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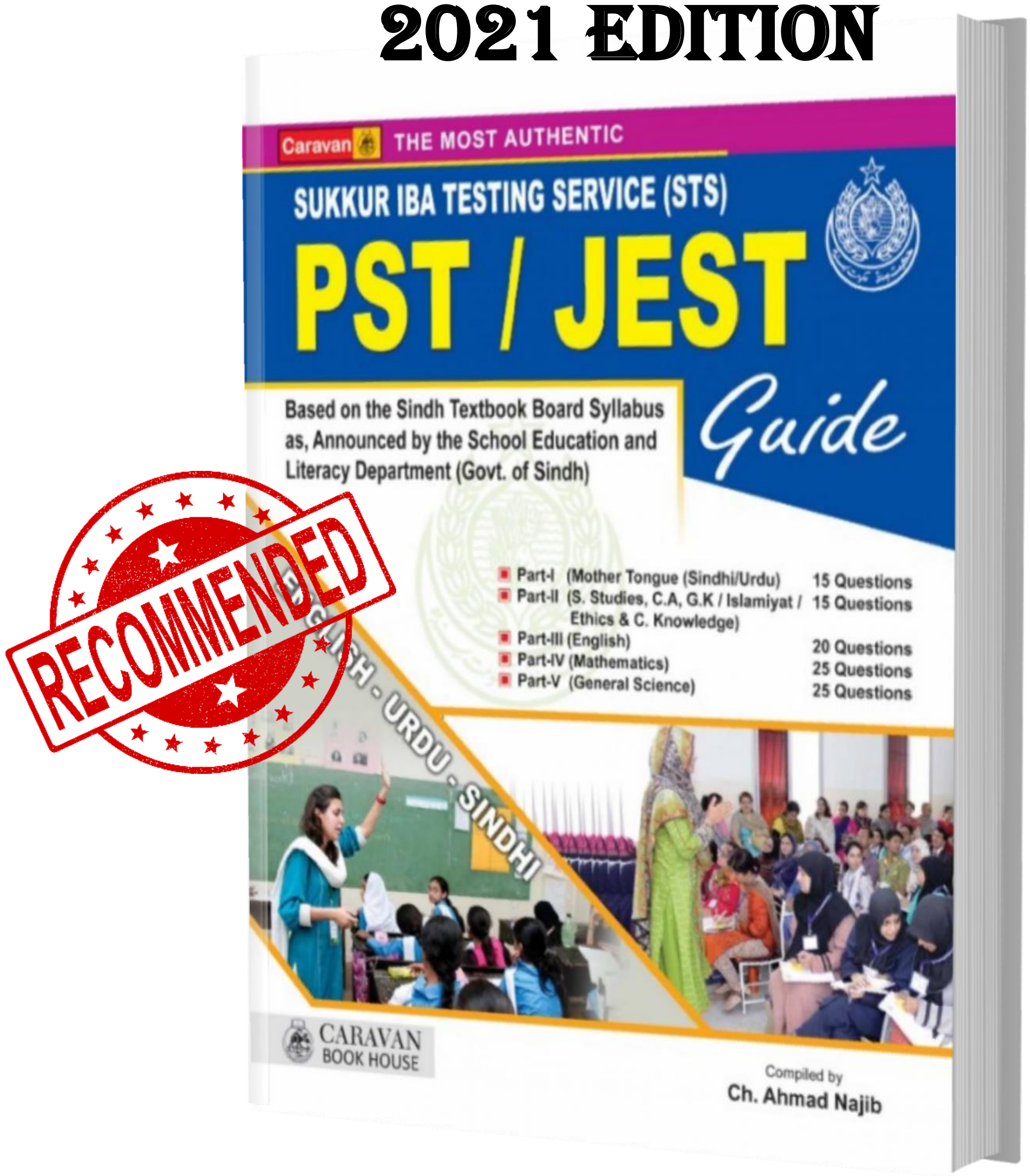

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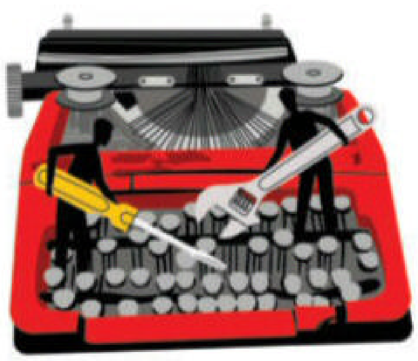

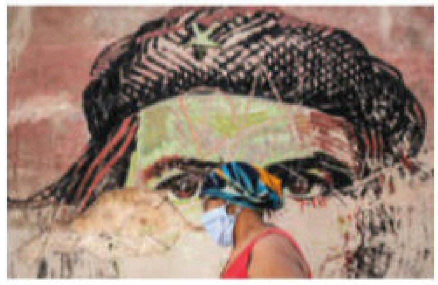

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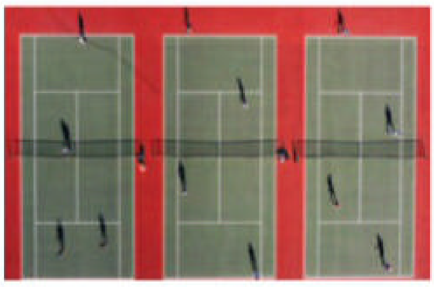

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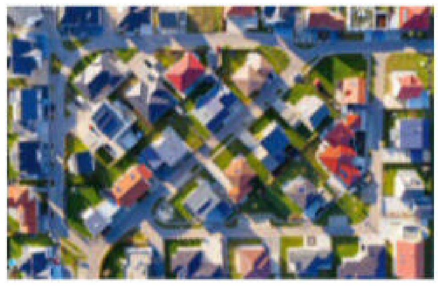

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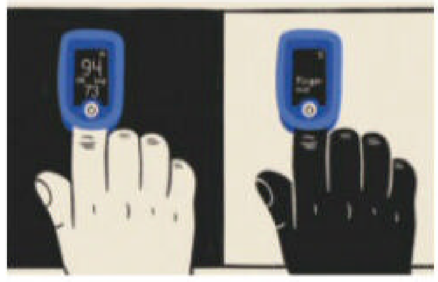

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Around 20 people were arrested in **Jordan** on charges of plotting against the crown. Prince Hamzah, a half-brother of the king and former heir apparent, was confined to a palace outside Amman. No evidence of an actual plot was shared by the authorities. Prince Hamzah has been a vocal critic of the government. From detention he released a video in which he assailed it for alleged corruption and repression, though he later pledged his loyalty to King Abdullah.

Israel's president gave Binyamin Netanyahu the first crack at forming a government. The prime minister's party won the most seats in an election last month, but his coalition is short of a majority.

An **Iranian cargo ship** anchored off Yemen was damaged by an explosion. Iran says the ship is a civilian one providing security for shipping; others believe Iran uses it for spying. Some reports say Israel was behind the attack.

More than 100 people were killed in clashes in **Ethiopia** along the borders of the country's Afar and Somali regions. Violence in the area has escalated in recent months. Tensions over internal boundaries have risen since November, when fighting broke out between the federal government and the ousted rulers of Tigray, a northern region.

Talks broke down between Egypt, Ethiopia and Sudan over a **new dam** in Ethiopia, along one of the tributaries of the Nile river. Egypt threatens to take action to "protect its water and its people". Ethiopia said it will continue filling the reservoir behind the dam.

Samia Suluhu Hassan, the new president of **Tanzania**, signalled a change in policy on covid-19, which is thought to have killed her predecessor, John Magufuli. Whereas he had refused to order the use of masks or other measures to contain the virus, Ms Hassan said her government will be guided by expert advice.

The BBC said its Beijing correspondent, John Sudworth, had moved to Taiwan following pressure and threats from the **Chinese** authorities. The broadcaster said it was proud of Mr Sudworth's reporting. A Chinese official denounced his coverage of Xinjiang and the outbreak of covid-19 in China.

Seven prominent pro-democracy campaigners in **Hong Kong** were convicted of unlawful assembly for their involvement in demonstrations in 2019. Among them were Jimmy Lai, a media tycoon, and Martin Lee, a lawyer and former politician.

North Korea announced that it would not send any athletes to the **Olympics**, which are due to start in Tokyo in July, to protect them from covid-19.

At least 50 people died when a crowded train collided with a truck in **Taiwan's** worst railway disaster in decades.

Australia and **New Zealand** announced that they would allow each other's citizens to travel between the two countries without vaccinations or tests for covid-19.

A second wave of covid-19 surged through **India**, which is recording more than 100,000 cases a day, the highest tally in the world. Bangladesh and Pakistan are also suffering.

Lawmakers in Arkansas overturned a veto by the Republican governor, Asa Hutchinson, of a bill that will ban the provision to people under 18 of drugs and surgery for **gender transition**. It is the first such bill to pass in the United States; half a dozen states are mulling similar ones.

Police shot and killed a man who rammed a car into a barricade at the Capitol in **Washington**. A policeman was killed. The suspect was a 25-year-old with an interest in the Nation of Islam, a black-nationalist group.

Almost 19,000 **unaccompanied migrant children** were taken into American custody at the border with Mexico in March, a monthly record. More than 170,000 migrants were apprehended in total, up by 70% from February.

In **Greenland's** snap election, Inuit Ataqatigiit (IA), an indigenous people's party, beat the Siumut party, which has ruled the Danish autonomous territory almost uninterrupted since 1979. IA said it would form a government and freeze the development of a big rare-earth mine, in which Australian and Chinese companies have stakes.

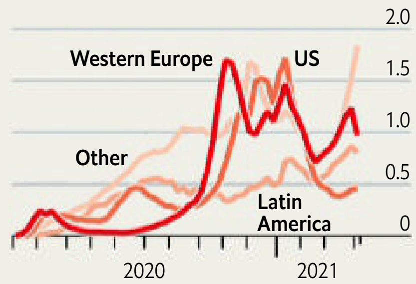
France entered a national lockdown for the third time, after a surge in covid-19 cases threatened to overwhelm hospitals in some parts of the country. All schools and non-essential shops will close for three weeks, and a nightly curfew is in force from 7pm to 6am. The country's vaccination programme, however, is starting to pick up. The likelihood of fresh national lockdowns also increased in **Germany** and **Italy**.

Britain's medical regulator advised that people under 30 should be given an alternative covid-19 vaccine to the **AstraZeneca** jab. It said evidence of a link with extremely rare cases of blood-clotting has strengthened, though more research is needed. The EU's regulator said blood clots should be listed as a very rare side effect of the jab. Both regulators reiterated that the benefits of vaccination outweigh any risks.

Coronavirus briefs

To 6am GMT April 8th 2021

Weekly confirmed cases by area, m



Vaccination doses

	Total '000	% of adults with 1st dose	2nd
Israel	10,154	95	87
Bhutan	470	92	0
UAE	8,660	66	42
Maldives	264	63	2
Britain	37,119	61	11
Chile	11,304	50	30
Malta	219	44	17
United States	168,592	44	24
Bahrain	856	41	24
Hungary	3,543	33	13

Sources: Johns Hopkins University CSSE; Our World in Data; United Nations

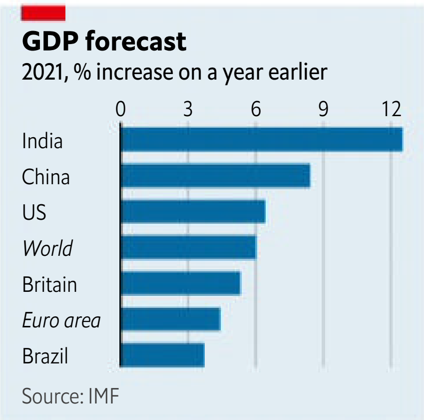
Brazil recorded over 4,000 deaths in a day. Jair Bolsonaro, the president, still opposes lockdowns; Brazil's vaccine programme lags behind others in Latin America.

The White House said that the government does not support **vaccine passports** because they intrude into the personal lives of Americans, and ruled out the possibility of a federal vaccine database. Such measures would be used unfairly, it said. Britain and the EU, by contrast, are working on plans to certify people who have been vaccinated.

California will drop most of its pandemic restrictions on June 15th, if vaccines remain available and hospitalisations remain stable.

The **Italian** government decreed that all health workers, including pharmacists, must take the vaccine, the first country to issue such an order. Those who do not could be suspended without pay.

→ *For our latest coverage of the virus please visit economist.com/coronavirus or download the Economist app.*



The IMF said that it now thinks the **world economy** shrank by 3.3% last year, less than it had feared, mainly because of the huge stimulus packages that propped up many economies and without which the contraction may have been three times as great. It increased its forecast for growth this year to 6%, as rich countries rebound from the pandemic with "smaller scars" than from the financial crisis of 2007-09. But the IMF warned that poorer countries, especially those that rely on informal work and tourism, will take longer to recover, leading to rising global inequality.

The new **infrastructure spending** plan unveiled by Joe Biden will fuel the American economy. Among the many commitments are $621bn on transport—such as roads, bridges, public transport, but also electric cars—$400bn for care homes and $100m for modernising the electric grid. Mr Biden's plan faces a rockier road through Congress than the $1.9trn covid-relief package, as even some Democrats are questioning the additional burden on the national debt.

The White House wants to pay for all its extra spending mostly through higher **corporate taxes**, which it hopes will raise $2.5trn in revenue over 15 years. It will raise the domestic rate of tax and increase the levy on foreign profits. The administration is also pushing hard, through the OECD, for a global minimum corporate tax.

OPEC and Russia agreed to increase **oil production** gradually from May for three months. Saudi Arabia had resisted the move, arguing that prices are still volatile.

A grilling in the markets

Retail investors began buying and selling shares in **Deliveroo**, a week after the food-delivery company's IPO was judged to have been a disaster; the stock lost a quarter of its value on the first day of trading in London. After an unappetising start, small investors looking for a slice of Deliveroo might eventually boost its share price.

Credit Suisse said it lost $4.7bn from its dealings with Archegos, a collapsed investment fund, a bigger amount than had been thought. The Swiss bank's chief risk officer and head of investment banking are leaving; it is also cutting its dividend and suspending share buy-backs. Credit Suisse is still assessing the damage from its exposure to the implosion of Greensill, a financing firm.

A decade-long legal battle reached its conclusion when America's Supreme Court ruled that **Google** had been legally entitled to use bits of **Oracle's** Java code when it developed its Android platform. The decision found that application programming interfaces (APIs), which let developers access other code, are significantly different from other computer programs. The wider industry greeted the ruling with relief, since it appears to give legal sanction to a practice that is routine.

LG decided to pull out of the phone business and focus on connected devices for smart homes, components for electric vehicles and other products. The South Korean company was the fourth-biggest seller of mobile phones in 2005, but never broke through in smartphones.

Toshiba confirmed that it had received a buy-out offer, reportedly worth $20bn, from CVC, a private-equity firm. The Japanese conglomerate has been beset by accounting scandals and a disastrous acquisition. Shareholders recently forced it to set up an independent investigation into its alleged attempts at silencing activist investors.

It was a busy week for acquisitions involving Japanese companies, as **Hitachi** sealed a deal to buy **GlobalLogic**, a software-engineering company based in Silicon Valley, for $9.6bn. The Japanese industrial group said the takeover will quicken its transformation from being a supplier of hardware to a provider of digital solutions, which also involves selling off some subsidiaries such as its metals business.

Keeping it in the air

The French government said it would provide €4bn ($4.7bn) in additional funding to **Air France** to ease the troubled airline's heavy debt load. The recapitalisation plan was signed off by Air France-KLM's board; the Dutch government is still in discussions with the EU about similar measures for KLM. The French government, the group's biggest investor, will increase its stake to just under 30%.

Hollywood breathed a sigh of relief upon the release of **"Godzilla vs Kong"**, a beast of a hit that raked in $48.5m over its first five days in America, the biggest box-office draw since the start of the covid crisis. That's still some way behind cinema's pre-pandemic golden age: "Sonic the Hedgehog" earned $164m over its opening weekend in February 2020. "Godzilla vs Kong" was simultaneously streamed on HBO Max, but fans still put their bums on cinema seats.

Riding high

In the rich world the era of sharp-edged capitalism is giving way to a golden age for labour

In the popular imagination the past four decades were wonderful for the owners of capital and miserable for labour. The rich world's workers endured competition from trade, relentless technological change, more unequal wages and tepid recoveries from recessions. Investors and companies enjoyed expanding global markets, liberalised finance and low corporate taxes. Even before covid-19, this caricature of broken labour markets was mistaken. Today, as the economy emerges from the pandemic, a reversal of the primacy of capital over labour beckons—and it will come sooner than you think.

It might seem premature to predict a wonderful world of work only a year on from a labour-market catastrophe. But America is showing how rapidly jobs can come back as the virus recedes. In the spring of 2020 the country's unemployment rate was nearly 15%. Now it is already just 6% after a year containing five of the ten best months for hiring in history. Public perceptions of how easy it is to find a job have already recovered to levels that it took nearly a decade to reach after the global financial crisis. And even in Europe, which is suffering a third wave of infections, the labour market is beating forecasts as economies adapt to virus-containment measures.

As the labour market recovers, two deeper shifts are unfolding, in politics and in technology. Start with the political environment, which is becoming friendlier to workers than it has been for decades. An early sign of change was the surge in minimum wages during the previous economic cycle. Relative to average wages, they rose by more than a quarter in the OECD, a club of mostly rich countries, weighted by population. Now governments and institutions are falling over themselves to chum up to workers. President Joe Biden hopes to use his planned infrastructure splurge to promote unionisation and to pay generous wages (see Leader). Central banks are worrying ever more about jobs and less about inflation. It was not a prank when on April 1st the IMF, once famed for its austerity, floated the idea of one-off solidarity taxes on the rich and on companies. In his letter to shareholders this week, Jamie Dimon, the boss of JPMorgan Chase, Wall Street's biggest firm, called for higher wages—and he wasn't talking about CEOs.

The second big shift in the labour market is technological. In the pandemic doomsayers have doubled down on predictions of long-term labour-market woes. Robots will create armies of the idle, precarious jobs are displacing stable ones and even prosperous workers chained to emails and screens know in their hearts that their "bullshit jobs" are pointless. But as our special report this week explains, these ideas were never supported by evidence and do not look as if they are about to be now. In 2019 nearly two-thirds of Americans said they were completely satisfied with their job security, up from less than half in 1999; a lower share of German workers felt insecure than in the mid-2000s. Countries with the most automation, like Japan, enjoy some of the lowest unemployment.

The long-term future of work has changed for the better this year because it has become more digitised. Remote working is easing the bottleneck of expensive housing in thriving cities (see Leader). Home-workers report higher levels of happiness and productivity. At the end of 2020 American firms spent 25% more on computers, in real terms, than a year earlier. Even pessimists like Robert Gordon, an economist, expect this burst of technological investment to bring about faster productivity growth, which means higher wages.

A golden age for workers is welcome. It is right to judge economic progress by the purchasing power of median wages, not profits or share prices. Jobs booms like those in most rich countries in 2019 bring huge benefits, by incentivising the training and good treatment of workers, as well as by reducing racial and gender inequalities. Yet governments can help determine the extent of these gains. Their goal should be to raise workers' living standards through higher productivity, rather than focusing on dividing the spoils through regulation and protection.

One task is to redefine workers' rights for an era of flexibility and service work. The size and novelty of the gig economy is often overstated; taxis and food deliveries existed before Uber and DoorDash. But service-sector employment, especially caregiving, will grow as populations age. There is no place for the snobbish idea that such jobs cannot be fulfilling, nor the related instinct that experimental models of work should be regulated out of existence. Instead governments should modernise the guardrails provided by employment law, offer a universal safety-net and ensure that the economy is strong. If they do, workers will have the confidence and bargaining power to experiment and negotiate for themselves.

Productivity can also be unleashed by broadening access to opportunities. Many rich-world labour markets are divided between the high- and low-skilled. That is tolerable so long as anyone can climb the ladder. Governments have a responsibility to ensure meritocratic access to education and sufficient opportunities for retraining. They should tear down barriers to entry such as needless occupational licensing rules—the legal and medical professions, for example, should not be allowed to pull up the drawbridge to outsiders. It should be easy to experiment with new digital and cross-border business models.

But helping workers by boosting productivity must not be confused with self-defeating attempts to protect them—as happened the last time they had the upper hand, in the 1970s. Repatriating supply chains, as Mr Biden would, will inhibit competition and grind down living standards. Cranking up corporate taxes too far will reduce the incentive for firms to invest (see Finance section). For central banks to lose their inflation-fighting credibility would be a disaster. Just ask the workers who bore the brunt of efforts to tame prices in the 1980s.

The wonderful world of work

People tend to be sentimental about how wonderful work used to be, grumpy about how it is and fearful of what it will become. In fact, working life has improved over the ages—and the promise today is as bright as it ever was. Time to get on the ride. ■

Jordan

Battle royal

A feud between prince and king is but one of Jordan's problems

DON'T BE FOOLED by its nickname. The Hashemite Kingdom of Boredom, aka Jordan, has had its share of palace intrigue. After surviving uprisings and assassination attempts, the late King Hussein used his dying breaths to remove his brother, Hassan, from the line of succession. That made way for Abdullah, Hussein's son, who has just faced down a plot against the crown, or so the authorities claim. Perhaps 20 people were arrested. Prince Hamzah, a half-brother of the king and former heir apparent, was confined to a palace outside Amman, the capital.

The government has provided no evidence of a plot. A pledge of loyalty from prince to king has calmed things for the time being (see Middle East & Africa section). But what of Prince Hamzah's criticisms, declaimed on video just days before? "I am not the person responsible for the breakdown in governance, the corruption and for the incompetence that has been prevalent in our governing structure for the last 15 to 20 years and has been getting worse," he said.

King Abdullah (pictured) has long tried to stifle such dissent, most recently using covid-19 as an excuse to bar demonstrations. But Prince Hamzah and other critics will not go away. They are giving voice to frustrations that many Jordanians feel. The country faces big problems, which the king must confront.

Underlying them all is the economy, which was sluggish before the pandemic and shrank by 5% last year. A quarter of the workforce is unemployed. With little oil or gas, nor even much water, Jordan relies on aid from America and the Gulf states, which value its stability in a volatile region. But some of that cash is drying up as countries face their own problems. And a chunk of it has gone to support the more than 600,000 Syrian refugees who have taken shelter in Jordan. Jordanians try to find work in the Gulf, but fewer jobs are on offer. Remittances, which are crucial to the Jordanian economy, have been plummeting.

The kingdom's reform plans make all the right noises about improving education, cutting the bloated public sector and making investment easier. But Jordanians have lost faith in their leaders, who are seen as corrupt and incompetent. Parliament is where politicians collect patronage—it is good for little else. Citizens say they cannot get jobs and basic services without resorting to *wasta* (personal connections) or bribes. Before the pandemic 45% of Jordanians said they were thinking about leaving the country, mostly for economic reasons.

The king acts as if he were above it all. When seven people died last month after a malfunction at a government hospital that was treating covid-19 patients, he sacked the health minister and complained about corruption. But King Abdullah chooses Jordan's prime ministers—and he has picked 13 of them, since he ascended the throne in 1999. He has sidelined the opposition, from nettlesome Islamists to pesky unions. Elections are rigged against those inclined to criticise the government. The king sits atop the rotten system, dispensing cash to businessmen and tribal leaders—not to mention family and friends—in return for their support.

King Abdullah is in charge, so he is the key to change. Yet change is unlikely unless he gives up some of his power. Jordan needs a parliament that is more responsive and representative—not the one elected last year by a fraction of the population and controlled by government loyalists. The government, in turn, ought to be derived from a majority in parliament. Politicians should feel pressure to be more transparent and less corrupt. The king is loth to loosen his grip. But if he doesn't start responding to critics from within, like Prince Hamzah, he may soon face more hostile challenges to his reign. ■

America and climate change

At last, a serious effort

Two cheers for the president's ambitious climate plan

THE PLAN that President Joe Biden unveiled in Pittsburgh on March 31st proposes over $2trn of spending on jobs and infrastructure. However, at the heart of the American Jobs Plan is action to combat climate change (see United States section). It bristles with support for electric vehicles and renewable energy, as well as proposals for research and sorely needed large government-funded demonstration projects for potentially crucial technologies. Fans of transmission lines are well served; so are railway enthusiasts.

A highly diverse range of spending commitments often stems from a lack of focus and an excessive attention to special interests. Not so this time. Eliminating the vast majority of America's greenhouse-gas emissions is a massive problem against which the country's leaders have failed to make legislative progress for far too long. A sincere attempt to reverse that failure needs to reflect the magnitude of the task, the range of the challenges and the lateness of the hour. The ambition, breadth and generosity of Mr Biden's plan therefore count in its favour. It would see about $1trn over eight years spent on climate-related projects, or about 0.6% of GDP a year. That is, if anything, a little on the low side of most estimates for the costs of rethinking and largely recreating an industrial civilisation. But if the public investments spur private ones, as they should, it is in the right ballpark.

This is not to say Mr Biden's proposals are ideal. They are let down by his devotion to the notion that the new jobs should, ▸▸

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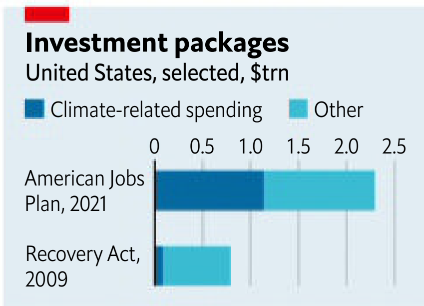
whenever possible, be union jobs, that all the ships bringing in the raw materials should be American-owned and registered, and that the new supply chains created should curl themselves up neatly within America's borders. Those things add to the plan's political appeal for Mr Biden's supporters, but they have nothing to do with climate change. Worse, they will increase the costs of a given cut in emissions and, if they block the flow of technology, could even become a source of deep frustration.

For all that, the plan's greatest disappointment lies not in its content but in its likely fate. The government is right to support the choices people and industries may make to lower emissions. But it also needs the means to force some of those choices on them.

The stick with which Mr Biden has chosen to apply this decarbonising pressure is an energy-efficiency and clean-electricity standard. Perhaps the administration can finesse matters so that this standard counts as budgetary and can therefore pass the Senate on a simple majority vote. More likely, Senate rules will require it to win a supermajority, which involves the support of at least ten Republican senators—an almost insuperable hurdle.



A far preferable stick, as this newspaper has long argued, would be a price on carbon that applies to much of the economy and rises over time. Such a measure would reveal the costs of different technologies and apply to far more industrial processes than a clean-electricity standard ever could. It could also help pay for some of the costs involved. And because it is unarguably budgetary it would stand a much better chance of getting through the Senate without the need for a supermajority.

Mr Biden has chosen to forgo that option. The prospect of a new tax, especially one that could prove regressive, is a hard political sell, and some of the opposition is within the president's own party. Senator Joe Manchin of coal-producing West Virginia has spoken out against a carbon tax, and to get a bill through the Senate even with just a simple majority Mr Biden needs Mr Manchin on his side. What is more, if a carbon tax were integral to such a bill and had to be cut out for it to pass, the loss of revenues might force its spending ambitions to be curtailed.

Republican legislators who are committed to climate action, fiscal responsibility, effective legislation and standing up to their base have thus been given a remarkable opportunity: they could add a carbon tax to Mr Biden's proposals. There are many enthusiasts for carbon taxes on the political right who would welcome that, and who would laud such legislators to the skies. Unfortunately, the prospect of praise will not on its own bring such paragons into being.

Even without sticks, Mr Biden's carrots will do some good. But they will be hard put to achieve the complete electricity decarbonisation by 2035 that the clean-electricity standard might manage, let alone the broader push towards emissions reduction a proper carbon tax could bring about. The cost of that lost opportunity will be high. But not so high as the one that has been imposed on the country, and the world, by the politicians who have for decades failed to take action on the defining global and human issue of the age. ■

House prices

Don't stop me now

House prices are going ballistic. Policymakers need to keep their heads

One obsession unites the rich world: housing. In the past year billions of people have been cooped up inside their homes for hours on end. As restrictions have eased, house prices have started to go through the roof. In America prices increased by 11% in the year to January, their fastest pace in 15 years. In New Zealand prices are up by 22%. Among the 25 countries that *The Economist* tracks, real house prices rose by 5% on average in the latest 12-month period, the quickest in over a decade.

Home values, like the price of other assets, have been boosted by low interest rates and fiscal stimulus. Many households have spare cash sloshing around—savings rates have increased by more than half in the rich world—and borrowing has rarely been cheaper. Separately, covid-19 has caused a shift in demand away from big cities to housing in less crowded places. The expectation that commuting may no longer be daily has caused house prices in suburban locations to rise faster than in cities—reversing a decade-long trend (see Finance section).

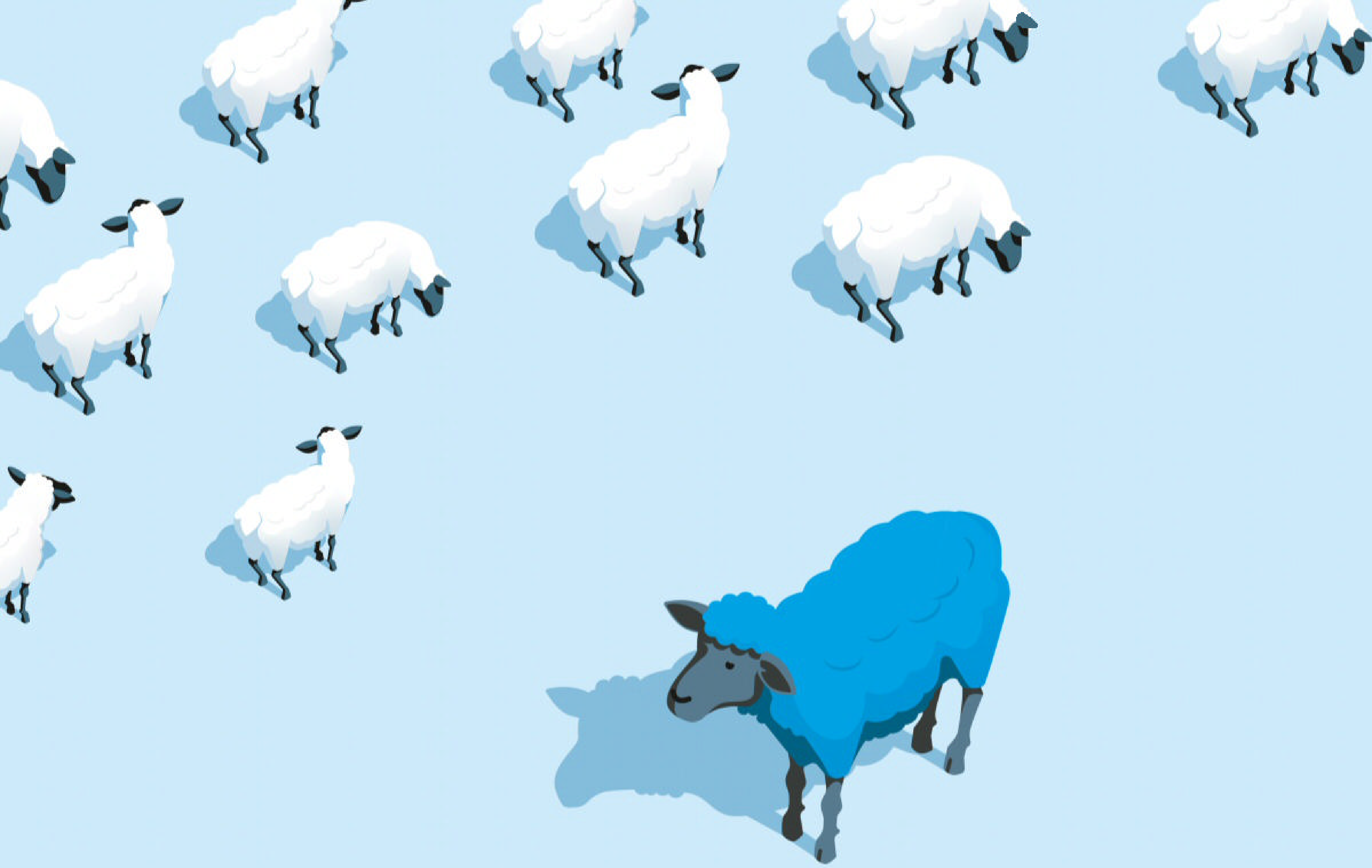
Governments and central banks, haunted by the financial crisis of 2007-09 and aware of public unease about expensive housing, are worrying about exuberance. In New Zealand the finance minister has asked the central bank to "consider the impact on housing" in its monetary-policy decisions. Central bankers from Copenhagen to Ottawa have expressed concern at the pace of housing inflation. In recent years many municipal governments have implemented rent controls as knee-jerk responses to rising prices. Spain may follow at the national level. As attention turns from controlling the virus to the post-pandemic world, the pressure to step in is likely to grow.

Policymakers in rich countries should resist. One reason is that house prices do not look as if they threaten financial stability. Although some people are wild for new properties, overall household borrowing remains restrained in the rich world. In contrast to 15 years ago, banks' balance-sheets today have solid foundations. If house prices in America fell by one-quarter, its 33 biggest banks would still have 50% more capital than they had going into the crisis of 2007-09.

Key money

Neither is there much evidence that lending standards are slipping, either among banks or among the non-bank lenders that make up a growing share of mortgage origination in America. Underwriting standards remain tight, with lenders keenest on borrowers who have good credit histories. In Britain new lending at high loan-to-income ratios is about one-third below the limit imposed by the central bank.

Another reason to resist intervention is that housing markets are still being distorted by the effect of lockdowns. The price rises in the past year reflect a relatively small number of transac-



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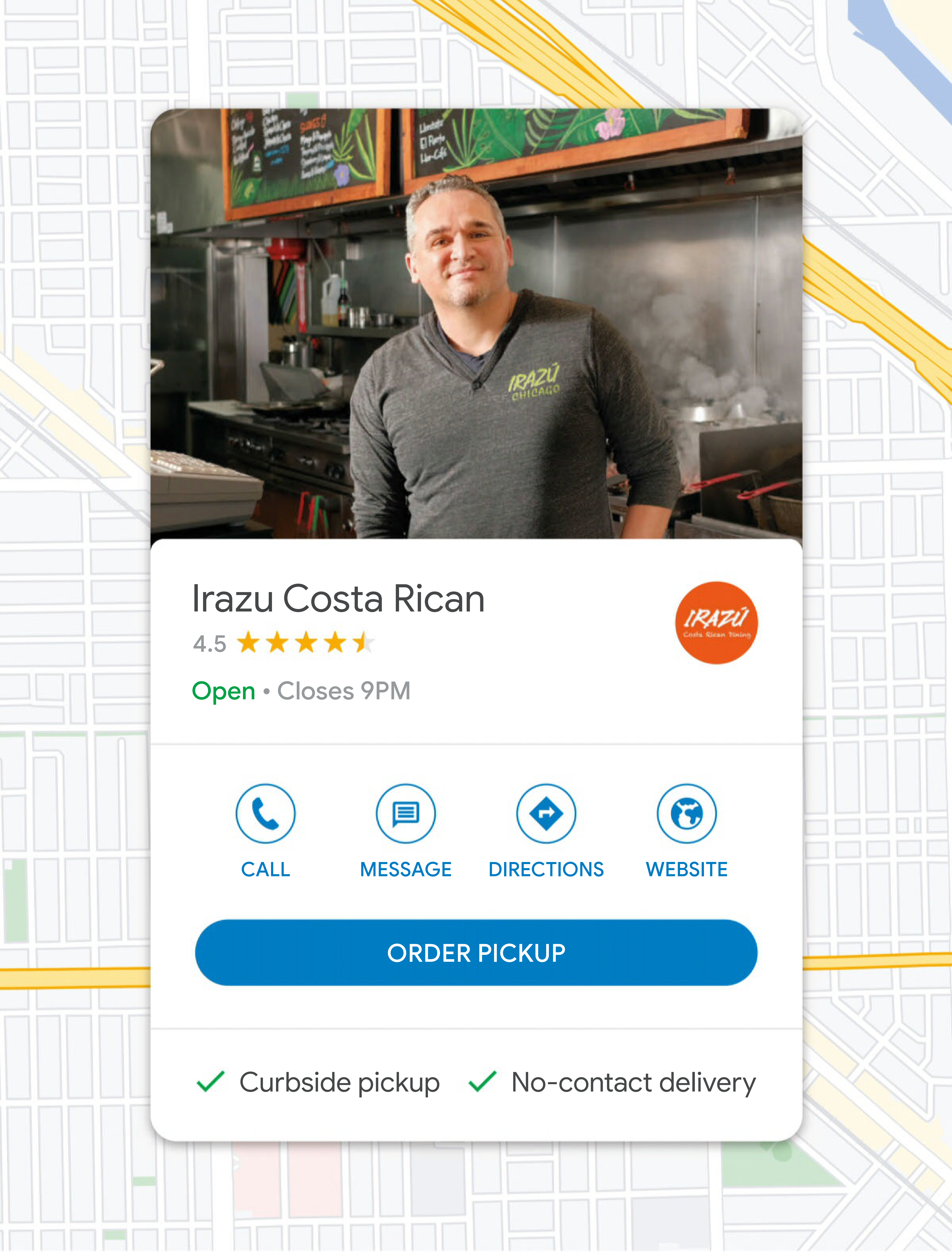
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tions, as the volume of activity in the housing market has dropped—it is hard to invite scores of potential buyers to snoop around your bedroom and check your plumbing during a lockdown. In Britain only 3.6% of the stock of homes changed hands last year compared with 6.5% in 2006.

Prices have leapt in part because supply is low. However, the ending of mortgage-forbearance programmes has deferred some sales by those struggling to pay their mortgage. The increase in supply should, our own model suggests, help cool prices (see Graphic detail). The rate of new construction in America and Britain looks solid which will help, too. If demand does end up shifting permanently to less-crowded places, the pace of housebuilding may even pick up. It is easier to build new properties away from America's coastal cities, with their elaborate regulations and limited free space (see United States section).

Instead of being trigger-happy with rent control and other regulations, governments should expend more energy on tackling the housing market's long-term problems. Top of the list is phasing out tax breaks for homeownership. Mortgage-interest deductions are a windfall to the well-off that does not boost homeownership. Despite recent reforms, America's tax perks will still cost the Treasury $650bn over the next decade. Governments should liberalise planning rules and support new developments by providing better transport infrastructure. The strength of the property market in the pandemic confounded early expectations of doom and gloom. Even so, the laws of supply and demand dictate that housing will be cheaper if more homes are built. ■

Design bias

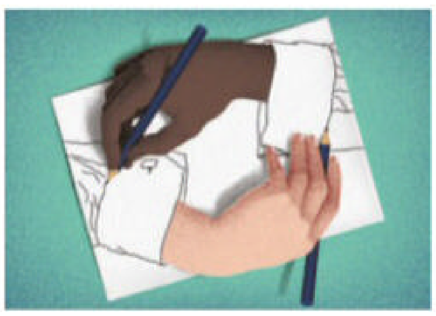
Working in the dark

The world is designed around white men. They share it with everyone else

Some things, you might think, are obvious. For example, if you design a device which shines light through someone's fingertip to measure the oxygen level of their blood, then the colour of the skin through which that light is shining should be a factor when the device is calibrated.

But no. Research suggests that, with honourable exceptions, pulse oximeters, the machines which do this, overestimate oxygen levels three times more frequently (12% of the time) in people with black skin rather than white. When this informs decisions on whom to admit to hospital during a pandemic, more black than white patients are sent home on the mistaken conclusion that their blood-oxygen levels are within a safe range. This could have fatal consequences (see Science section).

The pulse oximeter is only the latest example of an approach to design which fails to recognise that human beings are different from one another. Other recent medical cases include an algorithm that gave white patients in America priority over those from racial minorities, and the discovery that implants such as prosthetic hips and cardiac pacemakers cause problems more often in women than in men.



Beyond medicine, there are many examples of this phenomenon in information technology: systems that recognise white faces but not black ones; legal software which recommends harsher sentences for black criminals than white; voice-activated programs that work better for men than women. Even mundane things like car seat-belts have often been designed with men in mind rather than women.

The origin of such design bias is understandable, if not forgivable. In the West, which is still the source of most innovation, engineers have tended to be white and male. So have medical researchers. That leads to groupthink, quite possibly unconscious, in both inputs and in outputs.

Input bias is particularly responsible for the IT cock-ups. Much of what is commonly called artificial intelligence is actually machine learning. As with any learning, the syllabus determines the outcome. Train software on white faces or men's voices, and you will create a system that is focused on handling them well. More subtle biases are also in play, though. The faulty medical algorithm used prior medical spending as a proxy for current need. But black Americans spend less on health care than whites, so it discriminated against them. Sentencing software may similarly conflate poor social circumstances with the propensity to reoffend.

Input bias is also a problem in medicine. Despite decades of rules on the matter, clinical trials are still overloaded with white men. As far as sex bias is concerned, trial designers do have half a point. If a female participant became pregnant and the treatment under test harmed her baby, that would be tragic. But there is no excuse for failing to make trials big enough to detect statistical differences between relevant groups.

Output bias is more intriguing. In a well-ordered market, competition should introduce diversity quite fast. In the past, women and non-white people may have lacked purchasing power, but that is surely no longer so. This, however, assumes that they are the customer when frequently they are not. Look to those who buy medical equipment, and you may see a mix that is more white and male than the population in hospital wards and doctors' waiting rooms. Neither are face-recognition systems or sentencing software bought by those who suffer because of their failures.

Most consumer-led industries excel at generating choice by segmenting markets, so competition will probably sort things out. In other areas, though, boots may need to be applied to backsides. Regulators should, for example, factor in diversity when assessing clinical trials.

In both cases, however, it would behove firms to build diversity into their designs from the very outset. This means including women and non-white individuals in design teams. Eliminating design bias is not just about equality or doing the right thing, although all of these are important. It is also about creating products that meet the needs of women and the vast, non-white majority of the world's population. It is one of those welcome areas where the best path is not just the right one, but often the profitable one, too. ■

Director

EDHEC Risk Climate Impact Institute (ERCII)

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EDHEC-RISK
Climate Impact Institute

EDHEC seeks a Director for its new Climate Finance Institute

EDHEC, one of the leading European business schools, recognised for the quality of its research in finance, is recruiting a Director for its new climate finance research institute, the EDHEC Risk Climate Impact Institute (ERCII).

EDHEC's ambition is to make the EDHEC Risk Climate Impact Institute an international centre of reference in the area of fundamental and applied research on measuring the impact of climate change on asset prices and on the financial industry's participation in mitigating climate change.

Drawing on the reputation that EDHEC Risk Institute has built up over the past 20 years, the EDHEC Risk Climate Impact Institute intends to develop its activities in close cooperation with the investment industry.

Responsibilities and missions

In close cooperation with ERCII's Scientific Director, the institute's Director will manage the institute, which has been provided with a budget of 25 million euros for the first five years. The Director will participate in building a team of researchers and development support staff of around 15 people.

The director will have direct responsibility for the implementation of the institute's outreach, whether it involves organising presentation events and promoting the research to the industry or scientific cooperation with the industry.

A climate-investing specialist, the institute's director will have direct responsibility for the research & development focus on the financial industry's participation in mitigating the risk of climate change.

With very good knowledge of the industry, the director will develop and coordinate industry relationships, whether to fund research initiatives or implement joint research ventures.

A good communicator, the ERCII Director will be the institute's spokesperson and its institutional representative.

Profile

This position is reserved for a high-level professional who has exercised research responsibilities in the area of climate finance for at least five years and has more than ten years of professional experience in the finance sector.

Ideally a PhD holder, the Director will have dual expertise on both technological and financial matters relating to climate change.

Apart from their scientific qualities, the Director will need to have genuine project leader and communication qualities to fully cover the representation and development of the institute.

The institute's working language is English, so the Director will need to be bilingual if their first language is not English.

Location

The institute will have staff on EDHEC's campuses in London, Paris and Nice, so it is entirely possible for the director to exercise their responsibilities from one of these locations.

The director is expected to be highly geographically mobile in carrying out their missions.

Remuneration

The remuneration will be in line with the institute's ambitions and EDHEC implements an active talent recognition and management policy by associating its talent with the success of the initiatives that they develop.

Sanctions on China

There is some truth to your view that it may not be possible to penalise the Chinese Communist Party out of power ("Dealing with China", March 20th). The West's approach, typified by the latest round of EU sanctions, which target just four individuals and one entity, is founded on an inversion of Theodore Roosevelt's maxim, namely to speak loudly but carry no stick at all.

Ultimately, the Chinese pressure point lies as much in the West as it does in Asia. We do already have quite the stick available. Missing from the debate is the recognition that Britain's Modern Day Slavery Act, unmatched by other Western powers, provides both the reach and the punishments to tackle the enormity of human-rights abuses in China and have a real effect on its industry in a way sanctions arguably do not. Imitation is the sincerest form of flattery. If the Western alliance collectively adopted similar measures, it could prove to be the sharpest form of persuasion, too.

LEIGH HANSSON
Partner
Reed Smith
London

Given the impossibility of reversing the extinction of political democracy in Hong Kong, might there be hope for the future integrity of its financial and business community in developing a separate financial regime, along the lines of the Dubai International Financial Centre? Established on the basis of English commercial law, this has evolved, over the past 15 years, into a widely respected jurisdiction for international dispute resolution, effectively ring-fenced from the domestic law of the emirate.

DAVID MONTAGU-SMITH
London

Now we are told that China seeks global domination. But it is only America that terrifyingly combines being armed to the teeth with a belief that it is ordained to impose its values on the world. China lacks such messianic zeal. America's pre-eminence can no longer be taken for granted. A waning hegemon can be dangerous.

YUGO KOVACH
Winterborne Houghton, Dorset

A Mickey Mouse operation

Regarding the effort to free the stranded ship in the Suez canal ("Chokehold", March 27th), one wonders if the engineers were aware of the method whereby Donald Duck lifted a sunken yacht by filling it with ping-pong balls? It was illustrated in a daily paper at one time.

CHARLES FARKAS
Chappaqua, New York

Bangladesh's deadly industry

A blithe reference to governments in Bangladesh boosting economic growth "mainly by getting out of the way" and simplifying labour laws conceals the grim reality for the country's garment workers ("From rags to stitches", March 27th). A failure to regulate led to the deaths of 1,000 workers and injuries to thousands when the Rana Plaza garment factory collapsed in 2013. Since then the government has resisted reform, and left it to international unions, NGOs and some international clothing brands to try to ensure that workers come home alive at the end of the day.

Half a million employees in export-processing zones are denied the right to join a union to get decent pay and safe work. Police, acting on behalf of factory owners, many of whom hold seats in parliament, are notorious for using violence against striking workers and the mass use of criminal charges to stop workers exercising their rights. Hundreds have been sacked in recent years just for protesting for better pay. And sexual harassment is rife in the industry. We rank Bangladesh as one of the world's worst countries for workers' rights in our 2020 Global Rights Index.

We all want the garment industry to recover from the brutal cuts imposed at the start of the pandemic, but workers have to get a fair share of the pie and not risk death or harassment at work.

SHARAN BURROW
General secretary
International Trade Union Confederation
Brussels

The more the better

I take issue with your notion that Dutch politics is "absurdly complicated" because of the high number of political parties that sit in parliament ("Suddenly Sigrid", March 20th). Surely you are not making a case for a two-party system, after Corbynism nearly destroyed Labour in Britain, and Trumpism even more convincingly did so to the Republican Party in America?

Reducing the number of parties in the Dutch parliament by applying a 5% minimum threshold of the vote at elections would still leave at least eight parties. And then what? Forging coalitions would not be any easier. Compared with other European countries, Dutch voter turnout and confidence in national politics are high, and governance is generally stable. And thanks to the swirl of smaller parties coming and going, political trends become apparent much sooner here than in other countries.

Absurdly complicated? Sensibly dynamic is a more fitting description.

MICHAËL KOLK
Bussum, Netherlands

War on waste

Bartleby's take on getting rid of useless rules and regulations (March 13th) reminded me of a programme our team developed in the office of America's secretary of defence during the 1990s. We put together a plan that allowed the commanders of military installations to request relief from regulations that had hindered their ability to manage, with some success.

An air force captain told us that burdensome travel regulations (particularly those limiting expenses for meals) were costing a lot of money to audit. In those days, $3bn were spent auditing $8bn in expenses. The new rules prevented routine perjury. No one cared whether people on travel for education or training dined at the Ritz and slept in the park, or slept in the Ritz and ate a sandwich in the park. Their command would determine whether the overall training paid off.

And the sergeant of a motor pool stopped the department from buying boxes of manuals with each vehicle when only one was needed per garage. He also advised against paying Chrysler to remove radios from the vehicles, which weren't built without them. It saved millions.

Of course, subsequent administrations killed the programmes.

GERALD KAUVAR
Washington, DC

England, our England

English nationalism might be less disruptive to British politics (Bagehot, March 20th) if Britain had one strong national football team, instead of separate squads for England, Northern Ireland, Scotland and Wales. Then football could finally come home.

JÖRN BRÖMMELHÖRSTER
Vienna

Bagehot observed that today's strand of English nationalism is very different from that described in 1941 by George Orwell in "England, Your England". May I suggest a more enduring source to be "England, Their England", published in 1933 by A.G. Macdonell. It closes with the line: "Donald got up and yawned and stretched himself and went off to find some tea."

SIMON COWIE
Danville, California

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Down but not out

DIYARBAKIR, ERBIL AND RAQQA

Thirty years after the creation of the first autonomous Kurdish territory, dreams of statehood have faded. But despite their setbacks the Kurds may yet thrive

In the 1980s, when Basak Demirtas was just five, the police came for her father. Four years ago, her children watched their father being arrested in their turn. "I didn't think my daughters would have to experience the same thing," she says. But the lot of the Kurds is slow to change.

Selahattin Demirtas, her arrested husband, was at the time of his imprisonment the leader of the Peoples' Democratic Party (HDP), the strongest democratic voice of Turkey's Kurds. He remains behind bars on trumped-up charges, along with thousands of other Kurdish politicians and activists. Turkish prosecutors recently applied to the country's top court to have the HDP as a whole outlawed and disbanded. "Our parliamentarians are thrown in prison and our votes are ignored," says Ms Demirtas, sitting in her husband's office in Diyarbakir, the biggest city in the largely Kurdish south-east of the country. "Turks and Kurds still cannot live as equals."

Turkey's recent moves against the Kurds are not limited to its own territory. Kurdish insurgents in Syria have seen their attempts to carve out a statelet stretching from the Iraqi border to the Mediterranean knocked back by three Turkish offensives since 2016. In 2017 it joined the governments of Iran and Iraq in punishing the Kurdistan Regional Government (KRG), the autonomous administration which has ruled northern Iraq since the Gulf war of 1991, for holding a referendum on independence. More recently its president, Recep Tayyip Erdogan, threatened to invade parts of the KRG's territory in pursuit of members of the Kurdistan Workers' Party (PKK), an armed group that has fought Turkey's security forces for nearly four decades.

It is a long way from the time, half a decade ago, that some saw as heralding a "Kurdish spring". The HDP had seen its support increase significantly in the Turkish elections of 2015, a development that deprived Mr Erdogan and his Justice and Development (AK) party of a parliamentary majority. Kurdish militias in northern Syria had secured Western support by expelling Islamic State (IS) from Kobane, a town on the border with Turkey; fighters from the KRG had captured and held Kirkuk as part of the same struggle, taking control in the process of some very large oilfields. A significant fraction of the 30m Kurds spread across Iran, Iraq, Syria and Turkey were living under Kurdish rule with what appeared to be reasonable prospects. Further autonomy seemed possible.

That moment of hope led to both backlash and overreach. In the 2000s Mr Erdogan's government had made unprecedented attempts to deal with the demands of Kurds in Turkey, allowing more use of their language in schools and trying to clinch a peace deal with the PKK. After the 2015 elections Mr Erdogan abandoned the peace process to court the nationalist vote. For its part the PKK, heartened by the success of Kurdish fighters in Syria, tried to replicate them in Turkey. Insurgents proclaimed autonomy in cities across the south-east; the government responded with tanks and artillery. By the time the smoke cleared, some 3,000 people, including hundreds of civilians, were dead and entire neighbourhoods lay in ruins. Dozens more were killed in PKK suicide- and car-bomb attacks elsewhere in the country.

Mr Erdogan's government now seems determined to crush the Kurdish cause altogether. Of the 65 mayors elected on the HDP ticket in local elections two years ago, all but a few have since been either expelled from office or arrested. The same goes for over a dozen MPs. Kurdish parties have been suppressed before, only to reappear in short order with slightly different names. But Mr Erdogan's coalition partner, Devlet Bahceli, head of the country's biggest nationalist party, wants the HDP gone for good, and he may get his way. Prosecutors want 687 of its top politicians banned from politics for five years.

In northern Iraq the response to the referendum of 2017, in which 90% voted for independence, saw Iraqi forces, backed by Iran, recapture about a third of the territory then in Kurdish hands, including Kirkuk and its oilfields. Turkey and Iran closed their borders with the KRG's domain, and Iraq its air space, cutting the region's customs revenues. Masoud Barzani, who had presided over the KRG since its inception, left office.

In Erbil, the KRG's capital, the hint of spring in the air is long gone, and a certain despondency has set in. April 5th marked the 30th anniversary of the declaration of a no-fly zone over northern Iraq, the decision which allowed the Kurds' rebellion against Saddam Hussein to succeed. In some young polities such a milestone would be marked with fanfares. Yet when one of your correspondents visited the city in March no one, from the president to the pedlar at his palace gates, seemed even to be aware of the anniversary, let alone in a mood to celebrate it.

But the KRG remains a beacon, of sorts. When the Kurds rebelled the region was the poorest part of Iraq—just as the Kurdish homelands over the border were then the poorest parts of Turkey. Both have developed since. But while the gap between Turkey's south-east and the rest of the country has not closed, in Iraq things have reversed. The north's relative stability and access to oil have brought those who rule it serious wealth.

According to Iraq's finance minister, Ali Allawi, 60% of the country's imports now come through the Kurdish region. A lot of the proceeds seem to stay there. Mr Allawi complains that the KRG rakes in fees and oil revenues it should be transferring to the government in Baghdad. Iraqi officials say that the Ster Group, a conglomerate close to the KRG's prime minister, creams off customs revenues at the borders.

But if gains are being ill-gotten, they are also on display. While much of Iraq languishes, the Kurdish north booms. The development is often ugly, and a fair bit is beyond the reach of most citizens. But it is investment. In March the KRG unveiled plans for a railway linking Erbil to southern Iraq. Work has begun on a third international Kurdish airport close to Mosul, Iraq's third-largest city.

Northern Iraq also profits by offering its neighbours a way around Western sanctions. The border crossings with Iran and Syria are packed with lorries taking oil one way and goods which are the target of sanctions the other. The trade is particularly important for the enclave in northern Syria. Kurdish forces, led by a local franchise of the PKK, took a broad swathe of territory there early in Syria's civil war, and though their enclave has been reduced by the Turkish army—and is harassed by Iranian-backed militias in the south—it still comprises a quarter of the country, including its best agricultural land and its largest oilfields. About half the oil production goes to local needs or to other parts of Syria. The rest is exported via Iraqi Kurdistan.

Oilmen say that at least two pipelines violating American and EU sanctions now span the Tigris between Syria and KRG territory. Once in northern Iraq, according to Mr Allawi, some 10,000 barrels per day (bpd) flow through a pipeline to the Turkish port of Ceyhan, where it is sold as Iraqi oil. But blind eyes are turned. None of the Kurdish middlemen in the trade has been blacklisted. One of the largest, Abu Dilo, operates from a currency-exchange in Qamishli, a mainly Kurdish-run city near the Turkish border, with heavies guarding the entrance. America considers the oil trade a fitting reward for the Kurds, who lost thousands of fighters in the war against IS.

Setting suns again

At the urging of their American backers, and to win over local Arabs and placate their neighbours, the Kurdish forces in northern Syria have played down Kurdish nationalism and their links to the PKK (which America and the EU, as well as Turkey, consider a terrorist organisation). Having once called the enclave Rojava, Kurdish for "land of the setting sun", the Kurds now call it the Autonomous Administration of North and East Syria (NES), emphasising, in the light of the KRG's experience, a desire for autonomy rather than outright independence.

They have also moved their administrative seat away from the front lines with Turkey to Raqqa, an Arab city which served as the capital of the IS caliphate, and was reduced to rubble during its defeat. While the cities still under the control of Syria's president, Bashar al-Assad, lie in ruins, oil money and Western aid are bringing Raqqa back to life. As in much of the rest of the enclave, roadsides are piled with marble slabs, concrete blocks and rebar. Local officials say that much of Raqqa's housing stock has been restored, and its university, closed by IS, is set to reopen in August. Leila Mustafa, the Kurdish woman running the city's council, says "We want it to be Syria's capital."

That illustrates the NES's professed commitment to a united but federal Syria. The forces governing the NES want Mr Assad to recognise their region's autonomy and grant it a budget subsidy and a share of the country's raw materials. But the government in Damascus, faced with dire bread and petrol shortages, fumes at NES's bogarting of the country's resources: "Pirates!" snaps Syria's oil minister, Bassam Tomeh. Though Syria's Kurds have invited Russia and Mr Assad to send their forces into the NES to defend it against further Turkish attacks, three rounds of political talks between Kurdish officials and the Syrian regime's head of national security, Ali Mamluk, ended in a deadlock last December, according to a Kurdish negotiator. Syria and Turkey continue to insist that the

Areas of control, April 5th 2021
Syria Government; Kurdish forces (SDF); Turkish troops/rebels; Rebels: Turkey-backed, US-backed | **Iraq** Government; Turkish troops; Kurdish forces (the peshmerga)
Sources: Jane's Conflict Monitor; Energy Consulting Group

Rebuilding Raqqa

UN exclude the enclave's Kurdish leaders from the peace talks it hosts in Geneva.

Iraq's Kurds have also been trying to improve their relations with the rest of their country. They have committed themselves to selling 250,000 bpd of oil through Iraq's state marketing board and paying half the customs revenues they collect to the central government. In return the Iraqi parliament agreed in March to resume the transfer of 12% of Iraq's budget to the KRG. Iraqis from the Arab south have flocked north, drawn by Kurdistan's better security and more liberal lifestyle, though a recent surge of covid-19 cases has halted the flow.

Some come to holiday without their abaya, but others come to settle. After a generation of erecting barriers against such migration, the KRG has made it easier for Arabs to buy land without a local sponsor. Arabic and international schools have opened their doors. Of the region's 5m people, hundreds of thousands are Arab. "We're a multicultural city, not a Kurdish one," says a Kurdish minister in Erbil.

The outreach has partially eased tensions. Turkey, Iran and Iraq have reopened their borders, and trade with northern Iraq has been a boon for Turkey's Kurdish south-east. The economy there was badly damaged by the urban insurgency; the crackdown against the HDP has not helped. Companies with links to the party are denied contracts, says Mehmet Kaya, head of Diyarbakir's chamber of commerce, and mayors elected one day are ousted the next. "I've been doing this job for less than three years and I've had to work with four different mayors," says Mr Kaya. "They can't bring in investment."

Turkish exports to Iraq reached more than $9bn last year, despite covid-19 restrictions. Mr Kaya says the local economy would also have plenty to gain from the opening of Turkey's border crossings with Syria's north-east. But because these are under the control of Syria's Kurds, the government in Ankara refuses to entertain the idea. To cut intra-Kurdish trade and restore control of customs revenues to Iraq's government, Iraqi and Turkish officials have mooted a joint operation to seize a sliver of territory along the border from the Kurds and open a crossing of their own.

Their economic development provides the Kurdish territories in both Syria and Iraq with advantages. Their politics are a drawback. In Iraqi Kurdistan the political structures and the ruling families remain as they were 30 years ago. The feudal houses of Barzani and Talabani—which fought a civil war in the 1990s over UN aid—now tussle over trade routes. They have resisted Western pressure to merge their two forces into a single Kurdish army; the Iraqi government is trying to tempt the Talabanis away from the Barzanis by dangling the prospect of a separate budget subsidy.

No country for old men

Divided, the Kurds make easy pawns for regional powers to project influence. Iran lends support to the PKK in Iraq even as it fights one of the same group's offshoots at home. The Shia militias it backs in Iraq arm and fund PKK fighters on Sinjar, the strategic mountain perched on the border with Syria. Turkey has responded by urging the KRG to crush its troublemaking PKK cousins in Iraq's north-eastern mountains. Meanwhile Nechirvan Barzani, the president, struggles with his cousins Masrour Barzani, the prime minister, and Mansour Barzani over control of the security forces.

In his Erbil palace he feels Turkey's mounting pressure. He blames the PKK presence for destabilising northern Iraq; 400 villages near the border have been evacuated as Turkish fighter jets and drones target their positions. But he seems loth to take on the group alone. "It's a sovereign matter," he says, for once anxious to pass the buck to Baghdad.

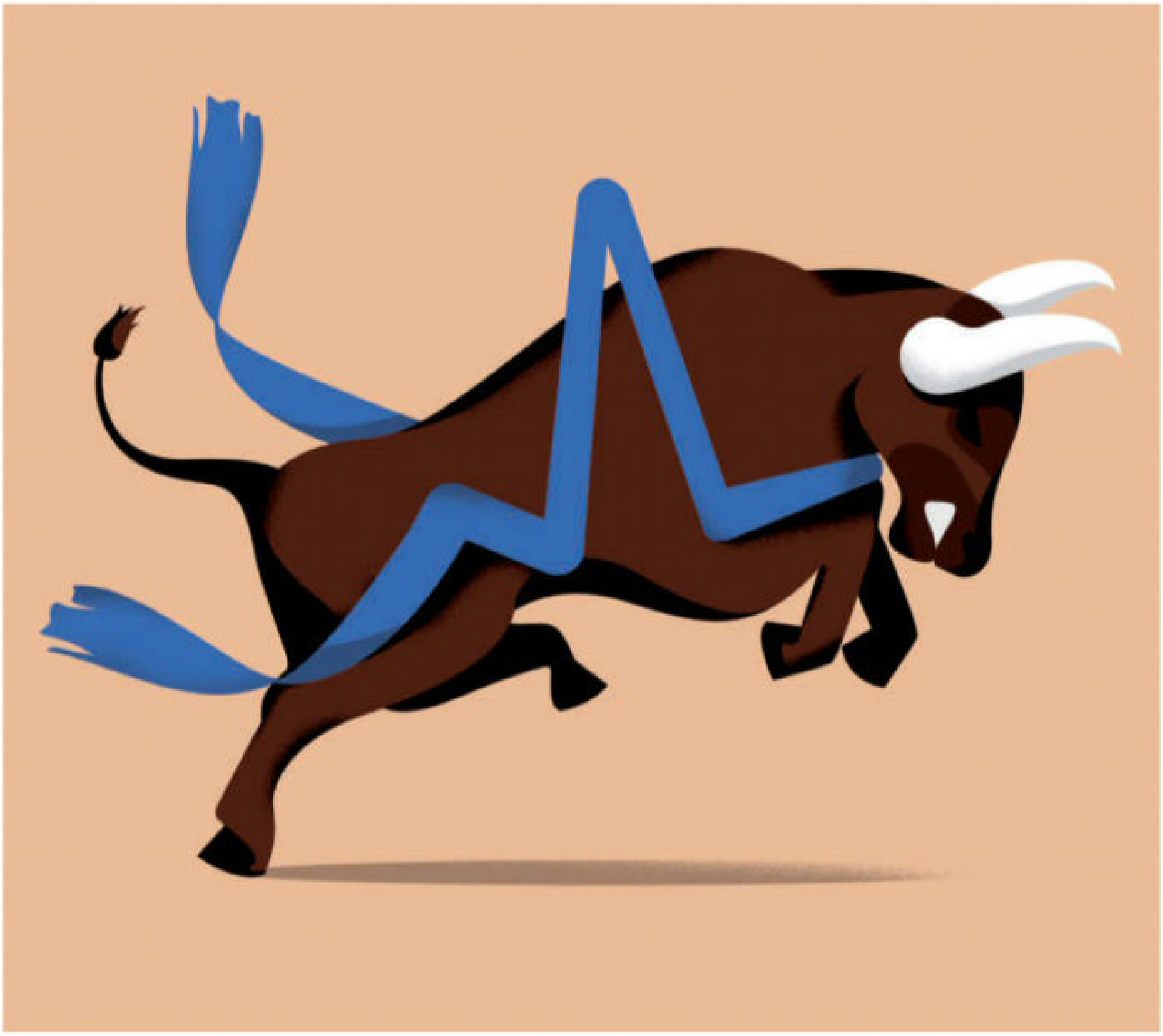
Infighting undermines the Iraqi Kurds' confidence in their leaders. So do a lack of rewards and a lack of justice. Last year the 1.2m on the government payroll saw their pay cut for six months; they were told this was because the central government was not sending money north. During protests against the non-payment of salaries last December at least eight people were shot dead. Journalists covering unrest are sentenced in courts with scant regard for due process. "You promised me freedom but instead took it away," says Shivan Fazil, a Kurdish analyst with the Stockholm International Peace Research Institute.

Across the border, people in the NES know that their lot is better than under the Assad regime—but that is the lowest of bars. The enclave remains a one-party state dominated by the Democratic Union Party (PYD), a group close to the PKK. Power-sharing talks between the PYD and the Kurdish National Council, a group endorsed by Turkey and the KRG, have gone nowhere, despite American backing. Kurds and Arabs cry for the relatives the PYD sends to Qandil for military training only to be killed in Turkish bombardments.

The threats and the obstacles the Kurds face across the region will not disappear any time soon. But in the enclaves in Iraq and Syria, Kurdish leaders have real power; and in Turkey so, too, do the Kurdish people. The fact that they face being deprived of their favoured party does not mean that they are being deprived of a voice.

In a country split evenly between Mr Erdogan's supporters and his opponents, the Kurds have become kingmakers—as they proved in local elections two years ago, handing control of Turkey's biggest cities, including Ankara and Istanbul, to an opposition alliance. "If you want to be in power in Turkey today," says Vahap Coskun, an academic in Diyarbakir, "you need to be on good terms with those voters." Mr Erdogan may have lost them for ever. Banning the HDP will only drive its supporters, as well as devout Kurds who might otherwise continue voting for Turkey's strongman, further into the arms of the opposition.

Few Kurds now believe they will live in a single, sovereign Kurdistan—even the PKK long since dropped such a dream from its demands. But in Diyarbakir, Ms Demirtas wants her daughters, when grown, to one day feel a hope like that which she felt in the peace process a few years ago—and to see that hope end in something other than another cycle of disappointment, violence and arrests. Experience suggests that may be a lot to ask for. But the Kurds have already come a long way, in Turkey and elsewhere. Despite recent setbacks, they may yet see better days. ■



→ Also in this section

The economic recovery

Charging ahead

America's boom has begun. Can it last?

THE LATEST monthly employment report, published on April 2nd, painted an impressive picture: over the previous month America created more than 900,000 jobs. That figure, the strongest since August, reflects the state of the economy in the first half of March, when the surveys took place. But a look at "high-frequency" economic data for more recent weeks, on everything from daily restaurant diners to Google-search behaviour, suggests that, since then, the recovery has if anything accelerated further. America's post-lockdown boom has begun.

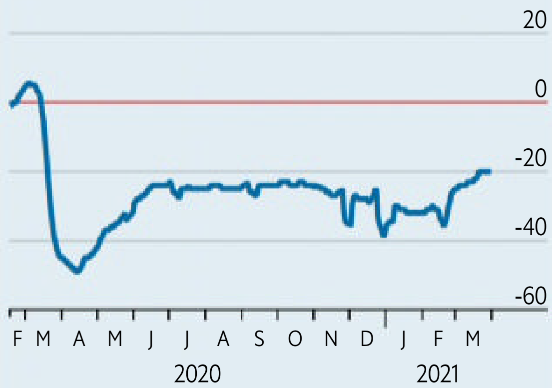
A rapid bounce-back would be welcome, because the world's largest economy remains a long way off its pre-pandemic peak, and the damage has been severe. Even after the latest jobs numbers, over 8m fewer people are in work than before the pandemic. The job losses are concentrated among low-income groups (though it is no longer the case that women are more affected than men). One-third of small businesses remain closed. Poverty is higher than it was before covid-19 struck, especially among black families. And the impact of school closures on children's education could last for decades.

High-frequency data, largely produced by the private sector, are useful in identifying economic turning-points before they get picked up in the government's figures, which are slower to arrive. In March and April 2020, long before the publication of official numbers, these data showed that the economy was falling off a cliff. A year on, happily, they point to a rapidly strengthening economy.

Jab and go 1

United States, economic-activity index*

Change relative to pre-pandemic average†, %



Sources: Our World in Data; Google; *The Economist*

*People visiting places of retail, recreation, transit and work
†Seven-day moving average

Using mobility data from Google, *The Economist* has constructed an economic-activity index, which measures people's visits to workplaces, stations, retail outlets and recreation sites. A month ago the index was 30% below its pre-pandemic baseline (see chart 1). In recent days the index has jumped to 20% below the baseline.

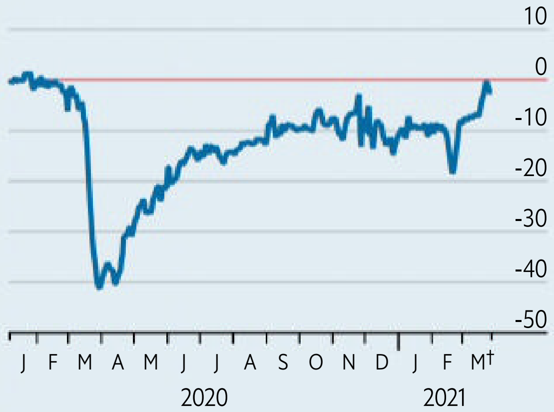
Other high-frequency data show similar trends. The number of passengers travelling through American airports is rising fast. Economists have also closely watched statistics from OpenTable, a booking platform. In February the number of restaurant diners was 48% lower than normal. So far in April it is 18% lower. Hotel occupancy is increasing rapidly. High-frequency indicators of manufacturing and services activity are surging, too.

People are venturing outside, and mixing, in greater numbers, in part because a successful vaccination campaign has allowed some easing of restrictions. And when people do leave the house, they have money to spend. On March 17th the Treasury deposited $250bn in stimulus cheques into people's bank accounts, adding to the $1.5trn of extra personal savings (about 10% of annual consumer spending) that households had piled up by the end of ▸▸

Spending spree 2

United States, consumer-card spending tracker*

Change from pre-pandemic trend, %



Source: JPMorgan Chase

*Seven-day average of total spending †To March 27th

2020. A tracker by JPMorgan Chase, a bank, shows that payment-card spending is near its pre-pandemic level (see chart 2). In late March total spending was up by nearly 20% on the previous month, according to Cardify, a data-provider.

The upshot is that America is likely to register jumbo GDP-growth numbers in the second quarter of 2021. Research by Nicolas Woloszko of the OECD, a rich-country think-tank, gives a hint of what is to come. He uses another type of real-time data, Google-search trends, to construct weekly GDP measurements for the G20 economies. In the final week of March American GDP was about 4% below where it would have been in the absence of the pandemic. That is the strongest figure in over a year, and far better than most other rich countries.

Many forecasters are now expecting GDP growth of 6% or more in 2021. If that happens, then it will not come as a surprise if America notches up monthly jobs gains of 1m or more in future employment reports. The unemployment rate could be near its pre-pandemic rate fairly soon.

Yet two factors could spoil the party. One relates to economic "scarring". Some economists worry that the pandemic has damaged America's productive capacity. If lots of businesses have gone bankrupt, then even with buoyant demand many Americans will not have jobs to go back to.

So far there is no compelling evidence of a wave of insolvency. In 2020 total commercial bankruptcies were about 15% lower than the year before. Extensive fiscal support offered by the federal government has helped firms pay their bills, while many landlords have offered rent concessions. Bankruptcies have remained low so far in 2021, but no one really knows whether or not they will rise in the coming months, as fiscal support ends and landlords seek to make up for lost time.

The second factor relates to fears that infections could take off again, despite the momentum behind vaccination. There are particular concerns about coronavirus variants, such as one first found in Britain, which spread more easily (though the prevalence of the "British variant" has not stopped cases tumbling in Britain itself, where, as in America, vaccination has been proceeding apace). Cases of covid-19 in America are now rising again. Some places, such as Chicago and New Jersey, have paused reopening.

That is slowing the recovery, but not yet stopping it. Widespread vaccination has weakened the link between infection and hospitalisation. In Michigan and Florida, two states with high levels of the British variant, the Google-*Economist* economic-activity index has lost steam in recent days, though it is still stronger than it was in the first quarter of the year. There will be setbacks along the way, but expect the good economic news to start piling up. ■

Business and Georgia's voting-rights law

Political baseball

NEW YORK

Companies are increasingly taking sides in political disputes

THOUGH THE divide has never been tidy, for the past century Republicans have been seen as the party of big business in America and Democrats as the party of labour. Under Bill Clinton and Barack Obama the Democrats found friends in Silicon Valley and on Wall Street, but they never overcame the Republican formula of cutting taxes, opposing regulation and reaping corporate campaign support.

Donald Trump's populism and the growing power of the consumer are tearing at the old order. Companies are coming under tremendous new pressure from the left. Some fear customer boycotts if they fail to take stands on divisive social questions. Others, less vulnerable to consumers, fear revolts by their progressive MBAs and software engineers.

The latest catalyst of conflict is a law passed in Georgia which facilitates voting in some respects but also makes absentee voting harder and gives the legislature more control over the process. Democrats accused Republicans of trying to suppress voters, in particular black voters. Mr Biden called the law "Jim Crow in the 21st century". Coca-Cola criticised the law last week. Ed Bastian, the CEO of Delta Air Lines, which like Coca-Cola has its headquarters in Atlanta, called the law "unacceptable". And Major League Baseball (MLB) announced it would move its annual all-star game out of Atlanta, though Democratic leaders in Georgia lamented the lost revenue.

A curveball for business

Republicans are now threatening reprisals of their own. The Georgia House of Representatives has already voted to strip Delta of a jet-fuel tax benefit worth $35m. That bill awaits action by the state Senate. Mr Trump called for Republicans to "boycott all of the woke companies", and put out a list that included not only MLB, Coca-Cola and Delta but others that criticised the law such as JPMorgan Chase and ViacomCBS.

The conflict is exposing double standards on all sides. Republicans, who have posed lately as the defenders of free speech against "cancel culture", are seeking to cancel the corporations. Democrats, who usually decry corporate involvement in politics as a corrupting abuse of free speech, are demanding that firms speak up. "Will Major League Baseball now end its engagement with nations that do not hold elections at all like China and Cuba?" asked Marco Rubio, a Republican senator, in a letter to the baseball commissioner.

The fight is spreading. The Business Roundtable, which represents CEOs of big companies, said "unnecessary restrictions on the right to vote strike at the heart of representative government." American Airlines and Dell Technologies, which have their headquarters in Texas, have come out against a proposed law there that would limit voting hours and ban drive-through voting.

The old dividing line between the party of business and the party of labour is likely to continue to blur, as more and more companies pick a side. They will be asked not only to speak up but also, like Major League Baseball, to act.

Climate policy

A long and bumpy road ahead

WASHINGTON, DC

The president's plan to decarbonise America in 30 years

IN 2020 LOCKDOWNS caused the largest single-year drop in America's greenhouse-gas emissions on record: some 10%. Even then, for every American 16 metric tons of carbon dioxide were released into the atmosphere. By 2050 President Joe Biden would like that number to be net zero.

Getting there within three decades seems daunting. Every sector, not just electricity generation, would need decarbonising. Other things like cars, buildings, farms and factories (which together produce three-quarters of today's emissions) would need to go the same route. Action so comprehensive could only come from Congress, which has long been deadlocked. On March 31st Mr Biden unveiled his effort to right this state of affairs.

In total his American Jobs Plan would cost more than $2trn over eight years. Half of this is devoted to matters like fixing roads and bridges, establishing universal broadband and removing lead pipes that carry water. The $1trn or so of climate-specific spending is roughly half the size of the clean-energy plan Mr Biden released during his campaign. It appears to have been slimmed down so that its costs could eventually be covered by a corporate-tax increase (see next article). Still, if passed it would be the most far-reaching climate bill ever enacted. It aims to decarbonise the economy by 2050, and to make electricity carbon-free by 2035.

The plan is heavy on incentives. Tax credits for clean-energy, which helped nurture the wind- and solar-energy industries, would be extended for ten years. Subsidies would be doled out to retrofit 2m buildings, put up high-voltage power lines, and incentivise technologies such as direct-air capture of emissions and floating offshore wind turbines.

The president's plan proposes $174bn in spending on electric vehicles, to subsidise production and sales as well as to establish a network of 500,000 charging stations across the country by 2030 (six times the current number in America). To make alternatives to driving more attractive, $165bn would be spent to modernise public transport and rail networks. And $180bn would be ploughed into basic-science research, much of it climate-focused.

Though Mr Biden opposed the sweeping Green New Deal during his campaign to be president, his plan retains much of its ethos—of advertising large clean-energy investments as boons for organised labour and racial equity. "If we really want to build back millions of good-paying union jobs, jobs that were threatened during the pandemic, then this is the future for us," says Gina McCarthy, the White House national climate adviser. Jobs programmes reminiscent of the original New Deal, like creating a civilian climate corps or putting former fossil-fuel labourers to work capping abandoned mines, are scattered throughout. The proposal includes a pledge that 40% of the clean-investment benefits will go to previously disadvantaged communities; exactly how is unexplained.

To succeed, Mr Biden will need a stick amid the feast of carrots. Achieving carbon-free electricity generation by 2035 would mean cutting emissions by 7% of current levels every year. That is unlikely to happen through subsidies alone. Mr Biden did not opt for a (politically unpopular) carbon tax. Instead, he proposed a federal clean-electricity standard that would become increasingly stringent over time.

That decision could dent the plan's prospects. Because the package is unlikely to attract the ten Republican senators needed to surmount a filibuster, it is almost certain to be pushed through using "reconciliation", a filibuster-free budgetary process. Reconciliation rules require that provisions be mainly budgetary and not merely regulatory. Some argue that the clean-electricity standard can be written in such a way as to pass this restriction, though it is not certain. If the linchpin of Mr Biden's plans were ruled inadmissible, a scramble to replace it would ensue.

Shepherding the plan through Congress will be a delicate operation. The progressive wing of the Democratic Party is guardedly enthusiastic. Senator Edward Markey from Massachusetts, the main promoter of the Green New Deal in the Senate, supports Mr Biden's initiatives, while also pushing a far more expansive plan to spend $10trn over a decade and create 15m jobs. "Many of my Republican colleagues have chosen to bury their heads in the sand on this crisis," he says. "I'll make sure the bill isn't watered down just to secure the pretence of some bipartisanship."

Without Republican votes, unanimity among Democrats would be needed to pass the law. Conservative Democrats will want concessions: Senator Joe Manchin from West Virginia, for example, may demand a heavy price to accede to setting a death date for the coal industry within 15 years. The 30-year journey will not begin easily. ■

Blue-sky thinking

Correction Our article last week on Gavin Newsom's troubles ("The recall brawl", April 3rd) mistakenly said that Alex Padilla, whom the California governor appointed to Kamala Harris's vacant Senate seat, is America's first Latino senator. He is California's first, but not America's. Sorry.

Corporate taxes

Counting trillions

WASHINGTON, DC

America Inc is on the hook for the government's splurge on infrastructure

UNLIKE HIS $1.9trn covid-19 relief bill, which was almost entirely deficit-financed, President Joe Biden would like his recently unveiled $2trn infrastructure plan to be paid for with taxes. Individual taxes have been left for later. Unluckily for American companies, the White House has set its sights on them to pony up.

This is hardly unexpected. Mr Biden had campaigned on a partial repeal of Donald Trump's tax cuts, which slashed the statutory rate of corporate tax from 35% to 21%. The president would now like to split the difference, raising the rate to 28%. But this would yield only about $900bn of the $2trn total, according to fresh calculations by the Penn Wharton Budget Model.

A bigger chunk would come from American firms' profits held overseas. The tax rate on global intangible low-taxed income (GILTI for short) would be doubled from 10.5% to 21%, and the tax would be assessed on a country-by-country basis rather than in aggregate. It would also eliminate the deduction for overseas income earned from American-based intangible assets like intellectual property. "There would be a strong tax magnet for that intellectual property and the associated jobs to migrate outside the US," argues Rohit Kumar of PWC, a professional-services firm.

Together, the Penn Wharton model estimates, these changes would bring in $1trn in revenue over the coming decade, the period covered by the $2trn in spending. A new proposed minimum tax for "the very ▸▸

largest of corporations" of 15% on the book income shown to investors would raise another $184bn.

The proposal aims to reverse two trends. One is the growing share of multinationals' income channelled through tax havens (now 60% of foreign earnings compared with 30% in 2000). The other is the declining collection of corporate tax as a share of GDP (just 1% now compared with 2% before the Trump tax cuts, and well below the 3% average of other rich countries).

But without comparable tax regimes in other countries, the cost of being an American-based multinational would go up considerably. That is why Janet Yellen, the treasury secretary, has begun pushing for a global minimum tax—though the currently proposed minimum rate of 12.5% would be well under Mr Biden's (see Finance section). Perhaps that is also why the plan promises (vaguely) to limit corporate "inversions", which allow businesses to change nationality and avoid the taxman.

The opening bid is unlikely to get through Congress unscathed. Republicans will be loth to go along with the plan, meaning that even minor dissent among Democrats could provoke large changes. Senator Joe Manchin of West Virginia has already argued for a smaller corporate-tax increase, to 25%. The proposal remains skeletal. Its flesh will probably materialise only after months of committee hearings. And the howls emanating from corporate America are already deafening. ■

Women and the draft

Gender war

NEW YORK

A fresh challenge to male-only draft registration lands at the Supreme Court

"BE THE MAN", says an advert for the Selective Service System. The entreaty is not merely a suggestion. For decades, registering for the Selective Service—the federal agency that keeps a roster of America's 18- to-25-year-old men, in case a military draft returns—has been a legal duty males must fulfil within 30 days of their 18th birthday.

Whether citizen or immigrant, dual national or national guardsman, all men must comply or face investigation by the Department of Justice. Potential consequences are not light: denial of student loans, disqualification from citizenship, fines reaching $250,000 and up to five years in prison.

A new petition to the Supreme Court challenges a broad carve-out to this rule. By requiring men (and transgender women) to register for the Selective Service, but exempting women (and transgender men), the plaintiffs say, the federal government is involved in invidious gender discrimination barred by the constitution.

Brothers and sisters in arms

National Coalition For Men v Selective Service System revisits a 1981 ruling that upheld the Selective Service's sorting by sex. That judgment, *Rostker v Goldberg,* came when women could not serve in combat roles. "*Rostker*'s fundamental premise is no longer true," the plaintiffs say. "In 2013, the Department of Defence lifted the ban on women in combat" and two years later "announced that all military roles, units and schools would officially be open to women with 'no exceptions'."

Now that women fly fighter jets and serve as army rangers, the reasoning goes, there is no justification for giving them a pass on registering for the Selective Service. So held Gray Miller, a district-court judge in Texas, in 2019. The Fifth Circuit Court of Appeals shared that sentiment but reversed Judge Miller's ruling. *Rostker* is still binding law, the court noted, and new circumstances do not give a lower court "licence to disregard or overrule" a Supreme Court precedent.

Will the justices agree to reconsider their 40-year-old ruling—released days before Sandra Day O'Connor would be nominated as the first woman to join their ranks—that "men and women are simply not similarly situated" in the military context? The plaintiffs cite a 1973 case argued by a young Ruth Bader Ginsburg (two decades before she became a Supreme Court justice) as encouragement: "Although purportedly protective of women", stereotypes of women as belonging at home put them "not on a pedestal, but in a cage".

The American Civil Liberties Union is bringing the case on behalf of a men's-rights group and two male plaintiffs. They enjoy support from the National Organisation for Women and a group of former generals. However, an amicus brief from a coalition including the Eagle Forum, a conservative organisation founded by Phyllis Schlafly, an anti-feminism activist who died in 2016, defends the status quo.

It is an "unassailable biological fact", the brief argues, that men are generally bigger, stronger and faster than women. And "the harsh realities of combat" do not ebb merely because some lawyers and judges ignore them—"no matter how sincere and committed they are to the principles of equality". ■

College admissions

No SATisfACTion

NEW YORK

Sidelining standardised tests won't make college admissions fairer

THE PANDEMIC has played havoc with college admissions. With many testing sites closed, over 1,400 colleges and universities (about a third of American degree-granting institutions) no longer required admissions exams for first-year students applying for autumn 2021. Many made the submission of test scores optional; 69 did not consider test scores at all. More than 1,300 colleges have already announced "test-optional" policies for 2022.

The coronavirus has hastened a trend already under way. Starting with a handful of institutions in 2005, and growing to over 1,000 (including half of the top 100 liberal-arts colleges) in 2019, many had gone test-optional before the pandemic. In May 2020 the governing body of the University of California, a public university with over 280,000 students on nine undergraduate campuses, voted to phase out the two main admissions tests, SAT and ACT, over five years. But a lawsuit sped up the timeline. A preliminary injunction prevented the university from using the SAT or ACT in admissions or scholarship decisions this year.

Opponents argue that these tests are biased. SAT and ACT scores are highly correlated with income, race and gender. Despite earning higher maths grades in school, women perform worse than men on the maths section of the SAT by 18 points (out of 800) on average. A student with an annual family income below $20,000 can expect to score 137 points lower on average (also out of 800) on the reading section of the SAT than a student with a family income above $200,000. Overall, black and Hispanic students perform worse than white students, and white students perform worse than Asian students. Similar concerns apply to the ACT.

Janet Godwin, CEO of ACT, which tests about half of all American high-school graduates, says the test outcomes are a symptom of systemic inequality, not a cause. She admits that the results are correlated with income, but she attributes this to the fact that a child living in a high-income zip code will have access to better resources. ACT has partnered with educational groups to provide access to test-preparatory resources to help close this gap.

Colleges have experienced a surge in demand since test-optional policies went into effect. First-year applications at Harvard jumped 42% (and the acceptance rate fell to 3.4%, from 4.9% last year); those at New York University rose by 17%. "A lot of students who felt that the SAT or ACT was a barrier to getting into those institutions are now taking their chances by applying," says Angel Pérez, CEO of the National Association for College Admission Counselling.

But with test scores downplayed or removed, admissions counsellors must focus on other aspects of an application. Some of those may also favour the privileged. A study from Stanford University of 60,000 applications to the University of California found that the content of students' essays was more strongly correlated with income than the SAT.

Extra-curricular activities are probably no fairer. Disadvantaged students have less access to them. And a study at Stanford that presented evaluators with fictional student profiles found that elite alumni, who often serve as interviewers and sit on review boards, preferred upper-class activities over lower-class ones requiring similar skills. Evaluators favoured the cello over the banjo, sailing over soccer, and foreign-film club over the video-games club.

Some measures do seem to perform better. Grade-point average predicts performance at college well, with less of an association with income. Some universities, such as the University of Texas at Austin, rely on class rank to admit a portion of their student body. Yet about half of high schools no longer rank students.

Rather than tinkering, advocates for more equitable admissions are calling for an overhaul. Some have suggested a lottery among students who meet minimum qualifications. Universities say they could admit "three times as many students without having to lower standards at all," says Jesse Rothstein, a professor of public policy at University of California, Berkeley. "Why don't we put our money where our mouth is?" Others recommend a more intricate process, such as the "match" system used to admit medical-school graduates into residency programmes.

Yet overhauling admissions may have its limits. "We aspire towards a meritocracy, but the reality is we have systemic inequality in our society," says Mr Pérez. "Until we fix the inequities at the lower levels, we're not even going to begin to make a dent in higher education." ■

Urban gardening

The Green Apple

NEW YORK

Hope blooms in a community garden

TUCKED AWAY in an unassuming corner of north Brooklyn is a 3,000-square-foot patch of open space. Keap Fourth, at the intersection of Keap and South 4th Streets, is a community garden established in 2013. It's a well-known hub in this largely Dominican and Puerto Rican neighbourhood, perched at the edge of trendy Williamsburg. The sun is out, and "it's nearly planting season," says Crito Thornton, a volunteer who manages the garden, with a grin. After a long winter made worse by covid-19 there are finally signs of life in the daffodils blooming around the garden.

Keap Fourth is one of 550 community gardens which have sprung up at New York's street corners since the 1970s, when the city's economy collapsed and its landscape became pockmarked by abandoned lots. Activists sought to transform these urban scars into gardens where residents could relax and grow vegetables. These places now cover 100 acres across the city, tended by a volunteer army of nearly 23,000 green-fingered New Yorkers. The gardens are supported by GreenThumb, a government initiative established in 1978, which is now the country's largest urban-gardening programme.

These gardens play a vital role in a city not known (beyond Central Park) for an abundance of green space, especially in its ethnic-minority neighbourhoods. Keap Fourth has about ten plots. Most are planted and harvested collectively, but a couple of them have been grandfathered, including one to a local Bangladeshi family who use it to grow vegetables for their cuisine which can be hard to find in the shops.

Running these spaces is no easy task. Keap Fourth's neighbourhood has been blighted by heroin dealers, who moved across the Williamsburg Bridge after being booted out of Manhattan's Lower East Side. The garden is a popular drop-off point, with suspicious packages found stashed among the clumps of kale and Swiss chard. But the recent demise of a local kingpin in a car accident may make this year's season more peaceful, says Mr Thornton.

The future looks bright. Funding for the programme is healthy. A key issue in the past has been a manpower shortage for the harvest. But volunteer numbers across the city's gardens have ticked up since the pandemic's onset, as locked-down residents have yearned for more open space. And in Keap Fourth's case, the whole neighbourhood seems to have come together over the past year as few people now undergo the daily commute across the river to Manhattan. A bountiful harvest is in prospect.

Keap Fourth and multiply

Award Kevin ("KAL") Kallaugher, our editorial cartoonist, who also draws the illustrations for the Lexington column, has won the 2020 award for best cartoons on international affairs from the Overseas Press Club of America. In addition to drawings for *The Economist*, the winning portfolio included ones for the *Baltimore Sun* and *Counterpoint*.

Housing in the West

Growing pains

COLORADO SPRINGS

Small cities in the Rocky Mountain region are booming

IN 1871 WILLIAM JACKSON PALMER, a civil-war general and railway magnate, looked up at Pikes Peak in central Colorado and decided "he wanted to build a city that matched the magnificent scenery". Or so says John Suthers, the mayor of Colorado Springs, the town Palmer would eventually found at the foot of the Rocky Mountains. Now, 150 years later, Mr Suthers says the residents of Colorado Springs are still trying to build that shining city on a hill. Lately, though, the building has sped up.

House prices in small and midsized cities are rising rapidly in America's Mountain West. Average home values in Colorado Springs rose by 15% between February 2020 and February 2021; prices in Bozeman, Montana, increased by nearly 20% (see chart). In Boise, Idaho house prices are up by 28%, the biggest increase among the 900 metro areas tracked by Zillow, an online listings platform.

It is tempting to attribute this to the pandemic, a factor in house-price rises elsewhere (see Finance section). Lockdowns showed office workers that they didn't need to commute to a fancy headquarters in a central business district to do their jobs. That left some wondering why they were forking out for a one-bedroom flat in San Francisco. The proximity to America's wide-open spaces and the socially distant outdoor activities that the Mountain West offers is alluring. Megan Lawson, of Headwaters Economics, a think-tank in Bozeman, says the covid-19 crisis has shown that the mythology of the West is alive and well. When people are thinking of breathing room, she says, "they picture these very iconic landscapes."

Room and a view

The pandemic may indeed have boosted interest, but a population boom has been apparent for some time. The US Census Bureau estimates that seven of the ten fastest-growing states in the country from 2015 to 2020 were in the West. Rapid economic growth in the second half of the decade also reflects the region's slower recovery from the Great Recession, says Tatiana Bailey, an economist at the University of Colorado Colorado Springs. Cities such as Colorado Springs were hitting their stride just as the pandemic struck.

Three other factors are contributing to the uptick in house prices. First, the West has lagged in building high-density housing. That is changing. In the Pikes Peak region, nearly as many multi-family units will be built from the permits issued in the year to March 31st as single-family homes.

Second, homebuyers and investors are buying property in places like Bozeman and paying with cash, sometimes sight unseen, says Ms Lawson. Because appraisals aren't required if a lender isn't involved, cash purchases can inflate local housing markets. Lastly, there is a growing disconnect between house prices and local labour markets. Remote workers who settle in Boise while getting a pay cheque from a firm in San Francisco can afford much more than someone on a Boise budget.

The diminishing supply of affordable housing is worrying locals and policymakers. Building more multi-family units will help longtime residents who would otherwise be priced out of the market, but only if the new apartments serve a range of incomes. Luxury condos won't do the trick. Homelessness, meanwhile, is on the rise. The Idaho Housing and Finance Association estimates that the number of homeless people in the Boise area rose by 203% between 2016 and 2020.

The growth of the Mountain West's cities is transforming the states around them. Colorado Springs, Denver, Boulder and Fort Collins form an urban corridor along Colorado's Front Range, just east of the Rockies. As their populations have increased, the cities have become more connected. "I don't think we were a bedroom community of Denver when I moved here 18 years ago," says Jeremy Wynia, a real-estate agent in Colorado Springs. "We absolutely are now."

That melding of metro areas will probably continue. Elizabeth Garner, Colorado's state demographer, says 87% of the 2.1m people the Centennial State looks set to gain by 2050 will live on the Front Range. A proposed railway would further link the four cities. Idaho's Treasure Valley, just east of the Oregon border, is witnessing something similar as rapid growth knits together Boise, Meridian and Nampa.

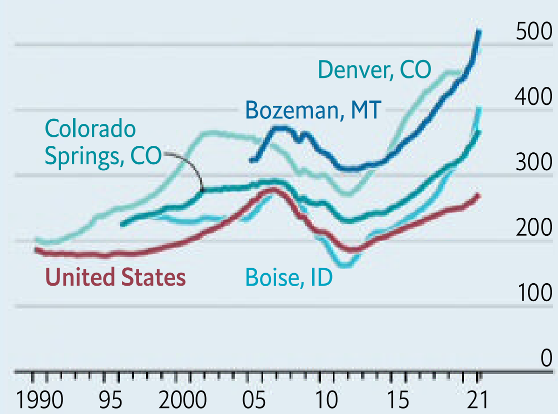
As the demography of these cities shifts, so do their politics. Both Mr Suthers, a Republican, and Lauren McLean, Boise's Democratic mayor, say their cities have become more liberal as they have grown. That is no small thing to admit in Colorado Springs, which has historically been a bastion of conservatism.

All this change presents the Mountain West with a paradox. The region's cities have to build and expand to accommodate population growth, but in doing so they may jeopardise the very things people move there for: space, quality of life and proximity to wilderness. Ms McLean says people come to Boise "to get away from the problems of larger cities". But Boise (population: 230,000 and rising) may become a big city yet. ■

Mountain highs

United States, real house prices

$'000, 2020 prices



Sources: Zillow; BLS; *The Economist*

Communist pharma

Revolutionary drugs

Cuba may become the smallest country in the world to produce a covid-19 vaccine

By 7am a long queue stretches around the medical centre near the Plaza de la Revolución in Havana. Some of those waiting have been there for hours; all are hoping to be volunteers to test Soberana-2 (Sovereign-2), Cuba's most advanced covid-19 vaccine candidate, which is in phase-three clinical trials. At 8am sharp, the first 40 are admitted into two large rooms, given rapid lateral-flow tests and told what to expect if they are recruited as volunteers. Yosvany Rodríguez Muñoz, a 37-year-old doorman, is one of the lucky ones. Staff at the clinic measure his height, weight and blood pressure before giving him an appointment for the next day. After 28 days he will get a second dose.

Cuba is small, with just 11m people, and is short of basic goods such as rice and paracetamol. But its long history of medical research has stood it in relatively good stead during the pandemic. After the Communist revolution in 1959, half the island's doctors fled abroad. In response Fidel Castro, the cigar-puffing dictator, pumped money into health care; he hoped pharma could be exportable, like sugar. Even during the economic collapse that followed the end of the Soviet Union and its subsidies in the early 1990s, in which GDP shrank by a third in three years, the Centre of Molecular Immunology (CIM) opened in Havana. "There was no money for food, but there was a brand-new cancer-research facility that was expected to be worth the sacrifice," recalls Ricardo Torres, a Cuban economist. Cuba produces 5m doses of simple or combined vaccines for various diseases for domestic use alone each year.

Now the country is developing five potential covid-19 vaccines. Soberana-2 is developed by BioCubaFarma, a state-owned biotechnology company; CIM produces a key ingredient. More than 44,000 participants in the phase-three trials have been vaccinated so far, and 100,000 doses of the vaccine have been shipped to Iran for further trials. The Cuban government hopes that, if these are successful, it can produce 100m doses by the end of the year. Any vaccines not used domestically may be sold to allies, such as Venezuela. Officials have also pondered offering jabs to tourists to earn hard currency, too.

But just as the governments of several big countries have indulged in vaccine diplomacy, the Communist Party in Havana—which is expected to see Castro's brother Raúl step down as first secretary on April 16th—has played up the propaganda value of its health-care system. The other vaccines in development have similarly grandiose names: Mambisa, a nasal spray, is named after the guerrillas who fought against Spanish colonial rule; Abdala, a vaccine that is also in phase three trials, is named after a play by Jose Martí, a revolutionary hero. State-run newspapers are full of headlines such as "Capitalism results in superfluous health care and socialism delivers it in just the right dose".

Behind the bombast, however, a more complex picture emerges. Reported covid-19 cases are on the rise—although the absolute numbers are small compared with most countries. There are now about 1,000 cases a day, 20 times higher than at the end of 2020. Some of that uptick is due to an influx of Cuban-American visitors from the United States after airports reopened in November.

And even if one of these vaccines proves effective, the government is unlikely to make much money from it. Modern drug development is a high-risk, capital-intensive business; it requires far more capital than Cuba's constrained economy can supply. "To date, not a single drug developed in Cuba has been approved for use in a highly-regulated market," says David Allan, a former chief executive of YM Biosciences, a drug-development company that worked with the government between 1993 and 2013. Manufacturing costs are high because Cuba makes few components locally, instead relying on expensive imports. A lack of vials, for instance, might be an impediment to the speedy inoculation of its population against covid-19, in the same way that a lack of plastic bottles often makes drinks such as mineral water impossible to find.

The result is that despite the possibility of becoming the first country in Latin America to develop a covid-19 vaccine, Cuba has got off to a late start at jabbing its own citizens. Clinical trials will take several more months, though more people may be offered the vaccine before all the results are in. It is still unclear if manufacturing will be done locally or partially outsourced to Iran, China or Thailand.

Mr Muñoz says he could sense the hope of the others in the queue as he waited for a jab. Such optimism is in short supply. Despite the end, in January, of its economy-distorting dual-currency system, the island faces its deepest recession since the 1990s, because of sanctions and the lock-down-related drop in tourists. The potential vaccines are a "much-needed good-news story", thinks Emily Morris, an economist at University College London. But ordinary Cubans, who also face the uncertainty of being governed by a non-Castro for the first time in six decades, cannot live off that good news alone. ■

Bello The strains in a politicised army

Jair Bolsonaro is weaker but no less dangerous for Brazilian democracy

General Orlando Geisel, the brother of a military president during Brazil's dictatorship of 1964-85, once remarked: "It's very easy to get the army into politics. The difficult thing is to get it out afterwards." That is the problem the country's generals now face. They embraced Jair Bolsonaro, a former army captain of hard-right views elected as president in 2018. With Mr Bolsonaro now in trouble, the army is trying to distance itself from him. The strains showed in the resignation of the commanders of the three armed forces on March 30th following a cabinet reshuffle.

Several retired generals campaigned for Mr Bolsonaro; one is his vice-president. The cabinet is stuffed with military officers. Their alignment is partly ideological—the army came to hate the left-wing Workers' Party of Luiz Inácio Lula da Silva and liked Mr Bolsonaro's call for order and security. But it is also opportunistic. Around 6,000 military folk have government jobs. The forces have received wage increases and were exempted from a money-saving pension reform.

Mr Bolsonaro, a covid-19 denier, is now on the defensive. He has grossly mishandled the pandemic. He got away with that politically last year by forging an alliance with the *centrão*, a bloc of pork-barrel politicians he once excoriated, and by giving generous emergency payments to 68m Brazilians. But with finances tight, the aid stopped in December; it has now restarted on a smaller scale. Mr Bolsonaro's approval rating has fallen below 30%. And the pandemic is still raging: a record 4,211 deaths were reported on April 6th. To the army's embarrassment, Eduardo Pazuello, a general, was in charge as health minister from September until last month.

Allies are turning against the president. Business now complains that the government's foot-dragging on vaccine procurement is delaying economic recovery. The *centrão* secured the firing of the Trumpist foreign minister, Ernesto Araújo, for his failure to buy vaccines; the group's leader, Arthur Lira, the speaker of the lower house of Congress, has hinted at Mr Bolsonaro's possible impeachment. Courts are investigating his politician sons. And the Supreme Court suspended Lula's conviction for corruption, making him a formidable potential opponent in 2022. "What was an open pathway to a second term will now be very contested," says Matias Spektor of Fundação Getulio Vargas, a think-tank. "He's preparing for a political crisis."

Mr Bolsonaro is now demanding loyalty from "my army". He said it would not enforce pandemic restrictions imposed by state governors. General Fernando Azevedo, the defence minister, disagreed and was sacked; he said he had "preserved the armed forces as institutions of state". His replacement, General Walter Braga, is of a similar outlook to his predecessor. Since he is junior in years of service to the outgoing commanders their resignation was, in a narrow sense, a reflection of the military principle of hierarchy. But it also sent a political message. This was reinforced by the appointment of General Paulo Sérgio Nogueira as the new army commander. He was not Mr Bolsonaro's first choice; he has overseen the army's own, relatively successful, anti-covid-19 effort and has made veiled criticisms of the government.

The high command have two big worries. One is reputational damage. They know that the public views their association with the government negatively, says a former officer. "They are desperate to recover their image." The other is the growing split between constitutionalist commanders and *bolsonarista* retired and junior officers.

What raises the stakes is the spectre of Mr Bolsonaro in 2022 trying to ape the attempted insurrection against defeat by supporters of Donald Trump (which Mr Bolsonaro and his sons cheered on). The tacit message of the past fortnight is that the army would not support an attempt at election-stealing. But the police might. A police commander close to the president is the new justice and security minister. Mr Bolsonaro's family has ties to paramilitary militias; he has issued decrees loosening gun controls—to arm his base, say his critics.

If the race is tight the army could find itself having to choose between defending the man it naively embraced, or backing the constitution and thus having to repress his supporters. This would risk the split in its ranks that wiser officers are desperate to avoid. Having made their bed with Mr Bolsonaro, the armed forces may find themselves lying in it uncomfortably for years to come.

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Mexico's economy

A tight-fisted socialist

MEXICO CITY

AMLO's erratic economic policies could turn out to be an electoral weak spot

WHEN MEXICO's president, Andrés Manuel López Obrador, was elected in 2018 he entered office with an approval rating of 76%, the highest for any new president in recent times. Astoundingly for an incumbent who has overseen one of the worst pandemic responses in the world, he remains popular, with nearly two-thirds giving him the thumbs up (see chart). Yet when it comes to his policies, Mexicans are far less sure of AMLO, as he is known.

Time for another presidential lecture

One of his weaknesses is the economy, which shrank by 8.5% in 2020, the worst slump since the 1930s. Some 47% of voters think he is managing it badly, second only to the share who disapprove of his handling of organised crime (52% think he is doing poorly at curbing gangs). That should worry him. On June 6th hundreds of seats are up for grabs in legislative, local and gubernatorial elections. Morena, the party he founded, which is now the head of a coalition government, leads in the polls. But the election will still be seen as an important test for his brand of populism.

When he arrived in office, AMLO made big promises. He vowed to reduce poverty and to double Mexico's lacklustre annual growth rate, which has been stuck at an annual average of just 2% for almost four decades. But his policies have not, by and large, lived up to the hype. In 2019, before covid-19 hit, the economy shrank by 0.1%. That was despite falling interest rates, a robust economy in the United States, which absorbs three-quarters of Mexico's exports, and the signing of the USMCA trade deal by the United States, Canada and Mexico to replace NAFTA.

"What growth there has been in Mexico in recent years has come from a growing population and investment. [And] AMLO damaged the latter," says Santiago Levy, a former deputy finance minister under the Institutional Revolutionary Party (PRI), which ran the show for most of the 20th century and is now part of the opposition. Between 2018 and 2019 foreign direct investment fell by 5%, thanks to the government's habit of reneging on contracts. Early in his term AMLO pulled the plug on a new international airport in Mexico City planned by his predecessor, which was half-built; much of the planned budget of $13bn had already been spent.

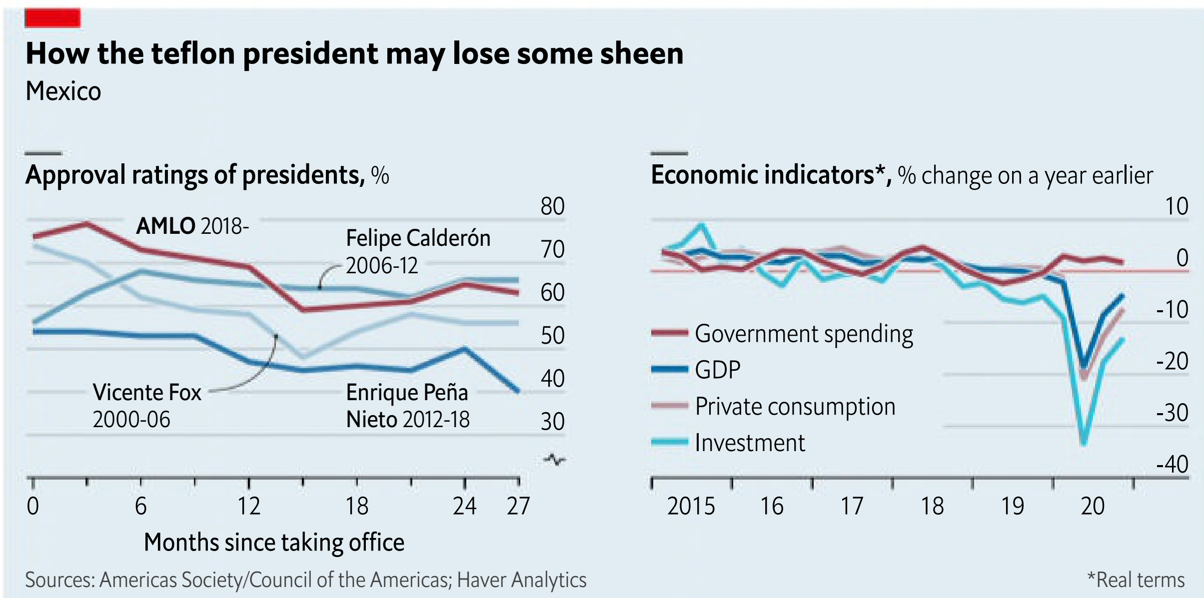
The most disruptive example of AMLO's erratic policymaking is in the energy sector, where he is determined to boost state providers. A bill currently before lawmakers would give Pemex, the national oil giant (and the world's most indebted oil company) control over imports and distribution of fuel. It also lays down broad grounds on which private firms can have their permits suspended. A law introduced in February, currently suspended by the courts, would allow CFE, the state electricity company, to feed the power it generates into the grid before other producers, regardless of cost or environmental impact.

The pandemic has not helped matters. With over 200,000 dead from covid-19, Mexico has suffered the world's third-highest reported death toll in absolute numbers. Revenues from tourism, which in a normal year account for 9% of GDP, shrank by more than half in 2020. Consumption, already falling in 2019, tumbled further. And, unlike other leaders in the region, AMLO, a fiscal hawk who says counter-cyclical measures "only deepen inequality and encourage corruption that benefits a few", refused to ramp up government spending to help people and businesses weather the pandemic. By January 2021 Mexico had spent a measly 0.7% of GDP on health care and handouts, compared with 7.2% in Brazil. The economic pain for many Mexicans would have been much worse were it not for relatives abroad sending home record amounts of cash. Remittances rose by 11.4% to $41bn in 2020, close to 4% of GDP.

According to the UN's regional economic commission, in 2020 the proportion of Mexicans who were unable to afford even basic necessities rose by nine percentage points to just over half—worse than anywhere else in Latin America. Wages fell, despite a rise in the legal minimum. More than 1m small- and medium-sized businesses went bust in the past two years.

The economy could pick up. Both the IMF and the finance ministry project 5% growth in GDP this year—thanks in part to the huge stimulus plan in the United States and the vaccine drive, which is slowly gathering pace. Mexico could also gain from the trend of near-shoring, which has been boosted by the pandemic, says Luis de la Calle, an economist. But although the government has brought forward some planned increases in social handouts ahead of the June elections, economists reckon that the overall low level of spending will hamper the recovery. Investment in Mexico is now at its lowest share of GDP for a quarter of a century. Bright spots such as manufacturing are doing well despite government policy, not because of it.

Mexico should be doing better: its people are young and it is next door to the world's largest economy. The question for AMLO is whether a post-pandemic bounce will be enough without the changes needed to foster lasting growth. ■



Covid-19 in South Asia

Indian brink

DELHI

India and its neighbours are becoming the hub of the pandemic

On April 7th India detected more than 125,000 new cases of covid-19—more than any other country in the world. The same day neighbouring Bangladesh registered far fewer—just over 7,600—but that was nonetheless a record for the country. Pakistan, too, is suffering a surge in infections, with the president, prime minister and minister of defence among those afflicted. In all three countries, testing in rural areas is almost non-existent, so the official tally of cases is likely to be a drastic undercount. On its current trajectory, South Asia, home to a quarter of humanity, will soon eclipse the European Union as the centre of the pandemic. Having suffered almost 200,000 known deaths from the disease already, the region is on the verge of further tragedy.

Cases in India have been rising shockingly fast. They leapt from 15,000 a day to 100,000 a day in just a month. India now eclipses America and Brazil, the two next most afflicted countries, in terms of new infections (see chart on next page). Just one of India's 28 states, Maharashtra, accounts for half of these cases, suggesting that overall numbers will continue to surge as the wave spreads more widely around the country.

Bangladesh, India and Pakistan are all vaccinating as fast as they can, but given the scale of the task their efforts are too little and too late. India, a big producer of vaccines, is taking the lead. Starting in January, a phased roll-out prioritised first doctors and nurses, then the elderly and those at high risk. As the urgency grew, private hospitals were invited to join the campaign, which was widened on April 1st to everyone 45 or older, even as vaccination centres were instructed to remain open seven days a week. The government has also ordered the biggest maker of vaccines, the privately owned Serum Institute of India, to suspend exports.

→ Also in this section

To date, India has dispensed about 90m doses. It is administering more than 3m a day. But, experts say, in a country of 1.4bn this is not fast enough to flatten the curve of infection. That would take more like 10m a day. Pressure has mounted for the government to open the spigot further by licensing new vaccines, by allowing private dispensers to charge a price determined by the market and by removing age as a criterion for eligibility. But until more of the half-dozen or so vaccines under development in India are certified and enter mass production, perhaps by midsummer, demand will outstrip supply.

It does not help that the current wave appears to be powered by more virulent strains of covid-19. Genetic sequencing of virus samples from the Indian state of Punjab in March found that 80% of patients were infected with the fast-spreading B.1.1.7 strain first detected in Britain last year. Other worrying variants have emerged, including one in Maharashtra dubbed the "double mutant".

Happily, India's capacity to test for and treat the disease is also growing rapidly. Uddhav Thackeray, the chief minister of Maharashtra, says that over the past year the number of labs in the state that can test for covid-19 has risen from two to more than 500, and hospital beds equipped for covid patients have multiplied by a factor

Subcontinental shift

Covid-19, daily new confirmed cases, '000

Seven-day moving average

Sources: Our World in Data; Johns Hopkins University CSSE

of 37. Most Indian health workers are vaccinated, and doctors say they are getting better at treating covid-19 patients.

Yet labs and hospital beds are heavily concentrated in India's largest metropolises. In an urgent circular on April 2nd the central government warned that it was smaller towns and "peri-urban areas" that are now experiencing the biggest surge in cases. Hospitals in Nagpur, Nashik and Pune, big cities in the interior of Maharashtra, report a distressing rise in numbers of villagers arriving with advanced illnesses, too late to be helped. Chhattisgarh, a poor, overwhelmingly rural state adjacent to Maharashtra that was relatively untouched in the first wave of the pandemic, has also seen a big spike.

Pune, ironically the headquarters of the Serum Institute, is currently India's worst-afflicted district, reporting some 13,000 new cases a day. Almost a third of tests there are positive—a strong indication that covid-19 is far more rampant than the official numbers suggest. The municipal authorities have announced a week-long shutdown from April 3rd, halting public transport, closing all shops and places of worship and imposing a nightly curfew.

Similar local measures are slowly spreading across the country. Delhi, which had begun a staged reopening of schools only in February, has abruptly shut them all again. But the central government is not likely to repeat the harsh nationwide lockdown that it imposed a year ago. Then, tens of millions of poor migrant labourers were left stranded and the economy contracted by 24% in a single quarter. It has since limped back to life, but the government is wary of making any moves that could delay recovery. Similarly nervous, Bangladesh has ordered a week-long lockdown, but has exempted garment factories, the country's main export earner.

Vimal Bhatt, an IT worker in hard-hit Mumbai, the capital of Maharashtra, says he can count 40 people in his extended family alone who have had covid-19, though luckily none with serious symptoms. "All of them work from home," he shrugs, "But you have to pop out now and then if only to buy vegetables, and that's when it gets you." Hersh Kapadia, who is employed by a large brokerage in the city centre, says his company has refused to allow work from home, even though a dozen of his colleagues have fallen ill. Avoiding the crowded canteen, he takes lunch at his desk. Will he complain? "Are you crazy?" he says. "All of us just keep our heads down and work. I'm lucky to have a job."

Luckily for India and its neighbours, death rates from covid-19 appear relatively low, even allowing for significant under-counting. That is probably in part because South Asia's population is relatively youthful and thus less susceptible to the disease. Diet, climate and previous exposure to pathogens may also play a role. But there is also a natural lag of several weeks between infections and deaths, so fatalities are likely to rise substantially across the subcontinent later this month. The pandemic's second wave in South Asia will get worse before it gets better. ■

Covid-19 in Bhutan

One-week wonder

DELHI

A tiny Himalayan kingdom sets the global pace for vaccinations

When India presented Bhutan with a generous gift of covid-19 vaccines in January, the neighbouring kingdom made an unusual choice. Rather than rush to inoculate all 800,000 of its citizens, the government sought advice from the Zhung Dratshang, a body of Buddhist monks. The stars were not auspicious, they ruled. Better to wait two months, and then to make sure that the first dose be both administered by, and given to, a woman born in the Year of the Monkey.

So Bhutan waited until March 27th before Tshering Zangmo administered the first jab to Ninda Dema. The injection took place at a school in the capital, Thimphu, at the auspicious hour of 9.30am, after prayers were chanted and butter lamps lit. But then there was no dallying. Within a single week a world-beating 85% of Bhutan's adult population had received a first shot. Only two countries, Israel and the Seychelles, have vaccinated a (slightly) higher proportion of people, but both took months to do so (see chart).

Credit is due not only to Bhutan's astrologers, but also to its political leaders. Jigme Khesar Namgyel Wangchuck, the "Dragon King", formed the Guardians of Peace, an orange-jumpsuited national-service corps that has helped to set up and staff more than 1,200 vaccination stations across the country. The prime minister, Lotay Tshering, is himself a doctor and the health minister, Dechen Wangmo, holds degrees in cardiology and epidemiology from prestigious American universities.

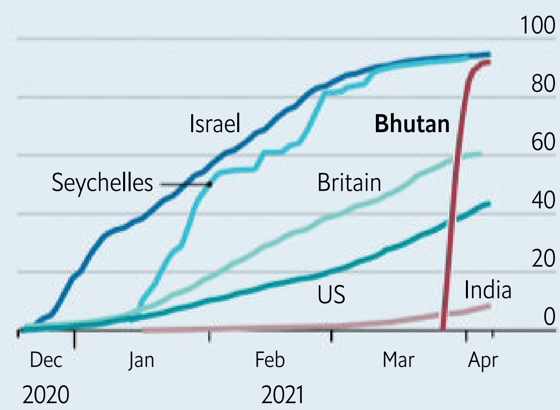
Elected in 2018 on a platform that emphasised public health, their government has responded vigorously to the pandemic. Quarantine measures have been strict: in March the king himself spent a mandatory week in isolation after returning to Thimphu from a tour of southern provinces, and the prime minister locked himself away for 21 days following an official trip to Bangladesh.

Mr Tshering, whose Facebook page is largely devoted to keeping the public informed about covid-19, explains that because the logistics of vaccine storage and delivery are complex, and because some people suffer side effects and everyone will need a booster shot, it made sense to foster popular acceptance by turning the campaign into a lively national event. The tight schedule was sensible for another reason, too. India, Bhutan's traditional benefactor, did not provide its tiny ally with a full vaccine supply all at once. Waiting for enough to arrive allowed the Bhutanese to avoid rationing. By vaccinating everyone quickly, Bhutan has also put subtle pressure on India, which is facing its own supply troubles, to deliver the required boosters soon.

Although Bhutan has suffered only a single death from covid-19, it is not without troubles. Unemployment is at a record high, albeit of only 5%. The cost of green chillies, a main ingredient (along with yak cheese) of *ema datshi*, the staple dish, has reached an eye-watering 700 ngultrum a kilo—nearly $10. The home minister recently resigned after allegedly making a false insurance claim on his car. Another scandal, involving army officers and judges, plus a lady go-between, is making tongues wag. Then again, these are problems the rest of the world would love to have. ■

A country of steep slopes

Adult population who have received at least one dose of covid-19 vaccine, %



Source: Our World in Data

The South China Sea

Reef madness

China tries to pinch yet another maritime outcrop from the Philippines

THE CHINESE ships that appeared around Whitsun Reef in March were unusual for fishing vessels. They seemed to do little fishing, for a start. Satellite images revealed them to be pristine and lined up with military precision. China said the ships were simply sheltering from bad weather. But the Philippine government said they belonged to China's "maritime militia", a naval auxiliary force under the command of the People's Liberation Army. The result is the latest stand-off in the South China Sea.

The Philippines says that Whitsun Reef, which it calls Julian Felipe Reef, lies within its "exclusive economic zone" (EEZ)—the area within 200 nautical miles of a country's coastline over which it has certain rights. The reef, one of many in the Spratly Islands in the centre of the South China Sea, does not look like prime property. Some 13km long and shaped like a boomerang, it appears above water only at low tide. It is about 320km from the Philippines proper and about 1,060km from China. Yet China, which lays claim to almost all the South China Sea, has built and occupied artificial islands around similar outcrops in the Spratlys, such as Johnson Reef, 50km to the west, and Fiery Cross Reef, 180km to the west (see map). They now have airstrips, radar systems and a variety of missiles.

In 2016 an international tribunal in The Hague rejected China's vague and sweeping claims in the South China Sea, including to the Spratly Islands, in a complaint brought by the Philippines. But Rodrigo Duterte, the Philippines' president, has largely avoided confronting China over the issue, preferring instead to needle America, an ally but also a former colonial occupier of the Philippines.

Thus it was a surprise when Mr Duterte's government strongly denounced the latest provocations. On March 21st Delfin Lorenzana, the defence minister, demanded that the 220 Chinese vessels in the reef's lagoon leave "our sovereign territory". Two weeks later he complained that China had shown "utter disregard…of international law". The next day Teddy Locsin, the foreign minister, thundered at China's "blatant falsehoods". Though many of the ships have now left Whitsun Reef, they are thought to have dispersed to nearby reefs, still within the Philippines' EEZ.

China has deployed a notionally civilian maritime militia since the 1970s, and Vietnam operates a similar fleet, although not as large or active. Chinese fishing boats played a big part in the Chinese seizure of disputed rocks and sandbars such as Mischief Reef in 1994 and Scarborough Shoal in 2012, notes Ryan Martinson of the US Naval War College. In late 2019 and 2020 China used both its maritime militia and its coastguard to intimidate the *West Capella*, a ship licensed by Malaysia to drill for oil and gas. In January China passed a law expanding the powers of its coastguard, allowing it to use force more readily.

The standoff over the *West Capella* prompted America to send first a warship, then bombers and finally a pair of aircraft carriers to the area. This time round, America has decided to send muscle again. On April 4th an American carrier strike group, led by the *USS Theodore Roosevelt*, entered the South China Sea.

The Philippine government is not as consistent. Despite his underlings' fulminations, Mr Duterte is emollient: "Whatever differences we have with China…will not be an obstacle to the overall positive trajectory of our bilateral friendly relations." As

he put it in February, "I cannot afford to be brave in the mouth against China, because we are avoiding any confrontation that would lead to something we can hardly afford." Even if he wanted to send his coastguard or navy to eject the Chinese ships from Whitsun Reef, they lack the charts necessary to navigate its shallow waters. ■

Haikus and climate/

As the seasons defy norms/

TOKYO

Poets are struggling

"HOW MANY, many things/they call to mind/these cherry blossoms!" the poet Basho once wrote of Japan's favourite flower. The blossoms have long provoked reflections on beauty, transience and the unceasing rhythms of the natural world. This year, their annual appearance has many thinking about how those rhythms are changing. The cherry trees in Tokyo began flowering on March 14th, tying the record for the earliest start since the Japan Meteorological Agency began monitoring in 1953. In Kyoto the trees reached full bloom on March 26th, the earliest date in 1,200 years of records. Scientists believe climate change is to blame.

Soon *sakura* may come not just early, but in less profusion. The cherry tree common in most of Japan, the Somei Yoshino breed, requires a protracted cold spell in autumn and winter in order to produce its resplendent buds in spring. Temperatures must remain below 8°C for around 40 days—something that is no longer a certainty in parts of southern Japan. Happily, scientists at Riken, a research institute, have created a less picky variety. Abe Tomoko and her colleagues scrambled cherry stones' DNA by irradiating them in a particle accelerator. The result is the Nishina Otome variety, which still flowers after a mild winter.

It is not just cherry trees that climate change is confusing, however, but also the poets who write paeans to them. Seasons have long occupied a prominent place in Japanese literature: *Kokinwakashu*, a poetry anthology published in the 10th century, opens with six chapters of seasonal poems. Basho, who popularised haikus in the 17th century, tended to include in his poems *kigo*, or seasonal words, to anchor them temporally and thus evoke a certain emotional state.

Over the centuries, poets compiled almanacs of *kigo*, categorising most natural and even some human phenomena by season, or even by particular months. But as the climate warms and weather becomes more extreme, *kigo* are slipping from their seasonal moorings. This "season creep" makes it harder for contemporary readers to understand traditional haiku, says David McMurray, who teaches the form at the International University of Kagoshima. A poem that mentions typhoons is supposed to evoke autumn, but they now occur as early as May and as late as December, laments Miyashita Emiko, a poet. The fluctuating *sakura*, although worrying, are still evocative. They bring to mind "the danger of the situation we are in".

Politics in Thailand

Strength without numbers

Democracy protests have dwindled, but public anger has not

Last summer, despite the tropical heat and humidity, more than 10,000 mostly young protesters paraded repeatedly through central Bangkok. The protests had a carnival atmosphere. Students dressed as Harry Potter, the better to vanquish He-Who-Must-Not-Be-Named (King Maha Vajiralongkorn); held aloft giant yellow ducks (a symbol popular with democracy activists around the world); and flashed the three-fingered salute inspired by "The Hunger Games", a series of books and films about resistance to tyranny. The protesters had three demands: an end to the government of Prayuth Chan-ocha, the coup-leading general who has installed himself as prime minister; the adoption of a new constitution to replace the one drawn up by the army; and a reduction in the powers of the monarchy.

The demonstrations continue, but over the past few months, the crowds have rarely exceeded 3,000. On some days just a few hundred turn up. The youth-led democracy movement appears to have run out of steam. "Even among the protest leaders, we are at a loss," says Yanisa Varaksapong, an 18-year-old activist. "With our friends being arrested, and the reaction of the people, who aren't as ready to come out on the street as they were last year."

Five factors have contributed to the dwindling numbers. The first was a spike in cases of covid-19 in late December, which briefly brought the protests to a halt. Second, when students returned to the streets, police greeted them with tear gas, water cannon and rubber bullets. Third, the coup in neighbouring Myanmar on February 1st and the subsequent demonstrations in favour of democracy there have diverted international attention. Fourth, factionalism among the organisers has eroded popular support.

But the fifth and most important factor is fear. In recent months, after a two-year hiatus, the government has resumed charging people with *lèse-majesté*, or insulting the monarchy, which is punishable with up to 15 years in prison. Leniency is rare. Several prominent protest leaders, including Parit "Penguin" Chiwarak, a student activist, and Anon Nampa, a human-rights lawyer, have been detained under the law and denied bail.

The arrests have changed the democracy movement, says Pavin Chachavalpongpun of Kyoto University. "You only see sporadic protests," he says. "And mostly these sporadic protests have only one aim: to call for the release of their friends." On March 15th Mr Parit went on hunger strike to demand bail, helping to keep the detained protesters in the public eye.

Paul Chambers of Naresuan University argues that, despite the dwindling numbers, the government is not out of the woods. Longer-term challenges are piling up. Mr Prayuth, who seized power in a coup in 2014, is increasingly unpopular. The economy, heavily reliant on tourism, shrank by more than 6% last year. In January tourist arrivals were 99.8% lower than in the same month in 2020. This week parts of Bangkok went into partial lockdown after a jump in new cases of covid-19.

Although Mr Prayuth pushed through an authoritarian constitution and then manipulated the rules and legal proceedings to minimise opposition representation in parliament, opposition MPs are still managing to embarrass the government. They have tabled repeated no-confidence motions in Mr Prayuth and his ministers and have attempted to amend the constitution to make it more democratic. Although none of these efforts has succeeded, they have kept the spotlight on the government's failings.

"I think the mood in August and September was that victory was right around the corner, and now…people see, much like earlier generations, that this is the struggle of a lifetime," says Tyrell Haberkorn of the University of Wisconsin. Even so, through their open criticism of the monarchy, the protesters have already changed Thai society. "That is something no one would have foreseen," says Mr Pavin. "The unsayable has become sayable." ■

They were sitting ducks

Pakistan's armed forces

If you can't beat them, obey them

ISLAMABAD

Imran Khan, the prime minister, gets on swimmingly with the army

Before he became prime minister, Imran Khan was happy to hold forth about the role of the armed forces in Pakistan. They were so influential in politics, he told *The Economist*, only because civilian governments had been so ineffectual. Once in office, he said, he would change all that. Yet in early March, when his government lost an important Senate election, he did what he has done many times as prime minister, and rushed off to seek the advice of the high command, to the derision of his political adversaries.

For most of the period since independence in 1947, Pakistan's army has either run the country directly, under military dictators, or pulled strings behind the scenes. Civilian politicians, in turn, have either rubbed along with the army or been ousted by it. No surprise, then, that far from Mr Khan putting the army in its place, opposition politicians contend that it was the army that awarded Mr Khan his current position. In return, they argue, Mr Khan has run a government of unparalleled subservience to the generals.

It is true that khaki tentacles seem to be reaching ever further into the business of government. For a long time retired generals have marched into ambassadorships and other sinecures. Jobs such as running the national disaster-management authority might come naturally to ex-soldiers, who are widely considered competent administrators. But current and former military men have gradually taken on more and more jobs that are central to the health of the economy. They run the civil aviation authority, the national institute of health, various state-owned firms including the national airline, and the government agencies in charge of power, water, telecoms and housing. To crown the army's hold on the economy, a retired general, Asim Bajwa, heads the agency that supervises the China-Pakistan Economic Corridor, helping funnel some $60bn of Chinese investment into infrastructure.

The main difference between Mr Khan's relationship with the army and that of his predecessors, says Farzana Shaikh of Chatham House, a think-tank, is how harmonious it seems. "What is different about this particular government is the dropping of all pretence that it conducts policy independently of the military," she says. Whereas previous governments sparred with the top brass, Mr Khan seems happy to do as he is told.

Mr Khan's longest-serving predecessor, Nawaz Sharif, rose to prominence as a protégé of the military dictator of the day, Zia ul-Haq. But the army toppled him in a coup in 1999. After he came to power again in 2013, he bickered with the generals about their failure to clamp down on Islamic terrorism. At times during his premiership, the army was openly insubordinate, refusing to help disperse protesters who were paralysing the capital, Islamabad, for example. A television network that enthusiastically backed Mr Sharif mysteriously disappeared from the airwaves. Pakistanis widely assume that the army was behind Mr Sharif's ban from politics at the hands of a special anti-corruption court in 2018. Since his ouster, he has railed publicly about the army's interference in politics.

Mr Khan, in contrast, does not seem to be jostling with the generals. Instead, his relentless legal harassment of his political opponents has left him with only narrow political support and therefore especially reliant on the army, Ms Shaikh argues. Qamar Javed Bajwa, the chief of army staff, assures diplomats he has no desire to run the country. He makes a show of calling Mr Khan his "boss". And he does seem ready to help drum up votes from pliable politicians when Mr Khan's powers of persuasion fail him.

No one imagines, however, that the relationship is really a two-way street. If the army comes to view Mr Khan as a liability, it is unlikely to have much compunction about dropping him, just as it did Mr Sharif. At that point Mr Khan may remember the view he expressed in opposition, that the generals "just don't have the vision to run the country". ■

Banyan Bubble trouble

Do not expect Asia's air bridges and travel bubbles to multiply rapidly

MORE THAN a year after they shut their borders, Australia and New Zealand will soon have a go at quarantine-free travel. From April 19th residents of the two countries can fly across the Tasman Sea to do business, see family and friends—or just revel in the novelty of holidaying in another country.

The trans-Tasman bubble is not the first between countries that have brought cases of covid-19 infections close to zero. That prize goes to Taiwan and the closest country with which it has diplomatic relations, Palau. On April 1st 96 Taiwanese tourists and the jubilant president of Palau, Surangel Whipps, took off from Taipei for the tiny Micronesian state, where the tourism industry has been hammered. Yet it is hardly unfettered travel. Taiwanese holidaymakers must test negative for covid-19 at the airport. In Palau they may travel only in approved tour groups, stay in designated hotels and follow specific itineraries. Back in Taiwan they must eschew public transport, restaurants and crowded places for five days. They cannot even share rooms with family members at home. Still, it beats the only other reason to get on a plane: two-hour "flights to nowhere".

The trans-Tasman bubble is a bigger deal. Before the pandemic, the 1.5m Australians who visited New Zealand each year accounted for 40% of all international visitors. For months New Zealand's prime minister, Jacinda Ardern, who has vigorously policed covid-19 at the country's borders, resisted Australian pressure for a bubble so long as localised outbreaks persisted in Australia. "As much as I know that our tourism cities and towns really want the return of Australians," Ms Ardern said this week, justifying the long wait, "I know they equally do not want the return of covid, full-stop."

Yet the trans-Tasman bubble, for which neither tests nor vaccinations are needed, will not be just like flying was in the old days. There are contact-tracing forms to fill out. Mask-wearing in airports and on flights will be compulsory. On landing, passengers will be sequestered from arrivals from other places. Above all, any fresh outbreak of the coronavirus in Australia could mean Kiwi travellers are stranded or, upon return, subjected to a full 14 days of supervised quarantine. Some of Banyan's Aussie acquaintances express reluctance to book a Kiwi skiing holiday in case the air bridge buckles.

Getting the trans-Tasman bubble going hints at the challenge of expanding bubbles across Asia. Cook Islanders are free to go to New Zealand without any quarantine, and Kiwis may soon be allowed to go the other way. A planned Hong Kong-Singapore bubble, which popped at the last minute because of a new wave of infections in Hong Kong late last year, may yet be reinflated. Thailand, meanwhile, wants to welcome holidaymakers from Hong Kong. But it is awkward for Hong Kong to allow travel to too many other places before it is possible to go to the rest of China—a step the authorities on the mainland are not yet ready to allow.

Singapore, meanwhile, has talked with several places about bubbles. But it does not want to move before it hosts the World Economic Forum in August. It plans to use that event to showcase its handling of the pandemic and is loth to risk spoiling the story.

Singapore and Australia, like other Asian countries with good pandemic records, may not start blowing multiple bubbles until their populations have reached herd immunity through vaccinations. Qantas, an Australian carrier, does not expect flights to Singapore and beyond before October. Yet that raises two other complications. One is bureaucratic. It will be impossible, says an airline executive, to resume travel when relying on "bits of paper" as proof of covid-19 vaccination or negative tests. Yet governments have been slow to agree on a digital standard, although Singapore signed up to the International Air Transport Association's this week.

The bigger stumbling block is the slow roll-out of vaccines across Asia, both because of shortages of supply and because of reluctance to get the jab. In Hong Kong, vaccine hesitancy is driven by abysmal trust in government (see China section). Vaccination programmes in Singapore and Australia are also going more slowly than hoped. And so a paradoxical prospect: travel in North America and Europe, which have handled the pandemic badly but are doing better with vaccinations, may resume more quickly than among countries in Asia, which have handled the pandemic well but struggle to get shots in arms.

Left-behind children

In grandpa's charge

LEYUN VILLAGE

Some 31m children live apart from both parents, who have moved away for work

EVERY SPRING, the Qingming festival brings families together for displays of respect and sorrow at the burial sites of their deceased relatives. Some travel a long way to reunite over the three-day holiday, which ended on April 5th. Among them this year were the Zhaos of Leyun, a village in the lush Daba mountains of Sichuan province in the south-west. For migrant parents like them, there are living relationships that cause quiet grief, too. When their daughter, Lin, was just one month old the couple left her with her grandmother to allow them to return to their factory jobs on the coast. That was six years ago. Since then, Lin has spent only about 30 days with her parents. To her, this holiday's get-together was with virtual strangers.

There are about 31m people in China like Lin—children who have been left behind in their home towns or villages, usually in the care of relatives, while both of their parents work elsewhere. The largest wave of internal migration in history—involving about 300m people who have moved to cities over the past four decades—has battered many other families, too. In 2015 Unicef, the UN agency for children, estimated that more than one in three children in China, or close to 100m, had experienced the prolonged absence of at least one parent. In nine out of ten cases, the main reason was migration.

Another important cause has been China's rigid system of household registration, known as *hukou*. Someone without *hukou* in the city where he or she lives is frequently denied access to local government-funded services, such as health care and schooling. Migrants therefore often have little choice but to leave children behind in their registered place of residence. Across China, many lives are racked by the pain this causes. At first Lin pined for her parents, says the girl's 57-year-old grandmother, a bean farmer. Then her pleas grew fainter, until one day they stopped. Now Lin refuses to speak to her parents when they ring home. She shrinks from their attempts to hug her during their rare, fleeting visits back to Leyun.

In recent years concern has grown in China about the plight of such children. State media have reported on their sufferings, including the torment of those abandoned with no one to look after them (in 2010 there were at least 2m without carers). About six years ago huge public debate was triggered by two such stories. One involved four siblings in the south who killed themselves with pesticide. They had been left behind with no guardian. The second was about another two left-behind siblings in the same region. They were murdered by two relatives who had been raping one of the children, a disabled 15-year-old girl.

In February 2016 the government responded to the outcry by publishing guidelines for the protection of left-behind children. These called for their numbers to be reduced "significantly" by 2020. They advised local authorities to monitor guardianship arrangements—it is illegal to let minors live alone. They also urged hospitals and schools to do a better job of reporting cases of suspected harm. In 2017 a new rule required village officials to register all left-behind children. Another, in May 2020, made failure to report neglect or abuse a possible crime. According to official figures, in 2018 local governments paired 76,000 unsupervised children with guardians, and helped the return to school of 160,000 left-behind children who had ▸▸

dropped out. Since 2017 the central government has kept a database of left-behind and vulnerable children, based on the records supplied by villages.

Officials have focused their attention on a subset of those affected. The guidelines in 2016 count as left-behind only those who are under 16 and have two parents working elsewhere. That year the government said there were just 9m children who could be classified as left-behind according to this definition. By 2018 the tally had fallen to under 7m. But children who have been separated from only one parent are often harmed, too. And it can matter which parent has left them. A Chinese study published in 2017 found that school drop-out rates were lower among rural children living with only a mother rather than only a father (rates were highest when both parents were away). In 2019 a paper in *Frontiers in Psychology*, a peer-reviewed journal, concluded that the presence of at least one parent at home, especially a mother, lessened the risk that a left-behind child would self-harm as a teen.

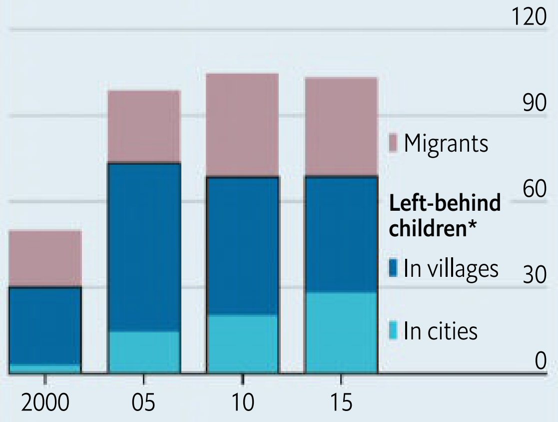
Rural parents often believe their presence is most vital when a child starts school. So they are more inclined to work elsewhere before their children reach that age, says Lu Shuang of the University of Hong Kong. More than a quarter of children in China under the age of two are cared for by people who are not their mothers, reports Unicef. The Chinese study of 2017 found that, as a proportion of all left-behind children, the number of under-fives had grown from 30% in 2000 to 40% in 2015. Many are never breastfed, depriving them of lifelong health benefits. That was so for Lin.

As they grow older, children face other traumas. Since 2015 surveys by On the Road to School, an NGO based in Beijing, have revealed consistently high levels of depression among left-behind children. In 2019 nine in ten of them said they had suffered from emotional abuse, and six in ten reported physical harm. Close to one in three had been sexually abused.

Such abuse often goes undetected. "The separation from parents means that children do not have the impulse to open up to them," says Wan Miaoyan, a lawyer in Chengdu who has worked on cases related to such crime. She recalls one in which relatives discovered what had happened only when they came across a letter that the victim had written to herself. In it she described being raped by a teacher. A child therapist says current systems of support rely on people from the same village who may themselves be abusers, rather than on professional outsiders.

Those systems are thinly stretched. Provinces with high numbers of left-behind children—Sichuan, a populous one, tops the ranking—tend to be among the poorest, with scant resources to devote to the task of protecting the vulnerable. But local governments are making an effort. Keep the Children Company, an official scheme in Sichuan, has involved setting up "children's homes" (a space in the village where they can play, read books and receive help with their homework), and appointing "mothers" to whom children can turn for emotional support. The central government has helped. Since 2010 it has trained people in 660,000 villages as "child-welfare directors", that is, to perform social work. It has also allowed the use of poverty-alleviation funds for spending on children's welfare.

Growing apart
China, children affected by migration, m



Source: UNICEF
*Includes children separated from one or both parents

In 2015 Lin's village of Leyun was among the first to introduce a Keep the Children Company project. Liu Chunhua, an energetic kindergarten teacher, was chosen to lead it. In Chengdu, the provincial capital, she learnt how to broach sex and mental health with the village's 20 children. Her efforts have paid off. A shy teen in Leyun was bewildered when she got her first period. A friend, also puzzled, prodded her to speak to "Mama Liu". The teacher explained to the girl what was happening to her body and taught her how to wear pads. Village elders often gossip unkindly about the parents of left-behind children. Ms Liu has put a stop to that. She knows the harm it can do. Villagers had once taunted her own left-behind daughter with the false notion that Ms Liu only came back to see her eldest son. Her daughter became so dejected that Ms Liu quit her factory job and moved back to the village.

Heading home, but not to mum and dad

But keeping tabs on children is getting harder. Most villages once had a school, where teachers could check that students were not hurt, sick or distressed. In the past two decades, however, over 360,000 underused village schools have been closed to save money. Leyun's hangs on by a thread. A decade ago it had 70 pupils. Now it has only two, in the youngest year-groups. Other children go to a school in Pujia, a town an hour's walk down the mountain. They usually return to the village at weekends. Lin attends a kindergarten there. Asked if she gets good marks, Lin says she is slapped on the hand fewer times than her classmates.

One glimmer of hope is that growing numbers of migrants are able to find jobs closer to their native villages, as factories move inland. Some parents from Leyun are settling with their children in nearby towns. And the covid-19 pandemic is a cause of unexpected joy for some: it has forced many migrant workers to return to their original homes. Half of Leyun's youngsters are currently living with both of their parents. That is "unheard of", says Ms Liu, the teacher.

Many of these parents were also once left-behind children. But rural conditions have improved immensely since those days. Zhu Yidan, a 25-year-old volunteer teacher who grew up as a left-behind child in Sichuan, says that when she was growing up people had to walk cross-country to reach villages. Now there are paved roads and children have enough food, clothing and toys. Parents can video-chat with them daily and buy presents for them online.

But a new problem is emerging. Increasing numbers of children are being left in urban areas by one or both parents who move away for work. There were about 28m such children in 2015, nearly three times as many as in 2000. Those who follow their parents from village to city have better diets and mental health than those who remain in the countryside, studies show. But those who are subsequently left behind in cities suffer higher rates of violence than those who stay in villages. Ms Wan, the lawyer, says there is "a debt owed by this country to its left-behind children". The account is far from settled. ■

Chaguan | The Middle East quagmire

Chinese leaders think they can avoid the traps that caught America. They may find it hard

China's leaders are trying to reinvent how great powers operate in the Middle East. They have busied themselves in recent years signing trade deals and co-operation agreements with regional powers that are, most of the time, rivals or foes of each other. China talks of its warm ties with Israel and Palestine, and has invited both to send envoys to Beijing for peace talks. In the Middle East, a region where trust is hard to find, China is hailed as a reliable supplier of covid-19 vaccines and surveillance technology to Arabs and non-Arabs alike. The world's largest oil importer, China is an irreplaceable trade partner both for Iran, the would-be leader of the Shia world, and for Saudi Arabia, its Sunni nemesis. More than once, Chinese warships have conducted separate exercises with the Iranian and Saudi navies, a few weeks apart.

Chinese leaders sound sure that their country's distinctive approach to geopolitics—one that stresses interests over values, and assumes that most foreigners can be bought for a price—will help them avoid the quagmires into which other outsiders in the Middle East have so often stumbled, from America to the colonial powers of old Europe. China's foreign minister, Wang Yi, while visiting six Middle Eastern countries in late March, deplored "the bad consequences inflicted on the region by external interference". In Iran Mr Wang signed a 25-year co-operation agreement. Its details remain murky, but the deal is thought to involve the exchange of cheap Iranian oil for help building telecommunications networks, hospitals, underground railways and, it is rumoured, ports on some of the world's most strategic waterways.

Chinese leaders make a virtue of their commercial focus. Addressing the Arab League in 2016, President Xi Jinping said that China sought no spheres of influence or geopolitical proxies in the region. Instead, he described a vision of progress built around economic growth, declaring that: "Turmoil in the Middle East stems from the lack of development." Even the hardest problems, such as Iran's loathing for America and Israel, are presented as puzzles that prosperity may solve. Notably, China insists that its promised investments in Iran will help rather than hinder efforts to prod the Iranian regime back into compliance with the nuclear accord (known as the JCPOA) that was brokered by the Obama administration and other powers in 2015. It was abandoned three years later by America's then-president, Donald Trump, who scorned the Obama-era approach of rewarding Iran for suspending nuclear-weapons research, and put his faith in harsh economic sanctions.

Yin Gang is a veteran scholar of the Middle East at the Chinese Academy of Social Sciences, a government think-tank. He sets out why the administration of President Joe Biden should believe that China opposes Iran's nuclear ambitions, even as it seeks to expand Sino-Iranian trade. China has selfish reasons for fearing an Iranian bomb, starting with the dangers of a regional arms race, says Mr Yin, a candid sort. "If there's a Persian bomb, there must be an Arab bomb and a Turkish bomb," he says. Though that may not directly threaten China, "If a nuclear war breaks out in the region, how would China do business with it?"

China's belief is that even the harshest economic sanctions do not stop countries from developing nuclear warheads, Mr Yin declares over tea in Beijing. He cites North Korea as a prime example. China's logic is that Iran will have more reasons to behave if America lifts sanctions and allows Chinese, European and other companies to resume legal trade with Iranian partners. That is why China calls on America to do so, and on Iran to resume compliance with the JCPOA's nuclear curbs. The unblushing self-interest behind those Chinese arguments is actually reason to think them sincere. And the Biden administration appears inclined to heed them, for now. After a high-level meeting in March in Alaska between American and Chinese diplomatic chiefs, Iran's nuclear programme appeared on a shortlist of areas for potential co-operation. Asked about Chinese plans to expand trade with Iran, a State Department spokesman called opposition to Iranian nukes one of a few "narrow areas of tactical alignment" between his country and China.

Foreign diplomats in Beijing note that China does, in fact, pursue political goals in the Middle East, such as by pressing Iran and Arab nations to endorse repression of the Uyghur minority in Xinjiang, a region of western China. Mr Yin offers a cynical riposte. Uyghurs are a Turkic people, and Arabs and Iranians distrust Turks, he says, so "Xinjiang is not a political issue for them." Still, he admits, many Chinese scholars worry about the balancing act that their country is trying to pull off. The Middle East is a place of opportunity but also "a trap, a swamp", he says.

Look on my works, ye Mighty, and despair!

Some Chinese experts talk of America leaving a vacuum in the Middle East. Danny Russel, America's assistant secretary of state for East Asian and Pacific Affairs in 2013-17, agrees that China senses a demand for a Chinese presence in the Middle East, amid talk of American unreliability. Chinese companies have been told to go out and sell advanced technologies that will carry their country's values and technical standards around the world, notably via the Belt and Road Initiative. But ambitious deals come with political risks. "The larger your footprint, the more valuable your investments, the more vulnerable you are," suggests Mr Russel, who is now at the Asia Society Policy Institute, a research outfit.

Even as America pulls back from the Middle East, its presence hovers over Chinese calculations there. China's most lucrative trade partners are Gulf Arab countries that cannot simply ignore America, their traditional security provider. America may yet ask old allies to take sides, for instance if China wants to build ports in the Middle East with dual commercial and military uses, or co-operate there over sensitive technologies. Amoral commercialism has helped China avoid many pitfalls in the region. Even so, its ambitions may yet run into the sands. ■

Labour gains

The Economist

SPECIAL REPORT:
The future of work

Labour gains

Workers the world over have had a torrid year. Yet the future is bright, says Callum Williams

The covid-19 pandemic has taken a terrible toll on the world's workers. It has destroyed millions of jobs, causing a drop in employment that was 14 times bigger than the one after the financial crisis of a decade ago. In many countries unemployment has risen to levels last seen in the 1930s, with the pain concentrated among the low-skilled. The pandemic has also accentuated inequalities that had previously often only bubbled under the surface. "Essential" workers had to continue travelling to and from their workplaces, exposing themselves to the virus and dying in great numbers even as many of their office-based compatriots were able to shield themselves at home. There are plenty who now fear that the post-pandemic labour market will be one of persistently high inequality and unemployment, with work outsourced abroad or simply handed over to robots.

Yet the belief that something has gone wrong with labour markets has a history of turning out wrong. Since the dawn of capitalism people have lamented the world of work, always believing that the past was better than the present and that the workers of the day were uniquely badly treated. Adam Smith argued that the burgeoning industrial sector of late-18th-century Scotland had the potential to make workmen "as stupid and ignorant as it is possible for a human creature to become". Emile Durkheim reckoned that in a glorious past in France, people had enjoyed work because they controlled it, were good at it, and did it in the bosoms of their community—but that capitalism had stolen all of this.

Even in the "golden age" of the 1950s and 1960s, when jobs were supposedly much better than they are today, a narrative of dissatisfaction loomed large. In the 1950s many social scientists asserted that America's unionised car workers were unhappy because their work was boring and they lacked any autonomy. By the end of the 1960s, the concept of "blue-collar blues" had entered the public imagination.

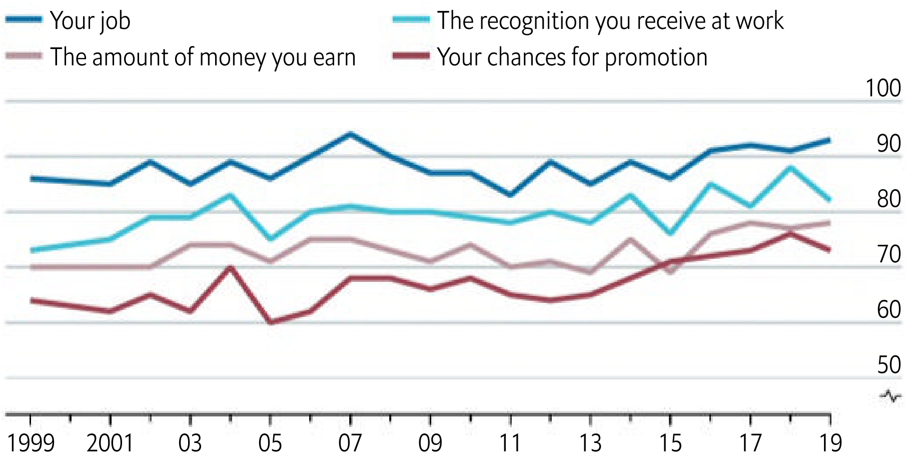
Shortly before the pandemic struck early last year people had a fresh set of concerns about work. The received wisdom, on both the right and the left, was that 21st-century workers were stuck in insecure and badly paid jobs, if they could find them at all—and that many faced an even worse future, as ever-smarter robots pushed them aside. What jobs remained were, for many people, soulless, pointless and unsatisfying. Guy Standing, an economist, talked of a growing "precariat". David Graeber, an anthropologist, coined the term "bullshit jobs" in a bestselling book in 2018. "Where have all the good jobs gone?" asked David Blanchflower of Dartmouth College in a book published a year later.

This special report will offer a rebuttal to such pessimistic assessments. Focusing on the 37 countries that are members of the OECD club of mostly rich countries, it argues that popular perceptions about the world of work are largely misleading. The labour market before covid-19 was far from perfect, but it was better than many critics were claiming—and it was getting better still. The pandemic has been a catastrophe for many, as this report will describe in detail. But its lasting legacy may be a better world of work, as it speeds changes that were already under way and high-

Getting better

United States, how satisfied or dissatisfied are you with...

% responding completely or somewhat satisfied



Source: Gallup

lights those places where further improvement is needed.

This matters. Labour markets are important not just because they allow people to earn enough to put food on their tables. People's jobs are perhaps the biggest single constituent of their identity. They shape their politics. It is grim to be out of work if you want it, or to be stuck in a job you hate. High unemployment is linked with higher crime and worse health. Estimates from America suggest that the rise in unemployment during 2020 will cause 800,000 extra deaths over the next 15 years.

That makes it fortunate that the world of work before the pandemic struck was actually quite successful. In 2019 the rich world's unemployment rate was lower than at any time since the 1960s. In America joblessness among black people was the lowest ever, as it was in Britain. Youth unemployment, which had once seemed intractable (especially in Europe) was also down.

The working-age employment rate (the share of 16- to 64-year-olds in a job), a more reliable indicator of labour-market health than unemployment, was also at an all-time high in over half of rich countries. A great surprise for many economists on the right was that this jobs boom occurred even as minimum wages rose smartly across the rich world and as immigration soared. A similar shock for those on the left was that capitalism was delivering clear gains for those at the bottom end of the labour market.

Pay may not have been rising as fast as many would have wished, but the era of ultra-measly settlements that marked the aftermath of the financial crisis of 2007-09 had come to an end. In late 2019 rich-world earnings were growing by nearly 3% a year (the figure was not even higher in part because poorer folk were joining the ranks of the employed in huge numbers, dragging down average pay). The wages of the worst-paid Americans were increasing 50% faster than those of the best-paid. Economists often focus on the "labour share", which measures total pay and benefits (such as health-care or pension contributions) as a proportion of national income, to give a sense of how workers are doing relative to the growth of the economy. In the years immediately before covid-19 this labour share was rising across America, Britain, the European Union and Japan.

It is however also true that income inequality was high by historical standards. Yet by the late 2010s it was no longer rising and might even have been falling a little, as the most disadvantaged people were pulled into the jobs boom. There were certainly fewer low-paid jobs, defined as those that pay less than two-thirds of the median wage. In Britain, for example, not since 1977 had there been so few.

How fast can labour markets bounce back from the shock of last spring?

Nor was there much evidence of a growing "precariat". A paper focusing on America, Britain and Germany, by Alan Manning and Graham Mazeine of the London School of Economics, finds "no trends in...subjective job insecurity in spite of the alleged rise in the prevalence of non-standard employment". By 2019 the share of German workers who felt insecure had fallen by more than half since the middle of the previous decade. Official estimates of employment in the gig economy suggested that it made up only a tiny fraction of all jobs.

And more people seemed to be enjoying their work. In 2019 Gallup, an American pollster, found that the share of Americans "completely" or "somewhat" satisfied with their jobs was the second-highest since its series began in 1993. Various measures of job satisfaction were also rising in Europe. It is difficult to make direct comparisons with the economic golden age of the 1950s and 1960s, but there is little evidence from the scattered surveys which can be unearthed to suggest that job satisfaction was higher then.

Well-educated people in high-prestige posts may consider many jobs in the modern labour market to be beneath them—insufficiently taxing on an intellectual level, perhaps. But this was another trade-off of a hot labour market: that jobs had become more widely available to people with the lowest educational qualifications. For such folk, being in work offers a measure of economic security, and dignity, that being out of work never can. Crucially, it also makes the next job easier to get. A study by Burning Glass, a labour-market analytics firm, finds that half of young workers are able to translate their first job, one that often requires less than a bachelor's degree and less than two years' experience, into better-paying jobs within five years.

Long way home

The big question is whether, after the pandemic is over, labour markets can regain these heights and start once more working for people of all backgrounds. Far from making everything worse, this special report will argue that covid-19 will ultimately make things better by speeding up changes that were already under way. This will happen through a number of routes.

Thanks to the rise of remote work, more people will have more flexibility over when, where and how they earn their living. Few bosses will be wholly indifferent as to whether their employees are working in New York or in Niue. But the shift to a "hybrid" model of work, with some taking place in an office and some at home, is already forcing managers to become better communicators, improving employees' job satisfaction. It is also stimulating helpful and long overdue changes in employment law.

This is not the only way in which policy is changing. What has been lost in the past year has made governments everywhere grasp the benefits of a healthy labour market, especially to families on low and moderate incomes. The pandemic thus presages a bigger role for governments than might previously have been expected, especially in sustaining employment, doing more to reduce inequality and coming up with better-designed systems of employees' rights and welfare benefits.

And what of automation, another perennial fear about the world of work? Some worry that the past year's experience might just give bosses the excuse they have long wanted to employ robots instead of people, leading to widespread joblessness. Recessions and pandemics do indeed often provoke a burst in automation. But the purported threat of a world without work is unlikely to come to pass—and could even recede.

In the short term, though, one question looms largest of all, and it is to this that the report turns next. How fast can labour markets bounce back from the shock of last spring? ■

The shock

Crash landing

Labour markets have coped better than expected with covid-19. But they have changed

THE JOBS numbers a year ago were grim. Unemployment across the rich world rose from 5% to 9% in April 2020. In America unemployment rose from 4% to nearly 15% in a month, such a rapid increase that some social-security computers broke. In its June 2020 forecasts, the OECD foresaw worse to come. If there were a second wave of covid-19 at the end of the year, it said, unemployment would reach 12.6% before inching downwards, but not falling below 10% until the second half of 2021.

There were good reasons to expect high unemployment to persist. Rather like the price of petrol, it tends to be quick to rise but slow to fall. Fifty years of data from America, Australia, Canada and Japan suggest that increases in unemployment happen 50% faster than declines. A worker can clear her desk in minutes, but searching, applying and interviewing for a job takes time. After recessions bosses are cautious about hiring new workers, as they want to be sure that business has genuinely recovered. Moreover, the pandemic turned out to be even more malevolent than the OECD predicted, with some countries experiencing three waves of infection. Yet unemployment across the club fell rapidly from a peak of 9% in the spring. By the end of 2020 it was 6.9%, half the level that the OECD had feared.

Some pundits fret that unemployment is now a poor guide to the labour market, because large numbers of people have dropped out of the labour force. Correcting this by assuming that everyone who has left the labour force really wants a job raises "true" unemployment by 1.5 percentage points. That is a big difference, but not enough to change the story of a labour market performing better than expected.

Using official data is tricky for another reason. In many places, including Australia, Japan and especially Europe, governments launched furlough schemes, under which people were counted as employed even though they were not working. There have been efforts to correct for this, including one by UBS, a bank, that analyses economy-wide working hours to estimate a "shadow" unemployment rate. Yet there is evidence of a bounceback. *The Economist* has adapted UBS's methodology and finds that Europe's shadow unemployment rate rose from 7% in 2019 to 20% in the second quarter of 2020, but fell to 10% in the third quarter and has probably fallen further since.

The idiosyncrasies of a pandemic-induced recession may explain why the labour-market recovery has been faster than expected. The rich world has got better at coping with lockdowns. Restaurants have found ways to offer takeaway and delivery services. Governments have allowed more low-risk activities, such as ▸▸

The truly disadvantaged

Covid-19 is especially a disease of the poor and the powerless

DURING THE pandemic one part of the workforce did not get to wear pyjamas during the day or join in marathon sessions of "Tiger King". The people known as "key", "frontline" or "essential" workers had to be in public spaces and often in close proximity with their colleagues. Many died.

Describing a worker as "key" is an arbitrary exercise (the label covers most journalists, for example). It usually includes occupations necessary to meet everyone's basic needs—food, heating and transport, not to mention health care. Most such jobs cannot be done from home. Essential workers are more likely to be ethnic minorities. They are also relatively badly paid. The Institute for Fiscal Studies (IFS), a think-tank, reckons that the average key worker in Britain earns 8% less than other employees.

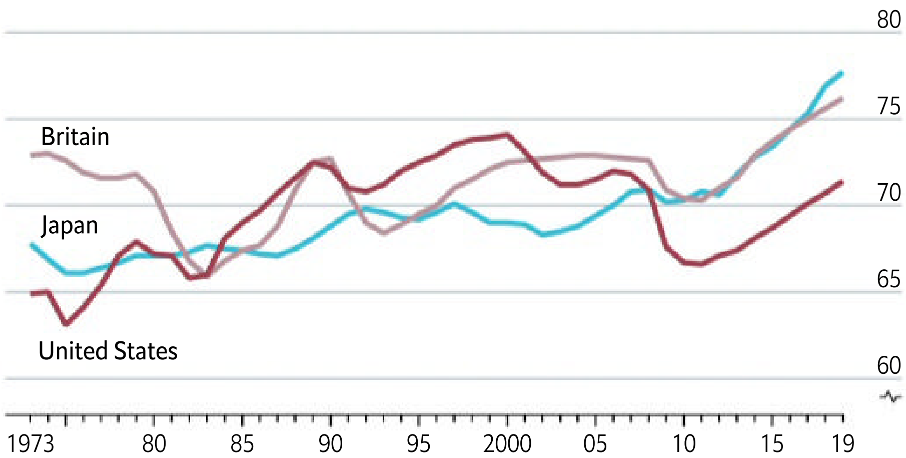
The pandemic has reminded key workers that without them society would grind to a halt. In its early phase homebound folk in Britain stood outside their front doors once a week and applauded the "heroes". Yet as Camilla De Camargo and Lilith Whiley, two sociologists, argue in a paper, giving essential workers "an almost mythologised status and value" obscures the human suffering that many have endured.

Going to work during a pandemic can be a terrifying experience. According to a study in England, frontline workers have had "significantly higher prevalence estimates of depression, anxiety, and PTSD". Part of the difficulty facing many key workers is that they cannot easily voice their grievances. Head offices are closed, and many do not have access to internal communication channels, such as a corporate email account.

Many essential workers have little bargaining power, so that if they feel unsafe there is not much they can do about it. One courier in England reports that his firm did not supply personal-protective equipment, leaving many riders unprotected. Colleagues who complain about clients not respecting anti-covid protocols have been fired. Governments are slow to hold careless employers to account, notably in the meatpacking and warehousing industries.

Imbalances of power are bigger in some places than others. A study in Toronto found that the death rate from covid-19 in the neighbourhood with the most essential workers was more than twice as high as in the one with the fewest. A study in California found that people of working age saw a 22% increase in mortality from March to October 2020. But bakers saw mortality rise by 50%, and line cooks by 60%. One class of people stayed home in their pyjamas; others went into workplaces that probably killed them.

Working harder
Employment rate*, %



Sources: OECD; ONS *15- to 64-year-olds

manufacturing and construction, to continue. Even under lockdown, demand for workers has been higher than it was when covid-19 arrived in early 2020.

The type of unemployment matters. Last spring the vast majority of unemployed Americans said they were "on temporary layoff", meaning that they had been told there was no work for them but there might be soon. Returning to an old job is easier than finding a new one, speeding recovery. A big majority of individuals who left unemployment in May and June of 2020 returned to work at their previous employers, according to a paper in February by the JPMorgan Chase Institute. That corporate bankruptcies have been far lower than many people expected also means more workers had jobs to go back to. For many people who had to leave their jobs for good, labour-market "reallocation" has found them new ones. Although demand in leisure, hospitality and travel has plunged, the pandemic has created new needs, from contact-tracers to Zoom trainers. The boom in online shopping has similarly boosted demand for warehouse workers and delivery drivers.

The upshot is that jobs are churning. A recent paper by José Maria Barrero of ITAM Business School and colleagues finds that the rate of employment reallocation (a calculation that accounts for some firms creating jobs and others destroying them) in America is running at twice its pre-pandemic level. In mid-March 2021 American job postings on Indeed, a website, were 9% above the previous baseline. Reallocation in Europe has been slower, in part because furlough schemes have kept workers tied longer to pre-pandemic jobs, but it is happening. In 11 European countries total advertised vacancies fell by 50% in the financial crisis of 2007-09, but by only 25% during the pandemic. In Australia, which locked down hard but is now bouncing back, vacancies are an astonishing 20% above their previous level.

Extra demand for workers has in part been met by existing companies. But new firms have also entered the market to fill gaps. America has seen a burst of startups. In 2020, 1.5m firms that are likely to end up employing people were founded, according to official data, up by 16% on 2019. Other countries, such as Britain, Canada and France, saw a similarly big rise in business formation in the second half of 2020. A recovery with lots of startups tends to be more jobs-rich than one without, since young firms are typically quicker to expand.

Technology has smoothed reallocation. Compared with the recession after the financial crisis, job-search websites such as Indeed and Monster are now more widely used. This makes it easier for firms to find workers, and vice versa. Yong Kim of Wonolo, a platform for blue-collar workers based in San Francisco, says that in the early days of the pandemic many industries, including fulfilment centres for online deliveries, struggled with labour shortages, but his platform has helped people to fill the gaps.

The rich world's job-market recovery still has a way to go. During the northern hemisphere's winter the fall in unemployment has slowed, reflecting rising covid-19 cases. And much of the remaining joblessness is concentrated among the poor. In America, over 25% fewer jobs paid less than $27,000 a year in January 2021 than in January 2020, even as higher-wage jobs recovered. In Europe unemployment among people with tertiary education is marginally higher than it was before the pandemic, but a lot higher among high-school dropouts. Will vaccines allow poorer folk to find work again—or might they find it hard for years to come?

Consumer habits will partly determine the fate of low-wage workers. Even if the covid-19 threat passes entirely, people may be more homebound than they were, either because they are more risk-averse or because they are more often working from home. As a result, demand for the sorts of low-wage jobs that help people outside their home—such as serving staff, hotel workers or flight attendants—might be lower than it was.

Yet there is reason to hope that the pandemic will not turn people into hermits. In New Zealand attendance at restaurants, cafés, shopping centres and theme parks is higher than it was before the pandemic. According to OpenTable, a booking platform, in the first two months of 2021 the number of Australian restaurant diners was 65% higher than before the pandemic. Because borders are closed, Australians are spending more locally. "The martinis were so good," reports one *bon vivant* in Sydney, "that we ended up not ordering wine with the meal. We just had seven martinis each."

Even in Australia and New Zealand, though, employment is still somewhat lower than it should have been. And the jobless include many low-wage workers. The covid-19 shock elsewhere was larger, making it more likely that consumers' preferences have permanently changed and some workers have lost habits that made them more employable. The coming wave of jobs will not catch everyone, at least not for a while. Yet it will be broader and more powerful than even optimistic pundits had predicted. ■

Working from home

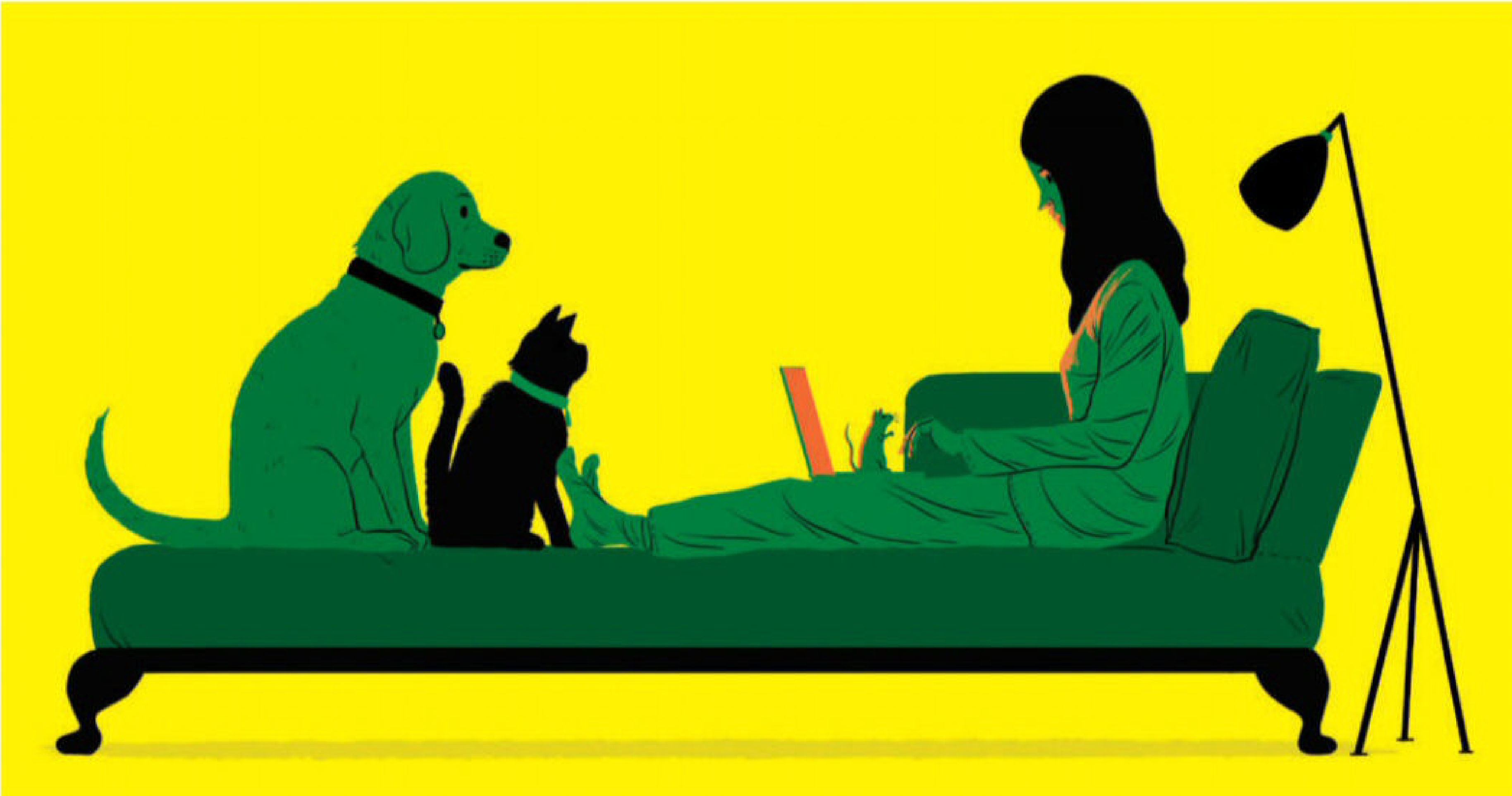
From desktop to laptop

The shift to a hybrid world of work will have a big impact on managers

A POPULAR CLICHÉ of 2020 was that covid-19 accelerated pre-existing trends. Yet that is a poor description of the massive rupture to office work. Before the pandemic Americans spent 5% of their working time at home. By spring 2020 the figure was 60%. The shift has gone better than expected. People are working longer hours, but they report higher levels of happiness and productivity. As lockdowns lift, working from home is likely to stay.

A growing body of research points to what post-pandemic working patterns may look like. In one paper José Maria Barrero, Nick Bloom and Steven Davis, three economists, survey thousands of Americans and conclude that, after the pandemic, the average employee would like to work from home nearly half the time. Employers are less keen, but their expectation that a fifth of working time will be spent at home (one day a week) is a big change from the previous norm. It also presents a huge opportunity for office-based workers.

In places that have conquered covid-19, working from home



has stuck—though perhaps not as much as some people might have hoped. Data for New Zealand show that, in the three months to December 2020, 27% of people in employment worked at home at some time during the week. Direct pre-pandemic comparisons do not exist, but there is little doubt that this represents a big increase. Tracking data from Google suggest that attendance at South Korean workplaces has settled at a level marginally lower than it was before covid-19.

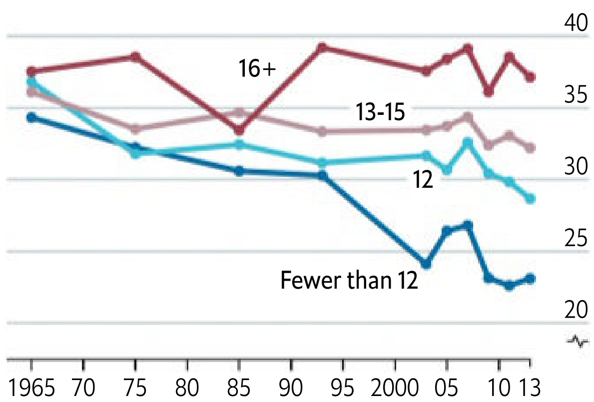
The shift to a hybrid world of work means that some fanciful predictions from early in the pandemic will not come to pass. "Remote-only" companies will remain a small minority. Firms will continue to "onboard" new staff in the old-fashioned way—they can do it in an office, rather than by video-link—while junior staff will still have an opportunity to skulk by the lifts in hopes of grabbing five minutes with the chief executive. Cities will not empty. Firms will not swap their full-time staff for freelancers, which might be tempting if the workforce were wholly remote.

Yet the blurring of home and office will have huge consequences. It will force managers to raise their game, improving office life for all. It will lead to changes in employment law to offer better protection for workers who spend less time in the office. And less positively, it will deepen political and cultural divisions between cosseted knowledge workers and the rest.

Take corporate life. Too often claims that businesses are committed to transparency, integrity and communication are boilerplate platitudes. Studies find no correlation between the supposed core values of companies and employees' assessment of how they reflect them. But change is afoot. In a report for the *MIT Sloan Management Review*, Don Sull of MIT and Charles Sull of CultureX, which advises firms, analysed workers' ratings of the culture and values of their employers. There was a jump in approval when the pandemic broke out, with especially big increases in employees' ratings for transparency and communication.

Life at the top

United States, hours spent in paid employment per week, by years in education



Sources: "Rising inequality and trends in leisure", by Timo Boppart and L. Rachel Ngai, 2021

Other studies find similar results. A poll by Gallup covering the early part of the pandemic finds that the share of American employees "engaged" at work reached its highest level since data began in 2000. Another survey, by Quantum Workplace, a software firm, takes the views of thousands of people and finds that the share of "highly engaged" employees leapt during the pandemic. "Covid-19 may be the best thing that ever happened to employee engagement", argues Josh Bersin, an analyst.

One reason is that blurring the line between work and home makes it harder for firms to treat office staff as automatons. "Before the pandemic," says Monica Kang, founder of InnovatorsBox, a workplace-culture firm, "we forgot that people are people first." During it, the sight of children invading Zoom meetings or of people's laundry in the background will have softened even hard-nosed managers, prompting them to pay more attention to their staff.

Another is that remote work has forced people to communicate better. Managers cannot just hope subordinates will pick up information by osmosis, as in an office. Instead they have to work to get the message across, argues Tomas Chamorro-Premuzic of Columbia University. This can be done the old-school way: by picking up the phone. But that seems increasingly clunky. The pandemic has encouraged managers to place more trust in technology that lets workers communicate and collaborate effectively, even when out of the office. Research by Mr Bloom, Mr Davis and Yulia Zhestkova finds a big rise in the share of new patent filings for work-from-home technologies.

The idea of managers using tools to talk to and monitor workers in their own homes may be disconcerting, but it is usually legal. Yet the rise of hybrid work has other legal effects—the second consequence. Just as the rise of the gig economy makes it harder to say who is an employee and who is self-employed, so the rise of working from home tests the boundaries where employees' and employers' responsibilities begin and end. Employment law, after all, is largely based on the assumption that work takes place at an office or a factory.

It is hard to assess the legal impact of the shift to hybrid work. Analysis of American legal filings in state and federal courts finds that the number of cases mentioning "work from home" is running at twice pre-pandemic levels. A brief by lawyers in the state of New York warns that employers have done a poor job of record-keeping for home-workers during the pandemic, so "management will have difficulty defending a worker's claim that she is owed overtime pay because she worked more than 40 hours in a week". Several north-eastern states are in a legal battle over which government should have the income tax of an employee whose office is in one but who works from home in another.

Other countries are also realising the limitations of existing laws. Last year some Russian businesses exploited a loophole in the law that allowed them to cut pay for people who were no longer working in an office. And whereas the past year has shown the many benefits of working from home, for both productivity and the work-life balance, in many countries workers do not have the right to ask for it.

All this is causing many to update the rules. "In recent months, we have seen an upsurge in new laws regulating remote work [and] telework—a trend we expect to continue," says DLA Piper, a law firm. Russia has closed the pay-remote-workers-less loophole. Germany has explored the idea of giving employees the right to work remotely for a set number of days a year. Ireland is likely to follow Britain in creating a legal right to request working from home (though employers will be under no obligation to agree). France is temporarily binning a law that made it illegal for workers to eat at their desks. This was designed to prevent overwork, but seemed oddly anachronistic when the domestic and professional spheres are one and the same.

The third big consequence relates to culture and politics. Before the pandemic a growing divide was rising between the less- and the more-educated, not just in what they earned, but also in what their work meant to them. In recent years the working hours of the less-educated have continued to decline, perhaps because rising real wages make it easier to attain a satisfactory standard of living. But for the more-educated, working hours have risen. Research suggests this is because they increasingly enjoy their job. Doing work well is, for many knowledge workers, a big part of their identity and sense of self-worth.

Even before the pandemic, knowledge workers and others were drifting apart, not just economically but culturally. Now one of the few things that previously bound them together—the shared experience of getting up every day and taking a long, expensive, sweaty commute to work—is also fraying.

Good jobs tend to be those that can be done from home. The best-educated are also the most likely to be allowed to continue working for part of the week out of the office. So well-paid folk with good jobs are likely to have the flexibility to pick up children from school or run other errands. Their interactions with those with worse jobs—the "essential workers", who move about in public spaces and keep the economy going—might become, at the extreme, little more than opening the door for a delivery. It is not easy to predict the political consequences of this new cleavage, but they seem unlikely to be benign. ■

Automation

Boy cries wolf

Recessions and pandemics accelerate automation. Yet warnings of a jobless future are overblown

THE COFFEESHOP is an engine of social mobility. Barista jobs require soft skills and little experience, making them a first port of call for young people and immigrants looking for work. So it may be worrying that robotic baristas are spreading. RC Coffee, which bills itself "Canada's first robotic café", opened in Toronto last summer. "[T]he barista-to-customer interaction is somewhat risky despite people's best efforts to maintain a safe environment," the firm says. When this correspondent visited in January, a gaggle of people stood by, trying to make it work.

Many people expect the pandemic to accelerate automation in industries far beyond coffee. Anecdotes abound of robots being brought in to reduce risks of infection, from automated slaughterhouses to do-it-yourself baggage drop-offs at airports. This wave of automation, some fear, will eliminate jobs, especially for those with less marketable skills, meaning more unemployment and inequality. Jobs in coffeeshops may not pay much, but their demise would be a disaster. "One thing worse than too many low-paid jobs is too few low-paid jobs," argues David Autor of MIT.

Recessions often lead to a burst of automation, and they do not come bigger than this one. When revenues but not wages fall, humans become relatively more expensive, giving bosses an incen-

tive to use machines. A paper by Joel Blit of the University of Waterloo, in Ontario, argues that "all of the routine job losses in Canada have occurred over the past three recessions", with America seeing similar trends. Pandemics speed automation, partly for the reason identified by RC Coffee: to stop people getting sick. Economists call this "forced automation". Previous pandemics, from H1N1 in 2009 to Ebola in 2014, hastened the adoption of robots.

Will this one? Surveys by Deloitte and McKinsey, two consultancies, find that firms have high ambitions to automate. In recent congressional testimony, Daron Acemoglu of MIT argued that "There are now more reasons for employers to look for ways of substituting machines for workers and recent evidence suggests that they are already doing so". There is a sense that before 2020 companies had dawdled over automation, and the pandemic is forcing them to try new ways of doing things.

Yet doom-mongers struggle to point to actual evidence of accelerating automation. Many do not bother trying to track it, preferring instead to focus on the next bloodcurdling prediction. So we tried to find some evidence, which pointed, if anything, to the opposite conclusion. American imports of industrial robots fell by 3% in 2020. The growth of spending on automation slowed in 2020, suggests a report in September by Gartner, a research firm. Rockwell Automation, the world's largest company dedicated to industrial automation, saw sales decline by 5.5% last year. Surveys of firms that say robotisation is around the corner are often unreliable. If somebody from McKinsey asks a manager if she will soon be adopting cloud computing or big data, will she say "no"? A survey by UBS of what firms in France, Germany, Italy and Spain are doing finds little evidence of growing interest in automation.

Some economic research suggests that more jobs are being automated away. Lei Ding and Julieth Saenz Molina of the Federal Reserve Bank of Philadelphia looked at jobs that seem most at risk. Based on data up to last August, it finds that "the pandemic displaced more workers in automatable occupations". But the effect is small. And employment in many areas supposedly at greatest risk may have declined not because of automation, but because of the pandemic. Take taxis, which many economists say will soon be driven by robots. Their numbers tumbled in 2020, but because people travelled less, not because of driverless taxis.

Adapting research from the Federal Reserve Bank of St Louis, we divided American jobs into "routine" and "non-routine" ones. Routine jobs are seen as more easily automatable because they rely on repetitive patterns that machines can learn. During the pandemic the trend towards fewer routine jobs, which has existed since the 1980s, has actually slowed. There are at least 900,000 "extra" routine jobs today than expected a year ago, given America's overall employment. Even Australia, which more than most can be said to be "post-covid", offers similar results: automatable jobs are about as common as expected without the pandemic.

The labour lump

If a pandemic-induced wave of job-killing robots does not happen, that is just one more example of misplaced fears about machines. Luddites in early-19th-century Britain smashed up textile machinery for apparently putting them out of work. In 1928 the *New York Times* proclaimed that the "march of the machine makes idle hands". In 1961 *Time* magazine talked of "the automation jobless". A paper in 2013 by Carl Benedikt Frey and Michael Osborne, of Oxford University, was widely misinterpreted as meaning that 47% of American jobs were at risk of being automated. Yet such fears were not realised.

The 1920s saw a wave of automation with few ill effects. Despite *Time*'s fears, the 1960s had low unemployment. Before covid-19, employment was rising even as robots improved. A paper in January 2021 by Alexandre Georgieff and Anna Milanez of the OECD tests how automation theorists' predictions have actually turned out. Countries facing what they call higher "automation risk" in 2012 saw stronger employment growth, consistent with the idea that technology adoption leads to higher productivity. It is striking that Japan, Singapore and South Korea all have world-beating rates of robot adoption, and yet also low unemployment. Perhaps technology allows more people, not fewer, to be employed.

Over a year on, the evidence of accelerating automation is thin

How did the doom-mongers get it so wrong? One well-known issue is the so-called "lump-of-labour fallacy": that there is a finite amount of work, so if some is automated that makes less to go round. In fact, by lowering costs of production, automation can create more demand for goods and services, boosting jobs that are hard to automate. The economy may need fewer checkout attendants at supermarkets, but more massage therapists. Technology often changes rather than scraps jobs. Francis Miers of Automation Consultants, a British software firm, argues that his firm's technology does not eliminate the need for developers: "It just makes them more productive."

If the pandemic has not so far led to robots taking all the jobs, it is still early days. And some believe this time will be different. Technology is so sophisticated it is difficult to split jobs into those that can and those that cannot be automated. Massage therapists are not safe. Capsix Robotics, a French company, has developed a robot that gives a full-body massage. Admittedly it does not look like the best massage in the world. But it is an example, from machines that read medical scans to gizmos that compose music in the style of Bach, of technology intruding into new territory.

In a new book Daniel Susskind of Oxford University extends these ideas, talking of a "lump-of-labour-fallacy fallacy". Technological progress increases demand for work, but "it is wrong to think that human beings will necessarily be better placed to perform the tasks that are involved in meeting that demand," he says. People who get their coffee cheaper from RC Coffee might have more to spend on massages—but they may get a Capsix robot to give them.

Perhaps, then, this is a tipping-point for humans' relationship with machines. If anything could cause such a wholesale change in labour markets, a once-in-a-generation pandemic might be it. Yet it would still be wise to hold off from fretting about the future of work. Given the history of outlandish and failed predictions, it is hard on principle to take the worst predictions too seriously. And there are three further reasons to believe that the pandemic will have only a modest impact on automation.

The first concerns travel. Economists talk broadly about a task switching from a human to a machine. But choosing what to automate, and how, requires a thorough understanding of how the business operates. "Automation is hard," says one consultant, drily. Even in a pre-covid world it was taking a lot of time to understand the ins and outs of a business process and how technology could improve it—and that was when people could see offices and factories in person. It becomes even trickier in a world where the only communication is via video-link, says one automation expert. Restrictions on international travel and meeting in person will remain in place for some time yet.

The second reason concerns levels of investment. Companies shun capital spending when uncertainty is high, which it is at present. Global bank-lending standards have tightened, and fiscal stimulus has largely focused on protecting households' and companies' balance-sheets, not on creating more incentives for investment. Recent research from Oxford Economics, a consultancy, finds that global investment growth in 2019-25 will be lower than it would have been without the pandemic.

The third factor is harder to measure, but crucial to understanding how technology shapes work. Many automation theorists have a narrow view of economic production. They see humans as one of many inputs, and therefore as interchangeable with machines. When consumers buy goods, that is often a fair assumption: few consumers will care if a chair is made by man or machine, so long as it is a good chair. But in today's economy, that assumption looks confused. Humans are not just an input; for many goods and, especially, services they are the output too.

An example came earlier this year in Japan. The *South China Morning Post* reported the case of a 37-year-old man who called his job "rent a person who does nothing", selling companionship to clients, including to somebody who visited the grave of a dead friend. I do "nothing in particular", said the man, yet he charged the equivalent of $95 for his services. This example gets to the heart of something about the economy. A growing share of jobs require people to be physically involved. The number of jobs in health care and education is rising fast. When somebody is sick, or needs to be taught, they expect face-to-face contact, not because people are better at it, but because they convey sympathy and fellow feeling. Something irreducible would be lost without them.

Or go back to the example of coffee. Blind tasting suggests that robots or machines are better than humans at making coffee. Yet those same tests find that people are cross when they find out that they are paying for a machine-made drink. It turns out that they value not only the taste of the coffee, but the mere fact that a real person has brewed it. ■

Government policy

Servants of the people

Policymakers are taking a more activist approach to managing labour markets

To get a sense of how policymakers used to think about unemployment, consider the Jackson Hole meeting, a jamboree for central bankers, in August 1994. One speaker, Alan Blinder, felt it necessary to remind his colleagues that "In my view, central banks...do indeed have a role in reducing unemployment," not just in reducing inflation. Many in the audience thought that he was a bold radical. "I was called an outlier, and some worse words," says Mr Blinder, who at the time was vice-chairman of the Federal Reserve. The sky-high inflation of the 1970s was still fresh in the minds of many participants. Like Paul Volcker, the Fed's chairman in 1979-87, they believed that conquering inflation was their sole true calling, no matter the collateral damage.

Today Mr Blinder's views on unemployment would seem mundanely mainstream. The pandemic has helped to contribute to an intellectual revolution in macroeconomics. Policymakers of both left and right have come to recognise the enormous redistributive power of a booming economy—one that generates both plentiful jobs and healthy wage growth—for low-income and minority groups. A "lesson from the recovery from the great recession [of 2007-09]", argue Jay Shambaugh, a former economic adviser to President Barack Obama, and Michael Strain, a conservative reformer, in a new paper, "is that low-wage workers and low-income households are relatively more sensitive to the business cycle". Increasingly, policymakers believe they can do a lot more to push the economy to the top of that cycle. And they are more willing

than they were to live with the trade-offs this entails.

There were signs of a change even before the covid-19 pandemic arrived. By 2015 most governments were losing their enthusiasm for the fiscal austerity that had marked the period after the financial crisis. Many came to realise the damage that years of budget-cutting had done. Others noted that the cost of borrowing had plunged, making fiscal stimulus less expensive. Analysis by UBS quantifies this change. Public spending was a net drag on the global economy in every year from 2010 to 2014. It began stimulating the economy in 2015, and that effect was worth as much as 1% of global income by 2019.

Some of this extra spending was directed at reducing inequality. For decades governments had chipped away at the liberality of welfare states in order to boost incentives to work. But in the years before the pandemic there were signs that the "replacement rate" of unemployment benefits, which measures them as a share of in-work incomes, was rising.

This pro-poor shift was not just about cash. Some jurisdictions have legislated to give more employment rights to "gig" workers. In February Britain's Supreme Court ruled that Uber's drivers were not independent contractors and so were entitled to various in-work benefits, including the minimum wage. Others have cracked down on rule-breaking by employers, such as unfairly depriving workers of pay. Australia has strengthened labour-market enforcement, issuing more notices to errant employers and recovering more unpaid wages. Governments have also bumped up the minimum wage. Its value in the average rich country, relative to average earnings, rose from 35% in 2000 to 41% in 2019, seemingly without the adverse effects on employment that some economists earlier feared.

The big bank rethink

Central banks were also changing. In the face of persistently low inflation, members of the Fed's rate-setting committee repeatedly revised down their estimates of the rate of unemployment that was consistent with a 2% inflation target, from 5.5% in 2012 to 4.1% by 2020. In 2019 the Fed launched a wholesale review of its monetary-policy framework.

The pandemic has helped galvanise these efforts. In its new framework, announced last year, the Federal Reserve has switched to "average inflation targeting". As part of this the Fed now emphasises the goal of maximising employment, implying that inflation could temporarily overshoot its 2% target if that helps more Americans to stay in or join the workforce. Returning to maximum employment "will require a society-wide commitment, with contributions from across government and the private sector," Jerome Powell, the Fed chairman, argued in February.

The Fed is by no means the only central bank that is now placing greater emphasis on employment. In 2019 the Reserve Bank of New Zealand, which pioneered the single-minded focus on inflation in the 1980s, switched to a "dual mandate", promising to seek to maximise employment as well. In September 2020, Wakatabe Masazumi, deputy governor of the Bank of Japan, said that "Personally, I feel there is room to consider the idea, voiced by some people, that monetary policy should focus more on job and income conditions." Today it is hard to imagine the Bank of England pre-emptively raising interest rates so as to forestall a rise in inflation above 2%, as it did in 2017-18. Instead, the bank is more likely to wait until inflation consistently exceeds its target.

None of these changes means that central bankers no longer care about inflation, the traditional concern of bankers and investors. But their heightened concern with employment means that they are implicitly placing more emphasis on the interests of the poor. As one former senior central banker says, somewhat impishly, "Central bankers still do represent the capitalist classes—but less than before."

Fiscal policy is also being rethought. Across the rich world the response to the covid-19 pandemic has been massive and sustained fiscal support for economies. And it is notable that this time, unlike after the global financial crisis, almost all governments are delaying moves to reduce fiscal stimulus so as to rein in gaping budget deficits and rising public debts. As ever Europe, scarred by the euro crisis, has been more reluctant to accept huge budget deficits, but even there efforts to trim borrowing have been more careful and slower than in the past.

Finally, the pandemic is reshaping welfare policy. Few doubt that trillions of extra spending to protect households' incomes during lockdowns did a lot of good. In the first months of the pandemic America's poverty rate declined, even as economic activity collapsed. In-work benefits such as the earned-income tax credit were protected. Such policies have proved popular with voters.

A quiet revolution is now under way. Data from the International Labour Organisation suggest that countries have continued to introduce new social-protection programmes long after the acute phase of the first covid-19 lockdowns had passed. Britain may turn a temporary boost of £1,000 ($1,400) a year to its main welfare benefit into a permanent one. President Joe Biden is making child tax credits dramatically more generous, a provision which is expected to cut child poverty in half. Many European countries are keen to wind down their job-protection schemes as fast as possible; paying somebody not to work for a year or more may ultimately not be in anyone's interest. Australia's ended last month. Yet there seems little doubt that politicians will dust such ideas off whenever the next crisis hits.

Taken together such changes show that policymakers are more focused on the plight of workers than they once were. Yet making labour markets work better will still require governments, employers and workers to think more creatively. ■

How the Danes do it

Can a welfare state be both generous and efficient?

A PAPER PUBLISHED by three economists in early 2015 came to a hard-nosed conclusion. It looked at what had caused a surge in employment in America over the previous year. The jobs boom coincided with a cold-hearted Republican reform to make unemployment benefits less generous. The authors demonstrated, convincingly, that the one had caused the other, with the benefit cut leading to the creation of 1.8m extra jobs in 2014—about two-thirds of the total.

The notion that lavish welfare benefits discourage work, so that cutting them makes people look harder for a job, is widely accepted not just by economists but by most politicians and voters. Nobody nowadays wins election by promising to lavish the unemployed with public funds. So it is surprising to find that the country with the world's most generous offer to the out-of-work also has one of its best-functioning labour markets.

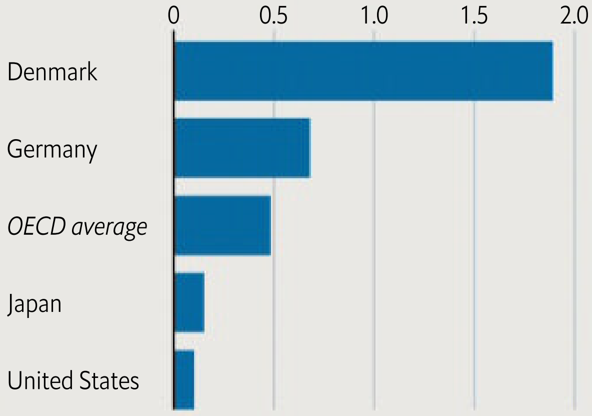
Danish benefits are worth more than 80% of previous earnings after six months out of work, compared with 60% across the rich world and less than 50% in Britain (America is even stingier). For Danish parents who lose their jobs, replacement rates can approach 100%.

The generosity of Denmark's unemployment system is the flipside of its liberal regulation of employment contracts—a combination called "flexicurity". Danish employers can hire and fire workers pretty much as they please. Jobs therefore come and go, but people's incomes are stable. Yet the state's munificence has not produced a class of feckless drifters. Denmark's unemployment rate is lower than the rich-world average and its working-age employment rate is higher. Long-term unemployment is low. When Danish people lose a job, they find a new one faster than almost anyone else in the world, according to the OECD.

It's expensive

Public spending on active labour-market policies

2018, % of GDP



Source: OECD

That is because Denmark makes it hard for people to live off welfare. Recipients must submit a CV to a coach within two weeks of becoming unemployed. They can be struck off for not trying hard enough to search for work or to keep up with adult-education programmes. As a share of GDP Denmark spends four times as much as the average OECD country, and more than any single one, on "active labour-market policies" to make people more employable.

This offers a tough lesson for those arguing for more generous welfare states. Simply boosting benefits may dissuade employment, as it did in America before 2014. To stop this happening requires massive investment in training, monitoring and enforcement of the rules for those out of work—spending money to avoid wasting it, in other words. The world's best

How to think about work

The grass is always greener

Pessimism about the labour market is widespread, but overdone

"THE SHIPPING NEWS", a novel about family history in Newfoundland by Annie Proulx, includes a passage about work. Jack, a former fisherman, explains how the local economy changed after the province joined Canada in 1949. Fishing went into decline, and with it a life that was "hard" but where "a man did what he wanted". Manufacturing rose in its place, offering jobs where men sheltered indoors, away from the elements, and did what they were told. Today, politicians on all sides say that jobs in manufacturing represent good, honest work and lament their demise. Jack thought they were utterly miserable.

For as long as capitalism has existed people have worried about labour markets. Why is this so? Perhaps it is because they produce inequalities that even the most right-wing know are not really fair. Perhaps it is because they are always changing, and people are resistant to new ways. But it is also because labour markets produce uncomfortable trade-offs. The rise of the factory gave workers more pay but less autonomy. Trade unions boosted workers' wages but reduced employment. As textual analysis of books shows, at different times authors have worried about different problems linked to work.

The modern labour market has similar trade-offs. Yet this special report has argued that before covid-19, it was working fairly well. Contrary to popular belief, work was both more plentiful and more rewarding. Overall wage growth was not as strong as many hoped; but low pay was falling and job satisfaction was rising. There was no sign of an ever-growing "precariat".

The pandemic has been catastrophic. Yet it may presage improvements in the world of work. The shift to remote work may make many people happier and more productive. It is unlikely to encourage job-killing robots. And it is forcing policymakers to acknowledge some difficult truths about whose interests today's economy serves best.

Reform or perish

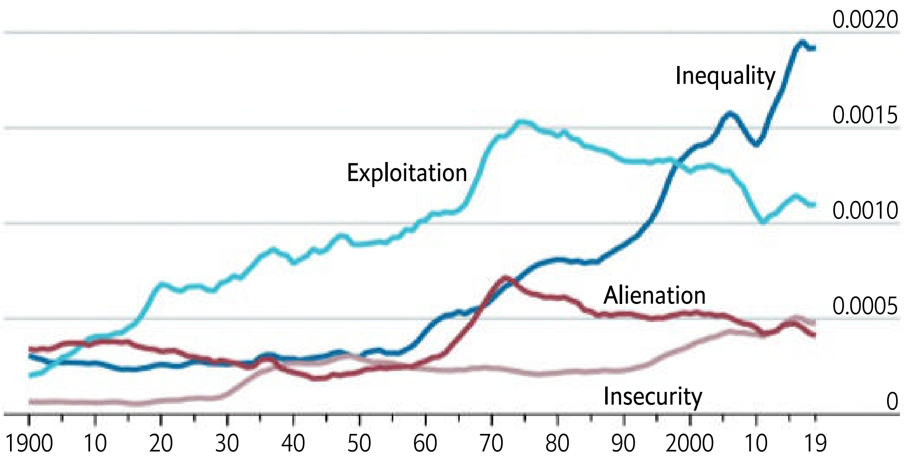
Politicians have more to do. Some reforms have long been called for. Dismantling occupational-licensing barriers would mean more jobs and lower prices. More liberal immigration regimes would boost innovation.

But the pandemic highlights two other necessary changes. The first concerns welfare. It turns out that in recessions sending cold, hard cash to families, especially poor ones, can do much good. America massively boosted the value of unemployment-insurance payments. Poorer households' incomes held up, and America's economic bounceback was one of the world's strongest because people had money to spend.

Outside recessions, there is still more to do. Boosting in-work payments does a lot to reduce poverty, as America's latest stimulus package will show. But it is of less use to those who are out of work altogether. Simply lavishing the unemployed with public funds may discourage them from finding work; but the lesson of Denmark is that it is possible to combine targeted generosity with incentives to take jobs, making the labour market more efficient. Another reform is updating the technology of welfare systems so that people are reliably paid what they are entitled to and poverty traps disappear, something Britain's universal credit system should eventually guarantee.

Separate, unequal

Prevalence of words in English-language books, case insensitive, % of total



Source: Google Ngram Viewer

Boosting welfare in this way would give workers better options, making them less willing to put up with bad jobs. More could also be done to improve people's bargaining power at work, the second big change. The pandemic showed that many workers have too little clout. Some paid with their lives.

A few favour a renaissance of trade unions, and even detect the stirrings of a movement in the tech sector. Irrespective of whether this is a good idea, a meaningful revival is unlikely when manufacturing and heavy industry are so much smaller than they were. Others say that the entire rich world should follow Denmark and Germany down the path of collective bargaining, where workers and bosses come together to reach deals on pay and conditions. But that would require wholesale corporate-governance reform. Other ideas are more practical. Talk to corporate bosses and, because of the pandemic, many now believe that they need to give frontline workers more of a voice. This can be as simple as giving them access to a corporate email account.

Governments also need to step up. Particularly in Anglo-Saxon countries, too many unscrupulous employers flout labour law. Many of the most egregious violations relate to gig-economy companies, which pretend that their workers are self-employed contractors when they are in fact more like employees. These firms have not found loopholes in existing employment law, as is often believed. Instead they act with impunity mainly because enforcement of existing labour law is weak and punishment is feeble. That calls for more inspections of suspicious firms and tougher fines for rule-breakers.

Such reforms may be hard to do. And history suggests they will come with their own trade-offs, creating different sorts of discontents. But the eventual outcome should be to move towards a more efficient and fairer world of work. ■

ACKNOWLEDGMENTS A list of acknowledgments and sources is included in the online version of this special report

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Jordan

Family feud

DUBAI

The arrest of a popular prince sends a chilling message to a frustrated public

EVERY ROYAL family is unhappy in its own way. Jordan's is no exception. There were sharp disagreements between King Hussein and Crown Prince Hassan, the brotherly duo who ruled the desert kingdom for decades. Weeks before his death in 1999, the ailing king flew back from an American hospital to remove his brother from the line of succession and make his son, Abdullah, heir apparent. But the Hashemites usually show a united front: Prince Hassan accepted his defenestration in silence.

Thus it has been extraordinary to watch the overt feud between King Abdullah and his half-brother, Prince Hamzah (pictured). It began on April 3rd, when the authorities detained perhaps 20 people on vague charges of plotting against the crown. The prince was confined to a palace outside Amman, the capital. He confirmed his detention in a late-night video message that assailed the government for alleged corruption, nepotism and authoritarianism. "It has reached the point where no one is able to speak or express an opinion on anything without being bullied, arrested, harassed and threatened," he said.

No evidence has emerged to support the official claim of a foreign-backed conspiracy. No arrests within the army or security services have been reported, which seems telling: it is hard to organise a coup without guns. Jordan's secret police are famed for their reach and ruthlessness. A sophisticated plot would be hard to hatch under their omnipresent gaze.

Instead the government has sought to calm the furore—perhaps a tacit admission that it erred with such a heavy-handed response. The king asked Prince Hassan, his uncle and the family's elder statesman, to play the role of mediator. A judge then placed a gag order on the case. In a written statement on April 7th the king said the "sedition" had been dealt with.

But Prince Hamzah has toggled between being conciliatory and confrontational. After meeting with Prince Hassan he signed a deferential statement pledging loyalty to the king. Then his camp leaked a remarkable audio recording, said to be of a meeting between the prince and Yousef al-Huneiti, the army chief. (The tape cannot be authenticated, though both voices are recognisable.) General Huneiti's tone was respectful, but he had come to deliver an unmistakable warning. The prince, he said, had crossed a line by attending meetings at which there was criticism of the government and crown prince. He asked Prince Hamzah not to tweet, or to meet anyone outside the royal family.

That the prince is disenchanted with Jordan's leaders is hardly a revelation. In 2018 he rebuked the government for mismanaging the public sector and failing to fight corruption. He often meets tribal leaders, the so-called East Bank Jordanians who are both the monarchy's historic power base and an impoverished, frustrated ▸▸

→ Also in this section

constituency. Admirers say the prince has a common touch lacking in the king, who grew up speaking English and can seem more comfortable in a British army club than in a scruffy Jordanian village.

The prince used those rhetorical skills in his chat with General Huneiti, parts of which sounded oratorical, meant for public consumption. He repeated his criticism of the government: "Is the mismanagement of the state my fault? Is the failure that's happening my fault?" Voice rising, he told aides to bring the general's car around and invoked the name of his late father, still a beloved figure in the kingdom. "Next time, don't come to threaten me in my house, the house of Hussein," he said.

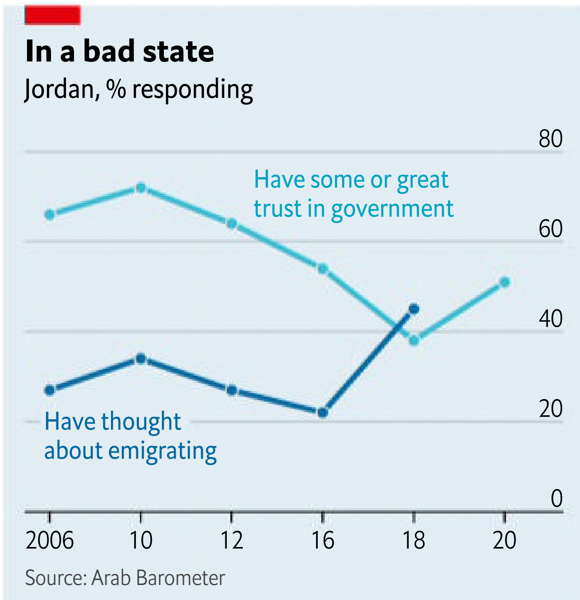
Jordan is often described as an oasis of stability, but under the surface a deep discontent simmers. The economy was stagnant even before the covid-19 pandemic. Last year it contracted by 5%, while unemployment hit 25%, and 48% for Jordanians aged 20-24. At least one Jordanian in six lives on less than $3.15 a day. Exporters have been hit hard by decades of war in neighbouring Syria and Iraq. Successive waves of Iraqi and Syrian refugees have strained services and pushed up rents.

A survey in 2018 showed a sharp increase in the number of Jordanians who have thought about emigrating (see chart). But opportunities have dwindled: wealthy Gulf states, home to more than 500,000 Jordanian expats, are struggling with low oil prices and sluggish economies. Remittances to Jordan fell from $6.4bn in 2014 (17% of GDP) to an estimated $3.9bn last year (9% of GDP). Small and resource-poor, Jordan uses its strategic location and compliant foreign policy to extract aid from allies. That is drying up, too. In 2011, after protests inspired by the Arab spring, Gulf states gave Jordan $5bn in aid. After more demonstrations in 2018 they offered just $2.5bn, mostly as loan guarantees and central-bank deposits.

The kingdom has lost billions to tax evasion, corrupt customs officials and other kinds of graft. Well-connected crooks are rarely punished. In March seven people died in Salt, a poor town west of the capital, after an oxygen failure at a government hospital treating covid-19 patients. Many saw the deaths as emblematic of widespread official incompetence.

King Abdullah played his cards as usual. He sacked the health minister. In an angry speech, he asked "how long we can bear neglect and corruption" by excusing it as a part of Jordanian culture? At times he sounds more like the head of a good-governance group than a monarch. He poses as being above the fray; when things go wrong it is the fault of cabinet members or the prime minister, a job held by 13 men since he ascended the throne in 1999.

Yet few others are permitted to ask



tough questions about governance. Parliament serves more as a vehicle for patronage than a check on the executive. Turnout for last year's election was just 29%, partly because of covid-19, but also because of a complex electoral law that favours wealthy candidates (some openly paid for votes). Activists and journalists are often harassed. Police have used the pandemic as an excuse to ban demonstrations. Last year hundreds of teachers were jailed for protesting against a crackdown on their union.

Politicians are rarely pure of motive. Prince Hamzah is only 41 and was unceremoniously removed from the line of succession in 2004. His criticisms resonate with many Jordanians, and the effort to silence him seems to have backfired, only raising his profile. It is understandable why the king's inner circle may find all this unnerving. The monarchy, as an institution, remains popular, but public spats within the royal family undermine it. So does dressing down the head of the army, a deeply loyal force. That the prince was playing politics, though, does not render his gripes invalid. The greatest threat to Jordan's stability comes from within: if the king wants to silence his critics, he will need to respond to their criticisms. ■

Getting into Iraq

The doors are opening

NAJAF

For some, at least

GETTING INTO Iraq has never been easy. Saddam Hussein was loth to grant visas to curious Westerners, lest they see evidence of his regime's brutality. After his overthrow in 2003, the borders opened up, but war kept civilians away. Then Iraq's new rulers lowered a paper portcullis, demanding fees and the completion of myriad forms. Local middlemen offered to help—for a price, of course. Oil firms coughed up thousands of dollars to get their workers in.

That is all changing. Last month Mustafa al-Kadhimi, the prime minister, scrapped visa requirements for visitors from 36 countries, including America, China and those in the EU. They will be granted a two-month entry permit on arrival. Officials say the move will cut red tape, encourage investment and kick-start reconstruction. "It's the single most effective decision to open Iraq to the world," says a frequent German visitor.


Soon to be more welcoming

The move is an effort to reposition Iraq as "an area of co-operation, not confrontation", says one of Mr Kadhimi's men. The prime minister hopes it will also let Iraq depend less on Iran. His advisers dream of attracting expats and even tourists. Iraq is certainly safer than it used to be. A visit by Pope Francis last month went off without a hitch.

Not everyone is happy, though. Some officials prefer Iranian to Western influence; others fear losing out on bribes. And xenophobia is still a problem. Clerics accuse the government of giving Westerners priority over pilgrims from Muslim countries that are not included in the plan. "It's discrimination and won't bring back tourism," says a cleric in the holy city of Najaf.

The doors are not fully open yet. Iraqi consular staff say they have not been officially notified of the changes and that foreigners should still apply for visas. Mr Kadhimi's underlings don't always enforce his decrees. Spring break in Baghdad may have to wait until next year.

Egyptian entertainment

Only good cops, please

CAIRO

How the Hollywood of the Middle East has changed under military rule

HESHAM ASHMAWY was executed twice. Egypt's most wanted man, an army-officer-turned-jihadist, was hanged in March 2020, out of public view. Two months later, millions of Egyptians watched the "execution" of an actor playing him on "The Choice", a television show about terrorism, produced by state intelligence. To promote the episode, the spy agency leaked videos of Mr Ashmawy's real execution. "The Choice" (pictured) was among the most-watched programmes last year during Ramadan, high season for Egyptian TV.

Egypt's TV and film industry was long the envy of the Arab world. During the 20th century, movies were among the country's biggest exports. From Rabat to Baghdad, Arabs learned to mimic Egypt's distinctive dialect by way of its wildly popular musicals and comedies. The trade gave Egypt cultural influence—and its rulers a propaganda tool. When cinemas took off in the 1930s, King Fuad played newsreels promoting himself before features. President Gamal Abdel Nasser, in turn, made sure films portrayed the monarchy, which he overthrew, as corrupt and wicked.

But Abdel-Fattah al-Sisi's obsession with controlling entertainment is extreme even by Egyptian standards. Two years after he and other military officers toppled the country's first democratically elected president in 2013, Mr Sisi warned TV stars that they would be "held accountable" if their work did not reflect the state's positive outlook. Mr Sisi, now president, nationalised the media in all but name and let his men control which shows are aired. In 2016 a company owned by state intelligence began buying Egypt's biggest private TV channels. Since 2018 one of its subsidiaries, Synergy (maker of "The Choice"), has produced most of the big shows broadcast during Ramadan. "It's a monopoly," says one filmmaker.

Egypt has always had censors. Still, under Hosni Mubarak, the president from 1981 to 2011, they allowed films to depict police brutality, corruption and even homosexuality. Cherished movies from that era would be blocked today, say producers. Sexual innuendo that was once common is banned. Extreme poverty may not be shown, lest anyone think Egypt is struggling. And the security services must be portrayed as good guys. The regime thinks that old films showing dirty cops fed protests against the police during the Arab spring of 2011. That the protests might have been inspired by real-life dirty cops appears not to have occurred to Mr Sisi's henchmen. "The regime sees what happened ten years ago as a cultural failure," says Ezzedine Fishere, a former diplomat under Mubarak.

State-backed war flicks and heroic police dramas are popular enough, but Egyptian TV is a lot less interesting than it was before the coup. And it faces growing competition. For years Syrian and Turkish dramas, beamed over satellite, vied with local soaps for Egyptian eyeballs. Now there are new centres of production in Jordan, Saudi Arabia and the United Arab Emirates. Streaming platforms such as Netflix and Shahid (owned by Saudi Arabia's MBC Group) give viewers even more choice. One sign that Egypt's soft power has declined is that Arab millennials are typically worse at understanding the Egyptian dialect than their parents.

Mr Sisi's regime is focused on influencing Egyptians, though. "The Choice" pushes dubious claims about the Muslim Brotherhood, which held power before Mr Sisi. "The Swarm", also by Synergy, glorifies an Egyptian air strike that killed 40 jihadists—and seven civilians (that part isn't mentioned). "They're using better talents, bigger budgets and bigger stars," says a Cairo-based director. "So even if it's propaganda, the quality is clearly getting better."

Season two of "The Choice", airing this month, will cover the Rabaa massacre, when hundreds of protesters from the Brotherhood were slaughtered by security forces (under the command of Mr Sisi) in 2013. Human Rights Watch, an advocacy group, described the event as "one of the world's largest killings of demonstrators in a single day in recent history". The show, naturally, was shot from the perspective of the heroic police. ■

Aiming to please the president

Kenyan coffee

They've woken up and smelt it

NAIROBI

Covid-19 has shown how important it is to have a local market for local beans

IN A SINGLE room tucked away behind a petrol pump in central Nairobi, men toil over a whirling drum, a shiny metal rack and heaps of sacks marked "Produce of Kenya". The coffee they roast sells for as much as $11 per 250 grams online. Out front at Spring Valley Coffee, the well-heeled brave the noise and fumes to sip flat whites topped with rippling hearts by a trendy young barista.

Some of the world's best arabica beans are grown on the fertile land around Mount Kenya. But like the citizens of many former British colonies, Kenyans are partial to tea. Now an expanding middle class is getting a taste for coffee. Domestic consumption is expected to reach 3,600 tonnes this year, almost a tenth of total production. The pandemic has shown just how important a local market can be, as logjams at ports and a sharp drop in global demand crush exports. "Covid has been an eye-opener," says Gloria Gummerus, who runs the Sakami estate in western Kenya.

It is a similar story for other coffee-producing countries. Apart from Brazil and Ethiopia (which has an elaborate coffee ritual), many are just beginning to consume their own beans. Over 30% of the world's coffee is now drunk in producing countries, according to José Sette of the International Coffee Organisation, up from 22% 30 years ago.

Many Kenyans first get a taste for coffee via instant sachets made from cheap robusta beans. City folk then graduate to coffee shops, which serve better-quality ara- ▸▸

bica coffee in trendy surroundings. Java House, which opened its first shop in 1999, was among the earliest to offer a Starbucks-style experience. It has expanded to some 70 shops and others, like Spring Valley, have followed. Leaving aside a blip during recent lockdowns, sales are expected to climb. Coffee is an "aspirational" drink, says Rozy Rana at Dormans Coffee, a local roaster. "It's the trendiness, the Western feel," says Ms Rana.

To some, talk of Kenyan coffee conjures images of "Out of Africa" and its vast colonial-era estates. In reality, most of the country's harvest comes from 600,000 smallholders. The film is more accurate about just how difficult it is to make money in coffee. A byzantine system of co-operatives, millers and marketing agents skims off profits. Farmers get about 6% of the retail price, reckons El Mamoun Amrouk at the UN's Food and Agriculture Organisation (FAO).

As a result, production is dwindling. Only 120,000 hectares are devoted to coffee today, by FAO estimates, down from almost 180,000 hectares in the late 1990s. Farmers are switching to more lucrative crops, such as avocados or macadamia nuts. Developers pay good money for land near Nairobi, too. "When I visit coffee farms around Kenya all I see is old faces," says Matthew Harrison of Trabocca, an importer.

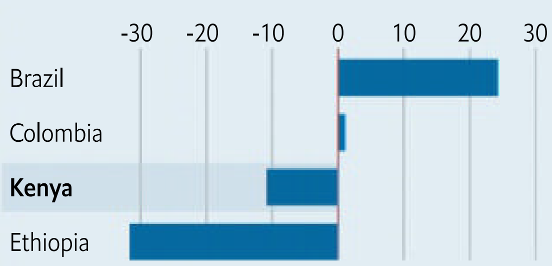
Domestic demand could help. Roasting coffee and brewing cappuccinos creates more jobs than exporting beans does. Selling locally could also be more profitable for Kenya's farmers, who complain that they are powerless price-takers in a vast global market. "When you have a domestic market you have more control," claims Daniel Mbithi, the head of the Nairobi Coffee Exchange, which runs weekly auctions where much of the crop is sold.

There are plenty of ways to stoke local demand. The Fairtrade Foundation has tried paying young people to stand around cafés evangelising about Kenyan coffee. Dormans sponsors an annual barista competition. Meanwhile, buyers like Ritesh Doshi, who runs Spring Valley, take cafetières out to the farmlands. Getting growers to taste the hot stuff might be the best way to prove it is worth planting. ■

Decaffeination

Coffee exports, Oct 2020-Feb 2021

% change on a year earlier



Source: International Coffee Organisation

Education in Africa

Covid-19 spurs catch-up classes

School closures open a window for reform

EVEN BEFORE covid-19 forced its classrooms to close for three months last year, Mavis Maphoto's school in Botswana had decided that its pupils needed to catch up. At the start of 2020 it began setting aside an hour each day in which to shuffle some of its children out of their usual classes and into groups decided by how well they could do maths. For 60 minutes chairs and tables are swept aside; pupils play learning games on the floor. Ms Maphoto, a teacher, says her school has expanded its catch-up programme since its doors reopened in July—though she fears the classes are not quite as fun, now that the children must keep one metre apart.

Pupils in many poor countries have long been learning shockingly little. In Botswana only about half of ten-year olds can read and understand a simple story—in America the rate is 92%. In most sub-Saharan countries the figures are much worse (see chart). The reasons for this could cover a blackboard. But one is that many school systems cling to over-stuffed curriculums. Teachers lack the training or permission to veer from the course set by textbooks. Pupils who fail to grasp basic literacy and numeracy when they are tiny cannot make sense of anything that comes next.

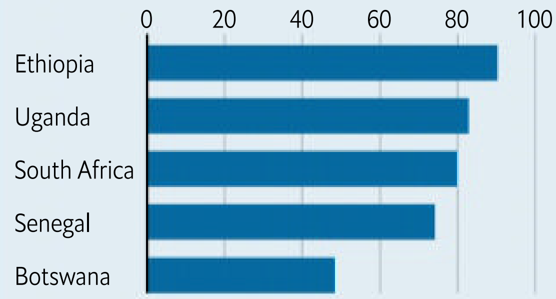
These long-standing problems now risk compounding the harm that covid-induced school closures have caused. (According to UNESCO, schools in sub-Saharan Africa shut for an average of 23 weeks.) A recent study of children affected by an earthquake in Pakistan in 2005 found that they ended up falling behind by one and a half years, even though their classrooms shut for only three months. The authors think this is because, when schools reopened, teachers pressed on with the usual lessons as if nothing had been missed.

Catch-up classes of the sort running in Botswana offer an alternative approach. They borrow from a technique pioneered over two decades by Pratham, a big Indian NGO that has helped left-behind learners in South Asia. Its model, known as Teaching at the Right Level (TARL), uses speedy oral tests to sort children in their last years of primary school into groups that match their learning levels, rather than their age. These groups commonly gather for one hour of each school day to practise either maths or reading. Alternatively children may attend intensive catch-up "camps", which are repeated throughout the school year. One such programme implemented a few years ago in Uttar Pradesh, India's most populous state, saw the share of children who could read a paragraph increase from 15% to 48% after 50 days of catch-up classes. That was twice as many readers as in a control group, who plodded on with their usual lessons.

Reading required

Poor literacy*, 2019, %

Selected countries



Source: World Bank

*Ten-year-olds unable to understand a simple age-appropriate text

For years Pratham's programmes have been studied by economists from the Abdul Latif Jameel Poverty Action Lab at the Massachusetts Institute of Technology. In 2019 the two outfits set up a new organisation, called TARL Africa, which aims to spread its model of remedial teaching across the continent. It is working with governments and advising local NGOs.

Ten African countries are running experiments: these include the Ivory Coast and Kenya, in addition to Botswana. Zambia is keenest. When the pandemic struck, it was running daily catch-up classes in one-fifth of its primary schools, benefiting a quarter of a million children in grades three to five. In 2019 the share of pupils who could read a simple story in one province increased from 22% to 41%. The government has grown even more enthusiastic since it allowed schools to reopen in October, says Nico Vromant of VVOB, a Belgian NGO that is helping. This year it is almost doubling the number of schools that operate a catch-up programme.

Making the model work in Africa is trickier than in India. Classes tend to be much larger. Bigger distances between schools make it more costly to ensure that all of them get frequent visits from mentors, who are needed to keep the programme on track. Noam Angrist, an American who co-founded Young 1ove, an NGO involved with the catch-up programme in Botswana, says that to get the programme to work in some schools it had to discourage corporal punishment. Pupils who are hit are afraid of making mistakes.

The pandemic could create new obstacles. In places that require strict social distancing, officials have had to cut the hours pupils spend in schools in order to allow them to attend in shifts. That only intensifies battles over how classroom time ▸▸

should be best used. But catch-up classes are cheaper and more effective than many other things officials like to spend money on, such as textbooks that only the cleverest pupils can read. Austerity may inspire more of them.

Governments have been loth to take stuff out of school curriculums, for fear of being accused of dumbing down. They have also fretted lest large-scale catch-up programmes be seen as an admission of failure. Yet the disruptions caused by the pandemic have created an opportunity, says Rukmini Banerji, one of Pratham's bosses. "Now they can blame covid." ■

Benin and Chad

Getting too much alike, alas

DAKAR

Benin was once a democratic beacon. Now it is more like Chad

"WE ARE NOT in a democratic country any more," says Rogatien Biaou, a former minister turned opposition figure in Benin, which will hold presidential elections on April 11th. This is not hyperbole. Almost all opposition leaders have been blocked from standing. Others are in exile. Reckya Madougou, a high-profile would-be candidate, is behind bars. As President Patrice Talon slashes political freedom, anger is rising. On April 6th protesters took to the streets, chanting "Talon must go."

Benin, a country of 12m people, had been a democratic beacon in west Africa. In 1991 the Beninois voted out Mathieu Kérékou, the long-time president who had taken power in a coup. It was the first time an incumbent president was peacefully voted out in mainland sub-Saharan Africa. Many hoped Benin's vigorous democracy could inspire greater freedom in the region's authoritarian regimes, such as Chad, which is also holding elections on April 11th. Instead it is Benin that is becoming more like Chad.

Mr Talon, a cotton magnate, came to power promising to consolidate Benin's raucous and sometimes splintered democracy. Instead he has weakened it. In 2018 the government pushed through cumbersome new rules for fielding candidates and raised the cost of registering. The electoral commission, which was packed with Mr Talon's allies, then barred all opposition parties from the parliamentary election in 2019 for failing to follow the new rules closely enough. The result was an abysmal turnout, a parliament made up entirely of supporters of Mr Talon, and protests to which security forces responded with live ammunition. Four people were killed and many more injured. The Constitutional Court, headed by Mr Talon's former personal lawyer, waved the results through.

The submissive new parliament has since changed the electoral law to require all presidential candidates to have the backing of at least 10% of the country's MPs and mayors. With a lock on parliament and all but a handful of mayors' offices, Mr Talon and his allies could, in effect, choose who would run for president. Just two of the 19 challengers were permitted. Both are accused by the opposition of being allies of the president.

Mr Talon is changing not just the rules but also the referee. In 2018 he created a new court, known as CRIET, which is nominally for economic crimes and terrorism but has a habit of targeting Mr Talon's rivals. The latest was Ms Madougou, who, despite already being barred from standing for president, was arrested on March 3rd and later charged with financing terrorism and plotting to kill two political figures.

A CRIET judge who recently fled Benin said to RFI, a French state broadcaster, that the court is not independent. In Ms Madougou's case and many others, judges received "instructions" from political bigwigs, he says. The government denies this. Ms Madougou remains behind bars in conditions that are "scandalous", says her lawyer, Mario Stasi: "I fear for her health." Other opposition figures seem in danger, too. Ganiou Soglo, another would-be presidential candidate, survived after being shot by unidentified men on February 5th.

Since Mr Talon came to power, Benin has fallen from 78th to 113th in a ranking of press freedom by Reporters Without Borders, a watchdog based in Paris. Opposition-linked television and radio stations have been shut down and in just two years at least 17 journalists and bloggers have been prosecuted under a new digital law.

Mr Talon admits that Benin has given up some democratic achievements, but says this was to allow for development. He points to roads built on his watch and to rapid economic growth, at least before covid-19. But "democracy and development are not contradictory," says David Zounmenou, a researcher in Benin for the Institute for Security Studies, a think-tank.

Chad has neither. It has been run by President Idriss Déby since he took power in a rebellion in 1990. Despite pumping plenty of oil, it remains desperately poor. A fifth of Chadian children die before the age of five. The wealthy Mr Talon is unlikely to compare himself to a former rebel, yet there are parallels. Mr Déby has also fiddled the electoral rules to block a would-be challenger. An attempt to arrest another candidate, Yaya Dillo, resulted in a shootout that he says killed his mother and son. The main opposition candidate, Saleh Kebzabo, subsequently withdrew, saying he refused to "provide cover for a large-scale masquerade". France remains a staunch ally of Mr Déby.

Benin is not in quite as much of a mess as Chad is. Mr Talon's attacks on democracy often have a legal veneer, whereas Mr Déby's frequently do not. Mr Talon is standing for his second term; Mr Déby for his sixth. And in Benin some opposition figures, such as Mr Biaou, still hope to get democracy back on track.

Other observers are more worried. Mr Talon originally pledged to rule for just one term (the constitution allows two), but soon broke his promise. A pliant parliament and docile Constitutional Court mean there are few impediments in his way. Should he wish to change the constitution to run for a third term, frets Mathias Hounkpe of the Open Society Initiative for West Africa, an NGO, "I'm not sure many people can stop him." ■

Benin's got Talon

Europe's public broadcasters

The people's voice

AMSTERDAM

Some populists want to take over public media, others to defund them

EVERY SELF-RESPECTING European country needs a public broadcaster. So after Slovenia seceded from Yugoslavia in 1991, it gave Radio-Television of Slovenia (RTV-SLO) a mandate to report independently, unlike the state propaganda that passed for news under communism. Indeed, RTV-SLO has proved too independent for Slovenia's current prime minister, Janez Jansa. For more than a year he has been browbeating the network's journalists on social media, calling their reports "fake news". Wags have consequently dubbed Mr Jansa "Marshal Twito", a nod to Josip Tito, Yugoslavia's longtime dictator. His government now wants to pass a new media law that will make RTV-SLO easier to control.

The Netherlands' national public news broadcaster, the NOS, also has its roots in a reaction against authoritarian propaganda, that of the Nazi occupiers during the second world war. The NOS has an independent board and a guaranteed multiyear budget. But lately Dutch public broadcasters have faced intimidation, too. Reporters have been physically attacked at protests and while reporting on covid-19 measures. In October the NOS removed its logo from its satellite vans after they were repeatedly harassed in traffic.

The problems in Slovenia and the Netherlands are typical of those that are increasingly facing public broadcasters all over Europe. In some countries, such as Hungary and Poland, illiberal governments are turning them into mouthpieces for the ruling party. In others, such as Germany and Sweden, populist movements accuse them of bias in favour of the establishment and the left. Modelled on Britain's BBC (now facing political pressures of its own), Europe's public media were set up to anchor democracy by providing citizens with objective reporting. But in an age of polarisation and disinformation, that is getting harder to do.

The recent reversal of public broadcasters' independence started in Russia after Vladimir Putin came to power in 1999. By the mid-2000s Russian news shows' agendas were being set at government-led meetings. When Viktor Orban won power in Hungary in 2010 he adapted Mr Putin's blueprint, transforming the state media agency MTVA into a propaganda organ. Outrageously, the group was restructured into a shell company in a fashion that exempts it from the law governing public media. During the European Parliament elections in 2019, editors at MTVA were recorded instructing reporters to favour Mr Orban's Fidesz party.

Poland's Law and Justice (PiS) party followed Mr Orban's example when it won power in 2015. It quickly turned TVP, the public TV network, into a bullhorn. The network championed campaigns against gay rights and demonised the opposition mayor of Gdansk. After he was assassinated by an extremist in 2019 a court told TVP to pay damages, but it has not complied.

If in eastern Europe the pressure on public media comes from government, in western Europe it comes from the populist opposition. During the migrant crisis in Germany in 2016, anti-immigrant protesters began attacking the big public broadcasters, ZDF and ARD, as *Lügenpresse* ("lying press"), a Nazi-era slur. Such open hos- ▸▸

tility has abated, says Peter Frey, ZDF's editor-in-chief, and reporters no longer worry about their safety at demonstrations. But the sense that the public media are biased towards the left has taken root in conservative areas, especially the formerly communist East.

The greatest risk may be to broadcasters' finances. Most of the budget of ZDF and ARD comes from a dedicated tax that must be renewed every four years. But each of Germany's states must sign off, and a proposed rate rise was blocked by the eastern state of Saxony-Anhalt. Critics there complained that the broadcasters focus too much on big cities and on themes such as gay rights and gender that appeal to educated urbanites. Populist parties in Sweden and the Netherlands want to cut their state broadcasters' budgets, too.

Public broadcasters have tried to win over critics. In Germany, ZDF has acknowledged its failure to cover rural areas and the east. For the past three years it has broadcast periodic town-hall discussions from smaller towns around the country. The Dutch system has a built-in safety-valve: anyone who can sign up 50,000 paying subscribers gets the right to a public TV station of their own, with designated time slots on the national channels. Since 2009 three stations with right-leaning agendas have been launched. But that has scarcely calmed things: the newest station, *Ongehoord Nederland* ("Unheard Netherlands"), attacks the NOS as fake news.

A better ally has been covid-19. Last year the appetite for rapid, accurate news about the pandemic and government social-distancing measures boosted state media's ratings after years of decline. Traffic on European public broadcasters' websites more than doubled. News shows even won over some young viewers (see chart).

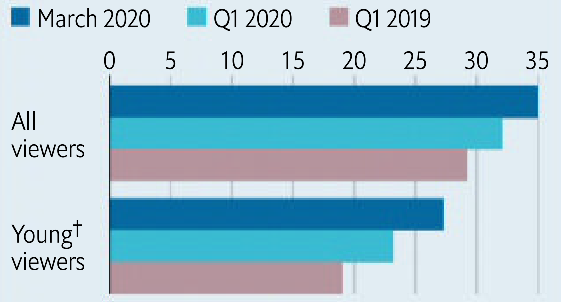
Overall trust in public broadcasters has risen over the past few years, according to the European Broadcasting Union, the groups' umbrella organisation. But that conceals a widening split, one that mirrors sharpening political polarisation. In most countries where public broadcasters remain independent, the public has confidence in them. But a disaffected minority has grown increasingly hostile.

Public broadcasters are especially vital in European countries where not enough people speak the local language to support diverse private broadcasting. In the Baltic states, populist attacks on the state-owned channels by groups like Estonia's far-right EKRE party have failed to catch on: they are simply too important. Yet there are worries there, too. Reporters at Latvia's public broadcaster have faced more threats of violence over the past six months, says Rita Rudusa, the group's head of strategy, mainly from covid-19 deniers.

In Latvia, too, the chief risk is the legal

Emergency broadcast systems

Europe*, average daily viewing share of public-service media evening news, %



Source: European Broadcasting Union

*29 organisations in 25 countries †15- to 24-year-olds

and financing structure. The country's new public-media law fails to include a set-aside tax like the television licence fee that funds the BBC. That leaves it vulnerable to political pressure. And it is not clear that the supervisory board will be protected from political appointments.

In Slovenia such political control over the budget and supervisory board threatens the public broadcaster's independence. The proposed new public-media law would let politicians appoint more of its board members and give some of its revenues to other news agencies, including ones that serve up propaganda for Mr Jansa. Journalists at RTV-SLO feared for their jobs. "Only a few of us left are still being critical, but we're being silenced," says a senior reporter. But on March 30th the defection of several MPs left Mr Jansa's government without a majority in parliament. If he cannot pass his media law, Mr Orban's model of public broadcasting may lose a new recruit. ■

Russia

House of the dead

The Kremlin may want Alexei Navalny to die in prison

VLADIMIR PUTIN may have hoped that locking up his main political opponent in a harsh penal colony would finally put him out of sight and out of mind. Instead, Alexei Navalny continues to torment the Russian president, exposing the cruelty and lies of his regime.

Deprived of his freedom and of any public platform, Mr Navalny is fighting back with the only instruments he has left: his body and his life. Since March 31st he has been on a hunger strike in his cell in Pokrov, some 100km (60 miles) east of Moscow. He is protesting against the appalling conditions of his confinement—he is being deprived both of sleep and of medical care. He has a fever and breathing problems. Three men in his barrack have been diagnosed with tuberculosis, which is common in Russian prisons.

Mr Navalny, who survived after being poisoned with Novichok, a nerve agent, last August, is also suffering severe back pain and numbness in both legs. Nonetheless, he has been denied access to a doctor of his choice, to which he is entitled under Russian law. Russia's prison service has labelled him an escape risk, even though he voluntarily returned to Russia to face Mr Putin. This label means he can be woken every hour during the night by a prison guard shining a torch in his face.

"There is a real prospect that Russia is subjecting him to a slow death," tweeted Agnès Callamard, the incoming head of Amnesty International, a human-rights group. She has written to Mr Putin calling for his release, noting that he is in jail only because he is "an outspoken critic of the Russian authorities". She also demanded that Mr Navalny be granted access to a doctor he trusts.

Instead of a doctor, the Kremlin sent a television propaganda team to taunt Mr Navalny. For the assignment it chose Maria Butina, a celebrity Putin supporter who was jailed in America for infiltrating American political circles as part of Russia's attempt to influence the election of 2016. Swaggering into Mr Navalny's barrack with a TV crew, she yelled that the prison was more comfortable than a hotel in the small Siberian town where she grew up. (No matter that it has no hotel at all.) When Mr Navalny's doctor and political ally, Anastasia Vasilyeva, arrived at the prison gates to demand access a few days later, she was detained, along with several journalists, including one from CNN.

Few things illustrate the pettiness of Mr Putin's regime as clearly as its treatment of political prisoners. Mr Navalny asked for a family photo album; it was denied. While he is on hunger strike, he says, the prison governor had sweets planted in his clothes and gave his cellmates an electric stove on which they grill chicken and bread. "This is the essence of this regime's [belief]: why would anyone want to defend his principles or fight for his rights if there is tasty grilled chicken nearby," Mr Navalny said in an Instagram post via his lawyers.

While the Kremlin tries to crush Mr Navalny's morale, his team has mounted a campaign to free him. It hopes to persuade at least 500,000 people to sign a protest against his imprisonment; as *The Economist* went to press, it had already gathered over 400,000 signatures. Various artists, scientists and journalists have sent messages of support. Every day that Mr Navalny spends in prison, he risks losing his health or worse. But he is gaining moral and political weight. ■

Bulgaria's election

Bye-bye Boyko?

A Balkans survivor stumbles

"YOU WON'T make it on your own...let's unite," said Boyko Borisov, Bulgaria's prime minister, standing forlornly in the snow soon after the polls had closed on April 4th. Opinion pollsters had predicted that the man who has dominated Bulgarian politics for more than a decade would lose some of his once-stellar support, but they did not foresee that he would do nearly as badly as he actually did. Now Mr Borisov is busy suggesting the formation of a technocratic government, which he would presumably control, though from behind the scenes.

Mr Borisov is clinging to power by his fingernails, and will remain dangling for weeks as the shocked leaders of the parties that have made it into parliament see if they can form a government. With 26% of the vote, his party will be the largest, but the vast majority of deputies from other parties have nothing in common—except that they loathe him.

Bulgaria is the poorest country in the EU, although its economy is a quarter bigger than it was when Mr Borisov became prime minister for the first time, in 2009. Then unemployment was a problem; now labour is scarce, not least because so many Bulgarians have emigrated. Last year the country was shaken by months of protest by people fed up with decades of ingrained corruption, political meddling in the judiciary and arrogant oligarchs.

Mr Borisov, a burly former bodyguard, came to power promising to stamp out corruption. Now, says Dimitar Bechev, a political scientist, his "tough guy, man-of-the-people act has worn out and he has come to symbolise all that is wrong with the country". As scandal swirled around him and his party last year, photographs were leaked that appeared to show him in bed with a pistol on his bedside table and wodges of €500 ($595) notes in its half-open drawer. Mr Borisov said that the pictures had been manipulated.

Although those protests eventually fizzled out, the anger of the demonstrators has now been translated into parliament in the shape of three anti-Borisov parties. The biggest is led by Slavi Trifonov, a talk-show host and the frontman of the Ku-Ku Band, a musical combo whose albums include "Rip off the head of the duck". He refused to campaign in the election. This strategy was successful, says Marin Lessenski, an analyst, because "it allowed everyone to project their own expectations onto him."

Claiming to have symptoms of covid-19, Mr Trifonov has said nothing since his party came second with 18%. His preferred political mode is criticism and protest, says Boriana Dimitrova, a sociologist; he has presumably been shocked by the realisation that his unexpected success means he will now have to take some responsibility for the future of the country.

Ms Dimitrova predicts that either forming a new government will prove impossible, in which case a new poll is likely to be held in July, or that a short-lived technocratic government with a limited mandate supported by the anti-Borisov parties will take the helm until a new vote is held alongside a presidential election that is planned for October.

Mr Lessenski is less certain. Mr Borisov has been written off before, he says, and previously "proved a master tactician". He thinks Mr Borisov will try to secure support in parliament from a party that represents Bulgaria's Turkish minority, plus others that may somehow be persuaded to part with their anti-Borisov principles.

In the coming seven years up to €29bn of EU funds are available to be disbursed. Having a hand in how that is spent, legitimately or not, could act as "a huge incentive" to join a government. ■

Spain

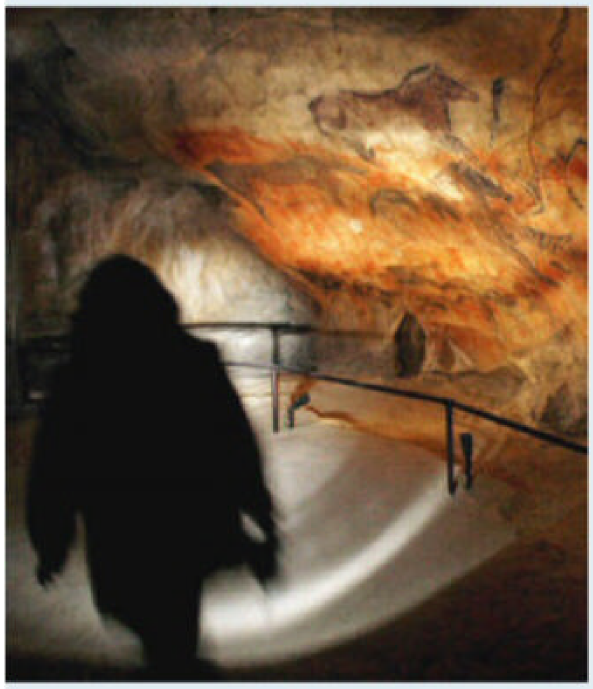
Yes, Basques are different

MADRID

But not as different from other Spaniards as some claim

WITH THEIR unique language, unrelated to all other European tongues, the continent's oldest cave paintings, and their seafaring, gastronomic and choral traditions, the Basques have long had a strong sense of identity. Nationalist propagandists have gone further, claiming that the Basques form an ancient and superior race, the first Europeans. In some versions they descend directly from the biblical Noah.

A new study of the genes of Basques and their neighbours brings mixed news for nationalists. The study, by a team at Pompeu Fabra University in Barcelona and published in *Current Biology*, shows that Basques are indeed genetically different from their neighbours. But those differences seem to be relatively recent, dating from the end of the Iron Age (around 2,500 years ago). And they are greater in the core Basque-speaking areas than in the Basque periphery.



Basquing in reflected glory

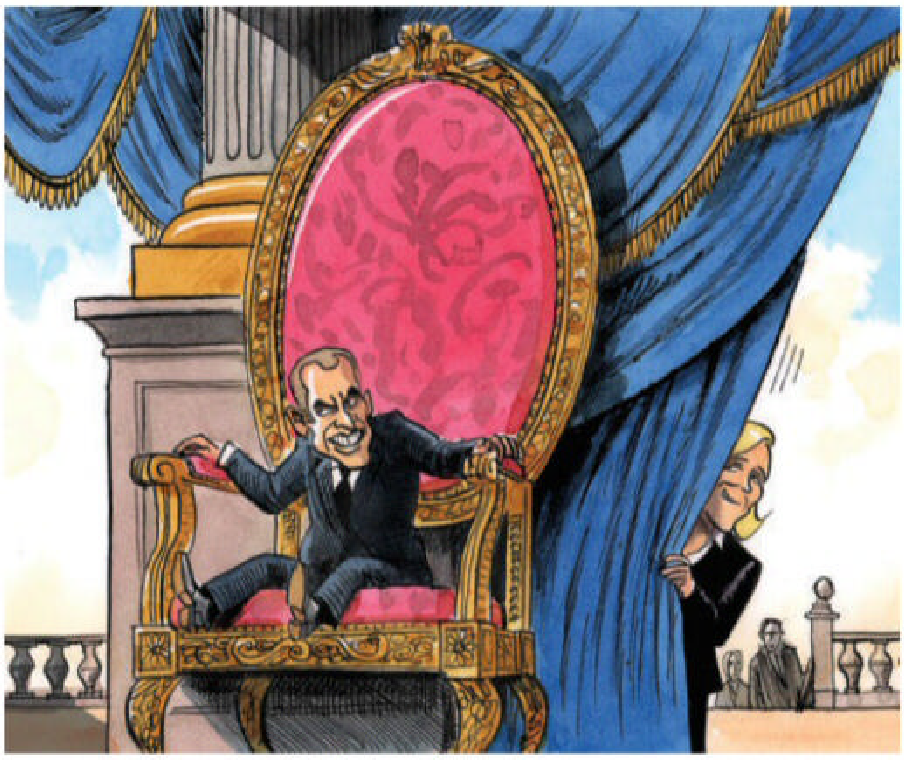
A key finding is that Basques and other Spaniards all descend from the same Stone Age migrants from Europe's eastern steppes. The ancient Iberians, too, spoke a non-Indo-European language (like Basque, Finnish and Hungarian). The differences only began when the Romans turned up in Iberia. Recent research has found evidence that, contrary to myth, the Romans did conquer the Basque Country. But few seem to have settled in the core Basque-speaking areas. And the Arab-Berber invaders who occupied much of Iberia for seven centuries scarcely got there. Impenetrable mountains and an incomprehensible language discouraged genetic mingling, the researchers surmise.

These findings should scotch the idea of a separate Basque race, as asserted by Sabino Arana, the founder of the Basque Nationalist Party (PNV). Arana was an anti-Semite who proclaimed the racial and religious purity of the Basques. When industrialisation brought a flood of migrants from the rest of the country, he warned against "the rubbing shoulders of our children with the children of the Spanish nation".

The Basque language, a clutch of dialects that were codified in 1968, has replaced race as the focus of Basque nationalism. The PNV, which has successfully governed the autonomous Basque region for most of the past 40 years, vigorously supports the language. Having long distanced itself from Arana, it is a broadly Christian democratic party. But all nationalists, including the former terrorists of ETA, might usefully acknowledge that Basques have much in common with other Spaniards.

Charlemagne | Thinking the unthinkable

Emmanuel Macron's troubles open up space for Marine Le Pen, but also bring greater scrutiny



MARION ANNE PERRINE LE PEN never really meant to go into politics. It was her eldest sister, Marie-Caroline, who was thought destined to follow in the footsteps of their father, Jean-Marie, co-founder in 1972 of France's far-right National Front. Marine, as she became known in childhood, was the baby of the family, the third blonde daughter, who set out to make a career as a lawyer. Yet for the past ten years, for reasons of chance and guile, it is Marine Le Pen who has run the party she renamed National Rally. And in 12 months' time it is her name that will appear on the ballot paper at the next French presidential election, for the third consecutive contest. Is it time to think the unthinkable?

To dwell on the possibility, however slim, that Ms Le Pen might seize the presidency unsettles the liberal-minded. The very discussion of it offers her oxygen and confers legitimacy on a candidate who once compared Muslims praying in the street in France to the Nazi occupation. Yet the odds of a Ms Le Pen victory are no longer close to zero. With covid-19 infections soaring again and a vaccination campaign only now taking off, Emmanuel Macron's rating is slipping. After a president on the right (Nicolas Sarkozy), the left (François Hollande) and the centre (Mr Macron), a disenchanted electorate may be tempted to try something different. The main reason voters tend to back her party is that they are fed up with all the others.

Moreover, Ms Le Pen is now a veteran campaigner, who knows the toll a two-round presidential election takes, and the scars defeat leaves. She has mastered the crushing one-liner, mocking Mr Macron's decision on March 31st to put France into a national lockdown after all as his "*Waterloo vaccinal*". "*Confinement, déconfinement, reconfinement*," chants Ms Le Pen, taunting the government's shifting strategy. Polls suggest that, were a run-off to be held today, she might score 47-48% to Mr Macron's 52-53%, a chillingly narrow margin. Once, it was assumed that moderate voters of the left and right would rise in shock and shame across the land to keep a Le Pen from the highest office. Today, voters disillusioned with Mr Macron, particularly on the left, vow simply to abstain.

If Mr Macron's troubles open up space for Ms Le Pen, however, they also bring greater scrutiny. Some unsavoury types still lurk in her shadow. There will be questions about her approach to the democratic exercise of power. Closer inspection will also involve what might be called the competence challenge. In the past, when the National Front was a party of protest, this mattered little. Her father sought to howl, not to rule. She seeks power.

Four years ago, her policy pitch was distinctive. She was a Frexiteer, who vowed to take France out of the euro, close its borders to immigrants, clamp down on Islamism and force factories to make stuff and keep jobs at home. She contrasted her "patriotic" approach with what she called Mr Macron's "*mondialiste*" vision: of deregulation and post-national Europeanism.

Today, however, Ms Le Pen has ditched Frexit, would keep the euro and promises to forge a "Europe of nations" by reforming from within. The candidate no longer has a monopoly on questions of national sovereignty; all parties vow to make more masks, vaccines and medicines in France. Mr Macron's "republican values" bill, meanwhile, which his critics see as a hunt for Ms Le Pen's far-right vote, is also designed to curb Islamism. Indeed Gérald Darmanin, his interior minister, startled her in a debate by accusing her of being too soft on such matters. Today Ms Le Pen, popular among anti-vaxxers, backs vaccination.

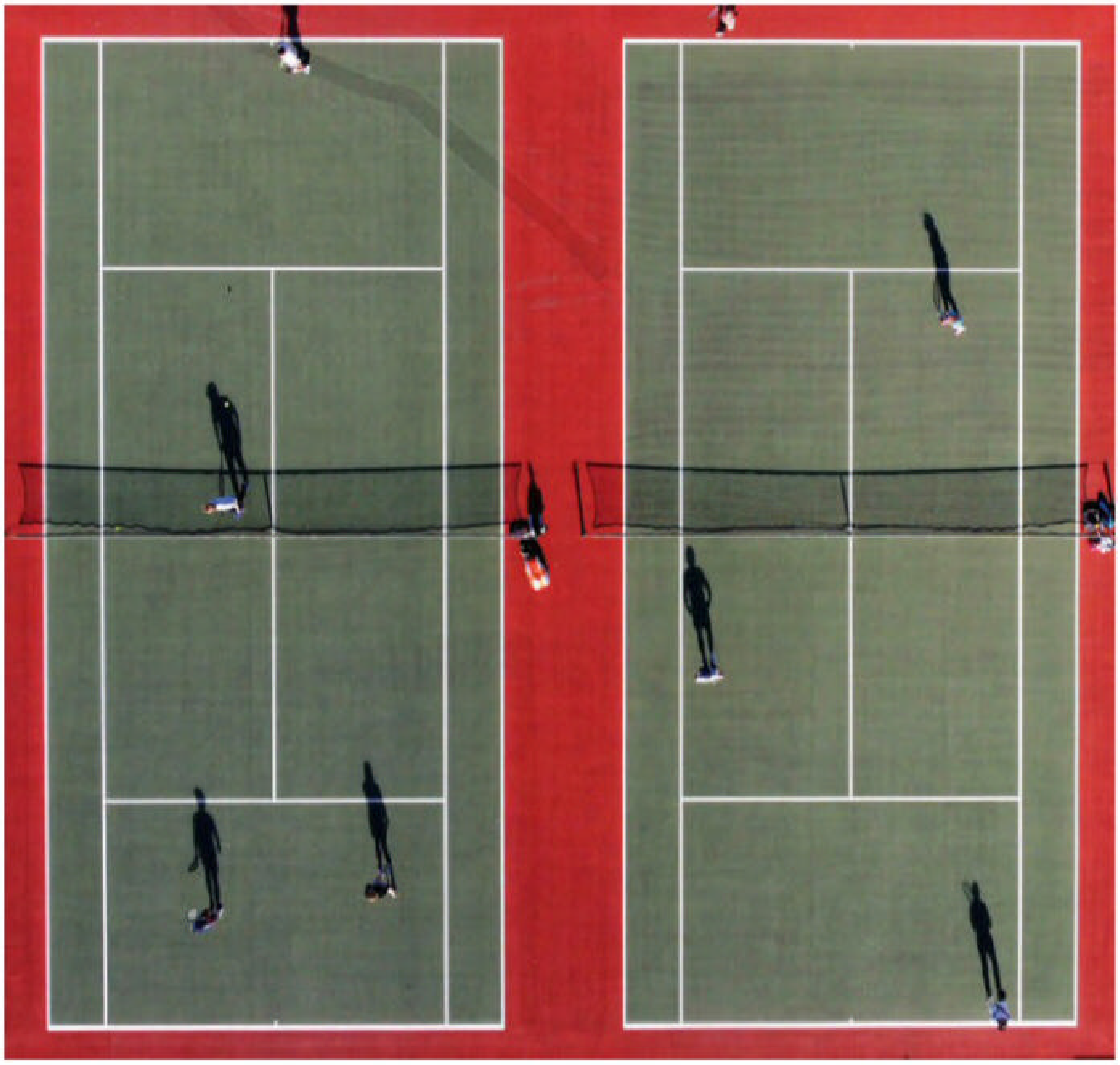
Many voters will still see the family name, disregard the fresh packaging and reject the underlying message as divisive and toxic. Roughly a quarter say they would back Ms Le Pen in the first round, but this is no more than it was a year before the previous presidential vote. Yet there is scope for her to grab more. Some of her policies are now hard to distinguish from those of the mainstream conservative or nationalist right. Indeed her pledges to restrict citizenship rights and cut immigration are espoused by conservative parties across Europe, including in Britain. When Ms Le Pen promises to manage things better, it may come down to whether voters think she is competent enough to do so.

Which, paradoxically, offers *macronistas* some comfort. Nobody has forgotten Ms Le Pen's wild-eyed second-round debate against Mr Macron in 2017, when he calmly reminded her that she had confused a firm that makes telephones with one that makes industrial turbines. He may be damaged by his handling of the third covid-19 wave. But, as vaccinations pick up, Mr Macron could yet recover. He is less disliked than either Mr Sarkozy or Mr Hollande at this point in their terms. If the next election hinges on technical expertise, Mr Macron will have a sizeable advantage.

Come one, come all

However, worries about Ms Le Pen's fitness to govern could help potential rivals on the right, too. One, Xavier Bertrand, head of the Hauts-de-France region, has already said he will run. Another, Valérie Pécresse, head of the Paris region, may yet do so. Yet another, Edouard Philippe, Mr Macron's ex-prime minister, is sitting it out as mayor of Le Havre, describing himself in a publicity tour for a new book as "loyal" but also "free". For which, probably, read: I won't run against Mr Macron, but won't hesitate to declare should the president decide he can't. Even Michel Barnier, the EU's former Brexit negotiator, could give it a go.

Ultimately, Ms Le Pen may still be judged, at least in the first round, not on cerebral calculations about expertise, but on identity, emotion and anti-elite anger in rural and industrial France. The competence challenge will apply more to the run-off. Which, at this point, is still most likely to see Mr Macron take on, and narrowly beat, Ms Le Pen. But politics remains highly fluid. Traditional parties are hollow. The rebellious French like to spring a surprise. No one is better placed to know that than Mr Macron. ■



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Covid-19

Opening shots

Britain emerges from lockdown with cases tumbling—and confronts dilemmas that will soon face much of Europe and America

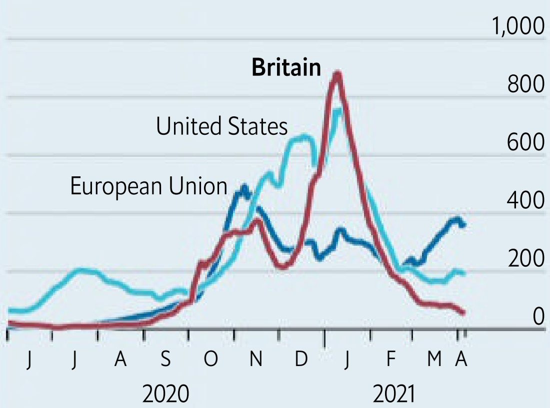
BORIS JOHNSON has long promised that Britain's emergence from lockdown would be "cautious but irreversible". Announcing the latest easing of restrictions on April 5th, the prime minister looked forward to a pub trip where he would "cautiously but irreversibly" raise a pint of beer to his lips. It was the sort of informality that annoys critics and cheers supporters.

There are growing numbers of the latter, with more people approving of Mr Johnson's performance than at any point since the early stages of the pandemic. Nearly half of Britons have received a vaccine, and jabs have been dished out according to a schedule that many deemed absurdly ambitious. As a result of this and a tight lockdown, cases have collapsed from almost 900 per 1m people in January to fewer than 50 (see chart).

Thus Britain is grappling with something that will soon confront much of the West: how to manage the transition to a world in which covid-19 is less deadly. The government has settled on a dual approach: lifting restrictions slowly (they will not disappear in England until June 21st at the soonest) and introducing a range of measures to reduce transmission, some on a scale matched by few other countries.

Over the hump

Covid-19, daily new confirmed cases per million people*



Source: Our World in Data *Seven-day moving average

Of the interventions, vaccine passports have attracted the most attention—and are the farthest from being introduced. The government is experimenting at events that include a club night and the FA Cup final. Although it has ruled out their use in pubs and restaurants when they open again, which will be no earlier than May 17th, it has not ruled out their introduction in such locations later in the year.

There are technical issues to overcome, including how to incorporate negative test results and how to knit together various databases. There are also political issues. Labour and the Liberal Democrats have indicated opposition, as have some Conservatives upset at the slow pace of the return to normality, who are fond of quoting Mr Johnson's jeremiads against ID cards from his time as a journalist.

Polls show strong public support. And the mere possibility of their introduction serves a purpose. According to Ipsos-MORI, a pollster, just one in 20 people would now turn down a vaccine, compared with one in seven in December. The main reason for this change is the expectation that vaccination will be necessary for travel or other leisure activities.

Britons may be enthusiastic about vaccines, but they are less keen on assisting a tracing system that is, in the words of an insider, "leakier than a...sieve". Nearly quarter of those who test positive are not ▸▸

reached by tracers or decline to give their details. On average people who are reached pass on four contacts, compared with the 15-20 expected at the start. There are also worries about how many people who have symptoms self-isolate, with Rishi Sunak, the chancellor, stubbornly resisting attempts to increase sick pay.

But more rigorous treatment is now being given to worrying variants. Thanks to Britain's enormous genetic-sequencing capacity, by the middle of March nearly half of positive PCR results were being examined. The government has deployed what it calls "enhanced contact tracing" for cases of the South African variant, against which the Oxford-AstraZeneca vaccine appears to offer less protection. This involves door-to-door testing and close scrutiny of the transmission chain (ie, what is known simply as "contact tracing" in China or South Korea).

Falling cases provide other opportunities, too. Of England's 343 local authorities, which tend to have more success finding cases, 59 are involved in a "Local-0" pilot, taking responsibility for tracing all cases in the area. When hospitality venues re-open, all visitors will be required to check in using the national contact-tracing app, rather than just one member in each group, which ought to provide their tracers with many more contact details.

But the biggest change, and where Britain stands out most internationally, is its testing capacity. It carries out around 1m tests a day, roughly the same number as America, which has five times the population. Numbers will soon grow larger still. On April 5th the government announced that everyone in England would have access to twice-weekly lateral-flow tests, which are less likely to pick up the virus than PCR ones but offer a fast turnaround.

The twice-weekly offer was previously available to medics and families with children at school. According to a scientist advising the government, by early March tests in hospitals had picked up around 30,000 cases among staff who would otherwise have gone into work.

Research published by the Department of Health and Social Care (DHSC) suggests that the false-positive rate of the Innova lateral-flow test, one type in use, is 0.03%. That may seem low, but when the virus is rare and millions of tests are in use, it means that lots of positive results are false. Critics worry that many people will get a nasty shock, and be forced to isolate unnecessarily. To mitigate this, last month the government changed its policy, offering all those who test positive a confirmatory PCR test.

The other worry is that lateral-flow tests pick up fewer genuine cases, thus offering misplaced assurance to some who test negative. But while they are less likely to pick up those with low viral loads than PCR tests, they pick up most infectious people. A pre-print by researchers at the University of Oxford, the DHSC and Public Health England suggests lateral-flow tests would catch 83-89.5% of cases that now lead to detected transmission events.

How effective the experiment will be depends on a huge number of variables, not least uptake. The tests will be available in pharmacies and by delivery free of charge, as many advocates have called for in America. The impact of Britain's fast vaccine roll-out has been closely studied across the world. Its entry into a new era of the pandemic will be, too. ■

Pubs

Raising the bar

Never mind Brexit: the British boozer is getting a European makeover

In Britain, standing at the bar with a pint in hand is a cherished national tradition, though it dates back only a couple of centuries. Before the 1830s drinks were carried to tables from storerooms. Then came the gin palace. Seating disappeared to maximise standing space; bars and ornate plate-glass windows were introduced. The clientele found that packing in together was a pleasurable way to stay warm. Pubs had to change or die.

Now pubs are evolving rapidly again. The smoking ban of 2007 pushed patrons outside, not always in the most stylish manner. "There were some pretty shabby ad hoc shelters...which were a token to smokers so they didn't get wet," says Kevin Marsh, head of licensed leisure at Savills, an estate agent. Other adaptations were more refined. Trendy city pubs and spacious country taverns blessed with superior gardens invested in canvas canopies, igloos and heated wooden booths. They are now in the vanguard: having a luxurious beer garden is key to surviving covid-19.

A taste of things to come

Last year 1,837 pubs closed across Britain, according to CGA, a consultancy—an increase of 85% on the previous year. Survivors with outside spaces are likelier to flourish. From April 12th, pubs with gardens can reopen; those without will have to wait until May 17th. A mere 38% of licensed premises have outdoor space that can be used to host revellers, and that falls to 23% in Scotland, where drinking outside is chillier. Pubs can put up marquees for the whole summer without planning permission; usually, the limit is 28 days.

But marquees are the least of it. At the Golden Lion in Rainford, Merseyside, Chris Nevin has transformed an area that was used as a dumping ground into a National Trust-style woodland trail. Other features include a large marquee, a table-tennis table and a playhouse for young children. "We're trying to reinvent what the pub is in the modern world," says Mr Nevin.

Luxurious al fresco facilities are proliferating across the nation. The Mulberry Tree Inn in Stockton Heath is creating an external bar covered by a louvre canopy system. The Union Inn in Falkirk is laying an artificial lawn from which covid-safe pods will burgeon. Fletcher's Sports Bar in Liverpool has a new 250-person capacity beer garden, with a large outdoor screen for live sports. Yr Hen Dderwen in Carmarthen is getting a £1m rooftop terrace. The Eastfield Inn in Henleaze will soon boast a restored pond, newly planted trees, outside booths—and maybe a few goats.

The growth of outside drinking is giving the traditional British boozer a European flavour. "Places like Paris, Madrid, Amsterdam have done it well for a long time," says Mr Marsh. "We haven't done it in any widespread kind of way. But we have reached a point now, because of innovation in the pandemic, where a proportion of pub trade will not go backwards."

Whether the beer garden will put down roots depends on two uncertainties. The first is the weather. Although Mr Nevin notes that he hosted more than 100 socially distanced people in his marquee on a cold December night, a monsoon summer could drown this fragile plant.

The second uncertainty is the British people. Thomas Thurnell-Read, a sociologist at Loughborough University, reckons the beer gardens' success will depend partly on how much publicans allow for transgression and "retain that spontaneity, humour and convivial impropriety, within covid rules." As a drinker puts it, "It's not really a pub if you can't crowd around a pool table shouting at your mates, is it?" ■

Bagehot | The power of perkiness

Liz Truss's popularity says a lot about today's Tory party

Liz Truss's fellow MPs tend to treat her as a bit of a joke. A dull speaker in a profession that values powerful rhetoric and a relentless self-promoter in a world that relishes cutting people down to size, after seven years in cabinet she only holds the lowly job of trade secretary. "Cringe-making", "insubstantial" and "a robot with a bit missing" are just a few of her colleagues' brickbats.

Yet this month she topped Conservative Home's monthly Cabinet league table for the fifth time in a row. With 89 points, she beats the highly regarded chancellor, Rishi Sunak (79 points), by a length and the prime minister (61 points) by several. The league table reflects the opinions of party activists, who matter in Tory politics not just because they make key decisions (Boris Johnson was selected as prime minister by a constituency of 160,000 party members) but also because they both create and reflect wider currents of opinion. What is it about Ms Truss that the Conservative grassroots finds so endearing?

A big part of the answer lies in the fact that she's utterly unapologetic about her Toryism. Nothing annoys the base more than self-styled progressives' conviction that they are on the right side of history. And nothing excites them so much as Conservatives who believe that Conservatives are the real progressives and progressives the true reactionaries. Margaret Thatcher seized the mantle of economic progress for her party. But David Cameron's modernisation strategy consisted of endorsing the left's cultural agenda—in essence, forcing *Daily Telegraph* readers to take the knee to the *Guardian*. Then Brexit shattered the Tories' unity on economics: Remainers accused Brexiteers of wrecking the economy and Brexiteers focused on sovereignty rather than prosperity. This created a market for an unashamed champion of both economic and cultural Tory values.

Despite voting Remain in the referendum, Ms Truss responded to doubts about Britain's ability to deliver independent trade deals with a whirlwind of activity. Remainers lauded the European Union's trade deal with Japan while mocking Britain's "flailing" negotiating team. Ms Truss beat the EU to the finishing line. Remainers argued that Britain lacked the necessary heft to negotiate trade agreements around the world. Ms Truss's officials have done deals with 65 countries.

Trade experts are unimpressed: they point out that most of Ms Truss's trade deals are rollovers—mere "cut and paste jobs"—and that the deal with Japan would add a mere 0.07% to GDP, a small fraction of the loss from lower trade with the EU. But the trade secretary calculates that bubbly optimism beats technocratic nitpicking. She describes the Japan deal as "a ground-breaking, British-shaped deal" and "just a glimpse of global Britain's potential"; her department celebrated it by tweeting a photograph of a bottle of Japanese soy sauce during an edition of "The Great British Bake Off", claiming that it would soon be cheaper.

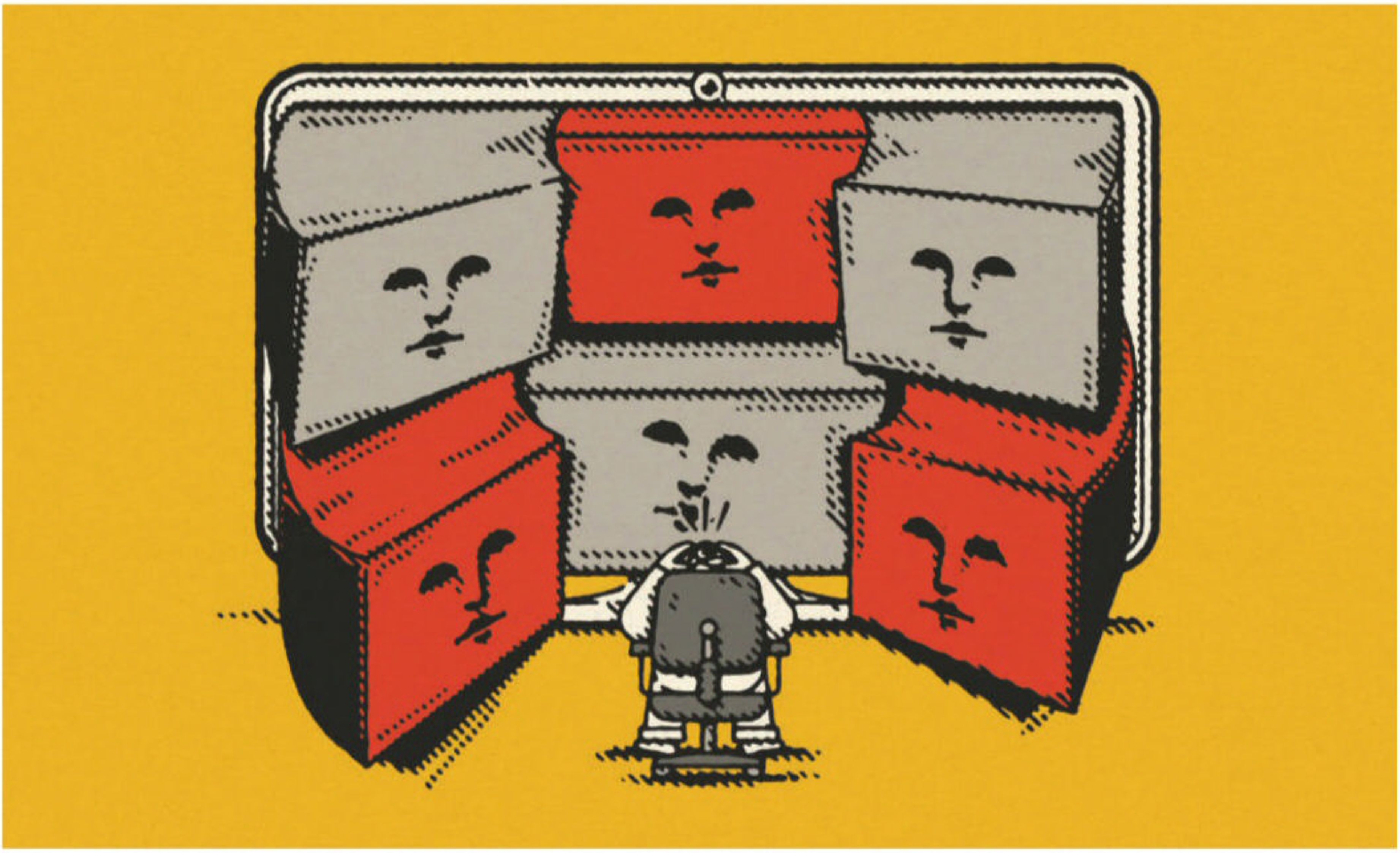
When it comes to her other portfolio—equalities—Ms Truss has adopted the posture of Oliver Cromwell's "plain russet-coated captain who knows what he fights for and loves what he knows". She has decisively broken with Mr Cameron's strategy of conceding the moral high ground to the left—most notably by rejecting the case for "self-identification" for trans people under the 2004 Gender Recognition Act but more generally by arguing that the best way to promote equality is to remove barriers to effort rather than for the state to hand down rights from on high.

The Truss style is a distinctive mixture of classlessness and perkiness. She's a "clean skin", as one Tory puts it: a Tory by conviction rather than inheritance who doesn't belong to any of the familiar Conservative tribes—grandees, shire-dwellers, nouveaux riches, or, more recently, no-nonsense Northerners. She grew up in Leeds—hence her politically useful Yorkshire accent—but is the daughter of left-wing professionals (her father was a professor of mathematics) who took her on CND marches when she was growing up and pointedly sent her to the local comprehensive rather than the grammar school.

She remains perky in even the most perk-shrivelling circumstances: she won her Norfolk seat despite attempts by the local "Turnip Taliban" to deselect her over her affair with a married Tory MP, Mark Field, and became a cocky chief secretary to the Treasury despite failing dismally as Lord Chancellor. Nothing is too trivial for her to tweet or post on Instagram and no phrase too cringe-making for her to seize upon: she recently celebrated her move to Ian Fleming's former office in the Old Admiralty Building by declaring that "Liz Truss: licence to trade" is in town.

The other source of Ms Truss's appeal is her libertarianism. She shares Thatcher's enthusiasm for unleashing the market, shrinking the state and breaking up cosy cartels. During her abortive bid for the leadership in 2019 she argued that Britain should "build a million homes on the London Green Belt" and tear up job-destroying occupational licences. But she also adds a modern twist to Thatcherism. A fan of "digital disruption", she celebrates "our nation of Airbnb-ing, Deliveroo-eating, Uber-riding freedom-fighters". A scourge of big government, she sticks up for Britons' inalienable right to stuff themselves with doughnuts washed down with sugary drinks.

Ms Truss's unapologetic Toryism makes her an ideal ally for Mr Johnson—a man who believes that offence is the best form of defence. But her libertarianism points to a possible problem. Mr Johnson has thrown his weight behind a post-Thatcherite conservatism that celebrates active government and regional redistribution. Ms Truss's popularity suggests that there is a limit to the party's willingness to tolerate that switch, and her soaring ambition and limitless self-regard suggest that she expects a big job in the next cabinet reshuffle. Ms Truss is worth watching not just for the usual runners-and-riders reasons but also because she illuminates a widening division in conservatism. ■



Working online

Virtual insanity

Love them or hate them, virtual meetings are here to stay

Georgina is in no hurry to get back to the office. The 37-year-old, who works in financial services in Geneva, has been working from home for most of the past year. Doing so allowed her to skip her commute, wear tracksuit bottoms and avoid awkward conversations about her pregnancy. She is now on maternity leave but her colleagues are trickling back into the office. Meetings all still take place via Zoom; her colleagues dial in individually from their desks so those working from home do not feel excluded. But Georgina worries that, as restrictions ease, people will rush back to their pre-pandemic ways and that working from home will once again be the exception.

Videoconferencing platforms, such as Microsoft Teams and Zoom (now so ubiquitous it has become a verb), made remote work possible as covid-19 spread and countries locked down. Staff once needed permission to work from home; they now need it to go to the office. All kinds of work that once took place in person—from yoga classes to medical appointments—have moved online. The daily number of participants in Zoom meetings jumped from around 10m at most at the end of December 2019 to more than 300m four months later.

The shift has been good for the planet. Videoconferencing uses less than a tenth the energy required for in-person meetings once travel and equipment are accounted for. The benefits for people, in terms of their mental health and relationships with colleagues, are less clear. Some have come to enjoy interacting through screens. Others are exhausted by their colleagues' inability to master the mute button. However people feel, virtual work is here to stay, says Tsedal Neeley of Harvard Business School. The trick, she argues, will be keeping the good parts and finding workarounds for the bad.

A year into the pandemic, many are suffering from Zoom fatigue. New research from Stanford University has laid out the science behind it. The first problem with video calls is that they force people to stare at their colleagues in close-up. Talk to someone on a laptop using the default configuration on Zoom and their face appears as big as it would be if the two of you were standing 50cm apart. At such proximity the brain is hard-wired to expect either a punch or a kiss. Endless eye contact makes the experience more stressful still. People rarely lock eyes for long during meetings in person. On video calls participants peer into their screens constantly and then wonder why they feel as though everyone is staring at them. Jeremy Bailenson, director of Stanford University's Virtual Human Interaction Lab and the study's lead author, compares the experience to cramming co-workers into a lift and forbidding them to avert their gazes.

Poor connection

Videoconferencing also eliminates important non-verbal communication. People nod dramatically in an effort to send non-verbal cues that in face-to-face meetings they send naturally. That is tiring. In real life you can see your colleagues fidgeting as your presentation drags on. That is less obvious online. People speak 15% louder on video calls than they do in person, which becomes exhausting. Delays in transmission, common when internet connections are spotty, make communication harder still. A gap of just 1.2 seconds makes participants seem less attentive, friendly and conscientious.

Building trust without these social cues is difficult, says Paul Fisher. Mr Fisher, who teaches negotiation at the Saïd Business School at Oxford University, has recently started a module on virtual communication. Every late response to an email and glance to the side on a video call breeds suspicion. Virtual negotiations are "more likely to reach an impasse", Mr Fisher says, as negotiators struggle to understand each other's emotions and grow frustrated.

The constant image of yourself on such calls is also trying. In June 2020 Gabrielle Pfund at Washington University surveyed women—narrowing her search by sex because women often report more issues around body image than men—and found respondents reported spending on average 40% of their time on video calls looking at their own face. Endlessly scrutinising your wrinkles and puffy eyes is not good for your self-esteem.

Virtual meetings have proved a mixed blessing for women in other ways. In one survey of women working in engineering and technology, almost a third of respondents said they were talked over, interrupted or ignored more frequently during such conferences than they were in person. But virtual meetings also free women from tiresome judgments. Bobbi, who is high up at a big consultancy, describes herself as "petite". She does not miss being sized up in meetings. Deborah Tannen, a professor of linguistics at Georgetown University, points out that deciding what to wear to a virtual meeting is less of a minefield. "You don't have to worry about how long or short your skirt is," she says.

The past year has also shown that, to the surprise of some bosses, many people labour harder when they barely have to get out of their pyjamas. According to a study of 3m employees at 21,500 companies published in September by Harvard Business School, they worked longer hours, dealt with more emails (see chart) and attended more meetings (a dubious measure of productivity) when the pandemic struck and work first shifted online.

That will make it harder in future for managers to refuse when employees ask to work from home. "One of the big questions last March was: would people essentially watch Netflix all day?" says Jared Spataro, head of Modern Work at Microsoft. It seems they do not.

Virtual work does have advantages. On video calls everyone appears as an equally sized, randomly arranged square; that has a certain democracy. Markers of status, such as taking the seat at the head of the table or next to the boss, have disappeared. Time differences permitting, staff anywhere in the world can hear from their bosses directly in mass meetings and can collaborate with distant colleagues.

Some feel uncomfortable about blurring the boundaries between their home and work lives, but it is also helping co-workers get to know one another. One in five people has met colleagues' pets or families virtually during the pandemic, according to a Microsoft survey. That breeds comradeship. One in six has cried with a co-worker as the stresses of lockdowns take their toll, according to the same poll. "Previously you had a work persona and a home persona," says Krish Ramakrishnan of BlueJeans, a videoconferencing service owned by Verizon Communications, an American telecoms group. "During the pandemic there is just one persona."

Take Sherry S. Wang, a radiologist in Utah. Before covid-19 one physician at a local hospital dropped by her room there to show her scans. Now that she works from home, he calls via Skype. She had never seen his office or the tchotchkes it is filled with. "I feel like I know him better now," she says.

WFH SMH FML

Other aspects are less appealing. Morag Ofili, a lawyer in London, changed jobs last year. Virtual drinks with new colleagues sounded fun at first. But Ms Ofili soon found that socialising with strangers via video call feels awkward and lacks the "energy" of the pub. "Fundamentally, I'm in a room on my own," she says.

For good or ill, a hybrid model of online and in-person meetings seems inevitable in the aftermath of the pandemic. A survey by PWC at the end of 2020 found that over 80% of employers reckon remote work has been a success. Some 70% of executives are planning to increase investment in virtual-collaboration tools. Almost 65% plan to plough money into training managers to deal with a virtual workforce.

The coming months will be devoted to working out how to avoid the worst aspects of telework. Harry Moseley, chief information officer at Zoom, takes his dog for a walk twice a day in lieu of a commute. He opts for audio-only calls when he is on the go or speaking briefly with colleagues he knows well. Non-stop videoconferencing over an eight-hour workday leaves users exhausted and bottom-sore.

Virtually impossible

Number of emails sent per person*

Source: Harvard Business School

*Global data from 21,478 firms in 16 large metropolitan areas

After a year of working from home, over 40% of employees surveyed in 31 countries said they still lacked office essentials such as a printer. One in 10 did not have an adequate internet connection. Managers are using their imaginations to keep their staff engaged. Courtney Hohne is the communications chief of X, a secretive arm of Alphabet, Google's parent company. She uses flashcards with a series of icebreakers to start frank, unstructured conversations. They range from "It was something you said," to "You have no idea what's really going on here." If nothing else, staff can bond over the misery of such exercises.

More sophisticated use of technology will improve the experience of virtual work. Many businesses forced online last year rushed into using videoconferencing for everything. But other tools work well for different tasks. At LeanIn.Org, a women's organisation that encouraged remote work long before the pandemic, teams rely on shared Google Docs. That allows for "asynchronous work", where colleagues work on a task together but in their own time. Meetings start with silent brainstorming using Jamboard, a virtual whiteboard. The goal, says Rachel Thomas, the group's boss, is to communicate in different ways to include different people—slow and fast thinkers, verbal and visual learners, introverts and extroverts.

The makers of such products are trying to improve them, too. To lend structure to the "shapeless workday", Microsoft Teams is introducing a "virtual commute" that eases users into the day with questions about what they need to get done. BlueJeans now allows people to highlight key moments in a video call and record them for others to watch later in an effort to combat the "FOMO" (fear of missing out) that rages among a remote workforce. With new filters, Zoomers can add a unicorn horn to lighten the mood. The company has also rolled out an end-to-end-encrypted option to allay privacy concerns.

Technology will help those who decide to carry on working from home to feel more included. The Zoom Rooms function for conference rooms is being upgraded with a "smart gallery" tool. Cameras will detect the faces of those physically present at meetings and display them side by side on the screens of those who join virtually.

Such a future may sound lonely and tiring. But those who worked remotely before the pandemic, such as Tara Van Bommel of Catalyst, a non-profit organisation, say things will be different. As Ms Van Bommel points out: "Normally, at the end of the day you go out and see your friends." Working on Zoom should prove less tiring when the rest of life moves offline. ■

Technology in China

An uncertain new path

HONG KONG

The Communist Party wants greater control over Chinese digital platforms. Trillions of dollars in market value are at stake

CHINA'S TECH tycoons have not been themselves lately. In early March, at the annual session of China's rubber-stamp parliament, Pony Ma called for stricter regulation of Tencent, the $700bn online empire he founded. Days later a rising star, Simon Hu, left his post as chief executive of Ant Group, a huge financial-technology firm affiliated with Alibaba, an e-commerce titan. Shortly after that Colin Huang stepped down as chairman of Pinduoduo, rattling investors still celebrating his upstart e-emporium's recent announcement that it had overtaken Alibaba measured by the number of shoppers. Jack Ma, Alibaba's outspoken co-founder and China's most recognisable entrepreneur, has not been seen in public for months, with the exception of a video where he discusses the country's education system.

Their companies' stocks have also been behaving out of character. Having added as much as $1.2trn to their combined market capitalisation since 2016, Alibaba, Pinduoduo and Tencent have seen their share prices tumble in recent weeks (see chart 1 on next page). The unlisted Ant is thought to be worth $200bn, down from more than $300bn in October. Throw in a few dozen other big Chinese tech groups and some $700bn in shareholder value has been wiped out since mid-February.

The share price of Xiaomi, a big smartphone-maker, is down by more than 20% this year. Despite being one of the year's most anticipated flotations, shares in Bilibili, a video-streaming service with 200m users, fell by 6% on its first day of trading in Hong Kong on March 29th. Baidu, a search giant which had regained some of its sparkle in the past year, has seen half of those gains snuffed out in less than two months. Shares in Meituan, a ride-hailing and food-delivery giant, have lost more than a quarter of their value in the same period, despite a doubling of profits last year. After this drop Chinese headlines asked of Meituan's founder and boss, Wang Xing: "Is he not frightened at all?"

Mr Wang and his fellow tech moguls indeed have plenty to fear. Investors have cooled on frothy tech stocks in America, where many Chinese giants, including Alibaba, Baidu, Bilibili and Pinduoduo, have listings. But China's firms have been hit harder than their American counterparts. They and their shareholders, who include plenty of Western funds, are grappling with three poorly understood developments. After years of tolerating big tech's unbridled expansion, the central government is rewriting the rules, some tacit and some explicit, for how billionaires can behave, the degree of overt state control over data, and who owns the firms' other assets, including stakes in other businesses. This new master plan for Chinese big tech will transform one of the world's most innovative and valuable industries.

Start with the tycoons. Unlike their counterparts in America, tarnished by accusations that their corporate creations harm users' privacy, spread disinformation, mistreat workers and abuse their ▸▸

market power, Chinese tech moguls enjoy a glittering reputation among ordinary Chinese, who see them as embodying the "Chinese Dream" of growing prosperity that propagandists tout on posters across the country. Too glittering, it now seems, for the Communist Party, which under President Xi Jinping increasingly bridles at anything that might challenge its authority. That includes being upstaged by superstar bosses.

The initial affront that led to the tech crackdown was Jack Ma's comparison, at a public event in October, of Chinese state lenders to pawn shops. A month later China's stockmarket regulator suspended the $37bn initial public offering of Ant, which would have been the world's biggest ever, in Hong Kong and Shanghai. Since then the authorities have forced Ant to become a financial holding company, undermining its lucrative, asset-light business model of matching consumers with lenders.

The message, says a broker in Hong Kong, is that tech leaders should "stay in their own lane, focus on their core businesses and avoid commenting on politics or economics". It has been heard loud and clear. Pony Ma's parliamentary performance, in which he called for strict regulation of areas that he has invested in, from e-commerce to ride-hailing, has been seen as a signal to the Chinese government that he will not get out of line. One interpretation of Mr Huang's departure from Pinduoduo—ostensibly to explore new opportunities in areas such as food science—is that he is wary of leading what might become China's biggest e-commerce company. He has also recently eclipsed Jack Ma in wealth, which further increased his stature. One person who knows Mr Huang says that as a diligent student of Chinese philosophy he "understands very well that it is not safe to be at the top or at an extreme". "He saw what was going on next door and decided to leave," says an industry watcher.

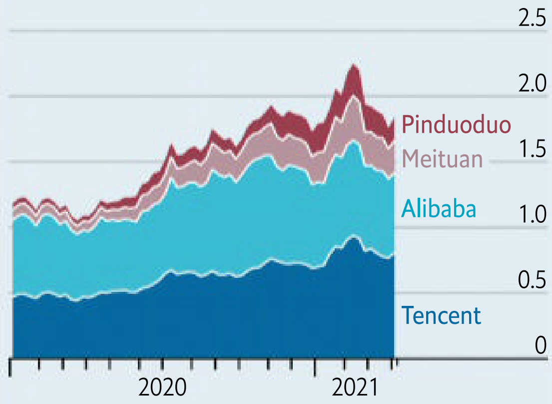
This de-tycoonification matters, for the firms' fates are bound up in investors' eyes with their visionary founders. Although Mr Ma quit as boss of Alibaba in 2013, and stepped down as chairman a year ago, he has continued to exert control over the direction of both the e-emporium and Ant. Where the company will end up shorn of Mr Ma's acumen is anyone's guess. The share price of Pinduoduo fell by 8% on news of Mr Huang's abrupt departure, possibly for similar reasons.

A second set of questions concerns the government's designs for the firms' most valuable resource—data. Its objective is to pool data and impose more state ownership and control, which could eventually amount to a kind of nationalisation. The digital firms have built some of the world's largest and most advanced databases, which assess everything from users' loan

Red scare 1

China, market capitalisation, $trn

Selected consumer-technology companies



Source: Bloomberg

repayments to their friend networks, travel histories and spending habits. Ant alone is said to hold data on more than a billion people, on a par with Facebook and Google. Because of the breadth of services that many Chinese "super-apps" encompass, they have an even richer picture of users.

Credit-scoring is the front line of the battle with the government over who controls data. Over the years the People's Bank of China (PBOC) has made feeble attempts to create a centralised scoring system. Now the central bank appears to have decided to grab more control over the tech firms' systems. It has approved two personal-credit companies, most recently in December, in which the technology groups and state-controlled entities hold stakes. The state has so far refrained from explicitly commanding the companies to share data. In China personal data belong to the individual, not companies, so laws would need to change in order for such data to be shared with the government. But that is hardly an insurmountable obstacle for an authoritarian regime.

The tech companies have resisted, with reason. The scheme would, in the words of an asset manager in Hong Kong, erode the "information edge" that especially Alibaba and Tencent, which control the bulk of relevant data, currently enjoy. The uncertainty over what types of data would be shared, how and with whom, has weighed on Chinese tech shares, says Robin Zhu of Bernstein, a broker.

The final source of uncertainty relates to the government's plans for the giants' other assets. The big firms are conglomerates that straddle many services and products. Over the past decade companies such as Alibaba and Tencent have also become some of China's biggest venture capitalists (see chart 2), giving them influence over the digital economy that extends far beyond their operating businesses. Under Mr Ma, Alibaba and Ant Group have accrued assets in media, finance, logistics and health care. Tencent is a big shareholder in JD.com, another e-commerce giant, as well as in Meituan and Pinduoduo. Both Alibaba and Tencent hold stakes in Didi Chuxing, a ride-hailing firm which hopes to go public this year at a valuation of $100bn. In total the combined investment portfolios of Alibaba and Tencent are worth some $300bn, making them among the largest tech investors in the world—as well as two of the largest tech firms.

Holding patterns

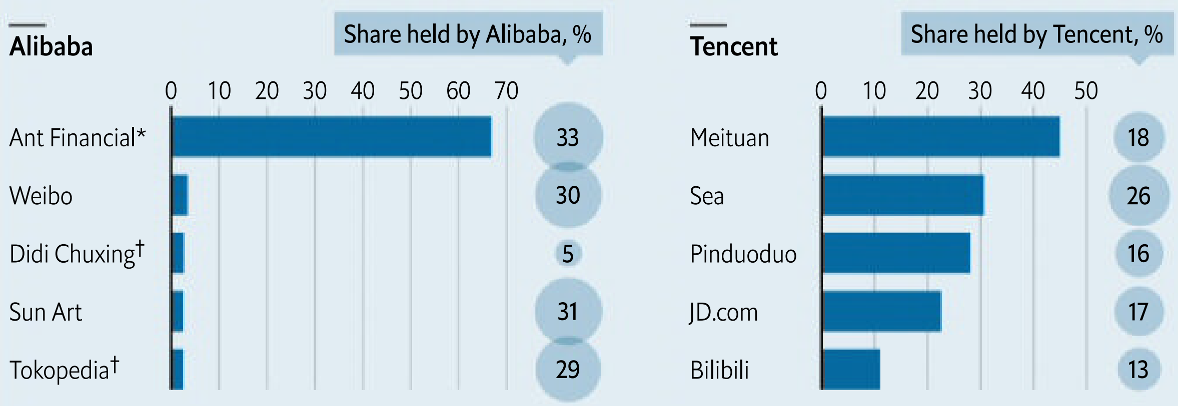
The decision to force Ant to become a holding company, with different activities held in different subsidiaries, suggests the authorities may want to change the structure of the tech empires. Tencent recently confirmed that it is working with regulators and reviewing past investments. Its credit operation, which is similar to Ant's but smaller, may likewise be separated into a holding company under the PBOC's jurisdiction. News reports have suggested that the government has asked Alibaba to sell its media holdings. Alibaba has not confirmed or denied the rumours. Legal experts say that if true, this would be concerning because the government measures would reach beyond antitrust law towards something more expansive and punitive.

Shifts in the relationship between the state and big tech can scar foreign investors, who dominate the Chinese compa-

Group buying 2

Value of top five holdings, $bn

At April 5th 2021



Sources: Bernstein; Refinitiv Datastream *Estimate †Last private transaction value

nies' shareholder registers. Yahoo, an American tech group, and SoftBank, a Japanese one, learned this the hard way in 2011, when they had to accept that their large stakes in Alibaba no longer included Alipay, which Mr Ma had quietly spun off owing to regulatory concerns.

Should something similar happen again, big foreign shareholders like SoftBank, which still holds a 24.9% stake in Alibaba, and Naspers, a South African tech conglomerate that is Tencent's biggest shareholder via an Amsterdam-listed holding company called Prosus, could suffer another hit to their investments, on top of the recent drop in share prices. On April 8th Prosus said it had reduced its stake in Tencent from 30.9% to 28.9% to raise money for other ventures.

The government's unspoken objective is to ensure that foreigners exercise no control over Chinese tech firms, even if they own shares in them. That does not suggest their property rights are top of mind. And Chinese firms are no strangers to abrupt changes of fortune. A handful of traditional conglomerates such as Anbang and HNA, which had splurged billions on accruing assets at home and abroad, were forced to shed some of those holdings in the past few years. The fate of the tycoons behind them has been mixed. A few are in jail; others have been disgraced; a few have continued to do business quietly. Their companies are often shadows of their former selves. China's digital darlings, as well as their founders and investors, will probably avoid a similar fate, because the firms are a source of dynamism and prestige and have succeeded through innovation rather than financial engineering. But such a bleak fate is no longer unthinkable. ■

Bartleby Shallow impact

A leaked memo from a chief impact officer

DEAR COLLEAGUES,

This is my first memo as the newly appointed chief impact officer at Global United Financial Firms (GUFF) and I would like to thank everyone for welcoming me to the group. Some of you will be unfamiliar with the role of chief impact officer, but you may have seen headlines about Prince Harry taking on the role at a Silicon Valley firm. Of course, I don't have the prince's star quality but I hope I can do the same job in enhancing the reputation of GUFF that Harry has done for Britain's royal family.

The job title may seem odd, but with a change of one letter in the title, think of me as a "champo", championing the things our organisation cares about. I will be flying round the world to promote our focus on combating climate change. Along with the chief happiness officer, I will be trying to maintain employee morale. Expect to receive regular weekly surveys about your physical and mental health, and on whether you are able to get on with your work or feel bogged down by corporate bureaucracy. Remember, there is no "I" in team but there are three in chief impact officer. I will be using them to watch over you all.

Now I may be the firm champo but I am no "chumpo". As a white male on a six-figure salary, it might seem as if I may not have the ability to sympathise with regular folks. But it is only because I have lived a life of privilege that I have the connections to bring about real change. By itself, my appointment has led to the expansion of the C-suite offices and thus more work for building contractors and interior designers, as well as my pair of executive assistants. Rest assured that I deal with normal people on a daily basis, whether it is cleaning staff, limo drivers or security guards, and I always have a cheery word for all of them.

But at GUFF, think of me not as an executive, but as your servant. Whether it is Zoom, WhatsApp, Slack, Microsoft Teams, Google Hangouts or email, my channels are open. I am willing and able to hear from you 24/7, with the unfortunate exceptions of 8am-9am (pilates class), 10am-11am (executive thought shower), 2pm-3pm (mindfulness break) and Sundays (golf day).

There may be cynics among you who ask "what exactly does a chief impact officer do?" The answer is easy. My plan is to invest in high-quality impact data to ensure we are at the leading edge of impact measurement. I can't be any clearer than that.

We know that our company has an impact but we can reduce it, like a seat belt or a passenger airbag. Think of me as the company's new airbag, ready to be inflated at any moment. Or, alternatively, as the voice of the satnav, there to tell the firm when it is going in the wrong direction and needs to "make a U-turn where possible". In my case, though, I will be the satnav you can't turn off.

You may also ask why, if our social and environmental impact is so important, Brad Piranha, our chief executive, doesn't handle the issues himself, rather than bring in an outsider. It is a good question. I think it's a sign of humility on Brad's part. He is happy dealing with the short-term issues of generating sales and meeting budgets but prefers to leave the "thought leadership" to me. "I'll make the money and you handle the touchy-feely stuff," as he put it.

So let me give you an initial brain dump. During the pandemic the company has cut its carbon footprint because you have been working at home. So stay there. Don't worry, we won't lose touch. Our new software will keep an eye on you at all times, monitoring your keystrokes and your facial expressions to make sure that you are not suffering any stress. On Friday afternoons we will stop for group drinks. Pick the beverage of your choice and relax while either myself or Brad gives the team a motivational speech. Every week one staff member will be picked at random to respond with a speech of their own to the entire group. That should ensure spontaneity.

And when the lockdown ends, two lucky staff members a month will be chosen (based on their screen time) to get the chance to relax in the executive spa for an hour (evenings only). The rest of you won't miss out: you will have the chance to take a video tour of the spa, including the Olympic swimming pool and hot tubs, at any time to see what could be in store. It is hard to think of anything that could have a greater effect on staff morale than that.

Here's planning to impact your life every day.

Will Meaning, chief impact officer

Social media

Hype club

SAN FRANCISCO

Clubhouse may fade. Group voice chat is here to stay

One of Silicon Valley's most successful inventions is hype. It usually disappoints. In 2015 live-streaming from smartphones became all the rage. But Meerkat, an app which pioneered it, shut down the following year. On April 1st Periscope, its more successful rival, did too (no joke). Will Clubhouse, a buzzy app that hosts live audio gabfests, suffer the same fate?

Launched at the start of the pandemic last March, Clubhouse quickly became Silicon Valley's most-talked-about app and a favourite stage for rock-star entrepreneurs. Elon Musk offered his views on colonising Mars and rewiring the brain to thousands of listeners. Marc Andreessen and Ben Horowitz, co-founders of a big venture-capital firm, regularly hold forth. More mortal Valleyites discuss everything from the future of San Francisco to the testy relations between tech and the media. This year the Clubhouse craze went global, offering a venue for frank conversations in places from Saudi Arabia to South Korea.

Amid the buzz, problems are emerging. You still need an invitation from an existing user, but these are easy to come by. As newcomers flood the app, the quality of debate has dropped. Without systematic moderation, chats entitled "How to discipline and train your women" or worse are popping up. Despite lower barriers to entry, the app's downloads were down to 2.7m in March, from 9.6m in February, according to Sensor Tower, a data provider.

On the business side, Clubhouse has yet to work out how to make money (ideas include tipping and membership fees for virtual clubs). And, predictably, big tech firms are jumping on the bandwagon. Twitter is testing a similar feature (and is reported to have considered buying Clubhouse). Facebook is expected to launch a clone soon. On March 30th Spotify acquired Locker Room, a sports-themed group-chat app. Even LinkedIn and Slack, two business-oriented services, are following suit.

It is too early to count Clubhouse out. It has name recognition and could remain the go-to place for virtual talk shows, as Twitter is for instant opinions. It is run by Paul Davison, an experienced social-media entrepreneur. It has plenty of cash: in December it raised $100m, much of it from Andreessen Horowitz. It is reportedly seeking new funding at a valuation of $4bn. And it has yet to release a version of its app for Android, Google's popular mobile operating system. Optimists point to Snapchat, a social network beloved of teenagers, which has found a lucrative niche in a market dominated by Facebook.

This suggests that even if Clubhouse looks Periscopic in a year's time, group chats are likely to remain a feature of social media after the pandemic recedes. Meerkat and Periscope may be dead, but live streaming is alive and well—albeit as a service within larger social-media platforms. Tech hype may be grating, but it serves a purpose. Buzz incites consumers to try new things, venture capitalists to put up the cash and entrepreneurs to experiment—even if, more often than not, pioneers wind up in the digital dustbin. ■

Corporate buccaneers

Seize and insist

A British firm goes after India's state-controlled assets

Faced with recalcitrant sovereign counterparties, foreign investors and companies occasionally take drastic action. A picaresque example of the genre occurred in 2012, when Elliott Management, a buccaneering American hedge fund which held distressed Argentine bonds, seized a handsome tall ship belonging to Argentina's navy. Elliott's aggressive tactics ultimately paid off, and others have followed suit. In December a court in the British Virgin Islands ordered hotels in New York and Paris owned by Pakistan International Airlines to be used to settle a claim against Pakistan's government by a Canadian-Chilean copper company. French courts have recently ruled that a stiffed creditor could seize a business jet belonging to the government of Congo-Brazzaville while it was being serviced at a French airport, as well as $30m from a bank account of the country's state oil company.

Catch it if you can

The latest to contemplate such measures is Cairn Energy. The Scottish firm's target is India. In 2004 it made a huge oil discovery in Rajasthan. Three years later it listed its Indian assets on the Mumbai stock exchange. Five years after that India passed a retroactive tax law and billed Cairn $1.6bn for the reorganisation tied to the flotation. The state then expropriated and liquidated Cairn's remaining shares in the Indian entity. Distrusting Indian courts, Cairn lodged a complaint with an arbitration panel in The Hague, which in December awarded it $1.7bn in compensation (including costs and interest).

The Indian government has appealed against the ruling. Officials argue that tax levied by a sovereign power should not be subject to private arbitration. The dispute could drag on for years. In the meantime, therefore, Cairn has hired asset-tracing firms to investigate the overseas assets of Indian state-controlled companies.

Cairn will not say what it might go after. But it has plenty to choose from: Air India's planes, vessels belonging to the Shipping Corporation of India, property owned by India's state banks, to name a few. The company has also begun registering the arbitration award in America, Britain, France, the Netherlands, Singapore and Canada's Quebec province, hoping to obtain legal judgments enabling assets there to be seized in lieu of payment.

The legal manoeuvres required of Cairn are formidable. Complex national laws and multilateral treaties govern when a foreign government can be sued and what counts as an asset linked to a state. In America and Britain, for example, courts require demonstration of a government's "extensive control" over the asset owner's operations. But what counts as "extensive" is not set in stone. Although France's high court awarded Congo-Brazzaville's creditor partial restitution it has denied the broader $1.2bn debt claim.

Some countries, notably China, shun commercial agreements that enable such litigation. India's strategy has been to renounce them after the fact. It walked away from the investment treaty with Britain on the basis of which Cairn had filed its complaint in The Hague. Boris Johnson is planning to visit India this month to negotiate a new bilateral pact. Cairn hopes Britain's prime minister will be "supportive of British industry" in the talks, says a person close to the company. He could urge his Indian counterpart to settle the dispute. If he does not—or if India demurs—those Indian ships and planes may need to ward off aggrieved raiders. ■

The future of drugmaking

Reformulated

NEW YORK

Covid-19 is reshaping Big Pharma. For the better, thinks Pfizer's chief executive

"THE IMPOSSIBLE can many times become possible," reflects Albert Bourla, boss of Pfizer. He is talking about the giant American drugmaker's speedy development (with BioNTech of Germany) of a vaccine against covid-19. The sentiment also applies to the turnaround in the fortunes of the pharmaceutical industry.

Before the pandemic Big Pharma was in big trouble. It was widely criticised for investing more in marketing than in research, for pursuing "me too" drugs over novel therapies, and for alleged price-gouging. When Gallup, a pollster, asked Americans in 2019 to rank two dozen big industries by favourability, the drugs business came in last. That year its bosses were subjected to a Big Tobacco-style bipartisan hazing in Congress, which threatened price controls. Concerns over diminishing research gains, and returns, weighed on drugmakers' share prices (see chart).

At first, the pandemic looked like another blow. Supply chains for essentials such as precursor chemicals were disrupted. As hospitals focused on covid-19, lucrative elective treatments were postponed. So were clinical trials of new medicines, on which future profits depend. Then something happened. As economies gradually reopened last year, drug sales began to recover. Several firms have, like Pfizer, come up with effective vaccines against covid-19. Pfizer reckons the sales of its jab will surpass $15bn in 2021. The firm reckons it could add more than $4bn to its adjusted profits before tax. Investors are becoming more bullish on the sector.

The reasons for optimism extend beyond the covid-19 jab. Another pharma boss recently declared to a private audience that the pandemic was "a significant inflection point for the industry". Unlikely as it may have seemed a year ago, a nimbler, more innovative business is emerging from adversity.

The breathless race against covid-19 led pharma to "break all of the rules", says Tim van Biesen of Bain, a consultancy. This prompted CEOs to ask why they weren't more agile in their day-to-day operations. John Reed, head of research and development (R&D) at Sanofi, a French giant, says the pandemic has pushed decision-making lower down the corporate ladder, helping his firm move with a greater sense of urgency. "We got trial concepts together in three or four days that took three or four

A shot across the bow for the old model

months in the past," he marvels.

Sam Glick of Oliver Wyman, a consultancy, notes that new patient enrolment for clinical trials, which plunged by nearly 80% amid the pandemic, has rebounded as firms have embraced digital tools such as remote monitoring, electronic patient-screening and tele-consultations. David Ricks, who runs Eli Lilly, another big American drugmaker, has said that virtual trials could prove faster and better, as well as bringing in harder-to-reach populations, for instance in rural areas. Andrew Badley of the Mayo Clinic, a leading American hospital chain, argues that drugmakers' boffins are for the first time making good use of unstructured data such as clinicians' notes. Digitisation allowed Pfizer to keep all of its trials on track in 2020. "We wouldn't have dared to test these things before the pandemic but they passed with flying colours," Mr Bourla says. They are here to stay.

Pharmaceutical sales reps, whom the pandemic has deprived of the opportunity to put on "educational" junkets for doctors, are also going digital. Eli Lilly's boss has estimated that his firm's virtual contacts rose more than ten-fold in 2020 compared with a year earlier. He reckons they, too, will be maintained, as they may allow the firm to "reach those physicians who wouldn't see our sales representatives". Mr Bourla agrees, reporting that "doctors like it". McKinsey Global Institute (MGI), the consultancy's in-house think-tank, calculates that the shift to digital sales could raise industry-wide productivity by a quarter, since it means a smaller staff and leaner budgets in marketing and sales departments, which account for nearly 40% of drugmakers' operating costs.

Big Pharma's sclerotic innovation model is also being shaken up. In the past there were "way fewer targets" for drug firms to pursue, says Mr Bourla, so it made sense to bet big on a few blockbusters. Now, he observes, firms must choose among hundreds of possibilities. This "explosion of new platforms and drug candidates will result in much more collaboration" of the Pfizer-BioNTech sort, predicts David Risinger of Morgan Stanley, an investment bank. Drugmakers are obsessed with guarding intellectual property but many industry watchers, including Mr van Biesen of Bain, have long argued that they should embrace more open-source innovation. A flurry of recent collaborations suggests that they may at last be listening.

Perhaps the most surprising reason for optimism about Big Pharma's prospects arises from its burnished image. Many Americans had never heard of Pfizer and those that did probably thought of it as money-grubbing. Now the company is hailed by ordinary people as a life-saving innovator. "Big Science is good, and Big Pharma now has a seat firmly at the table and has a chance to be 'good' again," thinks David Frey of KPMG, a consultancy. A recent Harris Poll found that public approval of the industry has shot up from around 30% last year to over 60%.

Will drugmakers seize the moment? Mr Bourla says that Pfizer does not support the status quo on drug prices in America. These are high by global standards, and contribute the lion's share of profits for the global drugs business. He goes further, insisting that Pfizer is "willing to contribute financially" to reforms that give "access for all", so long as insurers and government chip in too. If he can persuade his fellow pharma bosses to support this new social contract, it could be an even bigger feat than those incredible covid-19 shots. ■

Schumpeter | Unbundling sport

Brace for the Amazon effect on live sport

In 1993 FOX, a nascent cable network owned by Rupert Murdoch, an Australian-born tycoon, paid a fortune to scoop the rights to National Football League (NFL) games from under the nose of CBS, a veteran broadcaster. It caused a tremor in American television history. As one CBS reporter put it, "The NFL was ingrained in the walls of CBS like Edward R. Murrow and Walter Cronkite." With cable, the cost of sports rights took off. So did the cash cow of modern broadcasting—the TV "bundle" of sports and other stuff, most of it barely watchable. At the peak in 2012, almost 90% of American homes subscribed to one pay-TV bundle or another.

Today that share has dwindled to about 65%. That makes the NFL even more important to the fortunes of the TV networks, including Fox and CBS (now merged with Viacom). American football is the most-watched live sport in the country, and sport trumps everything else for TV ratings and ad revenues. At a time when other entertainment is available at a sliver of the price from Netflix and other streaming services, live sport is the only thing left to induce viewers to pay through the nose for pay-TV.

Now the industry faces another once-in-a-generation upheaval. Last month Amazon, the e-commerce giant, offered about $11bn for the exclusive rights to stream Thursday-night NFL games for a decade on Amazon Prime. That makes the subscription service home to one of the most watched programmes in America. This is not quite 1993 revisited. Fox has willingly surrendered the turf. Amazon's move was primarily aimed at recruiting Prime customers and promoting e-commerce, rather than ending the pay-TV business as you know it. Still, its incursion into live sports matters, and comes on three fronts. One is Prime. Another is Twitch, its online-gaming platform. The third is Amazon Web Services (AWS), its cloud-computing arm. Combined, they may leave broadcasters looking flat-footed.

Start with Prime. Unlike TV broadcasters, Amazon does not buy sports rights to flog overpriced subscriptions and advertising. Instead it uses them to attract new Prime subscribers and retain existing ones so that they shop on its platform. According to Omdia, a data-gatherer, Prime's more than 150m global subscribers spend twice as much on Amazon as non-subscribers. That makes Prime a core part of its retail business. In order to get the best return on its sports investment, it offers not wall-to-wall sports, but selective games likely to lure the highest number of customers, including English Premier League football matches (conveniently played around the Christmas-shopping period). It targets only Amazon's hottest markets, for instance purchasing rights to show football in Germany and cricket in India. But it does not spend indiscriminately just because, as a $1.7trn tech giant, it can. Instead, thanks to the concurrent decline of pay-TV, it is picking up sports rights as their prices have gone off the boil.

Some Prime subscribers may suspect that using sport to attract them is a bait-and-switch; once they are hooked on free shipping, Amazon can abandon matches. The ten-year NFL deal suggests otherwise. And Amazon has other ways to create an overlap between the sports fan and the shopaholic. That includes targeted ads; online sports, coupled with Amazon's customer-data trove, are an advertiser's dream. Another is e-commerce itself. Prime already offers a "buy" function within some sports streams: viewers can buy NFL paraphernalia, for instance. It is only a small business, but the potential is obvious.

Alongside Prime, Amazon offers a parallel way of attracting young, digitally peripatetic types that sports leagues are desperate to reach. Twitch, its e-sports platform whose fans watch and discuss online-gaming tournaments as if they were crosstown derbies, also shows Prime's NFL matches. The buzz around them suggests a future in which sports programmers can create a chattering class of connected buffs rather than supine couch potatoes.

AWS and its cloud will also shake things up. For a start, it helps Amazon demonstrate that it has the technical ability to stream to mass audiences without crashing. That is of vital importance to leagues and fans alike. The cloud also makes it easier for leagues and clubs to stream directly to consumers, bypassing broadcasters. That will help offset some of their concerns about the end of the TV-rights bonanza.

Amazon is not the only streaming insurgent. Another platform, DAZN (pronounced Da Zone), is mostly focusing on Europe and Japan. It is backed by Sir Len Blavatnik, a Ukrainian-born music-industry mogul. Last month it outbid Sky, the moneybags of European sport, for rights to stream Italy's top-flight football matches. Though it is losing pots of cash as it grows, its co-CEO, James Rushton, says advertising revenues, flexible subscriptions and a low-cost structure will eventually enable it to break even. It is studying Twitch to explore the interplay between sports and gaming. One day it may introduce sports betting.

ESPN+ ça change

At present mainstream American broadcasters act as if they still have faith in the old model. Their combined bids in the $110bn NFL auction dwarfed Amazon's. Fox has not bothered to start a sports-streaming service. Disney, a big entertainment conglomerate, is unlikely to let ESPN, its lucrative sports channel, be cannibalised by ESPN+, its sports-streaming service. They still believe that for most fans, TV muscle memory will win out over the internet.

But as retailers know, Amazon does not just disrupt industries with new technologies. It does so through relentless customer service. As the Ringer, a sports website, once wrote, Fox sought the NFL rights in 1993 partly because it thought TV football had, in the words of one executive, become "boring as shit". These days, boredom is not the problem as much as eye-watering prices that bundle-bearing broadcasters inflict on their customers. No wonder young sports fans are turned off. No surprise TVs are, too. ■

→ Also in this section

Global property

The race for space

BICESTER AND RHINEBECK

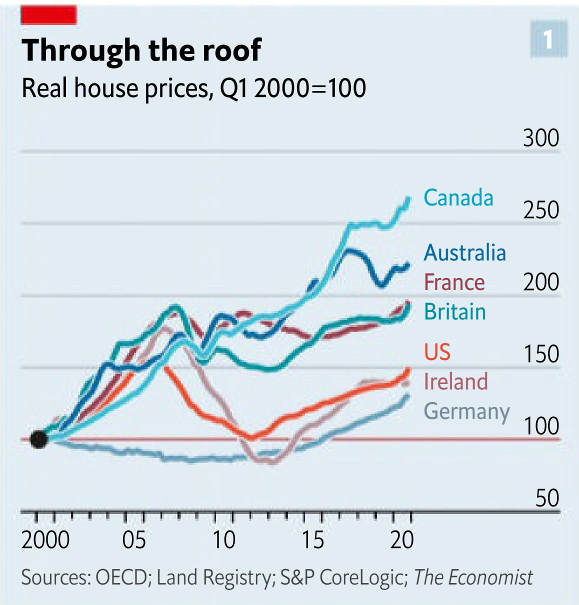
House prices in the rich world are booming. Unusually, suburbs not cities are feeling the heat

On a sunny afternoon in Kingsmere, a new suburb of Bicester, a town 50 miles (80km) north-west of London, the streets are abuzz with people strolling and children playing. In ten years 1,600 homes have been built on the site, and another 900 are soon to follow. In the sales office for Bovis Homes, Flip Baglee says she has "never known it to be so busy". Sentiment in Rhinebeck, a village 80 miles north of New York City, is similarly buoyant. Many of the properties advertised in the window of Gary DiMauro Real Estate—from mansions to cottages—are already taken.

Kingsmere and Rhinebeck are not the only places warming up. American house prices rose by 11% in the year to January, the fastest pace for 15 years. Those in Britain increased by 8% last year, and in Germany by 9%. The pattern is seen in much of the rich world (see chart 1). Across the 25 countries tracked by *The Economist*, real house prices have risen by an average of 5% in the latest 12-month period.

In many countries, rises have been rapid enough to attract the attention of politicians and central bankers. In a break with the pattern of the past decade it is prices in less populated, but still commutable, places, rather than city centres, that are rising most. Covid-19 seems to have set off a quest for space that could outlast the pandemic.

At first glance, the robustness of house prices in the face of the economic turmoil inflicted by covid-19 might seem baffling: property prices typically move in tandem with the economy. But furlough schemes and fiscal stimulus have limited distressed sales this time. Interest rates are ultra-low: in America those on 30-year mortgages are 1.5 percentage points below their level in 2010. Lockdowns and the reduced opportunity to spend mean that those who have kept their jobs have stashed away cash. Lucian Cook of Savills, a property consultancy in Britain, remarks that home values are being "driven by the haves rather than the have-nots". In America, 14% of all mortgage applications made in February were for second homes, twice the share in April last year.



Sources: OECD; Land Registry; S&P CoreLogic; *The Economist*

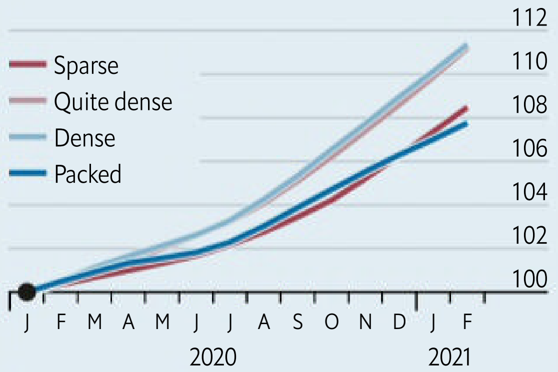
As covid-19 spread and many countries locked down, people's homes also became their offices, schools, gyms and bakeries. Many therefore spent more on their properties. Revenues for Home Depot, America's largest DIY store, rose by 20% last year. In Britain permissions granted for home improvements, such as extensions, increased by a third in 2020 compared with the average in 2016-19, reckons Barbour ABI, a market-research firm.

Other people sought new places to live. Homes in America have taken an average of 47 days to sell since May, compared with 59 days in the previous year. In Britain a temporary holiday on stamp duty (a housing-transaction tax) caused the volume of sales to rise in the final quarter of 2020 to a 14-year high.

For those wanting more space the best solution has been to move out of city centres. Prices per square foot in London, for ▸▸

Escape to the suburbs

United States, house prices by population density*, January 2020=100



*US counties grouped by population density, weighted average
Sources: Zillow; Census Bureau; *The Economist*

instance, are 40% higher than in surrounding counties. House prices in less densely populated, but still commutable, areas of Britain have risen faster over the past year than in more populous ones. A similar pattern is also evident in America (see chart 2).

That bucks a trend of the past decade, when megacities such as London and New York surged ahead of quieter locations—a reversal that Zillow, an American property-listings firm, calls the "great reshuffling". House prices outside Germany's seven biggest cities rose by 11% last year, compared with 6% within them. Prices in Sydney's northern beaches, within commuting range of the city, are up by 10%.

By contrast, house prices in central London and Sydney rose by just 4% and 3% last year, respectively; those in Manhattan fell by 4%. Rental markets are cooling too. Rents for flats in Sydney fell by 5% last year. Those in Melbourne, which endured a 111-day lockdown last year, fell by 8%. Figures from Zillow suggest that rents fell by 9% in New York City and 15% in Manhattan in particular.

The pandemic has disrupted some of the usual flows into cities. In the years before covid-19, London lost residents to the rest of Britain. But the outflows were made up for by people coming in from abroad. The pandemic, and perhaps Brexit, seem likely to have reduced the inflow. One estimate suggests that London's resident population may have declined by 8% in 2020. Australia's borders have been shut to non-residents since March 2020. Recent graduates, faced with the prospect of working from a shared home, may still be living with their parents.

Outflows from cities have risen, too. A study by the Federal Reserve Bank of Cleveland finds that migration out of cities in America doubled to 56,000 people per month from March 2020 compared with the 2017-19 average.

Some of the flows to cities will pick up as the pandemic ends. Students and international migrants will return in droves. Some investors are therefore betting big on big cities. A new development in Manhattan selling large flats for $12m offers the "premier answer to post-pandemic living". AXA Investment Managers, a firm that owns properties in 15 countries, has snapped up 1,233 flats in the heart of London, Britain's largest residential site.

Yet the allure of less-dense places seems likely to persist. Government advice to work from home, where in place, could be gone by the summer, but remote working may be here to stay. According to a survey of 20,000 employers around the world by Manpower, a recruitment firm, two-fifths of bosses plan to permit their employees to work from home at least some of the time. People might be willing to put up with longer commuting times in return for more living space or lower housing costs, if they are commuting less often. Suburban property prices would then inch towards those in the city.

The fate of overall house-price growth could well rest with policymakers. Emergency support for homebuyers and homeowners will be withdrawn as the pandemic draws to a close: in Britain, tax holidays are due to end later in the year. Other countries may look to take the heat out of housing markets. The government in New Zealand, where prices are rising at an annual rate of 22%, has taken steps to dampen speculation. The governor of the Bank of Canada has worried about "excess exuberance", and plans to watch the housing market closely. A fear of jeopardising the economic recovery could mean that policymakers tread gently for now. That would give the race for space more room to run. ■

Corporate taxes

Setting a floor

Janet Yellen calls for a global minimum tax on companies. Could it happen?

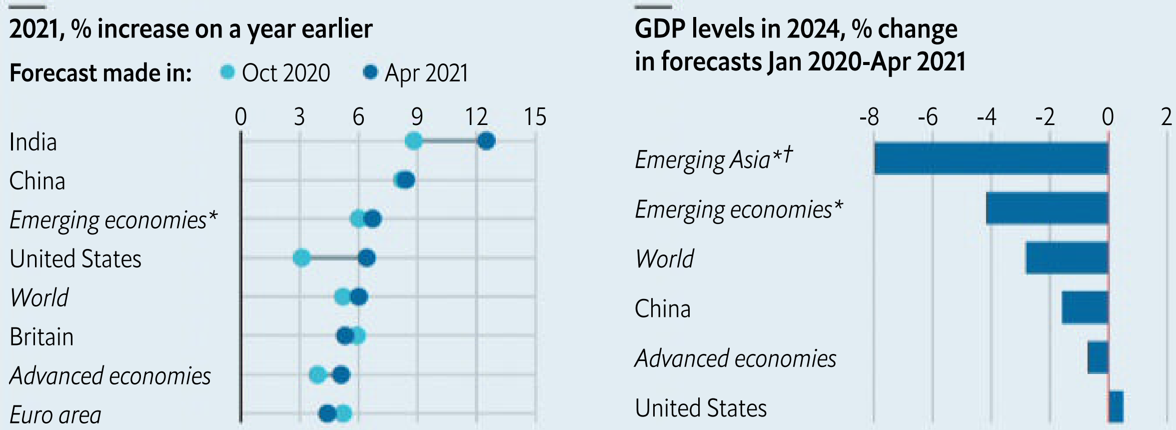
CORPORATE TAXATION is one of the thorniest issues in international economic policy. Janet Yellen, President Joe Biden's treasury secretary, and a former head of the Federal Reserve, is duly weighing in. On April 5th she grabbed the attention of the occupants of corner offices worldwide with a speech to the Chicago Council on Global Affairs. The headline was a call for countries to agree on a global minimum tax rate for large companies.

Such a levy, Ms Yellen said, would help "make sure the global economy thrives based on a more level playing field", and would help end a "30-year race to the bottom". Though the idea of a minimum tax raises hackles in tax havens in the Caribbean, parts of Europe and farther afield, many other big economies will welcome America's renewed commitment to multilateralism on tax after the prickly unilateralism of the Trump years.

Over the past decade, growing corporate-tax avoidance has met with a growing backlash. Breakneck globalisation allowed multinationals to replace dread of double taxation with the delights of double non-taxation, using havens to game the system. By exploiting mismatches in tax laws, taxable profits could be slashed or ▸▸

Time heals some wounds

GDP forecasts



Source: IMF *Including developing countries †Excluding China

On the mend

On April 6th the IMF raised its forecasts for the global economic recovery. The cause? Vaccination programmes and a healthy dose of fiscal stimulus in rich countries. So robust is America's recovery expected to be that by 2024 it will have overtaken the level of output that had been forecast before the pandemic. The rich world is projected to be about 1% below its pre-pandemic path. By contrast, in 2012, five years after the global financial crisis began, rich-country GDP was still a tenth below the fund's pre-crisis forecast. The poorest countries, though, are set to bear deeper scars this time.

even made to disappear. The rise of intangible assets, which can be shifted between jurisdictions more easily than buildings or machinery, made the game easier. Big tech has been a big beneficiary: the five largest Silicon Valley giants paid $220bn in cash taxes over the past decade, just 16% of their cumulative pre-tax profits.

Numerous sets of talks aimed at resolving the problem have been held under the auspices of the OECD, a club of mostly rich countries. Progress, however, has been slow. Frustrated, dozens of countries—from Belgium and Britain to India and Indonesia—have introduced or proposed "digital-services taxes" (DSTs) on the local sales of foreign firms with online platforms. The Trump administration said these levies discriminated against American business, and threatened tariffs.

Yet even the Trump administration agreed to the idea of a minimum tax; indeed, it enacted its own version as part of the Tax Cuts and Jobs Act in 2017. Mr Biden is pushing new reforms. He wants to raise the domestic federal corporate rate (partially reversing Donald Trump's cuts) from 21% to 28%—and, crucially, increase the rate on American firms' overseas profits from 10.5% to at least 21%, calculated on a country-by-country basis so that it captures all tax havens.

The hope is that the receipts will help fund a planned $2trn-plus upgrade to America's infrastructure. Republicans in Congress and groups representing big business complain that higher tax rates dent American competitiveness. That argument is blunted if other large economies agree to set a floor for the global rate.

The minimum tax is one of two "pillars" at the centre of the OECD-brokered negotiations. Talks on it were reasonably constructive, even with Team Trump, say officials. But queasiness over setting a floor persists, particularly among the EU's lower-tax members, such as Ireland, with its lean corporate-tax rate of 12.5%. Were a global minimum set at 21%, American firms operating in Ireland—of which there are many—would have to pay top-up tax of 8.5% to their government, on top of the 12.5% paid to Dublin, which would undercut the Irish advantage.

Moreover, most countries want negotiations over the two pillars kept together—and the other pillar is much less tractable. It involves finding a mutually acceptable way to carve up taxing rights over the profits of firms in markets where they have customers, but lack a physical presence (as is often the case for firms like Amazon and Facebook outside America).

Earlier this year it was reported that Ms Yellen had dropped the Trump administration's proposal to let American companies opt in to any new system for allocating taxing rights (why any firm would have chosen to do so is unclear). That removed a big obstacle to a deal, but by no means the only one. Many of the firms targeted by DSTs pay an outsize share of their taxes to America's government. America has circulated a new proposal on taxing multinationals to other countries. But to strike a deal, Ms Yellen will have to be unusually willing to share.

The most optimistic voices talk of agreement on both pillars being sealed by the end of June. Many doubt that is possible. It took years to agree on plucking and chucking lower-hanging fruit, such as tax trickery involving intra-company loans, or the "Double Irish with a Dutch Sandwich", which channelled profits through EU-based subsidiaries to tax havens such as Bermuda and the Cayman Islands.

A key variable is the rate at which the global minimum is set. Some officials think that, after all the horse-trading, it could be little more than the Irish rate of 12.5%—not very different from the average cash-tax rate that American tech firms actually pay. As for the reallocation of taxing rights, even its champions accept it may not skim much more than $10bn in extra revenue globally. The OECD estimates that corporate profit-shifting robs exchequers of $100bn-240bn a year.

Meanwhile, the Biden administration continues to flex muscle, even as it speaks with a softer voice than its predecessor. It is pressing on with plans to impose tariffs of as much as 25% on certain goods from six countries with DSTs, including Britain and Turkey. This is, perhaps, a tactic to encourage others to reach a deal at the OECD. If so, it is to be hoped that it works. The alternative is a global tit-for-tat as national tech levies become the norm. ■

Cryptocurrencies

Squaring the coin

SAN FRANCISCO

Its listing may break records, but Coinbase's success is not guaranteed

THE NEXT big listing on Wall Street will be a disappointment—at least for cryptocurrency purists. When Coinbase, a marketplace for such digital monies, starts trading on April 14th, it will be on a boring, conventional stock exchange, and not—as might befit one of the world's biggest crypto firms—on a buzzy blockchain, as the technology that powers the likes of bitcoin is called.

Yet for investors in Coinbase the flotation seems set to be a hit. In contrast with regular initial public offerings (IPOs), no new shares will be sold and existing investors do not have to wait six months before they can flip their stock, meaning they can benefit from any early excitement and a high share price. And Coinbase's first-quarter results, released on April 6th, seem certain to generate excitement. It provisionally estimates a profit of $730m-800m on revenue of about $1.8bn, up from $179m and $585m, respectively, in the last three months of 2020. Its initial valuation could top $100bn, perhaps exceeding even that of Facebook, a social-media giant, which was valued at $104bn when it listed in 2012.

Impressive as all that sounds, does it justify the price tag? To be sure, compared with many cash-guzzling unicorns (tech startups worth more than $1bn), Coinbase looks mature. In the past quarter users traded about $335bn-worth of currencies on its platform. They also held $223bn in its accounts—more than a tenth of the value of all cryptocurrencies.

Founded in 2012, Coinbase always wanted to be more than a place where people buy and sell digital monies. It aimed instead to become a bridge between the anarchic cryptoworld and conventional finance. Though its history has been tumultuous at times, the firm is not far from its goal: users do not need a degree in cryptography to benefit from its services (though its customer support is notoriously wanting); it is on mostly good terms with regulators and banks; and, unlike other crypto-exchanges, it has so far avoided becoming the victim of a catastrophic hack.

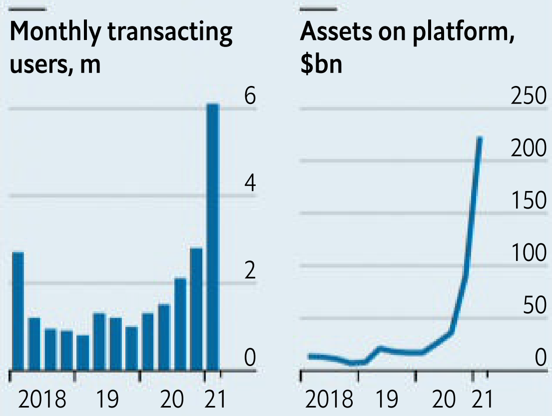
Yet in other respects the firm's prospects are uncertain. Although it has branched out somewhat, and now offers services to store and save cryptoassets, transaction fees still made up 96% of its revenue last year. This not only means that its fortunes rely heavily on the health of the cryptoeconomy, which can be volatile;

it also means that its take could shrink if competition muscles in. Of the $335bn in trades in the first quarter of 2021 it kept about 0.5% in fees—much more, for instance, than Nasdaq, the stock exchange on which Coinbase will list.

The Himalayan valuation could start to make sense if the cryptoeconomy continues to thrive and if conventional exchanges do not get religion—admittedly two big ifs. Coinbase then might seem best placed to reap the rewards and become the centre of an "open financial system for the world", as its IPO prospectus puts it. "For many of our customers, they simply think of us as their primary financial account in the cryptoeconomy," writes Brian Armstrong, the firm's boss. Like other promising start-ups that have recently gone public, Coinbase sees itself powered by an accelerating "flywheel", tech-speak for a virtuous cycle: more customers means more liquidity, which allows the firm to accept more cryptoassets and offer more services, in turn attracting more customers, and so on.

Even then, however, Coinbase would have to remedy some imbalances to really take off. One is getting so caught up in its flywheel that it can't do anything else, a malaise from which other big tech firms suffer. Both Google and Facebook, for instance, are still essentially advertising businesses. Coinbase, for all its ambitions, might get stuck being mainly an exchange.

Cryptocraze
Coinbase cryptocurrency platform



Source: Coinbase

Another question mark is management. Mr Armstrong is willing to learn from mistakes and eventually got things right, but he is no tech leader in the mould of a Steve Jobs or an Elon Musk. A self-described introvert, he cannot carry off his vision of bringing crypto to the masses by the sheer force of his personality, writes Jeff John Roberts, a journalist, in his recent book "Kings of Crypto", a profile of Coinbase. That helps explain why the firm's history has been one of delayed decisions and infighting.

And then there is the inherent contradiction of trying to be a big, if not dominant, player in a world that by definition is meant to be fragmented (or "decentralised", in the lingo). If crypto becomes as successful as Coinbase wants it to be, there may be no need for a financial behemoth. In fact, the firm's most dangerous rivals may be neither its peers, such as Binance and Kraken, nor conventional financial institutions, but those without a big organisation behind them—fully decentralised, like most cryptocurrencies themselves. ■

Bitcoin

The dirty truth

Totting up the cryptocurrency's environmental costs

As Coinbase's IPO shows, cryptocurrencies have many fans. But they have detractors, too. Environmentalists, in particular, fret about how much energy bitcoin uses. In a paper in *Nature Communications*, a group of academics led by Dabo Guan of Tsinghua University and Shouyang Wang at the Chinese Academy of Sciences examine bitcoin's energy use in China. They conclude that, in the absence of legal curbs, bitcoin could by 2024 become a "non-negligible" barrier to China's efforts to decarbonise its economy.

Bitcoin's hunger for energy stems from its design. It forgoes centralised record-keeping in favour of a "blockchain", a transaction database that is distributed among users. The blockchain is maintained by "miners", who validate transactions by competing to crack mathematical puzzles with solutions that are hard to find but easy to check. Each successfully mined block of transactions generates a reward, currently 6.25 bitcoins ($357,000).

The system varies the difficulty of the puzzles to ensure that one new block is created, on average, every ten minutes. High bitcoin prices make it worthwhile to spend more computing power—and therefore electricity—chasing mining rewards. But bitcoin's automatic stabilisers will ramp up the mathematical difficulty in response. Like the Red Queen in "Through the Looking-Glass", competing miners find themselves running faster simply to stand still.

Despite the currency's democratic ambitions, mining is concentrated among a handful of professional operators. About 70% takes place in China. The researchers use economic modelling to try to work out how much carbon all this make-work produces. They conclude that, without regulation, Chinese bitcoin mining could consume around as much energy as Italy or Saudi Arabia by 2024. Annual carbon emissions, at 130m tonnes, would approach those of Nigeria.

Such numbers should be taken with a good deal of salt. Bitcoin's energy use depends crucially on its price, which swings wildly. The authors assume that the long-term trend will be upward, because the rate at which new bitcoins are created is designed to halve every four years. Reality will doubtless prove more complicated. But the general picture—that bitcoin is a dirty business—fits with other research. One oft-cited model, which uses publicly available blockchain data, reckons its global energy consumption is already equal to that of Kazakhstan, and that its carbon footprint matches Hong Kong's.

China's stockmarket

A new tack

HONG KONG

In the face of a market correction, regulators try doing less

The job of China's top securities cop is a precarious one. Its fortunes are closely linked with the vagaries of the country's stockmarket. A crash can mean the sack or worse for the man in charge. Xiao Gang, who headed the China Securities Regulatory Commission (CSRC) during the spectacular boom and bust of 2015, was fired and has become an object of scorn among investors. Liu Shiyu, who took over from Mr Xiao and saw China rank among the world's worst-performing markets in 2018, later faced corruption charges (which might have been overlooked had the market done better). As China's CSI 300 index of blue-chip stocks tumbled by 14% in late February and early March this year, attention turned to their successor, Yi Huiman.

Having overseen a steady rise in share prices—often called a "healthy bull" market, in contrast to a speculative rally—since he took over in January 2019, Mr Yi has been held in high regard. Between then and early February this year the CSI 300 rose by more than 90%, and reached a 14-year high on February 10th. The unexpected correction that kicked off on February 22nd was the sharpest in years and revived fears of a collapse similar to those in 2007 and 2015. Many of China's largest stocks, such as Kweichow Moutai, a liquor-maker, shed a quarter of their market value.

Striking a balance between exuberance and rout is no simple task for technocrats in Beijing. The stockmarket is dominated by retail investors who are highly sensitive to political suggestions on the direction of trading. The practice of pledging shares as collateral to brokers also leads to sudden drops in share prices when margin calls go unmet and collateral is liquidated. Mr Xiao ignored growing leverage and trumpeted exuberance. As the crash began in June 2015 he indicated the rally would go on. Instead the CSI 300 fell by nearly 40% in a matter of months. Mr Liu fared no better. In 2017 he waged an attack on market manipulators, whom he called "giant alligators". The crackdown, along with poor economic sentiment, sapped risk appetite.

Mr Yi faces a more complex correction. This time fundamentals play a role. China's markets absorbed tens of billions of dollars in foreign funds in 2020 as the country recovered quickly from the pandemic while others continued to ail. With America's vaccine roll-out now picking up and the outlook in other markets brightening, fewer foreign funds are seeking out China as a haven, says Paul Sandhu of BNP Paribas Asset Management. Moreover, China's central bank is tightening monetary policy—the first in a big economy to do so—in the wake of the recovery. This is draining funds from the market and dampening sentiment. A crackdown on tech companies has also hurt the market value of firms traded on the STAR Market, China's version of Nasdaq (see Business section).

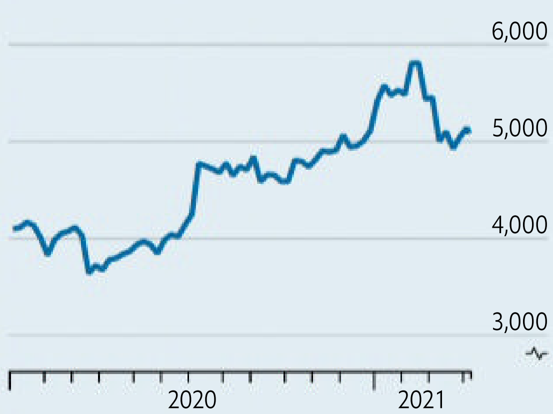
Much of this turmoil "came and went without a peep from the exchanges or the stockmarket regulator", a change in tack from past crises, noted Enodo Economics, a research firm. As the market stabilised in late March, Mr Yi was quoted by Chinese media as saying that there was little to worry about as long as leverage was not excessive. As the state media explained, Mr Yi's philosophy is one of "non-interference" and "avoiding unnecessary administrative intervention". Regulators appear "very comfortable at this point", says a manager of a Chinese hedge fund. "They have clearly learned from 2015."

Whether Mr Yi can keep his hand out of the market has yet to be seen. The government is sensitive to market swings during important anniversaries. A "national team" of powerful state investors often props up share prices on certain dates and in the event of market collapse. Prices plummeted unabated during China's National People's Congress in early March until the end of the event, when, many speculate, state forces stepped in to cushion the fall (though this is contested). July 1st marks the Communist Party's 100th anniversary. Whatever the economic outlook, few investors are expecting a market rout in the weeks before that hallowed date. ■

Standing corrected

China, CSI 300 stockmarket index

December 31st 2004=1,000



Source: Refinitiv Datastream

Robert Mundell

Floating ideas

WASHINGTON, DC

An influential international economist dies

After accepting the Nobel prize in economics in 1999, Robert Mundell crooned "My Way", the song by Frank Sinatra, to guests at the banquet. His way, as he put it, involved falling in love with economic theory, obtaining a PhD at the Massachusetts Institute of Technology, and spending time in London writing his thesis. It also involved crafting foundational ideas in the field of international economics, including one that earned him the title of a father of the euro. He died on April 4th at the age of 88.

Mundell, a prizewinning modeller

Mr Mundell attributed some of his interest in international economics to Canada, the country of his birth. In the 1950s it had, unusually, a floating not a fixed exchange rate. It also contended with large capital flows to and from America. What became known as the Mundell-Fleming model sought to explain the implications of Canada's setup.

Foreign investors seek at least the prevailing global rate of return. If the central bank raises interest rates, investors rush in, threatening any currency peg. When exchange rates are fixed and capital is mobile, monetary policy can therefore only reflect global conditions. Canada's floating rate, however, gave it monetary-policy autonomy. Students today learn about the "trilemma": countries cannot have mobile capital, control of monetary policy and a currency peg. They must pick two of the three.

If capital is mobile, then choosing a fixed exchange rate means the job of keeping the economy stable falls to fiscal policy alone. But Mr Mundell also showed that if countries choose floating rates, as Canada had, then fiscal stimulus can become less effective. It strengthens the currency, crimps exports and leaves overall demand unchanged.

As fixed exchange rates fell out of favour Mr Mundell's analysis looked prescient. Yet some countries remained committed to pegs. Partly inspired by deeper European integration, in 1961 he set out the conditions in which an "optimum" currency area could thrive.

A currency union lowers the costs of trade. But it removes a cushion—the exchange rate—that would otherwise protect its members against localised blows. Mr Mundell showed that this need not be a problem if, say, workers moved from depressed areas to thriving ones. In 2006 he noted that he was first called a father of the euro by the currency's sceptics. But his theory could be used to show that the euro zone lacked the labour mobility needed to be an optimum currency area. Still, he backed the project, noting that the European Commission sends money to depressed regions, reducing the need for emigration.

Mr Mundell also helped found supply-side economics, which advocated tax cuts to encourage investment, and gained favour in the 1980s. If the cuts boosted activity enough, they might even raise revenue (an idea that is debated within the profession). After he won the Nobel, Mr Mundell said he met heads of state as often as finance ministers. "When I say something, people listen. Maybe they shouldn't, but they do."

Free exchange | Our world, not in data

In poor countries, statistics are both undersupplied and underused

In the rich world, people worry that prying governments know too much about them. Popular culture valorises characters who go off the grid, like Jack Reacher (the hero of 25 novels by Lee Child and two films starring Tom Cruise). He drifts around America on Greyhound buses, eschewing a driving licence, credit cards and email. Why does he make himself so hard to find? "It started out as an exercise and became an addiction," he says.

The developing world, however, is full of unwitting Jack Reachers who leave little trace in official records. Their anonymity is not an addiction but an affliction. According to the World Bank's latest *World Development Report*, entitled "Data for Better Lives", about 1bn people have no official proof of their identity. More than a quarter of the world's children under five are not registered at birth. Half of the 29 poorest countries have not completed a census in the past ten years—Congo has not done one since 1984—and only 40% have three or more estimates of poverty that can be compared across time. Christopher Yeh of Stanford University and his colleagues have calculated that an African household will appear in a representative survey of living standards less than once every 1,000 years.

Given the shortage of conventional statistics, many people are enthusiastic about more novel forms of data, gleaned from mobile phones, social media and satellite imagery. In the early months of the covid-19 pandemic, patterns of mobile-phone use showed who could and could not afford to stay at home in a city like Jakarta, outlining the uneven impact of lockdown measures in many developing countries. That kind of data can help donors better target their aid efforts. Emily Aiken of the University of California, Berkeley, and her colleagues have tested whether a machine-learning algorithm can identify the poorest households in 80 Afghan villages based on mobile-phone data, such as the duration of their calls, their network of contacts, and how often they paid for more minutes of call-time. For the 80% of households that owned a mobile phone, the algorithm worked about as well as more traditional targeting methods, such as counting fridges, clothes irons, and other physical assets.

But, as the study's authors are careful to note, not everyone owns a mobile phone. And algorithms that work in one place and time may not necessarily travel well or endure for long. Joshua Blumenstock of Berkeley has pointed out that international calls may be a less reliable indicator of prosperity during the Haj pilgrimage season, when many more people travel.

Satellite imagery avoids some of these problems—cameras in orbit can see how the other half lives. Countries can sharpen poverty maps by combining household surveys with clues visible from space, including building sizes, forest cover, and the intensity of night-time lights. Tanzania was able to turn a poverty map divided into 20 mainland regions (containing populations of over 2m on average) into a higher-resolution poverty map of 169 districts (containing average populations of 300,000 or so). The extra precision provided by satellite data was equivalent to increasing the sample size of a household survey by five times, according to Takaaki Masaki of the World Bank and his co-authors.

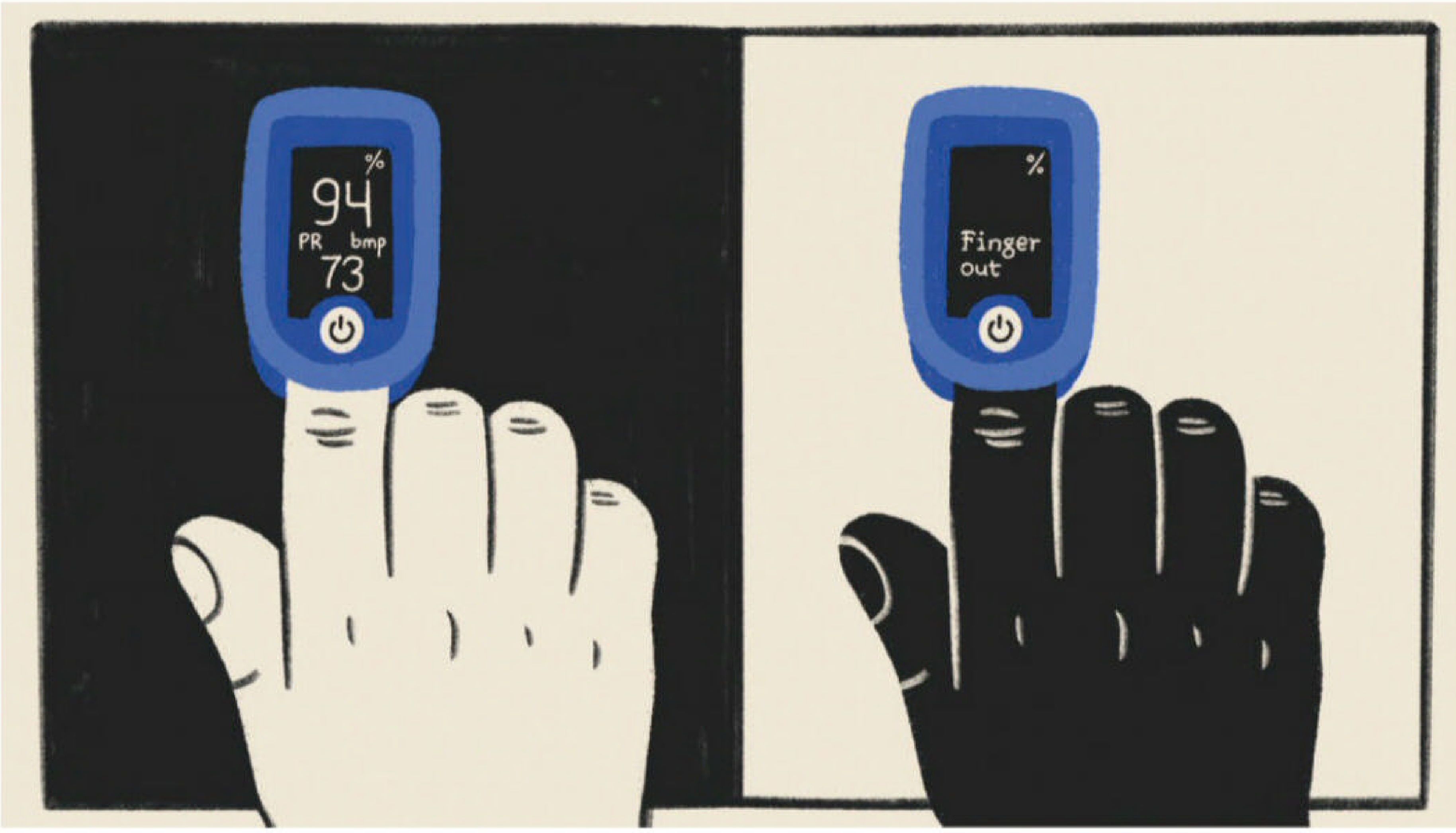
These techniques can all improve the supply of data. But supply is not the only problem. If it were, you would expect any figures a government did collect to be highly prized, widely disseminated and heavily used. But the opposite is too often the case. Data are rarely shared with outsiders. And they are poorly digested even within official circles. Daniel Rogger and Ravi Somani of the World Bank once asked over 1,800 officials in Ethiopia how many people lived in their districts. About half of them thought their districts were at least 50% bigger or smaller than they actually were, according to figures in their own databases. Education officials over- or underestimated primary-school enrolment numbers by 76%. When asked, less than 13% said that these administrative databases were their main source of information.

Big Brother is watching out for himself

Governments often lack a strong incentive to collect data, use them well, or allow others to use them better. Bureaucrats with little discretion to make decisions have scant reason to inform themselves about what the right decision would be. And in countries that lack strong safeguards to prevent data misuse, civil servants understandably hold numbers close to their chests. Moreover, statistics can be most valuable when holding governments to account. Why should governments conspire in their own embarrassment by providing the data by which they will be judged?

For this reason, the authors of the *World Development Report* call for something akin to a cultural shift in the handling of data. They advocate for "political champions" who recognise data's value in improving policies and a data-literate press and public who demand better numbers to draw on. This political commitment to data would, in turn, generate incentives for civil servants to make better use of the figures at their disposal. The mindset of ministries can be as important as a government's financial wherewithal. According to new indicators from the World Bank, a country's statistical performance is only loosely correlated with its prosperity. Some countries, like Kyrgyzstan or Mexico, do much better than you would expect given their level of GDP per person.

In this vision, private data and official statistics are complements, not substitutes, that can be of use for either corporate or public purposes. One current example is the Gallup World Poll, carried out by the private polling firm in over 140 economies. Every three years, it adds questions on financial inclusion instigated by the World Bank. This polling showed that 1.7bn people lacked a formal bank account in 2017. That gap is both a potential business opportunity for financial firms and a problem for governments. After all, even Jack Reacher has a bank account. ■



Race and sex bias in medicine

Fatal truths

Many medical devices and treatments work less well than they should do in non-white people and women

AT THE PEAK of the coronavirus epidemic in America, hospitals needed to triage patients. Only the sickest were admitted. Others were sent home to self-monitor. One measure used to determine the severity of an individual's illness was his blood-oxygen level. The devices typically employed to do this, known as pulse oximeters, are easy to use. They clip onto a fingertip like a clothes peg. Regrettably, they record some darker-skinned patients as being healthier than they really are. This may have resulted in people who needed hospital treatment being denied it.

Work published last year in the *New England Journal of Medicine*, which looked at more than 10,000 patients throughout America, suggested the pulse oximeters used overestimated blood-oxygen saturation more frequently in black people than white. A healthy human being has an oxygen saturation of 92-96%. In this work some patients who registered that level according to pulse oximetry had a true saturation (as recorded by the arterial blood-gas measure, a method which requires the actual drawing of blood) of less than 88%. For black participants this happened 12% of the time—three times the rate at which it occurred for white participants. As Michael Sjoding of the University of Michigan, the study's leader, observes, this difference would also be the difference between being admitted to the hospital and being sent home.

Irregular pulses

Dr Sjoding's investigations are not the only evidence of such bias. Work suggesting problems with pulse oximeters goes back as far as 1999. Despite that, and pulse oximetry's widespread use, few practitioners were aware until recently of the problems involved. "In my entire pulmonary critical-care training, I was never taught that the device could potentially be less accurate," explains Dr Sjoding.

Also in this section

On February 19th, after some media attention and a letter to the Food and Drug Administration (FDA) from three senators, that agency released a warning that "pulse oximeters have limitations and a risk of inaccuracy under certain circumstances that should be considered." It counselled doctors to use pulse oximeter readings as an estimate, and to make decisions based on trends rather than absolute thresholds.

Non-white people have been disproportionately affected by covid-19 in many places. In America, according to the country's national public-health agency, the Centres for Disease Control and Prevention, black and Hispanic individuals are twice as likely to die from it as white people. There are many reasons for this disparity, and a single type of medical device certainly cannot be blamed for most of it. But the wider point is that medical technology should be designed from the outset to be free from such bias—and, unfortunately, it isn't. Generally speaking, it is designed by white men and tested on white men. That it works best on white men is therefore hardly a surprise. But this fact has potentially lethal consequences for the part of the world's population who are not white men, ie, the vast majority.

Pulse oximeters, which were invented in the 1970s and adapted for commercial use in the 1980s, are a classic case in point. They work by passing two beams of light, one red and one infrared, through the tissue of the finger they are clipped to and then calculating the amount of each that is absorbed. Oxygenated and deoxygenated haemoglobin both absorb these frequencies differently, meaning that the oxygen saturation in someone's blood can be determined by comparing the strengths of the two beams after they have passed through that patient's finger.

This process must, however, be calibrated—for other tissues, skin included, also absorb some of the beams. Dark skin will clearly absorb more of the incident light than white skin, thus weakening the signal, and may well absorb one beam more than the other. So unless this calibration is done on both, which is not always the case, the result may be biased.

Home alone

Despite its error-prone history, pulse oximetry is a mainstay in hospitals. The arterial-blood gas measure, being both invasive and painful, is reserved for the sickest. Even before covid-19, doctors routinely used pulse oximeters to decide who to admit to hospital, and to monitor patients' health and make decisions about their treatment. The devices are also employed as sensors for the regulation of automated treatments such as oxygen administration.

Now oximeters are cropping up in people's houses, too, as those diagnosed with covid-19 but not ill enough to need hospital admission are advised to stay home and monitor their condition themselves. The devices have become so popular that the American Lung Association has asked healthy people not to buy them, in order to avoid creating supply shortages for hospitals and those who are actually sick.

If the example of the pulse oximeter were a one-off, that would be bad enough. But it isn't. Another scandal was a medical algorithm used on more than 100m Americans a year to allocate scarce resources to those with the greatest need. A study published in 2019 showed that this software gave white patients priority over black ones because it used people's previous medical spending as a proxy for their current medical need. Since black patients often spend less on medical care for nonclinical reasons, including lack of access and racial bias in treatment, they frequently have fewer previous expenses than white patients with similar medical requirements, and were discriminated against accordingly.

In this case, the firm that created the algorithm quickly took the point. It has collaborated with the researchers involved to change its operation. That has resulted in a huge reduction in bias, though it may not have eliminated it completely. Algorithmic errors can be tricky to eradicate. Rooting out bias requires extreme attention to detail at every stage of development.

Nor is ethnicity the only source of bias. Women are also often at a disadvantage when it comes to treatment. Procedures such as hip implants and heart surgery, for example, are more likely to fail in them than in men.

A study published in 2013, in the *Journal of the American Medical Association*, found that women in the four American regions which the authors looked at had a 29% higher risk of their hip implants failing within three years of hip-replacement operations. Another study, from 2019, found that women were twice as likely to experience complications from implantable cardiac devices, such as pacemakers, within 90 days of implantation. In both cases, the failures of device-makers to recognise physical differences, particularly in size, between male and female bodies were to blame. As Isuru Ranasinghe, a cardiologist at the University of Queensland, in Australia, who was part of the cardiac-implant study, observes, "In almost every cardiac procedure I'm aware of, women have a higher risk of complications."

One way to ameliorate problems of this sort is to insist that devices and procedures are tested on a wider range of individuals than just white males. In theory, at least in America, this is already supposed to happen. As long ago as 1993, Congress directed the country's National Institutes of Health (NIH) to require the inclusion of women and non-white people in clinical trials. FDA guidance also encourages studies to have "adequate numbers" of participants to conduct analyses by sex or by race.

But decades after the directive to the NIH, non-white people and women are still underrepresented. An analysis carried out in 2019 found that women were less than 30% of the study population in 15% of NIH studies conducted in 2015, and black people (who make up 13% of America's population) comprised 10% or less of the participants in about one-fifth of studies. Furthermore, only 26% of studies conducted subgroup analyses by sex, and only 13% by race or ethnicity.

According to Bakul Patel, director of the Digital Health Centre of Excellence at the FDA, the agency is learning from past errors. It has issued guidelines encouraging research on diverse patient populations. And Mr Patel asks all those with a stake in the matter, from regulators to patients, to work to ensure proper representation in medical research. "This is not going to be solved by one organisation or one entity or one stakeholder group," he explains. "It needs to be a collective effort."

Unintelligent design

Some have already acted. Designers at Nonin Medical, a pulse-oximeter company in Minnesota, long ago took steps to eliminate racial bias from the firm's devices. According to David Hemink, Nonin's boss, the company's clinical studies go beyond the FDA recommendation to include "at least two darkly pigmented subjects or 15% of [the] subject pool, whichever is larger", and include more than twice the recommended number of dark-skinned participants. Independent assessments conducted in 2005 and 2007 suggest this approach has worked. They found Nonin's products to have a clinically insignificant bias at the lowest saturation levels (less than 80%).

Changes in procedure, as well as design, can help, too. For example, Linh Ngo, a member of Dr Ranasinghe's team in Queensland, recommends using real-time ultrasonic scanning during heart operations. This, she reckons, will both reduce risk of vascular injury in all patients and equalise outcomes between the sexes.

In America, meanwhile, the FDA recommends transparency for medical algorithms, so that users, including insurance companies, doctors and patients themselves, can understand how they operate. And others are working to expand the range of options available.

Ana Claudia Arias, a professor of engineering at the University of California, Berkeley, whose laboratory specialises in improving medical devices, encourages the production of different models to accommodate different body types. For pulse oximeters in particular, size matters as well as skin tone. If the device is too large, light from the room can interfere with the reading—and women tend to have smaller fingers. Dr Arias therefore recommends 15 types to account for five skin tones and three sizes (small, medium, large). Such strategies to accommodate human variation would be welcome for other medical devices. Whether medical-technology manufacturers will meet the demand remains to be seen. ■

Covid-19 vaccines

Sorting signal from noise

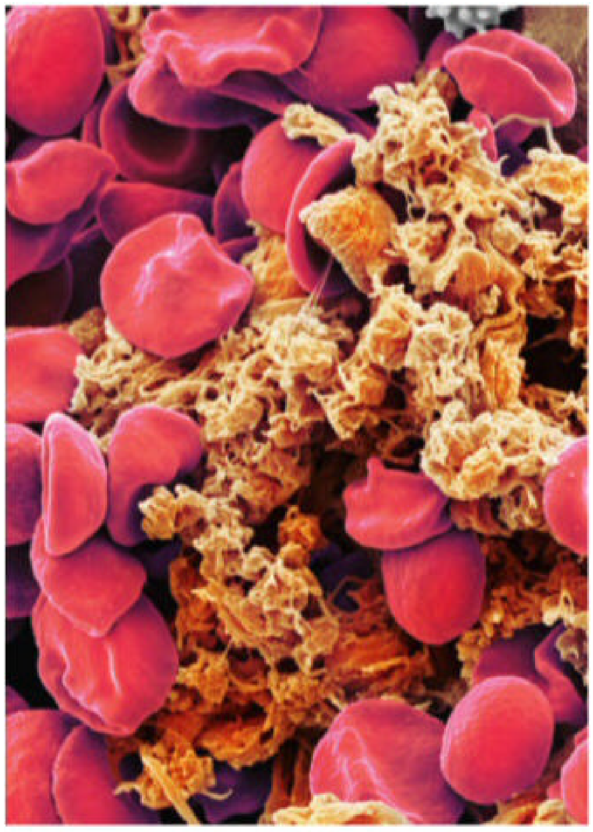
With millions vaccinated, rare side-effects of covid jabs are coming to light

CHRIS WHITTY, England's chief medical officer, vividly recalls a nerve-racking moment on December 8th 2020. That was the day when England became the first country to roll out a covid-19 vaccine, a jab developed by Pfizer and BioNTech. Near midnight on vaccination day one "We were discussing it and just thinking 'What are we dealing with here? These are small numbers and we've already had several dangerous near misses'," said Dr Whitty in a recent talk at the Royal Society of Medicine. In some people, it had turned out, the vaccine sets off anaphylaxis, a life-threatening allergic reaction. But this is rare. It occurred just once among the 22,000 or so people vaccinated in the trial, which could have been by chance. Now, with hundreds of millions vaccinated, the rate at which it occurs is clearer: five per million.

Fortunately, this side-effect is not only extremely rare but shows up soon after the jab. And treatment for it exists. Everyone who receives the Pfizer vaccine is now asked to stick around for 15 minutes, just in case. There have been no deaths from anaphylaxis related to the vaccine.

As millions of jabs of various covid-19 vaccines are administered every day, such rare adverse reactions will inevitably emerge. On April 7th both Britain's health officials and the European Medicines Agency (EMA), which regulates drugs in the European Union, said there is strong evidence that AstraZeneca's covid-19 vaccine may be linked with very rare blood clots, often in the brain or the abdomen. The EMA experts reached their conclusion based on a review of 86 reported cases, 18 of which were fatal. Britain's experts reached the same conclusion from data on 79 cases, 19 of which were fatal. Both the EMA and Britain's drug regulator concluded that the vaccine's benefits outweigh the potential risk of the clots. But Britain's officials, armed as usual with some nifty charts for their televised briefing, said that for people under 30 the risks and benefits from the vaccine were "finely balanced", so a different jab may be preferable.

The investigation of the suspected clots from the AstraZeneca jab has been a prime example of the challenge of sorting the signal of a vaccine's side-effects from the cacophony of medical emergencies that happen to millions of people every day. Vaccine-safety experts have two ways to untangle whether a rare medical problem is



Platelets at work

caused by a vaccine, says Kathryn Edwards of the Vanderbilt University School of Medicine, in Nashville, Tennessee. They can compare its rate in vaccinated people against the "background" rates of it that are observed in the unvaccinated. And they can look for unusual features of the medical condition being investigated.

The first signals emerged in late February, when doctors in several European countries noticed clusters of blood clots in people recently given the AstraZeneca jab, some of whom died. Most were women under 60, which was not terribly surprising because many EU countries were, at first, not convinced that the jab worked in the elderly and used it largely for essential workers, such as nurses, teachers and social-care workers—professions in which most employees are women.

The EMA's data as of March 22nd suggested that the rate of brain clots in people under the age of 60 who had had AstraZeneca's vaccine was one in 100,000—higher than would be expected normally. Precisely how much higher, though, is hard to tell. The rates of such rare and difficult-to-diagnose conditions vary a lot by country, age and sex. Estimates of the incidence of such brain clots have ranged from 0.22 to 1.57 cases per 100,000 people per year, and they are more common in younger people and women.

As doctors began to look more closely, something curious emerged. Many patients with suspected clots from the vaccine had unusually low levels of platelets. These are fragments of special precursor cells that float in the blood. Their job is to form blood clots (they rush to the site of a cut or other bleeding). Low platelet levels therefore usually result in uncontrolled bleeding, not clots.

With this new information to hand, Britain's medical regulators searched their data on vaccinated people for the unusual tandem of clots and low platelet counts. They found four cases per million people vaccinated, a rate several times lower than in the EU. One explanation is that Britain, unlike the rest of Europe, had used the jab primarily in older people. The rate at which the clots occurred in Britain declined steadily with age. Importantly, Britain's experts found that the clots occurred as much in men as they did in women.

This combination of blood clots and low platelet counts is something that doctors know how to diagnose and treat, says Jean Marie Connors, a haematologist at Brigham and Women's Hospital, in Boston. It resembles a condition seen in some people who are given heparin, a drug used widely to treat blood clots. For unknown reasons, some people develop an immune reaction to heparin, which results in blood clotting so profound that it depletes their platelets. The same reaction appears to be provoked by the vaccine.

Medical societies in several countries have already issued guidelines to doctors on how to spot and treat this rare reaction to the AstraZeneca vaccine. With vigilance and appropriate care, the extremely rare deaths that may result from it will become even rarer. ■

Domestic heating

A new use for microwaves

If you can have microwave ovens, why not microwave boilers?

DECARBONISING AN ECONOMY is a big job. Coal- and gas-fired power plants must be swapped for wind, solar or nuclear ones. Petrol-driven cars must be replaced by electric versions. Less attention is paid to heating. But in cold countries such as Britain, warming houses, offices and the like consumes more fossil fuel than either electricity generation or transport.

The fuel involved is usually natural gas. This is burned in a central boiler in order to heat water that flows to radiators elsewhere in the building. Britain's government would like to change this. From 2025 gas-fired boilers will be banned in newly built homes. By the mid-2030s installing new gas boilers in existing houses will be banned, too.

The question is what will replace them. Unlike electricity generation, where renewables are proving popular, or cars, where battery-powered vehicles are rapidly becoming established, the market for green heating is anyone's to play for. The usual suspects (assuming any electricity supplied is generated using appropriately carbon-free means) include electric immersion heaters, heat pumps (devices that work a bit like refrigerators in reverse, in that they extract heat from a building's surroundings and then pump it into that building), and burning hydrogen instead of natural gas. Engineers at a small British company called Heat Wayv, though, think they have another contender: microwaves.

The principle is the same as in a microwave oven. Many molecules, water included, are electrically dipolar. This means they have a positive charge at one end and a negative one at the other. They will therefore rotate to align themselves with a strong electromagnetic field. If that field is oscillating, as is the case with electromagnetic radiation such as microwaves, then the molecules themselves will oscillate too—bumping and jostling their neighbours as they do so, and thus creating heat.

But there is more to building a microwave boiler than simply repurposing the parts used for an oven, says Phil Stevens, one of Heat Wayv's founders. Most microwave ovens employ magnetrons—chunky devices built by surrounding a cathode with a carefully shaped anode that is designed to produce electromagnetic radiation of a specific frequency. With the help of a pair of big chipmakers, Heat Wayv has come up with a solid-state device that performs the same job, but which fits on a 10-square-centimetre silicon chip.

Arrays of these devices beam microwaves into water in a boiler, heating it up. The pipes that carry the water are also made of microwave-sensitive materials, as is the insulation that lags them. And a heat exchanger recycles residual waste warmth. The upshot, says Mr Stevens, is a boiler that is about 96% efficient. The best existing gas boilers rarely exceed 90%.

Efficiency matters, because the move away from gas may mean higher heating bills. Electricity generated from fossil fuels is necessarily more expensive than the fuels themselves. In Britain, at the moment, a given amount of energy delivered as electricity costs three or four times as much as the same amount delivered by natural gas. Switching to renewables is unlikely to change that much. Though the "fuel" involved (wind or sunlight) is free, other costs are often higher than for conventional power stations. Forced by law to switch from gas, then, customers will surely have their eyes on the cost.

Heat Wayv argues its technology offers advantages over rival methods. Immersion heaters must run continuously to deliver water at a suitable temperature. That often warms water which is never used. By contrast, and like existing gas boilers, microwaves heat water quickly enough to provide it only when it is needed.

Heat pumps, too, have drawbacks. Their efficiency plummets on cold days, when they are needed most. They are also bulky. And they generate water that is warm rather than hot, often requiring the retrofitting of bigger radiators or underfloor heating.

Hydrogen, meanwhile, must either be extracted from natural gas or created by running electrical currents through water. Both processes are inherently inefficient and the former is hardly green. Also, the infrastructure needed to produce and deliver hydrogen in quantity does not yet (and may never) exist.

Heat Wayv hopes to be producing microwave boilers for sale by 2024, in time for the first stage of the government's ban. Mr Stevens says the idea has attracted interest from most of Britain's big housebuilders. Soon, perhaps, microwaves may heat people's water as well as their food. ■

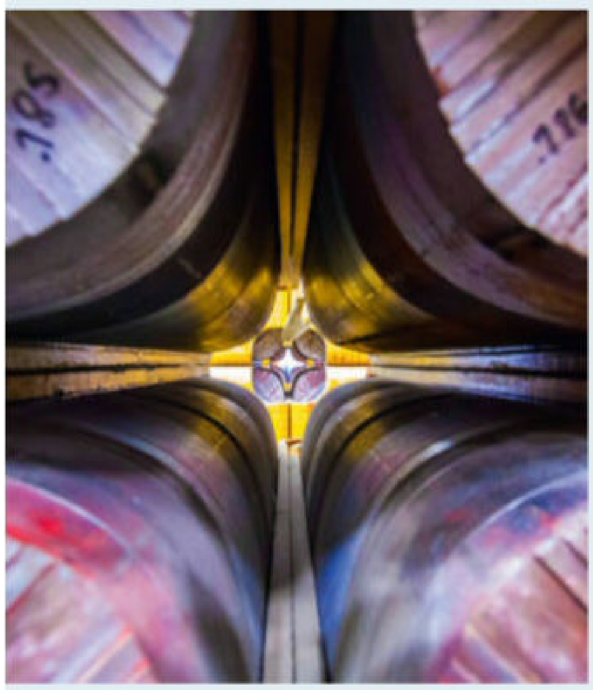
Particle physics

Model misbehaviour

For the second time in a month, an anomaly in the laws of physics has been noted

"WHO ORDERED that?" This was the reaction, famous in particle-physics circles, of Isidor Isaac Rabi to the discovery of the muon. Rabi, a Nobel laureate who helped America develop the atom bomb, was reflecting physicists' general surprise that muons, which are, to all intents and purposes, just heavy and unstable versions of electrons, actually exist. To an orderly physicist's mind they somehow seemed superfluous to Nature's requirements.

Establishing the muon's nature was, though, an important part of the creation of what is known as the Standard Model of particle physics. This, along with Einstein's general theory of relativity (actually a theory of gravity), is one of the two foundation stones on which modern physics is built. Yet the Standard Model is known to be incomplete for several reasons, one of which is precisely the fact that it does not yet embrace gravity. So it seems fitting that an answer to Rabi's question, and with it a path to an explanation of physics beyond the Standard Model, may now have been opened by a measurement made on muons.



A magnetic moment

The study in question, called Muon g-2, used a superconducting storage device (pictured) to look at the magnetic behaviour of muons. Experiments conducted with this machine at Brookhaven National Laboratory, in New York state, in the 1990s, had suggested an anomaly in such behaviour—a deviation of about 0.1% from theoretical predictions about the way that muons should spin in magnetic fields—but without sufficient statistical power to be sure. If this anomaly were real, it would suggest that an unknown force was tugging on the muons in the experiment.

To have another go at finding out, the storage device was shipped to Fermilab, outside Chicago, in 2013. There, it was linked to equipment which gave it more oomph. This boost has, indeed, confirmed the previous result—though irritatingly not quite unambiguously enough for physics' finicky requirements. These demand "five sigma" of significance (five standard deviations from the mean, for the mathematically inclined). The new data, added to the old, and announced on April 7th, give only 4.2 sigma. That, nevertheless, suggests there is only one chance in 40,000 that the result is a fluke.

This is the second time in a month that a group of physicists has published a result which might lead beyond the Standard Model, for on March 23rd researchers on a project being conducted at CERN, home of the Large Hadron Collider, the world's largest particle accelerator, pulled a similar surprise. Their work involved the decay of particles called B-mesons into electrons, muons and their antimatter equivalents. Again, the details are not yet quite as statistically robust as might be desired. But two such findings in short order give hope that the hunt for physics beyond the Standard Model may soon run its quarry down.

Art and belonging

The girl with the blue ribbon

Three books portray the glittering, doomed world of Jewish art collectors in pre-war Paris

On December 21st 1936 artistic luminaries gathered in the courtyard of an elegant town house in Paris, waiting for the speeches to begin. Number 63 rue de Monceau had belonged to a banker called Moïse de Camondo; his wife Irène, the daughter of another banking family, had as a girl been painted by Pierre-Auguste Renoir, her red hair tied with a blue ribbon. In wealthy middle-age Camondo had torn down the house his parents built when they emigrated to Paris from Constantinople, and sold or given away everything they brought with them, even the precious Judaica.

In its place, on the same plot, he built a new house, a French house, based on Marie Antoinette's Le Petit Trianon at Versailles, which he filled with the finest French paintings, porcelain and 18th-century tapestries, "a decorative art that was one of the glories of France" from the "period I loved most among all others", as he wrote in his will. He bequeathed the building and all its contents to the nation, with instructions that it be opened as a museum, and that nothing inside should be lent or changed, nor anything added.

Letters to Camondo. By Edmund de Waal. *Farrar, Straus and Giroux; 192 pages; $28. Chatto & Windus; £14.99*
The House of Fragile Things. By James McAuley. *Yale University Press; 320 pages; $30 and £25*
Göring's Man in Paris. By Jonathan Petropoulos. *Yale University Press; 456 pages; $37.50 and £25*

Camondo's daughter, Béatrice, was given Renoir's portrait of her mother as a wedding gift. She was among those who gathered in 1936 for the museum's grand opening. The Musée Nissim de Camondo was named after her brother, who had been killed fighting for his country in the first world war. It proved so popular that soon the opening hours were extended.

In "The Hare with Amber Eyes" (2010), Edmund de Waal recounted how his father's family, the Ephrussis, had built their own house on rue de Monceau, a few doors from their friends, the Camondos. In a series of imaginary missives to Moïse, Mr de Waal's slim new book, "Letters to Camondo", brings to life the milieu of 19th-century upper-middle-class French Jewry, with its peculiar mix of inner wariness and dynastic chutzpah. In "The House of Fragile ▸▸

Things", James McAuley sets the aesthetic created by the Ephrussis, Camondos, Reinachs and their Rothschild cousins in historical context. Together they form a moving portrait of a glittering, doomed world—of which both the house and Renoir's painting are poignant emblems.

Children of the revolution

During its revolution France became the second European nation (500 years after Poland) to emancipate its Jewish population. Sophisticated families like the Camondos may have had relations across Europe and the Mediterranean, but many embraced the republic and French citizenship with passion. They served in parliament or supported France's most beloved cultural institutions. As Mr McAuley puts it, they were "the careful architects of an identity that sought to present Frenchness and Jewishness as symbiotic, and perhaps even as natural extensions of each other".

The revolution had prised France's great art holdings out of the hands of the king and the aristocracy, so that in the 19th century collecting became a bourgeois affair. The collections of well-off Jewish families "bore special significance", Mr McAuley says. They filled their homes with quintessentially French objects: Savonnerie carpets, Chardin engravings, the opulent cabinet-making of the master *ébéniste* Jean-Henri Riesner. Camondo had a weakness for anything of royal provenance, especially from the reign of Louis XVI and Marie Antoinette. "These collections function as self-portraits," Mr McAuley writes.

Yet these same collectors might have known an ominous Yiddish phrase: *Frankraykh frest yidn* ("France devours Jews"). The republic may sometimes have upheld the revolution's values and embraced ardent adherents like the Camondos, but prejudice always shadowed the idealism. Anti-Semitism, sometimes a whisper, sometimes a shout, was perennial—not only among the rabid pamphleteers who supported the bogus conviction of the Jewish officer Alfred Dreyfus, but among the very artists who numbered these families among their greatest patrons. Of the substantial payment he received for painting Irène and (separately) her two sisters, Renoir wrote: "I have to say I find it stingy."

For French Jews, Mr McAuley says, the story's ending "has always overshadowed the beginning and the middle". Within weeks of France's fall in 1940 Reichsmarschall Hermann Göring was determined to seize as much of its great art as he could for himself and Adolf Hitler. One of the first paintings he took was Renoir's portrait of Irène, by then hanging in her daughter Béatrice's apartment in Neuilly. As Mr de Waal explains—in a book that blends historical research with literary ruminations—Frau Emmy Göring found the picture enchanting. The Reichsmarschall chose it for his private collection.

Göring appointed Bruno Lohse, one of "the most prodigious art plunderers in history", in the words of Jonathan Petropoulos in "Göring's Man in Paris", to oversee the wholesale theft and redistribution of more than 30,000 other art works, mostly from the private collections of French Jews. Not since Napoleon's foray into Italy had so much European art been stolen to order. After the war it would take decades to be restituted, notes Mr Petropoulos, in a book that underscores the vulnerability of France's Jewish collectors. Some works have never been found.

Although the Camondos and other 19th-century Jewish immigrants could not foresee the future, hindsight imbues their anxieties about belonging with tragedy. Irène survived the war (as did the museum named after her son). Eventually she recovered, then sold, the portrait of her much younger self. As Mr de Waal notes, Marshal Philippe Pétain, France's collaborationist leader during the Occupation, personally intervened to save a friend of Béatrice's—along with just two other French Jews.

With the help of some of their compatriots, around 80,000 others were murdered. Béatrice herself was among them. A convert to Catholicism, she wanted to believe that her wealth and dedication to the republic and the Virgin Mary would save her family. Yet less than a decade after the Musée Nissim de Camondo was left to the country, she, her two children and their father were arrested and sent to Auschwitz; they all perished. Her death certificate says she died for France. ■

Les slammeurs

Rhyme for your life

GOMA

Young people put their anger and hopes into spoken poetry

In a small, dimly lit room one recent Saturday morning, a group of Congolese slammers are chanting about politics and art, poverty and sex. They tower over the seated audience, gesticulating wildly. The listeners laugh, jeer and occasionally join in by repeating refrains or clapping. This is exactly how slam is meant to be. Marc Smith, an American former builder who hosted the world's first slam event in Chicago in 1984, would be impressed.

Mr Smith promoted slam, a form of spoken-word poetry, as a way of liberating rhymes from the page and making them accessible. Like rappers, slammers do battle, but they are judged by the audience. As well as giving marks out of ten at the end of performances, attendees express their opinions by cheering or heckling. Slam reached Goma, a city of some 1m people in embattled eastern Congo, five years ago when a handful of young men began watching YouTube videos of slammers across the world. They were inspired by the raw, uncensored rhymes of artists such as Grand Corps Malade (Large Sick Body), a tall French slammer with spinal injuries who writes about racism and loneliness in suburban Paris.


Words and wounds

"There was a lot of appetite for slam here," says Ben Kamuntu, one of Goma's early slammers. "Young people wanted to break away from silence, we wanted to express ourselves." With its sprawling tin-roofed houses and unpaved side-streets, Goma is a far cry from Chicago's skyscrapers, but the same slam fervour spread among its youth as it did when Mr Smith first promoted the idea in America. Soon, more than a hundred people were meeting to practise, clubbing together to rent a small house where they could slam. Before the pandemic hit, the best exponents put on shows in Goma's bars and restaurants.

When one slammer, a slight 22-year-old called Rita Zaburi (pictured), was asked by a friend why she spent so much time alone in her room, she decided to respond in verse. On the morning of your correspondent's visit, she stands up, shyly at first, and slams about what it means to be a poet. "It is not about being a sorcerer, healing wounds with the magic of your creativity," she begins in French. "It is about denouncing the evils that swallow our society."

Actually, Goma's slammers do both. Their city has been surrounded by warring armed groups for over 20 years. Rebels, who generally fund themselves by smuggling gold, coltan and wood, often kidnap people on nearby roads. In February men wielding Kalashnikovs intercepted two UN cars less than 30 miles from Goma; they hauled out the Italian ambassador, his bodyguard and driver and shot them. People in the region are slaughtered with machetes and guns every month. Militiamen terrorise women by raping them.

Ms Zaburi and four other female slammers help women who have been raped or beaten in weekly "slam-o-therapy" workshops. The participants—some attacked by rebels, others by their husbands—learn to write about their experiences. One of their number, Deborah, slams about what the group means to her: "I love you, you respect me, we give each other advice, we are working together to build a community," she intones in Swahili. When Deborah was 15, her parents forced her to marry a man who came home drunk and beat her most nights. She gave birth to a child who died in infancy and eventually ran away from the abuse. Slam helps her relax, she says. "It is a way to have fun, to de-stress, it helps me to put the pain behind me."

The men who established the slam scene in Goma are also among the city's most prominent activists. Mr Kamuntu, for example, wrote some of his best slam in prison, where he was locked up for two months after protesting against the refusal of Joseph Kabila, a former president, to leave power. But slam in Congo is about more than airing political anger. Goma's young slammers are exuberant. "People tell tales about what has happened in their neighbourhoods, recount love stories, make jokes," Mr Kamuntu says. "Even if there is no electricity in a street, there is still life in that street and a joy at being alive that must be expressed." ■

Egyptian fiction

A general in his labyrinth

The Republic of False Truths. By Alaa Al Aswany. Translated by S.R. Fellowes. *Faber; 464 pages; £16.99. To be published in America by Knopf in August; $28.95*

In "The Yacoubian Building" (2002), Alaa Al Aswany portrayed the corruption and discontent of Hosni Mubarak's Egypt through the stories of one building's denizens—a petty schemer, a gay writer, a doorman's son. Illuminating and evocative, the book sold over 1m copies and was adapted for the screen. Mr Aswany's new novel, "The Republic of False Truths", again uses an ensemble of characters to capture his country's contradictions and injustices.

This time the story is set around the revolution of 2011 when, sick of Mubarak's 30-year rule, hundreds of thousands of Egyptians gathered in Cairo's Tahrir Square. The cast includes young idealists, disgruntled factory workers—and others determined to stop the uprising. Some are simply caught in the middle. The result is an engaging, provocative and, ultimately, frustrating tour of the revolution, from its gestation to its bloody aftermath.

Banned in Egypt and other Arab countries, the book opens with General Ahmad Alwany, a God-fearing Muslim who watches pornography, tortures suspects and is thoroughly corrupt. Most of this, he naturally believes, is justified by Islam. Just ask Sheikh Shamel, a preacher trained in Saudi Arabia. "He is said to have taken the virginity of 23 young girls, all in compliance with holy law," writes Mr Aswany, whose dry tone accentuates the absurdity. Pious and patriotic, at least in their own minds, the pair and their allies resist the revolution—or, as they see it, the foreign conspiracy funded by America and Israel.

On the other side are the likes of Asmaa Zanaty, a teacher who can't believe her colleagues turn away students too poor to pay. Her beloved, Mazen, a workers' representative, says the problem is not the teachers but the whole rotten system. Their letters span the revolution, taking in both the false dawn when Mubarak stepped down and the security forces' massacres of protesters. Many Egyptians, egged on by the old regime, blamed the revolutionaries for stirring up chaos. Asmaa gets the last, depressing word: "The majority of Egyptians are happy to be oppressed. They consent to corruption and have become a part of it."

If this novel ever has a sequel, the author himself might be a character. He supported the uprising against Mubarak and has been sued for insulting Egypt's current strongman, Abdel-Fattah al-Sisi (probably an inspiration for General Alwany). But in between Mr Aswany praised Mr Sisi, then a general, for toppling Egypt's first democratically elected president, Muhammad Morsi of the Muslim Brotherhood. As others have, Mr Aswany hints that, before its election victory, the Islamist group had colluded with the army. Many Egyptians think Morsi then tried to entrench the Brotherhood in power; Mr Sisi's coup against him was quite popular.

But Egypt is now back where it started, with a Mubarak-like figure in charge. Might Egyptians have found more legitimate ways to counter Morsi and hang on to democracy? Thousands did take to the streets to protest against him (a movement itself backed by the army and Gulf dictators who hoped democracy would fail). Morsi did not budge. To lots of Egyptians, a coup may have seemed the only option. Perhaps that sequel should be called "The Republic of False Choices". ■

Alfred Hitchcock

Dial him for murder

The Twelve Lives of Alfred Hitchcock. By Edward White. *W.W. Norton; 400 pages; $28.95 and £22.99*

The profile is unmistakable. A few lines establish nose, lip, regal forehead, modest hairline and the great round jowl. From behind this caricature Alfred Hitchcock emerged to introduce a weekly television show filled with the bizarre and the macabre. Yet if many people recognise the sketch, most won't know that he drew it himself. The author of his own mystique, Hitchcock was, says Edward White, "not just a film-maker but an impresario".

He spent much of his time cultivating his brand. His mischievous face dominated promotional materials for "Psycho" and "The Birds". He talked up his own eye and disdained other directors. After meticulously preparing for shoots, he made a show of looking bored on set. Amid such gestures, the man himself recedes.

Mr White's solution is to organise his chapters by topic, such as Hitchcock's religion, voyeurism, approach to women, connection to London and obsession with murder. Perceptive and gracefully written, "The Twelve Lives of Alfred Hitchcock" is a bracing study of the master of suspense.

The book is particularly astute on Hitchcock's relationships with screenwriters and actors. He had little use for the writers, redrafting whole scenes delivered by luminaries such as John Steinbeck. Hitchcock took inspiration less from a script than an idea or image—a daring

escape across Mount Rushmore, say, which became the climax of "North by Northwest". Screenplays existed "to heave the propeller of his imagination".

Actors were a pricklier bunch. In one sense they were pure functionaries. ("Please start sweating now," he told one befuddled thespian.) Yet his stars were among the most glamorous figures of the golden age of Hollywood, and they drew Hitchcock into a vortex of envy and desire. He mistreated actresses on set, famously setting real creatures on Tippi Hedren in "The Birds". Several women accused him of sexual misconduct. Among leading men Hitchcock felt Cary Grant embodied his own aspirations to refinement and charm: Grant "became an avatar for an inner Hitchcock that could not be outwardly expressed", writes Mr White.

All because of his cursed heft, which Hitchcock bore like a child beating a bully to the punchline. He flaunted his appetite, then dieted ostentatiously. Yet he was sensitive about his appearance, and had a ham's need not just to hold the camera but to perform for it. The resulting exposure—especially on "Alfred Hitchcock Presents"—raised his profile but diluted his gravity. He saw himself as a Picasso; to others, he was as familiar as Mickey Mouse.

Recently Picasso has prevailed. Since his death in 1980, Hitchcock's renown has grown alongside a rise in genre film-making by directors such as the Coen brothers and Quentin Tarantino. Mr White limits himself to biography and does not make a study of Hitchcock's 53 films (though he confides that "Rear Window" is his favourite). An understandable decision—but a shame all the same. It is a rare book that could pleasurably be twice as long. ■

Johnson Tough stuff

Even when spelling seems to make little sense, it is almost impossible to reform

"KEEPING SCHOOLS closed has DEVESTATING effects" on children, America's Republican Party tweeted from its official account, before hastily deleting the post amid mockery. It's not just American conservatives who stumble with their spelling even when writing about education. Replying to a parliamentary query, the head of the schools inspectorate in Spain's Balearic Islands misspelled "recoge" ("to collect", among other things) as "recoje".

Writing systems flummox people around the world. These days many in China use the roman alphabet to find and enter the complex Chinese characters on phones and computers, meaning they increasingly cannot write many characters without help. French children fear the *dictée*, an exercise in which they must write down a passage read aloud by teachers. And many who haven't mastered the notoriously difficult spelling system of English are publicly humiliated in the ritual of the school spelling bee. Rare is the system that seems elegant, accurate and well-suited to its language. (Korean's Hangul script is one; it is so beloved that an annual Hangul Day commemorates its invention.) Why aren't illogical writing systems ever reformed?

Every language's sounds can be described with the International Phonetic Alphabet (IPA), a collection of symbols that covers the phonemes—basic units of sound—in every known tongue. Any given language uses just a subset of these, usually several dozen or so. Memorise a few squiggles and you can write any word you can say, and say any word that you read, accurately.

But the IPA is a modern invention; prior writing systems arose in chaotic circumstances. For instance, English's messy spelling came from a confluence of factors. The Latin alphabet was pressed into service for a Germanic language; then the Normans conquered England and brought French spelling customs. As spelling norms were still settling, the English vowel system underwent a major change called the Great Vowel Shift. Scribal errors muddied things further.

An update seems sensible. But a counter-argument made by traditionalists is that, by reflecting etymology, spelling reveals important information. Early English scribes put a "p" into *receipt* to make clear its connection to Latin's *receptus*, even though the letter was silent. That "p" also usefully links the word to *receptive* and *recipient*, which "reseet" would not. Interesting as etymology can be, however, it is hardly so crucial as to require painfully counterintuitive spellings unto eternity. Most people do not know that the English words *whole* and *health* come from the same Germanic root (roughly meaning "undamaged") as *holy*. No one would propose respelling them as "hole" and "holth" to advertise the association.

Other arguments for inertia are more compelling. One is regional variety. English, American, Irish, Scottish and other accents differ widely—no new arrangement could possibly reflect them all. Another is simply that pronunciations are always shifting, albeit gradually. Even a successful reform would only buy time; in two centuries many spellings would look odd again, because their pronunciations will have changed anew.

Modest tweaks might work better than drastic revisions; they need not create a perfect or timeless system, merely one easier than today's. But even small changes are hard to push through. Some years ago a limited German reform—which included replacing the ß character with "ss" in some contexts—produced a national uproar before it finally settled in. The types of sweeping change needed to make English regular might be socially unacceptable. Where root-and-branch orthographical reform has been implemented it has usually been in autocracies, like Turkey in the 1920s, when Kemal Ataturk replaced the Arabic script with a revised Latin one—or, indeed, Mao Zedong's simplification of Chinese characters in the 1950s.

A big reason spelling systems never seem to get overhauled in more liberal societies is that those in a position to change the rules have learned the old ones. Put another way, the type of folk who were once good at spelling bees now run the world. Those who would benefit most from reform, meanwhile, hardly have a voice, being either children or illiterate adults whom politicians can safely ignore. For the broad middle who muddle through, technology has made it easier to hide what they don't know. It seems the illogical systems are here to stay. In which case, politicians had better learn to spell-check their tweets.

Tenders

Economic data

	Gross domestic product % change on year ago latest		quarter*	2021†	Consumer prices % change on year ago latest		2021†	Unemployment rate %		Current-account balance % of GDP, 2021†	Budget balance % of GDP, 2021†	Interest rates 10-yr gov't bonds latest,%		change on year ago, bp	Currency units per $ Apr 7th	% change on year ago
United States	-2.4	Q4	4.3	4.5	1.7	Feb	1.9	6.0	Mar	-2.8	-10.0	1.7		93.0	-	
China	6.5	Q4	10.8	8.5	-0.2	Feb	1.6	5.5	Feb‡§	2.6	-4.8	3.1	§§	92.0	6.55	7.8
Japan	-1.4	Q4	11.7	2.7	-0.4	Feb	0.2	2.9	Feb	3.2	-9.0	nil		-8.0	110	-0.6
Britain	-7.3	Q4	5.2	5.1	0.4	Feb	1.7	5.0	Dec††	-3.9	-12.6	0.9		48.0	0.73	11.0
Canada	-3.2	Q4	9.6	4.8	1.1	Feb	2.1	8.2	Feb	-2.1	-9.2	1.5		68.0	1.26	11.1
Euro area	-4.9	Q4	-2.6	4.1	1.3	Mar	1.2	8.3	Feb	3.2	-6.0	-0.3		1.0	0.84	9.5
Austria	-5.7	Q4	-5.6	3.8	2.0	Mar	1.7	5.7	Feb	3.0	-6.1	-0.1		-25.0	0.84	9.5
Belgium	-5.1	Q4	-0.6	4.0	0.9	Mar	1.0	5.7	Feb	-0.6	-6.3	-0.1		-21.0	0.84	9.5
France	-4.9	Q4	-5.7	5.3	1.1	Mar	1.1	8.0	Feb	-1.7	-7.2	-0.1		-9.0	0.84	9.5
Germany	-3.6	Q4	1.4	3.5	1.7	Mar	1.8	4.5	Feb	6.8	-4.0	-0.3		1.0	0.84	9.5
Greece	-5.9	Q4	11.1	3.2	-1.3	Feb	nil	15.8	Dec	-5.1	-5.0	0.9		-99.0	0.84	9.5
Italy	-6.6	Q4	-7.5	3.4	0.8	Mar	0.7	10.2	Feb	3.0	-8.3	0.7		-94.0	0.84	9.5
Netherlands	-2.8	Q4	-0.5	3.1	1.9	Mar	1.9	3.6	Feb	11.4	-3.4	-0.3		-14.0	0.84	9.5
Spain	-8.9	Q4	0.1	5.8	1.4	Mar	0.8	16.1	Feb	1.5	-8.7	0.3		-42.0	0.84	9.5
Czech Republic	-4.8	Q4	2.5	4.1	2.1	Feb	2.2	3.3	Feb‡	1.1	-5.5	1.9		55.0	21.7	15.5
Denmark	-1.4	Q4	2.7	3.0	0.6	Feb	0.7	4.6	Feb	7.4	-1.3	nil		9.0	6.25	9.8
Norway	-0.6	Q4	2.6	2.6	3.3	Feb	1.6	5.0	Nov‡‡	2.4	-1.7	1.5		84.0	8.44	21.3
Poland	-2.8	Q4	-2.8	4.0	3.2	Mar	2.4	6.5	Feb§	2.1	-4.9	1.6		-4.0	3.84	8.6
Russia	-1.8	Q4	na	2.7	5.8	Mar	4.6	5.7	Feb§	4.0	-1.7	7.4		64.0	77.1	-1.9
Sweden	-2.1	Q4	-1.0	2.3	1.4	Feb	1.4	9.7	Feb§	3.7	-2.3	0.4		51.0	8.60	16.5
Switzerland	-1.6	Q4	1.3	2.5	-0.2	Mar	0.3	3.6	Feb	8.1	-0.9	-0.3		-2.0	0.93	4.3
Turkey	5.9	Q4	na	4.0	16.2	Mar	11.1	13.4	Jan§	-1.9	-3.1	17.5		376	8.17	-17.1
Australia	-1.1	Q4	13.1	2.8	0.9	Q4	1.6	5.8	Feb	1.1	-5.9	1.6		73.0	1.31	23.7
Hong Kong	-3.0	Q4	0.7	3.3	0.4	Feb	1.8	7.2	Feb‡‡	3.2	-3.6	1.4		48.0	7.79	-0.5
India	0.4	Q4	42.7	13.0	5.0	Feb	5.0	6.5	Mar	-0.8	-6.7	6.1		-33.0	74.5	1.5
Indonesia	-2.2	Q4	na	3.3	1.4	Mar	2.8	7.1	Q3§	-0.1	-6.5	6.4		-161	14,495	11.8
Malaysia	-3.4	Q4	na	4.4	0.1	Feb	2.4	4.8	Feb§	3.6	-6.3	3.1		-29.0	4.13	5.1
Pakistan	0.5	2020**	na	1.7	9.1	Mar	8.8	5.8	2018	-1.9	-6.9	10.2	†††	107	153	9.4
Philippines	-8.3	Q4	24.4	6.8	4.5	Mar	4.0	8.7	Q1§	-1.1	-7.2	4.2		-50.0	48.6	4.3
Singapore	-2.4	Q4	15.9	4.8	0.7	Feb	1.8	3.3	Q4	16.5	-4.1	1.6		53.0	1.34	6.0
South Korea	-1.2	Q4	5.0	3.3	1.5	Mar	1.5	4.9	Feb§	4.5	-4.7	2.1		48.0	1,116	9.4
Taiwan	5.1	Q4	5.8	4.5	1.4	Feb	1.5	3.7	Feb	15.1	-0.5	0.5		-7.0	28.4	6.1
Thailand	-4.2	Q4	5.4	3.6	-0.1	Mar	0.8	1.5	Dec§	5.0	-5.7	1.7		58.0	31.4	4.5
Argentina	-4.3	Q4	19.4	6.2	40.7	Feb‡	41.9	11.0	Q4§	2.1	-6.0	na		na	92.3	-29.5
Brazil	-1.1	Q4	13.3	3.2	5.2	Feb	5.7	14.2	Jan§‡‡	-1.1	-7.6	9.6		165	5.56	-5.8
Chile	nil	Q4	30.1	6.0	2.8	Feb	3.5	10.3	Feb§‡‡	-0.2	-6.9	3.3		-9.0	714	17.6
Colombia	-3.5	Q4	26.5	4.8	1.5	Mar	2.6	15.9	Feb§	-3.3	-8.9	6.1		-111	3,626	8.1
Mexico	-4.3	Q4	13.7	5.1	3.8	Feb	3.8	4.5	Feb	2.4	-2.8	6.2		-103	20.1	19.8
Peru	-1.7	Q4	37.9	8.0	2.6	Mar	2.3	19.0	Feb§	-0.1	-6.9	5.0		4.0	3.63	-6.9
Egypt	2.0	Q4	na	3.1	4.5	Feb	6.0	7.2	Q4§	-3.5	-8.2	na		na	15.7	0.5
Israel	-1.4	Q4	6.4	3.4	nil	Feb	1.4	5.1	Feb	3.9	-9.2	1.1		22.0	3.29	8.8
Saudi Arabia	-4.1	2020	na	3.0	5.3	Feb	2.5	7.4	Q4	3.1	-3.0	na		na	3.75	0.3
South Africa	-4.1	Q4	6.2	2.0	2.9	Feb	3.7	32.5	Q4§	-1.2	-9.2	9.3		-163	14.5	26.2

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 Apr 7th	% change on: one week	Dec 31st 2020
United States S&P 500	4,080.0	2.7	8.6
United States NAScomp	13,688.8	3.3	6.2
China Shanghai Comp	3,479.6	1.1	0.2
China Shenzhen Comp	2,258.1	1.8	-3.1
Japan Nikkei 225	29,730.8	1.9	8.3
Japan Topix	1,967.4	0.7	9.0
Britain FTSE 100	6,885.3	2.6	6.6
Canada S&P TSX	19,129.1	2.3	9.7
Euro area EURO STOXX 50	3,956.8	1.0	11.4
France CAC 40	6,130.7	1.0	10.4
Germany DAX*	15,176.4	1.1	10.6
Italy FTSE/MIB	24,740.7	0.4	11.3
Netherlands AEX	710.1	1.5	13.7
Spain IBEX 35	8,597.4	0.2	6.5
Poland WIG	59,695.3	2.8	4.7
Russia RTS, $ terms	1,429.5	-3.2	3.0
Switzerland SMI	11,128.2	0.7	4.0
Turkey BIST	1,417.9	1.9	-4.0
Australia All Ord.	7,177.4	2.3	4.8
Hong Kong Hang Seng	28,674.8	1.0	5.3
India BSE	49,661.8	0.3	4.0
Indonesia IDX	6,036.6	0.9	1.0
Malaysia KLSE	1,600.6	1.7	-1.6

	index Apr 7th	% change on: one week	Dec 31st 2020
Pakistan KSE	43,953.6	-1.4	0.5
Singapore STI	3,195.8	1.0	12.4
South Korea KOSPI	3,137.4	2.5	9.2
Taiwan TWI	16,815.4	2.3	14.1
Thailand SET	1,556.6	-1.9	7.4
Argentina MERV	50,128.2	4.5	-2.1
Brazil BVSP	117,623.6	0.8	-1.2
Mexico IPC	47,897.8	1.4	8.7
Egypt EGX 30	10,227.7	-3.2	-5.7
Israel TA-125	1,690.6	1.6	7.8
Saudi Arabia Tadawul	10,014.3	1.1	15.2
South Africa JSE AS	67,160.4	1.0	13.0
World, dev'd MSCI	2,881.1	2.5	7.1
Emerging markets MSCI	1,338.8	1.7	3.7

US corporate bonds, spread over Treasuries

Basis points	latest	Dec 31st 2020
Investment grade	120	136
High-yield	361	429

Sources: Refinitiv Datastream; Standard & Poor's Global Fixed Income Research. *Total return index.

Commodities

***The Economist* commodity-price index**

2015=100	Mar 30th	Apr 6th*	% change on month	year
Dollar Index				
All Items	161.9	164.5	0.5	62.1
Food	123.1	125.8	-1.3	35.2
Industrials				
All	198.1	200.7	1.5	83.6
Non-food agriculturals	148.4	151.6	0.1	80.3
Metals	212.8	215.3	1.8	84.3
Sterling Index				
All items	180.2	181.2	0.7	43.9
Euro Index				
All items	153.1	154.1	0.8	49.0
Gold				
$ per oz	1,685.7	1,744.1	1.6	5.6
Brent				
$ per barrel	64.3	62.9	-7.0	96.8

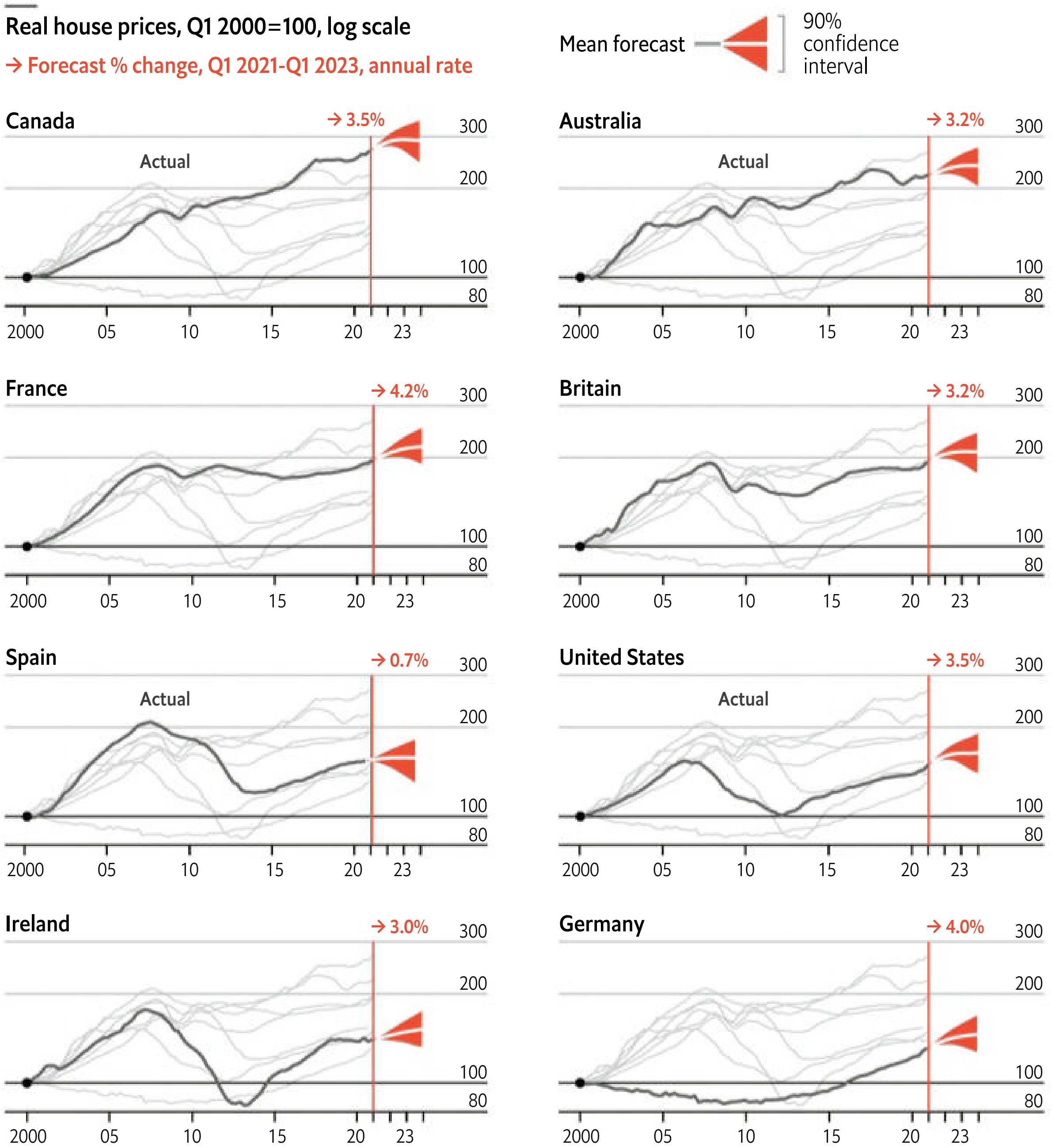
Sources: Bloomberg; CME Group; Cotlook; Refinitiv Datastream; Fastmarkets; FT; ICCO; ICO; ISO; Live Rice Index; LME; NZ Wool Services; Thompson Lloyd & Ewart; Urner Barry; WSJ. *Provisional.

For more countries and additional data, visit **Economist.com/indicators**

→ A slowdown looms for booming housing markets, but a global bust is unlikely

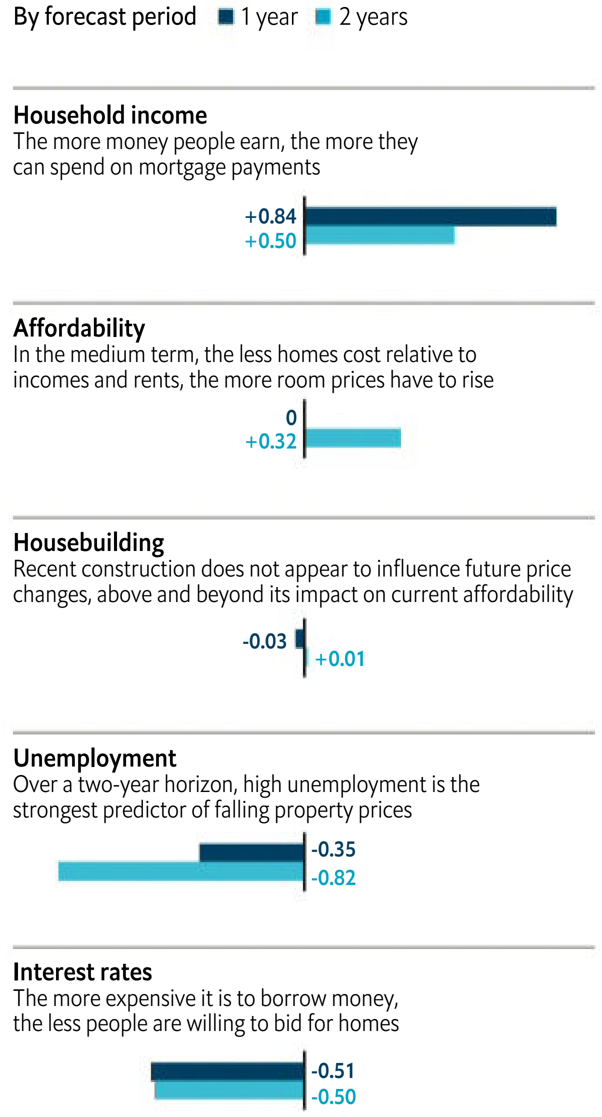
Real house prices, Q1 2000=100, log scale

→ Forecast % change, Q1 2021-Q1 2023, annual rate



Effect on future house prices of a one-standard-deviation increase in variable

Average of 16 rich-world countries, percentage points



Source: *The Economist* house-price forecast model
See economist.com/house-price-forecasts for details

Approaching the ceiling

Our house-price forecast expects the global rally to lose steam

THE RECESSION set off by the covid-19 pandemic has strangely coincided with surging asset values, and residential property is no exception. Taking an equal-weighted average of 16 rich-world markets, real prices have risen by 5.4% during the most recent 12 months with available data, compared with 2.2% a year earlier. In America values in the 12 months to January jumped by 11%, the fastest rate since 2006.

Does the boom have room left to run? Bulls and bears both make strong cases. Buyers note that fiscal stimulus and lower consumer spending have left household balance-sheets unusually healthy; that remote work has encouraged people to prioritise their living environments; and that interest rates are near all-time lows. Sellers counter that those rates have been rising quickly; that mounting debt will force governments to tighten their belts; and that rents in big cities have fallen sharply.

To help sort through this uncertainty, we have fired up *The Economist*'s statistical forecast of house prices. Built in 2019, our model uses a "random forest"—an algorithm so named because it blends the output of thousands of "decision trees", each containing a series of yes/no questions like "is inflation above 2%?" It is trained on a dataset of national price averages going back to 1990, and uses 25 different variables, such as price momentum, household incomes and credit growth. During the covid-19 pandemic, financial gyrations have caused its short-term forecasts to be unusually inaccurate. But once economies open up, the factors that have historically preceded rising or falling house prices should regain their predictive power.

Giving equal weight to each of the 16 countries for which the model has data, its central estimate is that the rally is likely to stall but not reverse. It expects appreciation to slow to 3.4% this year, and to 0.7% by 2023. Much of this deceleration comes from America and Britain. However, because prices are currently soaring in those markets, the model projects them to climb a bit further before reaching a plateau.

Elsewhere, the model does expect price declines. It is most dubious on Spain, which faces a mix of deflation, high unemployment and stagnant incomes. The most likely scenario is that prices there eke out paltry gains in 2021 and then turn south. Sweden and Canada also have unemployment rates above 8%, and the model predicts they will start facing losses in 2023.

Among big markets, the model is most bullish for the next two years on France and Germany, where solid fundamentals back up recent price increases. Yet by mid-2023, it expects annual appreciation of just 1.2% and 1.6% in those countries.

The longest-lived bright spot is Ireland, predicted to lead the table in 2023 with a gain of 2.5%. The model does not explicitly count Brexit-driven relocations to the EU's lone English-speaking country. Instead, it is impressed by Ireland's healthy numbers on jobs and incomes. Moreover, household credit in Ireland is far below the rich-world average, implying that buyers have room to increase borrowing. Irish homeowners may still be scarred by their losses a decade ago, but the data suggest that the Celtic Tiger looks poised to reawaken. ■

Paperback rider

America's great chronicler of the Wild West died on March 25th, aged 84

He was no more than three, and a small three at that, when he was given his first pony. The following year he went to his first cattle drive. His grandfather, whom he remembered as a man with a fine moustache and a habit of whittling his own toothpicks out of sweet-smelling cedarwood, built the ranch in Archer County, north-west of Fort Worth, from literally nothing. He had stopped the waggon there for no other reason than because he'd spotted a fine seeping spring that would assure the family plenty of water. Lore had it that it was a place without a house, on land that had never been ploughed, at the edge of the Great Plains stretching all the way to Canada. His grandmother, who spoke little, raised 12 children on that stark frontier. All that rooting, with time, became ever more fixed in the arid Texan soil, yet the boy turned out to be not at all what either of them had expected.

Throughout this childhood, he would recall, the contrast between what he should have been afraid of—snakes, bulls, stampedes—and what he was actually afraid of was something almost shameful for his grandfather, his father and his eight uncles, all of whom had become ranchers. The most frightening thing in his early childhood, hands down, was poultry, with trees and shrubs a close second. He never quite got over seeing a great white owl fly out of the outhouse, right in his face, when he was a child. He was a young cowboy who hated his horse, he said, and feared almost every animal on the place.

When eventually he found what he really loved, he would hide away with it in the loft of the barn, partly because, there, he was safe above the pecking chickens, turkeys and guinea hens, but partly also because when he did occasionally look up from it, he could glance north and south and take in the whole ranch.

When he was six, a cousin of his named Robert Hilburn stopped by on the way to the war, and dropped off a box of 19 books. He found not only that he knew how to read, but that he enjoyed it. Two sets of encyclopedias followed, thanks to a door-to-door salesman. His fascination was with the way books looked, the heft of them, the smell of the printing ink, and of course, what was inside them. Having found his thing, he would write when he was in his 60s, he began a subversive, deeply engrossing life as a reader and never abandoned it.

From the boys' own stories and the encyclopedias, he went on to other discoveries, from the essays of Walter Benjamin and the literary criticism of Edmund Wilson to Marcel Proust and Virginia Woolf (the White Nile and Blue Nile of literature, he called them) and Cervantes's "Don Quixote", which, with its two characters riding out on horseback across a plain, he reckoned was really just another cowboy story, set in 16th-century Spain.

He greatly admired Rebecca West and, later, Susan Sontag, who became a friend and whom he once took stock-car racing. If reading took him outward, to college and on to books from other times and other lands, writing, always on his little portable Hermes typewriter, brought him back to Archer County. He had the same postal address for virtually his whole life—Box 552, Archer City, Texas. The night he won an Oscar for his screenplay for "Brokeback Mountain", he wore bluejeans and cowboy boots under his dinner jacket. "I come, not just from a different time," he wrote, "but from a different era."

The genetic inheritance of cattle and ranching that seemed to have lost its way in the young boy turned out, instead, to be a whole new mutation. It affected the way he looked at things, how he listened and to whom, and what he wrote. And it helped him create the essential corrective to the cowboy mythology that had taken hold of America, thanks to advertising and the cinema.

The image of the cowboy all saddled up and ready to ride off across the unbroken beautiful expanse that is Marlboro country took a beating in "Lonesome Dove", an anti-western western which starts with one of the finest opening lines ever put to paper in America: "When Augustus came out on the porch the blue pigs were eating a rattlesnake—not a very big one." Over 843 pages of torture, murder, scalping, faithlessness, betrayal and accidental death, this violent and unsentimental story, about driving stolen cattle from the Rio Grande to the highlands of Montana, tests the souls of the two retired men who are making their final attempt to carve out a new life in America's last remaining wilderness.

Before that, the myth that women in the Wild West were only ever waifs in need of protecting had been stripped bare in his second novel, "Leaving Cheyenne", in which independent-minded Molly Taylor refuses to choose between the two men she loves, bearing each in turn a son and proving she has a mind of her own, even if she did like to "just stand there and grin her pretty, friendly grin, and curl a loop of her hair around one finger".

His appreciation of women is the great surprise, and, to many, the beating heart of the volumes of essays he wrote in later life. If he sat at his desk and typed in the morning and then trawled for supplies for his second-hand bookshop in the afternoon (the best-stocked used bookstore between New York and Berkeley, it was said), later when it was dark he would pick up the phone and call his women friends, sometimes six or seven of an evening. Often they wept about their fears and their frustrated ambitions. He didn't talk much. Mostly he listened. "If you have to learn about emotion, you have to go to women," he liked to say.

The women in his life

Unfit for ranchwork, it seemed, because of his indifference to horses, saddles and spurs, he ended up giving ranching a whole new meaning. Instead of rounding up cattle, he said, he herded words into sentences to be corralled into small pastures called paragraphs, which lastly he spread across the spacious ranges of a novel. He published more than 60 novels, essay collections and filmscripts, and was still not done when he died. His last memoir, unfinished, was going to be called "62 Women". ■

EVERY MOMENT MATTERS

THE PANDEMIC HAS ACCELERATED BUSINESSES' PLANS TO OPTIMIZE THEIR FINANCIAL HEALTH THROUGH SPEND, LIQUIDITY, AND PAYMENTS.

As government-ordered lockdown started to ripple across the globe, everyone improvised. Employees abandoned their cubicles for makeshift home offices without insight or direction. One employee working in the accounts payable department of an insurance firm had to haul home a check printer. Once a week, he drove 20 minutes to the home of the company's chief accounting officer so that she could sign checks.

It quickly became clear that outdated systems and processes were preventing finance and treasury teams from making key business decisions. Company leadership was asking, 'How much cash do we have right now?" or "Are we going to make payroll?" They needed to know how they could protect cash and contain costs. As Jeremy Hamon, head of group finance for the UK engineering company Primetals, explains: "You can't have good risk management without good cash-management."

But coming up with an answer was taking too long. The chief operating officer of Air Methods, a medical transport operator, remembers that their siloed systems created blind spots. "Vendors were shutting us off on deliveries; in other cases, we were paying suppliers in less than 10 days, so we weren't maximizing payment terms."

The chaos caused significant short-term disruption, but it also forced companies to confront their spend management issues. Executives are accelerating their migration to a single platform in order to get a holistic view of company-wide spend and liquidity.

With full visibility, CFOs can take control and make in-the-moment decisions that deliver tangible value and impact. According to a study by McKinsey, this kind of digitization helped companies drive at least 7% more revenue growth than industry peers.

Zalando, Europe's largest online fashion retailer, was, by necessity, one of the earliest adopters. Needing to procure PPE to protect its employees, the company found a digital solution in a business spend management platform from Coupa. The transition facilitated rapid adjustments to reduce costs, mitigate risk, and increase agility. "When you have a business spend management solution that performs well, rolled out across the business with high usage, you have full visibility into the data," says Alejandro Basterrechea, Zalando's head of procurement.

The digitization of Zalando's procure-to-pay processes enabled most of its employees to shift to working remotely without significant disruption to purchasing operations—and the company was able to quickly source and purchase the PPE for those employees unable to work from home. In some cases, this even accelerated operations, such as with the electronic submission of supplier invoices, as offices were not open to manually scan paper copies.

History has shown that how businesses emerge from a crisis makes all the difference. For instance, companies that were smarter about cash and liquidity management in the downturn of 2000 rebounded much faster, according to research published in the Harvard Business Review. And as businesses now plan for a post-pandemic world, those that become agile and resilient through the implementation of innovative technology have a new advantage: the ability to make every moment matter.