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Bloomberg Businessweek

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Bloomberg Businessweek

February 12, 2018

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▲ Robinhood co-founders Baiju Bhatt (left) and Vlad Tenev in Menlo Park, Calif.

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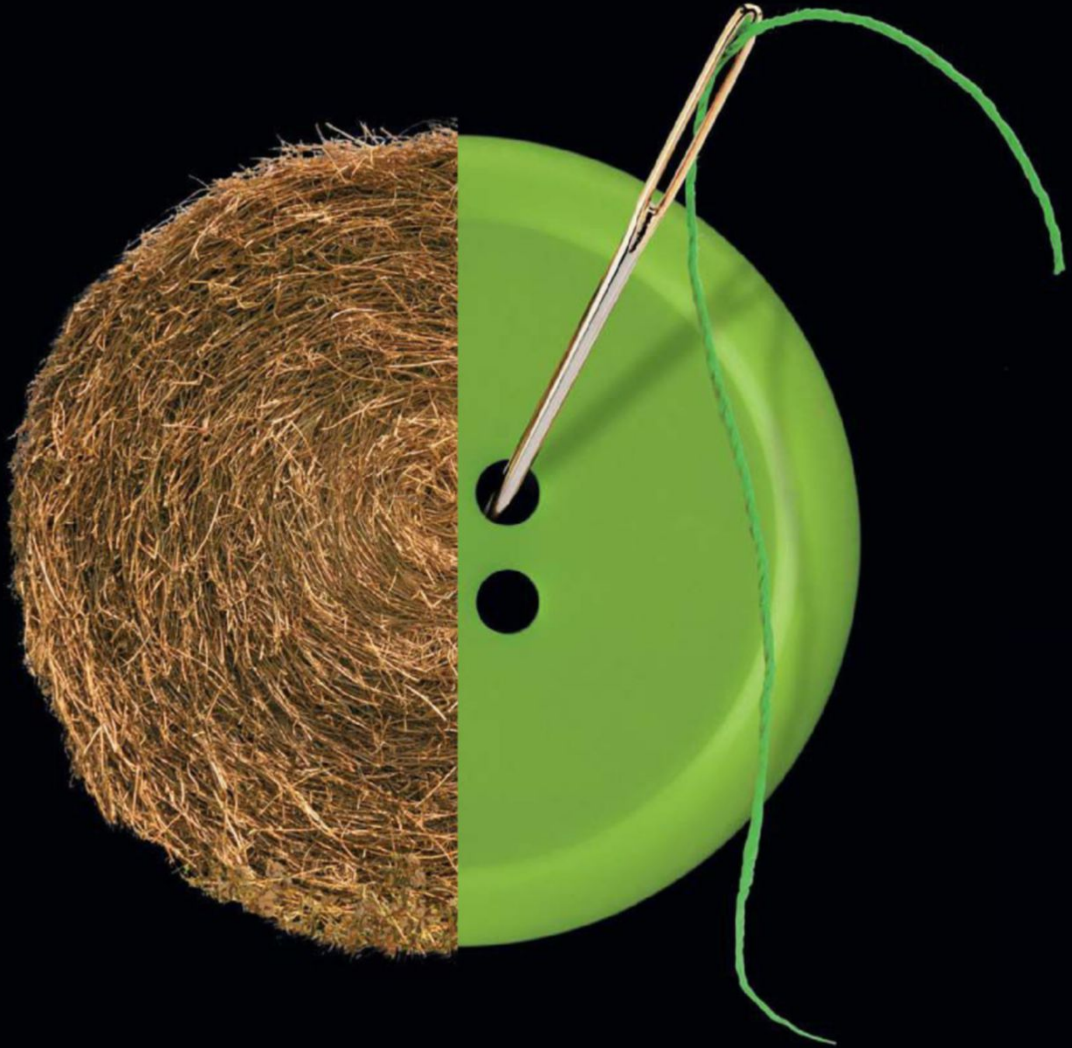

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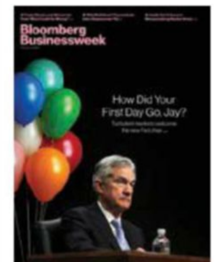

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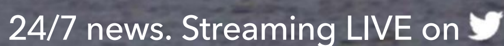

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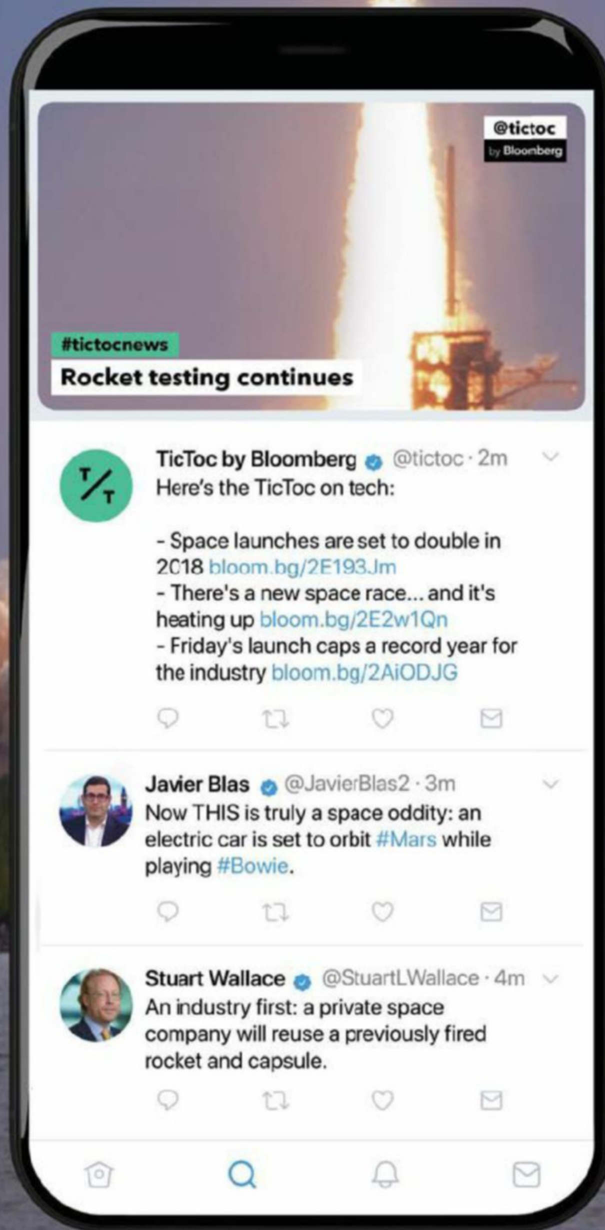

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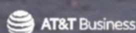
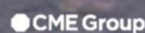
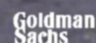
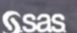








■ IN BRIEF

Asia

● Crews in Taiwan rushed to rescue dozens of people trapped under rubble after a 6.4-magnitude earthquake.

● Maldives President Abdulla Yameen jailed two Supreme Court justices and blocked lawmakers' access to parliament, calling the actions a response to an attempted coup.

● Forty-seven Russian athletes made last-ditch appeals to the International Olympic Committee to compete in the Winter Games in Pyeongchang. The IOC had barred Russia over allegations of widespread doping during the 2014 Games, but said decisions on individual athletes' eligibility would be made on a case-by-case basis.

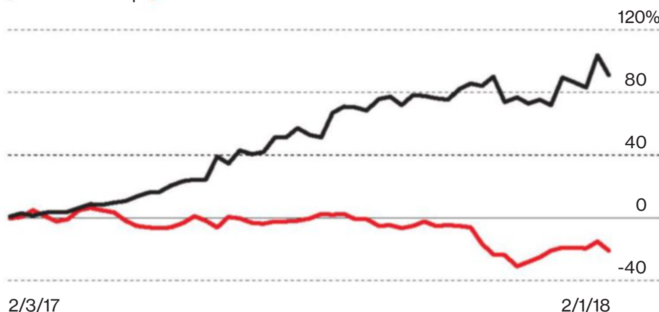
● China's Zhejiang Geely maneuvered to buy 3 percent of Daimler, the parent of Mercedes.

Geely, which also owns Volvo, has been on a shopping spree, buying the London Taxi Co., Lotus, and Terrafugia, a U.S. startup focused on flying cars.

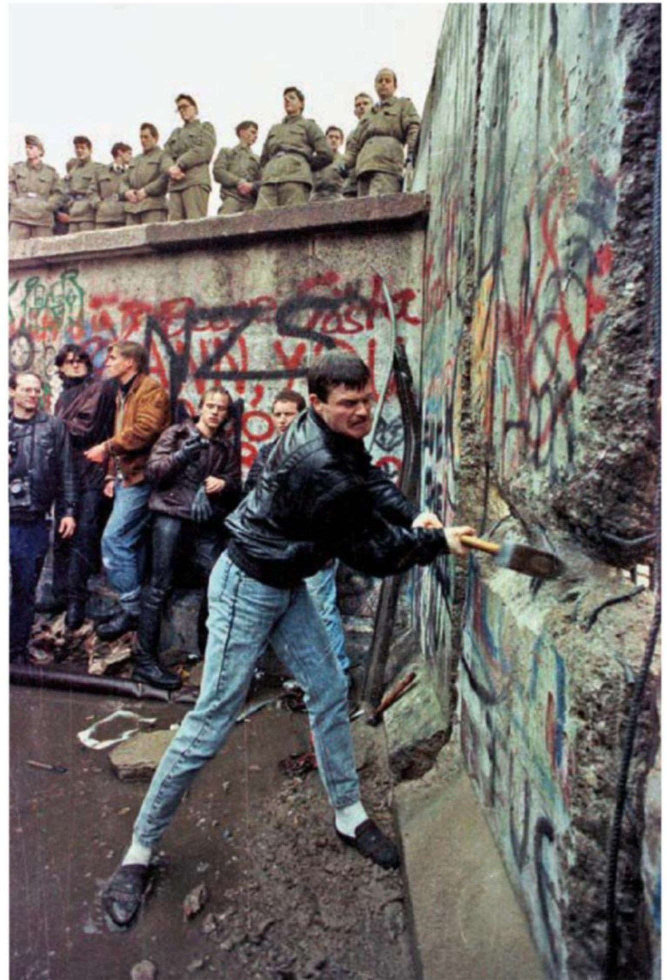
● Alibaba took a $743 million stake in Wanda Film, the cinema chain owned by Dalian Wanda, which controls about 14 percent of China's movie-going market. Alibaba's own film division has underperformed in the past year.

Change in share price since Feb. 3, 2017

Alibaba Group / Alibaba Pictures



Europe



● As of Feb. 6, the Berlin Wall had been down for exactly 10,316 days, one day longer than it stood. A day before, officials confirmed the authenticity of a 260-foot stretch of the wall that had survived undiscovered in woods north of the city.

● It's now illegal in Poland to accuse the country of assisting in the Holocaust.

As of Feb. 6, such statements qualify as libel and carry a jail sentence of as much as three years. ▷ 41

● The sole surviving suspect in the November 2015 Paris terror attacks, Salah Abdeslam, refused to cooperate with the court on the first day of his trial in Belgium for allegedly engaging in a gun battle with police. He also faces charges in France.

YAMEEN: KIMIMASA MAYAMA/AFP/GETTY IMAGES. BERLIN: REUTERS. MERKEL: INGA KJER/GETTY IMAGES. LOUBOUTIN: RAYMOND HALL/GC IMAGES. SPACEX: COURTESY SPACEX. BUHARI: SSOUF SANOGO/AFP/GETTY IMAGES. DATA: COMPILED BY BLOOMBERG

● More than four months after parliamentary

elections, German Chancellor Angela Merkel finagled a deal with the center-left Social Democratic Party to form a government. One last hurdle: The SPD's 460,000 members have to approve the deal. The result is expected to be announced in early March.

● The European Union's highest court ruled that Christian Louboutin's signature red soles were part of the shoes' shape and therefore not protected by EU trademark law. The ruling came in a suit filed by Louboutin against Dutch rival Van Haren. The company won a similar suit against Yves Saint Laurent in the U.S. in 2012.

● Reinsurance giant Swiss Re confirmed that it's in talks to sell a minority stake to Japan's SoftBank, which is led by mega-investor Masayoshi Son.

Americas

● "In my wildest imagination, I don't know why these products exist. Who do they benefit?"

Volatility Index co-creator Devesh Shah criticized financial products tied to the index he helped assemble 15 years ago. Derivative bets based on the Vix may have fueled huge swings in stock markets around the world on Feb. 5. ▷ 25

● The long-awaited *Waymo v. Uber Technologies* trial got started on Feb. 5 with opening arguments from both parties.

● Costa Rica's presidential election appeared headed for a runoff between Carlos Alvarado Quesada, the former labor minister, and Fabricio Alvarado, a TV journalist turned Christian singer. The next vote is scheduled for April 1.

● SpaceX successfully launched the Falcon Heavy, the most powerful rocket in use, sending a Tesla Roadster into orbit. CEO Elon Musk, who hopes the rocket will one day carry people to Mars, took advantage of the occasion to call for a new space race.

● For the first time since Snap went public a little less than a year ago, its earnings exceeded investors' expectations. Fourth-quarter sales grew 72 percent, to

$286m

Africa

● South Africa delayed President Jacob Zuma's State of the Nation address as its ruling African National Congress attempted to negotiate an early exit for the embattled leader, whose term ends in 2019. In December the ANC elected Cyril Ramaphosa to lead the party.

● Nigerian President Muhammadu Buhari prohibited foreign work visas for jobs that can be filled by residents. The country's unemployment rate has almost doubled in two years and is fast approaching 20 percent.

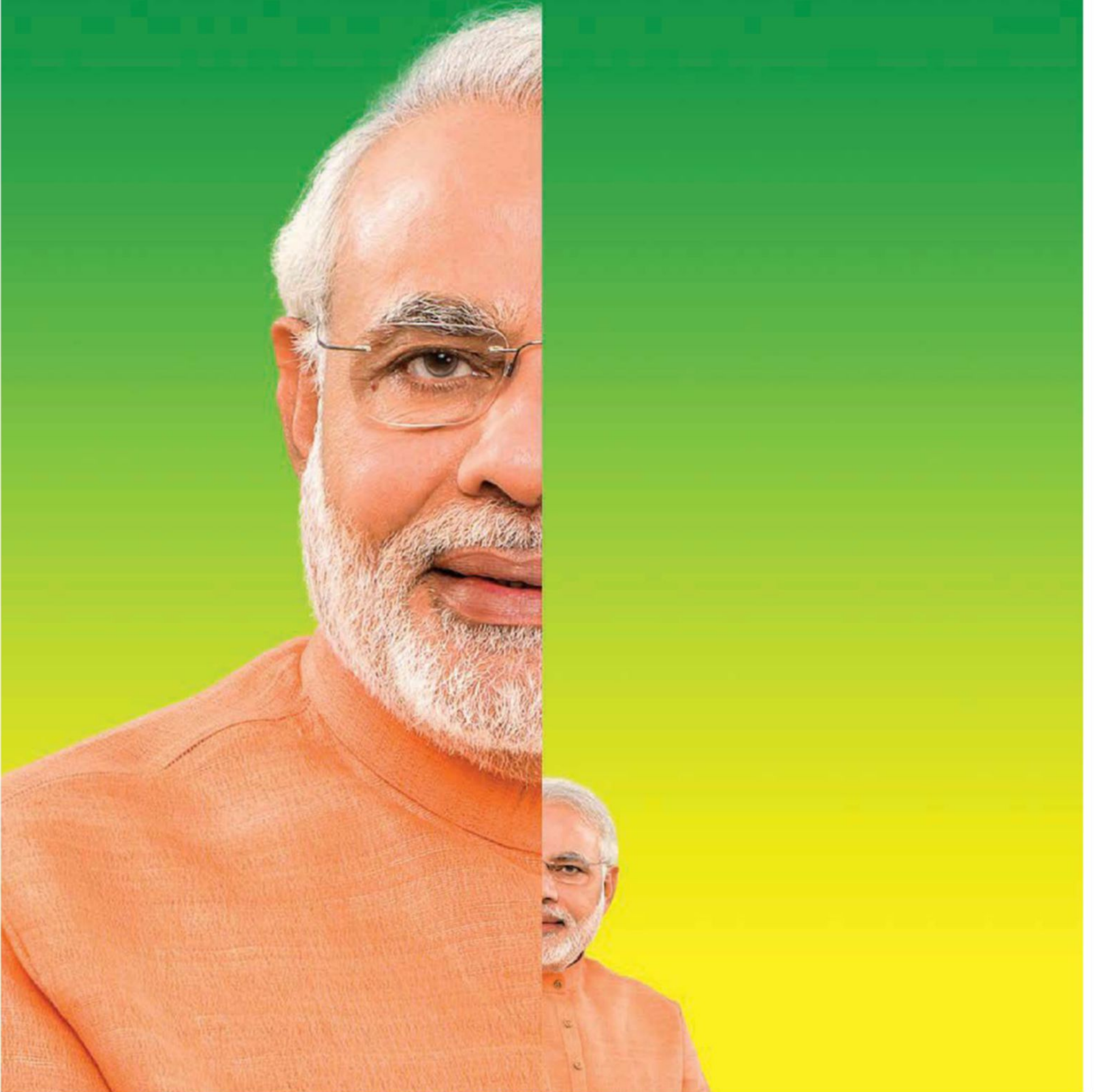


PHOTO ILLUSTRATION BY 731; PHOTO: COURTESY BJP

● He promised dramatic growth, and the numbers don't look bad. But India needs more—and he's retrenching

● By Mihir Sharma

It was a sight to warm the heart of an Indian nationalist: Prime Minister Narendra Modi, at the Republic Day celebration on Jan. 26, welcoming one by one his 10 chief guests, the leaders of the Association of Southeast Asian Nations, or Asean. They stood alongside Modi and watched an hourslong parade that, in its cheerful mishmash of tanks, marching sailors in spats, kilted bagpipers, female motorcycle daredevils, camels, ballistic missiles, dancing schoolchildren, and tableaux representing such abstract concepts as ethical taxpaying, is a fair representation of this bewildering and vibrant country. You could see the presence of Asean's leaders as a sign of India's rise and allow yourself to hope that this most diffident of countries was finally stepping into a global role. Just the previous week, Modi had held forth at Davos's opening plenary about India's democracy, its diversity, and its resilience.

But, as is always the case with India, the reality is somewhat different. Truthfully, the nation isn't quite ready for the role that most Indians—and many in the rest of the world—want it to assume. One day, perhaps, it will help stabilize the Indian and Pacific oceans and beyond. One day, certainly, it will seek to aggressively counter Chinese influence in Southeast Asia and Africa. One day it may serve as a beacon of liberal values and a counterexample to Beijing's authoritarianism. But, if you look out at the country and the world from New Delhi, it's clear that day hasn't yet arrived. Even at Davos, as veteran journalist Shekhar Gupta pointed out, the sessions dealing with India were mainly filled by Indians. "Unless the world starts lining up to attend these," he says, "India won't have arrived on the world scene, never mind our chronic love of self-congratulation."

India has underperformed for decades, and it's still underperforming. It comes down, in the end, to how fast the economy is growing. When Modi was elected prime minister four years ago, his ministers promised that double-digit growth was around the corner. His tenure, however, has been disappointing, marked by a lackadaisical approach to structural reform punctuated by world-beating policy errors, including the arbitrary decision to withdraw 86 percent of India's currency overnight. This year the economy may grow at a little more than 7 percent, and we're supposed to celebrate that. India, the land of the constantly lowered bar.

Seven percent growth is great, right? Sure it is—anywhere except India. This is a country that adds 1 million young people to its labor pool every month, most of whom can't find formal employment. To get them jobs, India will have to transform its economic landscape the way China has for the past two decades. But there's no sign of that sort of sustained double-digit growth on the horizon. India grew at that rate for only a few years, in the mid-2000s. Since then, the reform process has stalled. The economy looked like it was ticking along nicely for a while after Modi took office, but that was mainly because of a sharp decline in crude oil prices—India imports massive amounts. The World Bank may claim it's easier to do business in India, but little has changed on the ground. Regulations that govern the hiring and firing of employees are still the toughest in the world, tax investigations remain arbitrary and intrusive, and legal cases continue to take years to wind their way through court. As a consequence, investment is low and business is hesitant. Visitors don't return from India thinking this is a country about to take off, but one that is, as always, muddling along at its own pace. Meanwhile, month after month, another million people turn up demanding a job, a home, a future.

Nor does the government show any sign of urgency. On Feb. 1 the finance minister presented the central government's budget—usually the occasion when the broad thrust of economic policymaking for the year is mapped out. But little in it goes beyond the sort of token reforms and quasi-socialist populism the country has seen countless times before. There's some good news: The government's attempt to increase the meager tax base seems to be working. But sadly, there's much more bad news than good. In Davos, Modi warned that the specter of protectionism was as worrying a global problem as terrorism or climate change. But his budget raises tariffs across the board, reversing a 25-year-old bipartisan consensus that India's best interests lay in integrating with world markets.

The budget was clearly aimed at pleasing India's farmers and the rural poor. Modi is playing defense after a surprisingly narrow win in local elections in his home state of Gujarat; the national elections are only a year away, and the pressure to turn on the spending tap is enormous.

It's unlikely that a trickle of more government spending will satisfy an increasingly restive country. Over the past years, groups of angry young men, usually organized around caste, have spilled into the streets demanding government jobs, reserved spots in colleges, or sometimes just "respect." India has always been a deeply divided society, and the threat of violence lurks just below its calm surface—especially in its villages. For the first time in decades, these cleavages are spilling over into the insulated world of its globalized upper class.

The first week of 2018 set the tone: The country's financial capital, Mumbai, ground to a halt because of protests by Dalit organizations—Dalits are what India's former untouchables now call themselves. The protesters were angry that one of their festivals, which commemorates an 1818 battle in which Dalits fighting for the British defeated an oppressive local empire, had been attacked by those who saw the celebration as an insult. India is a young country, and Indians are even younger, but they carry the weight of centuries of grievances.

The headlines in the past few weeks have been ▶

◀ dominated by the controversy over the movie *Padmaavat*, an over-the-top, pseudo-historical romance that ends with its heroine, a fictional Rajput princess, throwing herself into a fire rather than surrender to a Muslim sultan of Delhi. Liberals are sort of upset about the glorification of the barbaric practice of *jauhar*, or mass suicide of women by fire—which was usually not "self-immolation" so much as a death that was forced on them.

But liberals just write outraged blog posts. The Rajputs are angry because this imaginary princess is shown dancing. Their protests endangered cinemas across northern India, even in glitzy South Delhi malls. A bus full of children from a well-known school that caters to the city's elite was attacked by stone-throwing protesters.

Even the Jaipur Literature Festival—a bubble of globalized privilege if ever there was one, a sort of literary Davos—had to cancel an appearance by the poet and advertising executive who runs India's film censorship board. The venue, it was feared, would be overrun by young men furious that he'd cleared the movie for release. Nobody trusted the state to be strong enough to contain the men if they decided to target the festival. College students who'd gathered to listen to the executive booed his absence. Just down the road, the other young people, who'd intimidated the man into silence, were presumably celebrating their victory. India's divisions aren't being moderated by growth and development. Instead they are deepening and being passed on to a new generation.

Is this then a country that can play a global role? India can hardly be a liberal counterweight to China unless it creates a more liberal society domestically. It will struggle to project power overseas until it builds a stronger state at home, and it won't have the global influence it craves until its economy stops underperforming. One day, yes, these problems may be sorted out: This miracle of a country, a bustling, continent-size democracy, has overcome enough difficulties in its 70 years of independence. But that day hasn't yet come. Ⓑ *Sharma is a Bloomberg View columnist.*

■ VIEW

To read Stephen L. Carter on the not-so-evil Patriots and Noah Feldman on Trump's win in the memo wars, go to Bloombergview.com

A Sensible Immigration Compromise

● Is a deal to secure the future of "Dreamers"—and the border—within reach?

It seems increasingly likely that, on immigration, Congress will face a stark choice in the weeks ahead. It can either pass a narrowly drawn bill that attends to border security and provides legal status for "Dreamers," the undocumented immigrants who were brought to the U.S. as children, or it can fail across the board.

Republican Senator John McCain of Arizona and Democratic Senator Chris Coons of Delaware have introduced legislation designed to achieve the better outcome. Their bill is similar to a bipartisan effort already introduced in the House, where it's co-sponsored by 27 Republicans and 27 Democrats.

It would grant legal status to Dreamers who've been in the U.S. since 2013, a population of approximately 1.8 million. The legislation would require the secretary of homeland security to produce a southern border security strategy, including "physical barriers," to gain operational control and "situational awareness."

In other words, the bill requires construction of a strategic plan to improve security rather than the construction of a wall, built willy-nilly at fantastic expense, to feign security.

Naturally, a basic immigration compromise that accomplishes sensible goals has committed enemies. President Trump has already announced his opposition. And the bill is certainly far from the kind of comprehensive solution, involving limits on family sponsorships and a bigger emphasis on skills, that's required.

Nonetheless, it represents progress. Senate Majority Leader Mitch McConnell of Kentucky promised to allow a debate on immigration if no deal is reached and Democrats help him keep the government open for a few more weeks. It's a measure of how degraded the Senate has become that even debate on a vital national issue is up for negotiation, but there's no use pretending the Senate is the great deliberative body of yore.

Democrats should meet McConnell's demand and vote to keep the lights on; and McConnell should in turn fulfill his promise. It's entirely possible that there are 60 votes in the Senate to do the right thing. Coons is already proposing to add more security provisions to entice more Republicans to support the bill.

A win in the Senate would then focus attention on the House. Speaker Paul Ryan of Wisconsin has so far shown every inclination to allow his party's extremists to ruin any chance of success—even though the existence of the 27 Republican co-sponsors signals that a simple compromise on Dreamers and border security could win majority support.

Of course, if Congress were sensitive to majorities, the Dreamer and border security provisions, supported by a large majority of voters, would already be law. If Ryan and company can break out of their partisan straitjacket for a day or two, perhaps they still can be. Ⓑ

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LOOK AHEAD

● Lennar investors vote Feb. 12 on its $5.7 billion bid for CalAtlantic Group, forming the largest U.S. homebuilder

● Drinks and snacks giant PepsiCo releases fourth-quarter earnings on Feb. 13

● The North American International Toy Fair, a major showcase for new products, starts Feb. 17 in New York

Airbus Outgrows Its European Nest

● There's pressure to shift work away from its home base to win political favor in new markets

Since it was cobbled together from a passel of national aerospace groups a half-century ago, Airbus SE has spread its operations across Europe in a delicate effort aimed at maximizing political expediency without sacrificing too much economic efficiency. There's little industrial logic, after all, in shuttling airplane parts among 14 factories in a half-dozen countries, with some wing components crossing the English Channel nine times before being mounted on planes. Yet it makes perfect sense if you want the backing of governments seeking jobs for their workers. Today, with Brexit looming, the quid pro quo is poised to become more complicated as the plane maker faces growing pressure from countries that buy the bulk of its planes to shift some manufacturing onto their shores. "Airbus will set up production capacity where it sees the potential for orders," says Agnès Blazy, an industry analyst with CM-CIC Market Solutions in Paris.

The company's airliner business employs more than 53,000 people across Europe. And of the 11,000 passenger jets Airbus has built since it was founded in 1970, all but 400 have come out of the region's factories. Europe, however, accounts for fewer than 1 in 5 planes in Airbus's order book, and China, the U.S., and other countries are clamoring for a bigger share of production reflecting the size of their markets—an idea Airbus has hinted it might accept. "Our first commitment is not to any particular nation," Chief Executive Officer Tom Enders said in January.

Globalized production isn't new to Airbus, which already has a pair of factories aimed at allowing customers in two of its most important markets to slap a homegrown label on its jets. A decade ago Airbus opened a plant in Tianjin, China, that's expected to make a half-dozen narrowbody planes monthly by 2020, up from four now. Production is also ramping up at a factory in Mobile, Ala., that's been building Airbus narrowbodies since 2015, and the company plans to open a second assembly

ILLUSTRATION BY CHARLOTTE POLLET; DATA: AIRBUS GLOBAL MARKET FORECAST FOR ALL MANUFACTURERS. ENDERS: VINCENT NGUYEN/REDUX

line there to make a smaller jet in partnership with Bombardier Inc. of Canada. Airbus hasn't been shy about linking offshore manufacturing to sales, especially for its floundering A380 megaplane. "If there was going to be a significant order out of China for A380s, we'd certainly be willing to talk about industrial cooperation," outgoing sales boss John Leahy told Bloomberg Television in January.

Brexit could supercharge the complexity of the operation. Britain has long had a stranglehold on the design and manufacture of wings, the most complex part of an aircraft's shell, spurring the U.K. to closely guard its expertise in the field and drawing the envy of other sites in the Airbus network. Germany, in particular, has complained of not getting its fair share of work on key programs and underpinned its protest by withholding some loans for the A350, the company's most advanced jet. If Britain's exit from the European Union leads to customs delays or restrictions on the movement of employees, its leading role might be threatened. "Brexit will inevitably weaken the industrial links between the EU and U.K.," Enders says.

China, Mexico, South Korea, and the U.S. have all approached Airbus about wing production, according to people familiar with the matter. France, Germany, and Spain are also interested. "Believe you me, they've been knocking at the door" for more work in light of Brexit, Airbus U.K. Senior Vice President Katherine Bennett said of China in a November address to British lawmakers.

Iain Gray, who heads the aerospace program at Britain's Cranfield University, cautions that change isn't imminent. While Airbus might not create its existing system if it were starting from scratch today, the company has spent billions of euros on European factories and in developing engineering expertise unique to each site. It won't be quick to shutter any of them. "There's been massive investment in human capital and equipment," Gray says. "As long as those countries remain competitive, there's no reason to change."

Airbus would more likely consider new locales to produce its next generation of aircraft, such as a replacement for the narrowbody A320 that's expected to have wings made from composites, rather than the aluminum used today. While manufacturing of next-generation planes probably won't get under way in less than a decade, investment decisions will be made far sooner.

Airbus already has a global network of suppliers, ranging from Kansas-based Spirit AeroSystems Holdings Inc., which produces the central fuselage of the A350, to a division of Korean Air Group that ▶

● Asia-Pacific region's projected share of all passenger jets in service in 2036:

42%
up from
32%
in 2017

● Enders

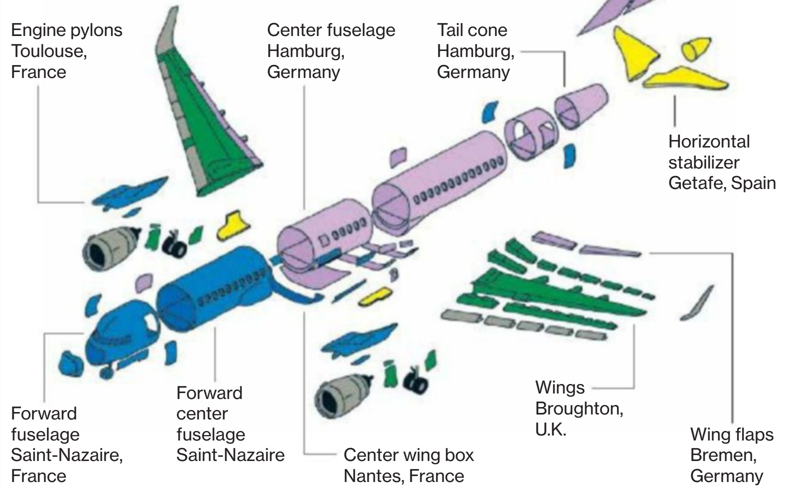
◀ makes wingtip devices for the A330 widebody, to China's Xi'an Aircraft Co., which manufactures wings for planes assembled at the Tianjin plant. All told, Airbus has some 12,000 subcontractors in more than 40 countries from Finland to Sri Lanka. "We are headquartered in Europe, but we are a global company and we need global resources," says Eric Schulz, Airbus's new sales chief.

Boeing Co., too, relies on vendors around the globe—and it offers a cautionary tale. The American manufacturer's 787 Dreamliner, the first all-composite aircraft, uses components from such far-flung places as Japan and Italy, part of a plan to spread the manufacturing risk among partners. The idea backfired when some parts didn't meet Boeing's specifications, requiring expensive follow-up work that caused a three-year delay in the 787's launch and spurred Boeing to write down more than $27 billion in losses.

It's clear that Airbus has accomplished its founders' goal: the creation of a European aerospace champion to rival U.S. manufacturers. Today it has a record order backlog of 7,265 planes, and its European factories are working flat out as final assembly of the vast majority of its planes and most other high-value work such as design, development, and systems integration are reserved for its home countries. But the pressure has never been greater for Airbus to shift more work abroad, and sooner or later it will surely do so, beefing up its nascent operations in the U.S. and China and possibly adding capacity elsewhere as well, says Hans Weber, an aerospace consultant in California. Enders and other Airbus leaders, Weber says, "realize that it is an international company, not just a European one." —*Carol Matlack, Benjamin Katz, and Ania Nussbaum*

Divided, It Flies

Parts for the latest A320 come from factories in four European countries



THE BOTTOM LINE Airbus's system of apportioning jobs across European factories will grow more complex as the company seeks to boost sales in China and other fast-growing markets.

Forget Cord Cutters. QVC Lives On

● The king of cable home shopping wants to become the Netflix of retailing

Standing next to a clothing rack on a TV studio set in West Chester, Pa., Pat James-Dementri, a host on home shopping channel QVC, urges viewers not to wait to buy a blouse and tank top set. Order now, she says, and get 30 percent off. Then she translates the price into the channel's signature math: "Three easy pays of $16.66." That folksy, old-school style of selling, used by the company since its founding in 1986, is burned into the memories of many people who haven't shopped the channel in decades. A recent *Philadelphia* magazine article described QVC fans, for instance, as "silver-haired grannies ordering slow cookers and vibrating belly bands from landline phones."

Yet QVC isn't that cable shopping channel anymore. About half its sales occur online, and two-thirds of those are on mobile devices. After completing a $2.1 billion purchase of rival Home Shopping Network in January, QVC Group is the third-largest e-commerce company selling products in multiple categories in North America, trailing only Amazon.com Inc. and Walmart Inc., according to researcher Internet Retailer. Wall Street has noticed, with shares of QVC's owner, John Malone's Liberty Interactive Corp., soaring 45 percent in the past year.

By combining the two leading shopping channels, says Chief Executive Officer Mike George, he'll have the resources to innovate. HSN is a

pioneer in shopping by remote control instead of requiring viewers to pick up the phone or visit a website. Following the merger, George said QVC is in talks with Comcast Corp. to enable the cable giant's 22 million subscribers to order items on the shopping channel from their remotes.

Now, QVC—whose name stands for Quality, Value, Convenience—has a strategy for surviving threats from Amazon and others: becoming the destination for video shopping on mobile phones. George wants to serve ads to phones that send users directly to the QVC app and its live video stream. "We want to be the Netflix of video-based commerce," says George, a former McKinsey & Co. partner who buys Keurig machines on QVC as birthday gifts.

George is confident that his company, born when cable was considered a disruptive technology and online shopping was still almost a decade away, can prosper in the Amazon age despite its quirky, pre-internet way of selling. QVC has no teleprompters or scripts. Its hosts improvise on live TV, fielding calls and social media questions from viewers in real time about the roughly 770 products that it features each week in the U.S. The channel is selling its personalities as much as its products. When David Venable, the host of *In the Kitchen with David,* tastes a dish he really enjoys, he raises his hands and turns in a circle saying "happy dance, happy dance" over and over. It's his signature move—and it's helped him sell almost 900,000 air fryers.

"We're establishing a relationship with viewers," says Venable, a former TV news anchor in Altoona, Pa., whose cooking show draws an average of more than 2 million viewers per episode to watch him answer questions on social media, whip up recipes, and demonstrate cookware. "If you go to other online retailers, it's a transaction. When you come to QVC, it's a social experience."

Still, QVC hasn't been immune to the struggles in retail and TV. It had four straight quarters of sales declines before posting a 3 percent increase in the third quarter of 2017. And like many TV networks, its main channel has lost subscribers as more consumers drop their cable subscriptions. Some analysts say a continued decline in pay-TV subscriptions industrywide could spell trouble. "We expect QVC to have more difficulty acquiring new customers," Citigroup Inc. analyst Jason Bazinet wrote in a September note downgrading the parent company's stock to sell.

QVC executives say cord cutters are mostly cost-conscious young men, while QVC viewers—80 percent female—are upscale, fiftysomething women who can afford monthly cable bills. The average QVC shopper spends more than $1,200 a year on the channel. Many of QVC's deals with celebrity pitchwomen, such as Martha Stewart, are exclusive to the channel, ensuring those items aren't available on Amazon. And when Stewart appears on air, the segment is streamed live on her Facebook page—introducing many of her fans to the shopping channel.

To reach younger consumers, QVC in October 2016 created Beauty IQ, a cable channel that also streams live on Facebook and features guests who are beauty experts with big followings on Instagram and YouTube. And in 2015 it paid $2.4 billion for Zulily LLC, a flash sales site aimed at millennial moms.

The digital strategy has started to pay off. The channel added about 417,000 customers last quarter, the second-biggest increase for that period in 15 years. And while about three-fourths

◀ On the set of one of QVC's studios in Pennsylvania

of QVC customers also shop Amazon's site, the behemoth last year shuttered its own online live-TV shopping show targeting millennials, *Style Code Live*. QVC can survive because it's "the anti-Amazon," says Barton Crockett, an analyst at B. Riley FBR Inc. Amazon is about selection, he says. QVC is about salesmanship. "QVC is a retail format that appeals to a woman who loves to shop," Crockett says. "It would appear this woman is born every year." —*Gerry Smith*

THE BOTTOM LINE In the age of Amazon, QVC is bolstering its home shopping TV channels through product deals with celebrities and by streaming more of its programming online.

COURTESY QVC. DATA: COURTESY AIRBUS. ILLUSTRATION BY CHARLOTTE POLLET

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● Baidu says whether it outpaced its own dimmer-than-expected quarterly earnings estimates

● Prosecutors will appeal the suspended prison sentence of Samsung heir apparent Jay Y. Lee

● After market's rout, Cisco's earnings will test if the stock can sustain 2017's 40 percent rise

Electric Battery Makers Should Fear This Factory

China's CATL is building a mammoth plant as it tries to expand abroad

The isolated city of Ningde, on the mountainous shoreline of the East China Sea, is best known for fishing and farming. Only recently have a few Starbucks and McDonald's outlets begun to show up in this home to 3 million. When President Xi Jinping apprenticed here as a Communist Party chief in the 1980s, it was the poorest city on the coast. Now, however, Ningde should have Panasonic, Samsung SDI, and LG Chem, the Big Three makers of lithium ion batteries for electric vehicles, running scared.

For seven years, Ningde has been home to the sprawling headquarters of Contemporary Amperex Technology Ltd., or CATL, which has quickly become China's EV battery leader and is setting its sights on the rest of the world. On the landfilled mudflats across a lake from its main campus, the company is building a $1.3 billion battery production complex that will be second in size only to Tesla Inc.'s massive Gigafactory in Sparks, Nev., enabling it to outstrip the capacity of other suppliers. CATL plans to finance construction partly by going public as soon as this year, selling a 10 percent stake that would value it at about 130 billion yuan ($21 billion). The next targets: expansion in Europe and a toehold in the U.S.

It's unclear whether CATL can succeed beyond China's borders. Ninety-nine percent of the company's business comes from contracts at home, including from foreign automakers—Volkswagen, BMW, Hyundai Motor—that have been quietly forced to partner with local battery makers if they want to sell state-subsidized electrics in the ▶

QILAI SHEN/BLOOMBERG

◀ The CATL plant is rising on landfilled mudflats in Ningde, in eastern China

◀ country. CATL's products aren't the best in class. Yet if the factory goes online in 2020 as planned, the company will become the largest EV battery manufacturer on Earth, according to Bloomberg New Energy Finance. Even Tesla and BYD Co., China's other battery powerhouse, will have to reckon with the company's next steps.

"Their intentions are very clear," says Simon Moores, managing director of consulting firm Benchmark Mineral Intelligence. "To not just be China's biggest battery producer but the world's largest." CATL declined to comment for this story.

CATL is a harbinger of the Chinese government's aggressive commitment to EVs. Beijing, aiming for a sevenfold increase in new-energy-vehicle sales by 2025, has floated the idea of banning gas-powered vehicles from its smog-choked cities. China led the world in purchases of electric automobiles in 2015; sales of EVs and plug-in hybrid cars topped 777,000 in 2017 and should hit 1 million this year, according to the China Association of Automobile Manufacturers. The country controls 54 percent of the world's lithium ion production capacity, and CATL's revenue totaled $2.4 billion in 2016, the most recent annual figure available.

Zeng Yuqun gambled on government support in 2011 when he created CATL while still the president of Japanese-owned Amperex Technology Ltd., which makes batteries for the iPhone and other consumer electronics. Zeng, an engineer by training, split off CATL in 2011 and resigned from Amperex last year. Early on, he learned and benefited from contracts with BMW; BAIC Motor Corp., the top EV seller in China; and Zhengzhou Yutong Group Co., the world's No. 1 bus builder.

CATL spent about $100 million on research during the first half of last year, or roughly 11 percent of revenue, according to its initial public offering prospectus. Research and development staff make up one-fifth of the company's 18,000-plus workforce; the prospectus says CATL plans to use $660 million from the IPO to develop next-generation batteries. "Technically, they are probably a tad behind the Big Three," says Menahem Anderman, president of Total Battery Consulting Inc. in Petaluma, Calif., who toured the company's headquarters in January. "But considering how fast they have been moving, it's reasonable to assume that in two to three years, they'll have a technically similar product."

Zeng already appears worried about competing with gas-powered vehicles in markets where he doesn't have government support. "Is the pig really flying?" he asked last year in a post on the company's internal WeChat account that was reviewed by *Bloomberg Businessweek*. "What happened to the pig after the typhoon is gone?"

That test isn't far off. Last year, CATL spent $35 million to acquire 22 percent of Finland's Valmet Automotive, a contract manufacturer for Daimler's Mercedes-Benz and a supplier to Porsche and Volkswagen's Lamborghini. The company has also added offices in Paris to facilities in Germany. Now it's posting Detroit-area job ads on LinkedIn. "China, unabashedly, wants to be the Detroit of electric vehicles," says Anthony Milewski, a managing director at EV-focused Pala Investments Ltd. "There is no question in my mind that they are going to lead the world in capacity and, eventually, in the technology." *—Jie Ma, David Stringer, Zoey Zhang, and Sohee Kim, with Elisabeth Behrmann*

THE BOTTOM LINE CATL lags in technology and has yet to prove itself beyond China's walled garden, but in a couple of years it will likely be the world's biggest EV battery manufacturer.

● Total existing and planned electric-battery cell production capacity, in gigawatt hours

Country	GWh
China	217
U.S.	47
South Korea	23
Japan	14
Poland	5
Hungary	2
U.K.	1
France	1
Czech Republic	1
Russia	1

DATA: BLOOMBERG NEW ENERGY FINANCE, CATL IPO PROSPECTUS

Canada's Quantum Brain Trust

● The man who co-invented the BlackBerry funds superfast subatomic research

It's early days for quantum computers, the still mostly theoretical subatomic processors so powerful they can make our fastest supercomputer look like an abacus. Mike Lazaridis, the co-inventor of the BlackBerry, says that when it comes to quantum technology, he's learned his lesson. He won't be iPhoned again.

After years of watching his brand wither during the iPhone era, Lazaridis stepped down as the company's co-chief executive officer in 2012 and devoted most of his energy to researching quantum technologies, including computers, sensors, and a wide range of other gear. With former BlackBerry colleague Doug Fregin, he's poured more than $450 million into quantum projects over the past two decades and now spends much of his

● Lazaridis

time running the $80 million venture company Quantum Valley Investments from his office in Waterloo, Ont., where BlackBerry Ltd. got its start.

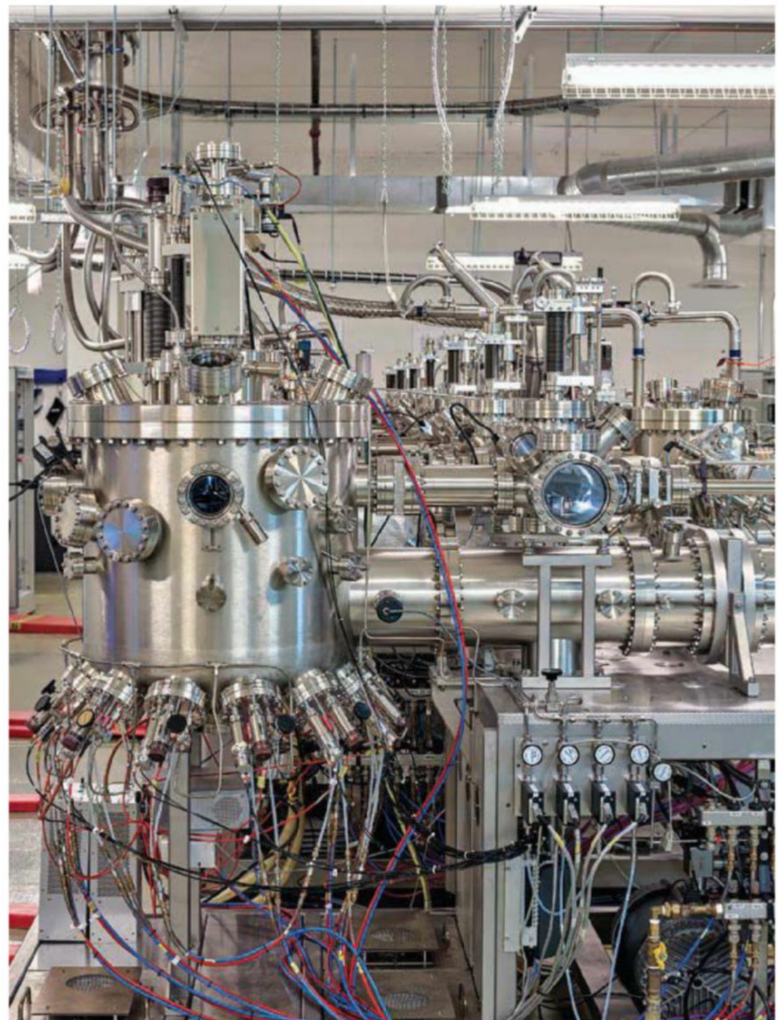
"You have to build an industry," Lazaridis says. "You have to be very nimble, and you have to be connected to your customers, and that can't be done with just one company." In addition to funding a quantum computing effort, a goal being chased elsewhere by the likes of Google and International Business Machines Corp., Quantum Valley directly funds narrower projects that Lazaridis says could be commercialized within the next few years.

Classical computers interpret bits of data as either a 0 or 1, but data in quantum computing can exist as 0 and 1 at the same time, enabling a level of multitasking unimaginable by today's standards. The quantum computers that exist now are too small and unstable for those kinds of results—they become error-prone after mere fractions of a second—and researchers say that perfecting them could take decades.

With Fregin's help, plus an additional C$1 billion ($800 million) or so from Canadian government coffers, Lazaridis has led recruitment and development at three research organizations: the Perimeter Institute for Theoretical Physics, the Institute for Quantum Computing, and the Waterloo Institute for Nanotechnology. Those efforts have attracted prominent physicists (MIT's David Cory, Stephen Hawking acolyte Raymond Laflamme) and made Canada an outsize force in the field, which the U.S. and China typically dominate. "Everybody in the field has gone through Waterloo," says Seth Lloyd, an MIT professor of quantum mechanical engineering.

Several of Lazaridis's investments have come to market or are getting close. Isara Corp., which is pitching security software it says can block quantum hacks, has sold $1.6 million in software and expects that to double in fiscal 2018. High Q Technologies LP says that by the end of the year it will be selling quantum sensors 100,000 times more sensitive than the tools pharma companies use to develop drugs. The sensors will be able to determine which compounds will bind properly to the desired proteins rather than "trying many drugs and seeing if something works," says Cory, who founded High Q.

Lazaridis traces his fascination with quantum research to a college physics class, and his recruiting has benefited from his history with several of the people behind his investments. Isara CEO Scott Totzke oversaw BlackBerry's famously secure encryption software for more than a decade. Lazaridis has also teamed with former BlackBerry employees who run Cognitive Systems Corp. to connect quantum computers with conventional models, making the quantum advantages accessible to a wider audience. Such efforts, of course, will still have to prove themselves as viable businesses.



▲ Quantum researchers use this device to test superconducting films on silicon at the atomic level

Canada's researchers will also have to work hard to keep pace with the U.S. and China on longer-term goals, says Elsa Kania, an adjunct fellow at the Center for a New American Security, a Washington think tank. "The race to construct a usable, scalable quantum computer will be more of a marathon that will play out over decades to come," she wrote in an email.

As that race continues, Lazaridis says, Canada will need more venture capitalists to ensure that quantum commercialization efforts get the funding they need. "We've proven that we can do this," he says. "We put our money where our mouth is."

—Natalie Wong and Jeremy Kahn, with Hugo Miller

THE BOTTOM LINE Funding from the government and Team BlackBerry have helped Canada to become a leader in the quantum computing race and to start commercializing simpler gear.

FROM LEFT: AARON HARRIS/BLOOMBERG; DAVID CORY/IQC

Don't Use This AI Tailor... Yet

● Original Stitch admits its shirt-cloning software still needs work

Original Stitch has all the trappings of an e-commerce success story. It's a San Francisco startup with an artificial intelligence angle, $5 million in funding from A-list investors, and a factory partner in the Japanese Alps. The pitch is simple: Original Stitch uses computer-vision software to review photos of your most beloved dress shirts uploaded to the company website, then delivers perfectly tailored copies. We tried it—the only problem was that it didn't work.

When the first shirt arrived too tight around the chest and too long in the sleeves, we figured an editor's sloppy photography was to blame, but the problems persisted with a second attempt. A third shirt, ordered under a different name to make sure we wouldn't get special treatment, could barely be buttoned up. The sleeves felt like tourniquets. "We tried to push the envelope," Original Stitch founder Jin Koh acknowledged after we confronted him with the results. "Obviously, it's still in beta." In December, three months after launching the service, Koh quietly pulled it down. He's returned to asking users to fill out a questionnaire with their own measurements while he works out the bugs.

Over the past two decades, software developers have gotten used to shipping products broken and fixing them later. Leaving aside the basic problem with that line of thinking, it's wholly impractical when online shopping intersects with the dreaded buzzwords "artificial intelligence." The kind of machine learning Original Stitch wants to rely on requires mountains of data, a way to quantify errors, and a system that learns from mistakes without extensive customer trial and error.

Almost every major online apparel business is searching for better ways to automate its sizing process. So far, nobody has a good answer. Japan's biggest online clothier, Zozotown, is experimenting with an undisclosed number of shoppers: It's shipped them bodysuits covered in sensors, like the motion-capture outfits Hollywood uses to generate computer effects. Body Labs, a startup purchased last year by Amazon.com Inc., has developed a 3D scanner for people to create a digital avatar of themselves that can try on virtual clothes. Both options remain too expensive for a mass audience.

Original Stitch's idea had the virtue of simplicity. We snapped a photo of a favorite shirt lying flat alongside a sheet of printer paper that functioned as a ruler, and Koh's software was supposed to extract the 12 measurements needed to sew a copy. A custom-fit shirt would run just $75. Getting a shirt to lie perfectly flat was easier said than done, though; bunched-up fabric seemed to throw off the software, and it failed to learn from its mistakes.

Edith Yeung, a partner at Original Stitch investor 500 Startups, says she's not worried about the 12-employee company's long-term prospects. More than 400,000 people have created accounts on its website, and though Original Stitch wouldn't say how many have ordered shirts, it says 70 percent of those who do become repeat customers. Koh's other investors, including the venture arm of Japanese telecommunications giant NTT Docomo Inc. and Stanford's StartX fund, didn't respond to requests for comment.

Advances in open-source software and smartphone-camera hardware should make Original Stitch's job easier. Researchers at the University of Nottingham last year generated 3D facial models from a single image of a subject, and the latest iPhone's facial-recognition feature uses lasers to better map contours.

"Technology is going to take over a tailor's job and do it better"

Koh says a working version of his system could be ready as soon as this year. The revised version will require three photos: one of the shirt, one of the wearer's chest, and one of his torso from the back. It's a minor setback, Koh says. Eventually "technology is going to take over a tailor's job and do it better."

Count San Francisco tailor Ravi Bulchandani, whose clientele includes numerous Silicon Valley engineers, among the skeptics. The son of a tailor who's been in the business for more than 50 years says something will be lost even if software does one day replicate his old-world touch. "If you send a picture somewhere for a computer to look at you, what's the difference between that and buying a shirt off the rack?" Bulchandani asks. "You are dehumanizing the entire process." *—Pavel Alpeyev and Jason Clenfield*

THE BOTTOM LINE Tailors shouldn't rest easy, but for now none of the online clothiers trying to automate the fitting process has found an efficient way to do it.

ILLUSTRATION BY 731

Making It

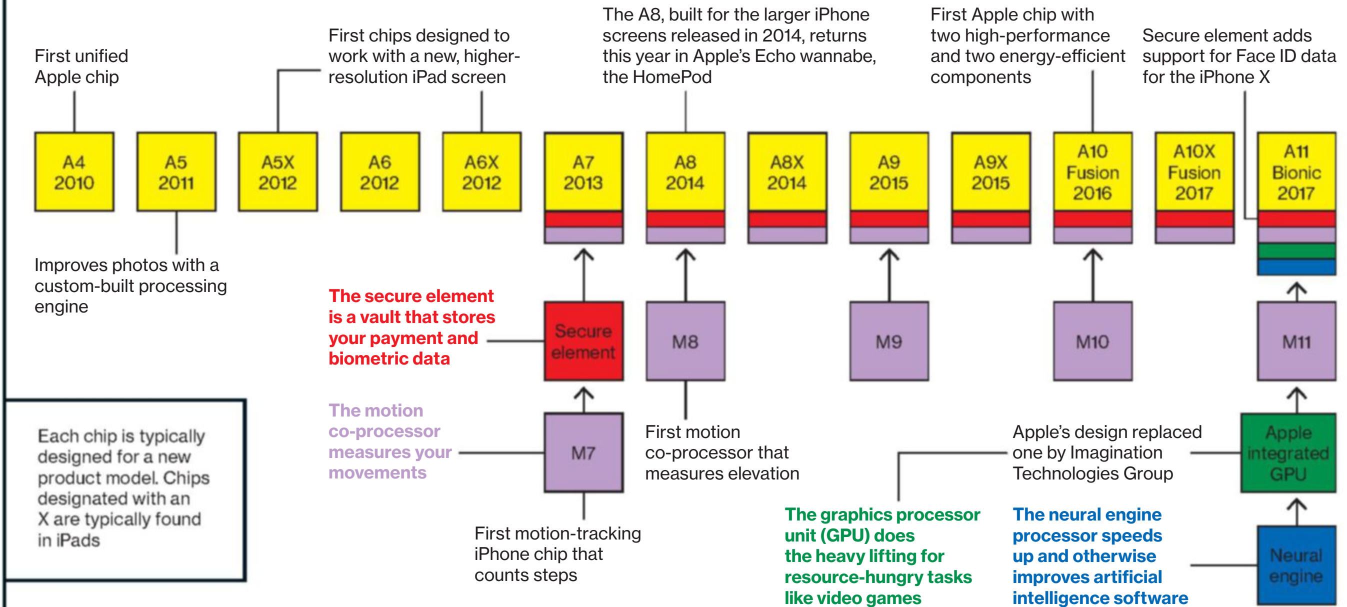
Apple's Chip Machine

Steve Jobs used to tell anyone who would listen that his company needed to make its own chips instead of trying to mix and match components from Intel Corp., Samsung Electronics Co., and others. In the years since his death, Apple Inc. has quietly packed its devices with in-house components that could one day leave the professional chipmakers behind entirely.
——Mark Gurman and Mira Rojanasakul

Apple's A11 chip found in the iPhone X, actual size

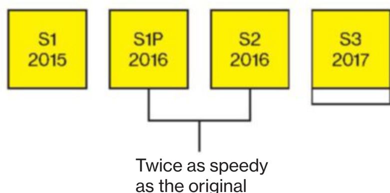
iPhone and iPad

The A4, Apple's first in-house chip to combine all its components on a single piece of silicon, looks simple compared with the models its devices now use to render better visuals on bigger screens, recognize your fingerprint or face, track your steps, pair with AirPods or an Apple Watch, and teach themselves other tasks. Increasingly, Apple has had to design and layer in new kinds of chips to keep pace with its developers' demands.



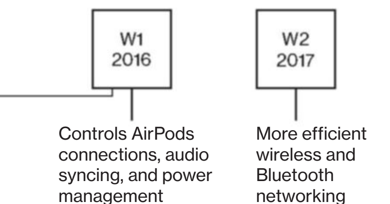
Apple Watch

The Apple Watch uses a specially designed chip the size of a postage stamp.



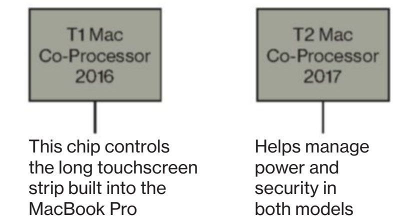
Wireless Devices

In-house processors have helped Apple peripherals better manage Bluetooth and Wi-Fi connections.



Macs

The company has even replaced some Intel designs in the latest Pro series MacBooks and iMacs.



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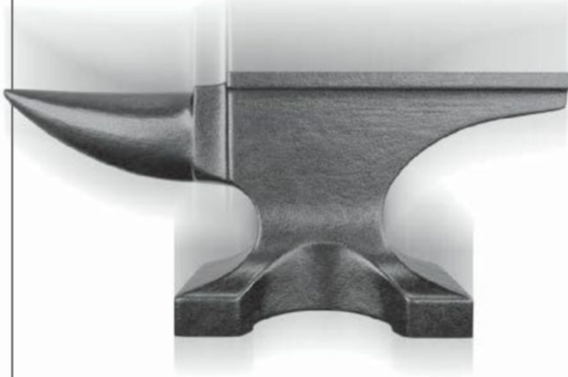
- MetLife publishes earnings, postponed due to a “material weakness” in its financial reporting
- The head of the U.S. commodities-market watchdog testifies to the Senate about cryptocurrencies
- Apple, the world’s most valuable public company, holds its annual shareholder meeting on Feb. 13



GETTY IMAGES/ISTOCKPHOTO

Welcome to The Market, Newbies

Investing is scary again. One strategy: Ignore your fears

Was it the computers or the humans? The blame game is on for the wild stock market rout of Monday, Feb. 5, when the Dow Jones industrial average plunged 1,175 points before climbing part of the way back the following day. Some likely suspects: hyperspeed algorithmic trading and a Wall Street stew of complex products that bet on volatility. Another: a record amount of money that has poured into stock funds recently from individuals. Maybe their late arrival—years into a bull market—finally pushed stocks up too high.

There was already selling the Friday before, when a strong jobs report stoked fear that a hotter economy could spur the pace of Federal Reserve interest rate hikes. Higher borrowing costs, the thinking went, would crimp profit margins at companies and sap consumer spending power. For Monday, though, there was no such tidy explanation. No big economic data releases, good or bad. No confidence-shattering earnings reports or geopolitical concerns. Just, apparently, an old-fashioned market freakout, fueled by anxiety among investors accustomed to stocks going in only one direction and traders who had bet on a continuation of the long stretch of low volatility.

Quantitative traders with arcane algorithms are an easy scapegoat when there are abrupt market moves. Probably more dangerous were products that allow traders to short volatility—that is, to bet that the market will stay calm. As stocks went wild, two such securities, with ticker symbols XIV and SVXY, plummeted about 95 percent. The complicated mechanics behind the free-falling securities may have punched up volatility even higher, possibly creating a feedback loop of selling.

In truth, after an unusually long stretch of low volatility and high returns, investors large and small were caught off guard. Individual investors had grown used to seeing account balances only rise. “This probably is coming as a shock” to individual investors, Quincy Krosby, chief market strategist at Prudential Financial Inc., told Bloomberg News. “This was a lesson, and that lesson is that markets don’t just go up, they go down.”

Did mom-and-pop investors really panic? While Wall Street’s computers may be programmed to sell in a nanosecond, many ordinary folks have automated their investments in ways that make it *harder* to sell. The bull market in stocks has been accompanied by the rise of robo-advisers, the digital investment and planning services that have $220 billion in assets in the U.S. That’s a drop in the bucket—even more individual-investor money is in 401(k) plans and mutual funds—but the success of the business may represent a significant behavioral shift among investors. ▶

◀ Robo-advisers aim to create portfolios that need relatively little attention or maintenance by clients. Users answer questions about their risk tolerance and long-term goals, and a computer formula builds a portfolio, usually of exchange-traded index funds, based on their profile. Portfolios are rebalanced automatically.

The robo-advisers didn't exactly cover themselves in glory on Feb. 5. Websites for Betterment LLC and Wealthfront Inc., two of the leading robos, suffered short technical glitches as users tried to access accounts. (The much larger Charles Schwab, Vanguard Group, and Fidelity Investments, which offer a broad array of services, also reported issues with their sites.) But even after logging on, customers would likely find it hard to join a race to the exits. That part is by design.

Wealthfront, for example, isn't set up for rapid-fire trades. Deposits, withdrawals, and changes to risk profiles take at least one business day. Users alarmed by falling prices can switch to a more conservative portfolio, but they have to change their profile, which means answering risk questions again—and they can do so only once a month. Warnings pop up about the perils of market timing, and the site shows a calculation of the compound gains you could miss out on over the years by taking less risk. If the Monday crash turns out to be a blip, many customers of robos may be happy they encountered these speed bumps. "Our clients choose Wealthfront because they share our philosophy that slow and steady wins the race, and emotions should be left out of investing," said Chief Executive Officer Andy Rachleff in an email. He added that withdrawals by clients don't correlate to market performance, even when stocks fall sharply.

Still, robo-advisers have grown up in a sunny market environment. In a bear market, will investors be as happy to trust a computer? Mike Sha, CEO of SigFig Wealth Management LLC, a robo-adviser that also offers access to human advisers, says his business model wouldn't change, but the messaging and conversations with clients might focus more on risk. Even then robos will have one advantage: They won't have to explain to clients why they thought an exotic bet on low market volatility was such a great idea. —*Suzanne Woolley and Jeremy Herron, with Dani Burger*

THE BOTTOM LINE While the pros on Wall Street have built ever-more-complex, hair-trigger trading systems, one of the fastest-growing ideas in individual investing is designed to slow things down.

The Ex-AmEx Club

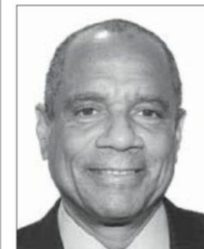
● The credit card issuer has an impressive alumni network—at its fiercest competitors

American Express Co. just ended 17 years of steady leadership under Ken Chenault, and that's left his successor with an unusual problem. Chenault's long reign atop the largest U.S. credit card issuer by purchases created a bottleneck for senior executives looking to climb higher. Some took their talents elsewhere. By the time Steve Squeri replaced Chenault as chief executive officer on Feb. 1, many of the company's competitors were run by AmEx veterans deeply familiar with its strategy, strengths, and weaknesses.

Dan Schulman, who stepped down as the head of AmEx's enterprise growth division in 2014, now runs PayPal Holdings Inc. It competes with AmEx as a way to pay for online and mobile purchases, and its stock market value overtook AmEx's last year. Al Kelly, who rose to become president during 23 years at AmEx, became CEO of Visa Inc. in late 2016. Other alumni run credit card divisions at JPMorgan Chase & Co. and Citigroup Inc.

The banks have already given AmEx a taste of heightened competition. In 2016, JPMorgan introduced the Sapphire Reserve, a $450-a-year card that came with an initial sign-up bonus of 100,000 reward points. The product, developed by former AmEx executive Pamela Codispoti, was an instant hit with millennials. An AmEx executive lamented at an investor conference that the offer was a "full-frontal assault" on its Platinum card. The same year, Citigroup took over a portfolio of cards issued to shoppers at Costco Wholesale Corp., after AmEx and Costco couldn't come to an agreement on fees. The warehouse retailer had long been AmEx's largest co-brand partner.

Chris Donat, an analyst at Sandler O'Neill & Partners, says Squeri will be able to tap seasoned



● Chenault

TAYLOR HILL/GETTY IMAGES

managers inside the company as he builds his team. But "they might not have the same level of understanding of their competitors as their competitors have of them," Donat says.

AmEx was craving stability when Chenault took charge in 2001. It had spent years recovering from a predecessor's attempts to turn it into a supermarket for everything from credit to asset management to brokerage, which devastated earnings. As CEO, Chenault initially focused again on cards, signing lucrative deals with retailers and improving premium offerings such as the Platinum card, which attract bigger spenders and earn hefty annual fees. These moves helped quadruple profits on his watch.

The company also became kind of a school for top executives. AmEx has long emphasized training, designating 20 or so vice presidents every year to enroll in an advanced leadership development program offered with Duke University. The program turned into a prime talent-hunting ground for competitors, according to people familiar with the situation.

An American Express spokeswoman declined to comment. Chenault has dismissed the threat posed by former executives. "While we have populated the industry, what people have not been able to export is the uniqueness of our brand," he told the Associated Press. AmEx finished 2017 with a record number of Platinum cardholders, and it's expanded partnerships with hotel chains including Hilton Worldwide Holdings Inc. For shareholders, the question is whether AmEx can maintain its rapid growth. The stock has climbed 51 percent over the past five years, but it lags behind the 100 percent gain of the S&P 500 Financials Index.

No one knows what AmEx faces better than Squeri, who's spent the past two years cutting $1 billion in costs as part of a broad restructuring. "You've got a wonderful business and someone who is going to lead it who is steeped in it," says William Smead, CEO of Smead Capital Management Inc., which has dedicated about 5.4 percent of a $1.25 billion fund to AmEx shares. Moreover, he says, "there's 20 people in development that are probably capable of being CEO in the company someday." One person not on that bench is Susan Sobbott, a 27-year AmEx veteran who ran global commercial services. After Squeri was named as Chenault's replacement, she left on Feb. 1 to seek a CEO position elsewhere. —*Jennifer Surane*

THE BOTTOM LINE Chenault brought stability to a business that badly needed it. His successor at AmEx will face rivals who know the company very well.

Singapore Is the New Hong Kong

● China's wealthy want to keep their money a little farther away from authorities in Beijing

When more than 80 of China's wealth managers gathered recently at the Shangri-La on Singapore's resort island of Sentosa, the chatter during tea breaks kept returning to one theme: Hong Kong is starting to be eclipsed by Singapore as the favorite destination for the wealth of China's rich.

At stake for banks in both cities is a huge pile of money. China's high-net-worth individuals control an estimated $5.8 trillion—almost half of it already offshore, according to consulting firm Capgemini SE. For some, the city-state of Singapore is preferable because it's at a safer distance from any potential scrutiny from authorities in Beijing, according to interviews with several wealth managers. Multiple private banking sources in Singapore, who wouldn't comment on the record because of the sensitivity of the subject, report seeing increased flows at the expense of Hong Kong.

The rich may be feeling exposed by changing bank practices. Hong Kong has signed tax transparency agreements that for the first time last year required all banks to report their account holders' information to Hong Kong tax officials, in preparation for giving that information to 75 jurisdictions, including mainland China. Singapore will have similar agreements with 61 jurisdictions. But they don't include either Hong Kong or Beijing, meaning its accounts and account holders aren't visible to the Chinese government. "Many rich people from the mainland believe Hong Kong is still a part of China, after all," says Xia Chun, chief research officer at Noah Holdings Ltd. of Hong Kong, an asset management service provider. "They think there's no difference in putting money in Hong Kong, compared to Beijing."

● Wealth controlled by China's high-net-worth individuals

$5.8t

At the same time, more Chinese banks in Hong Kong are "trying to synchronize their internal systems with those on the mainland to improve service," says Eva Law, the Hong Kong-based founder of the Association of Private Bankers in Greater China Region. "This also means the clients' information will become more transparent and the mainland can identify fund flows more easily, or will have fuller and faster access to your asset holdings, thus enabling easier investigation and tracing."

Overall, Hong Kong remains the primary ▶

◀ destination for China's offshore money, according to a Capgemini survey, followed by Singapore and New York. Yet the number of Chinese high-net-worth individuals who view Hong Kong as their preferred overseas place of investment is down to 53 percent, from 71 percent two years ago, according to a July survey by Bain & Co. More than 20 percent favor Singapore, up from 15 percent two years ago. "Singapore is the Zurich of the East," says Xiao Xiao, the Beijing-based chief operating officer of Chinese wealth manager Fortunes Capital.

"We see Singapore, not Hong Kong, as the bridgehead of China's investment overseas," says Li Qinghao, co-founder of NewBanker Tech Consulting, which organized the Sentosa conference last year. About 78 percent of S$2.7 trillion ($1.9 trillion) in assets under management in Singapore comes from overseas. Morgan Stanley, JPMorgan Chase & Co., and other firms with big private banking operations are building up teams of China relationship managers in Singapore.

China has been tightening its grip on Hong Kong. A year ago, Chinese financier Xiao Jianhua was reported by local media to have been seized from a Hong Kong hotel by Chinese authorities and taken to the mainland. Before that, several Hong Kong booksellers who sold books critical of China's Communist Party were reported to have been taken involuntarily across the border.

Then there are the increased restrictions on Hong Kong's financial practices, such as a 2016 crackdown on sales of certain types of insurance products to mainland Chinese. The products pay dividends over a number of years, and are essentially viewed as investments—and potentially a way to send money out of China and evade capital controls. "The Hong Kong market is now heavily affected by mainland China," says Guan Huanyu, president of Beijing-based wealth manager Zhenghe Holdings, who attended the Sentosa event. While Hong Kong's Securities & Futures Commission doesn't break down the origin of funds, its data show that growth in the city's private banking business is slowing. Hong Kong logged 10.7 percent growth in private banking assets under management in 2016, down from 18 percent in 2015.

Singapore has additional attractions for the wealthy of China. Mandarin is one of its four official languages, and it has world-class health facilities and international schools. Not far from the Shangri-La Hotel, Sentosa's casinos are a popular draw for Chinese tourists. Mainland Chinese were the largest foreign buyers of luxury properties in Singapore during the first half of last year, according to consulting firm Cushman & Wakefield. Real estate is far cheaper than in Hong Kong.

But mainly, the rich like to diversify—not only among asset classes but regimes. "Most of our clients have undergone a shift from poor to rich," says Kou Quan, vice president at Tianjin-based Xinmao S&T Investment Group. "And they're all worried about becoming poor again." —*Chanyaporn Chanjaroen, Keith Zhai, and Cathy Chan*

THE BOTTOM LINE Hong Kong's financial sector is becoming more entwined with the mainland, prompting more and more of China's rich to turn to Singapore.

Who Profits From Hedge Fund Fees?

● Money managers for the rich often pay back the brokers who pitch their products

Financial advisers in the U.S. have been under pressure. Investors are skeptical of high costs and sales fees for financial products. Federal rules finalized in 2016 require advisers to put their clients' interests ahead of their own when it comes to retirement accounts. Some of those rules aren't in force yet, and the Trump administration has signaled that it would like to roll them back, but many advisers working with everyday individual retirement accounts and 401(k) rollovers have already changed their business practices.

One corner of the investing world that's been more resistant to these trends is "alternative" investments, including private equity and hedge funds, which are sold to institutions and affluent individuals. The fees charged—traditionally 2 percent of assets plus 20 percent of any profits—can be hundreds of times higher than those of the lowest-cost mutual funds. The industry frames the fees as the price investors must pay to tap into top money managers.

A close look at where the money flows suggests a more complicated story. Alt funds regularly share major chunks of their fees with the bankers, brokers, and other salesmen who steer clients their way. The payments come in a number of forms and go by different names: placement fees, payment for shelf space, and retrocessions, among them.

● Fees paid by one hedge fund company to some advisers

0.85%

Placement agents, who get paid by fund managers for lining up investors, have been such a big source of corruption that New York and Pennsylvania have banned their public pension funds from using them. The European Union in

January banned many advisers from receiving inducements to sell investments to individuals.

In the U.S. market, hedge fund money flows in ways that only occasionally come into view. JPMorgan Chase & Co. selected third-party hedge funds based on their managers' willingness to pass along about 1 percent in fees to a bank affiliate and failed to inform clients of its preference for funds willing to share their fees, the U.S. Securities and Exchange Commission said in December 2015 as part of a record asset management settlement with the bank. JPMorgan has since updated its disclosures to reflect its fee-sharing practices, spokesman Darin Oduyoye says.

Och-Ziff Capital Management Group, a publicly traded company that manages hedge funds and other investments, reported expenses of $38 million for "recurring placement and related service fees" in 2016. That's equal to about 1 percent of the assets it had under management.

"Contrary to what the clients generally believe, half the fees they're paying are going not to investment geniuses but to marketing," says Edward Siedle, an attorney who represented a whistleblower in the JPMorgan settlement. "The marketing payments explain why hedge funds have persisted, despite ample evidence that they underperform." Hedge funds that invest in stocks returned 7.2 percent annually from 2009 to 2017, which was less than half the S&P 500's return, according to data from Hedge Fund Research.

It's impossible to say how much banks and brokerages take in from such payments. None break out the figures. A back-of-the-envelope estimate might start with the $4.8 trillion wealthy clients had invested via private banks and big brokerages as of December 2016, according to Cerulli Associates figures. About 5.5 percent of that, or close to $265 billion, was in alternatives, Cerulli estimates. Assuming money-management firms passed along 1 percent of that to banks and brokerages, that's a $2.6 billion weight on advisers' scales.

SkyBridge Capital's Series G fund offers a window on how the money flows. Founded by Anthony Scaramucci, who briefly served as the Trump White House communications director, SkyBridge files relatively detailed financial statements. Series G is a so-called fund-of-funds. It places investors' money with other funds, with SkyBridge receiving a fee of 1.5 percent of investor assets. The funds themselves charge another layer of fees, which are often higher.

Management fees paid to SkyBridge came to $95.5 million in the year through last March, according to the fund's statement of operations. A careful reader would learn several pages later that SkyBridge made payments equal to about half that amount, or about $48 million, to outsiders for placing clients in the fund. The fund's average annual return of 5.7 percent over the past 10 years lags the S&P 500's 7.4 percent, but beats an index for funds-of-funds, which made 1.1 percent.

A confidential Series G presentation Morgan Stanley prepared for clients last quarter, reviewed by Bloomberg, lists the fund's 1.5 percent annual management fee and several lines later mentions that SkyBridge makes payments out of its own revenues equal to more than half that amount, or 0.85 percent of assets, to Morgan Stanley. A spokeswoman for the bank says all fees are disclosed to clients, who must review and acknowledge receiving the information to be accepted as investors in the fund.

ILLUSTRATION BY PATRIK MOLLWING

A separate SkyBridge fund prospectus that Morgan Stanley provides warns investors that payments from SkyBridge could create incentives "to more positively consider" the Series G fund "relative to investment funds not making payments of this nature or making smaller such payments."

"Marketing payments explain why hedge funds have persisted"

SkyBridge owner Scaramucci, who's no longer involved in managing the company, has been trying for the past year to sell it to HNA Group Co., a troubled Chinese conglomerate. Scaramucci did not respond to requests for comment, but he's made no bones about his view of the previous administration's push for a client-first rule. "It could be the dumbest decision to come out of the U.S. government in the last 50 or 60 years," Scaramucci said in October 2016. —*Neil Weinberg*

THE BOTTOM LINE Brokerages can earn big money by placing clients in hedge funds. This could create incentives to recommend funds that pay them more.

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● Germany, Italy, and Japan report gross domestic product data for the final quarter of 2017.

● India releases January inflation numbers on Feb. 14. The betting is that prices trended higher.

● U.S. housing data, including starts and new building permits, arrive on Feb. 16.

Miss Me Yet?

PHOTO ILLUSTRATION BY JUSTIN METZ; PHOTOS: AP PHOTO (1); GETTY IMAGES (3)

● Yellen's successor at the Fed will butt heads with Trump if rate hikes cool growth

The long-expected clash between the Federal Reserve and the White House over interest rate policy kept getting postponed over the past year. The stock market climbed, the economy grew, and nothing the Fed did dampened the animal spirits. President Trump got along famously with Fed Chair Janet Yellen.

That calm is emphatically over. Investors have come to believe that the Fed, under new leadership, is serious about raising rates to prevent overheating of the economy—and they're scrambling to avoid the fallout.

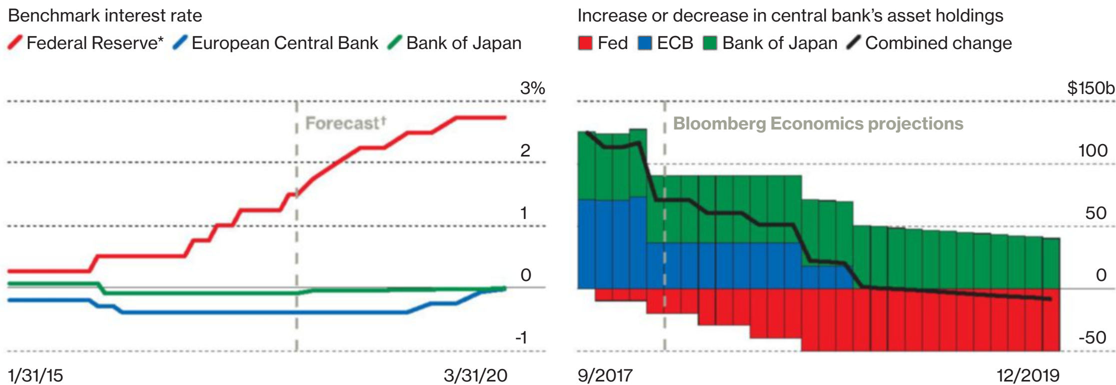
The S&P 500 fell 2 percent on Feb. 2 and 4 percent the next session after the U.S. Bureau of Labor Statistics reported that average hourly earnings for all employees rose 2.9 percent in January from the same month last year—the most since 2009. The strong wage growth raises the likelihood that the Fed will be more aggressive in combating inflation. On Feb. 7, Trump tweeted that the market's fall was "big mistake" because "we have so much good (great) news about the economy!"

President Trump can't brush off stocks' plunge after repeatedly citing their rise as a validation of his presidency. He bragged (correctly) in his State of the Union address on Jan. 30 that "the stock market has smashed one record after another, gaining $8 trillion in value" since he was elected.

If this turns out to be more than a shudder, Trump may start looking for someone ▶

Turning Off the Spigot

After a long period of low rates and experiments with bond buying, central banks are moving toward tighter policy



*UPPER BOUND; †MEDIAN FORECAST OF BLOOMBERG SURVEY OF ECONOMISTS CONDUCTED THROUGH FEB. 7; DATA: FEDERAL RESERVE, EUROPEAN CENTRAL BANK, BANK OF JAPAN, BLOOMBERG ECONOMICS

◀ to blame. And that someone could be Jerome "Jay" Powell, who was sworn in as Fed chairman on Feb. 5. The Fed is an independent institution, but Powell still must answer to Congress, which in turn heeds the president. "I don't think the Fed lives in fear of the White House by any means, but I think they have a certain amount of fear or respect for Congress—and Trump appears to have a great deal of sway over Congress," says Adam Posen, a former Bank of England policymaker who is president of the Peterson Institute for International Economics.

Trump wouldn't be the first president to pressure a Fed chief to keep interest rates low. Lyndon Johnson leaned on William McChesney Martin in 1965 without success; Richard Nixon successfully pressured Martin's successor, Arthur Burns, to cut rates in 1971. Burns's overly easy monetary policy led to high inflation. Posen says he doesn't think the Fed will need to raise rates enough to bring tensions with Trump to a head. But if the president does get displeased, he almost certainly won't hold his tongue. "We could suddenly see tweets about Jay Powell in the middle of the night," Harvard economist Kenneth Rogoff said in a Jan. 24 interview on Bloomberg Television.

This is shaping up as the first skirmish of a dawning era that could be christened "The End of Easy Money." Financing costs plunged in the wake of the financial crisis as major central banks slashed key short-term rates to zero or less to combat the global recession that followed. Many also bought bonds, driving down long-term rates. The Fed is the first central bank to start normalizing policy because the U.S. economy recovered soonest. Other central bankers are watching the American experiment closely for tips on what to do when it's their turn to raise rates, though tradition prevents them from commenting on a peer bank's performance.

The tax cut that was the capstone of Trump's first year in office is revving up an economy that's already at or near full employment. Unless the stock market turmoil cools things off, the tax cut could induce the Fed to speed up rate hikes—thwarting the very growth spurt that Trump is determined to achieve.

The Fed and Trump have different views of how fast the U.S. economy can expand without overheating. The Fed's latest projection for the longer-run growth rate is just 1.8 percent to 1.9 percent. Trump told reporters at a cabinet meeting in December, "I see no reason why we don't go to 4 percent, 5 percent, and even 6 percent."

Yellen's interest rate increases never irritated Trump because investors shrugged them off. Money for spending or investment is actually easier to get now than it was when the Fed began hiking at the end of 2015, according to the Bloomberg U.S. Financial Conditions Index.

Investors aren't shrugging anymore. Since September, traders in federal funds futures have upped their estimate for where the funds rate will be in two years by a full percentage point, to 2.4 percent. The yield on 10-year Treasury notes is up from 2 percent in September to 2.8 percent on Feb. 6. If rates keep rising, Republicans could attack the Fed for playing politics in the midterms.

Powell, a Republican, is a Princeton- and Georgetown Law-educated lawyer with experience both in government and on Wall Street. He worked at the U.S. Department of the Treasury under President George H.W. Bush; was named a partner at the buyout firm the Carlyle Group; was a visiting scholar at the Bipartisan Policy Center think tank; and was nominated to the Fed Board of Governors by President Obama in 2011. He turned 65 on Feb. 4, a day before his new job began.

"We could suddenly see tweets about Jay Powell in the middle of the night"

Signs are he can handle the stress. He was a cool hand at Treasury dealing with the failure of the Bank of New England and a Treasury bond bid-rigging scandal at Salomon Brothers in 1991. In 2011, at the Bipartisan Policy Center, he warned fellow Republicans not to let the U.S. default by failing to raise the debt ceiling. "I don't think he's inclined to be irresponsible just to support the president," says Julia Coronado, a former Fed staffer who's founder and president of MacroPolicy Perspectives LLC, a New York consulting firm.

Powell may need all the backbone he has. "I'm worried about the pressures to politicize the Fed. There's lots of temptation to do that from both the left and the right," says Charles Plosser, former president of the Federal Reserve Bank of Philadelphia. "I think it's going to get stronger." *—Peter Coy, with Matthew Boesler and Alessandro Speciale*

THE BOTTOM LINE Trump quit criticizing Janet Yellen when the Fed's rate hikes didn't pinch. But her successor, Jay Powell, could be in for rough treatment if tightening gets in the way of growth.

This Bond Market Could Get Uglier

● Buying the dips has led to quick profits, because central banks stuck with ultralow rates. This time may be different

A little more than a week into the New Year, billionaire bond guru Bill Gross proclaimed the start of a bond bear market, after an extraordinary bullish run spanning more than three decades. Two weeks later, Ray Dalio, whose Bridgewater Associates is the world's biggest hedge fund firm, piled on with a forecast of the worst bear market since the early 1980s.

As yields on U.S. Treasuries soared to levels unseen since 2014, Gross asked the question on many investors' minds: Who would buy America's debt right now? After all, the government deficit is soaring because of massive tax cuts, and the Federal Reserve, the largest single holder of U.S. government debt, is trimming its almost $4.4 trillion portfolio of securities.

Yet many investors in the world's biggest bond market are smiling. Traders were bored out of their minds for much of 2017, when Treasury yields fluctuated within the tightest range in a half-century. During the years in which the Fed held interest rates near zero, pension funds and insurance companies were forced to buy riskier assets to meet their return targets. So they too are giddy at the prospect of a selloff in bonds that would push rates back up to the levels of yesteryear. "We needed this," says Michael Franzese, head of fixed income trading at MCAP LLC, a broker-dealer. "This market is not going to go up forever."

Since the 2008 financial crisis, buying when bond prices dipped usually led to quick profits, because central banks around the world stuck with ultralow rate regimes. Now there's growing angst that this dip might be different. Those forces investors have counted on to continue keeping yields lower might not be so reliable anymore.

The Fed is allowing its debt holdings to shrink by not replacing bonds that mature. That means billions of dollars of demand is disappearing just as the Treasury plans bigger bond auctions to finance a growing deficit. The size of the Treasuries market is already $14.5 trillion (77 percent of gross domestic product), up from $5.8 trillion at the end of 2008. What if America's largest foreign bond customers, China and Japan, have had their fill? Indeed, they stopped increasing their holdings years ago.

Speaking at a fixed income conference in January, Bob Michele, head of global fixed income, currency, and commodities at JPMorgan Asset Management, said investors could "see a ▶

● Yield on 10-year U.S. Treasuries

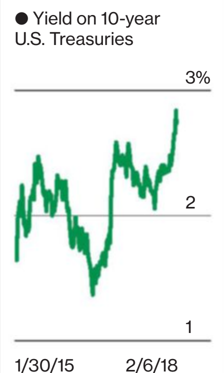


ILLUSTRATION BY TOMI UM; DATA: COMPILED BY BLOOMBERG

◀ significant bear market." Investors bailed out of bonds in 2013, when Fed officials began talking about slowing their bond purchases, an episode dubbed the "taper tantrum." The 10-year yield hit 3 percent before falling back again. But that's a long way from the double-digit interest rates of the early 1980s.

Nothing points to bonds suffering a calamity such as the stock market experienced after Lehman Brothers' 2008 collapse. (In a six-month span, the S&P 500 fell 45 percent.) Gross himself says the bond bear market will be a "mild" one. In the past 40 years, you can count on one hand the number of times (1994, 1999, 2009, and 2013) that Treasuries posted a negative annual total return (price change plus interest payments).

The tricky thing about predicting a stampede out of bonds is that fixed income is, by definition, different from other asset classes. Treasuries are the closest thing out there to a risk-free asset because there's an assumption that the U.S. will never default on its obligations. Investors who ignore market fluctuations and hold their bonds to maturity will always get their money back, plus they collect interest along the way. An aging population means an expanding pool of investors seeking the stability of bonds. The number of U.S. residents aged 65 and older has climbed 40 percent since 2000, to 49.2 million in 2016, according to the Census Bureau.

Longtime bond bulls such as Lacy Hunt at Hoisington Investment Management dismiss the risk of a big rise in interest rates that would send prices plunging. Forces such as globalization and technological advances will work to keep prices down, and wages show no signs of spiking, so the risk of sustained inflation is small. Moreover, the government has an incentive to keep rates moderate: Higher rates vastly increase the cost of interest payments on its enormous debt load. "There will be individual days and weeks and maybe longer stretches of time when long rates go up, but in this environment, I don't believe they can stay up," says Hunt, who's been bullish on Treasuries since 1990.

Susan Estes, who began working in financial markets in 1981 as a runner at the Chicago Board of Trade, also has a hard time envisioning a prolonged stretch of bond market losses. What's not talked about, says the chief executive officer of OpenDoor Securities LLC, which operates a Treasuries trading platform, is just how critical Treasuries are to the underpinnings of the entire financial system. "It's not even just the fact that the Treasury market is $14 trillion in size—it's $14 trillion in size times five—or the number of other securities linked to Treasuries," she says. That includes U.S. mortgages and dollar bonds in developing nations. If bonds truly went haywire, the tremors would be felt around the world.

That sounds scary. But it's based upon the prospect of investors fleeing Treasuries—when in most crises, they flock to Treasuries as a safe haven. That's exactly what they did when stocks swooned last week. "We've had a hell of a two years in the equity markets," says Hugh Johnson, chief investment officer of Hugh Johnson Advisors. "Investors are sending you a message: 'We want to own Treasuries, and we're not afraid.'" *—Brian Chappatta, John Gittelsohn, and Liz Capo McCormick*

THE BOTTOM LINE Demand for U.S. Treasuries could be waning just as the government prepares to step up issuance to finance a ballooning fiscal deficit.

China Takes a Harder Look At Big Borrowers

● Beijing is using regulations, not interest rates, to force companies to pare debt

The U.S. and Europe aren't the only places where authorities are trying to wean economies off easy money. In China, policymakers and financial regulators are working hand in hand to defuse a debt bomb. But they're doing it without resorting to big interest rate hikes that might crimp growth.

China's total debt equaled 162 percent of gross domestic product in 2008. By 2016 it had climbed to 259 percent, an increase of more than $22 trillion, in large part because of massive corporate borrowing. And even with the push to deleverage, it could reach 327 percent by 2022, according to Bloomberg Economics.

● Guo

Speaking at an annual gathering of economic policymakers in Beijing in December, President Xi Jinping said curbing pollution, cutting poverty, and reducing debt risks are the "critical battles" over the next three years. Zhou Xiaochuan, governor of the central bank, has warned that China may experience a Minsky Moment—a hard landing after an extended period of debt-fueled growth.

Since Xi consolidated power at a key Communist Party meeting late last year, China has doubled down on measures to address excesses in the financial system, including new regulations to curb off-balance-sheet lending by banks

ILLUSTRATION BY TOMI UM; GUO: IMAGINECHINA

and other financial intermediaries. Last year the government began reining in some of the country's acquisitive private conglomerates—including HNA Group, Anbang Insurance Group, and Dalian Wanda Group—to avoid the kind of debt-fueled, cross-border trophy deals that got the Japanese in trouble in the early 1990s.

Guo Shuqing, China's top bank regulator—who many think is poised to become the next head of the central bank—has vowed to take action against those who built large financial conglomerates through complex ownership structures, which often disguise true debt levels.

HNA, a no-name regional airline that grew into a sprawling conglomerate, is already close to the edge of the abyss. It had $190 billion of assets—more than at American Express Co.—as of June, including stakes in everything from Deutsche Bank AG to Hilton Worldwide Holdings Inc. and properties on Third Avenue and Park Avenue in New York. Under pressure from the government, HNA has gone on a crash diet. It needs to sell assets quickly to cover a potential shortfall of at least 15 billion yuan ($2.4 billion) in the first quarter, according to people familiar with the situation.

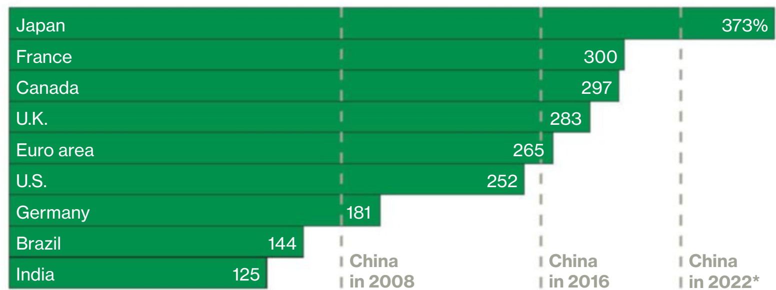
Dalian Wanda, a conglomerate that includes the world's largest cinema operator, has bailed out of luxury hotel and resort projects from London to Australia in recent months to raise money amid rising Chinese government scrutiny of how it financed a decade-long overseas expansion. Others are expected to follow, including insurance giant Anbang, owner of the Waldorf Astoria.

On the heels of a flurry of dealmaking in 2016 that thrust China to No. 2 behind the U.S. on the ranking of global acquirers, Beijing laid down new rules on overseas investments, making explicit its de facto campaign against "irrational" acquisitions in industries such as real estate, gambling, and entertainment, while blessing outlays in support of its One Belt, One Road initiative. The effect was immediate: Total capital outflows fell to $408 billion in 2017, half of the total for 2016, according to Natixis SA. "We expect the capital outflows condition in 2018 to remain stable as the scrutiny measures on cross-border capital movement are certainly working," says Alicia García-Herrero, the firm's chief economist for Asia Pacific.

China's bank regulator last summer ordered lenders to examine their exposure to private conglomerates, which was a way to slow borrowing by corporations without raising benchmark interest rates. In China, the amount of lending, rather than official interest rates, is the best indicator of

Borrowing Binge

Debt as a percentage of GDP in 2016



*BLOOMBERG ECONOMICS PROJECTION; DATA: BANK FOR INTERNATIONAL SETTLEMENTS; BLOOMBERG ECONOMICS

how tight or loose government monetary policy is. The picture is pretty clear: Broad-based money supply growth slowed to 8.2 percent in December, the weakest since data became available in 1998. "They are tightening," says Chetan Ahya, chief Asia economist at Morgan Stanley. "China has always relied more on actually controlling the flow of credit through direct measures."

While official interest rates haven't risen, the crackdown has pushed up borrowing costs for companies. The average yield on five-year bonds from top-rated Chinese corporates has jumped 1.5 percentage points since the beginning of 2017 to 5.47 percent, the highest since May 2014, according to ChinaBond data. "If you are a cash-rich firm, you can still pursue deals as you wish. But if you are a debt-fueled one, you won't be able to pass the regulatory check," says Zhang Shuncheng, a Shanghai-based analyst at Fitch Ratings Ltd.

The task of policymakers is made easier by the fact that the debt problem is confined largely to the corporate sector, as household and government debt levels are relatively low. Also, solid growth and robust exports have given officials a window to curb the pace of credit growth with targeted measures without triggering a slowdown. Economists surveyed by Bloomberg project the economy's expansion will slow to a still-healthy 6.5 percent this year, from last year's 6.9 percent.

What's good for China as a whole may not be so good for companies that had become hooked on cheap borrowing. "The large conglomerates may think twice before they take on ever more debt," says Nigel Stevenson, an analyst at financial research firm GMT Research Ltd. in Hong Kong. "Previously they may have assumed the lenders would always support them." *—Enda Curran, with Jun Luo, Prudence Ho, and Lianting Tu*

THE BOTTOM LINE Chinese regulators are pressing banks to restrict credit to conglomerates such as HNA Group and Anbang Insurance Group that have borrowed heavily to expand abroad.

LOOK AHEAD
- Pennsylvania lawmakers have until Feb. 15 to redraw congressional maps deemed unconstitutional
- Former White House strategist Steve Bannon is likely to meet with special counsel Robert Mueller
- The White House plans to release its 2019 budget to Congress on Feb. 12

Bitcoin's Candidate For Congress

Political newcomer Brian Forde has dazzled marquee crypto investors, who hope he can be the Washington friend they desperately need

Over the past year, Bitcoin's meteoric rise—and recent plunge—has captivated the financial world. The political world? Not so much. Washington remains stubbornly ignorant of cryptocurrency and blockchain technology. But that may soon change. A roster of prominent crypto investors has piled in to support a first-time Democratic congressional candidate, Brian Forde, who's looking to unseat the incumbent Republican in a pivotal Orange County, Calif., race that could determine which party controls the House of Representatives after November's midterm elections.

Forde's appeal isn't hard to discern. Before running for Congress, the 37-year-old coder was director of digital currency at MIT's Media Lab and a technology adviser in Barack Obama's White House. Forde says his tech and business background is a good match for California's 45th District, an historically GOP area currently represented by Republican Mimi Walters, but one whose well-educated, minority-rich populace also chose Hillary Clinton over Donald Trump by 5 percentage points. "Tech is one of the fastest-growing economic sectors in the district," Forde says. "In addition to our fair share of unicorns—from Broadcom to Blizzard Entertainment—Amazon, Google, and others have offices here, too."

It's Forde's expertise in cryptocurrency that's attracted marquee Bitcoin evangelists such as Pete Briger of Fortress Investment Group; Brad Burnham of Union Square Ventures; the investor Mike Novogratz; and famed Facebook litigants Cameron and Tyler Winklevoss, who founded the Gemini cryptocurrency exchange. "Brian understands the power of emerging technologies and how to foster and shape them in a way that has a positive impact on people and organizations," says Tyler Winklevoss. Bitcoin's recent roller-coaster ride—falling as much as 70 percent after hitting a high of $19,511 on Dec. 17—has only intensified the industry's desire to have an ally in Congress.

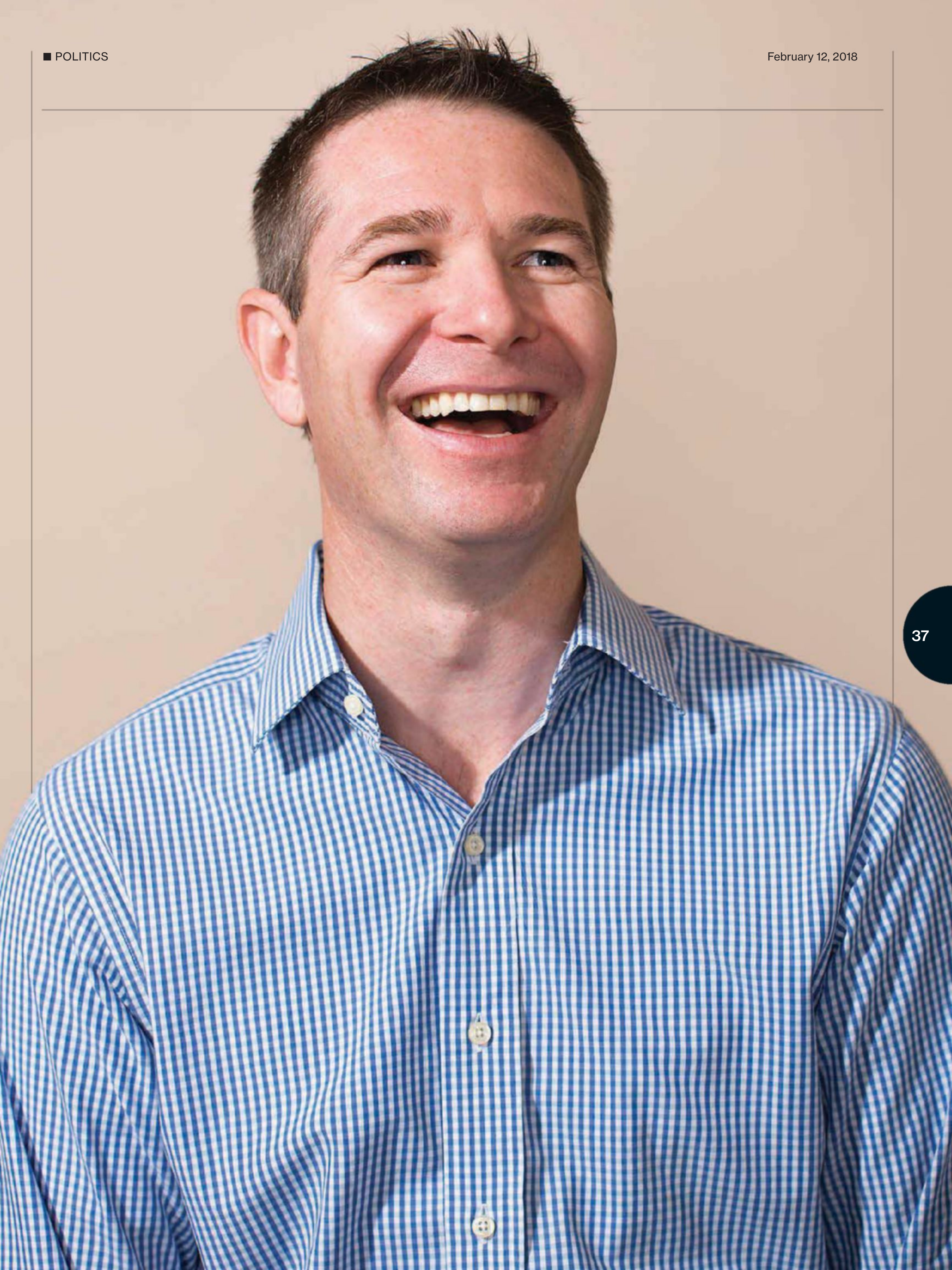
Forde's Bitcoin bona fides are so strong that many of those donors have contributed actual Bitcoins to his campaign rather than write a check, the old-fashioned way. Federal Election Commission records indicate that although his campaign is barely six months old, Forde has already amassed more Bitcoin contributions than all previous congressional candidates combined.

"He's walking the walk and speaking our language," says Stan Miroshnik, chief executive officer of the Element Group, an investment bank focused on digital-token capital markets, who last summer gave Forde 0.656 Bitcoin (then the equivalent of the FEC's $2,700 limit on primary campaign contributions). "If you're willing to go through the pain of actually taking cryptocurrency, it's a great endorsement of the philosophy we're all pushing." These contributions flow to a Bitcoin wallet and are converted by Forde's campaign to U.S. dollars through a Bitcoin exchange. Powered by cryptocash, Forde's fourth-quarter fundraising total beat the entire field of candidates—including Walters, a sitting congresswoman.

Yet there are reasons beyond a shared enthusiasm for blockchain decentralization that so many Bitcoin investors would like to send Forde to Congress. As cryptocurrency has exploded from a fringe passion into an $800 billion capital market, regulators are taking notice. "By and large, the government has been very quiet on cryptocurrencies and Bitcoin," says Justin Slaughter, a former top aide at the Commodity Futures Trading Commission who now consults on fintech regulation as a partner at Mercury Strategies LLC. "Partly because it's so new, partly because a lot of people don't understand it yet."

The high-profile collapse of several cryptocurrency exchanges, fears of fraud and price manipulation, the susceptibility of exchanges to hacking, and concerns of an asset bubble have all led to the expectation of more government oversight. In recent days, Bank of America, ▶

PHOTOGRAPH BY ANGIE SMITH FOR BLOOMBERG BUSINESSWEEK



◀ Forde, with his parents in Tustin, Calif.

◀ Citigroup, and JPMorgan Chase announced they would bar customers from using credit cards to buy cryptocurrencies, and Facebook said it would ban ads promoting them, including Bitcoin. "It would benefit the crypto sector to have one of our own in Congress," says Fred Wilson, a Forde donor and partner at Union Square Ventures.

Forde is no stranger to emerging tech that falls into a regulatory gray area. In 2005, after serving as a Peace Corps volunteer in Nicaragua, he co-founded Llamadas SA, a low-cost internet phone service provider that used Voice over Internet Protocol, then a new technology. "That tech wasn't legal or illegal—it was just new," he says. "So my biggest concern was that the government would end up on the wrong side of history with how it regulated VoIP."

Forde sees the same risk in how the U.S. government tackles crypto, and he wants to make sure that overly aggressive regulation doesn't drive the U.S. industry overseas to somewhere like Switzerland with more accommodating rules. "You have to protect consumer rights and consumer safety," he says. "But we also need to allow for innovation. You want to create 'regulatory sandboxes' for these emerging technologies to grow. My concern is that when you apply strict regulations to small startups, they'll be forced to apply so many resources to compliance that they won't have the resources to build and innovate."

Those like Forde and his backers hoping to nurture the nascent U.S. crypto industry see two primary hurdles. One is government ignorance. "I've been working on crypto with policymakers for years," says Jerry Brito, executive director of Coin Center Inc., a nonprofit focused on public policy issues involving cryptocurrency. "The good news is the level of awareness has improved dramatically, and there's real curiosity. But they still could not explain to you how Bitcoin works." In December, the crypto community got a scare when Senators Dianne Feinstein and Chuck Grassley—both 84 years old—introduced an anti-money-laundering bill aimed at terrorists and counterfeiters that appeared to criminalize concealed ownership of cryptocurrency. (The bill hasn't advanced.) "So much of what could go wrong with Washington and this technology would not happen out of malice, but out of ignorance," Brito says.

The other hurdle is the balkanized U.S. regulatory structure overseeing this technology. "We have a regulatory breakdown," says Slaughter, the former CFTC aide. "There isn't consistency between agencies. Most countries have a single market regulator, but ours is split between who regulates futures and who regulates equities."

Recently, the agencies have appeared to move in opposite directions. In December, the CFTC allowed two futures exchanges, CME Group Inc. and Cboe Global Markets Inc., to begin offering Bitcoin derivatives. At the same time, the Securities and Exchange Commission has cracked down, halting initial coin offerings and disappointing companies eager to launch exchange-traded funds tied to Bitcoin, including one backed by the Winklevoss brothers. In January, Bloomberg News dubbed SEC Chairman Jay Clayton "Washington's chief cryptocurrency skeptic."

Bitcoin's steep selloff over the past two months has added urgency to the push from regulators as the psychology among retail crypto investors shifts from FOMO to "Oh, no!" Says the Element Group's Miroshnik: "Regulators are all trying to catch up to what's happening."

Having an ally in Congress to push for clarity and consistency would help smooth out this

● Bitcoin investors and enthusiasts who've given Forde's primary campaign the federal maximum of

$2,700

- Cameron Winklevoss, Winklevoss Capital
- Tyler Winklevoss, Winklevoss Capital
- Pete Briger, Fortress Investment Group
- Brad Burnham, Union Square Ventures
- Wences Casares, Xapo
- Mike Novogratz, private investor
- Tim O'Reilly, O'Reilly Media
- Chris Sacca, Lowercase Capital
- Reed Hastings, Netflix
- Bill Tai, Charles River Ventures

PHOTOGRAPH BY ANGIE SMITH FOR BLOOMBERG BUSINESSWEEK; ILLUSTRATION BY 731

regulatory tangle. Forde himself has been caught up in the confusion. The FEC has offered little guidance about how candidates should handle Bitcoin beyond a 2014 advisory opinion that said candidates may accept a total of $100 in Bitcoin currency as contributions. Forde's campaign has asked the FEC for guidance on how to report contributions as high as the maximum limit of $2,700 and whether they're acceptable. But it's unclear whether any guidance will soon be forthcoming. "It's really a microcosm of where our government is on this stuff," says Joe Bowen, Forde's campaign manager, who adds that he believes all Forde's donations comply with FEC rules.

Those donations could be critical to Forde's candidacy—and to Democrats' chances of winning the seat if he finishes among the top two candidates in the June 5 primary. (Under California's "jungle primary" system, all candidates run in the same primary regardless of political party, with the two top finishers facing off in November.) "We've had a lot of success raising cryptocurrency," Bowen says. "Proportionately, it's a significant part of our fundraising program, around 20 or 25 percent of what we've raised."

Whichever Democrat prevails—Forde's main rivals, David Min and Katie Porter, are law professors at the University of California at Irvine—will need a substantial war chest in November. The incumbent, Walters, is one of 23 Republicans nationwide in districts Clinton won and a top target of national Democrats, who will probably need to capture the seat if they're to pick up the 24 necessary to win back the House.

Should Forde become part of a Democratic wave in November, he says, he'll usher in more than just a new majority. "We've got all these emerging technologies that are going to have a big impact on our economy and our lives," he says, "yet we don't have the folks in Congress who understand that." —*Joshua Green*

THE BOTTOM LINE Some of the top cryptocurrency investors have given money to Forde's campaign for Congress in hopes he can be an ally in Washington.

Banks Win Big in Trump's Washington

● Many Obama-era regulations to oversee Wall Street are being unwound

In early February, with the Treasury secretary testifying about wild gyrations in the stock market and the Federal Reserve leveling unprecedented penalties against Wells Fargo & Co., it may have felt like 2008 again, with the financial system under siege. In reality, banks are booming, at least in Washington.

As the 10th anniversary of the financial crisis approaches, many of the restrictions put in place to rein in Wall Street risk-taking are quietly being unwound. The Senate is considering legislation that would remove dozens of major banks from stepped-up oversight. The bill has broad Republican support and has been endorsed by 11 Democrats. In recent months a handful of the federal agencies that supervise financial companies have taken steps to revise two complex rules—one restricting trading and one requiring extra capital—that banks have long complained cost them millions of dollars in profits.

Other requirements are also being eased, including the stress tests the government uses to measure banks' abilities to withstand economic shocks. Conducted by the Fed, the tests were widely credited with restoring public confidence in the financial system after the 2008 meltdown.

Banks and their once-embattled Washington advocates are cautiously acknowledging their return to good graces after years of fighting against what they argued was regulatory overreach. "It just feels good," says Wayne Abernathy, an executive vice president for the American Bankers Association. Things "are looking up for the customers of the banks, looking up for the economy, and for the banks as well," he says.

Some of those who helped develop the crisis-era safeguards, however, are worried that policymakers and the banking community are forgetting history. "We're at serious risk of re-creating the conditions that led to the last financial crisis," says Michael Barr, a former Treasury official who helped craft the 2010 Dodd-Frank Act, which ushered in a host of new limits on Wall Street. Now dean of the Gerald R. Ford School of Public Policy at the University of Michigan, Barr says the 10-year milestone should be "a time to reflect on the need for strong guardrails in the system—not a time for taking those apart." ▶

This is "a time to reflect on the need for strong guardrails... not a time for taking those apart"

◀ Paving the way for the rollback is a slate of Trump-installed appointees now running the regulatory agencies. Mick Mulvaney, the acting chief of the Consumer Financial Protection Bureau, in January directed agency staff to exercise "humility and prudence" and not assume the companies that the agency investigates are "the bad guys." Most of the officials watching over banks in the Trump administration have extensive ties to the financial industry. Treasury Secretary Steven Mnuchin worked at Goldman Sachs Group Inc. and later organized a group of investors to buy the lender that became OneWest Bank. Mnuchin brought Joseph Otting, former OneWest chief executive officer, to Washington to run the Office of the Comptroller of the Currency, an independent bureau of the Treasury Department that supervises national banks. Jelena McWilliams, whose nomination to run the Federal Deposit Insurance Corp. is pending in the Senate, is chief legal officer of Fifth Third Bancorp in Cincinnati. By comparison, most of the financial industry regulators named by President Obama were government veterans or academics.

The most important watchdog for the biggest lenders is Randal Quarles, the Federal Reserve's vice chairman in charge of bank supervision. A banking attorney and ex-Carlyle Group partner, Quarles gave a revelatory speech to industry lawyers at the Ritz-Carlton in Washington on Jan. 19, surprising many by saying that the entire regulatory scheme is now up for reevaluation. He spoke of "tailoring" requirements to a bank's size and "reducing complexity"—buzzwords lobbyists often equate with easing regulation. "Now is an eminently natural and expected time to step back and assess," he said.

The Fed is already addressing one big Wall Street complaint by giving banks more time to submit their so-called living wills, the detailed plans that are meant to map out a bank's best route through bankruptcy. These sprawling documents had been required every year; now it will be every two.

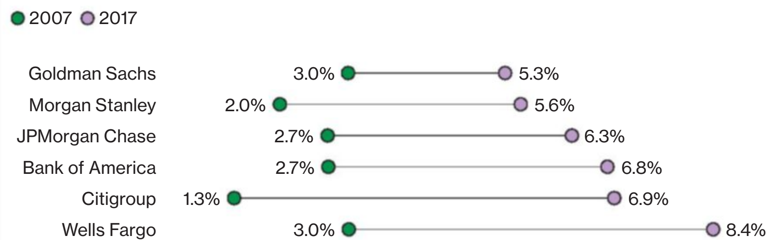
Quarles also committed to revising two of the industry's most disliked regulations. First up: a rule known as the leverage ratio, which limits how much banks can rely on borrowed money. The idea is to ensure they have enough capital to protect against losses and aren't overextended like they were in 2008 when credit markets froze. Second on the list is a proprietary trading ban known as the Volcker Rule. Banks contend its requirements are so confusing that it hinders their ability to help clients buy and sell securities.

Critics say it's no surprise many of the changes are taking place at the regulatory agencies where public input is rare and much of the business is conducted behind closed doors. The chaos that is Trump's Washington—from the taunting of Kim Jong Un on Twitter to the latest classified revelations in the Russia probe—make it even less likely that changes to stress tests or capital rules will garner attention. "If you are clever, you do the stuff under the radar," says William Black, a longtime federal financial regulator who's now an associate professor of economics and law at the University of Missouri-Kansas City.

FDIC Vice Chairman Thomas Hoenig is also concerned about the developments. A political independent appointed by Obama at the behest of Senate Republicans, Hoenig has long supported bank trading restrictions and bulked-up capital. He points out that banks are getting more profitable, even with all the additional regulations. After 40 years of watching booms and busts, Hoenig says they all follow the same pattern. There is an "arrogance" that the party "will never end," he says. "And it always does."

A Decade of Deleveraging

From 2007 to 2017, big banks increased their capital as a percentage of total assets



DATA: FDIC VICE CHAIRMAN THOMAS HOENIG

Hoenig himself was quietly vanquished by the White House in January with a bureaucratic sleight of hand. In a little-noticed move the day before the Senate Banking Committee was set to hold a hearing on the nomination of McWilliams, Trump's pick for FDIC chief, the White House withdrew her nomination. It was then immediately resubmitted but with a small change. McWilliams had originally been nominated to fill an open position on the agency's five-member board; her new nomination is to fill Hoenig's seat. Her confirmation would ensure he can't stick around past the beginning of April—and will serve to silence the voice of Wall Street's last, most vocal critic among Washington regulators. *—Robert Schmidt and Jesse Hamilton*

THE BOTTOM LINE With extensive ties to the financial industry, officials within the Trump administration are dismantling many of the safeguards put in place after the 2008 banking crisis.

Poland's New Iron Curtain

● A nationalist government in Warsaw is fraying ties with NATO and the EU

The Berlin Wall has been down longer than it was up, yet in Poland it feels like new barricades are being built. The country is in an escalating fight with the European Union over its nationalist government's power grab of the courts and media. Ministers have needled Germany with a demand for World War II reparations. Now it's angered Israel and the U.S. over a law making it a crime to suggest Poland played any role in the Holocaust.

If the idea was to boost the popularity of the nationalist leaders in Warsaw, it worked. Support for the governing Law & Justice party hit records in recent months. But Poland faces a hard truth: The nation is arguably more reliant on EU money and U.S. security than at any time since the collapse of communism. And both may be in shorter supply in the years ahead. Since joining NATO in 1999, Poland has been a key buffer state against Russia. Things got off to a good start with Donald Trump, who, on a visit to Warsaw last year, praised Law & Justice leader Jaroslaw Kaczynski for putting Poles first and maintaining defense spending. Yet that relationship is cooling, with the U.S. Department of State warning that the Holocaust law might affect "Poland's strategic interests and relationships."

The nation of 38 million people is the biggest net recipient of EU aid—€82.5 billion ($101 billion) from 2014 to 2020—and the biggest exporter of workers across Europe. The guidelines for the next EU budget are due in May and will take into account the drop in income caused by Brexit. Momentum is also gathering to use EU payments as a way to ensure member states can't flout the rule of law, according to diplomats in Brussels.

OMAR MARQUES/ANADOLU AGENCY/GETTY IMAGES

◀ Holocaust survivors visit Auschwitz

Some Western member states, including Germany and France, are suggesting limiting access to EU funds for countries breaching its democratic principles. EU Justice Commissioner Vera Jourova said in January that the bloc's budget should emphasize the importance of the rule of law and an independent judiciary in all member states. Ministers from national governments are set to discuss Poland at a meeting on Feb. 27. "Poland's case is becoming an element of the political bargaining about a very difficult budget," says Piotr Buras, a political scientist from the European Council on Foreign Relations.

Amid the drama, Poland's economy is doing well. Growth is stronger than it's been in six years, powered by consumer demand, which gets a boost from government handouts. Poland pays families 500 zloty ($147) a month for every child born after their first—a bigger subsidy relative to wage levels than that offered by oil-rich Norway.

● Poland is the biggest net recipient of EU aid. From 2014 through 2020 it will get

€82.5b

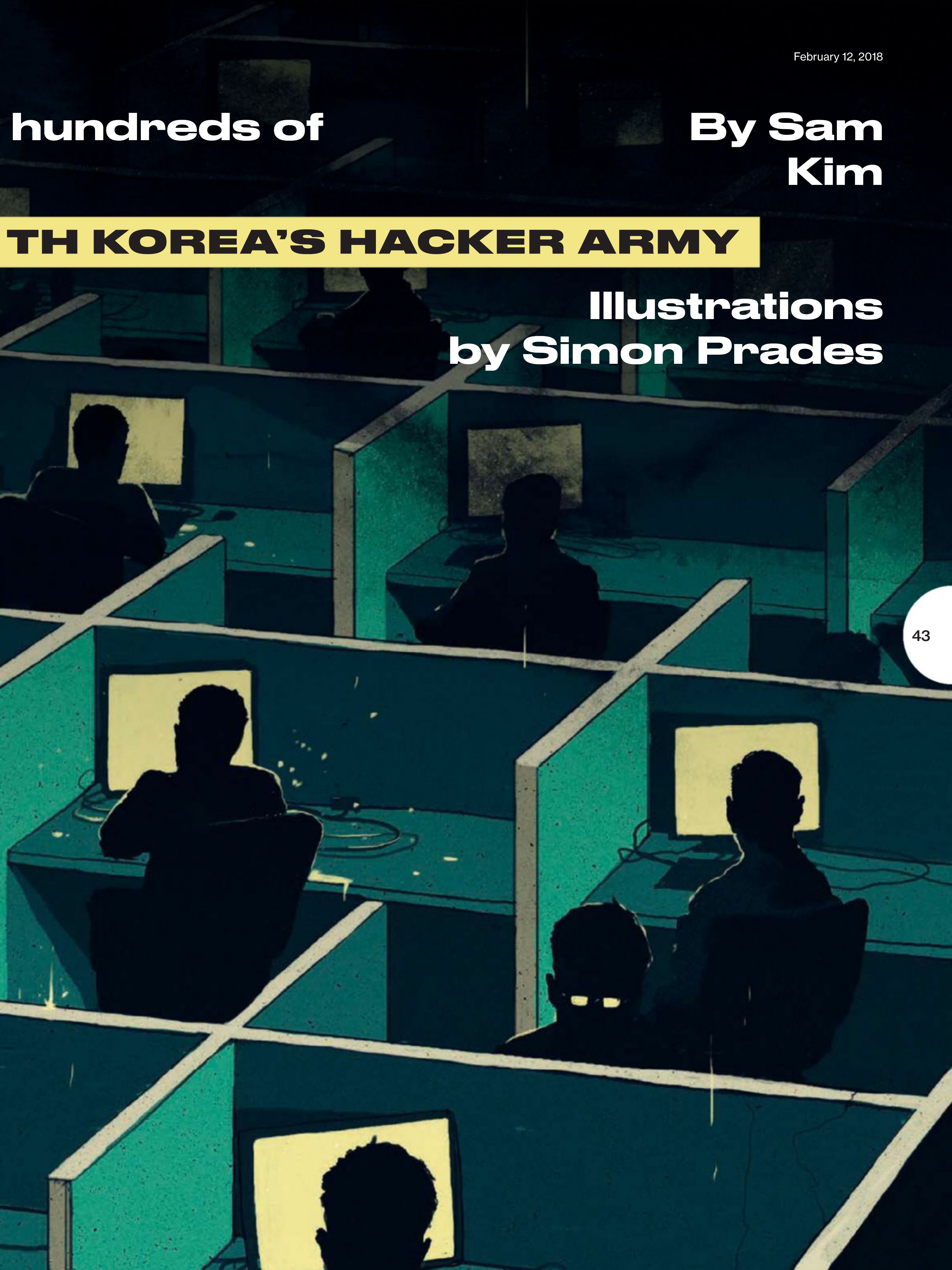
Law & Justice has spent the past two years portraying itself as the savior of Polish values. Everything Kaczynski does—whether it's taking over the judiciary, calling Western European allies "sick," or trying to ban talk of war crimes—is in the name of standing up for ordinary Poles against the "elites." On the night of Feb. 5, protesters gathered outside the presidential palace in Warsaw to urge President Andrzej Duda not to be swayed by Jews' objections to the Holocaust law, which imposes fines or as long as three years in jail for public claims that Poland bears responsibility for crimes against humanity committed on its soil. The following morning, the president signed the bill into law.

Kaczynski put the anger over the Holocaust law down to a misinterpretation of what it's really about. The new, Western-educated prime minister, Mateusz Morawiecki, told the World Economic Forum in Davos that the row between Poland and the EU was just a "misunderstanding." At a convention for Polish regional officials in early February, the country's minister for investment and development tried to reassure officials that EU money will keep flowing. Few, though, believe there won't be consequences. "Let's not hide that our relationship with the EU doesn't affect the budget," says Szymon Oglaza, an official from the Opole region. If Poland can't clear up these misconceptions soon, it may find itself cut off from the West by the curtain it erected itself. —*Wojciech Moskwa, Marek Strzelecki, and Ewa Krukowska*

THE BOTTOM LINE Recent moves by Poland's ruling Law & Justice party may provoke a backlash among budget-setters in Brussels and affect the flow of EU aid to the country.

The regime in Pyongyang has sent programmers to other countries. Their mission: Make money by any means necessary. Here’s what their lives are like

INSIDE NOR



hundreds of

TH KOREA'S HACKER ARMY

By Sam Kim

Illustrations by Simon Prades

In most respects, Jong Hyok looks like any other middle-aged male tech worker you might see on the skyscraper-shadowed streets of Seoul's Gangnam district: smartphone in hand, dark-blue winter coat over a casual, open-collared work shirt. Sit him down at a sushi restaurant and start asking him questions, though, and you soon sense that Jong is harboring an extraordinary tale. He slouches, staring intently at the table before him and speaking haltingly, his sentences often trailing away unfinished.

Jong tells you he's in his late 30s, but his tired eyes and wizened skin make him look a decade older. He says he's concerned that you'll be indiscreet with details that could expose him or his family. You wonder momentarily if he suspects you're a North Korean spy. But no, you're here to relate the remarkable story of his years spent cracking computer networks and programs to raise money for the regime in Pyongyang.

North Korea's hacking prowess is almost as feared globally as its nuclear arsenal. Last May the country was responsible for an internet scourge called WannaCry, which for a few days infected and encrypted computers around the world, demanding that organizations pay ransom in Bitcoin to unlock their data. A few years before that, North Korea stole and published the private correspondence of executives at Sony Pictures Entertainment, which had produced a Seth Rogen satire of the country called *The Interview*.

Jong wasn't involved in those attacks, but for half a decade before defecting he was a foot soldier in North Korea's hacker army. Unlike their counterparts elsewhere, who might seek to expose security vulnerabilities, steal corporate and state secrets, or simply sow chaos, North Korean hackers have a singular purpose: to earn money for the country, currently squeezed by harsh international sanctions for its rogue nuclear program. For most of the time Jong spent as part of this brigade he lived and worked in a crowded three-story home in a northeastern Chinese city. The hackers he shared it with were required to earn up to $100,000 a year, through whatever means they could, and were allowed to keep less than 10 percent of that. If they stepped out of line, the consequences could be severe.

Experts in the South Korean government say that over the years, North Korea has sent hundreds of hackers into neighboring countries such as China, India, and Cambodia, where they've raised hundreds of millions of dollars. But actually finding one of these cyberwarriors is, for obvious reasons, difficult. Sources in South Korea's government and the North Korean defector community provided *Bloomberg Businessweek* with the name of someone who has deep knowledge of the latter group—a fixer of sorts. This contact, a middle-aged man who chose his words with painstaking deliberation, asked that his name not be used. After several meetings, he offered the phone numbers of three contacts, requesting that *Businessweek* shield their identities. Jong—which is not his real name—was one of them.

For decades, North Korea's government has sought to use modern technology to transform one of the most isolated, impoverished parts of the world. During the 1990s, Kim Jong Il, the father of current leader Kim Jong Un, touted programming as a way for the country to rebuild its economy after years of catastrophic famine. He established technology degrees at Pyongyang's universities and attended annual software-writing contests to put gold watches on the wrists of winners.

NO WAY.

Reports from Korea watchers suggest that, sometime in the back half of the decade, Kim Jong Il formed a cyber army designed to expand North Korea's hacking activities. Initially the unit managed only random incursions, on targets like government websites and banking networks, but after Kim died in 2011, his son expanded the program. Soon it was launching attacks more consistently and on more important targets, such as nuclear plants, defense networks, and financial institutions.

Formally, North Korea denies engaging in hacking and describes accusations to that effect as enemy propaganda. It says its overseas computer efforts are directed at promoting its antivirus software in the global market. The country has for more than a decade been working on such programs, including one called SiliVaccine. It also

has a homegrown operating system, Red Star, that software developers have pointed out looks suspiciously like macOS. Kim Jong Un's affinity for Apple products is well-known. In 2013 he was photographed sitting in front of an iMac during a meeting with military officials to discuss missile attacks on the U.S.; a picture released a few years later showed him with an Apple laptop on his private jet.

Kim has also moved to make more smartphones available to North Korea's 25 million citizens and begun rewarding computer scientists with nicer homes and higher salaries. And he's sent increasing numbers of them into neighboring countries, where internet access is better and they can more easily hide their tracks. Defectors say programmers cross the border clutching bean paste, hot pepper paste, dried anchovy, and other comforts of home.

"ELITE PROGRAMMERS? WE WERE JUST A BUNCH OF POOR, LOW-PAID LABORERS"

Jong was part of an earlier wave sent by Kim Jong Il. Born in Pyongyang during the early 1980s, he was raised by parents who were faithful to the Workers' Party of Korea and Kim Il Sung, North Korea's founder, who led the party and is Kim Jong Un's grandfather. Growing up, Jong heard tales of his own grandfather's brave fight against Japan's imperial army in Manchuria alongside Kim Il Sung during World War II.

As a child, Jong's favorite subject was biology, and he aspired to become a doctor. His parents were supportive, but the state decided, based on his test scores, that he should study computer science. There was no questioning the determination. Heartbroken at first, he eventually became fascinated by the inner workings of computers, and in his junior year of university, in the late 1990s, he was selected by the government to study in China.

The years he spent there were a revelation. A government minder accompanied each delegation, but Jong's was lax, and he managed to go drinking, dancing, and camping with Chinese students. The biggest shock was having almost unlimited access to the internet. The computers back home were so strictly controlled that they were useful mostly for calculating figures or displaying diagrams. The ones in China showed Jong much more of the world. "I felt like a colt cut loose on the field," he says.

For a brief moment, North Korea seemed to be moving in a more open direction. During school breaks, Jong would return home to find that some of his wealthier friends owned personal computers. They played video games like *Counter-Strike* and watched DVDs of South Korean soap operas, which were becoming so easy to obtain that Jong almost believed unification was at hand. Soon, though, government authorities were storming homes to confiscate such material in a crackdown on the so-called yellow wind of capitalism.

Jong graduated and returned home to get his master's degree, for which he worked at a state agency, creating office software. The government was at the time investing in a variety of tech projects, including one that used power lines to transmit data. Once again, Jong glimpsed hope that the regime might see technology as a means for advancement, not just a threat.

After graduation, he went to work for a state-affiliated software development agency. Before he could settle in, the government informed him that it had other plans. He was being moved to China, to conduct software research that would "brighten the future" of North Korea's information technology sector.

Jong knew exactly what that meant: Go make money for your country.

Not long after, Jong crossed the border on foot and caught a bus to his assigned city. There, he made his way to a relatively large house set on a busy street amid a ▶

forest of high-rises. The place was owned by a Chinese tycoon with business ties to Pyongyang. Dozens of graduates from North Korea's elite universities—all men—slept in cots and bunks on the top floor. A warren of cubicles and computers occupied the lower floors, and portraits of Kim Jong Il and Kim Il Sung hung on the walls.

At first Jong didn't have a computer, so he borrowed one from his roommates, promising to pay a rental fee once he'd made enough money to buy his own machine. He began his new career by obtaining beta versions of commercial software such as video games and security programs, then making pirate replicas his clients could sell online. Orders came in via word-of-mouth and broker websites from around the world; many were from China or South Korea, allowing for easier communication.

Each unit was overseen by a "chief delegate," a noncoder who arranged transactions and collected payments. A separate minder from North Korea's state police was there to handle security issues. The work was arduous, involving reverse-engineering code and intercepting communications between the source program and the servers of the company that made it. Jong recalls that it took 20 programmers to build a functioning replica of one program. The hackers often found themselves racing to decipher vulnerabilities in a piece of software before its creators could patch the security holes.

Jong got up to speed quickly and was soon considered a senior member of the house. When orders were slow, he and his colleagues hacked gambling sites, peeking at the cards of one player and selling the information to another. They created bots that could roam around in online games such as *Lineage* and *Diablo*, collecting digital items like weapons and clothes and scoring points to build up their characters. Then they'd sell the characters for nearly $100 a pop. Every so often, to maintain the facade that he was pursuing research to benefit North Korea, Jong would create scholarly software, for example a data-graphing program, and send it across the border.

All in all, the work was unglamorous. "Elite programmers? No way. We were just a bunch of poor, low-paid laborers," Jong recalls. He denies any complicity in the kinds of crimes that security experts have attributed in recent years to North Korea, such as snatching credit card numbers, installing ransomware on corporate servers, and swiping South Korean defense secrets. But he doesn't doubt that such things were going on. "North Korea will do anything for money, even if that means asking you to steal," he says.

Any moral qualms that he or other programmers might have felt were subordinated by their mission. They had targets to meet—or else. Failing to clear a benchmark known as *juk-bol-e* ("enough to buy a bowl of soup") could mean being sent home. More serious offenses, such as skimming profits or not showing sufficient fealty to the regime, could result not only in repatriation but in "revolutionization," hard labor at a factory or farm.

On Saturdays the handlers, sometimes alongside visiting officials, would hold two-hour meetings with the units to discuss the philosophies of Kim Il Sung and Kim Jong Il, as well as any new ideological tenets dispensed by Kim Jong Un. Key statements would be memorized and recited in a loyalty pledge of sorts. A few times, Jong says, he dealt with two especially talented hackers who handled military espionage assignments, infiltrating the websites and servers of foreign countries. They were staunchly loyal to the regime, and he was particularly careful not to make any comments they might see as critical.

Jong estimates that he was eventually bringing in around $100,000 a year. Because he and his cohorts were regarded as productive, they were allowed to live relatively well. They enjoyed air conditioning during the summer and ventured into the neighborhood in chaperoned groups. In their spare time they played *Counter-Strike*, sometimes sneaking down at night to their cubicles to catch up on South Korean soap operas. On Saturdays, after their indoctrination session, they might go outside to the sizable backyard to play soccer, badminton, or volleyball. Twice a year, they would meet with hacking units from across China to celebrate propaganda events such as the blossoming of Kimilsungia and Kimjongilia, orchids named for Kim Jong Un's father and grandfather.

Jong's abilities also led him to be sent on trips elsewhere in China with North Korean officials. As he traveled, he got a view of how the hacker corps were organized and learned that not every unit was as lucky as his. Government agencies and state-affiliated corporations would each send their own cells abroad to generate cash. All of their activities were planned and directed by a shadowy branch of the Workers' Party called Office 91. The hacking units tended to keep in close touch with North Korea's consulates, gathering there to drink, talk shop, and trade computer gear.

One summer, Jong and some colleagues visited a cramped, run-down building in the northeastern city of Yanji. Living there were a dozen coders who'd been sent by North Korea's railways ministry. They were trying to crack high-end software that analyzed live orchestral performances and wrote musical scores. It was the rainy season, and the men worked in shorts and relied on fans to combat the heat and humidity; water dripped from the ceiling.

"SOME HACKERS BARELY FED THEMSELVES AND WERE JUST F HAVE ORDERS TO WORK ON"

Stacked against one wall were packages of ramen. “Some hackers barely fed themselves and were just fortunate to have orders to work on,” Jong says. One of them was being treated for tuberculosis; another had required medical treatment after waking up with a cockroach lodged in his ear. But they weren’t getting the kind of care his crew would have received.

Other programmers told Jong similarly gruesome stories. He heard about a young coder in Beijing, known for boasting of his elite education, whose colleagues had severely beaten him, shattering his ribs, after finding out he’d been receiving kimchi from a South Korean businessman. A hacker in Guangzhou was said to have died of dengue fever a year after leaving his home and children behind. The man’s boss apparently decided it would be too expensive to repatriate the body, so it was cremated and six months later another programmer took the ashes home. Hackers joked darkly that while they’d arrived as protein, they might return as powder.

Finally, after he’d been working in China for a few years, Jong himself landed in trouble. He’s spare with the details, describing only an “unsavory incident” involving a government official. He fled before the regime could mete out the inevitable beating or trip home for revolutionization. For two years he roamed southern China, earning money by hacking, sleeping in hotels, and tasting the sort of freedom he’d previously only imagined. His last stop in the region was Shenzhen, near Hong Kong, where, after making $3,000 and quickly spending it in ways he vaguely describes as “enjoying life,” he realized he was tired.

Returning home wasn’t an option—desertion could be punishable by death. Instead, Jong bought a fake Chinese passport for 10,000 yuan (about $1,600), traveled to Bangkok by train and bus, and knocked on the door of the South Korean Embassy. He lived inside the compound for a month, undergoing a security check, before being flown to Seoul.

The two other defectors I spoke with confirmed the broad contours of Jong’s story, though their own work was somewhat different from his. They were among a group of

ORTUNATE TO

programmers that North Korea had deployed to China to develop and sell iPhone and Android applications. Using fake identities, they posted on freelancing websites such as Upwork.com and took jobs developing apps for taxi-hailing, online shopping, facial recognition—anything that generated money. They say they were required to make around $5,000 a month for the government, working up to 15 hours a day and operating under the same pressures and threats as Jong and his peers.

One of the defectors, who worked under the auspices of a state agency called the Korea Computer Center, had long been cynical about his country; he’d come to hate bellowing out the loyalty oath to Kim Jong Un every Saturday and finally concluded that everything about the regime was a lie. He managed to escape when a Chinese client who liked his work asked to meet in person. He declined at first but changed his mind and wound up confessing that he was from North Korea. When he said he wanted out, the client offered to help.

The other defector says that one day he simply snapped from overwork and left, roaming around China on foot in hopes of encountering one of the South Korean spies he’d been warned about before leaving home. For six days he slept inside greenhouses, gyms, any place with a roof, worrying the whole time that he’d made a huge mistake. It was already too late, though—if he went back he’d be punished. Finally, he found a shop whose sign indicated it was run by someone from South Korea. The shopkeeper was willing to help.

Lim Jong In, head of the department of cyberdefense at Korea University in Seoul and a former special adviser to South Korea’s president, says that North Korea’s hacking strategy has evolved since Jong defected. At the program’s height, he says, well over a hundred businesses believed to be fronts for North Korean hacking were working in the Chinese border cities of Shenyang and Dandong alone. China has since cracked down on these operations in an effort to comply with United Nations sanctions, but they’ve simply been moved elsewhere, to countries such as Russia and Malaysia. Their value to the regime—and to the hackers themselves—is simply too high to forgo. “North Korea kills two birds with one stone by hacking: It shores up its security posture and generates hard currency,” Lim says. “For hackers it offers a fast track to a better life at home.”

Jong is doing well for himself in Seoul. He blushes when congratulated for a promotion he recently received at a local software security company, saying he had to work especially hard for it. “I feel like my value as a programmer is discounted by half when I tell people I’m from North Korea,” he says. Others in the 30,000-odd defector community express similar frustrations about their outsider status; some display contempt for their adopted country’s concerns about appearances and money, and recall with pride their homeland’s penchant for bluntness.

Still, there’s no going back. Jong is sometimes visited by South Korean and U.S. agents who ask him for details that might fill holes in ongoing investigations. The South Koreans ask about Office 91—what its hackers are like and what they’ve worked on in the past. The Americans recently inquired whether he knew anything about a four-story building in Pyongyang where Western-designed semiconductors are photographed and X-rayed for replication.

At night, Jong returns home to a quiet life with his South Korean wife. Their baby son, he says, babbles happily and has just started to walk.

WHO WILL CARE FOR YOU WHEN YOU'RE OLD?

BY 2050, ABOUT 80 MILLION AMERICANS WILL BE SENIOR CITIZENS; NEARLY ALL WILL WANT TO LIVE AT HOME. THE COUNTRY'S 3 MILLION AIDES ARE ALREADY OVERWORKED AND UNDERFUNDED—SOME ARE EVEN WORKING FOR FREE

BY E. TAMMY KIM
PHOTOGRAPHS BY ELINOR CARUCCI

AT 6 A.M. ON A WINTER MORNING IN RIDGEWOOD, N.Y., A woman I'll call Valia leaned on her kitchen counter, drinking black tea and packing a giant purse. She wore her blond-gray hair in a bun and pulled on an ankle-length brown puffer coat. "OK, I'm taking my medication, I'm taking my telephone, my tablet," she said, going down her checklist. She whispered goodbye to her cat and her 26-year-old son, who was still asleep, and lit a cigarette to smoke on her way out.

Valia took the L train to the end of the line in Brooklyn, then switched to a crowded bus. Her fellow commuters looked as tired as she did, some dozing upright in their scrubs or steel-toed boots or polo shirts embroidered with fast-food logos. I was following Valia, a Ukrainian immigrant, on her hourlong trip to the apartment of an elderly, low-income woman with advanced Alzheimer's disease. Valia had been assigned the case, the latest in her long career as a home health aide, a few months earlier. The woman depended on her for virtually everything. "Showering, washing her hair, feeding her," Valia said. "She's bedridden, she's not walking, so I have to transfer her from the bed to a chair. She's using Pampers."

Her shift would begin at 8 a.m. and end at 8 a.m. two days later—a schedule that had recently compelled Valia to sue her employer, a private home health agency. Forty-eight hours stuck in a cramped bedroom with someone in constant distress, who yelled or babbled strings of Russian words, who was incontinent and unable to sleep, who was lost in her own timeless world. "I can't fall asleep knowing she will break a bone," Valia said. "I sleep next to her and watch her all the time." Over two days she would work more than most full-time employees do in a week. Yet her pay stub would account for only 26 of the 48 hours, at $10 per hour. (She now earns $11.) This was arguably legal, because the law—and her employer—assumed that she slept and ate the rest of the time.

"I'm never sleeping," Valia said. "They didn't even tell us they weren't going to pay us nights. When I saw that on my paychecks, they said it's a very specific kind of case and that at some time in the night I'm allowed to stop working and put my client to bed. But in reality, most of the clients I was assigned were never sleeping at night." Still, Valia stuck with it, out of obligation to her clients and because she'd never known another career.

Privacy laws stopped me from following Valia into her client's home, so we parted on an industrial block nearby. At the end of her 48-hour shift, I met her on the same corner. She wore the same outfit, hair pulled into the same bun. She was exhausted and irritable and complained of a sharp pain in her back from repeatedly lifting her client. "Come on!" she yelled. "Let's go!" On the subway, she unfolded an hourly log she'd kept for my benefit, in lines of slanted Cyrillic punctuated by exclamation points: "Bed bath. Porridge + juice. Changing diaper. Intimate washing of patient. Transfer to the chair. Laundry. Gave her pills." A one-hour nap on the first day was the most Valia had slept. She said this was fairly typical. ▶

In Greenlawn, N.Y., home health aide Natalia Hubbard helps her client, Noriko Morimoto, who is 82 years old, has Parkinson's, and lives with her son

◀ Medicaid, which was footing the bill, periodically sent a nurse to evaluate the patient and inspect the premises. On the last such visit, Valia said, the nurse had instructed her to turn the patient every two or three hours, to prevent bedsores. A patient with constant overnight needs is supposed to receive a "split shift" of two consecutive 12-hour workers per day. But because that arrangement doesn't automatically deduct for sleep or long meal breaks, it would cost twice as much as Valia's stay; the nurse knew it would never be approved and called on Valia to fill the gap. "She just told me verbally. It can't be on my time sheet or in the care plan," Valia recalled. "They pretend we sleep."

Eighty million people in the U.S. will be 65 or older within a few decades, compared with around 50 million today, and, according to surveys conducted by AARP Inc., the desire to grow old at home is almost universal. Most who do so will need help with daily tasks and will exhaust the ability of family and friends to cook and clean, bathe and dress, and run errands. When Americans look for paid help, they'll find their national infrastructure convoluted and wanting. It's a problem the world over, but one compounded in the U.S. by the fragility of the welfare state.

A typical home-based care plan of six or eight hours a day is less costly, and more salutary, than a nursing-home stay, but it's still expensive enough to bankrupt a middle-class American family. Medicare, the public benefit plan for those 65 and older, pays only for strictly medical forms of home care, such as dressing wounds and physical therapy, or for short post-hospital stints in nursing homes. Private long-term care insurance can be prohibitively expensive (annual premiums run into the thousands) and unavailable to those with preexisting conditions. Most seniors who need help with daily tasks first exhaust their savings, then apply for Medicaid, the public health insurance program for the poor.

Medicaid is jointly funded by the state and federal governments, but most rules are set in Washington. Certain services must be provided; states can then decide what else to cover and how much to spend. Nursing-home care is a mandated benefit, but nonmedical home care isn't. The result is a chaotic national patchwork. A senior in Virginia is entitled to no more than 32 home visits per year; in Utah the cap is 60 hours per month.

In states with strict limits, many patients who would prefer to stay at home are placed instead in a nursing facility, at significant cost to the public—in 2015, about $55 billion. In states that do approve substantial home-based care, Medicaid budgets are underfunded to the point of crisis. As a result the nation's 2.9 million home-care workers—who, according to the Bureau of Labor Statistics, earn a median annual income of $22,200—are routinely pressed to donate their labor, pushing through required breaks, staying well beyond the hours set by their agency, or, like Valia, enduring long, uncompensated nights.

New York, one of the nation's largest long-term-care markets and the only state whose Medicaid program covers around-the-clock help, comes closest to the future Americans say they want. But New York also demonstrates the system's central problem: It's untenable, given current funding levels, to pay workers for anywhere close to the number of hours they actually work.

"Tell me another job where you have to work for free throughout the night," Valia said. "It doesn't exist!"

THE HOME-CARE INDUSTRY IS, LIKE NURSING, SOCIAL WORK, and child care, an offshoot of traditional unpaid domestic labor. During the Depression, New York City introduced one of the U.S. government's first experiments in monetized care, hiring black "housekeepers" with funds from the Works Progress Administration. As Eileen Boris and Jennifer Klein write in *Caring for America*, it was a paid gig, but one with faint boundaries; the women were expected to treat their jobs as charity. "If it seems necessary to work overtime, I tell my client we can check that up to neighborliness," one WPA housekeeper said. Later, the Welfare Council of New York City drew on the same population of workers to provide relief to the poor, paying them for only 10 to 16 hours of every 24-hour shift.

With the establishment of Medicare, Medicaid, and Social Security in 1965, and their expansion in 1973, government at all levels took an interest in home care. The health-care system became one of the economy's largest sectors, and states used home-based services to complement hospitals and long-term-care facilities. For the first time, elderly and disabled Americans lacking family help could participate in the community rather than being warehoused in institutions.

To staff these initiatives, in the 1970s and '80s many cities and states developed "workfare" programs, conscripting poor women to give "unskilled" care (as opposed to nursing services) in exchange for a welfare check. Home health aides, unlike nannies and house cleaners, were viewed by policymakers as "companions" and casual "sitters" undeserving of the minimum wage. During congressional debates in 1973 over the exclusion of domestic workers from the Fair Labor Standards Act, Senator Quentin Burdick (D-N.D.) argued that home health aides should remain beyond the law's reach. The prototypical aide, he said, was someone who just "comes in and sits"; aides were "not regular breadwinners or responsible for their families' support."

This assumption persisted and was further entrenched by federal welfare reforms passed in 1996, which vastly expanded workfare. Not until 2015, following Supreme Court litigation, a contentious rule-making process, and extensive labor organizing, did aides finally win the right to be paid the minimum wage and overtime. Even so, the median annual salary for full-time aides—overwhelmingly women, many of them immigrants and ethnic minorities—approximates the federal poverty level for a family of three.

Officially, Americans spend more than $300 billion per year on long-term care, including nursing homes,

assisted-living facilities, and in-home care—six times the annual budget of the U.S. Department of Housing and Urban Development. The total would be far higher if it accounted for gray-market domestic work or the country's 21 million unpaid family caregivers.

Many households find help through a home-care agency. In 1980 there were 3,000 such companies; today there are more than 12,000, ranging from tiny neighborhood nonprofits to corporations employing thousands. Other households hire directly and pay out of pocket, increasingly relying on startups to do so. Earlier this year, the website Care.com, the Tinder of domestic work, reported that it had registered more than 14 million consumers and 11 million aides to upload detailed profiles, want ads, and résumés for senior care, child care, pet care, and housekeeping. When I posted my own bare-bones listing, seeking around-the-clock help for my fictional grandmother—at $15 to $25 per hour, well above the Medicaid rate—I received 50 responses overnight.

Medicaid remains the largest funder of home- and community-based services in the U.S., but sufficient public funds have never been allocated to make the system work. How much home care a patient receives through Medicaid theoretically corresponds to her medical need: Someone with early Parkinson's disease might be granted two hours per day, whereas someone with severe diabetes and a bad hip might receive six. Doctors and nurses make these assessments, but insurance companies overseen by state Medicaid agencies must authorize them.

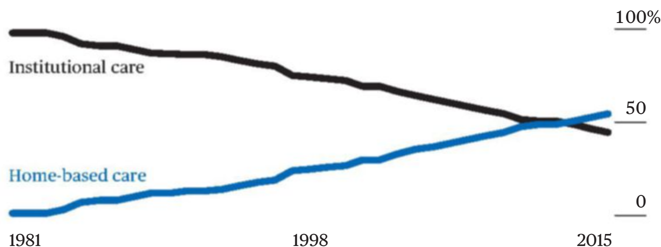
Once a case has been approved, Medicaid funds travel down a complex path. In New York, the state Department of Health pays a flat per-patient rate to a "managed-care" insurance company, which in turn contracts with home-care agencies, which in turn employ aides. The rate, once set for a particular insurer, doesn't vary, regardless of how much help a patient needs, so the actuarial math for the most seriously ill—elders who are bed-bound or have advanced Alzheimer's—is punishing. Most companies get around $3,000 per patient per month, enough to cover overhead and compensate an aide for a 40-hour week, but only one-quarter to one-half the cost of around-the-clock care. The total costs of a split shift can exceed $12,000 per month; a live-in shift, where nights go unpaid, averages $7,000.

New York's reimbursement scheme thus discourages managed-care companies and home-care agencies from accepting high-hours cases and masks the true level of demand. Only a fraction of the neediest Medicaid patients are granted 24-hour care, typically provided by a "live-in" worker like Valia, who's paid for only half her time. And these high-cost cases have become concentrated among a handful of insurers with philanthropic roots.

The state Department of Health wouldn't say what percentage of Medicaid patients receive 24-hour care. Local 1199 of the Service Employees International Union (SEIU), which represents more than 400,000 aides, nurses,

CLOSE TO HOME

Share of total Medicaid long-term-care spending



GRAPHIC BY BLOOMBERG BUSINESSWEEK. DATA: TRUVEN HEALTH ANALYTICS

and other medical workers on the East Coast, says live-in cases are 8 percent of New York's total. But Rochelle Friedlich, of the Carter Burden Center for the Aging, says that's because managed-care plans are "giving people fewer hours than we think might be safe." Compared with only a decade ago, she adds, "it's definitely much harder to get 24-hour care"—because of inadequate reimbursement rates and the growing population of seniors.

In 2016, GuildNet, a Medicaid insurer known for taking on high-hours cases, announced it would no longer pay for long-term-care services in greater New York City. "We can't control the negotiation of rates or the numbers of people we have to cover," Christina Wong, GuildNet's chief financial officer, says. "You have an aging population getting older and sicker. How do you manage that?"

In less populous areas of the state and country, the problem is compounded by the lack of aides willing to work for low wages. A survey conducted last year in Wisconsin showed that 85 percent of home-care agencies didn't have the workers to staff scheduled shifts. Di Findley, executive director for Iowa CareGivers, estimates that her state will need an additional 20,000 aides by 2020. "The demand is on the rise, and the supply is not enough," she said at a recent community meeting. "It's gotten so much worse in recent years."

In February 2017, the New York State Assembly convened a hearing on the "aide shortage" crisis. "On any given week," Rebecca Leahy, president of North Country Home Services Inc., testified, her agency has "400 hours of authorized care that cannot be provided due to a shortage of workers, leaving those unserved patients with a high risk of hospitalization or placement in a nursing home." In some areas of the state, aides assigned to 8- and 12-hour jobs routinely stay 16 hours or more without additional pay. Colleen Johnson, a 58-year-old caregiver in Buffalo, said that agencies often ask her to cover additional hours and that she feels compelled to do so out of loyalty to her clients—out of neighborliness, you might say. "It's all about the consumer," she said. "If you do this work, you have to accept that."

IT WAS 20 YEARS AGO THAT VALIA RESPONDED TO AN advertisement in one of New York City's Russian-language newspapers. A local home health agency was offering ▶

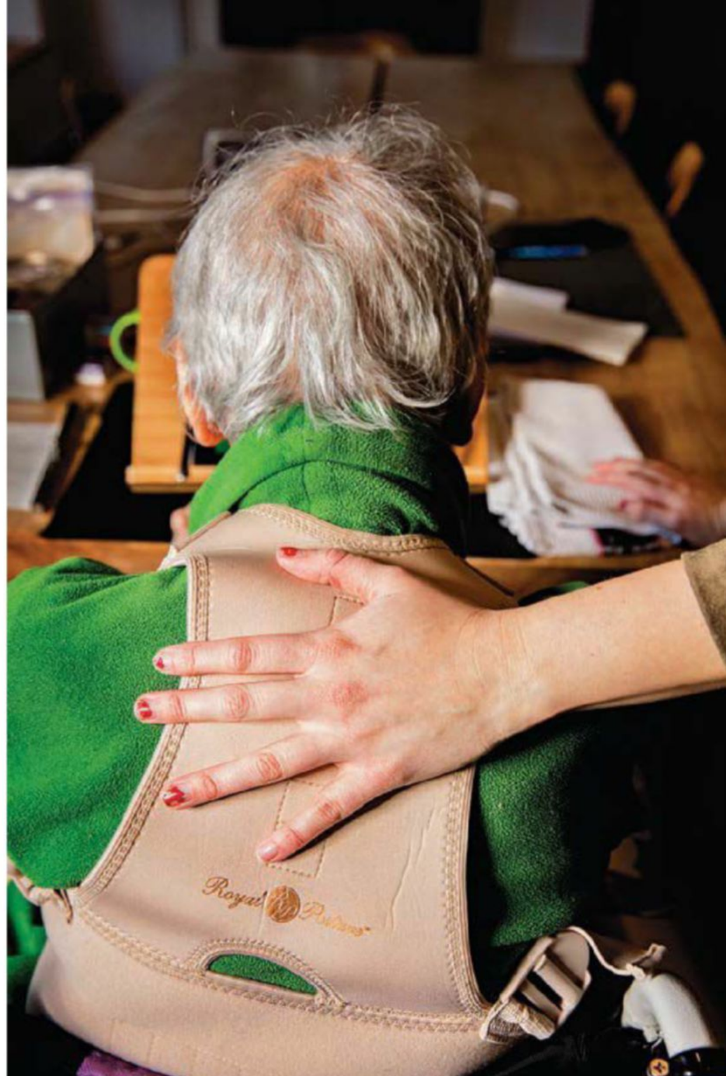
◀ training and the promise of steady work as a certified aide for elders and the disabled. Professional caregiving wasn't what she'd imagined for herself—as a young woman in Ukraine, she'd studied French and planned a career in translation or journalism—but here she was, an immigrant, a mother of three, and the wife of an ailing man. Her husband got sick a few years after they immigrated to the U.S. "I didn't have insurance, so we were fighting to get him covered," she says. "I had to earn money to raise the children." Valia tended to him as he lost his sight then slipped into a long coma. She stayed with him at the hospital and in a nursing home, where she witnessed the limitations of institutional care.

For many years there was little separation between Valia's personal caregiving and what she did for a living. Until her husband died in 2011, she split her time between his bedside and her clients', as if to prove the nebulousness of her profession. It was after his death that she worked her first 24-hour assignment—and later learned, to her shock, that only half the hours were paid. She called her union, SEIU Local 1199, to complain. A Russian-speaking organizer told her that nothing could be done: There was limited money in the Medicaid system. (The organizer declined to comment.)

In 2016, Valia heard that a group of home-care workers had filed lawsuits over unpaid time on 24-hour shifts. She was flat broke, living on 26 hours of pay each week but too tired from her 48-hour shift to take on anything more. She met with a lawyer in downtown Manhattan and decided to sue her longtime agency for unpaid overtime. More than a dozen class-action lawsuits have been filed in the state, with workers claiming that they weren't receiving breaks and that their employers and union representatives ignored repeated complaints. The key questions in such cases are a mix of law and fact: Does the worker formally count as "live-in"? How much break time does she enjoy? Under state and federal rules, time spent eating or sleeping can be subtracted only if a caregiver actually takes mealtimes and sleeps for extended periods, and only if she "lives in" her client's home.

Ordinarily it's the employer's responsibility to track hours and compensation, but attorneys for the home-care industry have argued that this is impossible to do in private homes. An aide must rebut the presumption that sleep and meal breaks are being taken, they say, by complaining to a supervisor or making notes on her time sheet.

I asked a dozen 24-hour aides in New York state if they'd ever been advised of their right to sleep and eat on the job. All said no, and none had been told to keep track of naps and meals. The nation's largest provider of home care, the Visiting Nurse Service of New York, includes only a brief, vague section on live-in shifts in its training manual. Aides are entitled to eight hours of sleep, it says, but they must also "be available to the client" as needed, for "a reasonable amount of time during the night." When I asked Kathryn Haslanger, chief executive officer of the Jewish



Association Serving the Aging, one of New York's oldest home-care agencies, what type of around-the-clock patient needs close attention for only 13 of every 24 hours, she described a scenario in which "the client requires assistance at night for toileting, or due to impaired cognitive status," but not all the time.

Valia hadn't kept records over the years, though she could recall each of her clients and what she did for them in minute, bodily detail. One woman needed her diaper changed throughout the night; another wanted Valia to cover her with a blanket, then uncover her, for hours on end. Valia could testify about the hours she'd worked, but her union contract seemed to lock in pay deductions for sleep and meal breaks whether or not she took them. The contract also prevented her lawsuit from proceeding in the courts, instead forcing the case into arbitration. "I have to fight both 1199 and the agency for my rights," she says.

Valia's employer declined to comment, but in court filings maintains that she was compensated fairly, in line with state and federal regulations. The union's position is harder to read. Over the past few decades the SEIU has unionized tens of thousands of aides, but to do so it struck compromises with home-care agencies and state governments, attempting to balance the need for fair jobs with the need for any jobs. The union's contracts typically guarantee health benefits and protection from arbitrary firing, but they've done little to change the reality of unpaid hours.

"Anytime workers can show, under the current rules, that they weren't paid, we're representing them," says Helen Schaub, a policy and legislative director at SEIU Local 1199. "In an ideal world, we'd want to make sure workers get paid for all hours they're in house. But a change to reimbursement would make home care very expensive."

It's difficult to know how many such hours go uncompensated nationwide—a representative from the U.S. Department of Health and Human Services repeatedly declined to answer questions to that effect. The New York Department of Labor wouldn't disclose information on wage complaints filed by home health aides, either. In a 2009 survey the National Employment Law Project found that 90 percent of home health aides had to work some hours off the clock, and workers in such diverse locations as Minnesota and Washington, D.C., have filed complaints over wage theft. I heard accounts of proliferating responsibilities and taffy-like schedules from those employed by Medicaid-funded agencies and private employers alike.

Valia's own case effectively hit a dead end after being forced into arbitration, but thus far two appeals courts in New York have ruled that aides like her aren't live-in workers and must therefore be paid for each hour they spend in a patient's home. The decisions are prompting panic among home-care agencies and cheers from low-wage workers nationwide. The Home Care Association of America has warned that thousands of agencies are at risk of going out of business. Valia felt vindicated.

On Oct. 6, only three weeks after the second appeals court ruled in favor of full compensation, the state Department of Labor quietly promulgated emergency regulations on sleep and meal breaks. But rather than clarify why around-the-clock workers are essentially "on call," the revised language will likely make it harder for workers to be paid for more than 13 of every 24 hours. In the explanatory note attached to the regulations, the department stated that it wanted to "prevent the collapse of the home care industry, and avoid institutionalizing patients." LaDonna Lusher, Valia's attorney at Virginia & Ambinder LLC, says the document "reads just like the briefs we've seen from the industry."

This local drama will continue to unfold on the national stage. Last summer, when the congressional GOP attempted to transform Medicaid from an entitlement into block grants that would leave far less money for home- and community-based services, activists staged sit-ins and noisy demonstrations. People in wheelchairs led the fight, just as they had in the early disability-rights era, four decades ago. Back then there was little camaraderie between people with disabilities and the home health aides who cared for them: Higher wages for the latter meant fewer hours of help for the former. This mistrust has softened over time. Still, any wage hike, any policy requiring aides to be paid for every hour, threatens to pit workers and consumers against one another once more.

AS THE FIRST WAVE OF 76 MILLION BABY BOOMERS TURNS 70, our long-term-care infrastructure will bend from the strain. To keep up, the Medicaid budget will have to grow and properly reimburse managed-care plans. Home health aides will have to be recognized as medical professionals and paid accordingly. Nursing homes, a far costlier option, will occupy a smaller share of the market, and Medicare will have to chip in for long-term care. As Paul Osterman, a business professor at the Massachusetts Institute of Technology, argues in *Who Will Care For Us?*, "by expanding the role of aides, not only do we improve their jobs and reduce the incidence of low-wage work in America, but we can also improve the delivery of care and save money while doing it."

No country has gotten this quite right, but in aging societies around the world, the public sector has proved indispensable. In Japan, long-term-care insurance is subsidized by the state, and in France, an expansive home-care network is covered by a mix of federal and local budgets. Yet the world over, family caregivers and private aides fill untold additional hours.

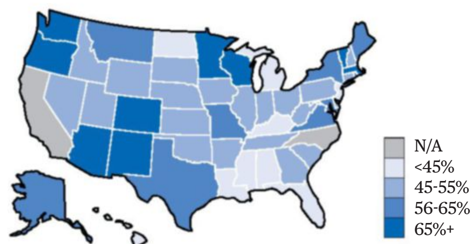
Valia sees her lawsuit as an attempt to bring order to this labor and to the home-health-care industry at large. "In a hospital, there are rules—for the worker, for the patient," she explains. "For us, we have nothing. The patient is the law." Yet she speaks empathetically of her clients' predicament and the value of getting care at home: "My husband was in a nursing home. They sit you on a couch, and you stay like that all day. You have to live with everyone else. But at home, you're in control. If you want to sleep, you can sleep. If you want to eat fish, you can eat fish. It's better, of course. I'd prefer to stay home. Everyone would."

I usually visited Valia on Wednesday nights, after she caught up on sleep, to chat about work and get the latest industry gossip. She'd respond impatiently to my questions while her cat prowled the linoleum. "I've lived here for 12 years," she often said, gesturing to her apartment as a Russian variety show blared from the TV. "I'm waiting for Social Security. I'm 62—I'm going to take my pension, and that's it." Her fridge was adorned with photos of her kids and grandkids, spanning New York, New Jersey, and France. Inside, the shelves were almost empty. Ⓑ

This article was reported in partnership with the Investigative Fund at the Nation Institute.

ALL OVER THE MAP

Home-care spending as a share of Medicaid long-term-care outlays



Pssst—

Want Some Crypto?

Robinhood co-CEOs Bhatt (left) and Tenev

If you're looking for zero-fee stocks, margin trading, and 24/7 Bitcoin buys, the founders of Robinhood have an app for you

By Max Chafkin and Julie Verhage

Photograph by Damien Maloney

Late one Monday morning last December, Baiju Bhatt and Vlad Tenev, co-chief executive officers of online stock brokerage Robinhood, called an emergency meeting in the company's cramped Palo Alto office. Behind them on a flatscreen TV an image of the Greek sun god, Helios, appeared over a hot pink background with the words "DON'T SLEEP" in giant, yellow type. On the bottom, right-hand corner of the image was a date: Jan. 31.

The meeting was short but to the point. Bhatt and Tenev told the 150 employees–some watching via video from Robinhood's Orlando office–that the company was in danger of missing out on Bitcoin, which, as they saw it, was the biggest thing to happen to the financial-services industry in decades. Workers would have to drop what they were doing and focus on giving clients access to it, or Robinhood might become irrelevant. "We haven't been taking this seriously," Bhatt recalls telling the staff.

The previous Thursday, with the price of the cryptocurrency soaring, Bitcoin exchange Coinbase briefly hit No. 1 in Apple's U.S. App Store–meaning it was being downloaded more than Facebook, Netflix, YouTube, and everyone else. The same day, according to data from market researcher App Annie, Robinhood, which had been ahead of Coinbase at times earlier in the year, was ranked 194th. By Dec. 11, when Bhatt and Tenev called the meeting, Bitcoin was trading at $17,000 per coin, up from $1,000 at the beginning of 2017.

Bhatt and Tenev had experimented with the currency years earlier, but as Bitcoin became mired in scandals, they decided to work within the conventional financial system instead. Unlike at traditional discount brokerages, which charge $5 or more to buy or sell stocks, at Robinhood trades are free and made using a minimalist smartphone app. To sweeten the deal, new users get a complimentary share of a random business–generally one with a price below $10–if a friend refers them to the service. The company has raised close to $200 million from venture capitalists, including Yuri Milner, Joshua Kushner, and Google's VC arm, who see in Robinhood a classic case of Silicon Valley disruption: Take a product that once cost a lot, put it online or on a smartphone, and make it as close to free as possible.

Robinhood doesn't operate retail stores, doesn't advertise on TV, and doesn't publish a customer service phone number on its website. In fact, until last November, the company's trading platform wasn't even available on the web; you could use it only on your phone. Once you've set up your account, which can be handled entirely on the app, you're able to search for any equity or exchange-traded fund (ETF) that's available on a major U.S. exchange. Tap a stock, choose the number of shares, then swipe, Tinder-style, to buy.

This convenience has made the app controversial–it's a little bit like putting a casino in an investor's pocket–but it's helped Robinhood grow quickly among millennials, a market the financial-services industry has found hard to crack. Since it was started four years ago, Robinhood has attracted 3 million accounts, roughly the same number as the big discount broker E-Trade. During its most recent investment round, the company was valued at $1.3 billion.

At one time, that might have sounded like a lot of money. But as Bhatt and Tenev watched Bitcoin's price tick up throughout 2017, eventually topping $19,000, they began to experience a sensation that speculators know well: crypto-FOMO. They'd planned on bringing Bitcoin trading to Robinhood eventually, but by December they were convinced they needed to accelerate their efforts. The Jan. 31 deadline meant the new functionality would have to be ready in just seven weeks, about half the normal product-development cycle.

The sprint would require some all-nighters. However, Bhatt and Tenev told the staff that "Don't Sleep," which they printed on posters pasted in bathrooms and throughout the office, had other meanings. First, cryptomarkets, unlike Wall Street, operate 24/7. Second, and more important, Bhatt and Tenev thought that if Robinhood continued ignoring Bitcoin's rise–sleeping on it, if you will–it risked getting disrupted itself. The entire equities market, they'd come to believe, faced a shift as dramatic as the one that confronted Netflix in 2011 when it decided to pivot away from mailing DVDs and toward streaming media. "This has the potential to remake the industry," Tenev says.

Of course, there's another possibility, which became clear as January wore on and Bitcoin's price fell more than 50 percent to about $8,000 in early February. Blockchain, the technology behind Bitcoin, has staying power, but Bitcoin itself may wind up being worthless. The question is whether Robinhood's founders–or any clients riding this wave–know what they're getting into.

"When we started Robinhood, there were a lot of naysayers," says Bhatt in an interview two weeks before his Jan. 31 deadline. The more outspoken of the duo, Bhatt had a frantic schedule that day, including a meeting to decide on the shade of green for the new section of the app–the plan was to give it a "retro-future" feel–as well as reviews of legal issues, marketing, and articles explaining Bitcoin that were planned for the app's help section. "I'm pretty excited about this," he says of the crypto push.

Bhatt, 33, has shoulder-length hair, an unkempt beard, and the bearing of someone more likely to be found on the edges of a Bernie Sanders rally than in the executive suite of a financial-services company. This is by design. Everything ▶

◀ at Robinhood, including the grooming habits of Bhatt and Tenev, 30, who also wears his hair shaggy, and the puckish connotations of the company's name, is choreographed to show that this is not your dad's stockbroker.

Robinhood's customers are mostly inexperienced investors (median age: 28) who are capital-light. That's a bigger cohort than people realize, Bhatt says. According to the Federal Reserve's latest Survey of Consumer Finances, only 14 percent of Americans directly own stock in a company, while 52 percent own it through an investment fund or a retirement plan. Bhatt argues, citing French economist Thomas Piketty, that rising inequality would be ameliorated if more people owned stocks. "People who have capital reserves are generating pretty disproportionate returns," he says. "That's driving inequality."

The pitch may seem too simple, but it's effective given where it comes from. Bhatt and Tenev ran a hedge fund before they started trying to fix capitalism. In 2009, after leaving graduate school—Bhatt has a master's in math from Stanford, Tenev has one from UCLA—they moved to New York and formed their fund, Celeris, using the high-frequency trading strategies then gaining popularity. Two years later they launched a software company, Chronos Research, to cater to high-frequency traders.

Bhatt says the work reminded him of theoretical physics. Markets were a complex system that couldn't be modeled perfectly. Tenev calls high-frequency trading a "pure intellectual exercise," but one without meaning. Their sense of unease grew after they started following Occupy Wall Street protests, which began in late 2011 and targeted, among other things, the trading strategies that Bhatt and Tenev employed. "It was a little bit of a gut punch," Bhatt says. "We were part of the problem."

In early 2012, Tenev, who'd moved to the Bay Area, was at a party with a techie crowd and started explaining what he and Bhatt did for a living. Chronos ran high-performance servers that let customers trade a million times or more a day. After he finished, a friend asked how much the hedge funds paid per trade.

"They don't pay anything," Tenev said. Tenev's friend asked, "So why is my broker charging me $49.95 per trade?" Tenev told him he didn't think there was any technical reason why individual trades should cost more than institutional ones. After the party, he called Bhatt. It was well past midnight in New York, but Bhatt was still out. He spent the predawn hours writing a business plan.

It took Bhatt and Tenev two years to broker their first trade, in part because the venture capitalists they pitched didn't like the idea of zero-fee stock transactions. Similar startups had failed because, though the trades themselves cost next to nothing, running a brokerage—a highly regulated business that requires any employee who touches customers' money to be licensed—is expensive. Revenue would have to come from somewhere, the VCs pointed out. Why couldn't Robinhood make trades 99¢ instead of free? "We were ideologically opposed," Bhatt says.

Seventy firms passed before Bhatt and Tenev got their first check at the end of 2013 from Jan Hammer of Index Ventures. Hammer, who invested in E-Trade in the '90s, reasoned that the shift from web-based brokerages to mobile ones would favor a newcomer. Moreover, though Robinhood would lose money on trading services, he thought that if it built up a big customer base, it could eventually offer them profitable financial products such as loans. "Today Robinhood is savers, but over time you might see them expanding to cater to borrowers," Hammer says. "They're going to be the Amazon of financial services."

In some ways, it's all gone according to plan. The company's no-commission strategy and populist messaging have helped turn market neophytes into small-scale investors. But Robinhood has had another, arguably more important, advantage that its founders acknowledge only reluctantly: The company was founded amid an historic bull market. From March 2014, when stocks began trading on the app, to late January, the S&P 500 index jumped more than 50 percent. Well-known tech stocks, which are popular with Robinhood's users, did especially well. That's likely made customers more willing to sign up, and it's made more dubious aspects of the company's pitch harder to spot.

At the moment, Robinhood has several revenue streams, including collecting interest on cash balances in user accounts. But the only significant one is a peculiar spin on margin lending. Rather than extending credit at a fixed interest rate, which is what most brokerages offer, Robinhood asks potential borrowers to sign up for a premium tier, Robinhood Gold. They pay a flat monthly fee that depends on the size of their credit line. For $50 a month, someone with a $12,000 balance can access up to $12,000 in additional capital. If you invest all the borrowed money, that works out to a 5 percent interest rate, which is a good deal. But if you choose to invest less, your effective interest rate goes up.

Robinhood argues that its pricing structure is easier to understand than traditional loans offered by other brokerages. The scheme, however, combined with no-cost trades, incentivizes risk-taking. "Historically, people that trade frequently don't do as well," says David Schawel, chief investment officer at advisory firm Family Management Corp. "This platform arguably encourages lots of trading."

Robinhood's marketing can assume a tone that wouldn't be out of step in Las Vegas. New users receive regular push notifications suggesting they get started by checking out the day's "top movers." It's enticing ad copy—and an invitation to invest in volatile stocks. In 2016 the company's Twitter account urged users to "Trade fast, die young." Robinhood says this was meant as a joke.

Even so, the app routinely promotes a strategy that seems somewhat reckless in light of the recent stock market pullback. When a *Bloomberg Businessweek* reporter in her mid-20s signed up for an account, the app asked questions about her age, goals, and trading experience, then spit out a "watch list." It named two dozen popular stocks including

"They're going to be the Amazon of financial services"

Apple, Twitter, GoPro, and Ford. More conservative suggestions, such as ETFs, widely seen as the safest choice for most investors, weren't on her list. Robinhood produced an identical list when the reporter's father tested the service.

Of course, there are less risky approaches. Betterment LLC and Wealthfront Inc., which have each raised hundreds of millions of dollars in venture capital, both target younger investors. But rather than offer a do-it-yourself trading platform, they use algorithms to suggest customized strategies that rely on index funds, periodically helping clients rebalance portfolios as investments grow and retirement nears. A Robinhood spokesman says the company intends to improve its platform to help investors find index funds more easily, and it's considering offering automated investing services.

These competing "robo-adviser" services aren't free—Betterment charges a quarter of a percent per year—but that's low compared with a traditional money manager. It's almost certainly a smarter strategy for most people than picking stocks, which Betterment doesn't even let customers do. It has no plans to offer Bitcoin. "Stockpicking and crypto speculating should only be a small percentage of your investable assets, if at all," says Betterment spokesman Joe Ziemer. Betterment, he notes, is a fiduciary adviser, so it's legally bound to act in its users' best interests. Robinhood, as a broker-dealer, is not.

Moreover, says Edward Wolff, a New York University economist and author of *A Century of Wealth in America*, it's unlikely that removing trading fees will do anything to address the inequality that Bhatt and Tenev say is core to their mission. The cause of inequality, Wolff says, isn't the low rate of stock ownership. It's that people don't make enough money to save. "Lowering investment fees is not going to bump up ownership," he says. "If you really want to do something about inequality, you have to do something about income."

When Robinhood announced trading of Bitcoin and Ethereum, another cryptocurrency, to the public on Jan. 25, it did so with its usual youthful exuberance. An email sent to users opened with "Don't Sleep" in neon green type. "We're seeing a dramatic increase in consumer demand for this," Bhatt said in a phone interview the day before the launch. "For many users, cryptocurrencies are going to be their first foray into investing, and we want to be there."

The pitch worked. Robinhood shot up 150 spots in Apple's App Store, resuming its position comfortably ahead of Coinbase, which had fallen since its big day in December. By the end of the week, more than 1 million people had signed up to trade cryptocurrencies in a trial program. (Although many were existing account holders, Robinhood says introducing Bitcoin will result in significant growth in new accounts.) Users chosen for the trial can start buying and selling coins as early as this month. Robinhood plans to open the service to its entire user base once it gets the green light from states, such as New York, that require companies that trade Bitcoin to have a special license.

In the phone interview, Bhatt explained that he and Tenev began plotting the move after concluding that Bitcoin could weather hype cycles without completely losing its value. "It has a resiliency to it," he said. "It has characteristics in common with the stock market. It has a way of bouncing back." In essence, he was espousing a sobered-up version of what you'd find on crypto message boards, where speculators shout encouragement at fellow believers. For example: "Buy the dip!" and "HODL," a deliberate misspelling of "hold" that has come to stand for "hold on for dear life."

What Bhatt didn't mention is that the 2017 price runup in cryptocurrencies was more dramatic than in any asset bubble in capitalism's history. And even if Bitcoin recovers from its crash at the end of January, the bull market in equities appears to be ending. One way or another, Robinhood users could very well lose money—no matter how careful they are.

Bhatt acknowledges this. But he argues the rewards outweigh the risks. "Investing is the biggest driver of wealth in our country," he says, doubling down on the populist rhetoric. "The best thing to do with our markets is to have more people participate." By adding Bitcoin to the mix, Bhatt thinks that Robinhood can help bring a currency that's been marked by volatility and, at times, criminality, further into the mainstream. "We're doing this because we believe in the financial system, and we want it to be a pillar of light," he says. Of course, Robinhood is also doing this because it wants more users and, ultimately, more margin traders.

In the meantime, interest in cryptocurrencies will keep the company growing. Robinhood plans to add 150 back-office and customer service employees to its Orlando operation, and hundreds more in Palo Alto, where Bhatt and Tenev are renovating a building that once housed *Sunset* magazine. The complex, designed by midcentury architect Cliff May, the father of the ranch house, is arranged around an interior quad with desert plants and low benches.

"This is the next best thing to being at Stanford," Bhatt says, walking through the courtyard. He muses about Robinhood's future, including the possibility of an initial public offering. "We're putting the gears in motion," he says.

On the other hand, he adds, by the time Robinhood goes public, IPOs may be history. Initial coin offerings, the cryptocurrency alternative to an IPO, raised more than $4 billion last year. "That," he says, "is a pretty fundamental structural shift." Ⓑ

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This 2018 Versace look is a replica of one that Naomi Campbell modeled in a fall 1992 show.

The brand's ready-to-wear collection includes a silk shirt with beaded fringe *($3,250)*, along with belt *($1,225)*, scarf *($475)*, and earrings *($650)*.

The skirt can only be made to order by request. The 110mm Icon vitello boots, on the other hand, are available for *$3,625*.

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Bonus time—let's go shopping!

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Investor Vijay Pande says we will cure cancer—well, our machines will

THIS OLD BLOUSE?

The newest trend in fashion isn't retro or vintage. It's "archival"

By Antonina Jedrzejczak
Photograph by Joanna McClure

February 12, 2018

Edited by Chris Rovzar
Businessweek.com

Since Alessandro Michele's appointment as creative director, Gucci has regularly revisited its archives. These block heel pumps with horse-bit buckles from 2018 reference a 1950s design. *$730*

Kenzo creative directors Carol Lim and Humberto Leon released a 2018 collection rooted in pieces created in 1986 by the company's founder, Kenzo Takada. *$540*

It could be any boutique on Fifth Avenue. Italian tourists in fur coats browse a selection of Chanel Classic 2.55 purses that flank a Gucci Dionysus, last year's holy grail of handbags. Nearby, women with bouncy blowouts pore over Cartier Trinity rings and Kwiat diamond studs. For all the excitement, you'd never guess this stuff was all preowned.

In the RealReal store on Wooster Street in New York's SoHo neighborhood, you might find a $600 Balenciaga City bag, $800 Hermès Collier de Chien bracelets, even a $1,500 Fendi Baguette—the pint-size floppy rectangle that rocketed to "it" bag status in the late 1990s as Carrie Bradshaw's carryall of choice on *Sex and the City*. That the items aren't directly off the runway doesn't detract from their value; it enhances it.

Almost 10,000 pieces are added to the RealReal's website every day, and some make it to the storefront, which opened last fall and is decorated with velvet couches and flower arrangements from chic florist Fox Fodder Farm. Chief Executive Officer Julie Wainwright estimates that the consignment-clothing startup, with 8 million members worldwide, will double its revenue over the next two years, making the six-year-old enterprise a billion-dollar company.

Other high-end resale sites are growing at similarly exponential rates: ThredUp Luxe opened in September and already forecasts $10 million in sales for this year. Vestiaire Collective, a Parisian e-commerce store, raised $65 million in October and is expanding to China. The three-year-old site Rebag expects annual sales to double in 2018.

Long synonymous with thrift, consignment clothing is an $18 billion business, with about $2.3 billion spent on specialized secondhand apparel websites. (The bulk is at conventional, low-price consignment shops.) Still, "they're part of an incremental chipping away of conventional retail," says Deborah Weinswig, managing director of FGRT (formerly Fung Global Retail & Technology), a think tank.

As Wainwright was putting the finishing touches on the brand's first brick-and-mortar store last fall, another billion-dollar brand was making a fashion statement of its own. Versace used its runway show in Milan last September to reissue some of the greatest hits that Gianni Versace designed in the early '90s. Models swished down the runway in a butterfly pattern that Kristen McMenamy immortalized on the cover of a 1995 issue of *Vogue*. The Warhol-inspired Marilyn dress that Linda Evangelista donned in a 1993 ad also came back. And the house was riotously brought down when original supermodels Cindy Crawford, Claudia Schiffer, Helena Christensen, Carla Bruni, and Naomi Campbell stormed the catwalk to the sound of George Michael's *Freedom 90!*—all wearing looks that channeled Versace's 1994 Metal Mesh collection. (Donatella Versace resurfaced these and other styles in a partial nod to the television show *American Crime Story*, which dramatizes the murder of her brother 25 years ago.)

High-fashion labels have riffed on patterns from their extensive in-house archives for as long as the archives have existed, but the recent push by midmarket and luxury brands to rerelease almost identical replicas of decades-old pieces is new. It extends to both menswear and women's wear, whether it's a reissued Helmut Lang denim jacket from 2004 or Gucci bags pulled from the '70s. Prada built its 2018 collection around nylon, a fabric it hasn't celebrated on runways in decades. Reverence for fashion's good ol' days might sound strange for an industry that prides itself on looking to the future, but the inspiration for retailers, designers, and consumers is, at the moment, coming from the past.

There are two possible explanations for this trend, Weinswig says. "In a world of near-unlimited product choice, these kinds of moves underscore a brand's heritage and can strengthen a connection with consumers by emphasizing their long-standing presence," she says. Struggling retailers such as J.Crew Group Inc., which is marketing the return of the rugby shirts it introduced in 1984, and Gap Inc., which

This year, Coach rereleased the Rural Free Delivery Mailbox bag, from 1972. The shape is the same, though creative director Stuart Vevers updated the look with Keith Haring illustrations on the lining. *$395*

Although the rugby was never technically discontinued, this year J.Crew is making a concerted effort to bring back the signature shirt style the brand developed in 1984. *$59.50*

introduced its Archive Reissue–Logo Remix campaign at last month's Grammy Awards, are eager to revisit their glory days to remind shoppers of their strengths. In January, Ralph Lauren relaunched its Snow Beach collection, made famous in 1993 by Wu-Tang Clan's Raekwon, who wore it for the music video *Can It Be All So Simple*.

The lack of overriding fashion trends may also "have contributed to mass-market brands raiding back catalogs for inspiration," Weinswig says. For this spring, Coach creative director Stuart Vevers rereleased the Rural Free Delivery Mailbox bag, originally introduced in 1972 by the brand's first creative director, Bonnie Cashin, but he updated it with graphics from ever-popular Keith Haring. Hermès, likewise, has revived colorful leather necklaces from the Clochette Collection–initially designed for the house by Martin Margiela in 1997.

"'Archival' is the buzzword that everyone is using," says Kristen Dempsey, the newly minted brand director of Heroine, which debuted in October as the women's counterpart to the men's peer-to-peer site Grailed. "Vintage has been a cool thing for the past 20 years, but archival is less ambiguous and more about specific designer pieces from specific collections." Today, that could mean scrolling through hundreds of purses on Rebag to find one Lady Dior handbag throwback on resale, or paying full price for a new version of something that first hit stores when you were in kindergarten.

Think of it as the millennial urge for experiences and stories over things, applied to fashion. "It's not very hard for someone to buy a new pair of Gucci shoes or get something from the collections–those are now globalized commodities," Dempsey says. "Something older becomes a lot more difficult to obtain, and that's where the point of pride comes from."

Brands are also attempting to get consumers, especially millennials and the generation after who are new to these designs, to rediscover clothes as a luxury good. This is an urgent need for retailers: Weinswig says an FGRT survey in January found almost 40 percent of respondents agreed that spending on clothes was less of a priority than three years ago. And despite the overall strength of the economy and the willingness of consumers to shell out big over the holidays, apparel spending is still underperforming, up only 1.8 percent in 2017.

Although "recommerce" sites such as RealReal and Rebag are cutting into sales that otherwise would have gone to traditional retailers, there's a growing symbiotic relationship between secondhand and high-end. When Prada resurrected its nylon fabric on totes in its men's fall 2018 show, the RealReal felt the impact immediately: Sales of the original 1984 backpack surged. And once those buyers are exposed to a fashion house's heritage, they become potential future consumers. "We're a customer-acquisition channel for the brands," says Rebag founder Charles Gorra. "When a shopper in her late 20s buys a secondhand luxury bag, the brand is already talking to her several years before she could consider a firsthand product."

Another happy benefit of this symbiosis is the potential to reduce wasteful practices: 75 percent of the 80 billion pieces of clothing produced annually end up in landfills. "Sustainability is a big deal to millennial shoppers," says Shawn Grain Carter, a professor at the Fashion Institute of Technology in New York. "They have a sense of corporate responsibility, and they find nothing wrong with recycling clothing. Buying used does not have a stigma whatsoever."

The RealReal has even entered into a partnership with Stella McCartney that runs through the end of 2018. For every piece of Stella consigned, the RealReal and McCartney will each give $50 to the seller to shop at one of McCartney's stores. "Stella's reaction has been, 'I will sell more Stella if people can resell it,'" Wainwright says. "And it's good for the planet, so everybody wins." Ⓑ

PREVIOUS PAGE: PROP STYLING BY PAOLA RAMIREZ. PHOTO BY RON GALELLA/WIREIMAGE/GETTY IMAGES (CAMPBELL). THIS SPREAD, FROM LEFT: COURTESY THE REAL REAL, COACH, J CREW, KENZO

How to Spend Your Bonus

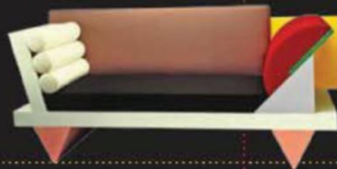
It was a good year. And you've already responsibly paid debts, invested in your family's future, and given to charity. Now for the fun stuff

$$$ ↑ more expensive ↑

- **Mock Tudor mansion in Russian Hill**
San Francisco has restrictive zoning codes and natural barriers that limit potential growth and sprawl, so rare historic gems like this are a strong bet.
$11 million

- **Picasso ceramic work**
Picasso's quirky ceramics aren't nearly as pricey as his paintings, but they've been on a 20-year upward swing in value. Plus, this'll be nice to look at while it appreciates. *$110,000*

- **Limited-edition Defender**
Land Rover is making a special run of 150 of these, each one brightly colored and stuffed with a 400-horsepower V-8 engine. Limited editions of cult cars tend to go up in value if kept in good condition, but don't let that stop you from taking this off-road.
$200,000



- **Big Sur sofa**
Peter Shire designed this couch in 1986, when he was part of the Memphis Group, which has enjoyed a resurgence in popularity (and price) in the past few years. Don't spill anything on it, and your kids can hock it for a profit after they ship you to the nursing home.
$17,000

- **Proper Cloth shirts**
Make this the year you transition to shirts that fit perfectly. Start with three, made from a range of high-quality cottons of your choosing, to set you on your way to permanently looking better. These shirts are so durable, they'll likely retain their shape long after you've lost yours. *$300*

- **Arquiste L'Etrog fragrance**
The easiest way to make a better first impression is to find a distinctive scent and wear it every day. Arquiste's L'Etrog features citrus, vetiver, and bergamot notes and lends elegance to both men and women. *$190*

- **Vanilla Speedvagen**
Low-impact, high-quality exercise is an investment in yourself. These handmade custom bikes are as handsome as they are comfortable, for long days in the saddle. *$11,000*

↓ less expensive ↓ $

← *prudent*

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● **Palm Beach waterfront estate**
The architecture is a dream. So is the idea that Palm Beach will still be above water in 10 years. *$38 million*

● **The *Doriana***
Built in 1930 and restored in 2005, this 38-meter (125-foot) yacht may be expensive to maintain—but it's also what Katharine Hepburn would call yar, or "easy to handle." *$3.65 million*

● **Greubel Forsey GMT Earth watch**
Only 33 of these white-gold mechanical confections, coveted by aficionados, will be made. Is the idea of investing in a timepiece that features a 3D rotating globe really so out of this world? *$658,700*

● **NetJets premium light jet card**
A jet card lets you buy time on the NetJets fleet. That's much more logical than buying a jet itself, which depreciates in value and is costly to keep up. But watch out, this card will forever change the way you want to travel. *$217,000*

● **David Webb bracelet**
An 18-karat-gold bracelet with more than four carats of emeralds, three carats of sapphires, and five carats of white diamonds may or may not rise in value—but inducing jealousy never goes out of style. *$135,000*

● **Diving to explore the *Titanic***
Fewer people have seen the *Titanic* shipwreck in person than have summited Everest, and scientists believe the ship will rust away to dust within a couple decades. This is the experience of a very select few lifetimes. *$105,129*

● **Berkel prosciutto slicer**
It's the Rolls-Royce of prosciutto slicers! Suitable for anyone who can say that sentence aloud without cracking up. *$10,000*

● ***GOAT: A Tribute to Muhammad Ali***
Connoisseurs of the sweet science, take note: Publisher Taschen has limited production of this volume to 9,000 copies, all signed by Ali himself and artist Jeff Koons. *$6,000*

● **Teeling 33-year-old single malt**
Some of the oldest Irish whiskey ever bottled, this was distilled in 1983 and aged in bourbon barrels. Only 275 bottles will be sold, so this could be worth saving for resale. But where's the fun in that? *$4,000*

fantastical →

Visit BloombergPursuits.com for links to buy any of these, and for dozens of other ideas

MAKE THE MOST OF

Paris

Innovation is sweeping French restaurants and hotels, adding even more excuses to extend a business trip. *By Nikki Ekstein*

The banks of the Seine are now lined with running paths

On your next visit to the French capital, forget your old favorites: The city has brand-new delights to show off. Daring chefs such as seafood masters Bertrand Grébaut and Théo Pourriat and baker Christophe Vasseur are luring diners to the up-and-coming 10th and 11th arrondissements. Homegrown fashion and beauty brands Sézane and Ex Nihilo are using technology to change the way Parisians shop. And even venerable hotels such as the Ritz and the Crillon have been overhauled, giving the tradition-obsessed city an utterly fresh feel. Here's where to eat, shop, and explore right now.

A suite at the Ritz Paris

STAY

Two of Paris's legendary grand institutions—both mere steps from the Jardin des Tuileries but miles apart from each other in terms of style—are open after four-year-long renovations. Rosewood Hotel and Resorts LLC's **Hôtel de Crillon** (*from $1,200*) has loosened its tie by creating wide-open social spaces filled with modern art and staffed with affable servers. The **Ritz Paris** (*from $1,240*), meanwhile, has doubled down on Louis XVI-style decadence with toile canopy beds, crystal chandeliers, and gilded swan-shaped faucets. A more affordable but still excellent alternative, the **Hoxton** (*from $185*), just opened in an 18th century building in the centrally located 2nd arrondissement. It features boldly colored, midcentury-inspired rooms.

FROM LEFT: COURTESY THE RITZ, HEMIS/ALAMY, COURTESY LE CHOCOLAT ALAIN DUCASSE, COURTESY HELIFIRST

SHOP

Wend your way on foot from the 1st to the 10th to follow the evolution of Paris's shopping scene. Sandwiched between legacy brands on Rue Saint Honoré, perfumer **Ex Nihilo** will custom-create a fragrance for you in 30 minutes with the help of a one-of-a-kind Osmologue machine. A few minutes' walk west, the online retailer **Sézane** has set up a brick-and-mortar shop peddling women's wear and accessories with a refreshingly simple aesthetic that locals are obsessing over. The expansive new location of **Buly 1803** in Le Marais has a similar cultlike following; it sells the brand's skin-care potions from antique pharmacy cabinets. For men's grooming products, scope out Le Baigneur's offerings, stocked at the nearby concept shop **Papier Tigre**. Finish in the up-and-coming 10th, where you'll find indie housewares at **La Trésorerie**, Franco-Indian scarves and textiles at **Jamini**, and colorfully edgy suits at **Balibaris**.

Pralines from Le Chocolat Alain Ducasse

PRO TIPS

A new 2-mile running loop along the Seine that passes the Musée D'Orsay and Notre-Dame makes the perfect Parisian workout. (Note: At press time, it's partially submerged because of river flooding—the second time that's happened since the course opened in April 2017.)

Cure your airplane hangover with a jet-lag facial and body massage at the Dior Institut spa at the Plaza Athénée.

For a quick-fix lunch in the financial district, head to Cyril Lignac: $12.50 gets you the best sandwich you've ever had, plus a top-quality pastry to boot.

The city's most delicious croissant can be found at Du Pain et Des Idées, in the 10th arrondissement. A convenient runner-up, Sébastien Gaudard, is around the corner from the Louvre.

Fill your purse with pralines from Le Chocolat Alain Ducasse, orangettes from Patrick Roger, and vacuum-packed cheeses from Fromagerie Marie-Anne Cantin.

EAT

The prevailing food trend in Paris is "bistronomy," which blends traditional French techniques with lighter preparations. It's on full display at **Clamato**, a no-reservations spot in the 11th focusing on seafood dishes that change daily. The nearby **Clown Bar** is similarly on-trend. Alongside a list of almost-exclusively organic and natural wines, Clown Bar's menu offers mussels steamed in sake and beef carpaccio with strawberries. For more elbow room and tables you can reserve online, try its sister restaurant **Saturne** in the 2nd. The $100 tasting menu at this sparse, wood-clad venue includes a rich lardo-poached cod. Need to close a deal? Go to **Hexagone**. It's elegant but not stiff, buzzy but not loud–and the local blue lobster comes with garlicky "compressed" potatoes.

DO

Learn to make macarons with a pastry chef at **École Ritz Escoffier** instead of buying a box that will go stale on the flight home. (The trick is "feeling" when the meringue batter is just right.) Or, if you'd rather work on your palate, take a whirlwind trip to wine country. In a very scenic 35 minutes, **Helifirst**'s helicopter service gets you to Reims. If you book ahead, you can enjoy tastings with Bollinger, Krug, and the other Champagne houses there.

Vineyards in Reims

Black Power in Bentonville

A potent exhibit examining African American art moves from London to the American South. *By James Tarmy*

"There is no America without African Americans," write Tate curators Mark Godfrey and Zoe Whitley in the introduction to the catalog for the exhibition "Soul of a Nation: Art in the Age of Black Power." The show, composed exclusively of work by American artists but conceived, organized, and first exhibited in 2017 at the Tate Modern in London, is an attempt to demonstrate how key these voices are to American culture, even as they had to fight to be heard. The exhibition stirred gushing reviews in London, a location that offered a studious distance from the setting and culture that inspired the art.

And then the show traveled to Arkansas.

It was brought to the state by curators at the Crystal Bridges Museum of American Art in Bentonville. The museum, which opened in 2011, was founded by Walmart Inc. heir Alice Walton. "What we say a lot [here] is that our mission is to try to welcome all," says Lauren Haynes, a curator at Crystal Bridges. "There may be people who decide not to come because they feel like, 'Black Power? Oh, this isn't for me.' But it is for them. This moment in our nation's history didn't just belong to one group of people. It was happening to all of us."

The show, which opened on Feb. 3 and runs through April 23, has been slimmed down from the original—there are now 164 works by 60 artists—but its basic format and thematic points remain the same.

The art in each room is organized by movements, themes, or geography. The first room starts with the Spiral group, a mid-1960s collective whose members grappled with the aesthetics of African American identity in the midst of a segregated U.S. The highlight is *The Dove* (1964), a photo collage by Romare Bearden, which depicts a kinetic, fragmented street scene dominated by young, black faces.

Other rooms bear names such as "Figuring Black Power," featuring the work *Black Unity* (1968), a giant clenched fist in cedar by Elizabeth Catlett. Another, "Improvisation and Experimentation," includes a gorgeous, massive abstract painting by the recent art market star Sam Gilliam.

In London the show didn't only introduce artists omitted from the canon of Western art, it also examined the U.S. civil rights movement for a largely European audience. Northwest Arkansas, where totems of the state's struggle for civil rights remain visible and fresh, is a different story. The central square of Bentonville is dominated by a large statue erected in 1908 to commemorate Confederate soldiers. "To the southern soldiers," reads an inscription on the base. "They fought for honor and fatherland."

Barkley L. Hendricks, *What's Going On*, 1974

COURTESY THE ARTIST'S ESTATE AND JACK SHAINMAN GALLERY, NEW YORK

Crystal Bridges is a five-minute drive from downtown. Designed by architect Moshe Safdie, the museum is nestled into a 120-acre sculpture park and is made up of vaulted, interconnected buildings that straddle a series of reflecting pools—a quiet oasis cut off from the outside world. Its permanent collections are stocked with masterpieces, courtesy of Walton and the Walton Family Foundation, which has pledged $800 million to the museum, its collection, and its endowment.

Compared with similar regional institutions, there's a large proportion of works by famous black artists. The first you see when entering the main contemporary galleries are paintings by Jean-Michel Basquiat and Kerry James Marshall and sculptures by the artist and activist Vanessa German.

"Soul of a Nation," in other words, isn't the museum's first foray into exposing visitors to work by black artists. It is, however, its most overt. And Bentonville is ready, according to Graham Cobb, chief executive officer of the city's chamber of commerce. "That idea of culture and race—in Arkansas, you live it," he says. "And there may be conflict, but there is therefore the opportunity for resolution and understanding."

Arkansas, with its tortured history of school desegregation and civil rights is, in Cobb's eyes, the ideal venue for the exhibit. "It's absolutely the right place to have" it, he says. "You can't get the whole story unless you're here."

Bottega Veneta Manhattan Tote

A carryall for all seasons
Photograph by Eric Helgas

THE CHARACTERISTICS
In time for New York Fashion Week, Italian luxury goods maker Bottega Veneta will open its biggest shop to date. Tomas Maier, creative director of the Kering SA-owned brand, is celebrating the occasion with a 33-piece collection of leather bags, titled Icons of New York and inspired by the Big Apple skyline. The Intrecciato Manhattan Craquelé tote, pictured, bears a design of the island's shape outlined in three subtle colors of nappa leather. Each small panel is cut out and aligned by hand, jigsaw-like, giving the bag a *craquelé*, or cracked, appearance.

THE COMPETITION
At $3,200, these limited-edition carryalls are priced similarly to the brand's Aquatre bags, which are $3,150 and covered with the interlaced *intrecciato* weave that's so central to the company's aesthetic. A more understated all-purpose leather accessory is the $1,250 unlined tote bag from Salvatore Ferragamo, which comes with a calfskin compartment inside. Hermès' $10,300 Cityhall 38 briefcase is even subtler, save for a stretch of reverse stitching. But neither has the conversation-starting panache—and New York-inspired exclusivity—of this collection.

THE CASE
The cracked ridges that denote New York's various neighborhoods—there's even a green rectangle representing Central Park—have a function beyond aesthetics. Under them, another panel of leather ensures both durability and flexibility, making this a bag that can be used every day. It comes with an optional shoulder strap as well; its deep tote shape is convenient for neatly hauling a variety of work-related items. But while it can be used for humdrum purposes, the woven sides leave no doubt that this is Bottega Veneta. *$3,200; 800 845-6790*

Vijay Pande

The investor is using venture capital and machine learning to try to cure cancer. *By Sarah McBride*

VIJAY PANDE, A LIFELONG coder who holds a couple of degrees in physics, doesn't seem like he'd be the guy to thwart death.

But Pande, a general partner at the venture firm Andreessen Horowitz since 2015, is providing money muscle to computer-powered medical startups including BioAge Labs, which uses genomics data to create anti-aging drugs, and Asimov, which is programming cells to fight disease. (Bloomberg LP, which owns *Bloomberg Businessweek*, is an investor in Andreessen Horowitz.)

One of Pande's first investments, Freenome Inc., uses machine learning to help detect cancer in its earliest stages by reading signals sent by the immune system. If successful, the technique could lead to cheaper, less invasive treatments. "Andreessen Horowitz pioneered this," says Freenome co-founder Gabriel Otte of the wave of investors funding biotech-machine-learning hybrids. "Freenome wouldn't exist without that intersection."

A scientific polymath, Pande likes to tinker at the cutting edge, viewing progress with a dose of healthy cynicism. He was a finalist in the 1988 Westinghouse Science Talent Search for his computer simulation of the Strategic Defense Initiative antimissile system, nicknamed Star Wars. SDI Director Lieutenant General James Abrahamson invited Pande, then 17, to the Pentagon to discuss his theories on why the system's lasers wouldn't work. Over the years, Pande has taught computer science, biophysics, chemistry, and biology at Stanford, where he still runs a lab. In 2014 he started advising Andreessen Horowitz as "professor in residence." Within a year, Pande went to work full time at the firm, having realized he could accomplish more as an investor, fostering multiple companies.

His belief in the impact that machine learning could have on medicine is met with skepticism by some investor colleagues. "Computers have been pitched as the savior before," Pande says. Still, other firms have embraced a computing-intensive approach to biotech, including Charles River Ventures, Founders Fund, GV (formerly Google Ventures), and Section 32.

The focus on companies such as Freenome is part of a broader shift in the biotech community from therapeutics toward diagnostics. So far, Pande's portfolio companies display more potential than actual breakthroughs: no IPOs or acquisitions. But he has no regrets about leaving academia. "The scale of what I can do is much greater," he says. ⓑ

b. 1970, Trinidad and Tobago
-
His protein research project, Folding @home, holds the world record for most powerful distributed computing system
-
As a teen, worked for the company that created the popular *Crash Bandicoot* video games

ILLUSTRATION BY SAM KERR

THAT DINNER

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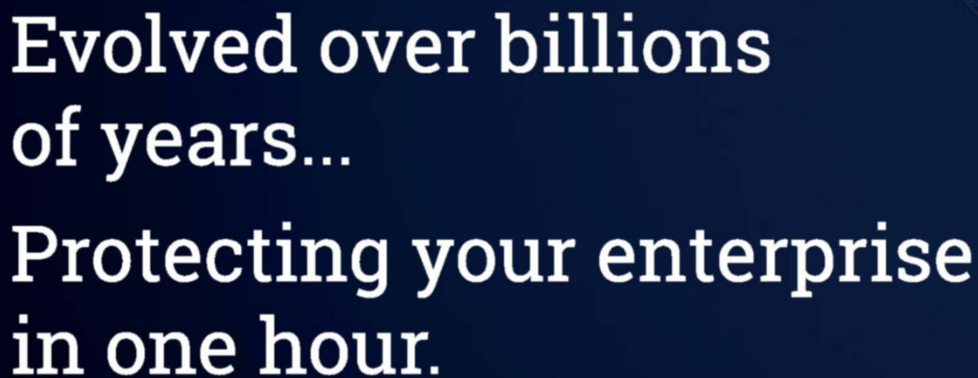

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