permanent collections. It would simply cost too much. These museums are protected instead by government schemes—and a strong sense of fatalism.

Money is only one criterion for grab lists, though. A unique object, such as a pen that signed a peace treaty, might have a sentimental or political value that wildly exceeds its financial one. Compiling the lists forces curators to calibrate such trade-offs. More mundane factors must also be weighed—not least weight itself.

At Ham House, firefighters in protective kit and breathing apparatus, cumbersome as old-fashioned scuba gear, move in with rasping breath. In their hands are the grab sheets, which provide images of the objects and advice on the number of firefighters needed to carry them (one for light items, three for heavy ones). At the Louvre, too, firefighters look over the curators' lists to see if they are practicable. Sometimes actual weight must trump the cultural kind. The Rosetta Stone, the key to deciphering hieroglyphics, is three-quarters of a tonne of igneous rock. Held in the British Museum, it is going nowhere.

Other dimensions matter as well. A painting such as Hans Holbein's "Ambassadors" stands at well over two metres from tip to toe. You'd struggle to get it through the door. In such cases, says Mr Knatchbull, "it could be that the salvage plan is to use a Stanley knife and to cut the painting out of the frame." An Australian guide to priority lists gently reminds museums to consider not merely their attachment to an object, but the object's attachment to the museum. Screwdrivers might be needed, the guide notes. It is wise advice. No one wants to run the museum where firefighters fiddled with an awkward wall bracket while the Rome section burned.

Not every museum and gallery runs



Imagining the worst

drills. Even among those that have a plan, some simply assume that the worst will never happen to them. And, in most cases, it doesn't. But as Alexander Kellner, the director of the National Museum of Brazil, knows better than most, when it does, it is bad. In September 2018, six months after becoming the museum's boss, he stepped off a flight one Sunday evening to find his son and his assistant waiting for him. The assistant was in tears. The fire at the museum (pictured on previous page) had begun. By the time it was out, most of the collection of 20m objects was lost.

For those museum directors who consider themselves immune, Mr Kellner has some stark words. "I'm not religious, but I will pray to God that this will not happen to you," he says. "Because once it happens, you can't go back, can you?" After all, when "it's lost, it's lost." ■

Aviation

Plane wrong

Flying Blind: The 737 MAX Tragedy and the Fall of Boeing. By Peter Robison. Doubleday; 336 pages; \$30. Penguin Business; £20

SHORTLY AFTER take-off, as assorted warnings flashed and sounded, the pilots of two Boeing 737 MAXS—one operated by Lion Air of the Philippines, the other by Ethiopian Airlines—wrestled with shaking steering yokes for control of their planes. Neither overcame the piece of software that was intent on taking over; 346 people died in the two resulting crashes in 2018 and 2019. As Boeing finally admitted on November 10th this year, in a compensation case brought in America by families of the crash victims in Ethiopia, the reason was that it had built a plane with "an unsafe condition".

The long train of events that led to the tragedies—and the subsequent reputational and financial trashing of one of America's biggest companies—is expertly dissected in "Flying Blind" by Peter Robison, a journalist at Bloomberg. His main argument will be familiar to anyone who has followed Boeing closely. After its merger in 1997 with McDonnell Douglas, stockmarket performance and satisfying investors took precedence over engineering excellence.

The arrival of bean-counting bosses from an erstwhile rival, as well as of a series of executives schooled in the art of financial engineering at General Electric, another American industrial giant, en-

▶ sured that a “bottom-line mindset” prevailed. In rich detail, Mr Robison chronicles the shortcomings of that approach at a firm where safety should be paramount. And he recounts the regulatory capture of the Federal Aviation Authority (FAA), which let Boeing take a leading role in certifying the airworthiness of its own planes, even as it engaged in a cut-throat battle for sales with Europe’s Airbus. Balancing shareholder returns, competitiveness and investment is a hard task for any firm. Boeing got the equation badly wrong.

It had been considering a new clean-sheet design for its lucrative short-haul workhorse when in 2010 Airbus announced the A320neo, a more fuel-efficient version of its competing plane. Rather than cede market share for several years while developing a new passenger jet, Boeing chose to fit new engines to the 737. But attaching giant turbofans to a plane that first took flight in 1967 with far smaller power units shifted its centre of gravity. The MCAS system, intended to counteract this effect in extreme circumstances by taking control to prevent a stall, merited one mention in the plane’s 1,600-page manual—in the glossary.

In both crashes a fault in a tiny sensor engaged this system—of which pilots were unaware—but under normal conditions. Finding the way to regain full control of the plane meant flicking through an inch-thick handbook in the confusion and desperation of the final few minutes in the cockpits of the doomed MAXs. Although some of Boeing’s engineers had raised concerns, MCAS had been signed off by a compliant FAA, obviating the need for expensive retraining in a flight simulator. To fly a MAX, pilots trained on the previous generation of 737s were merely required to spend a few hours on an iPad.

Boeing’s reaction also betrayed its priorities. After the second crash, the planes were grounded but the company kept making them, suggesting a quick fix was imminent and hinting that the pilots were to blame (the latest court ruling exonerates the Ethiopian crew). Contrition came slowly. In fact the grounding lasted 20 months, during which the pandemic struck, hobbling airlines and resulting in hundreds of cancelled orders.

The crisis has so far cost Boeing \$21bn directly in fines and compensation to airlines for delayed deliveries; the payout to bereaved families has not been finalised. Yet the MAX is now back in the air with a backlog of 3,000 orders from airlines clamouring for more fuel-efficient planes. The Justice Department’s investigation of what it called the “737 MAX Fraud Conspiracy” resulted only in one deferred prosecution (a kind of corporate plea deal). An unnamed pilot suggests a different title to Mr Robison: “Boeing got away with it”. ■

Scheherazade’s revenge

A whole new world

A classic of world literature gets an overdue makeover

The Annotated Arabian Nights. Translated by Yasmine Seale. Edited by Paulo Lemos Horta. Liveright; 816 pages; \$45 and £30

IT IS ONE of the world’s oldest fables, and I among the most-travelled. From 8th-century India and Persia, “1,001 Nights” (commonly known as “The Arabian Nights” in English) journeyed through Iraq, Egypt and Syria before arriving in western Europe in the early 18th century. The first translation into English directly from the Arabic—by Henry Torrens, a British army officer—appeared in 1838. Passing from East to West and back again, it may be the ultimate work of world literature.

Yet this to-and-fro has had drawbacks. Western adaptations have sometimes misrepresented the original tales, often to satisfy Orientalist fantasies of the Middle East. Meanwhile, though female peril and ingenuity are at the heart of the story, until now no woman has published a full English translation of the story cycle. All of which makes this new edition—translated by Yasmine Seale, a female British-Syrian poet—quietly momentous.

The book prompts a simple yet powerful question: could you, like Scheherazade, tell a story to save your life? After King Shahryar discovers that his wife has been unfaithful to him, he kills her and, in a fit of loathing against all womankind, begins marrying and murdering another victim every day. When Scheherazade’s turn comes, she asks to tell a story before she dies. He agrees, and is captivated. Scheher-

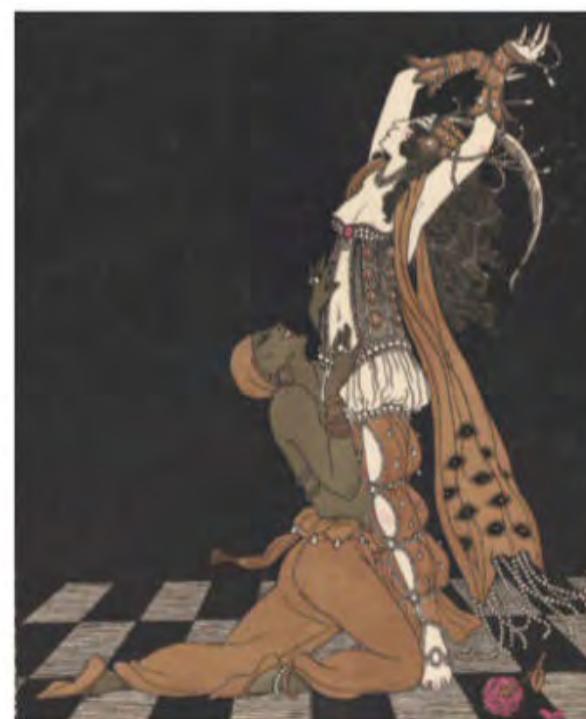
azade breaks off before dawn, promising to continue the following night. And so she goes on, for 1,001 nights, until the king falls in love with her, and she is spared.

For all the misogyny of the initial scenario, Scheherazade emerges as one of the most resourceful heroines in literature. But a lot can be lost in translation. Paulo Lemos Horta, a literary historian, says that, for previous generations of English readers, the tales came slathered in racism and sexism. The version by Edward Lane of 1839–41 salivated over the details of ornate palaces and titillating costumes. In a translation of 1885, says Mr Horta, Richard Francis Burton “adds negative traits to the women in the stories”, removing “their positive or redeeming qualities”. Burton also added racist jokes—perhaps not altogether surprising for a 19th-century British explorer who measured African men’s penises on his expeditions.

These Victorian renderings relied in turn on a French version of the early 18th century by Antoine Galland. That included several well-known tales—such as “Aladdin’s Lamp” and “Ali Baba and the Forty Thieves”—that were not in the original Arabic. For centuries, scholars thought Galland was their main author. Recent research has proved that Hanna Diyab, a Syrian storyteller, told them to him in Paris. Galland is thought to have adapted these “orphan stories” to please Western readers, by, for instance, carving clearer lines between good and evil.

For even the most venerable works of fiction, though, new readings can bring to light fresh meanings—and enduring truths. In 2017 Emily Wilson managed that in a new translation of Homer’s “Odyssey”, the first by a woman to be published in English. The new “Arabian Nights”—a selection from a complete edition in the making—does the same. Diyab’s role is duly recognised. Sex, violence and unequal gender relations still feature, but whereas earlier versions objectified female characters and elevated male ones, such as Caliph Harun al-Rashid and his vizier Jaafar, now homicidal sultans and pitiless jinns alike are disarmed by female storytelling.

Take a passage about a headstrong woman who in Burton’s rendering declares: “Destiny may not be averted... whatso woman willeth the same she fulfillleth.” In Ms Seale’s new text, what seemed like female wilfulness becomes noble independence: “He thought he had me and could keep me for himself, forgetting that



Talk for your life

Johnson A kind of blue

Environments can affect language—just not in the way you may think

EVERYONE KNOWS the Eskimos have dozens, if not hundreds, of words for snow because of their intimate knowledge of their environment. Except that everyone cannot "know" this, because knowledge requires a statement to be true. In fact, the Eskimo snow story is a factoid, a word coined by Norman Mailer for a fun, roughly fact-shaped object that is not, in fact, a fact—in the same way a "spheroid" is not quite a sphere.

The Eskimos (or Inuit, as most prefer to be called) don't really have hundreds of words for snow because of their fine sense of its variety. Rather, they have a virtually infinite supply of words for everything, because of the nature of their languages. Inuit languages allow lexical roots to be strung together to make long, highly specific words, including some that might make an entire sentence in English. "Snow that has turned grey from being walked on repeatedly", a noun phrase in English, might be a single word in Inuit. But the number of basic snow-related roots is not much larger than the number of snow words in English.

For many linguists, the Eskimo snow story has become an example of an embarrassing, exoticising fairy tale about an unfamiliar culture, passed round by those who know nothing of it. It is also the paradigmatic example of assuming a kind of mystical connection between language, land and culture—which falls apart under serious scrutiny.

Today, efforts to draw links between language and the environment are more respectful. One linguist has observed that languages with certain rare consonants (called ejectives) are more prevalent at high altitudes, perhaps because those are easier to pronounce in lower air pressure. Another team found that languages which use tones (ie, changes in

pitch) in their vowels, to distinguish one word from another, are linked with humid climates. This is purportedly because humidity helps the vocal folds produce the tones. These causal relationships are not always accepted by other scholars.

Recently, though, a large study of colour words around the world has found a clear link between geography and vocabulary. Colour is a classic case of a spectrum. There is no sharp break between, say, blue and teal, and cultures divide the continuum in different ways. Some languages have just two colour-related words, for light and dark. A pair of linguists, Brent Berlin and Paul Kay, wrote in the 1960s that if they have a third, it is almost always for red; a fourth and fifth are usually for green and yellow.

Blue comes only sixth in the Berlin-Kay schema, elementary as it may seem. Besides the sky and sea, though, there are few blue things in nature, which may make the word less necessary; rarely does anyone say "look for a blue plant", because these are uncommon. Many languages lump together blue and green, a chunk of



the spectrum linguists call "grue".

The new study breaks ground by finding that there is indeed a link between the use of grue words and the environment, specifically sunshine. Populations exposed to lots of sunlight are more likely to talk about "grue", note Mathilde Josserand, Emma Meeussen, Asifa Majid and Dan Dediu. One possible reason is that long-term exposure to ultraviolet light can cause changes in the retina that make it more difficult to distinguish blue from green.

The researchers tested a host of other theories to account for the presence of a "grue" term, and found a weaker but still interesting link to culture, rather than physiology. They discovered that larger populations were more likely to have a distinct "blue". Population size, they speculate, is a reasonable proxy for cultural complexity—the kind, for instance, that would lead cultures to develop dyeing techniques, and thus create artificially blue objects.

This is the first study to test so many of these hypotheses to see which hold up best. That is an admirable approach, which reduces the chances of a coincidental finding, the type that pops up all the time when researchers scour databases looking for linked variables. (One such effort found a link between acacia trees and tonal languages, a connection rather difficult to explain.)

The limitation is that the thing being tested (such as whether there is a distinct word for "blue") must be quite simple, in order to compare widely varying languages. But the strength of this method is that it produces conclusions which, if you drop them into cocktail-party conversation, are more likely to be legitimate. Fun facts are only really so when they are, indeed, facts.

► what fortune has in store cannot be turned, nor what a woman wants."

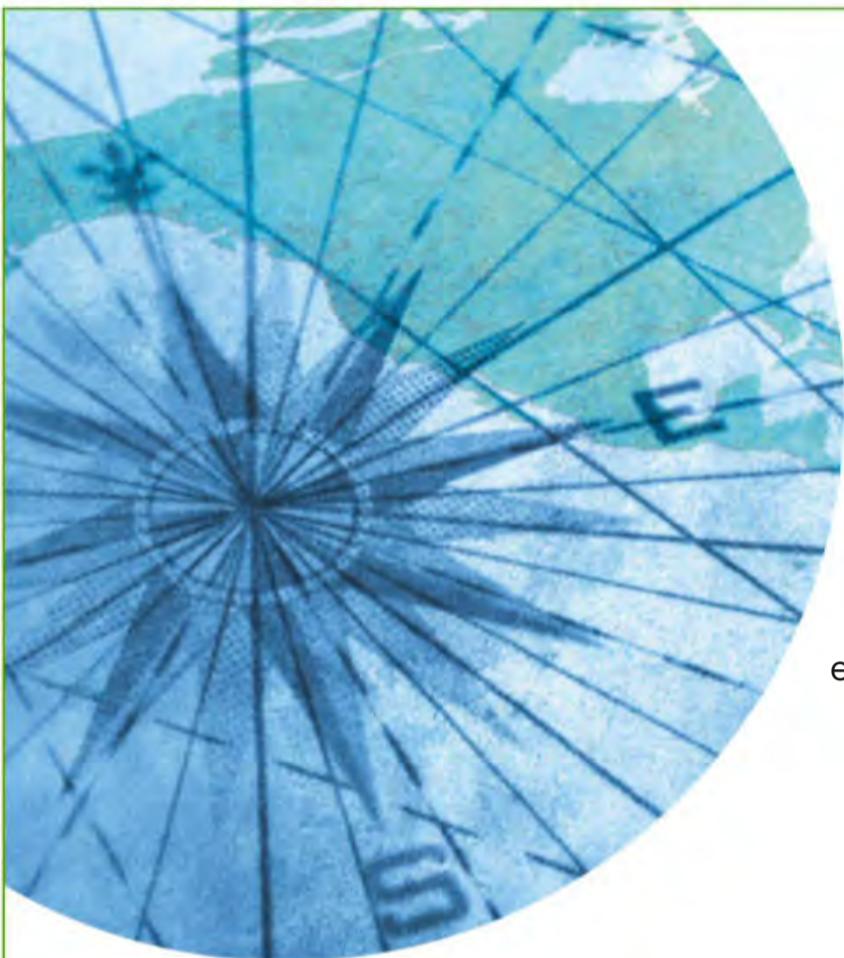
Or consider "The Story of the Porter and the Three Women of Baghdad", Ms Seale's favourite tale, in which the porter of the title is, as she puts it, "astonished to learn that it's possible to have a good life without men". Burton cut a section in which the women make jokes about the porter's genitals; Ms Seale includes it. And whereas Burton's porter insists that "women's pleasure without man is short of measure", her version is more even-handed: "as the pleasure of men falls short without wom-

en, so it is for women without men."

Still, evolution has always been part of the story of "The Arabian Nights". In the Arab world, the simple language, anonymity of the text and tradition of oral storytelling have made it seem less a part of the literary canon than of the ambient culture. "It's hard to pinpoint a specific moment where you first hear about these stories, because you almost absorb them by osmosis," says Omar El Akkad, a novelist. "The iconography of it is everywhere." Brought up in a family of distinguished writers—her great-uncle was the cherished Syrian

poet Nizar Qabbani—Ms Seale at first hesitated to take on such a well-worn project.

As it is, her proficiency in Arabic, English and French, along with her poet's ear, have yielded a lyrical and accessible new text. Mr Horta contributes annotations that give context to her choices, and has selected hundreds of illustrations that let readers travel visually through the tales and their history. Even so, this is not the last word. "The longer I spend with this text, the less I really know what it is," Ms Seale reflects. "It's so changing and shimmering and unstable." ■



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Economic data

	Gross domestic product			Consumer prices		Unemployment rate		Current-account balance		Budget balance		Interest rates		Currency units	
	% change on year ago latest	quarter*	2021†	% change on year ago latest	2021†	%		% of GDP, 2021†		% of GDP, 2021†		10-yr gov't bonds latest,%	change on year ago, bp	per \$ Nov 24th	% change on year ago
United States	4.9	Q3	2.1	5.5	6.2	Oct	4.4	4.6 Oct	-3.4	-12.4	1.6	76.0	-	-	3.0
China	4.9	Q3	0.8	7.9	1.5	Oct	0.8	4.9 Oct‡§	2.8	-4.9	2.7 §§	-48.0	6.39	3.0	
Japan	1.4	Q3	-3.0	2.3	0.1	Oct	-0.2	2.8 Sep	3.0	-8.8	nil	-8.0	115	-9.3	
Britain	6.6	Q3	5.1	6.4	4.2	Oct	2.8	4.3 Aug††	-3.9	-10.9	0.9	52.0	0.75	nil	
Canada	12.7	Q2	-1.1	5.4	4.7	Oct	3.1	6.7 Oct	-2.3	-9.5	1.8	106	1.27	2.4	
Euro area	3.7	Q3	9.3	5.0	4.1	Oct	2.3	7.4 Sep	3.2	-7.3	-0.2	33.0	0.89	-5.6	
Austria	12.8	Q2	24.6	4.7	3.7	Oct	2.7	5.2 Sep	2.0	-5.8	nil	45.0	0.89	-5.6	
Belgium	4.7	Q3	7.4	5.4	4.2	Oct	2.6	6.3 Sep	1.5	-6.7	0.1	50.0	0.89	-5.6	
France	3.3	Q3	12.6	6.7	2.6	Oct	2.1	7.7 Sep	-1.3	-8.9	0.1	40.0	0.89	-5.6	
Germany	2.5	Q3	7.3	2.8	4.5	Oct	3.0	3.4 Sep	7.0	-6.2	-0.2	33.0	0.89	-5.6	
Greece	16.4	Q2	14.5	6.5	3.4	Oct	0.1	13.3 Sep	-4.4	-9.6	1.4	57.0	0.89	-5.6	
Italy	3.8	Q3	10.8	6.3	3.0	Oct	1.8	9.2 Sep	3.9	-9.6	1.1	51.0	0.89	-5.6	
Netherlands	5.0	Q3	8.0	3.7	3.4	Oct	2.3	2.9 Oct	8.5	-5.2	-0.1	49.0	0.89	-5.6	
Spain	2.7	Q3	8.3	5.5	5.4	Oct	2.5	14.6 Sep	0.9	-8.9	0.4	34.0	0.89	-5.6	
Czech Republic	8.8	Q2	5.7	3.0	5.8	Oct	3.8	2.7 Sep‡	3.2	-8.3	2.7	152	22.8	-3.1	
Denmark	10.0	Q2	8.2	3.2	3.0	Oct	1.7	3.3 Sep	7.5	-0.3	0.1	49.0	6.64	-5.6	
Norway	5.1	Q3	16.1	3.0	3.5	Oct	3.0	4.0 Aug‡‡	6.9	-3.0	1.4	76.0	8.97	-0.3	
Poland	10.8	Q2	8.7	5.0	6.8	Oct	4.9	5.5 Oct§	1.1	-5.8	3.5	222	4.18	-10.1	
Russia	4.3	Q3	na	4.2	8.1	Oct	6.6	4.3 Sep§	5.2	-0.7	8.5	241	75.0	1.1	
Sweden	3.7	Q3	7.4	4.1	2.8	Oct	2.2	7.6 Oct§	4.8	-1.8	0.3	30.0	9.13	-6.1	
Switzerland	7.7	Q2	7.4	3.5	1.2	Oct	0.5	2.7 Oct	5.3	-3.8	-0.1	35.0	0.94	-3.2	
Turkey	21.7	Q2	na	8.0	19.9	Oct	18.1	11.1 Sep§	-2.8	-3.1	20.0	818	12.2	-34.5	
Australia	9.6	Q2	2.7	3.8	3.0	Q3	2.7	5.2 Oct	4.1	-5.8	1.9	97.0	1.39	-2.2	
Hong Kong	5.4	Q3	0.5	6.2	1.8	Oct	1.6	4.3 Oct‡‡	3.0	-4.5	1.6	88.0	7.80	-0.6	
India	20.1	Q2	-41.2	8.2	4.5	Oct	5.0	7.8 Oct	-0.9	-7.0	6.4	49.0	74.4	-0.5	
Indonesia	3.5	Q3	na	3.1	1.7	Oct	1.6	6.5 Q3§	-0.1	-6.0	6.2	3.0	14,258	-0.7	
Malaysia	-4.5	Q3	na	3.8	2.2	Sep	2.4	4.5 Sep§	2.7	-6.0	3.6	90.0	4.21	-2.9	
Pakistan	4.7	2021**	na	3.8	9.2	Oct	9.2	6.9 2019	-4.5	-6.9	11.9 †††	205	175	-8.7	
Philippines	7.1	Q3	16.1	4.8	4.6	Oct	4.5	6.9 Q3§	-1.9	-7.5	5.0	188	50.3	-4.3	
Singapore	7.1	Q3	5.2	6.1	3.2	Oct	1.9	2.6 Q3	18.1	-4.2	1.8	89.0	1.37	-2.2	
South Korea	4.0	Q3	1.2	4.1	3.2	Oct	2.2	2.8 Oct§	4.6	-4.4	2.4	79.0	1,186	-6.3	
Taiwan	3.8	Q3	2.3	5.7	2.6	Oct	2.0	3.8 Oct	15.2	-1.2	0.6	31.0	27.8	2.6	
Thailand	-0.3	Q3	-4.2	1.4	2.4	Oct	1.0	1.5 Dec§	-1.4	-7.8	1.8	58.0	33.3	-8.9	
Argentina	17.9	Q2	-5.5	8.7	52.1	Oct	48.3	9.6 Q2§	1.7	-4.6	na	na	101	-19.8	
Brazil	12.4	Q2	-0.2	5.0	10.7	Oct	8.2	13.2 Aug‡‡	0.5	-6.1	11.7	383	5.60	-3.8	
Chile	17.2	Q3	21.0	11.0	6.0	Oct	4.3	8.4 Sep‡‡	-1.8	-7.1	5.6	295	814	-5.0	
Colombia	12.9	Q3	24.9	9.8	4.6	Oct	3.4	12.1 Sep§	-5.3	-8.5	8.3	340	3,968	-8.2	
Mexico	4.6	Q3	-0.8	6.1	6.2	Oct	5.6	3.9 Sep	1.7	-3.3	7.8	226	21.4	-6.4	
Peru	11.4	Q3	15.0	13.2	5.8	Oct	4.0	8.6 Oct§	-2.6	-4.4	5.9	188	4.02	-10.4	
Egypt	7.7	Q2	na	3.3	6.3	Oct	5.7	7.5 Q3§	-4.3	-8.0	na	na	15.7	-0.5	
Israel	4.1	Q3	2.4	6.1	2.3	Oct	1.6	5.0 Oct	5.1	-5.5	1.1	26.0	3.15	6.0	
Saudi Arabia	-4.1	2020	na	2.2	0.8	Oct	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	Oct	4.4	34.4 Q2§	2.8	-8.0	9.8	87.0	15.9	-4.0	

Source: Haver Analytics. *% change on previous quarter, annual rate. †The Economist Intelligence Unit estimate/forecast. §Not seasonally adjusted. ‡New series. **Year ending June. ††Latest 3 months. #3-month moving average. §§5-year yield. †††Dollar-denominated bonds.

Markets

In local currency	Index Nov 24th	% change on:			index Nov 24th	one week	Dec 31st 2020	% change on:			index Nov 24th	one week	Dec 31st 2020	
		Index Nov 24th	one week	Dec 31st 2020				index Nov 24th	one week	Dec 31st 2020				
United States S&P 500	4,701.5	0.3	25.2		Pakistan KSE	44,363.7	-4.0	1.4						
United States NAScomp	15,845.2	-0.5	22.9		Singapore STI	3,227.2	-0.2	13.5						
China Shanghai Comp	3,592.7	1.6	3.4		South Korea KOSPI	2,994.3	1.1	4.2						
China Shenzhen Comp	2,520.5	1.8	8.2		Taiwan TWI	17,642.5	-0.7	19.8						
Japan Nikkei 225	29,302.7	-1.3	6.8		Thailand SET	1,649.8	0.3	13.8						
Japan Topix	2,019.1	-0.9	11.9		Argentina MERV	83,481.2	-4.6	63.0						
Britain FTSE 100	7,286.3	-0.1	12.8		Brazil BVP	104,514.2	1.5	-12.2						
Canada S&P TSX	21,548.4	-0.5	23.6		Mexico IPC	50,848.0	-0.4	15.4						
Euro area EURO STOXX 50	4,276.3	-2.8	20.4		Egypt EGX 30	11,352.6	-0.9	4.7						
France CAC 40	7,042.2	-1.6	26.9		Israel TA-125	1,975.8	-0.3	26.0						
Germany DAX*	15,878.4	-2.3	15.7		Saudi Arabia Tadawul	11,369.4	-3.9	30.8						

→ Honeybees attacked by parasites segregate activities into specific regions of their hives to stop the spread

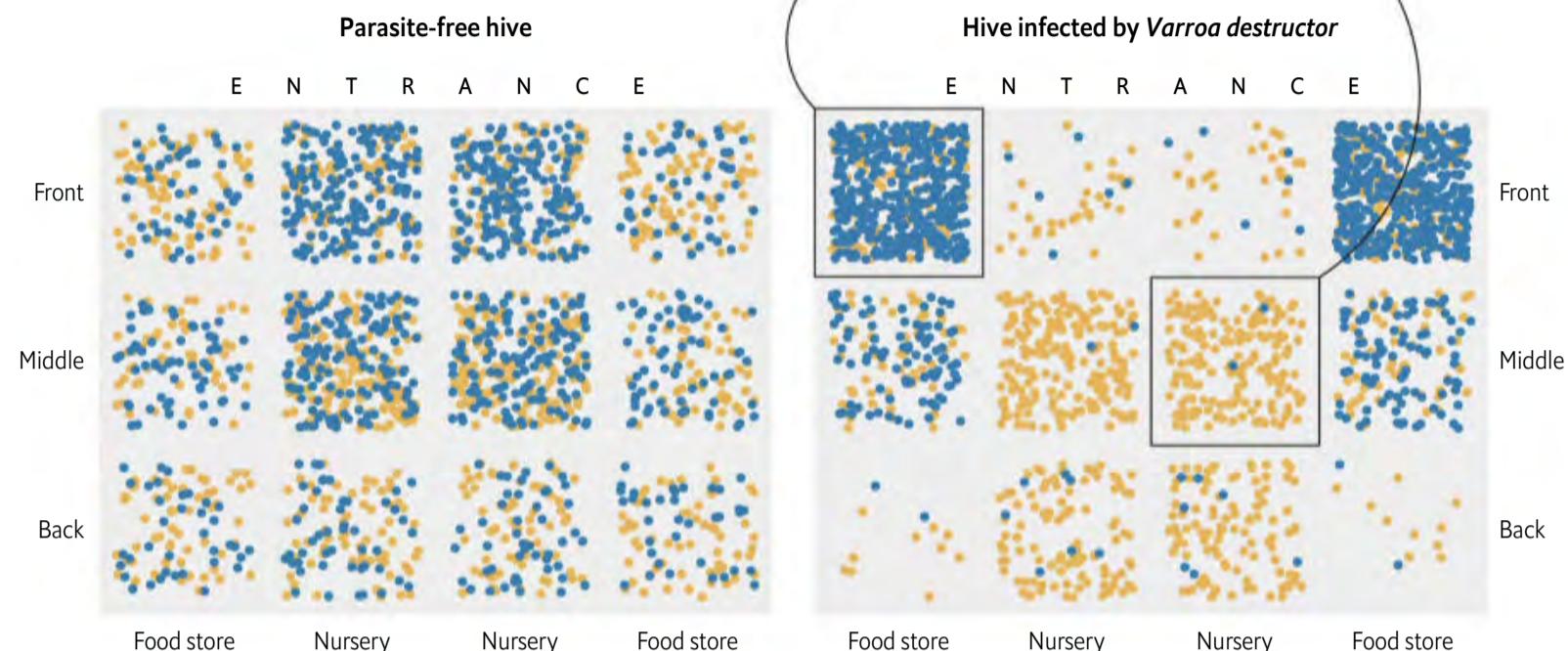
● Waggle dance used to communicate the position of food to other bees

● Allogrooming removes debris and parasites from another bee

● =0.1% of observations per behaviour

Forager bees, who can carry the mite into the hive, danced far from the vulnerable core

Bees concentrated allogrooming in the core, from which infected bees might emerge



Life cycle of the *Varroa destructor* mite

1 A female mite hitchhikes into the hive on the back of a forager bee

2 A bee takes the mite to a brood cell containing a bee larva, near the hive's core

3 After the cell is sealed, the mite lays eggs. The first is male, the rest are female

4 The young mites feed on the developing bee. Once mature they mate

5 Adult female mites leave the cell with the bee. The male mite dies



Source: "Honey bees increase social distancing when facing the ectoparasite *Varroa destructor*", by M. Pusceddu et al., *Science Advances*, 2021

Social distan-sting

Just like modern humans, honeybees avoid each other amid plagues

HUMANS HAVE used social distancing to fight infectious disease for centuries. In 1582 a health officer in Alghero, Sardinia, which was suffering an outbreak of bubonic plague, required residents to carry six-foot-long canes in public, and venture no closer to each other than its length.

Yet *Homo sapiens* is unlikely to have been the first species to keep apart for mutual protection. A recent study by Michelina Pusceddu of the University of Sassari, in Italy, and six colleagues found that honeybees in hives infected by parasites implement their own form of lockdowns. They achieve a degree of compliance that human public-health officials would envy.

Bees live in ordered communities that depend on social interactions. Their hives are split into sections. The periphery is

mainly used to store food, whereas the core contains a nursery made up of "brood cells", where larvae grow into adults. Individual bees also have well-defined roles. Queens lay eggs; drones fertilise queens; and young workers tend to look after the brood, before becoming foragers who leave the hive to search for food as they age.

Although the best-known threat to bees is the Asian giant hornet, which can swiftly decapitate all bees in a hive, vastly more bees succumb each year to the ominously named *Varroa destructor*. A parasitic mite, it attaches itself to bees' bodies and helps itself to their stored energy resources.

To spread, *Varroa* depends on contact between the hive's inner and outer parts. It enters a colony by hitchhiking on foragers, but needs to reach the nursery near the centre to reproduce. Once larvae in mite-infested cells emerge as young bees, they carry the newborn parasites with them throughout the hive, infecting other bees.

To determine how *Varroa* changes bees' behaviour, the authors set up six colonies, half of which were infected with the mite. They studied two common activities: the "waggle dance", which forager bees per-

form to communicate the site of a newly discovered food source, and "allogrooming", when bees clean debris or parasites (including mites) from each other's bodies.

The differences between the colonies were striking. In the *Varroa*-free group, waggle dances and allogrooming both occurred throughout the hive. By contrast, in infected colonies, most wagging occurred by the sides of the entrance, keeping potentially infected foragers far from brood cells. Conversely, allogrooming was concentrated in the centre of the hive, where parasite removal had the greatest impact.

Such changes probably come at a cost, just as lockdowns in human colonies (aka cities) do. Limiting where waggle dances are performed could reduce awareness of where to find food, and focusing allogrooming efforts in brood cells may worsen forager bees' hygiene. Nonetheless, natural selection appears to have favoured this trade-off. It might behove sceptics of lockdowns by humans to take note. ■

Correction A calculation in our article last week on false-negative covid-19 tests ("An Immensa cock-up", November 20th) used the wrong case-fatality rate. The correct estimated death toll is 100-250. Sorry.



The girl in red

Rossana Banti, agent for the Italian Partisans and Britain's SOE, died on October 4th, aged 96

HE LOVED that coat. It was the only one she had, made of thick smooth Casentino cloth, which some said was the best in Italy. Second, it was bright vermillion, as red as could be, bound to get her noticed and appreciated as she walked down the street. Red was her colour in all kinds of ways. The short form of Rossana was "Rossa", so that was her name among her friends. And her politics were red too, fiercely anti-fascist and of the left. Her approach wasn't intellectual, since she preferred actual parties to the intense philosophical debates some of her friends had. But then she was only a schoolgirl. She knew quite enough to have joined a group of young Communist Partisans in Rome to undermine, and fight if they could, the German occupation and the fascist regime of Benito Mussolini. All of them agreed it was the right thing and the only thing to do. Justice, solidarity, freedom! And joy.

That was where the red coat came in, on those chilly evenings in November and December 1942 when she cycled after school from Piazzale Clodio to Nomentura and then to Monte Sacro. She was part of a relay taking copies of *L'Unità*, the main Communist newspaper, now banned and underground, to a butcher who sent them on. No one would suspect her, she thought, a random girl on a bike in a nice eye-catching coat. But then, unhappily, someone did. The butcher was arrested and shot, and "the girl in the red coat" was now on the Gestapo's watch list. At that point she had to go into hiding and put her coat away.

On other relay missions she took weapons, though not without a dose of terrors. One was by bus over rough roads, where with every jolt she had to cling tighter to an enormous suitcase and try to keep it flat. The situation wasn't helped by her friend Maurizio, who was behaving as eager young men do once they are engaged. After one especially bad bump he shouted, "Rossa, mind those eggs!" Then they both burst out laughing. They were not engaged at all, just "doing the couple" to deflect suspicion, and the "eggs"

she was carrying, more or less carefully, were nitroglycerine explosives. "Too many boyfriends" was something the Gestapo's spies also noted down.

All her resistance work had a certain pattern to it. She tricked the enemy by appearing as a non-threatening, even silly young woman, because that was the role the fascist regime had long assigned to them. (How little imagination fascists had!) Women were fashion-plates, girlfriends, mothers, wives: ancillary to men. Most did not dream of taking part in politics or war, and she helped to add fire (sometimes too literally) to their rather helpless demonstrations when their men were taken away. Doing so made her a *ragazza terribile*, a terrible girl. But what did they expect from a general's daughter? She was as fervent as he was that Italy should be free. And when in June 1944, nine months after the Armistice between Italy and the Allies, she volunteered to work for Britain's Special Operations Executive (SOE), he let her go almost as soon as she asked him, telling her only: "Do your duty...as best you can."

At SOE, as a cadet ensign at their Operations HQ near Bari in the south, she coded and transmitted radio messages to agents dropped behind enemy lines in the north, which was still occupied. Through her they found out where their food and weapons were. She also translated from Italian to English, which she had been taught by her English nanny after her mother died. Her distance from actual fighting was a pain, and she took an unauthorised parachuting course in the hope she might be dropped herself. In the end, though, she had to be content with marrying a famously dashing agent—Giuliano Mattioli, aka Julian Matthew—who had been dropped to search for missing aircraft, raid German positions and help liberate Florence. Three days after their wedding, he plunged away to liberate Bergamo.

Yet it was also clear that the agents deeply valued her softer side. Some of them were younger than she was, and she was still a minor herself. Like a girlfriend she laughed with them, bubbly and glamorous even in her uniform. Before their missions some cried, and she comforted them. She checked the equipment, assuring them they had everything they needed. She would even ask them whether they had peed or not, as fussy as a mother.

Her British employers she found fun, but odd. On the long trip south, in a van at dawn through her devastated country, they made only two stops, both for tea. In the middle of all that mess, there was still time for proper ceremonial. And it happened again. Seventy years after her war-work, after long stints as a producer at both RAI, Italian state television, and the BBC, a friend who had been in the British army discovered that three medals existed, awarded by Britain but not yet delivered, for clandestine service in the war. And they were hers. In 2015 the War Medal 1939-45, the Victory Medal and the Italy Star were pinned to her plain grey suit.

She was honoured, but also amazed. For all those years, she had never talked about her war service. That job was done, Italy was free, and few people celebrated *il tricolore* on Liberation Day, April 25th, with more partying than she did. But she cared not a fig for decorating herself. She had done some good things as a girl, but so long ago! Now she was 90, for God's sake.

Besides, there was plenty still to do. Anti-Semitism was on the rise again, intolerable as that was. People in public office were exalting fascism. Children were not being taught the history they needed to resist these things. And only around a third of seats in the Constituent Assembly were held by women.

In Sorano in the Tuscan Maremma, where she had retired in her favourite rolling countryside with several horses and dogs, she had set up a *cenacolo rosso*, a group of left-wing intellectuals who met to debate the burning issues of the day. Quite a few were actors, and for them she started a theatre workshop focusing heavily on Dostoyevsky, that great lamenter of the human condition. Two months from her death she was still busy with that.

What of the red coat? She had burned it, she said. But in many ways, she had never taken it off. ■

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