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Bloomberg Businessweek

February 17, 2020 ● DOUBLE ISSUE

FRAGILE CHINA

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From the Makers of Paper and Packaging

Bloomberg Businessweek

February 17, 2020

◀ Billy Guillory, a steel grinder and pipe inspector, at work at JSW's Texas mill

FEATURES

PHOTOGRAPH BY MATTHEW BUSCH FOR BLOOMBERG BUSINESSWEEK

CORRECTION

"BP Is Still Paying for the Deepwater Horizon Spill" (Last Thing, Feb. 10) referred to the Deepwater Horizon oil well. It was a drilling rig, not a well.

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■ COVER TRAIL

How the cover gets made

❶

"So, this week's cover story is about coronavirus. Again."

"Still a thing?"

"Still a thing. And becoming increasingly more of 'a thing.'"

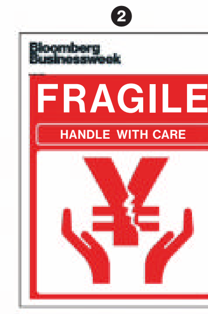
"Well, you know what they say..."

[In unison]
"When China sneezes, the world catches a cold!"

"But seriously. It's looking precarious for China. Debt. Disease. Discord."

"For some reason I'm thinking about bubble wrap."

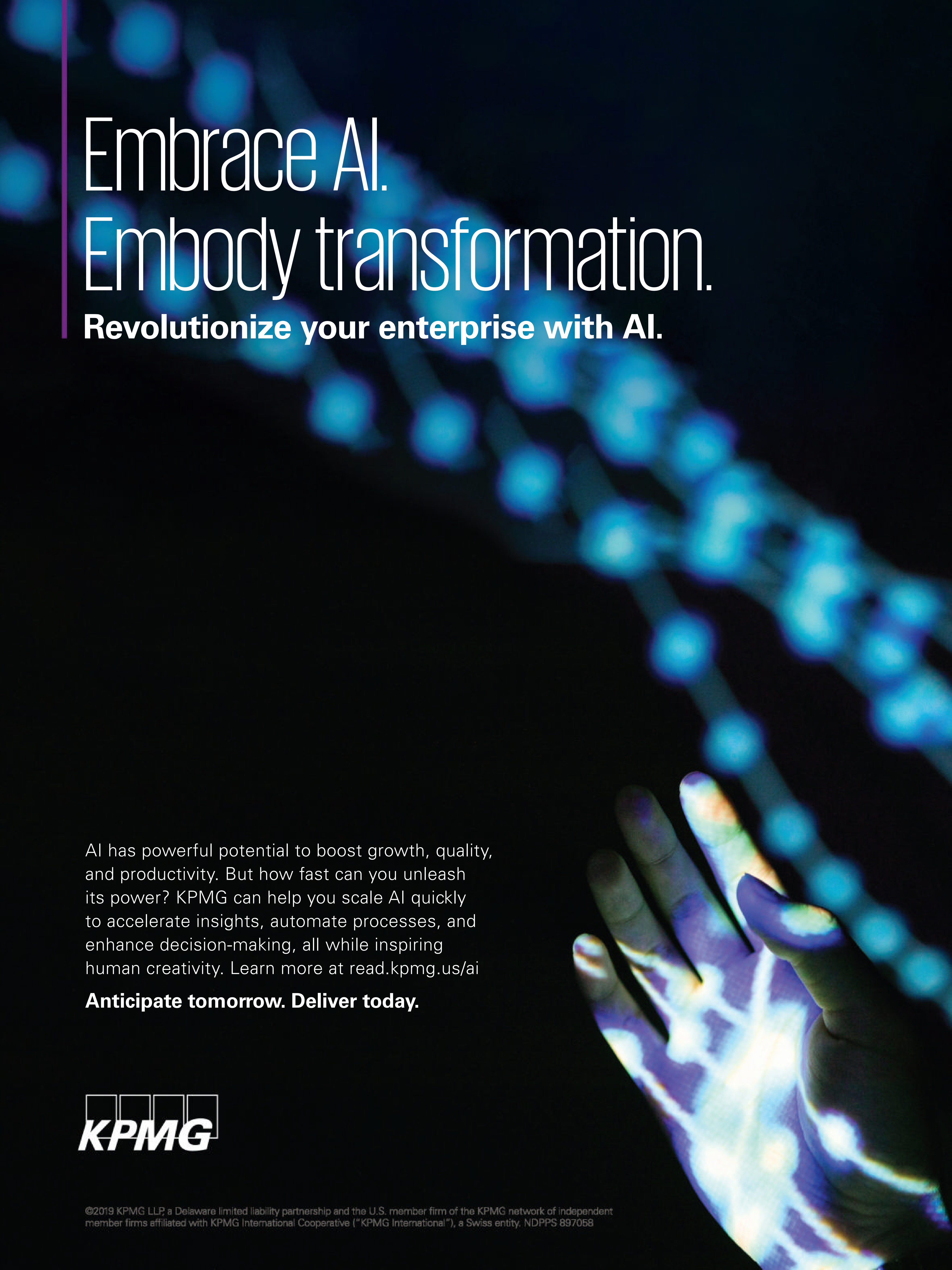
❷



"Wow. That concept works remarkably well. But can we get more China in there?"

"Conveniently, there's a pun just *waiting* to be made...."

MARYLAND: PHOTOGRAPHS BY KRISTIAN THACKER FOR BLOOMBERG BUSINESSWEEK



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Masdar Launches UAE's First Green REIT to Boost Sustainable Investment

For the expanding pool of investors that evaluate companies based on their environmental, social and governance practices, Masdar's billion-dirham sustainable real estate investment trust offers an opportunity to make a real difference.

Investors the world over are increasingly looking for responsible investments as they seek to contribute to a positive global future. One such opportunity is the UAE's first sustainable real estate investment trust (REIT), newly launched at this year's **Abu Dhabi Sustainability Week** by **Masdar,** one of the world's leading renewable energy and sustainable real-estate companies.

The REIT's property portfolio will initially include four commercial properties in Masdar City, the sustainable urban community in Abu Dhabi focused on low-carbon urban development. The properties cover a net leasable area of 57,493 square meters, and the REIT will have an initial valuation of AED 950 million ($258.7 million) to AED 1 billion.

The "green" REIT will be established at **Abu Dhabi Global Market** (ADGM), the international financial center offering the first private REIT regime in the MENA region, as part of its thriving business ecosystem. The launch is the latest development to advance the Abu Dhabi Sustainable Finance Declaration — pioneered by the ADGM and signed by 25 public and private-sector entities in 2019, with a further 11 signatories this year—aimed at establishing a healthy and sustainable finance industry that supports the UAE in attaining the U.N.'s Sustainable Development Goals.

"This REIT is a significant milestone for green investment in the region, and demonstrates Masdar's leadership in sustainable development," says Mohamed Jameel Al Ramahi, CEO of Masdar. "This is the first venture of its kind here, and offers investors an attractive option to invest in sustainable income-generating real-estate assets that are helping to contribute to a greater future for all."

The private REIT will be launched as a qualifying investor fund (QIF), open to market counterparties and select clients by private placement.

*Masdar, a subsidiary of **Mubadala Investment Company**, has been advancing the commercialization and deployment of renewable energy, sustainable urban development and clean technologies to address global sustainability challenges since 2006, and is currently active in more than 30 countries.*

Abu Dhabi Sustainability Week is one of the world's leading platforms for accelerating sustainable global development. This year's event encompassed six pillars: Energy & Climate Change; Water & Food; Future of Mobility; Biotechnology in Healthcare; Space; and Tech for Good.

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ABU DHABI SUSTAINABILITY WEEK

By Benedikt Kammel

● Angela Merkel's carefully crafted succession plan collapsed when her chosen heir, Annegret Kramp-Karrenbauer, said she won't stand as the next German chancellor. She also quit as head of Merkel's Christian Democratic Union party, a little more than a year after assuming the post. Merkel said she'd play an active role in finding another candidate. ▷ 33

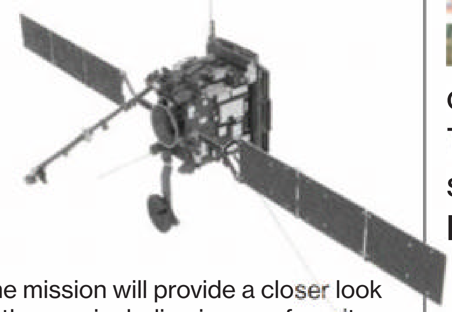
● President Trump proposed a

$4.8t

federal budget for the 2021 fiscal year, including deep cuts to social programs and a lift for defense and entitlement spending. Because federal expenditures are appropriated by Congress, the plan isn't binding.

● The *Westerdam*, with 1,500 passengers and 800 crew, will be allowed to dock in Cambodia. Japan, Taiwan, Thailand, and other countries had turned it away, fearing passengers might carry the new coronavirus. The ship left Hong Kong on Feb. 1.

● NASA and the European Space Agency launched the Solar Orbiter on Feb. 10.



The mission will provide a closer look at the sun, including images from its north and south poles. It will also study the effect the sun's powerful magnetic field has on Earth.

● Four prosecutors in the U.S. Department of Justice resigned after Attorney General William Barr indicated he'd seek a shorter term than the seven to nine years they

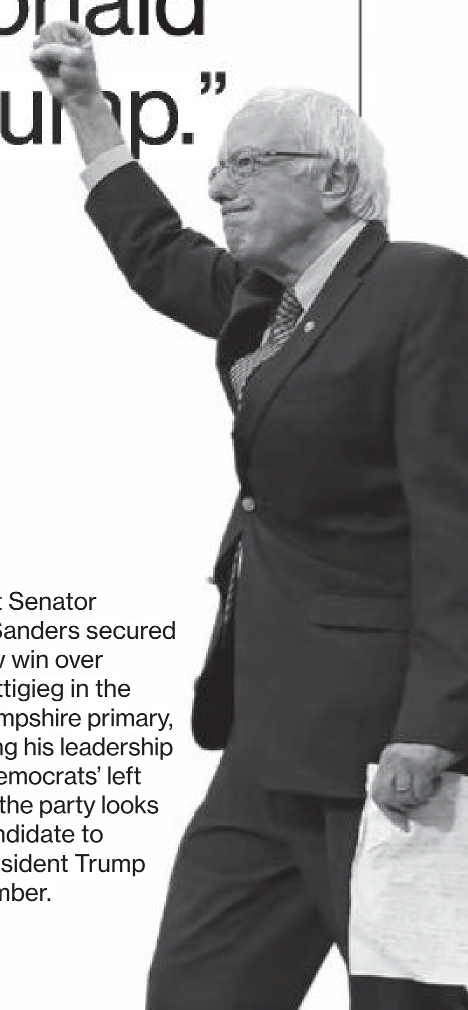
recommended for Roger Stone. The lobbyist, a close ally of President Trump, is set to be sentenced on Feb. 20 for lying to Congress.

● U.K. Prime Minister Boris Johnson backed the controversial High Speed 2 rail network linking London with cities to the north. Europe's largest planned infrastructure project, it will cost as much as

£106b

That works out to more than £300 million ($389 million) for each new mile of track.

● "This victory here is the beginning of the end for Donald Trump."



Vermont Senator Bernie Sanders secured a narrow win over Pete Buttigieg in the New Hampshire primary, solidifying his leadership of the Democrats' left flank as the party looks for a candidate to face President Trump in November.

● Chinese billionaire

Li Shufu is unifying his automotive brands, Geely and Volvo Cars. The move paves the way for China to have its first global carmaker. The new structure—with shares listed in Hong Kong and Stockholm—will be in place by the end of the year, giving Volvo another chance at a public listing after a plan was shelved in 2018.

● Sinn Fein won the popular vote in Ireland's seismic Feb. 8 elections.

It came within one seat of matching the total held by Fianna Fail, the largest party. That gives the left-wing nationalists, who have historic links to the Irish Republican Army, a huge role in the formation of a new governing coalition.

● Xerox raised the offer price for HP to $24 a share as it tries to jump-start negotiations with the iconic printer maker. HP has so far refused to engage in talks, saying the earlier offer was too low. Xerox argues that the tieup could revive both companies, with synergies unlocking about $2 billion in value.

xerox

hp

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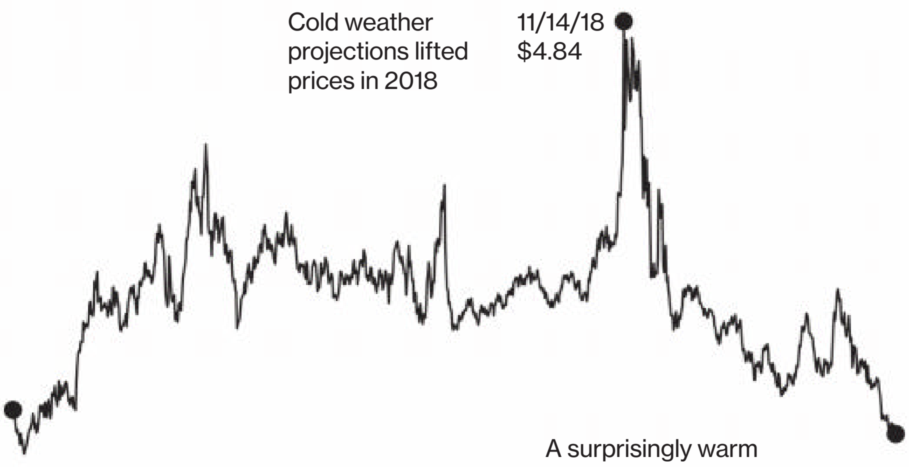
● With U.S. demand for heating oil and gas plummeting as frigid weather gives way to mild temperatures, natural gas futures slumped to a four-year low.

Natural gas futures, in U.S. dollars per million British thermal units



● Simon Property will buy rival U.S. shopping mall operator Taubman Centers for

$3.6b

making a bet that brick-and-mortar retail still has a future in the age of online shopping.

● The U.S. Department of Justice has charged four men belonging to the Chinese People's Liberation Army for their role in the 2017 hack of Equifax. Prosecutors allege that the infiltration allowed the Chinese military to access data on U.S. citizens including Social Security numbers, driver's licenses, and addresses.

● Five hedge fund managers earned more than $1 billion last year, according to estimates by the Bloomberg Billionaires Index:


Chris Hohn
$1.8b


Jim Simons
$1.7b


Ken Griffin
$1.5b


Steve Cohen
$1.3b


Chase Coleman
$1.1b

● Waves crashed over the seawall at Newhaven, England, on Feb. 9 as heavy storms swept through Europe. The gales disrupted travel, damaged buildings, and caused several deaths.

● T-Mobile US won court approval for its

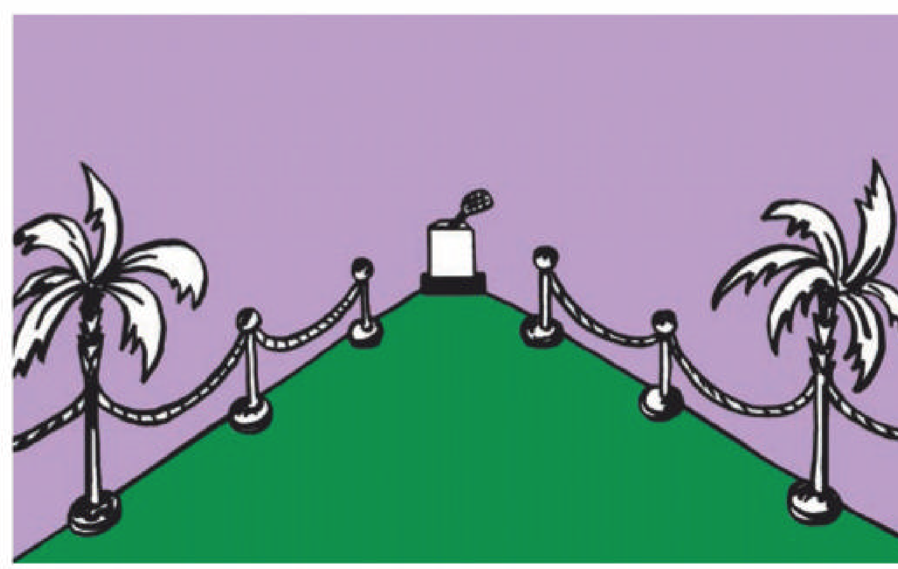
$26.5b

takeover of Sprint, defeating lawsuits that sought to block the deal. The new entity will have a subscriber base of about 80 million, catapulting it into the same league as AT&T and Verizon.

● Under Armour gave a muted forecast for the year.

The company said the new coronavirus outbreak alone will cut sales by $60 million in the next few months. It's a humbling outlook for the sports-gear maker, which is trying to regain its footing under new management.

■ AGENDA



▶ MBS Hosts High Finance

Saudi Arabia welcomes ministers to Riyadh on Feb. 22-23 as part of its G-20 presidency. It's a chance for Mohammed bin Salman to repair his name, sullied by the war in Yemen, the Jamal Khashoggi murder, and a phone hacking scandal.

▶ Glencore reports full-year earnings on Feb. 18. The world's biggest commodities trader has said it will benefit from demand for metals such as copper, needed for increased electrification.

▶ Walmart reports earnings on Feb. 18. The U.S. retail giant's results will likely reflect fallout from the coronavirus spreading across China, where it has more than 440 stores.

▶ Berkshire Hathaway Chairman and CEO Warren Buffett publishes his much-anticipated annual letter to company shareholders on Feb. 22.

▶ Singapore unveils its budget for fiscal year 2020 on Feb. 18. The outbreak of the new coronavirus has hurt business and tourism in the Asian city-state.

▶ The Democratic primary campaign season continues with the ninth presidential debate on Feb. 19 in Nevada, days before the state's caucuses.

▶ Deere reports earnings on Feb. 21. The tractor maker has been hit by the U.S.-Chinese trade war, which has sapped Asian demand for goods like soybeans.

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Martyrdom in The Time of Xi

● The death of a persecuted whistleblower is the gravest political challenge to China's Xi Jinping yet

● By Daniel Ten Kate and Peter Martin

Martyrs have always played a central role in China's opaque politics—both for authorities to rally nationalism and for the opposition to resist. Now the country's spiraling virus outbreak has one who could become the face of the biggest crisis for President Xi Jinping since he took power.

Li Wenliang, a 34-year-old doctor in the central city of Wuhan, was sanctioned by local officials last month for publicly warning of the dangers of the coronavirus that is quickly making its way across the world. His death on Feb. 7 from Covid-19, as the disease from this new coronavirus is called, unleashed a wave of fury in online forums from citizens questioning not just the initial response, but also the overall competence of the Communist Party.

The regime, of course, isn't in danger of falling, even if its infallibility has been dented. But the death of Dr. Li is a reminder of how challenges can emerge unexpectedly for even the mightiest of rulers.

Xi's government knew Li's death could be explosive. After the *Global Times*, a newspaper affiliated with the Communist Party, reported his demise, it quickly retracted it, only to confirm it again hours later. Suspicions of an attempted cover-up led to online outrage, with censors quickly taking down the hashtags "I Want Freedom of Speech" and links to *Do You Hear the People Sing?* from the musical *Les Misérables*. They even removed posts with the first line to China's own national anthem: "Arise, ye who refuse to be slaves!"

China's rulers have thus raced to control the narrative unfolding from the death of Li and more than 1,000 others so far in China. Just as much as it wants to contain the outbreak, it also wants to stamp out any notion that Li and his fate represented broader failures of Xi's top-down system of government, rather than simply the isolated shortcomings of local officials. "The public outcry since his death has been truly extraordinary," says Julian Gewirtz, a researcher at Harvard and the author of *Unlikely Partners: Chinese Reformers, Western Economists, and the Making of Global China*. "One way of seeing the political 'bargain' between the Chinese Communist Party and the Chinese people is securing material well-being in exchange for giving obedience to the party—and Li's story flies in the face of that."

Xi fully recognizes the power of history, and martyrs, in maintaining legitimacy to rule. In the middle of Tiananmen Square, in the heart of Beijing, sits the 10-story Monument to the People's Heroes commissioned by Communist Party leaders shortly after taking power in 1949. It commemorates soldiers who fought in the civil war and against foreign enemies, including during the "Century of Humiliation" that brought parts of China—such as Hong Kong and Shanghai—under the control of such powers as Britain and Japan.

The monument also served as a lightning rod for the most famous anti-government uprising in China's modern history: the 1989 Tiananmen Square protests. Pro-democracy activists gathered there to mourn the death of Hu Yaobang, a top Communist Party official who advocated Western-style reforms. Less than two months later, soldiers killed hundreds and possibly thousands of them—there's never been an independent investigation—in a bloodbath that's defined perceptions of China in the West ever since.

Since taking power in 2012, Xi has sought to put his government on the right side of martyrdom. He designated a Martyrs' Day to commemorate the country's heroes, and last October he laid a wreath at the Tiananmen Square monument to mark the 70th anniversary of Communist Party rule. He also paid respect to the only Chinese leader in history more powerful than him, Mao Zedong, whose son was killed fighting in the Korean War.

To assuage the online anger over the doctor, the party's highest disciplinary body quickly announced it would investigate the circumstances of Li's death in Wuhan, the first step in pinning responsibility on local officials. Shortly afterward the *Global Times* published an article warning that "secessionists and foreign entities" were effectively trying to turn Li into a martyr—and such "malicious" efforts would fail.

For Xi, the stakes couldn't be higher. China is effectively in lockdown mode, with normal life on hold for the foreseeable future: Hubei—the province where the city of Wuhan, the epicenter of the outbreak, is located—is sealed off. Beijing and Shanghai are ghost towns, with their ubiquitous Starbucks outlets only just starting to reopen. Shanghai Disneyland is closed for now. Meanwhile, in both cities, some residents are mandated to submit their temperatures regularly to authorities. In other places, citizens are literally barred from leaving their houses. Companies are warning against nonessential travel to China, and governments are evacuating citizens.

With still a few weeks before the outbreak is expected to peak, the death toll for Covid-19 has surpassed that for Severe Acute Respiratory Syndrome in 2003—even though the mortality rate remains much lower than SARS's. The virus has spread to about two dozen countries, and thousands of people are quarantined in cruise ships off Japan, Hong Kong, and other places.

While the West has long distrusted China—the Trump administration has loudly warned the world of the dangers of using equipment from Shenzhen-based Huawei Technologies Co. for 5G networks, for example—authorities in Beijing have ▶

PHOTO ILLUSTRATION BY 731; PHOTOS: REUTERS (1); ZUMA PRESS (3); DRAWING: A WIDELY CIRCULATED DRAWING OF DR. LI WENLIANG FROM CHINESE SOCIAL MEDIA

◀ successfully used propaganda to stoke nationalism and shape public opinion. But the scale of the viral outbreak is generating large disparities between the official message and the reality on the ground, spawning all sorts of rumors that collectively erode the party's control. "I heard that Wuhan told the central government about the virus and sent samples, but Beijing returned them and said it wouldn't be contagious between people," says a Beijing resident who works with a state-run oil company, asking to be identified only by the surname Shu. "I don't know if that's true, but that's what I heard."

The circumstances of Li's death in particular speak to a deeper truth about the current state of the Communist Party. His early warnings, which were ignored, laid bare the weaknesses of a system where collective decision-making has increasingly given way to a more authoritarian Xi. Instead of opening up and decentralizing, as some observers predicted, Xi effectively turned China into something resembling a one-man show. He sidelined rivals in an anticorruption purge, restricted the space for civil society, increased the state's role in the economy, put hundreds of thousands of ethnic minorities into detention camps, and got rid of presidential term limits that were imposed to avoid the chaos that resulted from Mao's one-man rule.

For Xi, the moves were necessary to maintain the party's grip on power. Even before taking office, he expressed to others—including former Vice President Joe Biden—that the party must deliver practical gains for its citizens to avoid falling like governments in the Arab Spring. He also studied the demise of the Soviet Union and concluded that China needed more ideological purity and a loyal military to weed out officials enriching themselves at the expense of the masses.

For a while, Xi could claim success. In 2017, at the last Communist Party Congress—the twice-a-decade conclave where new leaders are unveiled—he outlined a road map for China to become a leading global power by 2050, casting the change as the next step in a long recovery from its century of humiliation at the hands of colonial powers. The country "stood up" under Mao, became rich under leader Deng Xiaoping, and now—under Xi—it would become strong. "The Chinese nation is standing tall and firm in the East of the World," Xi said in hailing a "new era" of the Communist Party's one-party rule, which he presented as an alternative system of government for developing countries to emulate.

Since then, however, that model has taken some serious hits. Xi's more assertive foreign policy prompted a bipartisan pushback in the U.S., generating wide support for Donald Trump's trade war. Even with the "phase-one" deal between the two countries reached last month, the tariffs that remain on billions of dollars of Chinese goods have forced companies to rethink their Asian supply chains. Trump is also imploring the world to limit China's access to technology, shun its infrastructure loans, and speak up on its human-rights abuses.

The new coronavirus only adds to worries about China's long-term trajectory. Bloomberg economists say first-quarter growth could fall to a record low of 4.5% year-on-year, with full-year growth falling as well, jeopardizing Xi's goal to double per-person gross domestic product over the 10 years ending in December. Sticking with those targets, which have become akin to gospel among party leadership, could derail efforts to wean China off debt-fueled growth, and that poses potentially even more dangerous risks down the road.

The hazmat suits, barricaded apartments, and empty streets in China have spurred comparisons to Chernobyl, the site of a 1986 nuclear disaster that ushered in the Soviet Union's downfall. However, the Communist Party in Beijing is nowhere near collapsing. After the initial bumbling in Wuhan, China has jumped into action as only authoritarian China can. It implemented the quarantine of some 60 million people, the largest in human history, rushed to build two hospitals in a matter of weeks, and restricted movements across the country. The World Health Organization has said China's actions helped prevent further spread of the virus.

The next phase may pose an even bigger challenge. The top priority in the months ahead will be getting the masses back to work and avoiding widespread unemployment that could lead to street protests. While the party has ample tools to quash political dissidents, local officials have struggled at times to contain outbursts of anger brought on by bread-and-butter issues such as labor disputes, investment fraud, and environmental disasters. Still, Xi's government kept society relatively stable last year despite the trade war and a spike in the price of pork, a staple in China.

No one expects demonstrations similar to those in Hong Kong, where residents have at times violently opposed the regime in Beijing. The rulers in Beijing have little regard for civil liberties and can shut down the internet, censor anti-government sentiment, and detain any troublemakers at will. But rumblings of discontent from across society could ultimately affect those at the top. For while the Communist Party faces no real challenger, power struggles within the organization are real. And Xi's repeal of term limits has introduced a new level of uncertainty in elite politics heading into 2022, the year of the next major reshuffle of the ruling politburo.

Might there be an internal challenge to the president's so-far unquestioned control of the country? Xi isn't taking anything for granted. Shortly after the scale of the outbreak became evident, top Communist Party leaders issued a notice calling for cadres to think of the big picture, stay united, and "resolutely uphold General Secretary Xi Jinping's core position" in the party.

It's not just the party elite he'll have to convince. On Feb. 10, Xi sought to show his connection to the masses, appearing in Beijing wearing a surgical mask to rally workers treating the virus and those seeking care. He exhorted them to remain confident, saying that China would get the outbreak under control. "Of course we will," one of them replied.

For most people in China, that's all they can say in public. But restoring confidence will require Xi to take real steps to address the missteps—starting with a full reckoning of Li's death. Ⓑ

The Coronavirus Task Force Is Here

PHOTO: GOOGLE STREET VIEW

Oslo-based CEPI has built a broad coalition to speed development and deployment of a vaccine

A key player in the race to develop a vaccine for the new coronavirus doesn't conduct biomedical research. It's 3 years old, has just 68 permanent employees, and is headquartered in Norway, which so far has reported zero cases of the illness. But the Coalition for Epidemic Preparedness Innovations is "incredibly necessary," says Dr. Manuel Martin, the adviser for medical innovation and access policy at Doctors Without Borders (Médecins Sans Frontières). "Absolutely, without a doubt," CEPI has accelerated development of a vaccine against the virus, says Phyllis Arthur, vice president for infectious diseases and diagnostics policy at Biotechnology Innovation Organization, a trade group.

Since CEPI's contribution is organizational, attention usually goes to the scientists it supports. But the coalition is a societal immune response, speeding the development and deployment of vaccines that the private sector on its own lacks the profit motive to undertake.

The need for it became clear after the 2014 Ebola outbreak in West Africa, which killed more than 11,000. Scientists had begun working on a vaccine, but no company had produced one, because the market was small and potential recipients poor. An ad hoc consortium rushed one into existence.

CEPI was conceived at the World Economic Forum in Davos, Switzerland, in January 2016. It started in Davos a year later with funding from the forum, the governments of Norway and India, the Bill & Melinda Gates Foundation, and Wellcome Trust, a London-based research charity. It's raised $760 million toward its target of $1 billion, with multiyear funding from its founders as well as Australia, Canada, Germany, Japan, and the U.K.

Edited by
Bret Begun

Finding a vaccine for the new coronavirus is the coalition's first big test. On Jan. 23, less than a month after Chinese scientists identified the virus, CEPI announced funding of vaccine development projects led by Inovio Pharmaceuticals Inc. of Plymouth Meeting, Pa., the University of Queensland in Brisbane, Australia, and Moderna Inc. of Cambridge, Mass.

On Jan. 31 the group reported a development agreement with biopharmaceutical company CureVac AG of Tubingen, Germany. On Feb. 3 it announced a deal for vaccine giant GlaxoSmithKline PLC to supply its adjuvant technology, which juices up some vaccines by enhancing the body's immune response to them. (Chinese and Russian companies are working on vaccines outside CEPI's auspices. A Chinese drugmaker, BrightGene Bio-Medical Technology Co., is mass-producing an experimental therapy, remdesivir, that belongs to Gilead Sciences Inc. of Foster City, Calif.)

The goal is to have a vaccine ready for wide deployment in 12 to 18 months, says Dr. Richard Hatchett, CEPI's executive director. That timetable means the vaccine won't stem the current outbreak. But it will be essential if the virus comes back–or never goes away. The nightmare scenario, says Hatchett, is a disease that combines a fraction of the lethality of Middle East Respiratory Syndrome with the contagiousness of the common cold. "Possibly," he says, "that's what we're dealing with now." Both MERS and some colds are caused by coronaviruses–as is Covid-19, the name given to the new disease.

The coalition has a head start against Covid-19 because it was already working on a MERS vaccine. It's also been developing a "rapid response" platform for new threats. That's how flu vaccines work; a core component is tweaked to battle novel strains. Except in CEPI's vision, the platform could fight different diseases, not just versions of a single one.

CEPI solves what economists call a "coordination problem." It can help pair boutique research and development companies with big vaccine manufacturers, work with regulators to streamline approval processes, and resolve patent disputes on the spot. Its scientific advisory committee has executives from Pfizer, Johnson & Johnson, and Japan's Takeda Pharmaceutical, among others.

The coalition has had its disagreements. Some corporations objected to its original "equitable access" policy, an 18-page document that spelled out how vaccines produced under its auspices would be provided at affordable prices in developing nations. The policy also gave CEPI "step-in" rights to use companies' intellectual property for vaccine production if they withdrew from the agreement. In response to the objections, CEPI scaled back the document to a two-page statement of principles, while continuing to insist that vaccines will be affordable and available. Doctors Without Borders objected to the watering down of the language. "I marvel that the companies found the original policy was not market-oriented enough when the free market had completely failed" to deliver vaccines, Martin says.

Hatchett, CEPI's executive director, says pathogen outbreaks are "an emergent property of global 21st century society. We created a world that gives microbes lots and lots of opportunities." The necessary response, he says, is groups like his. As viruses evolve, society needs to change to counter them. *—Peter Coy*

CEPI has a head start against Covid-19 because the coalition was working on a MERS vaccine

THE BOTTOM LINE The new coronavirus is the first big test for CEPI, which brings together pharma companies, governments, and other bodies to coordinate a response to health crises.

Airbus Tries to Press Its Advantage

● The company is struggling to build more of its competitor to Boeing's 737 Max

For decades, Airbus SE and Boeing Co. have been fighting each other for orders. In 2017 and 2018, Boeing delivered more aircraft, but after two fatal crashes in five months, its 737 Max was grounded last year, and it was forced to halt production and deliveries of the popular jet. With its rival in crisis, Airbus supplied 483 more planes than Boeing in 2019, the biggest margin in their 45-year battle. Airbus secured more than 700 net orders for narrowbody aircraft, while Boeing lost more deals than it won, ending the year down 51 narrowbody orders.

While the company has been careful not to revel in Boeing's misfortunes, they give Airbus the opportunity to reshape the narrowbody market for years. Industry consultant Mark Martin estimates that Airbus could one day deliver 60% to 65% of single-aisle planes (up from about 50% now), which are the most widely used type of aircraft and bring in the bulk of profits for both companies. "It has ▶

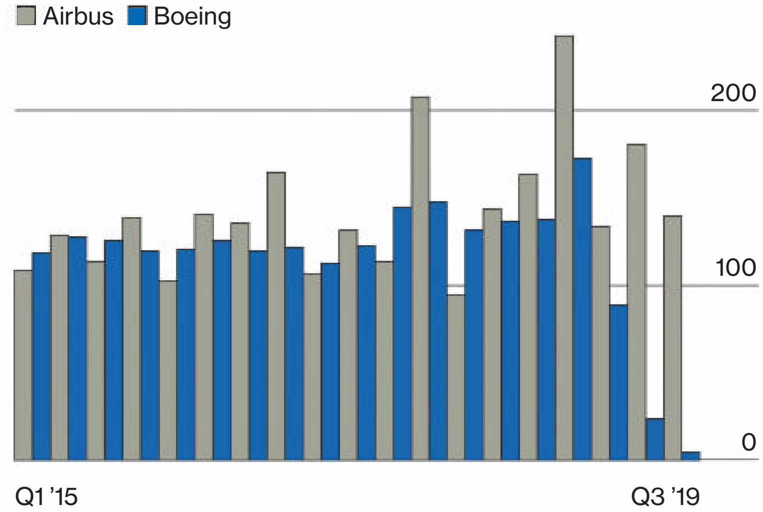
◀ opened the door for Airbus to fill up the huge hole that the Max grounding has created," Martin says.

Buying a plane, however, isn't like buying a smartphone or a car. Airbus and Boeing are in a duopoly, meaning alternatives are limited. Waiting lists for the most popular aircraft stretch out for years, so pulling out of a Max order means joining the end of a long Airbus line. Purchase agreements include upfront payments that would be lost in a cancellation, even during production delays, and airlines like to build fleets around one maker to streamline crew training and maintenance.

Airbus's main competitor to the Max is the A320neo, and the company is delivering the plane in greater numbers and types. It's introduced variants of the larger A321 model that can fly overseas routes that were previously the domain of less fuel-efficient widebodies. Airbus is also considering an attack on the Max by stretching its smaller A220, which seats 100 to 150 passengers and uses lighter materials and more advanced aeronautics. (Bombardier Inc. designed the plane, but cost overruns forced it to find a partner.) Such a move would bring seating capacity closer to that of the A320 and 737, which fit about 180 passengers on average. Southwest Airlines Co., which flies only 737 models, is "looking at" the A220 as an option, Chief Executive Officer Gary Kelly says. Air France, which has ordered 60 A220s, has said it would be interested in more purchases of a larger version.

But Airbus's biggest challenge is less about winning orders than about finding space and parts to build more planes. The company had to trim its 2019 delivery target as it struggled to fulfill customized cabin layouts for the A321. Its global production lines for A320-series planes are working on an eight-year backlog of orders at current build rates, with no new delivery slots free until 2024. That's an obstacle for airlines such as European discount giant Ryanair

Narrowbody deliveries



Holdings Plc, one of Boeing's biggest customers. It's said it would discuss an order with Airbus, but the wait times are a nonstarter.

Airbus says it makes about 60 A320 planes a month and will soon be able to make 63. It's also going to retool an A380 superjumbo assembly line to make narrowbodies once the jet ends production next year. But that won't provide additional capacity until mid-decade as some older A320 facilities are updated to meet higher build rates.

No airline wants Boeing to become an also-ran in the single-aisle sector. The Chinese-built C919 jet is behind schedule, as is the Russian Irkut MC-21. "It would be a disaster for everybody," says Domhnal Slattery, CEO of jet-leasing company Avolon Holdings Ltd. The industry, he says, needs "healthy and relatively stable" competition.

The question for Boeing is how quickly it moves away from the 737, whose reputation is now tarnished. Blueprinting a new plane could sap funds needed in the future as the industry transitions to hybrid power. But without updated offerings, it could struggle to compete with Airbus.

Boeing CEO David Calhoun, who took over last month after the Max crisis led to the ouster

Airbus A320

● Variants: A319neo, A320neo (above), A321neo, A321LR, and A321XLR

● Seating capacity	● Range (miles)	● Price
120-240	3,915-5,220	$102m-$142m

Boeing 737 Max

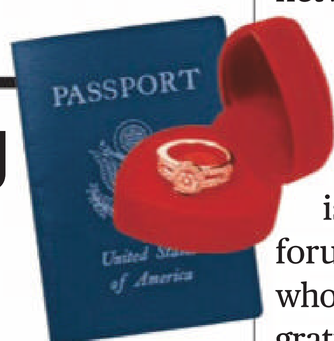
● Variants: Max 7, Max 8, Max 9 (above), and Max 10

● Seating capacity	● Range (miles)	● Price
138-230	3,797-4,430	$100m-$135m

AIRBUS: BLOOMBERG. BOEING: YURIKO NAKAO/GETTY IMAGES; DATA: COMPILED BY BLOOMBERG of boss Dennis Muilenburg, will need to settle on a strategy soon, says Richard Aboulafia, an analyst at aviation consulting firm Teal Group. "Airbus is incredibly well placed to capitalize on its single-aisle market position, and Boeing isn't," he says. "This is one of those enormously important inflection points, and they don't really have long to make a decision." *—Charlotte Ryan and Siddharth Philip*

THE BOTTOM LINE Airbus is delivering more—and more types—of its A320 planes, but its advantage could be even greater if it could increase its capacity to make them.

TLC's Thriving Franchise



● *90 Day Fiancé* is a hit at a time when ratings are down across traditional pay TV

Like every successful reality TV show, *90 Day Fiancé* begins with an intriguing concept: Can a blossoming romance survive the harsh rigors of the American immigration system? From there, of course, it descends into spellbinding acrimony.

In each hour-and-a-half-long episode, viewers watch as real-life couples navigate the K-1 visa program. Established in 1970, it grants prospective immigrants permanent residency in the U.S. if they marry an American within 90 days of entering the country. If the engagement fails, so does their chance at living the American dream.

The fast track to U.S. citizenship fills the show with tension, misunderstanding, and drama: The hasty timeline baked into the K-1 program adds pressure to the already fraught proceedings of courtship, assimilation, and matrimony. Along the way, lovestruck couples try to convince skeptical families that their engagements aren't a sham. Protective American parents bristle with accusations of opportunism. Brawls erupt at dinner. Cultural misunderstandings abound.

At a time when ratings are plunging across the traditional television landscape, *90 Day Fiancé*, which started in 2014, has grown into a ratings juggernaut for TLC, the cable network owned by Discovery. The seventh season, which wraps on Feb. 17, has averaged 3 million total viewers per episode. (A new season begins on Feb. 23.) Among female viewers, it's the most popular cable program on Sunday nights.

What started off as a single show has grown into a franchise. Spinoffs include *90 Day Fiancé: Happily Ever After?*, in which TLC checks in on couples previously featured, and *90 Day Fiancé: The Other Way*, in which Americans move across the globe for the people they love.

The success of the series has returned the network to the prominence it last enjoyed during the 2007-09 heyday of hit reality show *Jon & Kate Plus 8*. TLC saw a 13% increase in viewership in 2019, the largest bump of any basic cable channel. For the year, it finished as the second-most-popular cable network with women, trailing only Bravo.

The show was created by Sharp Entertainment, a production company known for reality TV shows such as *Man v. Food* and *Doomsday Preppers*. To find couples grappling with K-1 issues for the first season, producers scoured forums on VisaJourney.com, a site where people who are struggling with the hazards of the U.S. immigration system congregate.

90 Day Fiancé is a hit at a time when the Trump administration fiercely opposes immigration, and the couples featured on it are becoming rarer. According to a study from the University of Cincinnati, there's been a notable decline in fiancé visas granted since Donald Trump took office, dropping from an average 33,701 approved applications for fiscal years 2011-15 to 28,662 in fiscal 2018. TLC President Howard Lee says politics is tangential to the show's success: "I don't even think about the political angle of what *90 Day Fiancé* is about. I think about that universal theme of love."

Even so, immigration provides much of the drama. During the sixth season, viewers were introduced to Colt Johnson, a computer programmer from Nevada, and Larissa Santos Lima, a social media-savvy Brazilian. After meeting online, the couple rendezvous briefly in Rio de Janeiro, fall in love, and plan to marry hastily so that Lima can move to Las Vegas, where Johnson lives with his mother. The wedding takes place before the clock runs out, but things soon go sour. Lima compares Las Vegas to Mars. Johnson calls the cops on her over alleged domestic violence. (The charges are dismissed.) The couple divorces after seven months.

Still, Johnson and his mom have returned twice to other shows in the franchise. He's currently hawking items from his days with Lima on celebrity memorabilia site FanBound. An invitation to the couple's wedding at the Las Vegas Chapel of Flowers is selling for $75. *—André-Pierre du Plessis*

THE BOTTOM LINE The reality TV show *90 Day Fiancé*, a massive hit for TLC, has inspired a series of spinoffs despite a political climate that's hostile to immigration.

▼ Basic cable networks with the biggest percentage gain in viewership, 2018-19

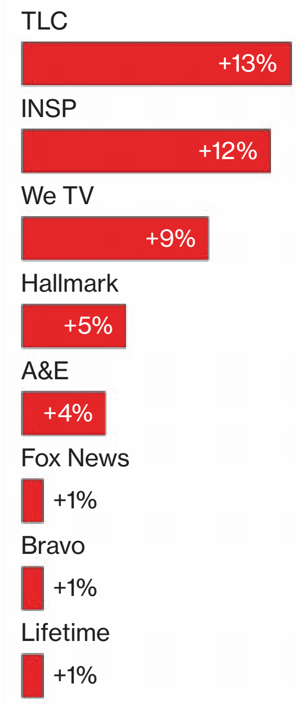


PHOTO ILLUSTRATION BY 731; PHOTOS: GETTY IMAGES (3). LIVE+7 NUMBERS INCLUDE LIVE VIEWERSHIP PLUS SEVEN DAYS OF DELAYED VIEWING. DATA: DEADLINE

ILLUSTRATION BY SHARMILA BANERJEE

YouTube's Shyest Superstar

The internet's most popular kids' channel is run by a skeleton crew and owned by a 55-year-old guy in a quiet California suburb

Jay Jeon is an unassuming mogul. No one takes notice of him as he slips into the corner booth at the Italian steakhouse steps from his Orange County office on a sunny Friday. Most any toddler who knew what the trim, soft-spoken 55-year-old does, however, would have gone nuts. Jeon runs Cocomelon, a YouTube channel dedicated to nursery rhymes and original songs, whose animated kids and creatures generate about 2.5 billion views in a typical month. That translates into as much as $11.3 million in monthly ad revenue, according to estimates from industry analyst Social Blade. In terms of viewership, an average Cocomelon video dwarfs the turnout for most of the world's sports leagues, pop stars, and scripted TV. It's the second-most-watched YouTube channel, trailing only T-Series, India's music king.

Cocomelon's success has caught everyone off guard, including Jeon. For more than a decade, he and his wife ran their channel more or less by themselves, and he was happy that way. The steakhouse meeting is his first press interview ever, and one condition was that he not be photographed, for fear of paparazzi. Another: His wife was not to be named or discussed. Even the couple's neighbors don't know which channel they run. "Nobody knows me," Jeon says between bites of pasta. "I really like that." He owns 100% of Treasure Studio Inc., which controls Cocomelon, and for years he and his wife have rejected investors, sponsors, and demands to translate the cartoons into other languages, make sequels to big hits, or roll out plush toys based on the characters.

Now, however, the Jeons and their team of about 20 employees are ready to merchandise. Their first forays beyond YouTube include albums of the channel's popular songs and, later this year, Cocomelon toys, made by Jazwares, known for its Cabbage ▶

Edited by Jeff Muskus

◀ Patch Kids and Pokémon dolls. Jeon says he's also thinking about ways to develop a full-length theatrical movie based on the show. (In a normal week, Cocomelon uploads one original video that's a few minutes long, plus a longer compilation of old footage.)

Diversification is becoming more important for YouTube stars, especially those with young audiences, because the formula that fueled Cocomelon's success is changing. YouTube still sells ads against videos, but in January it had to stop using kid-focused clips to sell more profitable targeted ads, which are personalized to each viewer's browsing history. This change, along with a $170 million fine, was part of YouTube's September deal with the U.S. Federal Trade Commission to settle charges that it routinely built behavioral profiles on kids younger than 13, flagrantly violating the Children's Online Privacy Protection Act. (In another condition of the settlement, the company neither admitted nor denied wrongdoing.) YouTube says it's taking more steps to address the concerns, including limits on ad personalization.

Since the change, the top kids' channels have lost 50% to 60% of their ad sales, according to Chris Williams, who runs the kids' media company PocketWatch. Jeon says his channel's ad revenue has declined, but wouldn't say how much, or whether he believes YouTube is a trustworthy conduit for kids' programming. He praises the site for helping people tell stories that otherwise might go untold. Still, his company's new ventures speak to a shift away from a YouTube-only business model among even the channel's most popular creators. Each new Cocomelon video now takes about two months to produce. The need and potential to expand into other arenas has become obvious, says Williams, who's helped at least one young star get a show on Nickelodeon and a line of merch sold in Walmarts. "Look at the universe of YouTube channels, consumer products, premium series, live events," he says. "I see a big opportunity."

Jeon moved to Los Angeles from Seoul in the mid-1990s and got into commercial directing after studying film at a local arts school. He and his wife, a children's book author, began making short cartoons to accompany kids' songs about a decade later to entertain their two young sons. When they showed some of the clips to friends from church, one of them suggested the couple post them on YouTube, then brand-new. The Jeons posted their first video, under the account ABCKidTV, a month before Google acquired the website in 2006.

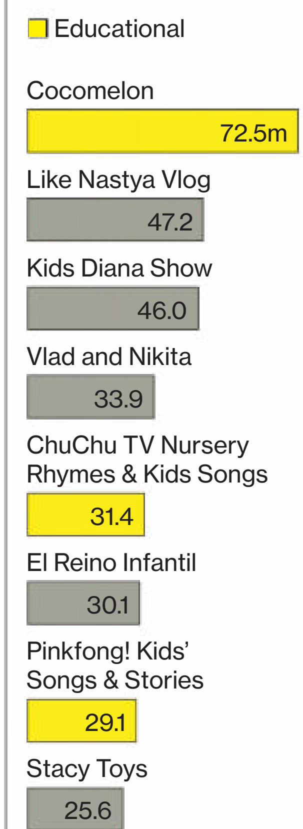
Even after their own kids outgrew the videos, the couple kept making them as a creative outlet. For years, ABCKidTV posted classic singalongs like *The Alphabet Song* and *Wheels on the Bus*. Over the years, viewership steadily rose, and at some point—Jeon forgets exactly when—he started earning enough from YouTube ads to quit his day job and hire animators and songwriters. In early 2017 a buoyant animated toddler named J.J. began to star in most of the videos, joined later by his mom and dad and a sea of animal friends. J.J.'s family is white, and his parents play traditional roles, with Mom doing most of the parenting and chores and Dad popping in every so often.

Then, suddenly, everything changed. In the fall of 2017, after the team had begun producing cartoons with 3D-rendered characters, monthly views nearly doubled, to about 238 million, in a matter of two months, according to Tubular Labs Inc., a market researcher. In 2018, Jeon picked a new channel name, an amalgamation of coconut and watermelon. "It's kid-friendly," he says. "Sweet." By the end of that year, monthly views totaled about 2 billion. Cocomelon's most popular video, a *Baby Shark* riff called *Bath Song* ("Wash my hair, doo doo doo doo doo doo"), has been viewed more than 2.3 billion times. "It's just a staggering number," says Patrick Reese, an executive at Fullscreen, Jeon's manager. Reese scours YouTube for copycat channels that blatantly upload Cocomelon's videos as their own.

Most of the cartoons don't exactly have the same educational value as one of the better segments of *Sesame Street*, but the Jeons are hardly responsible for YouTube raising a generation of children. The fig leaf maintained by YouTube and its parent, Google—that YouTube isn't for kids, and kids don't use it—has been ridiculous on its face for years. (The company says its terms of service bar kids under 13 from having accounts.) The audience for Cocomelon, which has blown far past those of the Disney Channel, Nickelodeon, Cartoon Network, and whichever episodes of *Sesame Street* remain outside the HBO paywall, is a testament to that. Jeon's channel drew an appreciable percentage of the roughly $8 billion YouTube handed out to video creators last year.

Cocomelon has become the most visible face of the YouTube cartoon industry, which includes a sea of anonymous animated content farms that have occasionally scandalized the video site over the past few years. Critics say the channel's success is less a function of its material than its savvy manipulation of YouTube's recommendation system. The channel's rise to superstardom coincides with its use of the search tag "no no baby," which in late 2017 was also associated with a steady stream of superviral videos, usually of a stubborn child learning to do household tasks. ("No no baby" had recently replaced "bad baby," a search term that had been co-opted by a series of nightmarish clips of infants hurling food and screaming in terror.) "These are all great keywords, but show me the educators behind it," says

▼ Top made-for-kids YouTube channels by subscribers*



Steven Wolfe Pereira, chief executive officer of the small, kids-focused Encantos Media.

Jeon says he's a storyteller, not an expert in search engine optimization. "I never look up the reason why something is popular or how I can please the YouTube algorithm," he says. "I know what matters. Stories matter." Future Cocomelon cartoons, developed in consultation with educators, will bring J.J. to school, he says, and diversify the channel's cast.

Whatever the future holds for J.J., his hit songs are sure to become required listening on a great many family car trips as Cocomelon's albums begin to sell. With his anonymity mostly intact, Jeon doesn't have to worry much about moms and dads who've heard *Bath Song* for the thousandth time complaining to him on the street. And if that air of mystery turns some people off, that's OK. "I don't want more viewership," he says. "I'm fine." *—Mark Bergen and Lucas Shaw*

THE BOTTOM LINE Cocomelon, the world's most-watched kids' programming, is estimated to have generated as much as $11.3 million a month in ad revenue. Now it's expanding into merch.

SoftBank Cash Couldn't Save the Pizza Robots

● Inside the downward spiral at Zume, one of Masayoshi Son's latest investment debacles

Two years ago a truck covered with large photos of pizza pies nosed its way onto a long Bay Area driveway. It was ferrying Alex Garden, the chief executive officer of Zume Pizza Inc., to the home of SoftBank Group Corp. CEO Masayoshi Son. Zume's pitch was robots that could make pizzas a person would want to eat, so Son climbed aboard in the driveway of his Woodside, Calif., estate to watch as the truck's ovens fired up some robot-made pies, according to people familiar with the meeting.

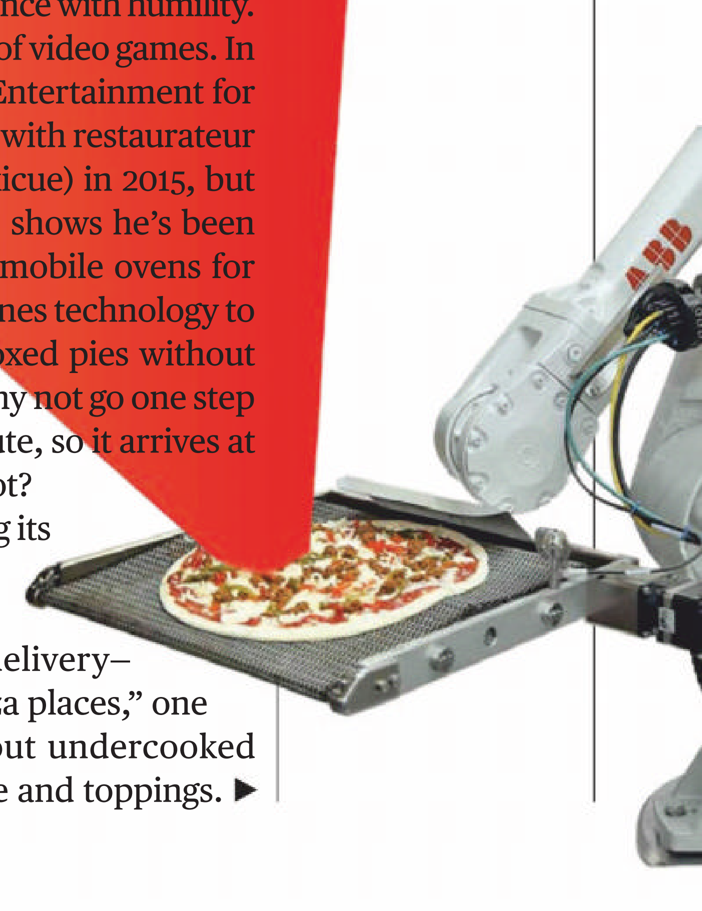
By the time Garden headed back down the driveway, he was well on his way to a SoftBank investment of $375 million, with double that money on the table if his business gained traction. But that's not what happened. Instead, Zume marks one of the biggest recent disappointments in SoftBank's portfolio. As of this year it no longer makes or delivers pizzas. In January, Zume cut 360 jobs, leaving a little over 300 employees, and said it would focus on packaging and efficiency gains for other food delivery companies. In a note to employees, Garden said that improving the global food system required increased focus and that the pizzas had served as "inspiration" for higher-growth businesses. Zume declined to comment for this story.

While Zume's retooling hasn't cost SoftBank's $100 billion Vision Fund nearly as much as the fund's $4 billion investment in WeWork, both startups—as well as the home-goods seller Brandless Inc., which announced its imminent shutdown on Feb. 10, less than two years after taking $100 million from SoftBank—reflect one of Son's blind spots. If a founder seems brash enough, charismatic enough, reminiscent enough of a younger Son, some of SoftBank's rigorous business-model tests appear to melt away. "Our large, diversified portfolio will perform well over time," SoftBank said in an emailed statement. "The fund is less than three years old and we've already had eight IPOs and returned $10.6 billion to our limited partners."

Accounts from 10 current and former Zume employees, plus four people who closely evaluated or worked with the company, suggest that Zume's predicament, like WeWork's, offers lessons for the U.S. startups that collected more than $136 billion in venture capital last year. Among those takeaways: A visionary founder with a fire hose of money can't solve every problem. Often, that combo creates new ones. "I've never seen data to suggest that being charismatic and confident and overly brash is linked to a successful business," says Kellie McElhaney, founding director of the Center for Equity, Gender, and Leadership at the University of California at Berkeley's business school. Instead, she says, the Vision Fund should seek leaders who combine confidence with humility.

Garden comes from the world of video games. In 2004 he sold his company Relic Entertainment for $10 million. He co-founded Zume with restaurateur Julia Collins (of fusion chain Mexicue) in 2015, but a 2013 patent now held by Zume shows he's been thinking about food robots and mobile ovens for almost a decade. The patent outlines technology to turn balls of pizza dough into boxed pies without ever using a human hand. And why not go one step further and cook the pizza en route, so it arrives at a customer's house still piping hot?

Zume did a so-so job delivering its first pizzas in 2016. Although some reviewers on Yelp appreciated the fresh ingredients and speedy delivery—"Clearly better than low end pizza places," one wrote—several complained about undercooked dough or small amounts of sauce and toppings. ▶



MARCIO JOSE SANCHEZ/AP PHOTO. *FIGURES AS OF FEB. 7; EDUCATIONAL CLASSIFICATION AS REPORTED BY SOCIAL BLADE. DATA: SOCIAL BLADE

◀ Eventually, Collins's team gave up on the dream of baking the pies while driving to customers, according to two people familiar with the matter. The cheese tended to run everywhere as the trucks turned or hit bumps in the road. Instead, the oven trucks began parking in central locations, with runner cars or mopeds transporting the cooked pies.

The home base in Mountain View, Calif., wasn't as cutting-edge as hoped, either. Among other things, humans still had to load the racks of assembled, unbaked pizzas into the trucks. Some hires came directly from coding schools that specialize in quick boot-camp-style training courses. One adviser recalls being surprised to learn that some Zume coders had last worked at the porn-and-hookup site Adult FriendFinder, known for a security breach that exposed the data of 412 million users.

Garden's specialty was pitching to investors. Former employees remember joking about his "jazz hands," referring to his tendency to spin things as positively as possible. Strategic and retail consultant Brittain Ladd says Garden contacted him in 2017, after Amazon.com Inc. purchased Whole Foods, to ask for help proving to SoftBank that Zume was thinking big enough for Son to invest. "He said, 'I want to be the Tesla of fresh food, and the Amazon of fresh food,' " recalls Ladd, adding that he liked the big thinking but it needed to be backed up by action.

Around this time, say several people familiar with the matter, Garden's attention began shifting to a grander vision of the company's place in the food chain. In 2018, Zume applied to trademark the name "Gigaranch," describing a facility that would create meats and cheeses using plant proteins, like Beyond Meat Inc. Zume's mid-2018 financial estimates, reviewed by *Bloomberg Businessweek*, projected revenue of about $250 million in the final quarter of 2020 and almost $1 billion in the last three months of 2021, mostly from providing services to other food companies.

In the fall of 2018, SoftBank delivered its Vision Fund cash. After one conversation with Son, Garden choked up relaying the details to a confidant, saying, "Masa says I'm going to change the world," this person recalls. To celebrate Zume's supposed momentum, he decided to host a companywide fete he called Day Z. But by June of last year, when staffers from Zume's offices in the Bay Area, Southern California, and Seattle arrived at an event space near the company's San Francisco headquarters for Day Z, Garden's happy mood seemed to have soured, according to attendees. While rank-and-file employees got a typical Garden pep talk and lavish food and drinks, the CEO gave his executive team a rambling, vague speech about poor values at the company.

By Day Z, co-founder Collins was long gone, and Garden seemed to be having trouble sticking with ideas long enough to execute them, say current and former employees. FedEx, UPS, and Kroger have all rejected his requests for investment and help supplying the 10,000 vans he thought he'd need, according to a person familiar with the matter. (UPS and Kroger declined to comment; FedEx didn't respond to a request for comment.) Garden spent serious cash to buy and convert a double-decker bus from London into a giant pizza truck named Martha for Day Z, but it wouldn't fit on the party premises. (Martha is now up for sale.) Zume engineers spent months last year developing proprietary batteries and charging stations for the pizza trucks, as well as sensors to detect when hot food had cooled too much for delivery, but none of these projects went anywhere, say people familiar with them. Zume recorded 2019 revenue well under $1 million, says a person familiar with the company's finances.

Last June, Zume bought a company called Pivot Packaging to jump-start its ability to sell compostable containers to other businesses. It held a one-day test at a Pizza Hut in Phoenix in October, with the goal of expanding the tests to more locations in January or February of this year. But the boxes can't legally hold food in some jurisdictions, including San Francisco, because they contain the chemicals known as PFAS, which the Environmental Protection Agency has said can harm humans. No further tests have been publicly scheduled. Pizza Hut declined to comment.

Over the past year, Garden grew distant and spent less time at the company, former employees say. Several suspected he was indulging his well-known love of muscle cars, racing them at a nearby track. Executives started leaving in late summer and fall, by which point it seemed clear no more SoftBank money was coming. Reggie Davis, who joined Zume as chief legal officer in September, resigned in November after sending the board of directors a letter questioning Zume's leadership and spending, according to three people who read it. Davis declined to comment.

Garden was at Zume headquarters during the mass layoffs in January, hovering as his former staffers packed up their desks. One departing employee asked on behalf of the group whether they could stay through the usual catered lunch. An HR rep said no. Instead, they headed to the nearest bars with their generous severance packages—brought to them, albeit indirectly, by SoftBank. —*Sarah McBride*

THE BOTTOM LINE Zume is shifting away from pizza robots to delivery logistics and compostable packaging, but its early forays into these businesses don't inspire much confidence.

● Garden

● SoftBank never gave Zume that second

$375m

COURTESY ZUME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We adopted sustainability practices such as zero routine flaring decades before they became industry standards. As a result, a recent study of over 100 oil fields in 20 countries showed that our crude oil has the lowest carbon intensity among large producers, proving our commitment to reducing greenhouse gas emissions and powering a more sustainable future.
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A Fragile System Faces an Outbreak

● The health crisis in China adds new stress to a booming, debt-fueled economy

There's a sign pinned to the door of Peking Garden, a swanky restaurant in Hong Kong's central business district and a popular venue for deal-closing dinners and gatherings of lawyers and financiers working nearby: "Temporary closure notice… We have received a report that one of our staff members is confirmed to be infected with the novel coronavirus." The luxury stores surrounding the restaurant are empty; many office workers who once spent their lunch hours shopping here have been told to work from home for the foreseeable future.

For years, bankers, investors, and lawyers flocked to Asia's financial centers to take part in a boom sparked by China's rapid economic development and the opening of its financial markets. Now, as authorities struggle to contain the outbreak of a deadly new virus and restore public confidence, the question of whether China can live up to the hopes of those who have tied their fortunes to it looms larger than ever.

Pessimists say the crisis could be a catalyst for a long-awaited collapse of the country's over-indebted financial markets—an extreme scenario that Chinese regulators have managed to stave off time and time again, even during the debt crises that embroiled the U.S. and Europe in 2008 and 2012. Among longtime China watchers, the outbreak revives a more nuanced debate about whether outsiders have overestimated the country's economic strength and the political stability of the ruling Communist Party.

For investment professionals, the immediate concerns are more mundane: What does it mean for client meetings, dealmaking, and their jobs? "No one wants to travel to Hong Kong," Thomas Wong, former head of Hong Kong and China research and sales at Credit Suisse Group AG, says of international investors. Wong now leads his own Hong Kong-based hedge fund, Optimas Capital. The company has asked most of its 23 employees to work from home.

Even before Covid-19 began claiming lives, China's economy looked to be on increasingly shaky foundations. In part because of trade tensions with the U.S., gross domestic product officially grew 6.1% in 2019—a pace that most developed nations would welcome but that reflected China's weakest expansion in almost three decades. Defaults in China's domestic bond market, once rare, hit more than 150 last year, beating 2018's record and spurring concern that China's pursuit of growth had come at the cost of financial stability. Last year regulators seized Baoshang Bank, the first state-led takeover of a lender in China in about two decades.

Beijing has been trying to slow the corporate borrowing binge, but such efforts probably will be paused while the country focuses on getting through an outbreak that has claimed the lives of more than 1,110 people, according to official numbers. Businesses have been shuttered in an attempt to contain the spread of the virus during the extended Lunar New Year holiday. In Hubei, the epicenter of the outbreak and a key industrial province, millions remain under lockdown.

One question now is whether markets will remain confident in the ability of China's policymakers to pull the strings of the financial system. These concerns overlap with criticism of the government's

Edited by Pat Regnier

handling of the virus crisis itself. "The controversy surrounding response and management speaks directly to a governance system which is good at large and draconian top-down action but weak and brittle when it comes to prevention and people being allowed to take responsibility," says George Magnus, an economist at the University of Oxford's China Centre and author of *Red Flags: Why Xi's China Is in Jeopardy*. "You can map this governance conundrum onto the wider economy, including debt management, and see how flawed the whole system is."

Anticipating a stimulus by Beijing and pent-up consumer and investment demand, Optimas added to its existing holdings in cement, technology, property, and education companies, Wong says. Others aren't so sure regulators can push the "build" button so easily, with many workers still confined to home, the ground in much of the country still hardened by winter ice, and abandoned infrastructure projects already dotting the landscape. "We're in early February, construction season hasn't started yet. Stimulus this quarter might be pushing on a string," says Travis Lundy, a longtime Hong Kong resident and independent analyst at Smartkarma.

The central bank has slashed money-market lending rates, and banks have been told to extend the terms of loans. But authorities may be cautious. "Financial conditions are more fragile in terms of leverage and growth momentum," says Dan Wang, a Beijing-based analyst at research firm Gavekal Dragonomics. "China doesn't need as much infrastructure as before, and it doesn't want to cut rates too much." More easing could lead to more of the leverage Beijing was so recently keen to limit.

China won't experience a full-blown "debt crisis as long as the financial system remains closed and the regulator is all-powerful," says Michael Pettis, a finance professor at Peking University. That's not necessarily good news. "Debt problems can be resolved in the form of a crisis or in the form of many, many years of stagnation. The latter tends to be in the long term much worse than the former."

Back in Hong Kong, which had already been shaken by clashes between pro-democracy protesters and police before the outbreak, Wong says he's still optimistic. Finance professionals will continue to view China as a growth market and keep arriving at its banking hubs. "There is no other choice," he says. His firm recently signed a new lease, expanding its space and moving into Chater House—an office tower just across the road from Peking Garden restaurant. —*Tracy Alloway and Bei Hu*

THE BOTTOM LINE With growth slowing, policymakers in China had been trying to guide the economy onto firmer footing. The new coronavirus makes that much more complicated.

How China Keeps From Crashing

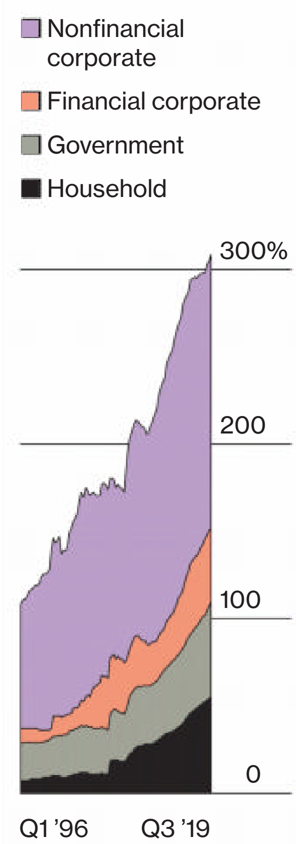
● Predictions of a financial meltdown haven't come true yet. But policymakers have a delicate job

For a decade, hedge fund managers and short sellers have unfurled dire and bold warnings about potentially catastrophic losses in China's financial system. Jim Chanos, famous for predicting the 2001 collapse of Enron Corp., memorably said in 2010 that China's reliance on real estate for growth was a "treadmill to hell." Since then, prominent institutions and investors, including the International Monetary Fund and George Soros, have pointed to a long list of problems in China's financial system, from indebtedness and banking stress to shadow loans and housing bubbles. Now there are concerns about how the outbreak of a new coronavirus in China might hurt banks. Not to mention the risks of a trade war lumbering into another year and social unrest in Hong Kong.

Yet for the past four years, China has maintained its growth, outpacing other major economies, as its financial system rumbles on. Its central government, regulators, and local authorities have come up with creative and arcane ways to prop up everything and keep the world's second-largest economy on track. But with signs of stress flashing across the board, the debate among investors over whether stopgap measures can contain systemic risks is as fierce as ever. The stakes are enormous: Years of breakneck growth in an economy heavily reliant on financing has created a gargantuan banking system, which, with $41 trillion in assets, is the world's largest.

Over the better part of the past decade, total private and public debt in China has ballooned ❶ to surpass 300% of gross domestic product, casting a shadow over prospects for economic and financial stability. By 2017 the nation's leaders were pledging to clean up systemic risks in the financial sector. They started by curbing excessive lending ❷ from so-called shadow banks—companies that provide credit outside the conventional banking sector. UBS Group AG economist Wang Tao says China will continue to do so by closely supervising internet-based finance companies and asset managers. It may also force banks and companies to clean up their balance sheets by writing off bad debts and seeking new capital. Already, authorities have been lowering leverage at heavily indebted ▶

❶ China's debt as a percentage of GDP



❷ Shadow banking assets as a share of total banking assets in China

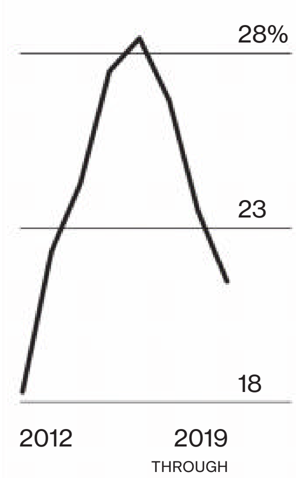
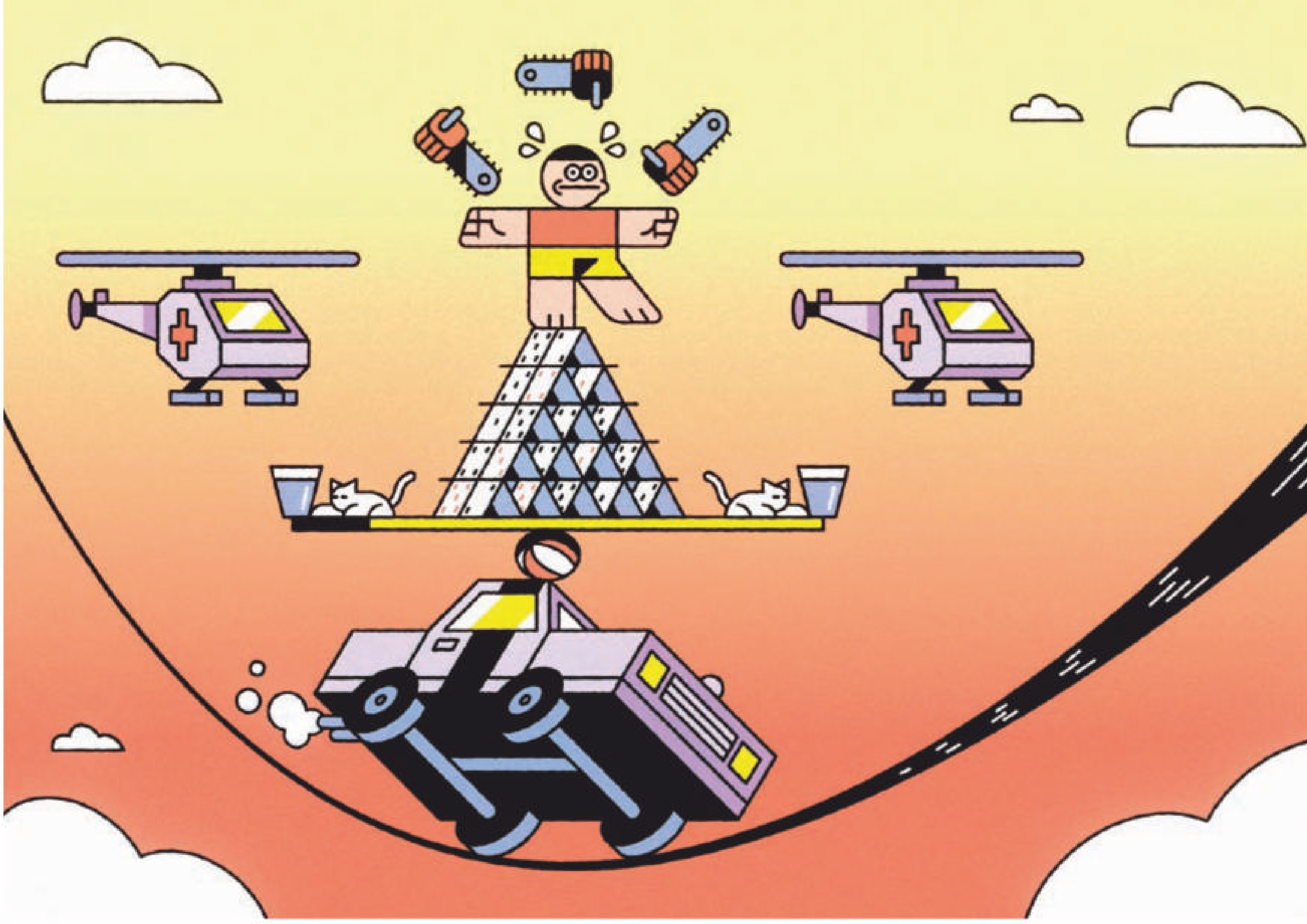


ILLUSTRATION BY JOEL PLOSZ. DATA: BANK FOR INTERNATIONAL SETTLEMENTS, IMF, INSTITUTE OF INTERNATIONAL FINANCE, MOODY'S INVESTORS SERVICE



◀ and inefficient state-owned enterprises.

Such efforts have shown progress. But the country's debt-to-GDP ratio inched higher again in 2019 as policymakers, faced with slowing economic growth, eased credit to provide a stimulus. Chipping away at debt without crushing growth is a delicate business.

Spending on consumer goods and housing in recent years has fueled China's economic growth. Household debt has surged, climbing to 55% of GDP last year from about 19% in 2007, according to the Institute of International Finance. That elevated level, especially when compared with incomes, means officials can't lean much harder on loosening up mortgages and consumer credit to offset the impact of trade tensions with the U.S. More worrisome, the numbers are likely underestimated. Beyond the official 55 trillion yuan ($7.9 trillion) of bank loans, households tapped other sources, including internet-lending platforms.

China's online peer-to-peer lending sector ❸ was born during a wave of deregulation. The lenders were meant to give small borrowers more access to the financial system while letting savers collect double-digit yields. Before China's deleveraging campaign, online lenders had upwards of 50 million investors and more than $150 billion of debt outstanding. The system was plagued by fraud and defaults. Now even major players are disappearing, with cities including Shanghai ordering shutdowns of such platforms in recent months. Outstanding loans tumbled 48% during the first nine months of 2019, according to the China Banking and Insurance Regulatory Commission.

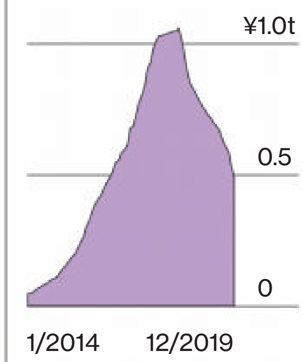
Alongside the consumer boom, a housing frenzy ❹ in 2015 and 2016 left China's megacities among the least affordable in the world, based on local price-to-income ratios ❺, according to Oxford Economics. Take Beijing, where in just one particularly hot year—2016—new-home values surged about 30%, roughly equal to the New York metropolitan area's entire rebound since the depths of the 2008 financial crisis.

To prevent the type of real estate bust that sapped Japan for a generation, policymakers in China have pulled a vast array of levers. Across the country, local housing watchdogs issued a record 554 policies in the first 11 months of 2019 to fine-tune the market and keep prices from collapsing or, more often, overheating, according to Centaline Group.

These rules can be surprisingly restrictive. Many cities raised the down payment threshold to as much as 70%. Some restrict borrowing by divorcing people to stop anyone from getting around caps on the number of homes a family can own. Developers may be told by officials that they're pricing projects too expensively, or banks may get word the mortgage rates they're offering are too cheap. There have also been caps on how much developers can pay for land, as well as curbs on fundraising. The ubiquitous and meticulous restrictions have largely kept home prices flat since late 2016.

The new coronavirus could shake up all these efforts. In recent weeks, banks have been directed to boost lending, lower rates, and extend repayment schedules in stricken areas. Regulators have extended a deadline for curbing shadow banking. Authorities are hoping to preserve the government's growth target, with the likes of Goldman Sachs Group Inc. and UBS warning of a sharp slowdown. S&P Global estimated that the virus outbreak might triple China's already elevated stock of bad loans ❻.

❸ Value of outstanding peer-to-peer loans

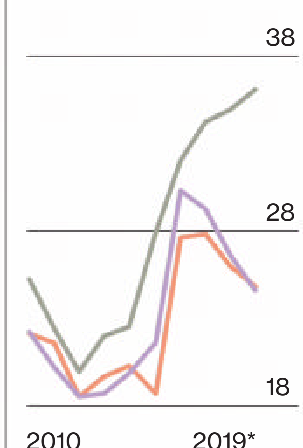


❹ Change in existing-home price index from December 2011 to December 2019

Hong Kong
Beijing
Shanghai

❺ House price-to-income ratio

Shenzhen
Beijing
Shanghai



❻ Value of nonperforming loans in China as of Q3

2009
2014
2019

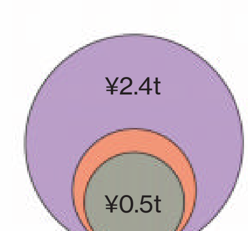


ILLUSTRATION BY JOEL PLOSZ. *THROUGH JUNE. DATA: WDZJ; NATIONAL BUREAU OF STATISTICS OF CHINA; CENTALINE; E-HOUSE CHINA R&D INSTITUTE; CHINA BANKING REGULATORY COMMISSION

Slower growth, in turn, would leave authorities fewer levers to pull to manage the economy, according to Gene Ma, head of China research at the Institute of International Finance. "Going forward, policymakers are likely to take smaller, more piecemeal steps on multiple fronts," he says. The question is whether that will be enough. —*Bloomberg News*

THE BOTTOM LINE A debt-fueled economic boom—with surging consumer spending—has created an enormous but stressed financial system in China.

Selling Private Equity at The Superstore

● Vanguard is offering PE to institutional clients—and hopes to go retail

Vanguard Group, which manages $6.2 trillion in assets, unveiled plans on Feb. 5 to offer a private equity fund. The move represents a surprising convergence of two very different investing worlds. The Malvern, Pa., company showed millions of investors that they could beat many Wall Street pros by keeping things simple using low-cost index funds and exchange-traded funds. PE funds are the opposite of simple: They charge high fees for opaque portfolios and can lock up cash for years–which is why the U.S. Securities and Exchange Commission has long kept smaller investors out of them.

Vanguard is just dipping a toe in for now. Its offering, which will be managed by an outside firm called HarbourVest Partners, will be available only to institutions such as endowments and nonprofit foundations. But Vanguard intends to move beyond that. Chief Executive Officer Tim Buckley said in a release that for individual investors, the company's move into private equity will eventually "present an incredible opportunity–access and terms they could not get on their own."

Private equity funds buy up entire private companies or take public companies private. They can use borrowed money to try and juice their returns, and they can also make venture capital investments in startups or own private loans. The prospect of broader access to such investments may not be good for many investors, says Charles Rotblut, vice president of the American Association of Individual Investors. "It sounds prestigious, it sounds like they're getting some kind of advantage," he says. "But for a lot of individuals, getting that basic mix of stocks, bonds, and cash is hard enough."

Vanguard has broached the idea before. In 2001 it announced a deal with Hamilton Lane Advisors, based in Bala Cynwyd, Pa., to create a fund of funds–a pool that invests in private equity funds, aimed at institutions and high-net-worth individuals. It dropped the arrangement a year later during the dot-com bust, saying it couldn't attract enough assets.

In more recent years the PE industry has swelled, driven by investors' hunger for higher returns in a low-yield environment and a sense that many of the best investments are outside public markets. So much money has poured in that PE firms held almost $1.5 trillion in unspent capital at the end of 2019. Even so, private equity firms have been making the case to the SEC that they should have more access to smaller investors–and the fees they would pay. At a time when some index funds have zero expenses, a PE fund can still charge as much as 2% of assets a year, along with a share of profits.

Vanguard will bring its traditional concern with costs to private equity, an area where "investor needs are growing," says Kaitlyn Caughlin, the firm's head of product management. But expenses shouldn't be the only test of an investment, says Fran Kinniry, its head of private investments: "What we really need to focus on is, what does the client get to keep?" The fund industry's concern with low fees, he says, has reached a fever pitch, with "all these zeroes and everything else– we've gotten so fixated."

"For a lot of individuals, getting that basic mix of stocks, bonds, and cash is hard enough"

Proponents of private equity argue that it can improve diversification, especially as the number of public companies shrinks. "Risk means having all your eggs in one basket," says James Waldinger, founder and CEO of Artivest, a platform for buying alternative investments such as private equity.

Vanguard's edging in might be a sign that PE is "at the top of a market cycle," says Kelly DePonte, a managing director at Probitas Partners, which helps raise money for private equity funds. He worries about what happens if access eventually widens beyond institutional and affluent clients. "If things go bad, you are going to have a number of unsophisticated retail investors getting into this business for the first time who don't understand how it really works and are going to get burned." —*Annie Massa, Sabrina Willmer, and John Gittelsohn*

THE BOTTOM LINE Vanguard helped the masses beat Wall Street with its low-cost index funds. Now it's turning to the world of private equity, where investments tend to be complex and expensive.

Can Maryland Defuse the Inequality ‘Time Bomb’?

● The state legislature is weighing a proposal to make education more fair

The primary school in Crellin, Md., a village of 260 people, sits on a reclaimed coal-loading site in the Appalachian Mountains. On top of reading, writing, and arithmetic, students get to look after chickens and lambs in the barn outside. They also learn about pollution by testing water from the nearby river.

It’s a place full of warmth and curiosity—and, like most of the families who send their children there, it’s short of money. “I want them to have choices,” says principal Dana McCauley of the kids in her charge. Crellin Elementary has earned widespread recognition for its environmental education program. But there’s no money for tutors, and funds for the school’s math academy have dried up.

Rising inequality is now at the heart of U.S. public debate, looming over just about every policy discussion from trade to interest rates and likely to take center stage in this year’s presidential election. America’s classrooms are one place where the trend could be halted.

McCauley and her staff are battling to give children from low-income families a better educational start. That can lead to decent paychecks and a stake in an economy that’s become more oriented toward skills and knowledge. But because of the way the U.S. school system is funded, it often perpetuates inequality instead. The reality is that McCauley’s school would have more resources if the children who went there were better off.

Maryland—one of the more prosperous states but also one with pockets of hardship in places including Baltimore and rural areas like Crellin—is trying to disrupt this loop in which underfunded school systems produce poor adults. It’s embarked on what some experts say is one of the biggest education reforms attempted by a state in recent years, with a price tag that runs into the billions of dollars.

U.S. schools get most of their money from state and local authorities. The latter typically rely on property taxes to raise revenue and can do it more easily in wealthy neighborhoods. It’s a “uniquely American” system, says Elaine Weiss, a researcher at the Economic Policy Institute. And its distributional consequences are “uniquely bad,” she says. “Some kids, just by dint of where they are born, will have much less funding.”

In 2020’s legislative session, Maryland lawmakers are considering a proposal that would ramp up education spending by state and local authorities, adding $4 billion a year by the end of the decade. The goal is educational outcomes—and ultimately social and economic ones—that are both better and fairer.

The commission that drafted the plan said it wants to transform a school system with “glaring gaps in student achievement based on income, race, and other student subgroups.” Less than half of Maryland kindergartners enter school prepared to learn, the commission said, and tests show only about a third of the state’s high school juniors are “college and career ready.”

William Kirwan, the commission’s head and a former University of Maryland chancellor, calls the under-education of vast segments of the U.S. population a “ticking time bomb” that’s “right there hidden in plain sight.”

The Kirwan proposal is based on a reality that McCauley experiences every day in Crellin: Kids are walking into classrooms with problems and won’t learn much unless those are addressed. It envisages full-day prekindergarten for children as young as 3 years old, an expansion of family support centers, and improved pay and career paths for teachers.

Edited by Cristina Lindblad

◀ From left: McCauley greets a student at Crellin Elementary; 5th graders settle in for the morning; children visit the school's sheep

Schools with a high concentration of poverty would get counseling and health services.

Maryland's state government would pay for a chunk of the program–and play a redistributive role, directing more money toward poorer areas, such as Garrett County, where Crellin is. By 2030 state spending would rise $2.77 billion above the current law while local funding would rise by $1.23 billion.

Paul Edwards has been a mayor, teacher, and coach in Garrett County, where his family has lived for four generations, and now is a county commissioner. It's going to be "very difficult" to find the money for the proposal, he says, because Garrett recently raised taxes and is worried about chasing residents and employers away. With companies relocating across borders in search of lower costs or into areas that have a technologically skilled workforce, keeping jobs in rural areas is a high priority. He also acknowledges the flip side: The biggest challenge for new business in the county is finding the right workers, and education is vital for that.

The Maryland educators' union, which is backing the Kirwan plan, makes the same point. It argues that the only way to stem population decline in such places is to make them attractive to employers, which means having an above-average school system. The union also says Garrett County will get more money in state aid than it has to pay from its own coffers.

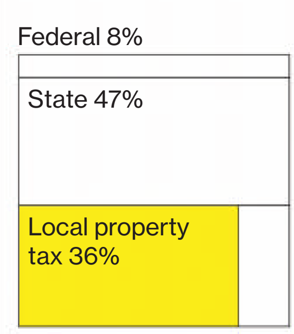
The county's profile illustrates what millions of Americans are missing, even after a decade-long economic expansion left the country better off on aggregate. Unemployment in Garrett is just 4.2%, but taxable incomes are among the lowest of Maryland's 24 counties.

While income inequality across the U.S. has steadily worsened, the performance gap between rich and poor students has at least stopped widening, says Bruce Baker, a professor at Rutgers University who specializes in education financing. "In a modest way I guess that could be called a win," he says, but it's going to take a lot of time and resources targeted to high-need districts to narrow the gap. "Some of these states are trying to lean hard" against inequality, Baker says. But "they're leaning against a very strong force."

Kirwan, who's 81, says most people his age have retired and left political battles to others. But as a lifelong educator, he's worried–and not just about his own state. "We have these horrific income gaps in America," and educational disparities are making them worse, he says.

He anticipates a pitched battle as the state ▶

▼ Revenue sources for U.S. public elementary and secondary schools*



PHOTOGRAPHS BY KRISTIAN THACKER FOR BLOOMBERG BUSINESSWEEK. *DATA FOR THE 2015-2016 SCHOOL YEAR IS LATEST AVAILABLE; DATA: NATIONAL CENTER FOR EDUCATION STATISTICS

◀ legislature begins debating the plan that bears his name. "Who knows if we are going to get it across the goal line," Kirwan says. Yet he's hopeful that if it does pass, "it will be a drop of a pebble in a lake that could ripple across our country."
—*Craig Torres*

THE BOTTOM LINE The U.S.'s reliance on property taxes to fund education perpetuates inequality, experts say. Maryland is considering a plan to direct more resources to poor districts.

China's Factories Fall Silent

● Manufacturing plant closures are being felt as far as New Delhi and Los Angeles

Janey Zhang, the owner of an umbrella factory in China's east coast city of Shangyu, spends her days watching the updates for the new coronavirus and fielding calls from cash-strapped employees asking when they can come back to work. "I don't know," says Zhang, whose Zhejiang Xingbao Umbrella Co. employs about 200 workers. "We await government instructions. If it's just me, I can tighten my belt for a few months. But if the epidemic lasts a long time, China's economy will slump. That will be horrible."

Across China's vast east coast manufacturing region, thousands of businesses are in limbo, waiting to hear from local authorities on when they can resume operations. Even when they get the all-clear, it might take days to climb back to full staff, as many workers who traveled home for the Lunar New Year holidays are stuck there because of travel restrictions. Completed orders would pile up anyway, because the logistics companies that deliver them aren't working either.

China's efforts to contain the spread of Covid-19, as the disease from the virus is called, are rippling far beyond the epicenter of the outbreak. Hubei's economy is bigger than Poland's, but the province isn't itself an export powerhouse. In contrast, the factories along the eastern coast are tightly embedded in global supply chains.

"We are missing our peak sales season," laments David Ni, chief executive officer of Jiangsu Siborui Import & Export Co. Headquartered in Nanjing, the company buys aluminum alloy car wheels from Chinese producers and exports them to retail outlets in the U.S. None of its suppliers have gone back to work yet, and it's unclear when they will, says Ni, who's based in Los Angeles. "On and off, the epidemic could delay production for at least two months. Most factories this year wouldn't be able to make any money."

In New Delhi, Vinod Sharma, the managing director of Deki Electronics, calls it a "panic situation." To compensate for the factory closures in China, the manufacturer of capacitors is leaning more heavily on South Korean suppliers. But their inventories may be quickly exhausted, because they too rely on plants in China for parts. "I don't know if they can scale up so quickly," he says.

Under a scenario in which the virus is successfully contained, Bloomberg's economists see China growth slowing to 4.5% in the first quarter, followed by a recovery and then stabilization in the second half of the year. That trajectory would put full-year growth in 2020 at 5.7%, compared with 6.1% in 2019. If the outbreak takes longer to come under control, the economic hit will be more severe.

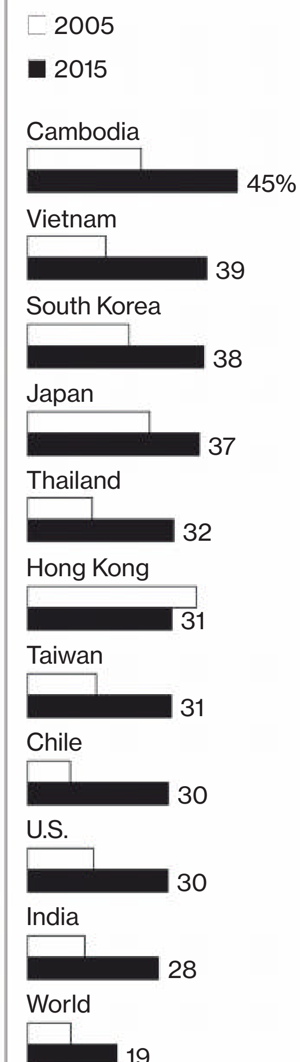
For Chinese factories that make lower-end goods such as furniture and cheap phones, the virus is the latest in a series of existential threats. Already operating on paper-thin margins because of rising labor and materials costs, these businesses sustained another blow from the tariffs the Trump administration levied on $360 billion in Chinese exports to the U.S. since 2018. "The impact of the epidemic is even worse than the trade war," says Zhou Xinqi, owner of Cixi Jinshengda Bearing Co., which gets 60% of its 100 million yuan ($14.3 million) annual sales from abroad. "The trade war just decreased our margin, but at least we were still making money."

Zhou doesn't expect to resume production until Feb. 25 at the earliest. Most of his 300 employees hail from other provinces. He's told them not to return to Cixi until the government announces a restart date.

Some places are getting back to business faster. In Shanghai, which extended the Lunar New Year holiday until Feb. 9, about 70% of manufacturers and 80% of IT providers have returned to work, the city government said on Feb. 10, citing a survey.

In a survey of 995 small and medium-size companies by professors at Tsinghua and Peking universities, 85% said they are unable to sustain operations for more than three months under current conditions, and 30% expect revenue to plunge by more than half this year because of the virus.

▼ Share of imported intermediate products coming from China

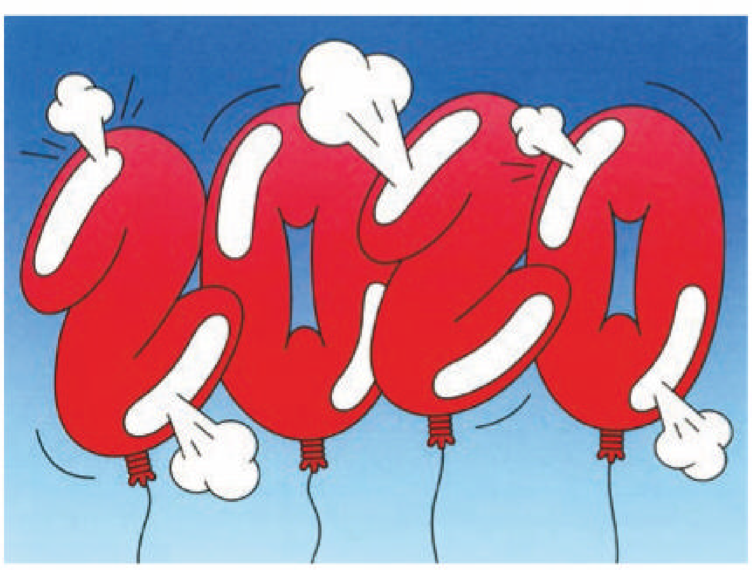


Local governments are doing what they can to ease the pain. Authorities in the city of Yiwu in Zhejiang province are offering merchants rent exemptions for one or two months, depending on the severity of the situation, says Yu Guoying, owner of Bolun Resin Craft, a maker of garden gnomes. She says clients have been very understanding and some agreed to postpone their deliveries to March or April. "The only thing we can do is stay at home," Yu says. "What's the point rushing to make money if we can't stay safe?" *—Kevin Hamlin, Miao Han, Jinshan Hong, Vrishti Beniwal, and Lin Zhu*

THE BOTTOM LINE Chinese manufacturers weakened by the trade wars may not be able to weather measures to contain the spread of the coronavirus.

Inflation Risk Is in the Eye of the Beholder

● Some caution against central bank complacency, saying this year is different



True believers in the return of global inflation have started 2020 with renewed hope. Successive years of prices being depressed by powerful phenomena from demographic shifts to globalization and technological change haven't yet killed the anticipation that inflation is a lurking threat. When it does return, such prophets warn, central banks will be caught flat-footed.

Speaking at the Economic Club of New York on Feb. 6, Ken Griffin, founder of the hedge fund Citadel, said there's "absolutely no preparedness for an inflationary environment" in the U.S. Ethan Harris, head of global economic research at BofA Securities Inc., wrote a note in January titled "Inflation: Talk of Death Greatly Exaggerated" that also cautioned against complacency. They and a few others make the case that resurgent inflation spilling over from tight labor markets could leave central banks scrambling to reverse ultralow interest rates and unwind their bond-buying programs.

The majority of investors don't yet see it that way. In the U.S., the bond market's gauge of inflation expectations has had difficulty holding above 2% since early 2019 and is now around 1.66%. While that's up from last year's lows, it's still too weak for Federal Reserve officials. Even January's stronger-than-expected jobs growth gave them no reason to anticipate steeper price gains. "Unless and until we see those low unemployment rates putting excessive upward pressure on inflation, we're not prepared to say we're necessarily at full employment," Fed Vice Chair Richard Clarida told Bloomberg Television on Jan. 31.

At the Bank of England, policymakers have lately been fretting that price pressures are worryingly weak. Similarly, European Central Bank President Christine Lagarde described the price outlook as "subdued" in an appearance before European Parliament lawmakers in February. Average consumer-price gains across the Group of Seven nations remained below 2% all through 2019, according to Organization for Economic Cooperation and Development data.

It's confounding for policymakers, who've long thought inflation and employment have an inverse relationship known as the Phillips curve. Tight labor markets, as they currently are in the U.S. and arguably in the U.K., should lift wages and prices.

In the U.S., however, the pace of wage gains has moderated in recent months. Average hourly earnings rose an annual 3.1% in January, down from a decade peak of 3.5% last year. The Phillips curve is "flatter than we thought," says Florian Hense, an economist at Berenberg Bank. "We're not in the area where, in light of a dropping jobless rate, wages are rising again."

Speculation over an inflation resurgence has become something of a new year's tradition, according to Steven Major, HSBC Holdings Plc's global head of fixed-income research. "Why is it, every year, we start with this reflation theme?" he said in a recent interview on Bloomberg Television. "There is this perennial optimism, somewhat fallacious in my opinion, that gets found out very quickly." *—Craig Stirling, with Catherine Bosley*

THE BOTTOM LINE Inflation remains subdued in the U.S. and most of Europe. But some investors warn that loose monetary policy leaves central banks ill-prepared for a surge in prices.

▼ OECD total inflation rate

Decade average

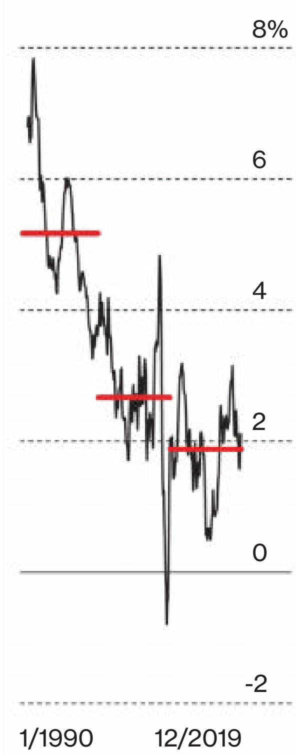
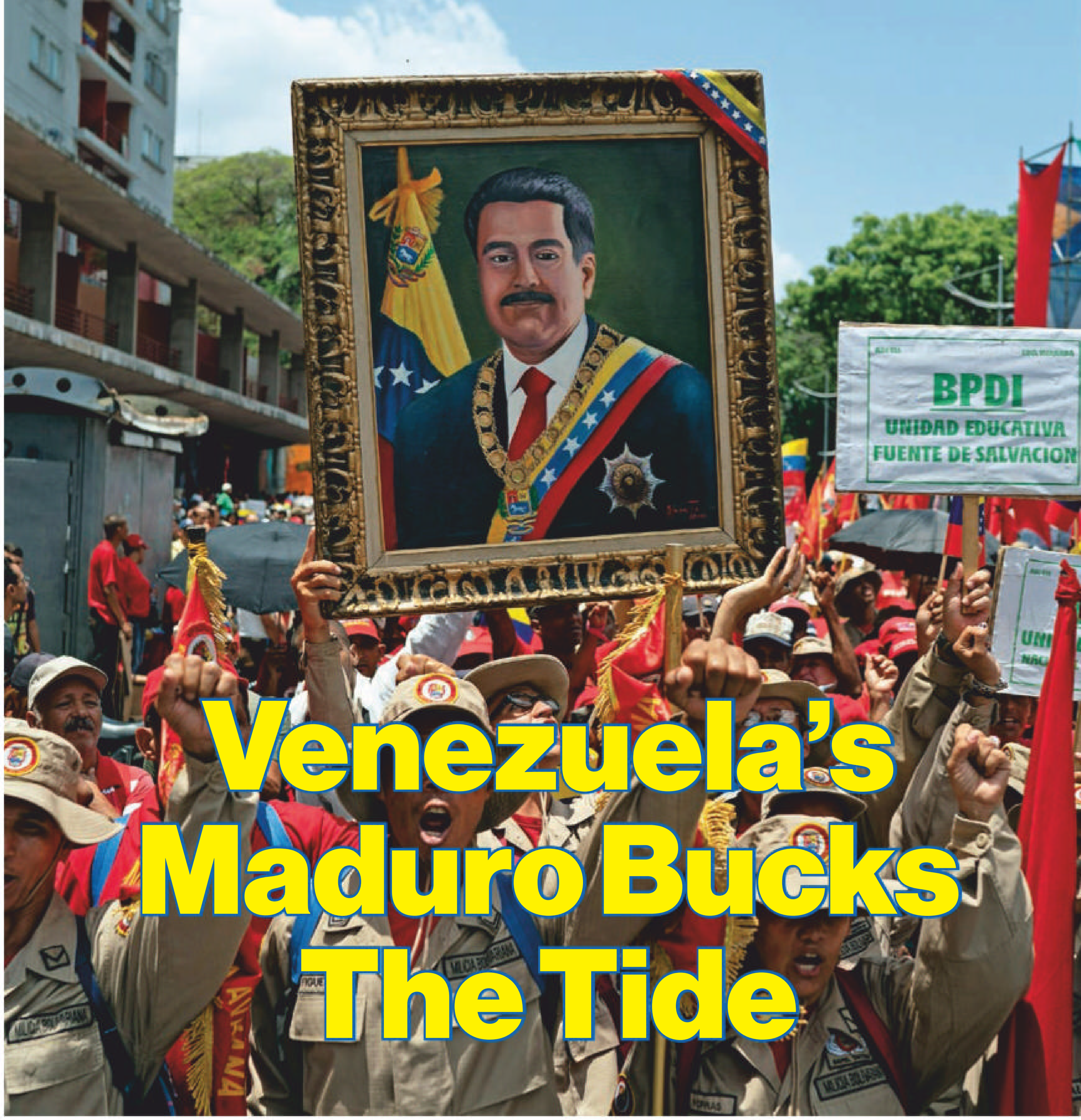


ILLUSTRATION BY XAVIER LALANNE-TAUZIA. DATA: OECD, BLOOMBERG ECONOMICS



Venezuela's Maduro Bucks The Tide

● Embracing capitalism and the dollar, the embattled president lures émigrés home

Carlos Viloria came back to Venezuela last month. The 35-year-old lawyer—one of more than 5 million people who've left the country over the past five years, hoping to escape one of the world's worst humanitarian catastrophes—had tired of 15-hour days and abusive bosses working in a restaurant in Argentina for a year and a half. His reason for returning is emblematic. "I'm going to find a job that pays in dollars," he says.

After leading his country's economy over a cliff, President Nicolás Maduro has brought it a certain measure of stability. He remains widely despised. But by allowing dollars to flow freely and private enterprise to flourish in recent months, he seems to have breathed new life into his regime. Emigration has begun to slow. Some people are returning.

It all points to the tenacity of Maduro, whom the U.S., Europe, and much of the world consider an illegitimate leader. They've thrown support behind opposition leader Juan Guaidó, who announced his plan a year ago to oust the president. Now, despite a world tour including a White House meeting with Donald Trump on Feb. 5, Guaidó appears further from his goal. As he returned to Caracas six days later, there was little to indicate that he was headed to anything like quick victory. Although Guaidó wasn't arrested for violating his travel ban, security forces stopped buses taking his supporters to the airport to greet him, and journalists and lawmakers said they were beaten by Maduro loyalists.

It's a big shift from a year ago, when many wrote off Maduro. After all, the president had taken one of the region's richest countries and run it into the ground through corruption and mismanagement. The U.S. smacked Maduro with sanctions on oil, a blow many said he couldn't survive. What the doubters didn't realize was how much help he'd get from Russia, China, and other key allies in evading the sanctions, or how fully he'd embrace a version of Chinese-style state capitalism.

"The economies of the countries that have helped us are capitalist—China, Turkey, and

Edited by
Jeffrey Grocott

India," says David Paravisini, a lawmaker in the National Constituent Assembly associated with Maduro. "To get their aid, you need conditions of economic liberalism. That's what China did to move forward. It's what we have to do."

As part of this new approach, Maduro has held secret talks with holders of about $60 billion in bonds, some of them American, Bloomberg has reported. One plan would open up oil fields to foreign companies and steer proceeds to the bondholders. Venezuela has the world's largest known oil reserves; investors could reap enormous profits from a deal.

Several people who've met with Maduro recently say he's more confident than they've seen him in a long time. They spoke on the condition of anonymity. Elliott Abrams, the U.S. special envoy for Venezuela, disagrees. "Why is this happening?" he asked reporters this month, referring to the dollarization and privatization. "Because their backs are against the wall."

Years of hyperinflation have made the official bolívar currency virtually worthless. In the past year, the dollar has become the unofficial currency, appearing in cafeteria menus and shop windows blocks from the presidential palace. Across the capital, bodegas filled with French Champagne, vacuum-sealed salmon, and Grana Padano Italian cheese have opened where there were once bankrupt stores. The government isn't liberalizing as much as it's being permissive toward the dollar, says Tamara Herrera, chief economist at Caracas-based consultant Sintesis Financiera.

The Maduro-friendly Constituent Assembly has approved a value-added tax to benefit from the 70% of all transactions expected to occur in dollars this year. "The new decrees show the government's fiscal hunger and punitive nature," Herrera says.

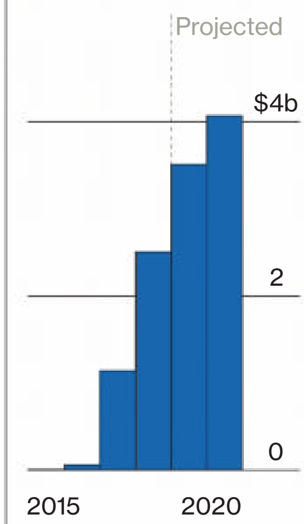
Maduro has also loosened the government's grip on the oil industry, permitting an increased role for foreign and local companies. Oil production, after plunging for nearly a decade, is finally stabilizing. This year's projected 10% contraction in production is a far cry from the 35% a year ago and 65% over the past five years.

Now fewer Venezuelans are leaving, according to two polling firms, Datanalisis and Delphos. In a December report from Datanalisis, those expressing a desire to leave the country fell to 38%, down 5 percentage points from a year before. Of those who've emigrated in the past five years, 17%, or about 1 million people, have returned over the same period, the data show.

There's an irony about Venezuelan emigration that the government doesn't mention: Those who leave send dollars that help feed and house those who stay. Ecoanalitica, a research firm, says remittances have risen from $2.7 billion in 2018 to what it projects will be $4 billion this year. Luis Vicente Leon, head of Datanalisis, says emigration has slowed not only because of opportunities at home but also in response to a xenophobic backlash abroad. "Staying home seems to be less traumatic than emigrating," he says.

Viloria, the lawyer who's just returned from abroad, says he'd had enough of his grinding restaurant job in Buenos Aires. One of his managers, he says, likened a fellow Venezuelan to a cockroach. "I couldn't complain, or I'd get fired," he says. "In Argentina, it's true that I could walk around safely at night, and there are a lot of cultural events, but I spent all my time working, often being mistreated. And the money wasn't enough. I'm putting my hopes in dollarization." *—Patricia Laya and Alex Vasquez, with Fabiola Zerpa, Ben Bartenstein, Nicolle Yapur, and Nick Wadhams*

▼ Remittances to Venezuela



THE BOTTOM LINE An estimated 70% of all transactions in Venezuela this year will be in dollars. That's helped stabilize the country's economy and possibly Maduro's hold on power.

LEO CORREA/REDUX. DATA: WORLD BANK, CEMLA, VENEZUELA'S CENTRAL BANK, ECONOALITICA

Even the Good News Is Bad for Ukraine

● The country's economy is steaming ahead, but an obscure debt derivative could take a bite out of growth

Ukrainian President Volodymyr Zelenskiy is battling Russian-backed rebels in the east. He's trying to zigzag around President Trump's impeachment drama. And even what should pass for good news, the country's flourishing economy, has a catch: The stronger Ukraine's economic growth, the more an obscure debt derivative could cost the government.

The trouble goes back to an arrangement Ukraine made in 2015 as it teetered on default. To compensate creditors who agreed to write off part of the country's debt, the government granted so-called GDP warrants that promise future ▶

◀ payoffs tied to growth in the country's annual gross domestic product.

During the restructuring handled under the previous government, a result of an International Monetary Fund bailout, Kyiv persuaded bondholders to write off $3.2 billion in exchange for the warrants. As the instruments pay out over the next few decades, Ukraine could end up spending much more than it saved by restructuring.

The government doesn't have to pay any returns on the securities when real GDP growth is slower than 3% a year. It must make a small payout for growth from 3% to 4%. The big action comes if annual growth exceeds 4%. For example, in a year where the pace of expansion reaches 6%, Ukraine will be on the hook to pay as much as 40¢ on each warrant, which would cost about $1 billion.

That's hardly a long shot: Ukraine has achieved annual growth of at least 6% five times since the beginning of the millennium, and its government is targeting medium-term growth of as much as 7%. Based on those projections, Kyiv estimates its cumulative obligations for the warrants could exceed $10 billion by maturity in 2040.

Zelenskiy's government may have a bit of breathing room, because the restructuring agreement caps payout amounts until 2025. Next year is the first year Ukraine has to pay out on the securities, and it may need to come up with as much as $100 million for investors. Government officials have already said they're looking at ways to minimize the liability before the first payments are made. Some investors anticipate the government will offer to buy back the warrants or exchange them for bonds.

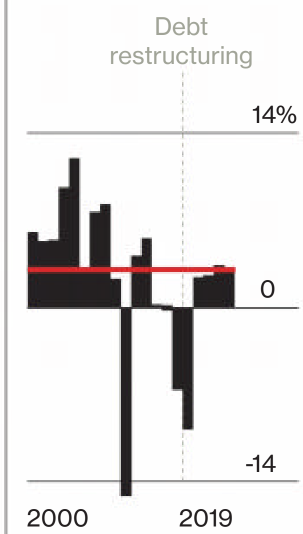
"It's not easy to say how well Ukraine and its creditors understood these instruments," researchers Stephen Park at the University of Connecticut and Tim Samples at the University of Georgia, who have studied the warrants, wrote in an email. To be fair, they added, the recurring challenge with these sorts of deals is that they're struck when confidence in the country is at a nadir. "It's easy to say that Ukraine is losing really bad here," Samples says, but that's "because all we see is the payouts" and not whether the government gained important goodwill with creditors in 2015 by promising a share of growth down the road.

If Zelenskiy hopes to sweep the warrants off the market, it'll cost him. The securities, after tripling in price from their initial value of about 33¢, could easily trade at $1.30, the fair value estimated by Citigroup Inc. analysts. Says David Nietlispach, a Zurich-based money manager at Pala Assets, who owns the notes: "If they want to buy the bonds back, they will have to pay a very, very high price."
—Aine Quinn and Marton Eder

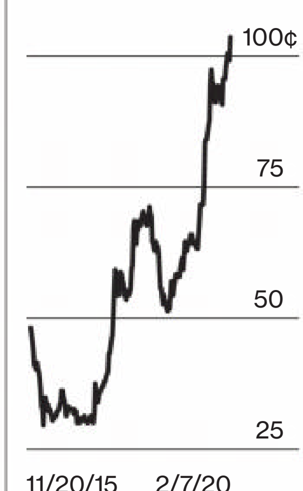
THE BOTTOM LINE GDP warrants that Ukraine granted as it teetered on default in 2015 could cost the country as much as $10 billion by 2040.

▼ Ukraine GDP growth, year over year

Minimum growth for GDP warrant payout after 2021



▼ Ukraine GDP warrant price



Canada Rethinks Its China Ties

● Signs of meddling by Beijing bring calls for a more skeptical approach

Something didn't add up about the oddball group of youngsters gathered at a Vancouver courthouse calling for the release of Meng Wanzhou, Huawei Technologies Co.'s chief financial officer, at her hearings to fight extradition to the U.S. They refused to identify themselves. Their placards were identical, down to the handwriting and grammatical errors.

It turns out they weren't sure what they were doing there, either. Some had been told they were taking part in a music video, others that they would be extras in a movie–all lured with offers of as much as C$150 ($113) for 15 minutes' work. It's unclear who was behind the payments. Huawei said it had no involvement. The Chinese Embassy in Ottawa didn't respond to a request seeking comment.

The incident has revived persistent concerns about Beijing's long reach into Canadian affairs, as Prime Minister Justin Trudeau faces growing pressure to take a harder line against China. "If China is interfering, we should fearlessly call them on that," says David Mulroney, a former Canadian ambassador to China and a senior fellow at the University of Toronto's Munk School of Global Affairs.

The plight of Meng, the eldest daughter of Huawei's billionaire founder Ren Zhengfei, has become a national cause for Beijing. Following her December 2018 arrest at Vancouver's airport on U.S. fraud accusations, China jailed two Canadians, Michael Spavor and Michael Kovrig; halted about C$5 billion in Canadian agricultural imports; and put two other Canadian citizens on death row.

Canada has been reluctant to confront signs of meddling. A decade ago, Richard Fadden, Canada's then spy chief, triggered a storm of controversy after saying that some elected officials in British Columbia—the province that's home to the highest proportion of ethnic Chinese in Canada—were believed to be under the sway of a foreign government. A parliamentary committee demanded his resignation. Those comments now appear prescient: In the most recent local elections, three Vancouver-area municipalities investigated allegations of vote-buying after a pro-Beijing group offered a C$20 "transportation allowance" over WeChat to encourage voting for ethnic Chinese candidates.

As Canada-China relations have deteriorated in the past year, Beijing supporters have escalated their harassment of Tibet and Uighur activists in Canada. Beijing has denied allegations of interference and has called Meng's arrest politically motivated, accusing Canada of "arbitrary detention." It rejects any suggestion that the detention of Spavor and Kovrig was retaliation.

Successive Canadian governments have focused on engaging China through trade, assuming—like much of the West—that the country would liberalize. China is Canada's second-biggest trading partner, with two-way trade totaling C$71.2 billion in 2019.

Meng's case is forcing a reassessment of that approach. "Canada's relations with China fundamentally changed" with her arrest, Dominic Barton, Trudeau's recently appointed ambassador to China, told a parliamentary committee on Feb. 6. "The chill is real."

Trudeau faces calls for a tougher stance. Legislators in December voted to create a special committee to reexamine Canada's fraught relations with China, a measure Trudeau's Liberals had opposed for fear of escalating matters. There's also a growing chorus for Canada to follow the lead of Australia in introducing anti-foreign-interference laws. "The real danger is that the more we appease China, the more emboldened they become," Conservative Senator Leo Housakos said as he put forward a motion in December calling on Trudeau's Liberal government to start sanctioning Chinese officials for human-rights abuses. "It is time for a change in tone and approach." *—Natalie Obiko Pearson*

THE BOTTOM LINE Canadian governments have made boosting trade with China a top priority, but signs of growing political interference from Beijing are raising questions about that strategy.

GETTY IMAGES (4). DATA: INTERNATIONAL MONETARY FUND, COMPILED BY BLOOMBERG

Germany Next Leader Up

Chancellor Angela Merkel is shopping for a successor—again. Annegret Kramp-Karrenbauer, the last one to be considered, said on Feb. 10 she'd resign as the leader of Merkel's Christian Democratic Union after the party made common cause with a far-right party in a regional vote. That's led to protests. Merkel, Germany's leader since 2005, said she'll play a hands-on role in choosing a new CDU leader—the party's hope for chancellor when Merkel steps down next year. Here are likely candidates, from favorite to long shots:

ARMIN LASCHET ● The Merkel Moderate

An ally of the chancellor, 58-year-old Laschet is premier of North Rhine-Westphalia, making him head of the CDU's largest state chapter. But he has a reputation for avoiding conflict and is untested in Berlin.

JENS SPAHN ● The Young Gun

Just 39, Spahn lost a 2018 bid to lead the CDU but garnered positive press. A standard-bearer of the party's right wing, he attacked Merkel on immigration. Pundits say he should wait this race out—but suspect he might go for it.

FRIEDRICH MERZ ● Merkel's Nemesis

Merkel's rival for decades, 64-year-old Merz lost his previous bid to lead the CDU. He's considered an outsider and a throwback. But he just said he'd leave his lucrative job at BlackRock Inc.'s Germany unit "to become more engaged in this country."

MARKUS SÖDER ● Bavarian Wild Card

Once a party rabble-rouser, 53-year-old Söder became Bavaria's premier in 2018 and chairman of Merkel's Bavarian sister party in 2019. He's already the country's second-most-popular politician, according to one poll.

A SMARTER SECOND ACT

● Want to change jobs? Let your personality, not your skills, guide your search

Starting a new career involves some guessing and finger-crossing. Can you really know if you'll enjoy 60-plus hours a week as a business owner, consultant, or manager? Mismatches are common. "I get a lot of clients who finished a second degree and then realized they don't want to do anything affiliated with the degree they just got," says Ariel Schur, chief executive officer of ABS Staffing Solutions LLC, a recruiting company in New York. A 2014 study by LinkedIn Corp. and PwC put the global annual loss in productivity because of these realizations at $150 billion.

Researchers in Australia have discovered a way to remove some of the guesswork from changing professions. In December they published a study in the *Proceedings of the National Academy of Sciences* that grouped more than 3,500 jobs by the personalities of the people in the roles, the first large-scale effort to trace these connections and let workers pinpoint careers they're suited for across fields. Art dealers, for example, share personality traits with public-health directors and directors of education; certified financial planners are similar to internet marketing specialists and e-commerce managers.

Approaching a profession based on personality type is radically different from how people

Edited by Bret Begun

ILLUSTRATIONS BY PATRIK MOLLWING

typically choose jobs; normally, being good at, say, writing or sales dictates decisions. “Skills and experience are important, but we know from employers that the most important attributes for long-term success and engagement are personality traits and other soft skills,” says co-author Paul McCarthy, an adjunct professor of computer science at the University of New South Wales.

The co-authors started by studying tweets from 236 elite computer programmers. The researchers fed hundreds of posts per programmer into software that looked at their writing and scored it based on values, needs, and the Big Five personality traits: agreeableness, conscientiousness, extroversion, neuroticism, and openness. “When I first got the results, I thought we made a mistake—they all largely had the same personalities,” McCarthy says. The researchers repeated the process and got similar results with the top 344 tennis players worldwide and then with top scientists, architects, and doctors. Eventually, they examined about 128,000 Twitter users who had a job title in their bio that the U.S. Bureau of Labor Statistics recognized. The published findings included all jobs for which they had at least 50 Twitter users to analyze.

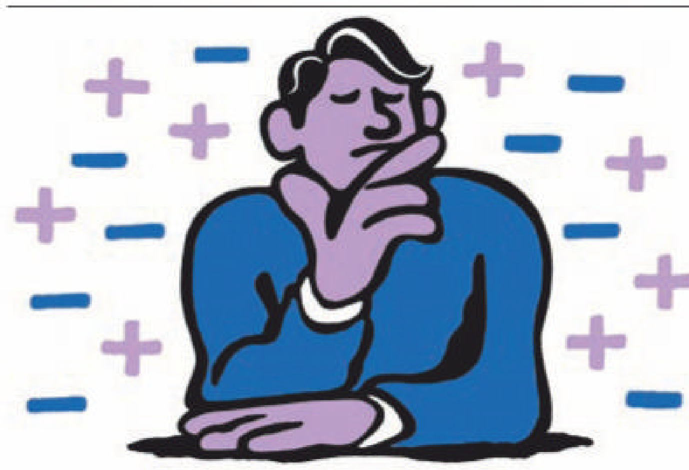
The results will get more precise as the researchers expand beyond Twitter and address the fact that the study maps the roles that people are in, not necessarily the best fit for their personalities. They plan to fix this issue by adding top performers in each field, just as they did with programmers, tennis players, etc.

The information could be valuable for workers in “sunset” industries, says Robin Ryan, a career counselor in Seattle and author of *60 Seconds & You’re Hired!* Among other clients, she works with baby boomers who took severance packages from downsizing companies and didn’t know how tough it would be to find a new job. Study co-author Peggy Kern discovered that her own backup career might not work. “My exit plan was to go be a park ranger,” says Kern, an associate professor at the Centre for Positive Psychology at the University of Melbourne. Park rangers weren’t included in the findings (they’re not active on Twitter), but park superintendents share personalities with maintenance specialists, it turns out, not research psychologists.

Once a new potential role is identified, ABS Staffing’s Schur suggests, job seekers should network with people in the field and try side gigs. She transitioned from a private psychotherapy practice to career advising by visiting a recruitment agency. “The owner pulled me aside and said, ‘I think you should work here.’ It was the last thing I was thinking.” —*Arianne Cohen*

DON’T JUMP!

Before starting a new career, consider the likely challenges. Here are five things to think about before telling your employer to take this job and, well, you know



❶ Get your head on straight. Be confident and clear about what you want. “Know yourself, know your value added, and be open to how that might translate,” Schur says.

❷ Identify the required expertise. Do you need a doctorate, or would classes at online learning platform Udemy cover it? Would language immersion help? “People in their 30s or older typically go to school in the evening or do online programs,” Ryan says. Young people generally do full-time coursework.

❸ Accept that your pay and title will take a hit. Salary drops stall many career changes before they start. “A lot of people have a lifestyle they’re not willing to change,”

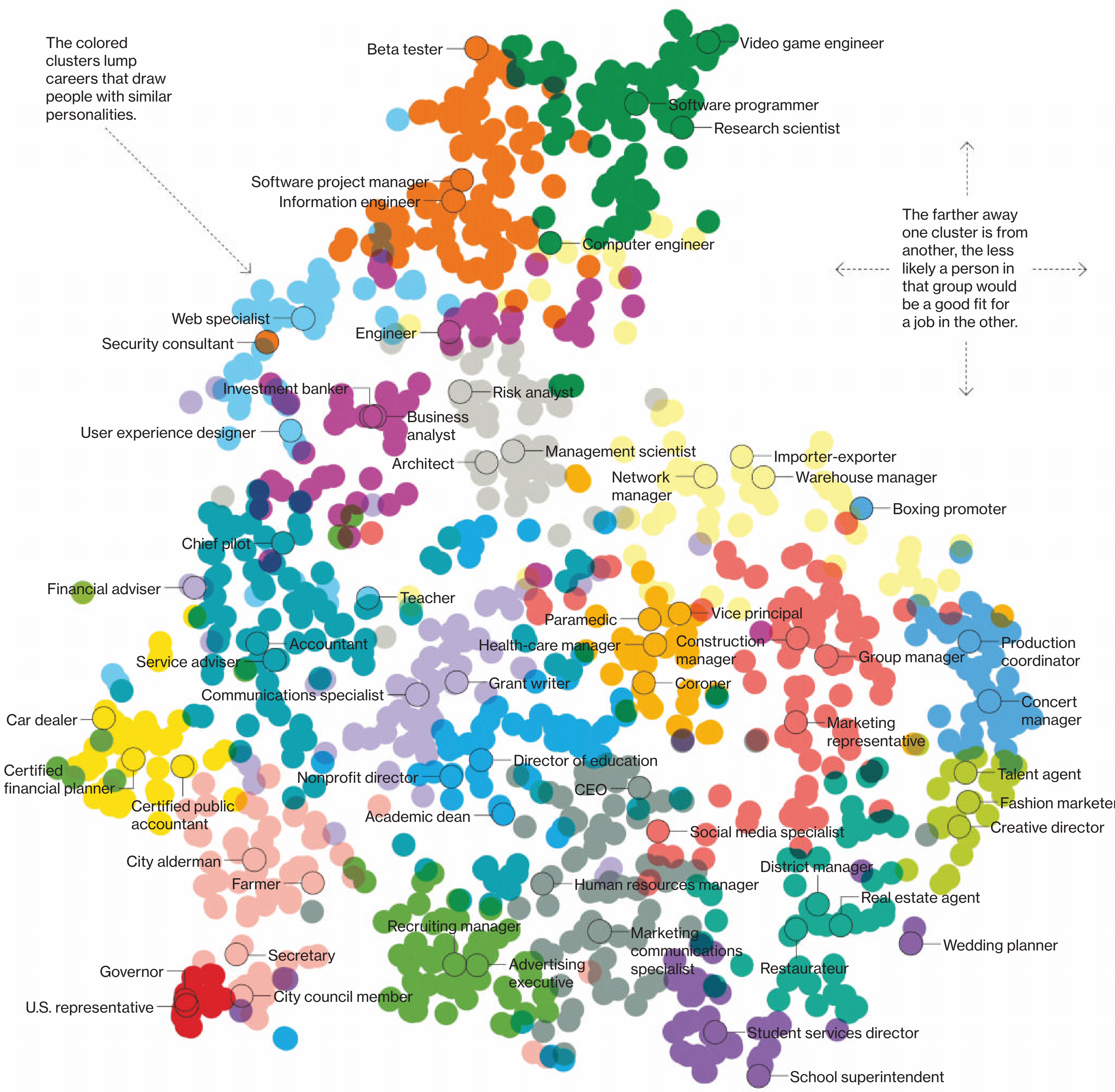
says Ryan, who suggests looking at salaries at PayScale and making a budget plan. “If you were making $125,000 in your old job and your new job pays $70,000, are you willing to do that?” A few years of lower salary is a common cost of entry for a new career, she says.

❹ Weigh the economics. “What happens if the economy goes south?” Ryan asks. “Would your business go under?”

❺ Prepare to be busy. While you’re transitioning, Schur suggests, devote at least five hours per weekend to your new field—networking and researching, or doing part-time work or consulting. “If you’re going to do this, something will need to give,” she says. “You can do a lot in five hours and still have most of your weekend free.” —*A.C.*

JOB SWAP

Below is a sampling (1,227, to be exact) of the jobs that the Australian researchers analyzed. Tired of life as a school superintendent (bottom right)? Consider managing even more difficult people as a wedding planner.



DATA: "SOCIAL MEDIA-PREDICTED PERSONALITY TRAITS AND VALUES CAN HELP MATCH PEOPLE TO THEIR IDEAL JOBS," PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES, DEC. 16, 2019

Q&A

BYE TO BILLABLE HOURS

John Chisholm advises professional service firms on how to end the practice of charging clients by the hour. A lawyer for four decades and the former managing partner of two large firms, he says it leads to unethical behavior and runaway costs. In December, for example, a judge earmarked $77.5 million of the Equifax Inc. data breach settlement for lawyers, which left most consumers with less than $7 each.

Chisholm likes pricing models that remunerate lawyers not for their time but for their expertise and value, and where services are billed as flat fees, retainers, or subscriptions that are adjusted as the scope of work shifts. Edited excerpts of his conversation with Arianne Cohen:

● What's so bad about the billable hour?

There's no way of knowing the [total] fee until after the event. It's a ridiculous scenario.

● Is that why you think the practice is unethical?

The whole model tempts otherwise ethical professionals to sometimes do unethical things.

● Like what?

Who's going to know if I put an extra hour here or there?

● What do lawyers think about tracking their time in six-minute intervals, as most legal firms require when billing hourly?

It penalizes good, fast lawyers, and it's demeaning. We take the best and the brightest out of law schools, and we make them record every six minutes, all day. In my experience, most lawyers put down what they think their time was or what the time spent should have been, rather than what the actual time was.

● What business model do you suggest instead?

Value-based pricing. You sit down with your client, you work through the scope, and you give three options with different prices. There's no surprises. It's the way law firms used to do it.

● Isn't it difficult to estimate legal fees in advance?

You can't necessarily price litigation out to its end, but you can price by phase, and some clients will pay more for priority.

● What would force a change in the model?

The Big Four professional firms [Deloitte, PwC, Ernst & Young, and KPMG] have exponentially increased their legal services over the last few years. While those firms predominantly billed by the hour, their foray into other services such as consulting means they have experimented with other pricing models. One of the Big Four will change its pricing model before any global law firm, and all will follow.

● How does someone at a firm start a conversation about billing for deliverables that actually mean something to clients?

Try saying, "Recording time is inaccurate and nontransparent, and no one values it. Our clients value projects completed on time, revenue, and new intellectual property."

● Where are corporate clients on this?

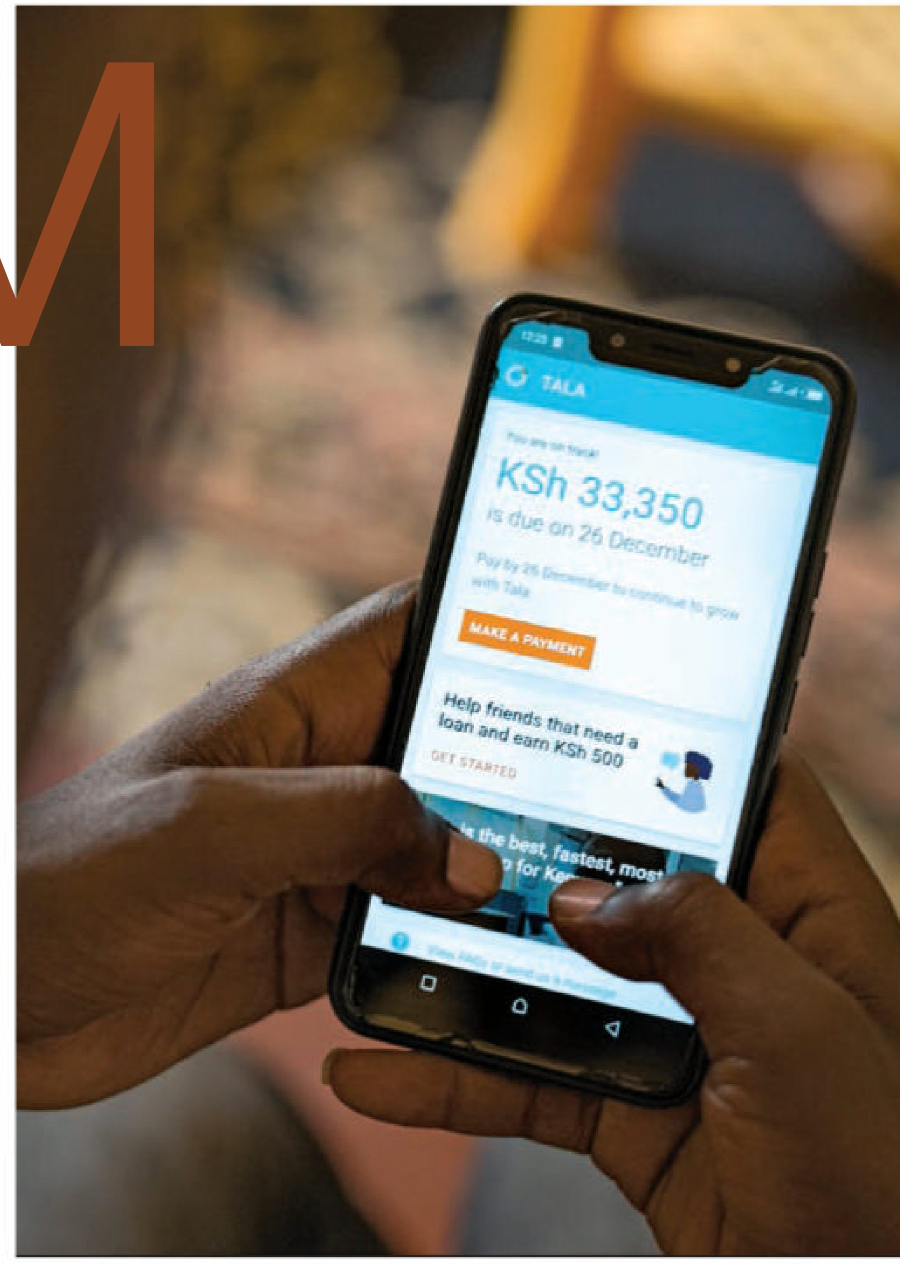
An increasing number of them are saying, "Unless you give us prices upfront, you're not working for us." Apple, Panasonic, Cisco all have.

● What's next?

Many startups and new law firms are adopting upfront pricing, and some global firms use it for specific types of work. But change is being led from the bottom—it's the smaller firms transitioning, and they're successful and profitable and have lawyers queuing up to work for them and clients wanting to use them. It's the future of law, but it's hard to tell a roomful of millionaires that their business model sucks.

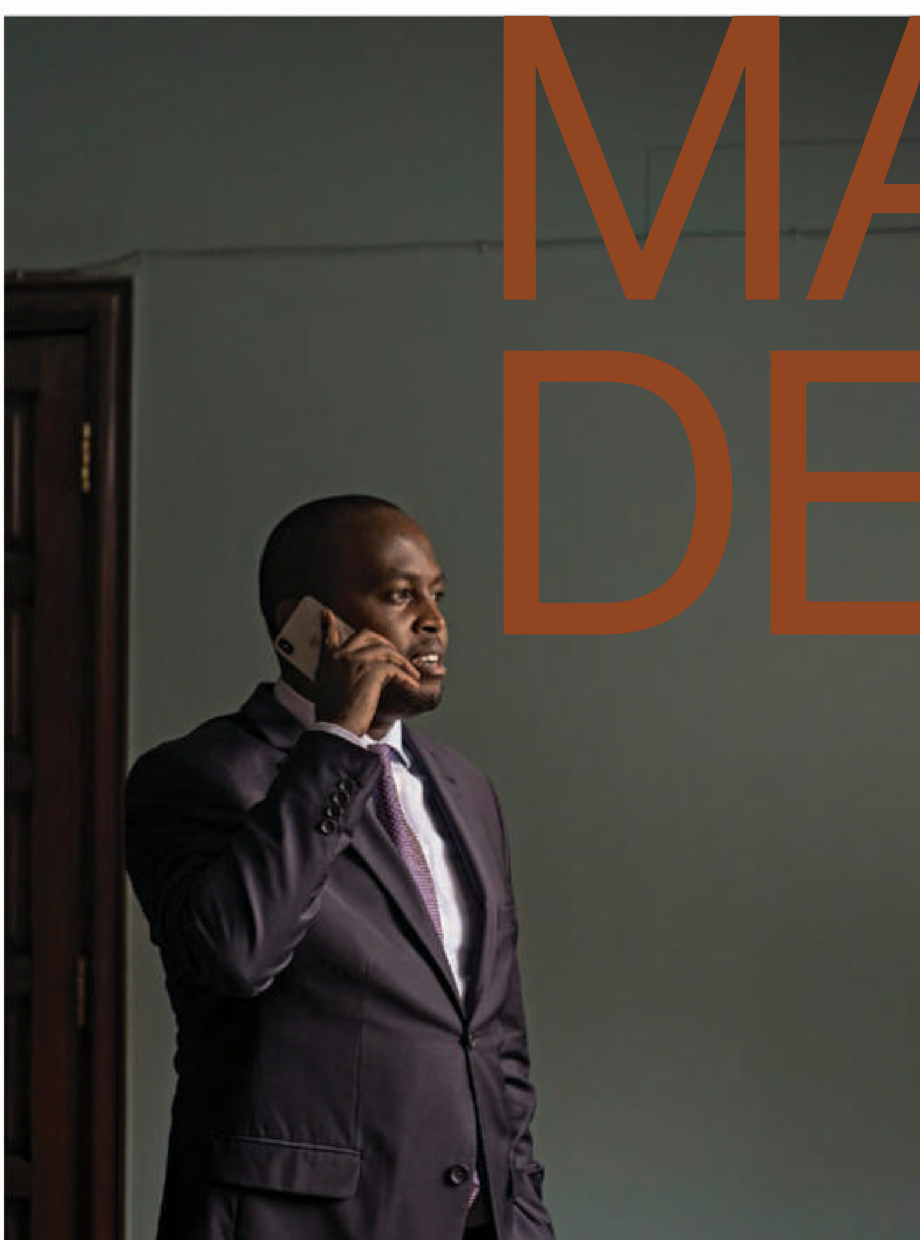
FROM MICRO-CREDIT

From left: Patricia Lele; the Tala app; Gideon Keter; David Saitoti



Tala and other startups are flooding Kenya with apps offering high-interest loans. Are they empowering the poor or profiting from desperation?

TO MAJOR DEBT



By Zeke Faux
Photographs by Roopa Gogineni

Patricia Lele waits for nightfall to go to work. As the sun sets in Kitale, in western Kenya, she hikes her 2-year-old daughter up on her hip, gathers some of her other eight children, and sets off down a dirt road. When she reaches the center of town, she spreads a blanket on the sidewalk outside a grocery store and carefully lays out her wares.

Lele makes beads out of brightly colored paper she scavenges from the town dump, stringing them into bracelets she sells for a few dollars apiece. But tourists are rare in this maize-growing hub, especially after dark, when teenagers stumble down the street, holding Sprite bottles to their nose to sniff glue. Lele considers herself lucky if she makes $5 in a night, enough for bus fare home and porridge for her family the next day.

Like almost everyone in Kenya, rich or poor, Lele has a mobile phone. Hers is a small black Android model with a cracked screen. A few times a day it buzzes with a text message sent on behalf of Tala, a tech company in Santa Monica, Calif., that says it's empowering female entrepreneurs around the world. Each message is a reminder of how that's gone for Lele. "You haven't PAID A SINGLE cent of TALA LOAN," a recent message reads. "TAKE NOTE your DETAILS are with TOUGH SKIP-TRACE & RECOVERY, PAY NOW."

Tala has made $1 billion in microloans to people in developing countries, all using its app. It says it can reach those who've been ignored by banks, because its software generates instant credit ratings from data scraped off prospective borrowers' phones. The company is part of the financial-inclusion movement, a loose coalition of tech companies, banks, and nongovernmental organizations trying to lift people out of poverty by offering them new ways to gain access to loans and other financial services.

In Kenya, the first country where digital credit has gone mainstream, borrowers are learning that with financial inclusion comes financial risk. With dozens of apps offering short-term advances similar to payday loans, word of debt's dangers is spreading from the office towers of Nairobi to the grasslands of Maasai Mara. People who once borrowed mainly from family and friends are now being bombarded with ads for quick money and calls from debt collectors. The market is largely unregulated, and there are no caps on interest rates. Tala's are typically 180% annualized; on some apps they're even higher. About 2.5 million Kenyans—roughly 1 in 10 adults—have defaulted on a digital loan. Others are trapped in a debt cycle, borrowing from one app to pay off another. Last summer newspapers reported that a 25-year-old man from a tea-farming village north of Nairobi had hanged himself after defaulting on a $30 loan from an unspecified app.

Pretty much everyone I meet on a visit to Kenya has a story. A print shop owner can't pay back a loan taken out to buy a goat to cook for a Christmas party. A policeman I ask for directions pulls out his phone and admits to defaulting on a loan himself. A cab driver says that, four months after he borrowed to buy a new battery, he's no closer to repaying the debt. Several people get text messages from debt collectors as we speak.

Most borrowers felt the terms of their loans were unfair but took them out anyway. "It's as if they know an African has no options," says Stephen Omondi Juma, an electrician with a small office in Nairobi's Kibera slum, where he also sells hats.

Lele heard about Tala from a friend in the fall of 2018. At first she felt fortunate to be approved for a 1,000-shilling (about $10) loan to buy varnish, string, and other jewelry-making supplies. A widow at 33—she says her husband was burned to death in election violence in 2008—she lives in a one-room shack in Kitale's Kipsongo slum, next to the landfill. There's no running water, and residents use trash bags instead of toilets. "It is so dangerous, life in our place," she says one afternoon. She mentions fearing that her toddlers might be fed alcohol, or that someone will offer to pay her older kids for sex and infect one with HIV. She's dressed in a baseball jersey and a denim skirt. Outside, three of her neighbors' toddlers tussle in the dirt over a motorcycle brake rotor, while an older child angles a CD to flash sunlight in their eyes.

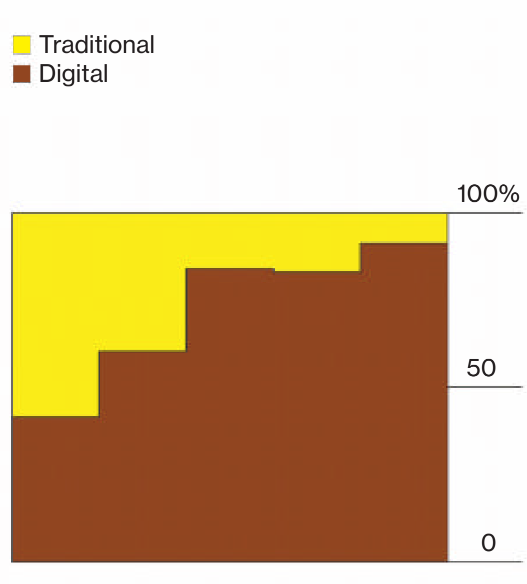
Lele says she repaid that first loan when it came due. Then Tala boosted her limit, and she took out another to buy more supplies and some food. By spring she was borrowing about $70 a month, almost her entire income. The trouble may have started one morning when, seeking to save money on charcoal, she skipped boiling her drinking water. She started to feel sick, wrapping herself in a blanket by day and sweating through the night, but she put off seeing a doctor, knowing she needed the money. "I say, 'This money is for Tala,'" she recalls. When the pain finally prompted her to go to the hospital, she learned she had malaria and typhoid fever. For days she drifted in and out of consciousness. In moments of lucidity she worried about who would provide for her children if she died.

Then her phone rang. It was a debt collector. Her Tala loan was past due. When Lele said she was in the hospital, the caller told her she didn't care. Lele said she had no money, and the collector told her to borrow from someone else. She threatened to report Lele to a credit bureau, potentially blacklisting her from the banking system, and said she'd track Lele down if she didn't pay. Lele begged the woman to leave her alone.

"I don't want to be taken to jail," she said.

DIGITAL LOANS TAKE OVER

Share of loans in Kenya



Lele's story runs counter to the narrative that has made Shivani Siroya a star in Silicon Valley and financial-inclusion circles. Diminutive and soft-spoken, the 37-year-old founder of Tala is a regular on the conference circuit.

At Women Deliver, TechCrunch Disrupt, and other events, she describes her mission as using the power of big data to help the 2.5 billion people around the world who lack credit scores. Someone not listening closely to her pitch might think she's running a charity. "With something as simple as a credit score, we're giving people the power to build their own futures," she said in a 2016 TED Talk that's been viewed online 1.7 million times.

Siroya has raised more than $200 million from high-profile investors such as PayPal Ventures, Revolution Growth, and GGV Capital. She's also won recognition from the Aspen Institute, the World Economic Forum, and Echoing Green, a fellowship program that counts Michelle Obama and the founder of Teach for America as alumni. In September 2018, at the recommendation of billionaire philanthropist Melinda Gates, *Wired* selected Siroya as one of 25 people who will shape the future of tech.


Siroya

Siroya declined to be interviewed for this article. Lauren Pruneski, a spokeswoman for Tala, said in response to emailed questions that the company doesn't condone the practices Lele describes and that it will investigate what happened. "We are committed to the financial health of every Tala customer and firmly believe in the transformative potential of bringing digital financial services to the people who need them most," Pruneski wrote.

Financial inclusion is an evolution of microcredit and microfinance, concepts that were in vogue in the 1990s and early 2000s. The guiding idea has always been that poor people can pull themselves out of poverty by borrowing small amounts of money. Before the widespread adoption of mobile phones, the loans were typically provided by agents working with small groups of women. Peer pressure was supposed to encourage repayment. Enthusiasm for this model peaked in 2006, with a Nobel Peace Prize for the pioneering economist Muhammad Yunus and his Grameen Bank.

Around 2009, inspired by Yunus, Siroya started talking about a microfinance venture of her own. Her idea was to crowdfund larger, more flexible investments in small businesses, with repayments tied to profits. The concept was similar to a charity called Kiva, lauded by Oprah Winfrey and Bill Clinton, that allowed Westerners to make tiny loans to entrepreneurs in Africa and Asia. Siroya imagined her startup would have both for-profit and nonprofit arms. She called it InVenture.

Not yet 30, she'd already accumulated an impressive array of credentials: degrees from Wesleyan and Columbia universities, a stint as an analyst for the United Nations Population Fund, and investment banking jobs at UBS Group AG and Citigroup Inc. Her most recent position was in the mergers department of a California-based health insurer. In her spare time she met with a revolving group of friends at coffee shops or over Skype to talk microfinance.

Siroya thought InVenture could address problems that were emerging with the microfinance model. A widely cited 2010 study had found that the approach had little impact on borrowers' earnings, and Indian officials were blaming it for a debt crisis and the deaths by suicide of dozens of farmers. In 2011, she published a critique of the industry on the *Huffington Post*. "In the wrong hands, it can be a corrupt industry that exploits impoverished businesses, charging interest rates as high as 100% or more and making it all but impossible for borrowers to actually help themselves," she wrote.

After raising $70,000 and making a few test investments in Ghana, Siroya realized it would be too labor-intensive to hunt down donors if she wanted to achieve global scale. She incorporated InVenture in 2011 as a for-profit company, with a new idea in mind: Poor people could report their income and expenses by text message, and her company would turn that into a score it would license to banks.

In 2013, Siroya caught her big break. At a dinner organized by the TED Foundation, she was approached by Chris Sacca, a venture capitalist known for his loud cowboy shirts, early bets on Twitter and Uber Technologies, and a judging role on the CNBC show *Shark Tank*. He loved Siroya's idea. His only concern was whether she was too altruistic to get rich. "Once I determined she wasn't allergic to money, it was a no-brainer," he later told *Forbes*. He joined her board and led a $1.2 million fundraising round whose investors included Google. A co-founder of Dogster, a social network for dogs, was appointed chief operating officer.

When banks didn't show much interest in Siroya's credit scores, she decided to put some of the money toward an experiment: lending directly. The first market would be Kenya.

In recent years, Kenya has become a laboratory for tech companies creating financial products for developing markets, thanks largely to a single innovation. Although about two-thirds of the country's population of 50 million lives on less than $3 a day and only 1 in 3 adults has a bank account, practically all of them have a phone running the mobile-wallet service M-Pesa. Released in 2007 by telecommunications provider Safaricom Plc, M-Pesa was one of the earliest and biggest stories in financial inclusion. Years before Americans were Venmoing each other pizza money, workers in Nairobi were using M-Pesa to send funds upcountry to their families. Today more than 75% of Kenyan adults use it, whether to get paid, cover utility bills, or buy food from street vendors.

InVenture started testing its app, initially called Mkopo Rahisi ("Easy Loan" in Swahili), in 2014. For its first loans it manually deposited about $20 into the M-Pesa accounts of almost anyone who applied, then waited to see who ▶

PREVIOUS SPREAD: KETER; PHOTOGRAPH BY TREVOR SNAPP FOR BLOOMBERG BUSINESSWEEK. THIS SPREAD: ROBERT GALLAGHER/THE FORBES COLLECTION/CONTOUR/GETTY IMAGES; DATA: MICROSAVE

"IT'S LIKE BAIT. THE MORE YOU TAKE, THE MORE THEY GIVE"

◀ repaid. Users took to it right away. Back in Santa Monica, engineers rushed to automate the lending-approval process. Siroya posted positive feedback for the service online, on what she called the Wall of Love. "You are a true blessing from god," one early customer wrote.

At first the company charged a 5% fee for a 21-day loan. Then, former employees say, its analysts decided it needed to raise the rate to make money. They tripled it to 15% and extended the term to one month—a rate equivalent to 180% annualized, 10 times what Americans usually pay on their credit cards. At that rate, someone who borrowed $100 for 12 months in a row would end up paying $180 in interest. (Tala says it now offers monthly fees as low as 7%, or 84% annualized, to its best customers.)

The former employees say the app was designed to avoid trapping people in debt. Borrowers who didn't pay on time were charged a one-time late fee instead of more interest and were barred from taking out another loan until they'd settled up. They imagined their users would be business owners who could turn a quick profit—a woman who would borrow $10 to stock up on tomatoes for her vegetable stand, say, then sell them and pay back $11.50 the next month.

The application process required users to permit data such as text messages, location data, contacts, and call logs to be downloaded so the app could generate a credit score. In her TED Talk, Siroya said it could even take into account whether someone spoke often to their friends or if their location data showed they went to work regularly. The user agreement specified that the company retained ownership of the data, whether or not the loan was approved.

That data was a big part of InVenture's appeal in Silicon Valley. According to the *Forbes* account, Sacca, the venture capitalist, told Siroya at a 2015 meeting that she'd figured out an even better way of gathering data on users than Uber co-founder Travis Kalanick. "This is freaking big," Sacca said. "It's time to move from the dreamy hypothesis phase to wanting to fan the flames." That September he helped Siroya raise an additional $10 million from investors. (Sacca left Tala's board in 2018. He didn't respond to requests for comment. His email auto reply said he'd retired from investing and was busy "working on saving democracy, healing the climate, and reforming the criminal justice system.")

InVenture was rebranded as Tala in 2016, by which time it had the fifth-most-downloaded app in Kenya. It started staffing up, hiring product managers from other startups, and adding the data scientist credited with developing surge pricing for Uber. It also opened offices in Tanzania and the Philippines.

At the same time, some people working on the Kenya operation were seeing cause for concern. Many borrowers were taking out a new loan within minutes of repaying their last one, and it was evident not everyone was using the money to stock up their food stalls. A former Tala data scientist says one of the top places borrowers spent money was a sports-gambling app. Still, the company chose not to further limit who could take out loans, because it didn't want to slow its growth, according to a former top executive. (Pruneski denies that sports gambling accounts for such a large portion of borrowing and says Tala's algorithm is designed to discourage this behavior.)

There was also competition to worry about. A year or so before Siroya introduced her app, Safaricom had teamed up with a bank in Nairobi to offer one-month loans to M-Pesa users. Then a co-founder of Kiva started Branch International Ltd. And the Norwegian makers of the Opera web browser came out with OKash, which seamlessly downloaded applicants' contacts, then used the lists to shame delinquent borrowers by informing friends and family of the debt. (An Opera spokesman says it stopped the practice last year.) There are now more than 50 loan apps targeting Kenyans, and a study published last year by MicroSave Consulting found that two-thirds of the loans issued by nonbank lenders are delinquent. The profusion of apps has made it possible for borrowers to juggle loans for months on end. Instead of repaying Tala with their profits or savings, they can do it with a loan from another app, then immediately qualify for a larger Tala loan.

David Saitoti, a 34-year-old substitute teacher and taxi driver in Nairobi, says he borrows and repays loans from at least five apps each month. When I meet him, he's living in a small studio without a sink or a shower, supporting himself and his family—a wife and two sons who live in a village near the Tanzanian border—on only $10 a day. He can't remember exactly why he started borrowing, and now he can't see a way to repay the debts. "It's like bait," he says, his finger worrying at a hole in the shoulder of his beige sweater. "The more you take, the more they give."

Saitoti's Tala app lists him as a "gold" customer, with an outstanding balance of $320 and a record of 28 consecutive repaid loans. He estimates that he spends a week's income each month on interest. Twice he's had to sell goats to repay his loans, culling his herd, which represents his savings, to three. "At the end of the day," he says, "you are the loser because of the interest rate."

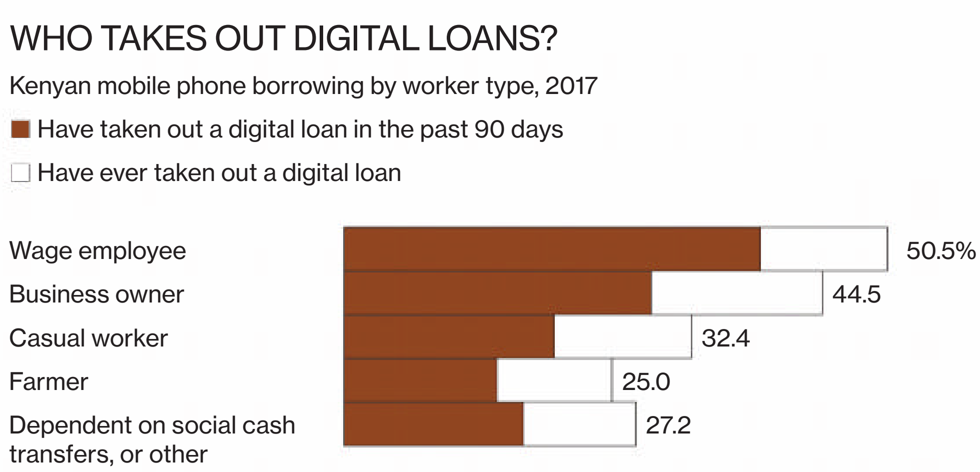
Some borrowers eventually turn to neighborhood moneylenders, loan sharks who charge even higher rates. One of them, who operates from a cubby in a warrenlike mall in Kitale, tells me that, despite the companies' claims to be providing an alternative to people like him, they're driving business his way. "Many people go to apps," he says. "Then some come here to have some money to pay the apps."

On the top floor of a yellow-and-red office building in Nairobi, about 70 people wearing headsets cajole and harangue borrowers over the phone from morning to night. This is Tala's debt-collection office. The collectors are Kenyans, many of them young women.

Tala's policy requires them to be honest and polite. But in interviews, five current and former collectors describe feeling intense pressure to perform, which they say led them to use dishonest tactics. The company sets quotas of millions of shillings in repayments a month, they say. Those who fail to hit their marks can be fired. Until recently the collectors' names and progress toward their targets were displayed on a big-screen TV on the wall.

Manipulating borrowers is easy, they say, because most are naive about the financial system. Some describe using login credentials stolen from Kenya's National Hospital Insurance Fund (NHIF) to learn borrowers' work addresses and the names of their children. They then threaten to show up at their offices to shame them, or to visit their homes and seize their possessions. How will little Johnny like it, they might ask, when he sees us taking your television?

Another effective tactic was telling debtors they'd be immediately approved for a larger loan if they borrowed elsewhere to repay Tala—a lie, given that the borrowers were already late. One collector recalls helping a customer sweet-talk someone into advancing her the money. When the promised loan from Tala didn't come through, the customer was arrested for fraud and jailed. The collector says she went to church to pray for forgiveness.



Pruneski says Tala doesn't condone threats or trickery, and that a recent audit led it to fire some of its collectors for breaking rules. She adds that the company blocks the NHIF's website and says the collector's story about the arrest is unlikely, because defaulting isn't a crime.

On Jan. 22, after *Bloomberg Businessweek* sent Tala a list of questions, the company published a blog post saying it was aware that debt was becoming an issue for some Kenyans. It called for regulators and credit bureaus to create a real-time database to prevent borrowers from using too many apps at once. It also said its business succeeds only if customers are able to repay, and that it was making changes "to ensure that we are only lending to customers who can reasonably afford loans." Tala said it hopes "others will join us in learning from recent challenges and building a stronger, safer industry."

App-based lending has become synonymous in Kenya with predatory practices, much like payday lending in the U.S. About 2.5 million people have been reported to credit reference bureaus by digital lenders. Many banks won't lend to defaulters, no matter how small their infractions, and most government jobs require that applicants have a clean credit history. Instead of being financially included, they're effectively blacklisted.

Kenyan officials are starting to realize lending apps need regulation. In a speech last June, Patrick Njoroge, governor of Kenya's central bank, called the companies loan sharks "hiding behind nice-looking applications." Gideon Keter, the National Assembly member who represents youth interests, has drafted a bill directing the central bank to regulate the apps. He was motivated by seeing constituents blowing borrowed money on gambling apps while their children went to bed hungry. "These mobile loan apps have commercialized poverty," Keter says. "They are thinking of profits only." The bill is currently awaiting a vote; parliamentary action is likely months or more away.

Former Tala employees, even those critical of Siroya, are adamant that she wants to help people. But in international development, good intentions are rarely enough. Tala's problems in Kenya are the same ones she observed in microfinance a decade ago. Lenders end up charging high rates to cover the losses from people who don't pay. The higher the rates, the more people struggle to pay, and the more indebted they become.

Tala's troves of data and sophisticated lending algorithms were supposed to end the cycle. Instead, they've just allowed the company to make the loans more quickly, on a larger scale. "There was a lot of hope and excitement that digital credit would outperform microfinance in terms of improving peoples' lives," says Carson Christiano, executive director of the Center for Effective Global Action at the University of California at Berkeley, which is studying the impact of mobile loans. "It hasn't delivered on that."

It does, though, seem to be delivering for Tala. Last year its Santa Monica operation moved into larger offices. In August, as the company crossed $1 billion in loans made to 4 million customers on three continents, it announced that it had raised an additional $110 million, saying it would use the money to expand in India and hire employees in Kenya and Mexico.

Patricia Lele is still hoping to repay Tala and clear her name. She hasn't been selling many bracelets, but she still tracks when trucks arrive at the dump to discard the bright green Safaricom scratch cards that make the best material for her beads. Far from being upset at Tala, she says, she'd like to get new loans to send her children to school or to buy a small plot of land away from the dangers of Kipsongo. It bothers her that she didn't get a chance to show Tala how thrifty and responsible she is. If only the app would have trusted her to make more affordable payments over more time, she's sure she would have made them.

"Small, small, small," she says, counting out imaginary coins with her hands. Ⓑ —*With David Herbling*

DATA: FSD KENYA

INNOVATE RINSE REPEAT

Procter & Gamble, age 182, is coming after eco-friendly soap sellers, organic tampon makers, and other upstarts of the digital era

By Tiffany Kary
Photographs by Lyndon French

It's a classic setup: A psychology grad, a microbiologist, and a chemical engineer walk into a room buzzing with flies. The psych grad is versed in feminine-hygiene products. The microbiologist has a side business in eco-friendly yards. The chemical engineer specializes in wet wipes. The room, OK, it's not a bar, but the University of Cincinnati's Benoit Laboratory has its charms, too.

The three specialists peer over the shoulder of Carlie Perretta, a physiology major, as she picks up a pooter, a glass tube attached to a translucent yellow hose. She puts one end in her mouth and the other in a tent filled with houseflies (*Musca domestica*), then starts to suck. Her short sips gently aspirate the flies into the tube. She says the air tastes a bit like it smells—baby formula gone bad, thanks to the low-fat milk powder the flies are fed. A filter stops the bugs from entering her mouth. Once Perretta has collected about 20 specimens, she carries the pooter across the lab to a tent, where she'll release the flies to choose between two traps emitting different wavelengths of light.

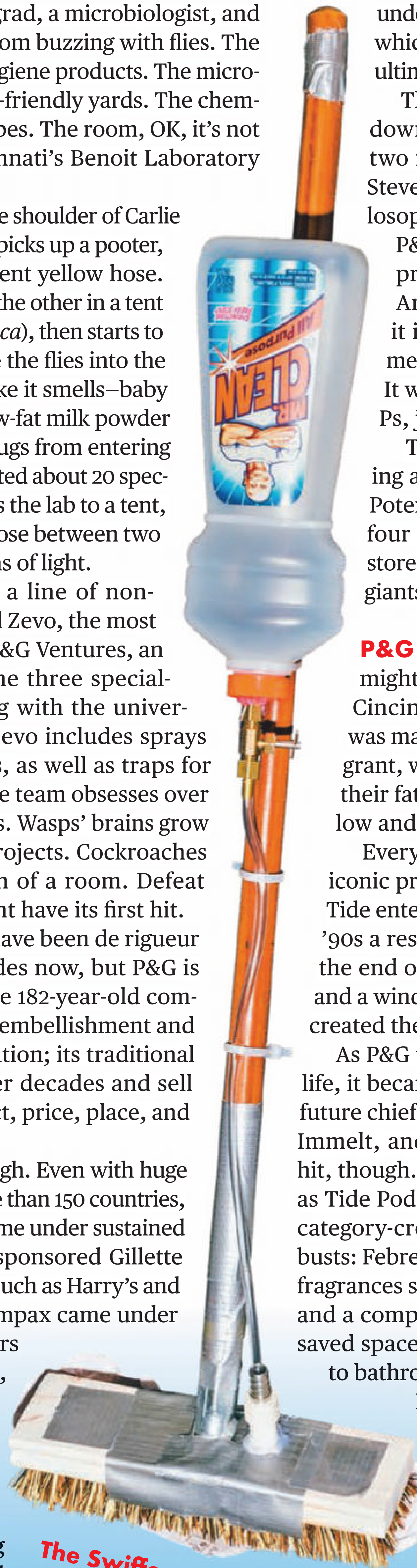
The traps are prototypes for a line of nontoxic insect-killing products called Zevo, the most developed brand to come out of P&G Ventures, an arm of Procter & Gamble Co. The three specialists are P&G employees, working with the university's entomology department. Zevo includes sprays for flies, wasps, and cockroaches, as well as traps for mosquitoes, moths, and gnats. The team obsesses over ways of outwitting their opponents. Wasps' brains grow as they work on more complex projects. Cockroaches can memorize every square inch of a room. Defeat these foes, and Ventures just might have its first hit.

Internal-disruption initiatives have been de rigueur at U.S. corporate giants for decades now, but P&G is an unlikely candidate for one. The 182-year-old company is better known for product embellishment and marketing than for product invention; its traditional formula is to tweak its goods over decades and sell them with its vaunted 4Ps: product, price, place, and promotion.

P&G is desperate for ideas, though. Even with huge economies of scale and sales in more than 150 countries, its most reliable businesses have come under sustained attack. Those five-blade, athlete-sponsored Gillette razors? Nicked by no-fuss startups such as Harry's and Dollar Shave Club. Always and Tampax came under siege from organic tampon makers Lola and Cora; Tide and Pampers, from Seventh Generation's eco-friendly soaps and diapers. Almost three years ago, activist investor Nelson Peltz, of Trian Fund Management LP, bought up a chunk of P&G stock, characterizing the company as lumbering and underperforming. Then he waged a proxy fight during which he bandied about the prospect of a breakup, ultimately winning a seat on P&G's board.

The company was by then already trying to slim down. In 2014, with growth slowing, it had made two important changes. Working with consultants Steve Blank and Eric Ries, whose "lean startup" philosophy was becoming gospel at large corporations, P&G decided that, in the short term, it would shed product lines and get out of certain categories. And in the long term, it would change the way it innovated. Quietly, with no formal announcement, it created Ventures. Ventures would be agile. It would be idea-focused. And it would have fewer Ps, just three: pass, pivot, or persevere.

This year, P&G will find out if Ventures is working as planned, or if it's yet another big, corporate, Potemkin disruption lab. By 2020's end, it will have four product lines on sale, some online, others in stores. If they succeed, P&G might just show that even giants can step nimbly in the digital, on-demand era.



The Swiffer prototype

P&G has a long history of seeking synergies—you might say it's ampersands all the way down. In 1830s Cincinnati, William Procter, an English immigrant, was making candles, and James Gamble, an Irish immigrant, was making soap. After they married two sisters, their father-in-law noticed they were competing for tallow and suggested they join forces.

Every few decades the company would tinker up an iconic product. In 1879 came Ivory soap. In 1911, Crisco. Tide entered American laundry rooms in 1946. In the late '90s a research team jammed a backwards Pamper onto the end of a mop handle, attached a bottle of Mr. Clean and a windshield squirter scavenged from a junkyard, and created the Swiffer.

As P&G turned these inventions into staples of modern life, it became a feeder for corporate America, incubating future chief executive officers such as Steve Ballmer, Jeffrey Immelt, and Meg Whitman. The Swiffer was its last true hit, though. While the 21st century has seen offshoots such as Tide Pods and Downy scent beads, these were far from category-creating breakthroughs. They've also had a few busts: Febreze ScentStories, a disk that rotated through five fragrances so people wouldn't become "nose blind" to one, and a compressed version of Charmin toilet paper, which saved space and packaging costs but didn't quite rebound to bathroom-friendly shape.

P&G faltered in part because the synergy-seeking had run amok. In 1985 it bought Clearasil, Oil of Olay, Pantene, Vicks, and Vidal Sassoon. In 1989, Cover Girl. In 1990, Old Spice. In 1991, Max Factor and SK-II. In 1994, Giorgio Beverly Hills. In 2001, Clairol. In 2005, Gillette.

The bloat was apparent by the time revered CEO A.G. Lafley retired in 2010. His replacement, Bob McDonald, announced $10 billion in cuts in 2012, then two years later, with Lafley partway through a three-year return engagement, P&G began its short-term program to lean up, ultimately shedding 100 brands. "We said, 'We need to be more forward-looking. There's a lot of disruption in the world, and we need to be leading it,'" says Kathy Fish, P&G's chief research, development, and innovation officer. Fish is the one who brought in Blank and Ries, author-consultants who'd begun making the rounds at companies blindsided by digitally oriented upstarts.


Radford

When P&G decided to start Ventures, Lafley asked Leigh Radford, who'd revitalized the Olay and Vicks brands, to lead it. To help decide the unit's focus, David Archer, a market-knowledge director, culled data from 2,000 categories to profile what consumers would be buying by 2025. His model identified three target demos: city-dwelling millennials, aging baby boomers, and China's middle class. And it forecast three important shifts in their desires: rising demand for "natural" products, interest in hyperconnected devices capable of anticipating individual needs, and concern about scarce resources, from clean water to personal time.

The next step was classic P&G: getting to know the consumer. Archer spent time with a middle-class family in China whose home had a 50-inch TV but no windowpanes, for example, and visited an aging New York woman struggling to care for her incontinent, 300-pound husband. From there, Ventures decided on eight areas that wouldn't eat into P&G's preexisting business lines: elder care, mental and physical performance, nontoxic homes, menopause, chronic skin conditions, environmental sleep enhancement, male wellness, and side-effect-free pain management. Ventures would seek out products accordingly, developing them and figuring out new ways of selling them, all while bypassing the usual management channels.

Soon, P&G bisected its wood-paneled boardroom in Cincinnati with a glass wall, leaving oil paintings of past CEOs suspended on one side as if in amber. On the other side, the wood was torn away to expose concrete pillars. Fluorescent sofas were grouped in configurations conducive to tête-à-têtes. Ventures, with little fanfare and no press release, was born.

Betsy Bluestone is handling what appears to be a floppy pink chastity belt. One of three full-time innovation scouts hired by Radford, she's wading through a crowd at the 2019 HitLab World Cup, a pitch contest for female inventors at the New York offices of German software giant SAP SE. The belt, made by an Israeli startup, is a wireless mobile monitor that can track fetal heart rates without requiring a doctor's visit. "There could be an interesting pivot when you think about Pampers," Bluestone says, brainstorming aloud. She moves on to a couple of founders who describe their business as a women's health version of the makeup-curating subscription service Birchbox—except they're offering "Box Boxes," to address issues such as yeast infections and endometriosis.

The five finalists assemble in front of floating silver balloons spelling out #Disrupt 50B, a reference to the $50 billion women's health market. As they tout their companies in three-minute spurts, Bluestone takes notes. Univfy Inc. uses machine learning to better predict in vitro fertilization success rates. Skye helps women do better Kegels to eliminate incontinence. Norka Health is reinventing fertility insurance. Babyscripts' tech assists with prenatal and postpartum care. Jessie matches women with health service providers.

Most of the judges are from venture capital firms. Two are with the disruptor teams of other big corporations: Bayer AG's G4A and Johnson & Johnson's JLabs. Not on the panel from that sizable cohort are Unilever NV's own Ventures and Clorox Co.'s Burt's Bees Natural Launchpad. Not to mention Edgewell Personal Care Co., maker of Gillette competitor Schick, which almost had a disruptor within a disruptor—it struck a deal to buy Harry's Razors last spring, including the startup's Harry's Labs, but the Federal Trade Commission later sued to block it.

Bluestone doesn't spot anything for Ventures at the SAP event, so, a few nights later, it's on to addressing a sea of young women in jeans and flowery dresses at an event hosted by the Vinetta Project, a fund that seeks to close the investment gender gap. After her talk, an informal pitching queue takes shape. Two women from a startup called Molecular Zen offer Bluestone a sample of a collagen-rich chocolate bar, which she politely waves away. "This isn't a space for us, but functional beauty is very interesting," she tells them.

Then a woman wearing a badge that reads "Ask me about: bedsores" strides up and introduces herself as Dr. Sanna Gaspard, a biomedical engineer who's developing an early detector for bedsores. Bluestone extends a hand for a demo. The prototype is conical and slightly lumpy, with white paint around the edges. Gaspard presses a ring at the tip of the cone into Bluestone's finger, where a round indent forms and bounces back to indicate that no bedsore is present. Bluestone smiles—elder care, one of Ventures' target areas.

"One reason we're interested in wound care is it's one of the main reasons people can't age in place," she says. Sick or elderly people often go into long-term care facilities in part for fear of bedsores—common, potentially lethal wounds that can be difficult to detect, especially on darker complexions. If they're identified before they reach the surface of the skin, though, they're easily fixed by changing the patient's resting position to relieve pressure.

Soon the women are exchanging bedsore trivia. It costs U.S. hospitals $11 billion each year to deal with bedsores, Gaspard says. "With 81-year-old parents myself, I can tell you this is very appealing," Bluestone responds.

She asks about the next hurdles for the device, explaining that there are multiple ways Ventures might help. "We're dedicated to growing the business with the founder, then deciding if we're interested in buying or licensing something," she explains.

Months later, Gaspard says she's being mentored by someone from P&G. "They've been helpful, and Bluestone is trying to make connections for me where she can." In January, Ventures announces that Gaspard is one of four finalists in its Innovation Challenge competition, sending her on an all-expense paid trip to pitch her product at CES in Las Vegas.

While Ventures' scouts are looking for new ideas—the unit has signed more than 20 contracts with outside partners so far—others are busy working on the products it has. To create Zevo, Ventures brought together spray technology from Envance Technologies LLC in Morrisville, N.C., and trap technology from an undisclosed inventor. The development team started living the lean-startup gospel, doing all its own R&D, product testing, and marketing, with each member playing multiple roles. Francez Curbelo, the psych grad, is in charge of perfecting the spray's particle size, but she also translated product labels into Spanish and worked on some Instagram ads for an early direct-to-consumer tryout.

At the same time, there are advantages to being part of a behemoth. Zevo grew out of consumer surveys finding that 85% of Americans have reservations about traditional insecticides, which account for 95% of the U.S. spray market. Its technology borrows from Pampers sticky diaper strips and Febreze plug-ins and sprays. And P&G's relationships with retailers such as Target Corp. and Home Depot Inc. ensured Zevo could get swiftly to shelves.

Mindful that most startups fail, P&G said last February it would partner with Los Angeles-based firm M13, which has invested in such companies as Lyft Inc. and Pinterest Inc. As Ventures signs deals, it has the option of bringing in M13's money and expertise, letting it place more bets without committing too many of its own employees. If M13 expands the businesses to a certain scale, P&G can then take back a controlling interest. "No one has used that model before," Radford says. "It's like sending a kid to boarding school."

The other three products well along Ventures' pipeline are under M13's care. Slated for release this year is Opté, a device that applies makeup and anti-aging serums to age spots and other marks without the look of heavy foundation. There's also Bodewell, a botanical-based lotion for psoriasis and eczema, and Kindra, a line of natural products to help with menopause. M13's contributions have included changing the menopause line's name from Pepper & Wits and repackaging it in sleek containers. It also changed the lotion's name from Metaderm and recruited two people to run the brand.

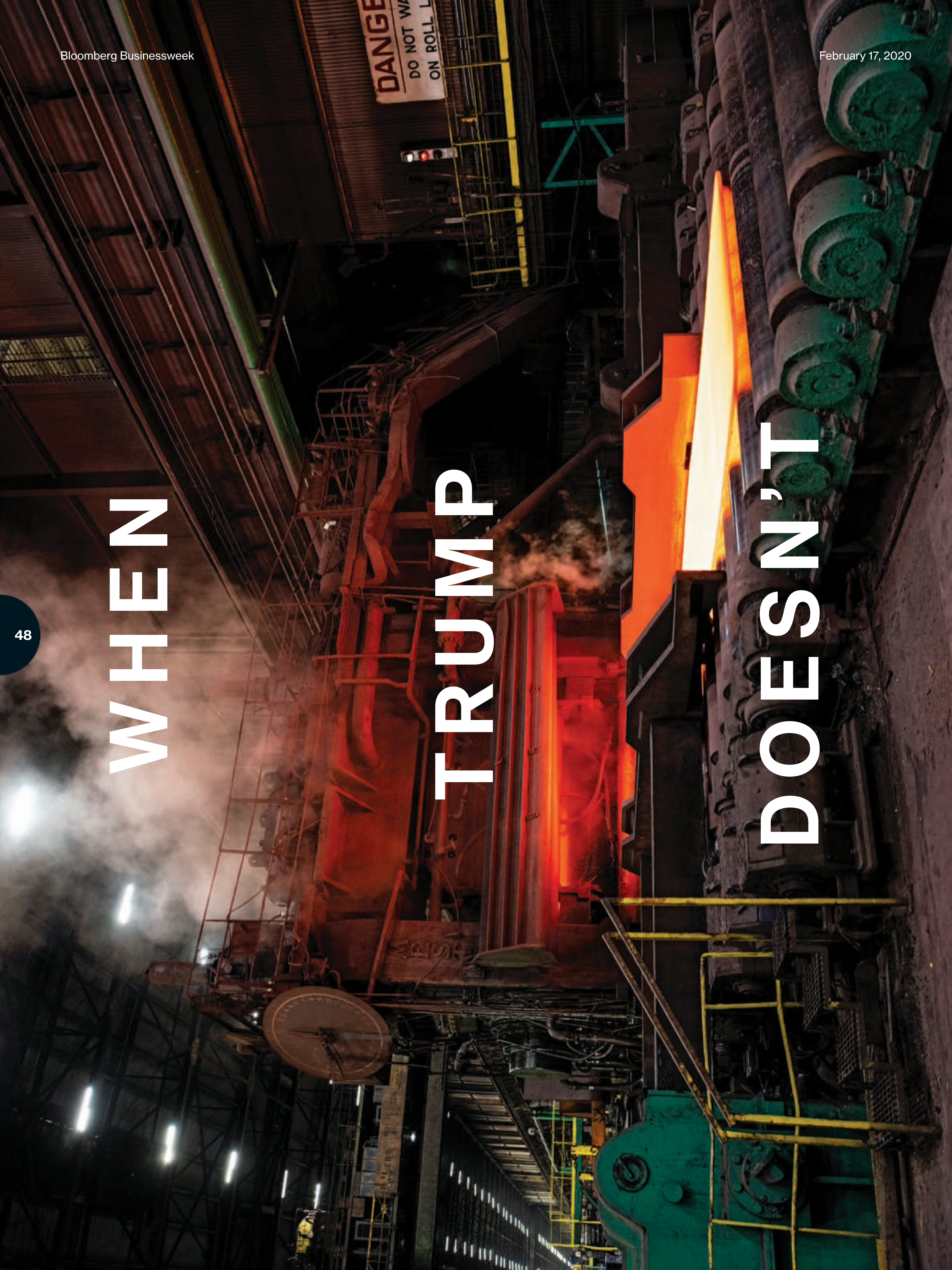
P&G wanted M13 to oversee those lines in part because the venture firm has more expertise selling direct-to-consumer. "Menopause and skin conditions, these are things people don't necessarily want to talk about," says Christine Choi, a partner at M13. Her company "has a history of finding those target audiences."

While P&G monitors the lines' success, Ventures has in the meantime helped assuage Peltz. His company, Trian, declined to comment on Ventures, citing his position on the parent company's board, but a P&G spokeswoman says Peltz has taken a tour. And he spoke glowingly of the changes at P&G during an event last year in New York. "Here is an elephant that knows how to dance," he said, deploying a go-to business-book metaphor. "There are other companies around that have responded to the new digital age beautifully and many others who don't. And P&G is doing a phenomenal job."

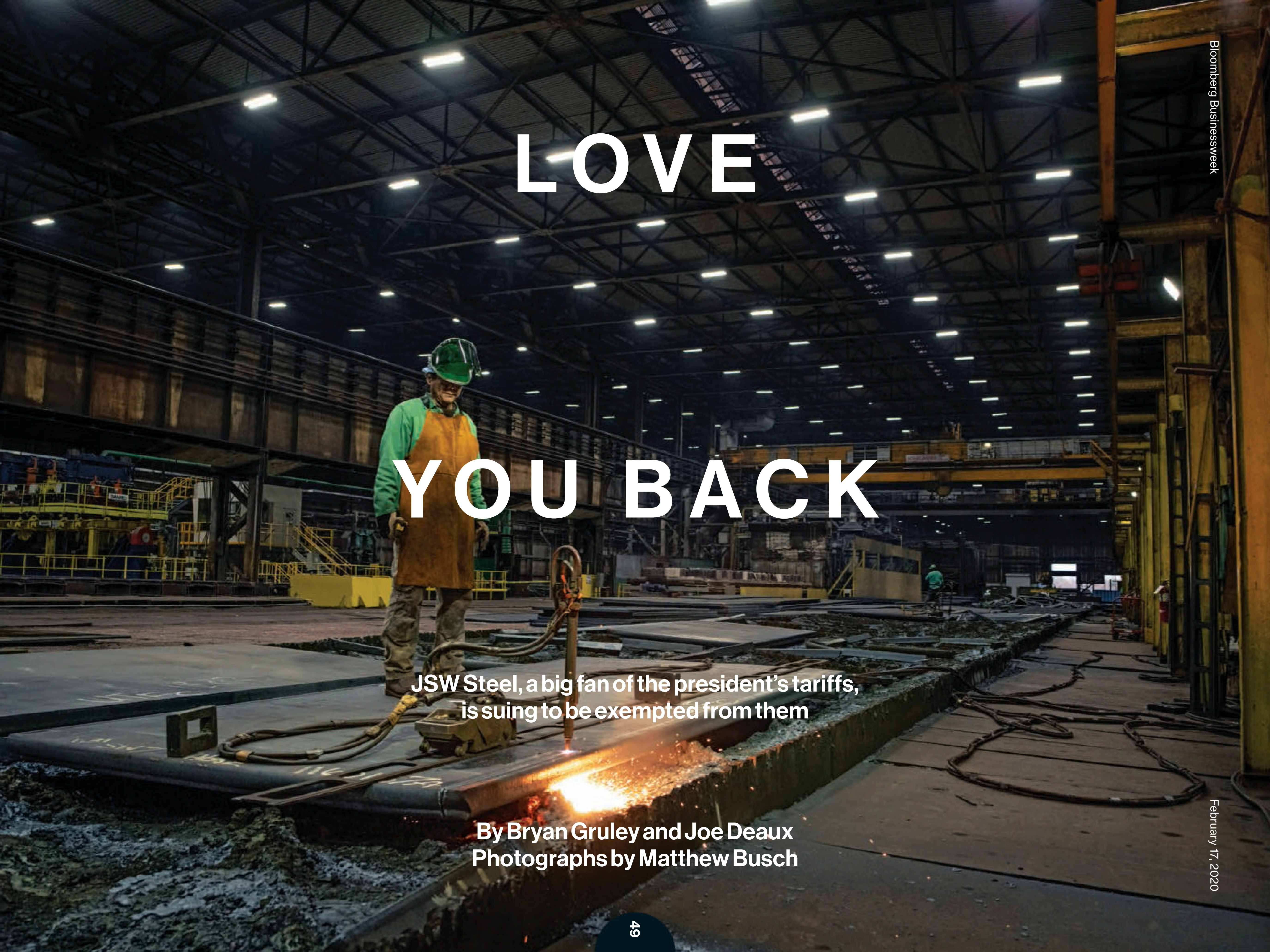
Flies at the University of Cincinnati

Fish, the R&D chief, agrees that P&G is getting its steps down. She mentions that Pampers Pure, introduced in 2018, took about 18 months to go from idea to market, compared with 10 years for Pampers Swaddlers. And if people want to gawk at the proverbial elephant, so much the better. At this January's CES, P&G had a marketing coup, of sorts, with one of the show's most-discussed innovations: the Charmin RollBot, a bear-faced prototype for delivering toilet paper seat-side. Intended less as a consumer-goods breakthrough than as a "cheeky" way for P&G to tout its bathroom products, comedians pounced. "What an advancement," said *The Late Show*'s Stephen Colbert. "It replaces the previous toilet roll replacement technology of... Here it is. Can you grab it?" Ⓑ

—*With Scott Deveau*



WHEN TRUMP DOESN'T



LOVE YOU BACK

JSW Steel, a big fan of the president's tariffs, is suing to be exempted from them

By Bryan Gruley and Joe Deaux
Photographs by Matthew Busch

John Hritz, president and chief executive officer of JSW Steel USA Inc., put on a big smile and a Texas flag pin for his television spot on Fox Business in March 2018. "It's a special day," he told his host, then told her again: "It's a special day." JSW Steel's India-based parent company, JSW Group, had announced it would invest $500 million and create 500 jobs at its steel mill in Baytown, Texas. "We're going to make history," Hritz said.

Hritz was counting on help from President Trump, who three weeks earlier had announced his intention to impose tariffs of 25% on steel and 10% on aluminum imported to the U.S. The Fox anchor wondered if the import levies might interfere with JSW's Baytown plan, given that much of the raw steel processed at the mill was imported from India and Mexico. "Absolutely not," Hritz said. On the tariffs, JSW was "in lockstep with the president and with the administration."

Not so much anymore. A big piece of the Baytown project has been postponed indefinitely, in part because of Trump's tariffs. Both Baytown and a sister plant in Ohio, where JSW once planned to invest another $500 million, have been operating at unprofitably low production levels, also owing in part to the tariffs. JSW has sued the administration for refusing to exempt it from paying the levies on the massive slabs of steel the company imports and turns into pipe and other products for industrial use. "It's the hypocritical nature of these tariffs that's completely dumbfounding us," says Parth Jindal, director of JSW Steel USA and managing director of JSW Cement Ltd. in India. "It just doesn't add up."

As Hritz sees it, JSW set out two years ago to do precisely what Trump and his trade hawks said the tariffs would help accomplish: reestablish the U.S. as a premier producer of steel. Hritz told the online trade publication *Fastmarkets AMM* after the tariffs were put in place, "We are following right down the road where the administration wants things to go…to completely overhaul the steel industry in this country." But the revolution has been delayed by a bureaucratic morass at the U.S. Department of Commerce and, possibly, political weight thrown around by two of steel's heaviest heavies: United States Steel Corp. and Nucor Corp.

Other steel processors are in a position similar to JSW's, paying tariffs on raw steel they say they can't procure here. NLMK, the U.S. arm of Russia's Novolipetsk Steel PJSC, has had rolling layoffs at a plant in Pennsylvania because it's been paying tariffs on slab from Russia—$184 million and counting, says Robert Miller, NLMK's U.S. CEO and president. "That frustrates me because now you've affected people's families," he says. "We're an American company with American workers represented by American unions. That's what sucks."

Even before the Trump tariffs, domestic steelmakers enjoyed ample government protection, via scores of duties imposed on companies or countries judged by the Commerce Department to have dumped steel in the U.S.—that is, sold it below cost—or otherwise violated trade laws. The new tariffs had a salutary effect for a while: Steel prices rose, and U.S. Steel and others reactivated mills. Then U.S. manufacturing went into a recession, and prices fell. Some steelmakers are retrenching. U.S. Steel recently said it would cut capital spending and close most of a plant near Detroit, costing about 1,500 jobs. All told, U.S. iron and steel jobs are up 3%, or 2,600 workers. That gain would be more than halved by the U.S. Steel cuts.

JSW's experience of the tariff wars is peculiar not only because the company energetically backed the tariffs. Hritz continues to praise the administration even while battling the Commerce Department in court. The whole situation is an awkward lesson in unintended consequences—it makes you wonder whether, when it comes to trade policy, some capitalists really don't like capitalism that much.

A two-lane asphalt road burrows through trees and tall brush to JSW's Baytown plant, about 30 miles east of Houston. The complex squats on the grassy tip of a peninsula that's also home to some of the world's largest petrochemical facilities and huge warehouses owned by Walmart, Ikea, and Home Depot.

Hritz, a short, stocky 65-year-old who wears his brown hair shaggy, started his four-decade career as an apprentice craftsman at a U.S. Steel plant in Youngstown, Ohio. He calls himself "an equipment guy" and gets excited showing visitors a slideshow of machinery being installed at Baytown. "Look at those beautiful double-side and end shears—they're already on-site," he says, referring to machines that cut slabs of steel like gigantic meat slicers. One slide in the presentation boasts that JSW is "Making American Steel Great Again."

U.S. Steel opened Baytown in 1970 and employed as many as 2,000 workers there before closing it in the 1980s. By then, the long decline of the American steel industry was under way. Hritz witnessed it firsthand in Youngstown in 1980, when his employer closed the Ohio Works plant, killing thousands of jobs. The Baytown facility, which JSW bought in 2007, is now a rerolling operation. Rerollers import what's known in the industry as semifinished steel, often in slab form, and process it into finished products such as pipes, as well as into sheets and plates that customers shape into

A stencil used on sheets of metal produced in Baytown

Hritz

auto body panels, washing machine shells, and other things. In Baytown, JSW's largest customers are energy companies, for which it fabricates pipes that channel oil and gas across Texas and the Great Plains.

Importing semifinished slabs gives rerollers a slight cost advantage over U.S. Steel and other fully integrated steelmakers, which use expensive blast furnaces to convert iron ore into usable steel. But rerollers remain more costly than minimills such as those operated by Nucor, which uses electric-arc furnaces to forge raw material from scrap metal and has little need to buy from overseas.

In a 2001 case that foreshadowed the debate over the current steel tariffs, the Commerce Department studied whether imports of semifinished steel might pose a threat to U.S. national security, given that easy access to steel would be crucial in the event of war. The so-called Section 232 inquiry was conducted under a 1962 trade law that empowered the president to impose levies on imports of products deemed vital to national security.

Commerce concluded that semifinished slab imports were no such menace, mainly because traditional U.S. steelmakers already produced three times the semifinished steel that might be needed in a conflict. The traditional companies used most of that internally to fashion products for customers and sold little of it to rerollers and other rivals. A study from Rutgers University in 2003 said the traditional companies had scant incentive to sell the stuff to their domestic competition, because they could reap bigger profit margins making it into customer products.

None of that mattered much to Jindal, whose father, Sajjan Jindal, is chairman of JSW Group, which owns a giant Indian steelmaker as well as major energy and infrastructure businesses. Starting around 2009, the younger Jindal, then an undergraduate at Brown University, visited Baytown during semester breaks. The plant was unprofitable, which he saw as an opportunity for both his father's company and himself. "I became emotionally attached," he says. "If I could turn it around, it would be a huge boost to my credibility. I wouldn't just be viewed as the father's son."

Much of Baytown's decades-old equipment was prone to costly breakdowns. Customers returned significant amounts of products because of poor quality. Only three energy companies had approved the plant as a regular supplier. Jindal and the bosses in India decided they had to dump the place or spend a pile of money on upgrades. They chose the latter option, reasoning that Baytown would be a big test of its ability to expand outside India.

Jindal was working on his MBA at Harvard in 2014 when he had a three-hour dinner in Boston with Hritz. An attorney, electrical engineer, and seasoned executive with experience at AK Steel Corp. and several other steel companies, Hritz was eager to try to turn around Baytown. In early 2015, JSW named him CEO of its U.S. operations.

The parent company was dangling serious investment, but first Hritz had to show he could get Baytown into the black. To give the old machines periodic chances to rest, he went to four days on and three days off, which also helped cut overtime costs. He instituted stringent quality and safety processes. The customer rejection rate declined, and more energy companies endorsed JSW as a supplier of pipe. (Today, as many as 38, Hritz says.) Hritz himself went customer to customer asserting that JSW was a different company than before. The plant started to make money.

Hritz was fired up, even more so after Trump was elected. JSW by then was laying the groundwork for the plan to build Baytown an electric-arc furnace along with a slab-casting machine that would spit out steel slabs for products to feed the fracking boom in Texas' Permian Basin as well as an expected upswing in infrastructure spending. (The latter has yet to materialize.) Once the arc furnace was running in a couple of years, Baytown would no longer have to import slab; the new furnace and caster would supply it.

Domestic steelmakers helped persuade the Commerce Department in 2017 to revisit the question of whether steel imports threatened national security. This time the answer was yes. Since the 2001 study, imports had risen to more than 30% of U.S. steel consumption, the department said. The number of facilities operating blast furnaces had fallen to nine, from 19, and the industry had been operating for years in the red. Domestic makers "will be unable to meet the current and projected needs of the U.S. military and critical infrastructure sectors," the department concluded on Jan. 11, 2018. ▶

◀ Trump announced his intention to impose the tariffs on March 1, 2018, and a week later it was official. Hritz was delighted. He expected the levies to discourage foreign rivals from illegally dumping steel in the U.S. while JSW built out Baytown. (JSW units in India were found to have been illegally dumping cold-rolled and coated steel in the U.S. in 2016; the company says it's since stopped shipping it.)

Jindal says he thought the Trump tariffs "were just going to make our strategy the correct one." JSW announced its Baytown expansion plan on March 26, 2018. A few days later the company acquired an old Wheeling Pittsburgh Steel mill in Mingo Junction, Ohio, for $187 million. It vowed to reactivate the plant's idled electric-arc furnace and add a new one, at a cost of $500 million. JSW would have three arc furnaces in the U.S. (Nucor has 28.)

Mingo Junction was a risky play. Set in a scruffy hill town where scenes from *The Deer Hunter* were shot, the mill dated to the late 1800s, and a series of previous owners had failed to make it work. Weeds were growing through some of the ancient machinery. Undaunted, JSW revived the existing arc furnace while making plans for the new one. Jindal envisioned the mill serving the auto and construction sectors while Baytown focused on energy. Mingo Junction Mayor Ed Fithen declared, "I always knew something would happen. I never lost faith."

There was a problem, though. Buried in the Commerce Department analysis was a time bomb for JSW and other rerollers: Semifinished slab steel was lumped in with all the other steel being shipped from abroad, and therefore would be subject to tariffs. The department said affected companies could remedy this by seeking exclusions from the tariffs. Petitioners needed merely to demonstrate that the stuff they were importing wasn't readily available in the U.S. Requests would be decided, Commerce said, "in general… within 90 days of a completed application being filed with the Secretary." JSW had to wait a year.

The same day news of the Mingo Junction deal broke, Jindal and Hritz met with Secretary of Commerce Wilbur Ross in Washington. Jindal says Ross was pleased about JSW's plan to invest $1 billion in the U.S. While not guaranteeing anything, "he said, 'We will look at your tariff request very favorably,'" Jindal recalls. A department spokesman, without commenting specifically on any meeting, says exclusion decisions are made solely on publicly available information submitted by interested parties.

The department was unprepared for the flood of requests it got for exclusions. It had estimated there would be 4,500 petitions for tariff relief. By early 2019 it had more than 50,000 from steel and aluminum makers, as well as from manufacturers of furnaces, razor blades, automobiles, and other metal goods, according to an analysis by the Mercatus Center, a research think tank at George Mason University. As of late January, steel claims alone had risen to more than 141,000, with almost 75,000 granted, 22,000 denied, and 27,000 rejected for filing errors, according to the Commerce Department.

High-grade steel pipes awaiting shipment

JSW filed six exclusion requests for imports from India in April 2018, followed by another six for Mexican imports that June. JSW told Commerce it couldn't rely on "direct competitors" in the U.S. to supply its slab. Echoing the department's 2001 analysis, JSW said that the material it needed simply wasn't available in the quantities and specifications it required and that, furthermore, competitors had no incentive to sell JSW slab that they could process and sell themselves at a higher markup.

JSW told the department it needed to import slab only during the two years necessary to complete the Baytown expansion. Lacking relief, the company said, "JSW will be unable to continue operating the Baytown plant on an economic basis." Publicly, Hritz expressed confidence that the tariffs would bolster the domestic industry. "People that are complaining about the Trump administration, let them complain," he told *Fastmarkets AMM* in June 2018.

Months passed. Two different parts of Commerce were studying petitions from scores of companies, and Congress requested tweaks to the process that temporarily slowed things. The department spokesman says the creation of an online portal last June for exemption pleas means there are "essentially zero requests" that aren't being "meticulously" considered.

Complicating matters, some steel companies submitted objections insisting they could supply whatever steel was needed, so those seeking tariff relief didn't deserve it. In other words, if Company A seeks to avoid paying tariffs on steel from Brazil, Company B can object by asserting that it can deliver the same steel within eight weeks. Objecting to one of JSW's exclusion pleas, Nucor asserted that giving slab production to American mills—such as one U.S. Steel was restarting in Fairfield, Ala.—is "exactly the outcome intended" by the tariffs.

That's true, if the objecting company is painting an accurate picture. But as Christine McDaniel, a senior research fellow at the Mercatus Center, says, "You don't have to prove that you can make it for me, you just have to say that you can." That can result in some problematic arithmetic. For instance, Nucor, which produced 24.4 million metric tons of steel in 2017, has told Commerce it could supply 42 million metric tons to companies seeking tariff waivers, according to Mercatus. U.S. Steel said it could produce 49 million metric tons for its competitors, more than three times its production in 2017.

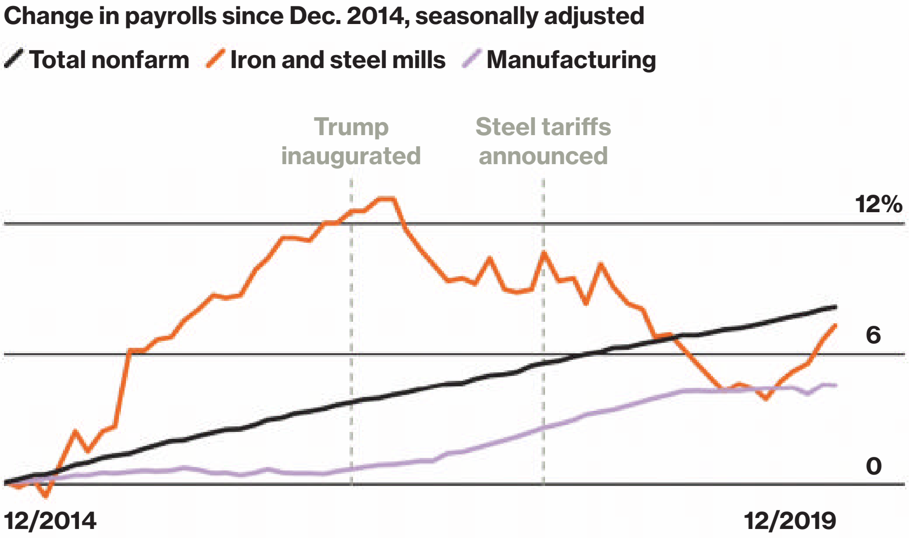
McDaniel says Nucor and U.S. Steel appear to have leveraged their political ties to Trump, who campaigned hard in Ohio, Pennsylvania, and other steel states on reviving the industry. In October the Commerce Department's inspector general, without naming names, issued a memo saying that a "lack of transparency" had contributed to "the appearance of improper influence" and that Commerce officials "may not be impartial" in making tariff exclusion decisions. The department says it's "taken numerous steps to safeguard the Section 232 exclusion process" and plans to "further improve transparency with industry."

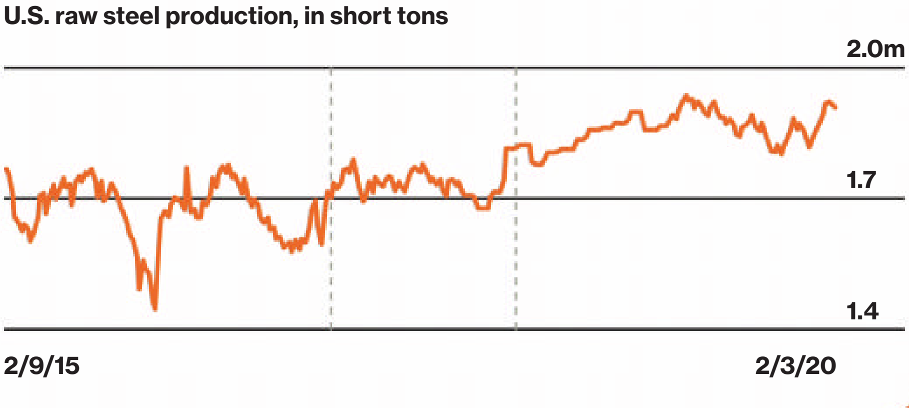
U.S. Steel declined to comment. Nucor spokeswoman Katherine Miller noted that companies seeking tariff relief have requested exemptions on more than 107 million tons of steel—at least triple the amount of all 2018 steel imports, rendering Mercatus's arguments "meaningless." Former Nucor CEO Dan DiMicco, who advised the Trump campaign on trade, says of JSW, "I give them credit for where they're going, but they could have done this years ago, and they didn't."

JSW's waiver requests faced objections from Nucor, U.S. Steel, and AK Steel. JSW's Washington lobbyists at the Vogel Group repeatedly met with Commerce officials to point out that the objectors couldn't possibly meet the company's needs. In April and May, the department nevertheless issued two batches of almost identical denials, saying U.S. companies produced the slab JSW needed in "a sufficient and reasonably available amount" of "satisfactory quality." JSW has now paid about $50 million in tariffs.

On July 25, Hritz and a Mingo Junction worker joined a large group that gathered with Trump at the White House to mark the anniversary of a pledge for U.S. businesses to create more jobs. Hritz praised Trump's "bold leadership on tax reform, a smart regulatory agenda, and investing in American workers." Five days later, JSW sued the administration in the U.S. Court of International Trade.

STEEL EMPLOYMENT AND PRODUCTION





DATA: BUREAU OF LABOR STATISTICS, AMERICAN IRON AND STEEL INSTITUTE

"WE WANT TO HAVE OUR TARIFF MONEY BACK, AND THEN WE CAN GO FASTER"

Hritz's office at Mingo Junction is in a sparsely furnished trailer with a view of the Ohio River. To use the restroom, he has to go outside to an adjacent building.

Parts of the mill itself feel like a steel industry museum. Much of the floor is dirt. Large areas are strewn with unused parts waiting to be scrapped. But there's also the newly living arc furnace as well as stacks and stacks of steel slabs, heat still rising off them days after they were made.

Mingo Junction and Baytown are both losing money "hand over fist" when the tariffs are accounted for, Jindal says. The mills are operating at well below 50% capacity, when about 70% is necessary to turn a profit. JSW has indefinitely postponed plans to build the arc furnace at Baytown and add the second at Mingo Junction. Although the company has added several hundred workers at the facilities, it recently laid off 175 at Baytown, and total investment in the plants is expected to be closer to $350 million than the original $1 billion, Jindal says.

These problems aren't all a result of having to pay tariffs. JSW has had to slow production at Baytown while installing new equipment. In addition, a number of steelmakers reactivated furnaces as prices for steel rose for a while after the Trump decision. The increased supply eventually caught up with decreasing demand, pushing down prices and contributing to the recent layoffs at U.S. Steel.

Like NLMK and other rerollers, JSW has rejiggered its supply chain to source slab from countries exempt from tariffs. But it's a game of industrial whack-a-mole when Trump can change things with a tweet, as he did in December by unexpectedly declaring Brazil and Argentina no longer exempt from the levies. He reversed himself on Brazil and hasn't followed through with action on Argentina.

If Hritz is discouraged, it's hard to tell. He says he's confident that JSW's lawsuit will eventually work in its favor, the government will refund the tariffs, and the company will become a bona fide melt-and-manufacture operation. "We want to have our tariff money back, and then we can go faster," he says. "When we're all done, we'll have one hell of a steel company." Ⓑ

Almost all 175 pieces of *The Mane Event* are the same size and color

Stave Puzzles Will Drive You Wild

How a tiny manufacturer of wooden jigsaw puzzles created an addiction that high achievers just can't kick

By Devin Leonard *Photograph by Eric Helgas*

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Edited by Chris Rovzar

Businessweek.com

Hal Brierley looked at the 1,185-piece puzzle on the dining room table at his Dallas home with mounting frustration. It had been almost a month since his wife and sister-in-law had given it to him for Christmas to test his puzzling skills, and he was still only a third of the way through.

A designer of customer loyalty programs for companies such as Hilton and Hertz, Brierley craves fiendishly difficult puzzles. He usually has one going on the dining table at his family's second home in Utah, too. "It's probably a bit of an addiction," he admits.

This particularly troublesome brain teaser had been custom-designed by Stave Puzzles Inc., a tiny company that cuts all of its puzzles by hand in a nondescript building in Norwich, Vt., an affluent commuter town across the Connecticut River from Hanover, N.H., home to Dartmouth College. The company jokes that some of its puzzles are conceived by a sadist. Among connoisseurs, it's famous for delighting, infuriating, and fostering a co-dependency with high-achieving customers—names like Gates, Bezos, Bush. Queen Elizabeth II is also a fan, not to mention scores of second-, third-, and fourth-generation heirs to dynastic fortunes.

Pete Furniss, a onetime computer company owner who lives in Georgia, also describes his attachment to Stave puzzles with a whiff of unhealthiness. He got hooked when he stumbled on one in a common area at Triple Creek Ranch, a luxury resort in Montana. "I could have saved a lot of money if I'd never sat down there," he says ruefully. Now one of Stave's biggest customers (he orders about 10 at a time), Furniss says he's sometimes harrowed enough by its puzzles to curse at them. But he kind of likes that.

"There's just something cool about unraveling a puzzle's secrets," says YouTube puzzle expert Chris Ramsay, who has 3.6 million subscribers to his channel, where he broadcasts videos grappling with $3,000 locks and rare Enigma boxes. "The rush of figuring it out yourself only comes with a level of mind-numbing patience, where you start thinking abstractly a little, and it leads you in the right direction. If you're running or owning a business," he continues, "this deconstructing mindset is huge. It's problem solving."

It can be an expensive habit. Staves range from about $300 to $10,000 depending on the number of pieces. A custom-built one can cost even more. One of the company's bestsellers, *The Mane Event*, goes for $1,700. It ranks a 5 out of 5 on the Stave "tormentor" scale because most of its 175 pieces—which add up to make a lion's head if you are ever so clever—are pretty much the same shape and color. Another popular puzzle is *Olivia*, a 215-piece octopus shape that sells for $2,700. It can be assembled 10,000 ways—only one of which is correct. The company even used to offer a bottle of aspirin with it.

Inflicting pain on puzzle addicts wasn't what Steve Richardson, who refers to himself as Stave's "chief tormentor," had in mind when he founded the company in 1974 with Dave Tibbetts. The two, laid off from jobs at a New Hampshire computer company, started making board games and cheap cardboard puzzles. One day a Boston man called to say he'd been buying wooden jigsaws, but his supplier wasn't making them anymore. He was willing to pay $300 apiece (more than $1,600 in today's dollars). "My eyes lit up," Richardson recalls. "I said to Dave, 'If there's an existing customer base of wealthy eccentrics crazy enough to pay that kind of money, maybe we can pick it up.'"

So Richardson got a hold of his father-in-law's scroll saw and taught himself to cut wooden jigsaw pieces. They also bought ads in the *New Yorker*. The first response came from the grandson of the founder of pharmaceutical giant Eli Lilly & Co. He was soon spending $50,000 a year on Staves, some of them specially designed for him. Another regular was a woman in New York whose toucan flew around her penthouse, swooping down from time to time to devour puzzle pieces. Rather than cage her pet, she bought the bird its own Stave to nibble on.

Richardson found that the more difficult he made the puzzles, the more compulsive his buyers became. He began to design them without the straight edges that puzzlers tend to look for when they start assembling. He threw in extra pieces that didn't fit to torture them further. People who'd invested thousands of dollars begged for clues; others offered bribes. Some who completed them too easily

The more traditional *Desire*, with an irregular edge, starts at about $900; familiar shapes and words are hidden among the pieces

PROBLEM SOLVERS, UNITE!

Test your puzzling skills in real life with one of these group activities

The Fun One

There aren't any jigsaw pieces at Compass, a biannual puzzle hunt that grew out of the finance industry's Midnight Madness events in New York. Instead, teams from Wall Street firms solve riddles, decode Enigma machines, and apply Fibonacci sequences over 12 hours. In 2017 it began at Pier 46 and ended at the *Intrepid* battleship; in 2019 it started near the stock exchange and wound up at a bar in Brooklyn. (The prize was a bottle of whiskey.) Fees are $30,000 per team, and all proceeds go to Good Shepherd Services, which works with at-risk youth in the city.

The Ridiculous One

The MIT Mystery Hunt, which begins every year at noon the Friday before Martin Luther King Jr. Day, is one of the world's oldest and most complex puzzle hunts. Held on the university's campus in Cambridge, Mass., it attracts about 120 teams and 2,500 contestants every year. The hunt's distinguishing feature is that teams have to find solutions to all the puzzles in one round to solve a metapuzzle before they can begin the "runaround" phase to find a hidden coin—the nominal prize. The hunts, which have been based on *Alice in Wonderland* and the movie *Inception*, take 48 hours.

The Impossible One

For the past decade, Forrest Fenn's treasure hunt has lured thousands of people to the Rocky Mountains to search for a bronze chest full of gold and artifacts said to be worth about $2 million. The only clues are in a 24-line poem Fenn published in 2010, plus a few hints the eccentric art dealer has given along the way: He hid the chest in the mountains of Colorado, Montana, New Mexico, or Wyoming, at an elevation of 5,000 to 10,200 feet. Despite numerous warnings about the treacherous terrain, people continue looking for the loot. At least four have died.

called to complain they hadn't gotten their money's worth.

The company broadened its puzzle-junkie base by partnering with five-star resorts, starting with nearby Twin Farms, where each room has Stave puzzles to entertain snowbound guests. On the night I stayed, I failed to complete the 25-piece puzzle in my room that visitors can take home. (My daughter later managed it in about 10 minutes.)

In 2016, Richardson sold the company to two longtime employees, Paula Tardie and Jennifer Lennox, but he's still designing puzzles, including one for Stave's 45th anniversary party this July. It has three correct outcomes in three different shapes, and anyone who completes it will receive a cash prize.

After recovering from another hectic Christmas season, Tardie, who handles the marketing side, and Lennox, responsible for production, give me a tour of the headquarters. They take me into the cutting room where 13 of their 25 employees, several with Band-Aids on their fingers, are hunched over saws. The cutters get a big board with the picture on it, and then each one is hand-cut so there's some personal style in it. Lennox says some customers are so particular, they want all their puzzles cut by the same person. "It's really weird," she says.

Around the corner, there's a wall of pictures and letters from some of Stave's best-known customers, where a photo of Bill and Melinda Gates is enshrined. "They like difficulty," Lennox says. Tardie agrees, saying the couple had fun with the $5,400 *Pentagon*, a limited edition that included five puzzles and a spy thriller with clues on how to complete it. There's also a picture of Jeff Bezos and his family. "Actually, Jeff's ex-wife, she's the puzzler," Tardie says. The late Barbara Bush, a longtime customer, used to say the best time for learning what was going on with her family was when she was sitting at the puzzle table with her children and grandchildren.

From there, Tardie and Lennox take me to a room down the hall to talk about the puzzle Brierley has on his dining room table. They show me a picture on a computer screen and explain how they worked with his wife and sister-in-law to make it. It's based on safari trips they took, and about a third is made up of their photos from the journeys. The rest of the pieces are almost all blue. Tardie has been keeping track of his progress–or lack thereof–via email updates from his wife. "He's crazy," Tardie says, laughing. "This is probably the most difficult puzzle we've ever made for him."

Back in Dallas, Brierley's mind veers toward conspiracy. His sister-in-law, he says, is punishing him for finishing an earlier one that displayed Buckingham Palace in a mere three hours. "Next Christmas, I keep telling them, give the money to charity. Do something different!" But he isn't quite ready to go cold turkey: "Let's just say I'm not a recovering Stave customer–yet." B

DESIRE: COURTESY STAVE. INTREPID: BEN HIDER/GETTY IMAGES. MIT: VICTOR J. BLUE/BLOOMBERG. ROCKIES: GETTY IMAGES

The Light Inside

Opals make for unique, distinctive jewelry. Now designers are using these glimmering stones as centerpieces of their collections. *By Hyla Bauer Photograph by Joanna McClure*

GURHAN
Bracelet composed of 21.7 carats of Australian opals set in 24k yellow gold.
$16,500; available at Neiman Marcus, San Francisco

JENNIFER MEYER
Bar necklace featuring a 2.5-carat opal set in 18-karat yellow gold with diamond accents.
$4,500; jennifermeyer.com

Full of fiery inner life and ever-changing colors, opals are singular among gemstones: Unlike sapphires and other crystalline gems, the stone is opaque, and its tiny specks of silica produce kaleidoscopic hues.

Opals "produce brilliant streaks of iridescent color when turned in the light," says jeweler Gurhan Orhan. The optical effect is "created when light passes through microscopic spheres of silica and diffracts to break up into the colors of the spectrum." Each stone has its own pattern; no two are alike. That's another part of their appeal—and why many of our selections here are one of a kind.

"Opals are really seductive, especially for gemologists," says Laurie Brookins, a writer and fine jewelry expert. "It's difficult to match opals because each is unique."

According to Will Kahn, market director of fine jewelry at Moda Operandi Inc., "opals are having a huge moment." He says they "were pushed into the spotlight by Irene Neuwirth," the lauded Los Angeles-based designer. Kahn prefers opal jewelry in a "layered casual style, the bohemian-chic look perfected by designers like Jacquie Aiche, Neuwirth, and Andrea Fohrman."

It takes at least 5 million years for Australian opal to form from natural silica deposits in the Earth. In contrast to lab-grown diamonds and sapphires, opals offer distinctive qualities that can't be mass-produced. "Opals are bossy—they tell you what you need to do with them," says designer Monica Rich Kosann about working with the stone.

After more than 10 years of using opals in her jewelry, Kosann says they "find their mamas. When you put an opal on a woman, if it's the right match, it just lights up." B

WEMPE
Opal earrings set in 18k rose gold, featuring 10 carats of opals, 4 carats of moonstones, and 1 carat of diamonds. *$14,675; available at Wempe, New York*

DAVID YURMAN HIGH JEWELRY
Opal and cognac diamond drop earrings set in 18k white gold. *$44,000; available at David Yurman, New York*

JARED LEHR
Earrings with 11.7 carats of opals and 2.1 carats of diamonds set in blackened 18k white gold. *$19,900; jaredlehr.com*

MONICA RICH KOSANN
Crescent moon pendant necklace showcasing an 18.6-carat boulder opal and 1.87 carats of diamonds set in 18k white gold. *$16,500; available at Bergdorf Goodman, New York*

IRENE NEUWIRTH
Ring with a 5-carat opal set in 18k gold, surrounded by diamonds and pearls. *$14,300; available at Irene Neuwirth, West Hollywood, Calif.*

Hikers scale Stratton Mountain during October's 29029 event, with glamping tents for rest between ascents

Scaling Mount Everest In Vermont

To feel pain is to feel alive. And millionaire life coach Jesse Itzler has a unique method to inflict it. *By Anders Melin*

The sun is still below the horizon and the temperature barely above freezing when Jesse Itzler gears up to ascend a black diamond ski slope. "We're going into the clouds!" he exclaims, eyeing the snow-covered summit of Vermont's Stratton Mountain, which is ominously concealed by dense fog.

Never mind that Itzler, a 51-year-old serial entrepreneur and former rapper, has enough money in the bank that he never has to work another day in his life, let alone scale a mountain on a chilly October morning. He's out here anyway, clad in blue shorts, a wind jacket, and a headband, accompanied by roughly 200 others who range from veteran endurance athletes to people for whom exercise is more of a goal than a habit. They've all paid about $4,000 for the privilege of joining him.

The challenge: Follow a winding trail up to the summit. Catch the gondola down. Repeat 16 times. That adds up to a little more than 29,029 feet of elevation—the equivalent of Mount Everest, without the altitude sickness and oxygen tanks—spread over 23 miles of trekking.

Over the next 36 hours, which is the time limit to complete this "Everesting" challenge, numerous participants confess that they've struggled to explain to family and friends what they've gotten themselves into. Lengthy runs or triathlons are known quantities for those who revel in physical exhaustion. Hauling up and down a ski slope isn't.

This recent "29029" event is the third that's been held in Vermont. (Another hike took place in Snowbasin, Utah, a few weeks prior, and the team is adding one in Sun Valley, Idaho, in June.) The participants are fairly evenly split between men and women, and the average age is well over 40. Some have a few marathons behind them. But for most, this is a new frontier.

Itzler, meanwhile, has been an endurance runner for decades. In the weeks leading up to Vermont, the father of four completed two races—one 100-miler and one where he lapped a course 17 times for a cumulative 79 miles. "It makes me feel super alive," he says. "And this allows everyone to have that experience."

Studies show that endurance sports disproportionately attract people with white-collar jobs and above-average incomes. That's true here on the mountain. Many are entrepreneurs or corporate managers. One is an executive at Bank

PHOTOGRAPHS COURTESY 29029

of New York Mellon Corp. There's a Goldman Sachs Group Inc. private wealth manager, a president of an executive search company, a California civil rights attorney.

Part of it comes down to costs and time: Training, equipment, and travel can easily amount to several thousand dollars. (The Vermont climbers have gone through a 20-week preclimb program overseen by Itzler's deputies.)

But it also makes you wonder why people who work long hours to attain a comfortable lifestyle spend significant amounts attempting to get uncomfortable. The answer, at least according to a study of Tough Mudders in the *Journal of Consumer Research*, is simple: to escape themselves.

"By flooding the consciousness with gnawing unpleasantness, pain provides a temporary relief from the burdens of self-awareness" and helps participants "create the story of a fulfilled life," the authors wrote.

"We live in general—obviously not everybody—cushy lives," says Chad Livingston, 47, a first-time Everester who works at a family office in New York. "And you sort of have to manufacture immensely challenging things. I think it sharpens you."

Born and raised in a middle-class family on Long Island, Itzler has a résumé that's anything but conventional. He started out as a rapper in the early 1990s, and that evolved into a music consulting business in which he wrote a song for the NBA that won him an Emmy. He then co-founded Marquis Jet Holdings Inc., a pay-by-the-hour private jet company that Warren Buffett's Berkshire Hathaway Inc. bought in 2010. And he helped build and eventually sell Zico Coconut Water to Coca-Cola Co. in 2013. He's written a *New York Times* bestseller chronicling his experience hiring a Navy SEAL to move in with him to train him. And he married Sara Blakely, the billionaire founder of Spanx.

In recent years he's turned to public speaking and runs a life coaching program, preaching the importance of charging ahead. Many of the hikers in Vermont either took his course or know someone who did. And they echo one another when quizzed why they're here: to learn from Itzler firsthand, break routines, and test limits.

Itzler and his team created 29029 to bring endurance racing to the masses. Not all knees are built for hours of running or biking, and that hurdle can get higher with age. But, Itzler says, almost anyone can climb stairs (or a ski slope) at a modest pace for a prolonged period of time.

The first 15 or so minutes of each ascent consist of a serpentine gravel path. After little more than a half-mile and roughly 500 feet of elevation gain, the landscape flattens. Cheery volunteers manning a tent full of snacks help brighten the mood.

Fifty yards later, the slope turns sharply upward, and the trek turns into a climb. The stomped-up path narrows to a treacherous mudslide. Chitchat trails off. Heart rates pick up. Farther up, there's a continuous series of inclines that resemble vertical walls. Equipped trekkers drive their hiking poles deep into the muddy soil, hoisting themselves up inch by inch. Those without proper gear—including this *Bloomberg Businessweek* reporter—find themselves crawling on all fours. The pace slows markedly. After walking uphill for hours, it's hard to focus on anything beyond putting one foot in front of the other. And it's especially hard when you're woefully underdressed for the elements, like me, in running shoes and track pants, wrapped haphazardly in sweaters. (I hadn't planned on hiking the whole thing but felt compelled when I realized I was more or less the youngest person there.)

Each ascent is about 1,750 feet of elevation, which doesn't sound particularly threatening. But out there, well, there's no way around it: A black diamond ski slope is really, really steep.

By the time the summit emerges amid the fog, the temperature has dropped by as much as 20 degrees. The ground is covered by snow, and wind gusts rip through a tent that houses a smorgasbord of nutrition bars, fruit, and hot Gatorade. The quickest trekkers make it up here in less than 40 minutes. The average person takes a bit over an hour. Nobody—not even Colin O'Brady, who recently skied alone across Antarctica—has ever finished all 17 ascents in less than 15 hours.

That sheer length of time is what makes it so challenging, Itzler says. "It's really about patience. No matter what you do, whether we go this fast or"—he speeds up—"this fast, it'll take in total 26 hours, 30 hours. There's no way around it, man."

On the afternoon before we start, a former Olympic swimmer lectured the participants about how to best eat and drink during the trek. Ex-SEAL Chadd Wright and Charlie Engle, who once ran more than 4,000 miles across the Sahara Desert, talked about the importance of avoiding a defeatist mindset.

They're necessary lessons. By 9 p.m., after 14 hours of nonstop trekking and 11 ascents completed, I'm wiped. One by one, participants withdraw for a few hours of rest, except for a brave few who hike through the night. The next morning, Itzler and his crew are back on the mountain, mingling with participants. It's the proximity to the who's who of endurance sports and a sense of togetherness, hikers say, that set this weekend apart from competing events. Exhaustion catches up with everyone, and all that's left is a group of humans on a joint mission to put one foot in front of the other, then repeat. On the mountain, everyone is an equal.

Itzler hikes his 17 ascents with the demeanor of an affable rock star, patiently shaking hands, taking photos, and sharing experiences from his business endeavors. He looks a full decade younger than his age; the headband never comes off.

Anyone who works out knows the kind of emotional clarity that sets in after a hard session. Fatigue strips away many petty worries that occupy the mind. Problems suddenly seem less insurmountable, and the mind is buoyed by a sense of accomplishment. Those same things happen on the mountain—but more pronounced. Itzler repeatedly tells participants to hold on to that feeling of achievement and bring it out whenever self-doubt sets in. It will last only as long as you let it, he says.

When the 36-hour time limit is up, two-thirds of the participants have finished all 17 hikes. That night, Itzler tells them all to go home and double their business plans. "Whatever you think you can do, or thought you were limited to—that bar has been reset." Ⓑ

Facebook's Two Faces

A comprehensive history tells the story Zuckerberg & Co. want you to hear—but then holds those claims up to reality
By Austin Carr

Several weeks ago, Mark Zuckerberg, the perennially embattled chief executive officer of Facebook Inc., said he's done caring if he's liked. His new goal? He wants to be understood.

Steven Levy, a veteran technology journalist, sets out to do just that in *Facebook: The Inside Story* (Blue Rider Press, $30). Levy charts how, in a move-fast-and-break-things pursuit of market share and consumer data and advertising dollars, Zuckerberg opened a Pandora's box of social ills, from viral misinformation and hate speech to digital colonialism and election interference. Yet the more the CEO attempts to explain away these Facebook-facilitated calamities as unintended and fixable, the more apparent it becomes that he doesn't have substantive answers–and that he still hasn't come to grips with all the harm his creation has wrought.

At "*Finnegans Wake*-ish proportions," to steal a description from the author, Levy's book first delves into the social network's early days, with stories of Harvard, the Winklevii, Sean Parker, and Myspace-era privacy scandals. In rehashing old news, albeit with novel color, the author's goal is to identify precursors of Facebook's current woes.

Levy got his hands on a significant portion of Zuckerberg's 2006 diary, a small notebook full of ideas the future billionaire named the "Book of Change." The journal outlines lofty ambitions Zuckerberg had for transforming Facebook into a "futuristic government-style interface to access a database full of information linked to every person." Even nonusers would be ensnared: Zuckerberg wrote of implementing "Dark Profiles," placeholder accounts for network holdouts, constructed with data mined from friends who'd already signed up. Levy confirms that these profiles existed, at least for a time. Facebook is said to have taken out Google search ads linked to them, apparently aiming to attract nonusers with prebuilt profiles.

This may seem quaint by 2020 standards. The Trump era of Facebook described in the book is meatier and, by extension, more distressing. Company leaders ricochet from one corporate crisis to the next, unequipped to deal with fallout and seemingly far more concerned about their public-relations strategy than addressing the underlying problems of their services.

Notably, insiders point fingers at Chief Operating Officer Sheryl Sandberg. As the critical 2016 election year approached, she was "not operating at peak performance," Levy writes, which he attributes to her husband's tragic death the previous May. Sandberg is depicted as a micromanager, fanatical about her public image–her "center of gravity"–and known to scream at underlings. In Levy's telling, she's unnecessarily manipulative and calculating, faking nervousness in front of journalists to induce softer questions. He describes how Sandberg didn't want to suggest she was in cahoots with Twitter Inc.'s Jack Dorsey before a congressional hearing, so she decided to avoid a hug with her industry friend. By the time she begins weeping over her faults in front of Levy during an emotional two-hour interview–"I'm upset, we're all upset," she says–a reader is led to wonder how much of her anguish is an act.

Zuckerberg is harder to read, ping-ponging in Levy's portrayal between naive genius and robotic robber baron. He, too, is consumed by his public image. (A communications exec is shown blow-drying the CEO's armpits before speaking appearances to eliminate anxiety sweat.) Far worse, Zuckerberg's deepest reflections on Facebook's catastrophes are surprisingly shallow: He was merely too idealistic about technology's use for good vs. bad, and he's learned his lesson but realizes Facebook has work to do. "People think that we've eroded [privacy]," he says. "I would actually argue we have done privacy innovations, which have given people new types of private or semiprivate spaces in which they can come together and express themselves."

All this raises questions about the virtue of Levy's access. This is clearly a book in which Facebook's executives–an impressive number of them–decided to participate to tell the company's side of the story. But I'm not sure I'm much more informed about Facebook's moral compass as a result, given how often company boilerplate dilutes the truth. Still, the book does an admirable job calling balls and strikes on the execs' revisionist version of Facebook's past and present. Zuckerberg's answers reveal a founder-CEO still deeply defensive about Facebook's role in so many societal challenges. Sincerely engaging with these issues is apparently beyond his emotional range, which means repairing them is likely a pipe dream. B

Top of the Line

Despite our digital lives, the lowly pencil is in its prime. *Photograph by Ted + Chelsea Cavanaugh*

Objects of obsession tend to be flashy—watches, jewelry, cars—but the humble pencil is not immune to fetishization. Caroline Weaver, owner of CW Pencil Enterprise and author of *Pencils You Should Know* (Chronicle Books, $16.95), credits their sensory appeal. "A pencil feels different," she says. "It smells like something. It sounds like something." Blackwings, a favorite of John Steinbeck and Bugs Bunny creator Chuck Jones, are a case in point: While vintage specimens can go for more than $40 each on EBay, new versions ($25 for a set of 12) are beguiling a generation of contemporary devotees with their pedigree and smooth-as-silk writing quality.

THE COMPETITION

• Pencils have been made under the Viarco banner in Portugal since 1936, and its classic red Desenho 250 with gold foil ($9 for a set of 12) is a "deep cut" among cognoscenti. "They have this audible scratchiness that people really like," Weaver says.

• Mitsubishi Pencil Co.'s Kohitsu Shosha sells for $8. "People who love them hoard them," says Weaver. They're graded 10B, which indicates a wide core of the softest grade of lead available—more than 90% graphite.

• Most quality pencils are produced from California incense cedar, but Switzerland manufacturer Caran d'Ache makes its Swiss Wood pairing out of beech and pine ($26). The sharpened tip of the beech pencil, Weaver says, "smells like brown sugar."

THE CASE

Since it was restarted in 2010 by California Cedar Products Co., a major wood supplier to the pencil industry, Blackwing has made deep inroads in the arts and design communities. That's largely thanks to its Volumes limited-edition series, which is also available by quarterly subscription. The most recent (pictured), a tribute to Bauhaus design, comes with the brand's rectangular, replaceable eraser. It uses a soft graphite ideally suited to sketching, but it will give your handwriting a lift, too, whether you're churning out the next *Grapes of Wrath* or scribbling a reminder to buy actual grapes at the supermarket. *$25 for a set of 12; blackwing602.com*

Household Size May Be Bottoming Out

By Justin Fox

The average U.S. household had 2.52 people in 2019, the Census Bureau estimates. That's the country's smallest size ever. It's precisely half of the number in 1880 and down a quarter from the Baby Boom-era average of 3.36.

This long decline in household size is linked to all sorts of economic and social phenomena: urbanization, the forgoing of marriage and childbirth—even the rise in spending on restaurants relative to groceries, as smaller households save less by preparing meals at home. Smaller households also use more energy per person, a hurdle for combating climate change as household sizes decrease around the world.

The shrinking of the American household may be coming to an end, though. In one sense, that's inevitable: The average size can't go below one; and even two feels like a stretch, though a couple of European countries have been flirting with that number lately.

In the U.S., the Census Bureau's main household-size measure shows only the tiniest declines in recent years, while another census survey shows it rising since 2010. Adult children have been staying at or moving back to their parents' homes. Unrelated people are living together in greater numbers, too.

These trends may indicate that Americans have had enough of living alone. But they may also reflect high real estate prices in parts of the country and a housing stock that's failed to adjust to falling household size. About 63% of households in the U.S. now consist of two or fewer people, but 61% of the country's housing units have three bedrooms or more. Ⓑ *—Fox is a columnist for Bloomberg Opinion*

● EMPTY HOUSE
Households led by non-Hispanic whites in the U.S. had the smallest average size in 2019, at 2.36, while those led by Hispanics averaged 3.22.

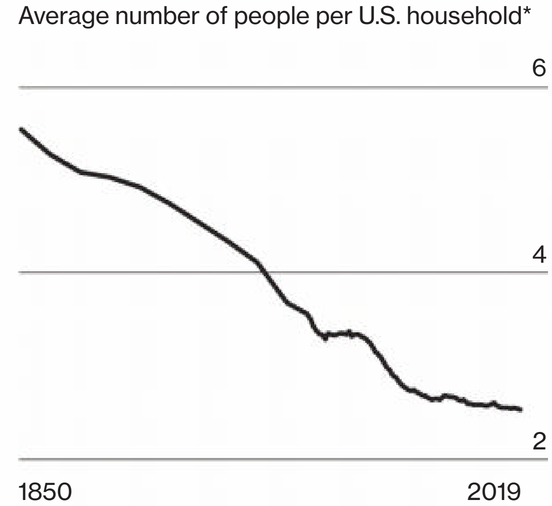
● GLOBAL LOW
Germany's average household size in 2018 of

1.99

was possibly the world's lowest.

● FULL HOUSE
Utah had the largest average household size among U.S. states in 2018, at 3.12. Maine had the smallest, at 2.28. The metropolitan area with the largest households was El Centro, Calif., at 3.87.

● SLIMMING DOWN
Average number of people per U.S. household*



● GOING SOLO
One-person households accounted for 28.4% of the U.S. total in 2019, up from 13.1% in 1960. Households of four or more people went from a 40.2% share to 22.1%.

ILLUSTRATION BY GEORGE WYLESOL. *FIGURES SHOWN EVERY 10 YEARS UNTIL 1947, WHEN ANNUAL DATA BECAME AVAILABLE. DATA: U.S. CENSUS BUREAU, HISTORICAL STATISTICS OF THE UNITED STATES

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