Bloomberg Businessweek

May 13, 2019

THE GORE-TEX EYE

A FAMOUSLY UNORTHODOX COMPANY DEVELOPS ITS NEXT BREAKTHROUGH 38


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EVA-MARIE
QUIT AFTER SMOKING 12,000
PACKS OF CIGARETTES
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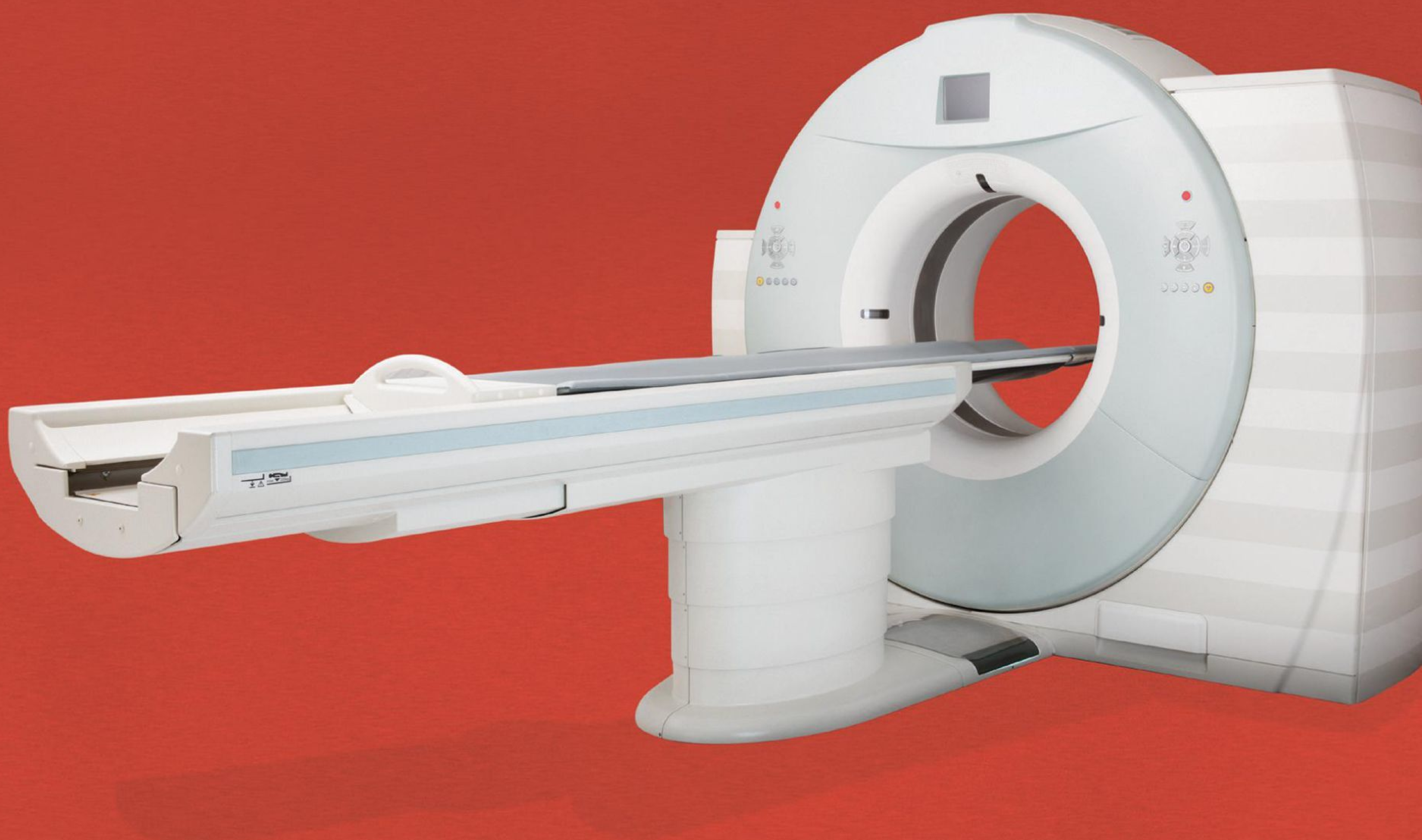

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Budget
Objectives
• Business goals
• High-level requirements
- Project specific??
- Measuring/analyzing success?
Notes on User Research
• High-level design
• Define user behavior
and illustrate!
Beta Launch
• App store testing
• Roll out planning
Launch Schedule
OCTOBER
BETA
LAUNCH!
2 MONTH PHASE?
Remember our mission!!!
MULTIFACETED APP... 600-900 HOURS?
OS development submitted to app stores
PUSH NOTIFICATION SERVICES
Provide mock-ups as needed by development team
INFORMATION ARCHITECTURE BLUEPRINT
PR + Launch party
Audience
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From the Makers of Paper and Packaging

◀ Every employee at pasta maker Barilla now gets training in diversity, inclusion, and unconscious bias

PHOTOGRAPH BY GAIA CAMBIAGGI FOR BLOOMBERG BUSINESSWEEK

FEATURES

ANDREY RUDAKOV/BLOOMBERG

CORRECTIONS

"Serenity Now" (Pursuits, May 6) misstated the figures for the worldwide wellness market. The Global Wellness Institute values the market at $4.2 trillion and related tourism at $639 billion. Ⓑ In the "Art With a Message" section of "How to Spend $1 Million on Art" (Pursuits, May 6), the Anicka Yi work identified as *with whose blood were my eyes crafted?* is actually titled *epigenetic escape*.

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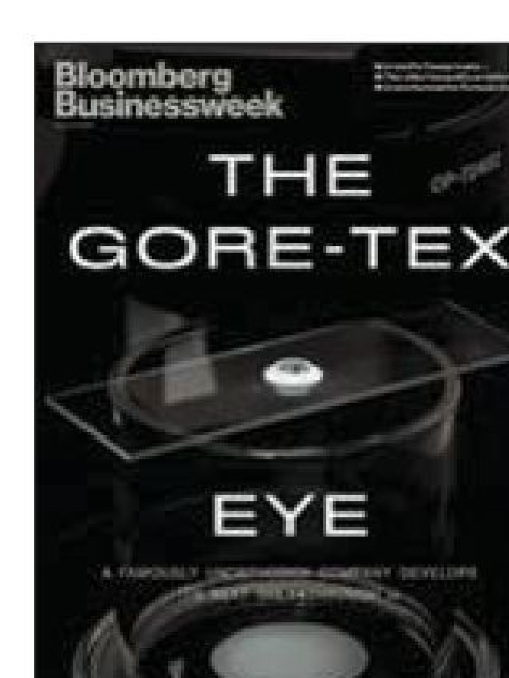


Cover: Photographs by Jeremy Liebman for *Bloomberg Businessweek*

By Benedikt Kammel

● Congress and the White House moved closer to a constitutional confrontation in the space of two days.

May 7

May 8

❶ Treasury Secretary Steven Mnuchin said he wouldn't comply with the House's demand to see the president's tax returns.

❷ President Trump asserted executive privilege over all of Robert Mueller's report.

❸ The House Judiciary Committee voted to hold Attorney General William Barr in contempt of Congress.

❹ The Senate Intelligence Committee subpoenaed Donald Trump Jr. to answer questions about his earlier testimony.

● Porsche agreed to pay about $600 million to end a probe into rigged diesel engines, its part in an emissions scandal that's cost its parent, Volkswagen, billions of dollars in fines and reimbursements.

● A crash landing at Sheremetyevo International Airport in Moscow of a Sukhoi Superjet operated by Aeroflot killed 41 people. Crew error, mechanical problems, and bad weather are being explored as causes.

● "It was a mistake not to intervene and not to interfere. We would have been the only ones to destroy the lies which were circulated around."

European Commission President Jean-Claude Juncker said he regrets listening to the U.K. government's advice to refrain from interfering in the 2016 Brexit referendum, calling it one of the biggest errors of his time in office.

● Siemens said it will spin off its power business next year, in a sweeping overhaul that further reduces the once-sprawling portfolio of the German engineering company.

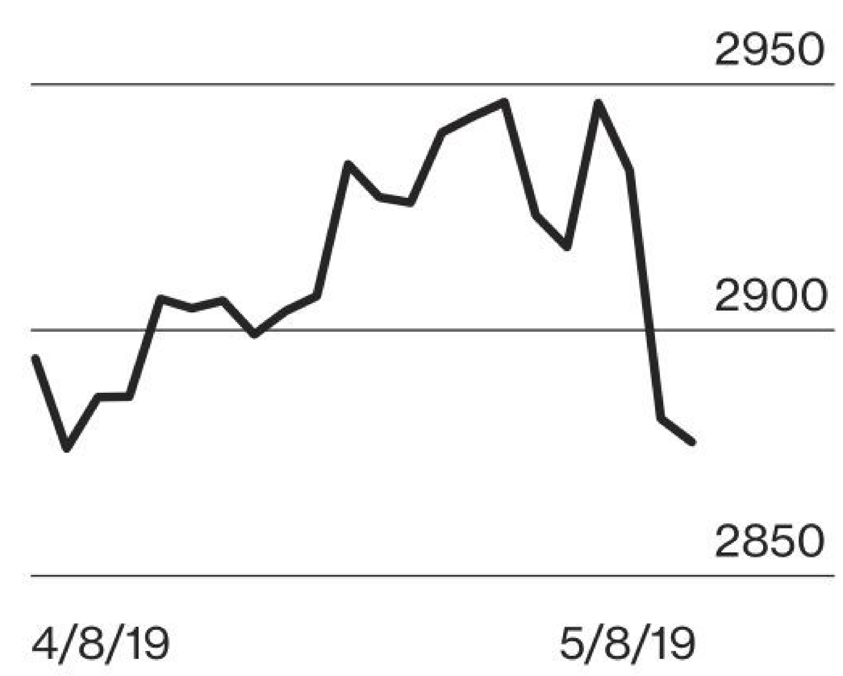
● Anadarko Petroleum accepted Occidental Petroleum's sweetened

$38b

bid, which edged out an earlier offer from Chevron.

● The stock market plunged on May 7 after Trump threatened higher tariffs on Chinese goods.

S&P 500 Index



● Beyond Meat, which makes plant-based meat alternatives, followed its successful May 1 IPO with four days of gains before falling a bit on the fifth. Price increase since the shares' debut: 189 percent.

● Lyft unveiled its first quarterly earnings as a public company, reporting a loss of

$1.14b

which exceeded its revenue for the period. It promised that 2019 will be the peak year for losses.

● Trump issued an executive order putting sanctions on Iranian iron, steel, aluminum, and copper.

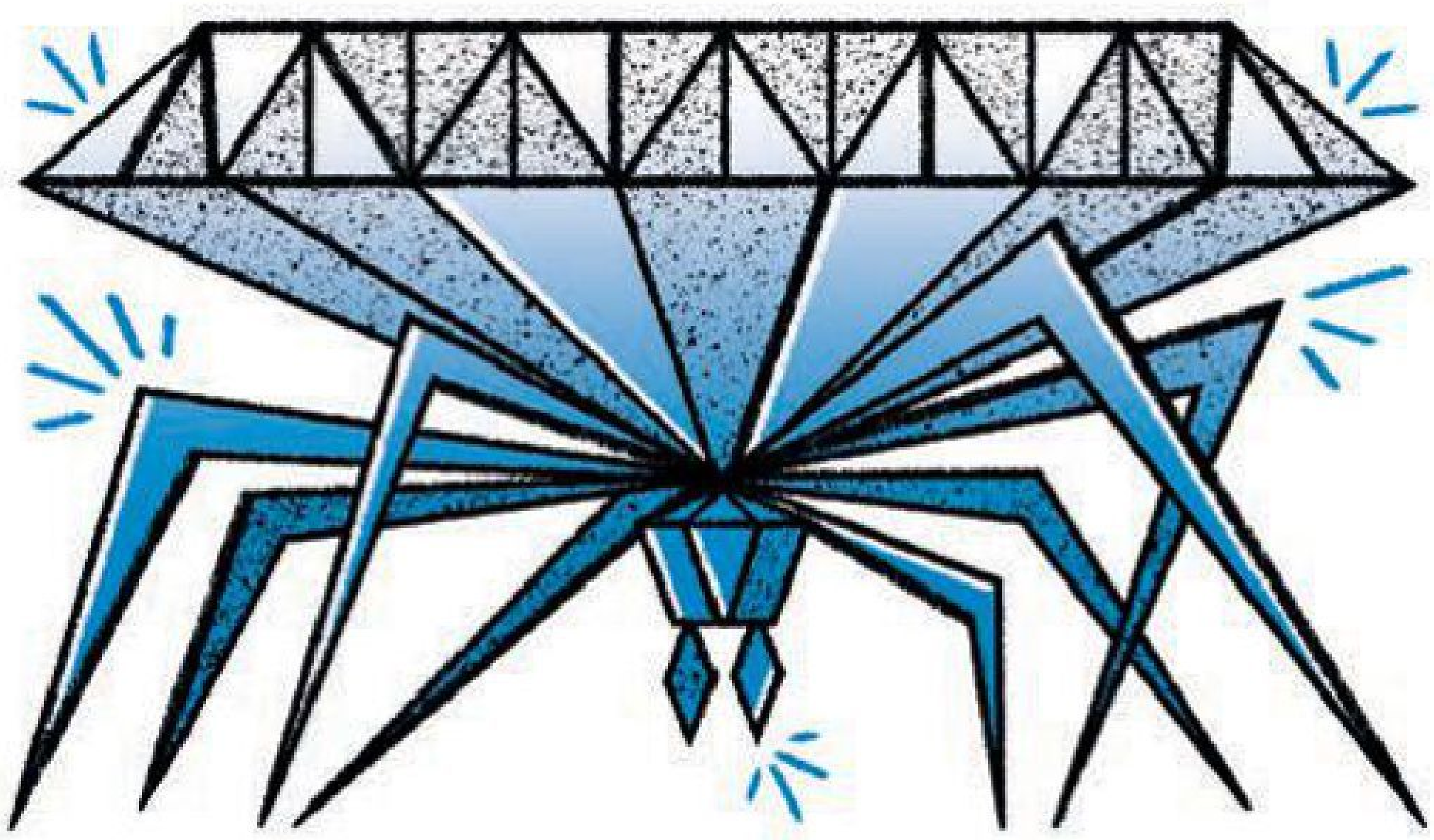
The move came less than a day after Iran declared it may begin enriching uranium again in two months.

● General Motors is in talks to sell its idled Lordstown, Ohio, plant to Workhorse, an electric vehicle maker.

● Angola, Botswana, Namibia, Zambia, and Zimbabwe want to resume ivory sales, citing recovering elephant populations.

● Brunei won't enforce the death penalty for gay sex after a global outcry from politicians and celebrities.

● Walmart will stop selling cigarettes, including electronic ones, to buyers under the age of 21.



▶ The Amazing Spider Woman

Christie's auction of contemporary art on May 15 in New York may top the record price for work by a female artist—now held by Georgia O'Keeffe, whose *Jimson Weed/White Flower No. 1* sold for $44 million in 2014—when one of Louise Bourgeois's bronze spider sculptures goes on sale.

▶ China releases industrial production and retail sales figures on May 15, as the trade war with the U.S. risks taking a turn for the worse.

▶ Alibaba unveils fourth-quarter earnings on May 15. Billionaire Jack Ma's e-commerce giant is trying to revive demand despite slowing growth at home.

▶ The VivaTech conference takes place May 16-18 in Paris. Speakers include IBM CEO Ginni Rometty and LVMH Chairman Bernard Arnault.

▶ A congressional hearing with special counsel Robert Mueller is tentatively set for May 15, amid calls from President Trump to shut down any follow-up probes.

▶ Richemont presents its numbers on May 17. The performance of the Cartier parent is a key indicator of global demand for jewelry and expensive watches.

▶ The Cannes Film Festival starts on May 14. This year's jury is led by Mexican director Alejandro González Iñárritu. The prizes will be revealed on May 25.

■ BLOOMBERG OPINION

Germany's To-Do List

● Rebuilding the military is only the first thing the country must do to live up to its economic power

When U.S. Vice President Mike Pence declared in an April 3 speech marking NATO's 70th anniversary that "too many" alliance members have failed to increase spending on their militaries, he singled one out: Germany. The complaints are excessive, but not entirely wrong. Rather than bristle, Germany's leaders should take up the challenge and assume global responsibilities commensurate with its economic strength. This would be good for Europe, and for Germany.

Upgrading the country's armed forces is the first step. Years of neglect have left the Bundeswehr in dismal condition. More than half of its tanks, helicopters, and fighter planes have been judged unfit for deployment; all six of its submarines are too hobbled to leave port. The standing army, which numbered some 500,000 troops at the end of the Cold War, now totals only 180,000, among NATO's smallest on a per capita basis.

The government has tried to shake the country's aversion to foreign military interventions. German troops are active in Afghanistan and Mali and lead a NATO battalion deployed to Lithuania to deter Russian aggression. Germany will spend €43 billion ($48 billion) on defense this year, some 26 percent more than it did a decade ago.

That's just 1.3 percent of German gross domestic product—far less than the 2 percent target all NATO members agreed to in 2014, a cudgel Donald Trump has wielded repeatedly against Berlin. Chancellor Angela Merkel, who plans to retire in 2021, has pledged to spend 1.5 percent of GDP by 2024 but faces resistance from her coalition partner, the center-left Social Democratic Party. Public opinion is no more favorable: Most Germans say the nation should be more active in international crises, but just 32 percent back more defense spending.

Merkel and the defense minister, Ursula von der Leyen, should aim to get more from what's already being spent. They should reform the military's inefficient procurement system. Closer coordination with other European armies could help eliminate redundant weapons systems and reduce costs. And investments in domestic infrastructure will yield benefits for the Bundeswehr and civilians alike.

The biggest challenge facing Germany is to advance Europe's cohesion and democratic identity. Berlin should champion proposals to tie European Union funds to member governments' adherence to the rule of law and create an EU fund for civil society groups that defend liberal values. Germany also needs to bolster its diplomatic corps, which has almost 1,000 fewer diplomats than in 1990. Given its size and resources, the country could take the lead in promoting development, good governance, and private investment in Africa—which would counter Chinese influence on the continent and help prevent future migration crises in Europe. Merkel should bequeath her successors a more fitting and ambitious vision of what comes next. Ⓑ

Produced by the Bloomberg Opinion board

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● In the winner-take-all world of Big Business, the rich companies are getting richer and the poor poorer

● By Peter Coy

Liberals have a blind spot about inequality. They decry disparity between individuals—the fact, for example, that the 10 richest people in America have more money than the bottom 160 million. But they overlook inequality among companies, instead viewing Big Business as a troublesome monolith. During the 2016 presidential campaign, Senator Bernie Sanders of Vermont occasionally tarred business with a broad brush, once saying the chiefs of large multinational companies "ain't going to like me."

The surprising truth is there's as much inequality among large companies as there is among people. As with individuals, a handful of companies make the lion's share of profits, while struggling companies do so poorly they actually destroy value for their shareholders and debtholders. In the middle is a stressed-out majority: unable to keep up with the best, while pressured by the desperate tactics of the worst.

Inequality in the corporate world isn't new. Perfect competition—with millions of small, roughly equal businesses battling it out on a level playing field—was never more than a teaching device in intro economics textbooks. What's new, though, is that the polarization is increasing. The rich businesses are getting richer and the poor poorer.

A 2018 study from McKinsey Global Institute analyzes 5,750 companies around the world that have $1 billion or more in annual revenue and account for roughly two-thirds of all global pretax profits. The institute—the think tank of the global consulting firm McKinsey & Co.—calculates that the best-performing 10th of the companies captured about 80 percent of all the economic profit in 2014 through 2016, up from 75 percent a decade earlier. The top 1 percent of the companies captured 36 percent.

Those extreme winners—McKinsey doesn't name names, but the group obviously includes the likes of Apple, Facebook, and Microsoft—are the companies Sanders focuses on. But for people in the business world, equally important are the losers in the fight for market share and profitability.

Those laggards are doing surprisingly badly. "The bottom 10 percent destroy as much value as superstars create," McKinseyites Sree Ramaswamy, Michael Birshan, James

ARe 1%

Manyika, Jacques Bughin, and Jonathan Woetzel wrote in an April article on the McKinsey website. The worst of the worst, about the bottom 2 percent, are technically "zombies"— finance lingo for companies whose cash flow doesn't cover their interest expenses.

In between the superstars and the losers are all the rest of the companies, running around like extras in a disaster movie trying to avoid getting crushed. "If you're a middling company, you're essentially being squeezed at both ends," Ramaswamy says in an interview. "It's becoming harder to survive and grow."

McKinsey uses economic profit—how much a company earns above its cost of capital—as its measure of performance, because it captures what really matters to investors. To take an extreme example, a company that raised $100 billion in stocks and bonds and then earned just a thousand bucks in net income would still show up as profitable in the books reported to the Securities and Exchange Commission. But such a puny return on invested capital would disappoint the investors who bought its equity and debt. Economic profit adjusts for the returns that investors expect in exchange for the risk they take when they put in their money. That hypothetical giant earning $1,000 would have a highly negative economic profit.

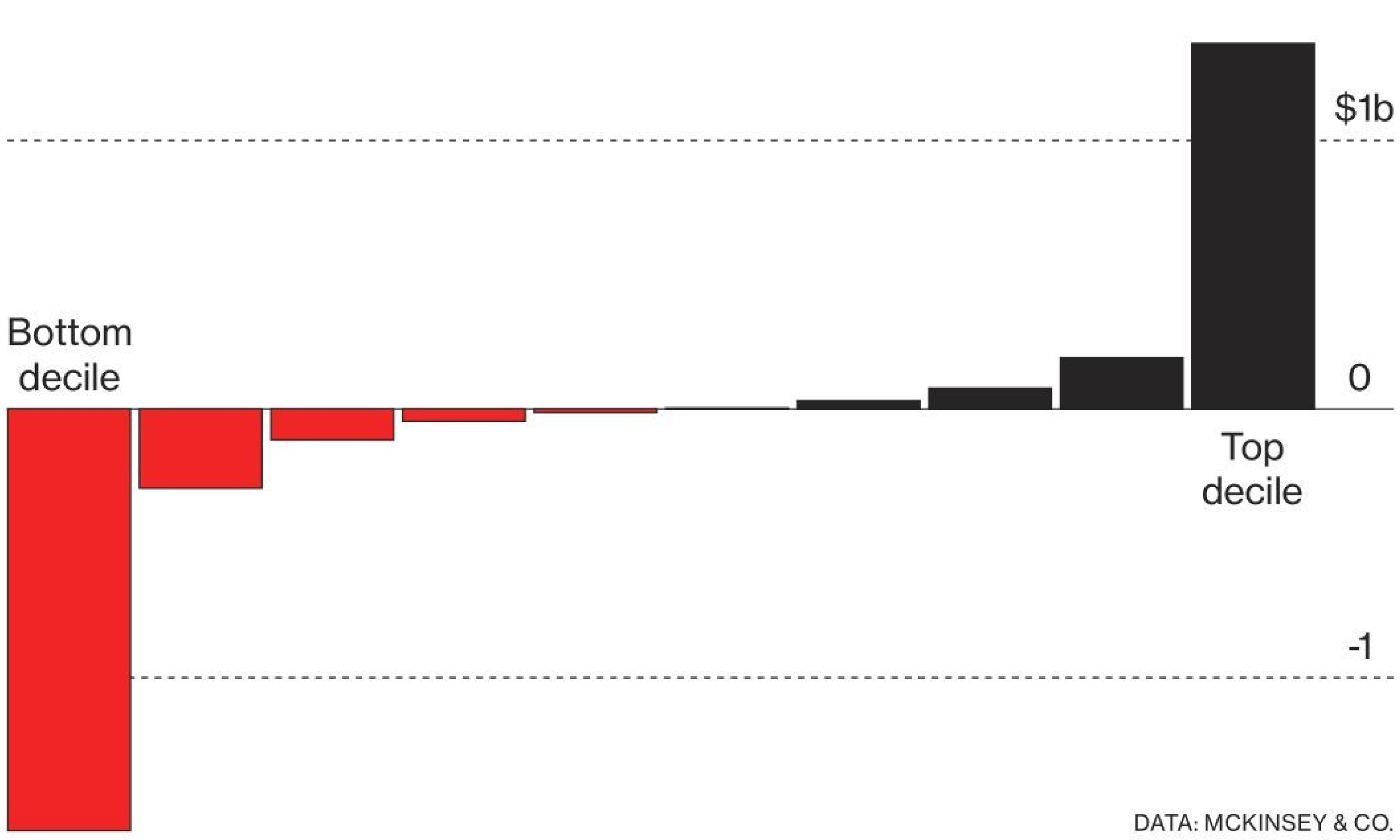
A picture similar to McKinsey's emerges in research on a bigger set of global companies by Aswath Damodaran, an accounting expert at New York University's Stern School of Business. Instead of companies clustering around an average level of profitability, he, too, detected a bimodal distribution: As of January, he found, 8,300 big companies had strongly positive economic profit (return on invested capital exceeding weighted average cost of capital by 5 percentage points or more), while about 17,000 had strongly negative economic profit (returns trailed capital cost by 5 percentage points or more). In the profit space between those two extremes, where ordinarily you'd expect to find the vast majority of companies, he found only about 11,000—fewer than a third of the total.

This is the polarized world that economists Robert Frank of Cornell University and Philip Cook of Duke University predicted in 1995 in *The Winner-Take-All Society*. Their key insight was that returns in many businesses are nonlinear: A player with just a slight edge stands to win the entire pot, while a close second gets little or nothing, because why would any customer choose the second best?

Globalization exacerbated the winner-take-all phenomenon. When transportation and communication were expensive and regulatory barriers and tariffs high, each city ▶

Average economic profit per company

By decile of economic profit, 3-year average, 2014-16



◀ would have its own local champions, whether brewers or piano makers or banks. Most were swept away when they were exposed to national and then international competition. Says Frank: "You can't make an OK cellphone. You've got to be one of the very best if not the best to even survive."

It's easy to draw a line from company inequality to individual inequality: Superstar companies pay their own people well, but they are highly productive so they don't have a lot of employees per dollar of sales or profit. And as they gain market share, employment by their competitors shrinks. Workers lose, while capitalists win. So concludes a 2017 paper by David Autor of Massachusetts Institute of Technology and four other authors called *The Fall of the Labor Share and the Rise of Superstar Firms*.

Ramaswamy and his McKinsey co-authors found that superstar companies do more research and development than average and rely more than average on mergers and acquisitions for growth. As for companies in the bottom profit decile, they actually do more conventional capital spending than the average big company, perhaps because they tend to be in sectors that depend more on physical capital than ideas.

Think of the plight of a wireless company like Sprint Corp., which has fewer customers paying less per month than Verizon Communications Inc. or AT&T Inc. and yet has to invest heavily in its network to have any hope of success, says Bloomberg Intelligence senior industry analyst John Butler. Again, McKinsey's study doesn't name companies, but Sprint appears in a Bloomberg screen of U.S. companies with the weakest performance in terms of return on invested capital vs. weighted average cost of capital. (A spokeswoman for Sprint declined to comment.)

Researchers disagree on whether superstar companies are becoming more entrenched. McKinsey says that according to its research, half the superstars lose their standing in an average business cycle. And when they fall, they often fall hard: "Over the past 20 years, 40 percent of companies that lost their top positions fell to the bottom decile of economic profit. In the most recent business cycle, more than 50 percent of superstars that lost their top positions fell to the bottom decile," according to the April article.

MIT's Autor says McKinsey's figures exaggerate the likelihood that companies will rise or fall. In an email, he wrote, "We find that Superstar persistence has increased not declined over time." Plus, he added, the superstars are getting bigger: "There's little question that concentration is rising in many industries. That's pretty well established by now by many independent inquiries."

There's anecdotal support for either argument, McKinsey's or Autor's. On one hand, companies such as CVS Health Corp. and Walt Disney Co. do appear to have an iron grip on power. "I just don't see any challengers to the big companies we worry about in every sector. There's not a lot of dynamism," says Sally Hubbard, director of enforcement strategy at the Open Markets Institute.

On the other hand, plenty of companies that once seemed invincible have been brought low. Royal Bank of Scotland Group Plc and American International Group Inc. required government rescues in the financial crisis; energy giant Enron was felled in 2001 by an accounting scandal. As for companies going from the bottom to the top—that happens, too. Apple was nearly dead in 1997 and is now among the world's most valuable companies. Delta Air Lines Inc. is the world's most valuable airline just 14 years after a bankruptcy judge told its executives, "I have not heard anything that I will say remotely impressed me that you have the money, the talent, or the thought that you could successfully reorganize in this case."

Those who say superstars are entrenched advocate strong measures—including antitrust lawsuits—to increase competition. Such steps would be unnecessary if market forces alone were strong enough to drag down the superstars. Some superstars, like Apple, produce so much cash that they use big dividends and share repurchases just to keep up with the flow. But buybacks are also characteristic of some poor performers, which hand back money to shareholders since there's no good use for it in their shrinking sectors.

Companies that are earning less than their cost of capital can be as problematic for competitors as superstars, because their money-losing ways erode profit margins for everyone else. For buzzy startups such as Uber Technologies Inc., pricing below total cost is a temporary (they hope) strategy for building scale. For established companies that have fallen on hard times, slashing prices can be a "gamble for resurrection." Since the stock is near zero anyway, shareholders have little to lose by taking a chance that roils the industry—think of an airline operating under bankruptcy protection. In 2017 the Organization for Economic Cooperation and Development published an economic policy paper titled *Confronting the Zombies: Policies for Productivity Revival* that recommended changing bankruptcy codes to more speedily shut down companies that deserve to die.

Those who worry about individual inequality might spare a thought for corporate inequality. Fixing one might help the other. Ⓑ

1

BUSINESS

A New Formula For Form

● The same teams win F1 races almost every weekend. John Malone aims to change that

When the marshal waved the checkered flag at the Azerbaijan Formula One race on April 28, the result came as little surprise: The first car across the line was a Mercedes. The second was, too. In Shanghai two weeks earlier, the outcome was the same. Ditto the other two races this year. That puts Mercedes in pole position to win the 2019 team championship. Just as it did last year. And the four years before that. In fact, only two teams have won the title in the past nine years, and about the only mystery in the competition is which Mercedes driver will come in first, and whether third place will fall to Ferrari or Red Bull.

That predictability has become a headache for John Malone, the Denver billionaire who in 2017 paid $4.4 billion for Formula One. Malone's Liberty Media Corp. has sought to revive the troubled series by supercharging the competition, but the wealthiest and most powerful teams don't like the idea. The three leading entrants, at risk of being dethroned, have threatened to pull the plug on their Formula One efforts unless they can shape the rules to their liking. "One of the teams could quit if things go in the wrong direction," Niki Lauda, a three-time F1 champion and now a part-owner of the Mercedes squad, told Germany's *WirtschaftsWoche* last year.

Since its founding in 1950, Formula One has become the world's most popular motor sport and one of just a handful of truly global competitions, with races in 21 countries this year. But since Liberty took over, F1's revenue and payments to teams have been flat. Its television audience shrank by two-fifths in the 10 years to 2017, according to Goldman Sachs, and Evercore estimates that the company's value has dropped about 12 percent on Malone's watch. "There has to be some degree of cost containment and a more appropriate apportionment of revenue to create a competitive grid,"

Edited by James E. Ellis and David Rocks

says Sean Bratches, a former ESPN executive who serves as F1's commercial operations chief.

The sport's rulebook, the Concorde Agreement, is renegotiated a couple of times a decade by the dozen or so teams, the management group that Malone bought, and the Fédération Internationale de L'Automobile, which regulates F1 and various other competitions. The current 181-page pact will expire in December 2020, and any rewrite typically must be completed at least 18 months in advance so teams can ensure that their cars adhere to new rules. That means the talks should be wrapping up in time for the season highlight, the storied Grand Prix winding through the streets of Monaco on the shores of the Mediterranean on May 26. But negotiations "really have just started," Mercedes team chief Toto Wolff told reporters on April 12.

Liberty's latest proposal includes budget caps to make races a test of drivers' skills rather than a battle of the richest engineers. And Malone wants teams to share prize money more evenly so losers don't pull out of the circuit or go bankrupt, as dozens have in the past several decades. A key issue is extra cash granted to the longest-serving teams, which gives Ferrari—a contestant in every series since 1950—a bonus approaching $100 million per season. "The teams at the top don't want a budget cap because there's a direct correlation between the amount you spend and how often you win," says Christian Sylt, head of Formula Money, a sports consulting firm.

The weaker teams are backing Liberty's efforts. While only the foolhardy get into F1 to make money—running a team can cost hundreds of millions of dollars a year—most see it as a promotional opportunity, for either an automaker (Renault, Alfa Romeo) or a broader consumer brand such as Red Bull, Virgin, or Vodafone. But it's hard for marketing bosses to make the case for a competition that's so lopsided. "We don't need to be in the sport for cash profit," says Zak Brown, head of McLaren Racing, whose parent company makes street-legal supercars that can cost more than $1 million. "But we don't want to have the type of losses we're currently sustaining and still not be competitive."

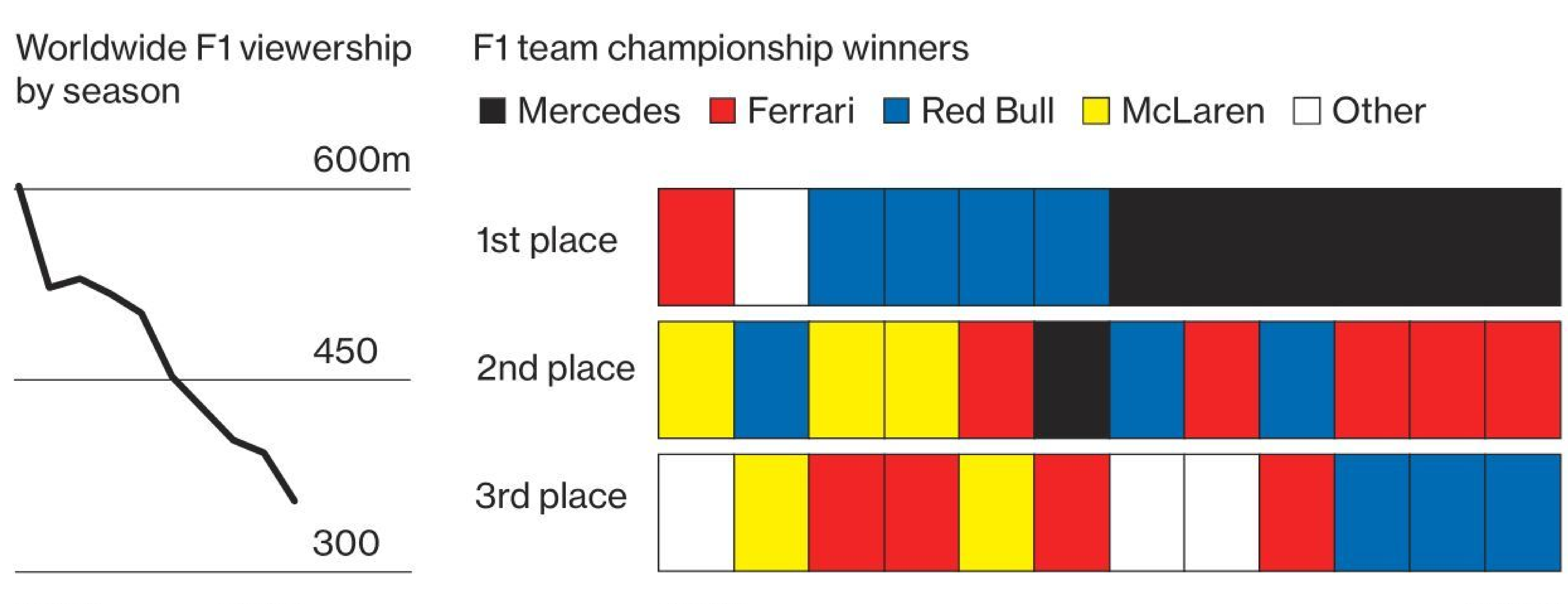
Then there's the problem with track owners, who pay Liberty tens of millions of dollars per race. Since they don't get a cut of broadcasting revenue, they must recoup that entirely via sales of tickets that frequently top $500 for grandstand seating at the Sunday final. Britain's Silverstone, a former airbase in the English Midlands that's played host to Formula One since 1950, is working under a contract that expires in the coming months and is marketing this summer's competition as potentially its last. And Germany's Hockenheimring signed a one-year pact for the current season while it seeks a better deal. "From a financial point of view it has to be affordable," says Jorn Teske, marketing director at the German track, which has held races since 1970 (after repairing damage from tanks that swept through the region in the final months of World War II). "F1 races can't be such a risk for promoters."

Liberty has managed to juice extra cash from ▶

◀ Mercedes driver Lewis Hamilton in the pit during preseason testing in Montmeló, Spain

● Malone

The Grand Prix of Predictability



*2019 IS YEAR TO DATE. GETTY IMAGES (2). DATA: FORMULA ONE, GOLDMAN SACHS, FORMULA MONEY, FORBES

◀ the schedule by shifting contracts to pay-TV. That yielded a modest increase in broadcast revenue, but it risks sapping interest in the sport by restricting the audience. Forty percent of fans watch less racing when there are paywalls, according to a 2017 Nielsen survey. Liberty has also said it expects to boost profits with more sponsorships; it has just 10 official global partners, compared with scores for the Professional Golf Association and Nascar. But Liberty Chief Executive Officer Greg Maffei told analysts that's "proven to be harder and less uptick than we initially thought."

While Wall Street analysts see substantial upside if Liberty's changes are instituted, operations boss Bratches says success will depend on remaking an operation that was undermanaged for years before Liberty bought in. Aiming to boost F1's presence on social media, Bratches had lunch with Lewis Hamilton, the Mercedes driver who's won the season championship five times. He asked Hamilton why he doesn't share high-octane clips of races on Facebook or Instagram. The response? Hamilton "basically put down this stack of cease-and-desist letters that the prior management had sent him every time he did." —*Thomas Seal, with David Hellier*

THE BOTTOM LINE Since buying the circuit in 2017, Liberty Media has sought to supercharge the competition, but the top teams fear new rules might threaten their dominance.

Why TikTok Is Music to Bands' Ears

● The video service is winning millions of new fans for old music, but pays low royalties

Fitz and the Tantrums were wrapping up the tour for their third album last year when their label, Atlantic Records, told them that their song *HandClap* was climbing the charts in South Korea. "We were shocked," says Lisa Nupoff, one of the group's managers. The Los Angeles-based pop band had never been there, or anywhere in Asia for that matter. But by April of 2018, *HandClap* had topped the international charts in the world's sixth-largest music market, outperforming Camilla Cabello's *Havana*, the most popular song in the world last year. A couple months later, the song surpassed 1 billion streams in China—even more than it had received in the U.S.

Nupoff credits much of the song's success in Asia to TikTok, a social video app that allows users to record and share short clips of pranks, dance routines, and skits set to music. The song took off in South Korea after the 1Million Dance Studio troupe recorded a video set to the song, which other users replicated in their own videos. It went viral in China after a player of the video game *PlayerUnknown's Battlegrounds* uploaded a film combining gunshots of a weapon from the game with *HandClap* to Douyin, TikTok's China-only equivalent. "It was just fans listening to the song, posting videos, and doing dances in their homes," Nupoff says.

TikTok and Douyin, both owned by the Chinese startup Bytedance Ltd., are propelling songs from obscurity to ubiquity overnight, rewriting the path to stardom for some acts. While Fitz and the Tantrums had already experienced success at home, the burst of fame on TikTok persuaded the band to focus on Asia as it rolls out its new album.

The list of acts that owe sudden success to TikTok grows by the day. Lil Nas X just scored a No. 1 song on the Billboard charts—and a record deal—after his song *Old Town Road* went viral on TikTok. And Supa Dupa Humble, a producer from Brooklyn, doubled his daily streams. "If you can get a song on Douyin, you suddenly get a viral impact," says Simon Robson, the head of Warner Music's Asian operations.

Musicians first met TikTok as musical.ly, a lip-syncing app founded in California and Shanghai in 2014 that had amassed more than 10 million daily users—mostly teens—by the middle of 2016. Music writers labeled it the new Vine, the now defunct short-form video app owned by Twitter Inc. Bytedance, which also operates one of China's most popular news apps, saw enough potential in short music-enhanced video that it created its own service, Douyin, later that year. Douyin attracted 100 million users in less than 12 months; a separate app, TikTok, was created for outside the mainland.

Bytedance swooped in to acquire Musical.ly in November 2017 and folded it into TikTok, centralizing the pranks—and the music licensing—under one company. The app's popularity has since surged. TikTok has been downloaded more than 1 billion times worldwide, and is available in more than 150 markets. It was the most downloaded free app in the world for a time last year.

● Number of streams in China of Fitz and the Tantrums' *HandClap*, since going viral on Bytedance's apps

1.5b

The app's sudden rise caught record labels off-guard and revived an old debate in the music industry: Is this new internet service giving artists free promotion, or simply getting rich off their work? Record labels have resisted hundreds of companies, including MTV and YouTube, that wanted to offer music for free and pay little in return. As paid streaming services Spotify and Apple Music have revived record sales in recent years, labels have tried to squelch any app that offers music for free.

TikTok, however, presented a new way to promote songs. Unlike YouTube, which features full songs, TikTok lets its users include only snippets of music in their 15-second clips. So record labels licensed TikTok the rights to music for a flat fee of only tens of millions of dollars, comparable to what record labels get from Spotify each week, to test what would happen. The growth of TikTok and the news app Toutiao has boosted the valuation of Bytedance to about $75 billion, making it one of the world's most-valuable startups. That rankles the music labels, which are still being paid under the original low-priced deal. "When I left [last year], the industry said these deals are not going to work anymore," says John Bolton, a music executive who helped Bytedance strike its previous deals with music companies. "It sounds like that still has not been figured out."

Labels are now asking Bytedance for hundreds of millions of dollars in guaranteed licensing payments, and they've threatened to pull their music from the app's library if they aren't rewarded.

TikTok would be rather boring without music, says Yang Lu, the general manger of music for Bytedance, which is now planning its own paid music service. But he's quick to add that the app has been beneficial to the music industry, by creating programs to support independent artists in China, Japan, and South Korea, and has teamed up with labels around the world to help promote releases. And there's little question that Bytedance's apps motivate music lovers: On any given day, as many as half the songs in the top 10 on Chinese music services have been made popular by TikTok or Douyin. "We are not a music promotion app," Lu says. "But we did happen to have a huge impact on music promotion. We are a very positive force."

Many artists agree. Supa Dupa Humble promoted his song *Steppin* on Instagram when he first released it in 2017. The track garnered more than 3 million streams, enough to earn Supa, whose real name is Tarique St. Juste, a deal with Roc Nation, an entertainment company founded by hip-hop mogul Jay-Z. Supa had never heard of TikTok when he first learned his song was going viral, but daily streams of *Steppin* on music services more than doubled as soon as people started including it on videos on the app. The song has since been streamed more than 19 million times. "It's a meme world," he says. "TikTok exposed us to a whole new set of fans."

The challenge for artists like Supa is figuring out how to capitalize on that growth. *HandClap* was a hit before it got to China, reaching the top five on the alternative and rock charts in the U.S. in July 2016; it's Fitz and the Tantrums' first song to go double platinum. But it didn't start to gather fans in South Korea until almost two years after its U.S. release. Listeners in South Korea and China know *HandClap* from watching app clips, but many have never heard of Fitz and the Tantrums.

The band will now travel to Asia in conjunction with the release of its fourth album. Nupoff has been working closely with Warner's labels in South Korea and China to build relationships with streaming services in the region. "2018 was the year China and Korea exploded," she says, "and 2019 is when we hope to harness it." —*Lucas Shaw*

THE BOTTOM LINE The popularity of songs on Bytedance's TikTok app, downloaded more than 1 billion times worldwide, is pushing musical acts to shift their touring schedules toward Asia.

● Some of the songs that have gone viral on TikTok and Douyin

Absofacto
Dissolve

Badshah
She Move It Like

Bhinda Aujla and Bobby Layal
Teri Pyari Pyari Do Akhiyan

Blueface
Thotiana

The Boyboy West Coast
U Was At the Club (Bottoms Up)

Deep Chills featuring IVIE
Run Free

Jennie
Solo

Joji
Slow Dancing in the Dark

Kana Adachi
I'm Loving You

Lil Nas X
Old Town Road

Riton and Kah-Lo
Fake ID

Sub Urban
Cradles

Supa Dupa Humble
Steppin

▼ Videos of web users dancing to *HandClap* became a phenomenon across much of Asia

DATA: TIKTOK

HEALTH SPAN

● Unity Biotech's osteoarthritis treatment could reverse the body's self-sabotage

To hear Nathanial "Ned" David tell it, the osteoarthritis drug his Unity Biotechnology began testing in human subjects last fall is about far more than just helping aging weekend warriors regrow cartilage in their damaged knees. It's the first step toward making us all feel young again. "Aging is not a rigid, inflexible phenomenon," he told a conference room full of Wall Street analysts and financiers in Midtown Manhattan. "Nature has created control knobs that it uses and turns to change the life span of different organisms. Finally, as scientists, we are learning how to identify some of these knobs and actually turn them as a therapeutic strategy."

David, 51, was in New York to explain the science behind UBX0101, the drug Unity has in late Phase I clinical trials to treat the intractable arthritic condition, which affects 14 million Americans. The company is expected to release early results within the next several weeks. Analysts, scientists, and patients are watching closely.

David's ambition is to establish a new scientific field he calls senolytic medicine. Senolytics are small molecules that can selectively induce the death of cells that have entered a state known as senescence—they no longer divide and instead trigger chronic low-level inflammation that's harmful to surrounding cells. Senescence is associated with a wide array of diseases that occur mostly in old age, including heart disease, glaucoma, strokes, and arthritis. Purging the body of these zombie cells, David believes, could undo the ravages of time.

Unity is among a small group of companies, including the Google health-care subsidiary Calico, that are attempting to harness advances in molecular biology to increase the human health span, the length of time that a person is healthy. The idea, David says, is not just to prolong life but to allow older people to live healthier lives. "We are not purely a senolysis company. We will also be exploring alternative mechanisms that can extend human health span," he says.

The reaction from the pinstriped crowd in New York—which included analysts from Citigroup, Goldman Sachs, and Morgan Stanley—was respectful but muted. After all, only about 12 percent of

Edited by Dimitra Kessenides and Paula Dwyer

LIFE SPAN

drugs that enter clinical trials are successful, according to a 2018 report by the Tufts Center for the Study of Drug Development. And the science upon which Unity has based its approach is largely untested in humans; scientists have only recently begun to understand the links between senescence and the diseases associated with aging.

The arthritis drug, and senolytic medicine generally, are intriguing, says Salim Syed, the head of biotechnology research for Mizuho Securities USA LLC, and an attendee at the investor conference in New York, but they're "definitely not a slam-dunk."

Still, the potential payoff from the company's arthritis drug ensures investors are watching carefully. After collecting $222 million in venture capital from Jeff Bezos, Peter Thiel, Fidelity, and others on the strength of its preclinical studies, Unity went public last May, raising $85 million in an initial public offering that valued the biotech at $700 million.

David, a biochemist trained at Harvard and the University of California at Berkeley, has founded four other companies, including Kythera Biopharmaceuticals, which won Food and Drug Administration approval for a chin-fat drug before it was bought by Botox maker Allergan Plc for $2.1 billion in 2015. Another, Syrrx, raised $79 million from venture capitalists and was sold to Takeda Pharmaceutical Co. for $270 million in 2005, before winning approval for the diabetes drug Nesina in 2013.

In 2017 researchers funded by Unity published a paper in the journal *Nature Medicine* demonstrating that removing senescent cells from the injured knees of mice using UBX0101 not only reduced pain, but also prompted the joint to regrow cartilage. The scientists later repeated the finding using human knee tissue removed from patients who'd undergone total joint replacements.

Osteoarthritis of the knee is a painful condition in which the cartilage between the bones wears away. In 2018 there were 725,000 knee replacements in the U.S. If successful, Unity's drug for the condition could reduce the need for surgery while generating as much as $6.7 billion a year in revenue, according to a recent Goldman Sachs Group Inc. research note on the company.

Last fall doctors began injecting UBX0101 into the knees of older human patients suffering from moderate to severe osteoarthritis. "Right now drugs for knee replacement are pretty ineffective," says Morgan Stanley biotech analyst Mathew Harrison. "I think the biology is highly interesting, and ▶

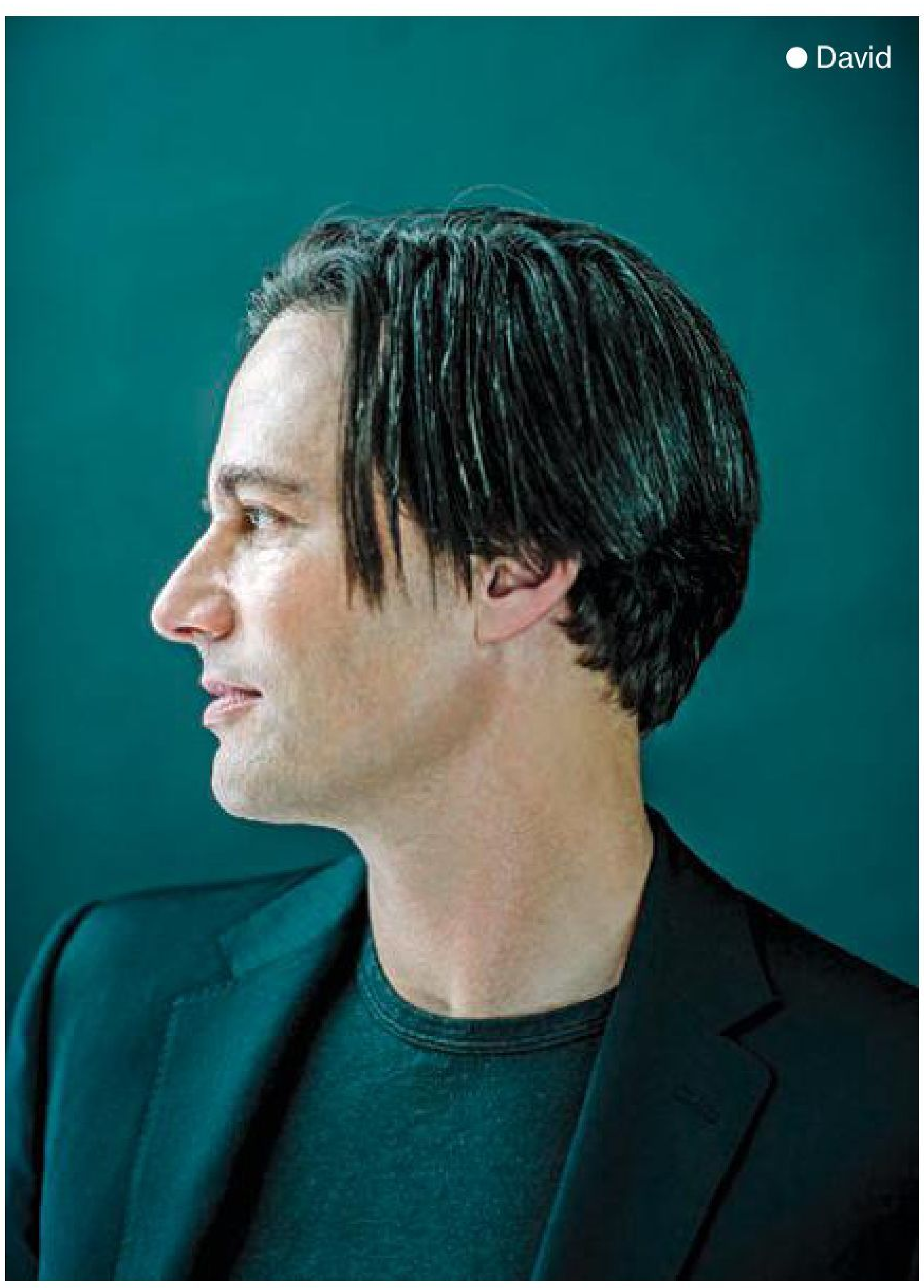
"Aging is not a rigid, inflexible phenomenon"

◀ I think the initial mouse data that they have suggests that there is something to the data."

Unity isn't shy about its grand vision of fixing the problem of aging. Last September, when Chief Executive Officer Keith Leonard, David's longtime collaborator, appeared on CNBC's *Power Lunch*, he opined that the science behind Unity's first drug could be harnessed to treat not just osteoarthritis and vision problems, but also the loss of cardiac and pulmonary function, as well as cognitive function and a wide variety of other "things we have come to accept as part of the normal course of aging."

Unity's selection of osteoarthritis of the knee as its first target allows the team to administer the drug locally in the joint and closely monitor how it affects the aged cells around it. Unity announced in January that it's also seeking FDA approval to begin human testing for a second locally administered drug, UBX1967, that would target age-related eye diseases.

Unity's "first in-human" data from the knee trials will show whether the drug affects 30 different cellular markers believed to be associated



● David

with cellular aging. "It's a new science," says Syed of Mizuho Securities. "And it takes a little bit more time for investors to digest new areas of science. So a lot of people are skeptical. But those that are following this are going to look closely at the first in-human data." —*Adam Piore*

THE BOTTOM LINE Unity has attracted more than $222 million from blue chip investors. If successful, its osteoarthritis treatment could lead to remedies for other problems of aging.

Ban Huawei? U.S. Allies Mostly Resist

● On many fronts, business couldn't be better for the equipment maker as it plans a comeback in America

President Trump's worldwide campaign to blackball Huawei Technologies Co. is looking like a failure. Attempts to persuade other governments to exclude Huawei equipment from the next generation of superfast mobile networks have hit a wall, even among close U.S. allies. So far only a few countries, including Australia and Japan, have joined the call to ban the Chinese company.

Not a single European nation has done so, triggering a scolding from Secretary of State Mike Pompeo. On May 8 he demanded that Britain take a tougher approach to China, saying now is not the time to "go wobbly"—a favorite phrase of the late Prime Minister Margaret Thatcher. In a speech, Pompeo asked, "Would she allow China to control the internet of the future?"

Huawei, meanwhile, is piling up record sales, entering markets, surpassing Apple Inc. as a phone maker, and cementing its position as a leading global supplier of telecom gear. Now the newly confident company is poised to bolster its U.S. presence. Huawei put a seasoned insider, Joy Tan, in charge of public affairs in the U.S., where it's planning to start a print ad campaign, amplified by social media, in the coming months. "It's winning," says Robert Spalding, a retired Air Force brigadier general who was on Trump's National Security Council and is now a senior fellow at the Hudson Institute, a policy group. The U.S. isn't able "to do anything that would fundamentally change things," he says.

Not for lack of trying. The U.S. for the past year has sent diplomats around the globe to beseech other countries to shun Huawei. The U.S. says Huawei can build backdoors—paths to bypass security to access a computer system—into its equipment, allowing China to spy and posing a security risk for fifth-generation mobile networks that

TIMOTHY ARCHIBALD

promise to connect billions of devices, including autonomous cars and robot-rich factories.

The U.S. also says that Chinese law compels Huawei to cooperate with Beijing's espionage agencies and that it's stolen other companies' intellectual property. At the request of the U.S., Canada since December has held Meng Wanzhou, Huawei's chief financial officer and the eldest daughter of company founder Ren Zhengfei, while the U.S. seeks her extradition on charges of violating its Iran sanctions.

Countries throughout Europe and Asia have mostly shrugged off the warnings. The reasons? Huawei's gear is reliable, technologically advanced, and less costly than its rivals', says Joseph Franell, chief executive officer of Eastern Oregon Telecom, an early Huawei customer in the U.S.

The anti-Huawei campaign is playing out within a larger geopolitical struggle between the U.S. and China that some liken to the Cold War between the USSR and the U.S. And Europe is trying to balance its close relationship with the U.S. with a desire to do more business with China, its second-largest trading partner. Trump's threat to raise tariffs on $200 billion worth of Chinese goods from 10 percent to 25 percent further complicates matters.

The latest snag came on May 3, at the end of a meeting in Prague to set standards for 5G equipment. Officials from 32 countries, including Japan, South Korea, and most of the European Union, presented a united front, issuing a statement that warned participants against choosing 5G suppliers that could be susceptible to state influence. But behind the scenes, Austria, France, and Germany sought changes, including switching from "principles" to the less stringent "proposals" in the statement's title, according to one Western official, to stress that the document would be nonbinding. The Prague proposals allow some European countries to adopt a two-tiered approach, excluding Huawei equipment from the core of their networks, while allowing it to supply antennas and other parts for less sensitive functions, Paul Triolo, an analyst at the Eurasia Group, said in an email.

The U.K., people familiar with the matter told Bloomberg, is considering a similar approach for its 5G network—leaked news of which resulted in the firing of its defense minister. The EU has asked members to assess the risk to their 5G infrastructure and report back. Chancellor Angela Merkel has said she opposes singling out a company; Germany instead plans more stringent vendor testing and oversight.

Robert Strayer, the U.S. State Department's point person on Huawei, said the Prague agreement could lead to the banning of Chinese companies. He rejected the notion that a lack of action so far against Huawei meant the U.S. had lost the fight. "While we have not seen bans on any particular company, I think that's a little premature," he said.

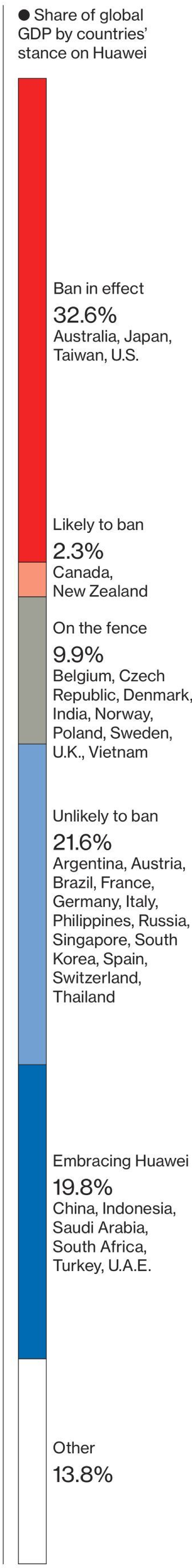
Throughout Europe, carriers say they fear they'll fall behind the rest of the world on 5G if they're forced to abandon Huawei. Even Vodafone Group Plc stands behind the Chinese company after Bloomberg reported that Huawei software used in its Italian business had backdoors. Huawei said that the issues, found in 2011 and 2012, had been resolved and that many other vendors used similar software to diagnose problems with home internet routers.

In the U.S., beyond the ad campaign, the company is suing to overturn legislation that bars agencies, federal contractors, and grant recipients from doing business with it. "Blocking one company from the U.S. market is not going to make the network secure," says Tan, who headed Huawei's global communications in Shenzhen and prepared the CEO for interviews before taking over the U.S. media relations operation in January. She points to the global supply chain, which relies heavily on components manufactured in China. Tan says Huawei has worked with U.K. authorities to develop a third-party system to check equipment for backdoors and other security risks, and that's the approach policymakers should adopt.

Huawei has added some high-powered lawyers to its roster, disclosures filed with the Senate show. Samir Jain, formerly a senior director for cybersecurity policy on President Obama's National Security Council and a partner with the law firm Jones Day, registered to lobby for Huawei in March. That prompted a tweet from Trump: "This is not good, or acceptable!" The company says Jain will not lobby but will help with legal efforts.

The company's financial performance shows no signs of retreat. Privately held Huawei said first-quarter sales rose 39 percent from a year earlier, to $26.8 billion. For 2018 the company posted net income of $8.8 billion on $106 billion in sales. It overtook Apple to claim the No. 2 spot in global smartphone sales in the first quarter, behind Samsung Electronics Co. In telecom equipment, Huawei's global market share rose to 29 percent in 2018, up from 20 percent five years earlier, according to research company Dell'Oro Group Inc. With Huawei gaining market share, financial strength, and acceptance among America's closest allies, the score for now appears to be Trump 0, Huawei 1. *—Todd Shields and Bill Allison, with Patrick Donahue, Stefan Nicola, and Lenka Ponikelska*

THE BOTTOM LINE With a new head of U.S. media relations, higher revenue, and a newly assumed place as the No. 2 global smartphone seller, Huawei has the upper hand to fight off Trump's attacks.



DATA: INTERNATIONAL MONETARY FUND GDP DATA FOR 2018; BLOOMBERG

The HGTV Generation Gets

Flipped

● Rookie real estate investors and rehabbers get their first taste of a downturn

Sean Pan wanted to be rich, and his day job as an aeronautical engineer wasn't cutting it. So at 27 he started a side gig flipping houses in the booming San Francisco Bay Area. He was hooked after making $300,000 on his first deal. That was two years ago. Now home sales are plunging. One property in Sunnyvale, near Apple Inc.'s headquarters, left Pan and his partners with a $400,000 loss. "I ate it so hard," he says.

A new crop of flippers, inspired by HGTV reality shows, real estate meetup groups, and get-rich gurus, piled into the market in recent years as rapid price gains helped the last property crash fade from memory. Many newbie investors are encountering their first slowdown and facing losses from houses that take too long to sell. Meanwhile, they face steep payments on a kind of high-interest debt—known as "hard-money" loans—that helped power the boom.

"Flipping only works in an appreciating market where homes move quickly," says Glen ▶

PHOTO ILLUSTRATION BY 731. PHOTO: SHUTTERSTOCK

Edited by Pat Regnier

◀ Pan took a big hit on a Silicon Valley fixer-upper

◀ Weinberg, the Denver-based chief operating officer of Fairview Commercial Lending, which is tightening its standards for real estate investors. "Those factors are now in flux, and that's what's going to lead to the demise of a lot of flippers."

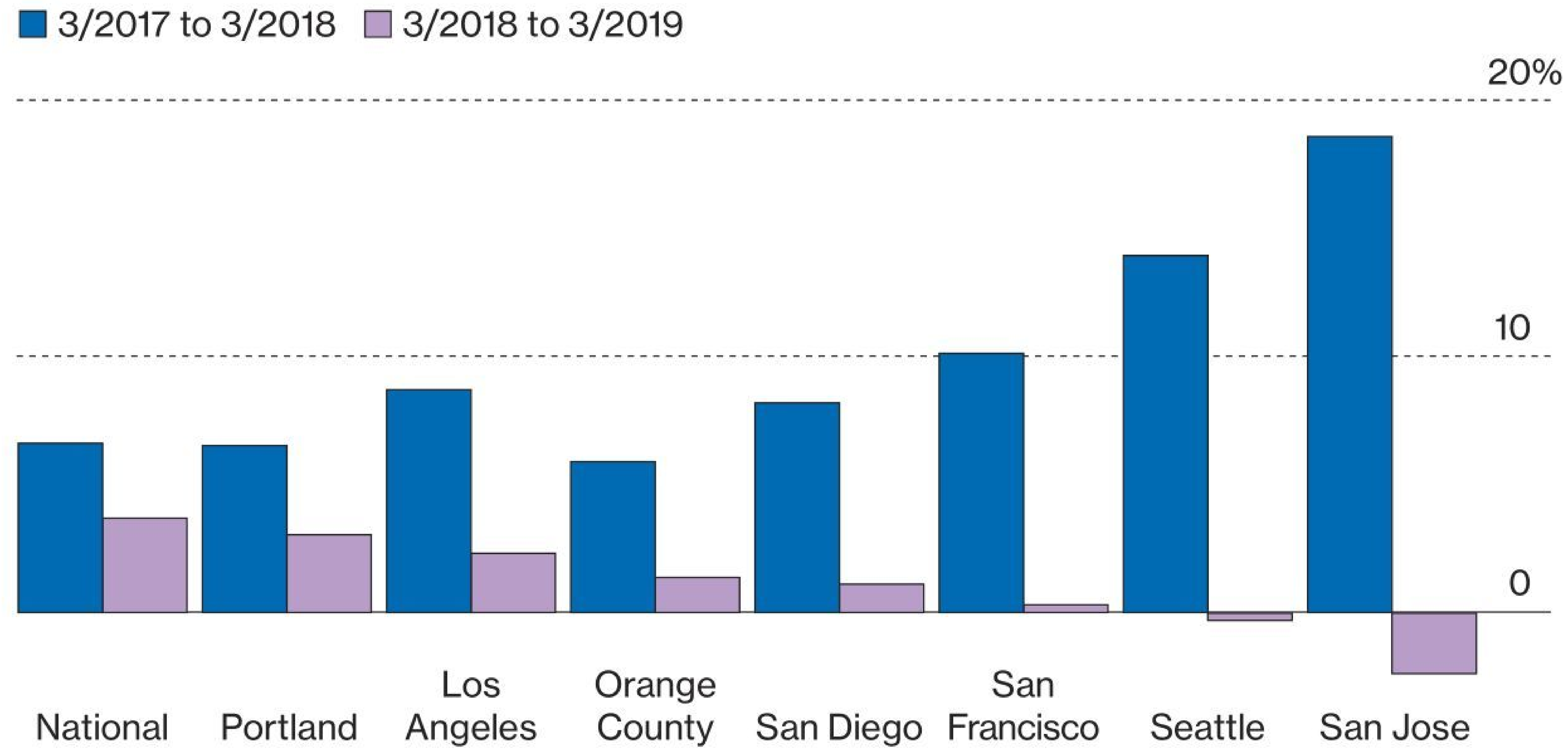
About 6.5 percent of U.S. sales in the fourth quarter were flips, or homes sold within a year from when they last changed hands. That was the highest share in seasonally adjusted data going back to 2002, according to real estate data firm CoreLogic. (It's even higher than during the last boom, when there were more newly built houses for buyers to choose from.) Such deals were particularly attractive in Western markets such as Northern California and Seattle, where prices climbed by double-digit percentages annually. But some areas got too hot, and prices are flattening or falling. Fourth-quarter losses for flippers who sold within a year were the highest since 2009, according to a CoreLogic analysis that looks at buying and holding costs, but not rehab expenses. In the San Jose area, 45 percent of flips lost money.

Unlike the last decade's housing crash, in which speculators bought simply to resell, many of today's flippers sink money into fixing up properties. Their hard-money loans, which come from private investment groups, often have high interest rates and low down payments. The loans also are bigger because renovation costs are folded in.

Large companies including Blackstone Group LP and Goldman Sachs Group Inc. have gotten into such lending. Competition has helped drive interest rates on some of the loans below 10 percent, says Todd Teta, chief product officer at Attom Data Solutions, a real estate tracker. Now lenders "are easing capital requirements and lengthening loan terms because it's taking longer to flip homes," Teta says.

Many flippers are professionals who've been in the business for years. But the latest boom has also lured people such as Rachelle Boyer in Seattle, who got into property investing after attending a $25,000 real estate coaching program. The course taught her to think big, stay positive, and never quit. In 2016 she left a six-figure job and started flipping houses. When demand slumped last year, she fell behind

Change in U.S. Home Prices



PHOTOGRAPH BY TAYLOR KAY JOHNSON FOR BLOOMBERG BUSINESSWEEK. DATA: CORELOGIC on hard-money loan payments for two houses languishing on the market. She has one more to get rid of. "We will get through the dip. Things are already perking up a bit," Boyer says. Nevertheless, she's reconsidering the wisdom of reselling rehabs. Her goal now is to buy 25 houses in Pittsburgh, a cheaper, less volatile market, with a strategy of holding on to the properties as rentals.

Weinberg, the Denver hard-money lender, says he's increasingly selective with borrowers and deals. He requires flippers to put 40 percent down on a house. But the lenders he competes with are financing purchase and rehab costs with only a small down payment or none at all. The flipper "can go in with no money, his pockets just blowing in the breeze," he says. "The lenders are going to be left holding the bag."

The downturn may provide an opportunity by lowering the cost of houses, but buyers have to be able to withstand losses. Bryan Pham, a Bay Area software engineer who also flips houses, has purchased four during the slowdown even as he's had to put some projects on hold. After the downturn last year, he decided to pay $47,000 extra in loan extensions so he could keep three homes off the market, waiting for spring demand to kick in. Pham estimates he'll take a $50,000 loss on one home that was listed for $1.1 million and took a month to go under contract. "I've seen people make foolish decisions in the past and still make money," he says. "Now you have to be conservative."

Pan, the aerospace engineer, is undeterred. He started a blog and podcast about flipping and plans to quit his job to focus on flips full time. He got into property investing after reading Robert Kiyosaki's financial advice book, *Rich Dad, Poor Dad*. Pan began scouring online investment forums and attending meetup groups to learn more, but his biggest lesson came last year with the Sunnyvale home. He thought he got a "sweet deal," negotiating the $2 million asking price down to less than $1.8 million. He and his partners decided to go all out on the remodel. The project took longer than expected, and then the market went soft.

Pan couldn't afford to wait for a rebound. The holding costs alone for three properties he was trying to dump totaled $30,000 a month. The home sold for less than $1.7 million, or more than $80,000 below what he paid for it. "When you buy these houses, you never think you'll lose money," he says. "I fixed it up. It should be worth more, but things change." —*Prashant Gopal*

THE BOTTOM LINE Fueled by high-interest, hard-money loans from private investors, individuals have gotten into real estate speculation again.

Why Some ETFs Cost More

● The fund giant behind iShares gets almost half its ETF revenue from premium-priced funds

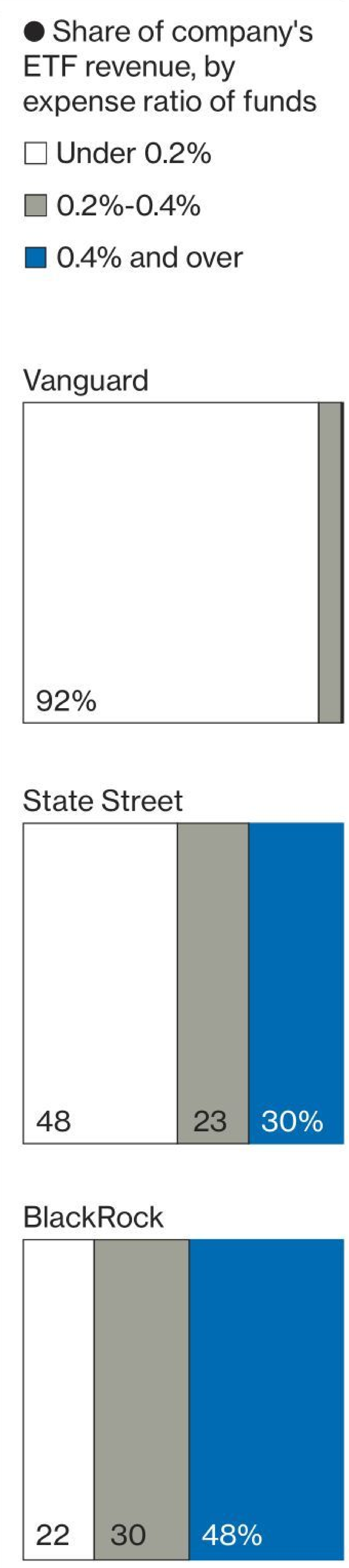
It's no secret low-cost exchange-traded funds are big business for BlackRock Inc. Over the past decade, the money manager's line of iShares ETFs has become the most popular on the planet, amassing almost $2 trillion of client assets along the way.

Its behemoth iShares Core S&P 500 ETF charges a management fee of just 0.04 percent of assets per year, or a scant 40¢ per $1,000. You might wonder how BlackRock makes money charging so little. What's rarely publicized is just how much of its ETF profits—its single biggest revenue source—comes from smaller, high-priced offerings.

BlackRock doesn't disclose how much it earns from individual ETFs, but calculations by Bloomberg show that almost half the company's ETF revenue comes from its premium-priced products, which are popular with hedge funds and other professional investors. It's a stark contrast to its biggest rivals, such as Vanguard Group and State Street Corp., which depend primarily on attracting individuals to their low-fee ETFs.

For now, those high-margin funds provide a crucial buffer for BlackRock as fierce industry competition pushes the cost of ETF index funds closer to zero. But BlackRock has that much more to lose if investors abandon it for lower-cost alternatives. If it were to cut ETF fees to match Vanguard across the board, a back-of-the-envelope estimate suggests it could cost the firm upward of $3 billion in annual revenue. Melissa Garville, a spokeswoman for BlackRock, said in an email that "iShares is positioned to serve different client types who value different components of the ETF value proposition."

While BlackRock has introduced a "core" lineup of low-cost funds in recent years for the buy-and-hold set, Ben Johnson, who heads passive-strategy research at Morningstar Inc., says that institutional investors have long preferred its more established and costlier ETFs because they're easy to trade. "From BlackRock's point of view, why kill your golden geese?" he says. "Rather than strip themselves of millions of dollars in revenue" by cutting ▶



DATA: AS OF MAY 3, 2019. COMPILED BY BLOOMBERG

◀ prices, the firm can keep profiting by maintaining the status quo.

Consider the difference between the firm's iShares MSCI Emerging Markets ETF, which goes by the ticker EEM, and its iShares Core S&P 500, ticker IVV. With $35 billion in assets, EEM is just one-fifth the size of IVV. Yet the emerging-markets ETF earns three and a half times more in fees. That's because EEM charges 0.69 percent, 17 times what IVV costs.

Besides ease of trading, another reason BlackRock can charge more is the sheer scope of its offerings. Want to invest in Russian stocks? State Street and Vanguard have nothing to offer you. But iShares has two Russia-focused ETFs, both of which charge more than 0.6 percent.

BlackRock's protection from the fee wars may not last forever. Total assets of its iShares MSCI Emerging Markets ETF have declined by roughly 12 percent in the past year. Over that same span, assets in the broadly similar iShares Core MSCI Emerging Markets ETF, ticker IEMG, surged by roughly $10 billion. At 0.14 percent, its expense ratio is just one-fifth the amount for EEM. "BlackRock is smart to squeeze out the revenue of keeping the bigger, more liquid funds higher-cost for now," says Eric Balchunas, an ETF analyst at Bloomberg Intelligence. "But eventually the cheaper funds will take over." —*Brandon Kochkodin*

THE BOTTOM LINE If BlackRock cut fees across its fund lineup to match Vanguard's costs, it might have to give up $3 billion in annual revenue.

Apps That Cancel Subscriptions to Apps

● New services target the monthly fees you might have forgotten about

Financial companies are targeting subscriptions—from video and music streaming to gym memberships—with apps that can help consumers weed out payments for services they no longer use or have forgotten about. It's happening even as the options to take on more monthly expenses multiply.

The apps, from companies including Goldman Sachs Group Inc. and Wells Fargo & Co., assist users in finding recurring fees and in some cases canceling them. Their emergence points to the growing battle over regular access to consumers' wallets. Apple, Walt Disney, AT&T, and Comcast are all planning new streaming services. Mocking the avalanche of offerings, Colin Jost recently noted on *Saturday Night Live* that Walt Disney Co.'s service was called Disney+, "as in, you now have to get Disney, plus Hulu, plus Netflix, plus Amazon, plus PlayStation, plus cable."

Hulu LLC reported last month that cancellation rates hit an all-time low. And Netflix Inc., with a 35 percent revenue jump last year from 2017, has raised prices. So the new banking tools may not be taking a noticeable bite out of business just yet. But there are signs they might. For Clarity Money, an app Goldman Sachs bought last year, two of the three most canceled expenses are video services, according to Kelly Newton, vice president for marketing. (She declined to name the services.) Wells Fargo added the Control Tower feature to its mobile app for customers last fall after a poll showed 31 percent of Americans had paid for subscriptions or memberships that they didn't use in the past year.

Today, the average U.S. household subscribes to three streaming video services, with 43 percent paying for both streaming and traditional pay TV, according to Deloitte's annual Digital Media Trends survey. Almost half, however, are frustrated by the growing number of outlets they need to gain access to what they want to watch. "Every week it's like there's a new subscription we've signed up for, and the bank account is drained by the end of it," says Mark Schwanhausser, director of digital banking at research firm Javelin Strategy. The new tools "contribute to a smarter, more aware consumer."

Don't expect the subscription offers to abate soon, as everything from video games to razor blades can be purchased via monthly payments. "We live in a subscription economy," says Thomas Smyth, chief executive officer of Trim, another company offering a payment management app. "If you're paying for anything and it's not a subscription today, it will be tomorrow." —*Anousha Sakoui*

THE BOTTOM LINE Companies are increasingly building their businesses around monthly subscription fees—inspiring other businesses to help overwhelmed consumers manage them.


YOUR CLIENTS SHOULD BE CHARTING AN ADVENTURE
WITHOUT FEAR OF DROWNING IN HEALTHCARE COSTS
WITH WEALTH + HEALTH,℠ THEY CAN WRITE THEIR NEXT CHAPTER
The average couple is expected to need more than $360K to cover healthcare costs in retirement. But with a strategy that encourages them to live well now to hopefully minimize healthcare costs later, your clients can be better prepared for a long life on their terms. Help your clients write their next chapter at transamerica.com/nextchapter
"2018 Retirement Healthcare Costs Data Report," HealthView Services, 2018
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Year o Apoca

● The ripple effects of China's epidemic of African swine fever could reach as far as Brazil

This is the Year of the Pig, according to the Chinese zodiac, but it's shaping up to be a disaster for its namesake. What started with a few dozen dead hogs in northeastern China has turned into a porcine epidemic sending shock waves through the global food chain.

Last August a farm on the outskirts of Shenyang with fewer than 400 of the animals was found to harbor African swine fever, the first reported occurrence of the contagious viral disease in China, which is home to half the world's pigs. Forty-seven died, triggering emergency measures including mass culling and a blockade to stop the transportation of livestock. Within a couple of days, a government notice proclaimed the outbreak "effectively controlled."

But it wasn't. The disease had already literally gone viral, dispersed across hundreds of miles by sickened pigs, contaminated animal feed, and even dust on truck tires and clothing. Nine months later, the contagion has spread nationwide, crossed borders to Cambodia, Mongolia, and Vietnam, and pushed up prices for pork products from the U.S. to Spain. There's a silver lining for exporters of alternatives to pork, such as beef and chicken, with meatpackers in Australia and Brazil reporting higher sales.

Chinese officials estimate 1 million hogs have been culled from the nation's 440 million-strong swine herd in 2019. In April the U.S. Department of Agriculture forecast a decline in production of 134 million head in China by yearend—equivalent to the annual output of pigs in the U.S.—and the largest slump since the department began counting the country's pigs in the mid-1970s. "In my 39 years in the business, I've never seen an event that has the potential to change global protein production and consumption patterns as African swine fever does," Noel White, Tyson Foods Inc.'s president and chief executive officer, told analysts on a May 6 earnings call.

The strain of African swine fever spreading in Asia is undeniably nasty, killing virtually every pig it infects by a hemorrhagic illness reminiscent of Ebola in humans. There aren't any vaccines or

Edited by Cristina Lindblad

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alypse

effective drug treatments, so culling infected animals and imposing strict containment measures are the only means of halting its spread. Unlike some other swine viruses, such as the H1N1 influenza pandemic a decade ago, this one isn't known to harm humans.

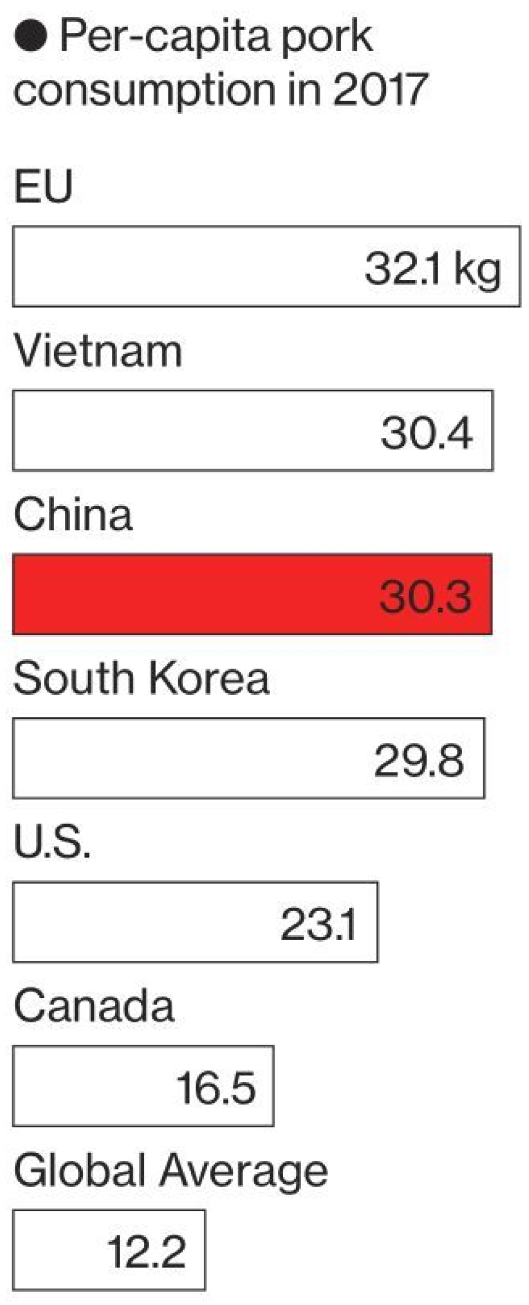
The disease is endemic in sub-Saharan Africa, and it's also cropped up in parts of Brazil, the Caribbean, and Europe. No country faces a bigger threat than China, with a $128 billion pork industry and the world's third-highest per capita consumption. "China will clearly need to import substantial amounts of pork and likely other meat and poultry to satisfy demand," Juan Luciano, chief executive officer of ArcherDaniels-Midland Co., told analysts during an April 26 conference call. The company, a leading supplier of pig feed, is forecasting China's hog herd may shrink as much as 30 percent.

Wholesale pork prices are already 20 percent higher in China than a year ago and have risen in the U.S. and European Union, where meatpackers are sending more of their product to China. The price of bacon in Spain jumped about 20 percent in March, while that of pork shoulders in Germany climbed 17 percent, according to Interporc, a Madrid-based industry group. "This is an unprecedented situation," says Arlan Suderman, chief economist for INTL FCStone Inc., who's been tracking commodity markets for almost four decades. "This will impact food prices globally."

The effects have spread to the markets for other meats. Australia's beef exports to China surged 67 percent in the first quarter. In Brazil, shares in meatpackers such as JBS SA and Minerva SA have soared amid optimism of stronger sales to China.

Increased Chinese meat imports will result in higher food costs that affect economies around the globe. The extent of those ripple effects depends on how quickly the epidemic can be stopped. Chinese data show a slowdown in the number of pigs affected since late 2018, supporting the government's assessment that the disease is under control. However, analysts from Morgan Stanley to Citigroup to the USDA aren't convinced.

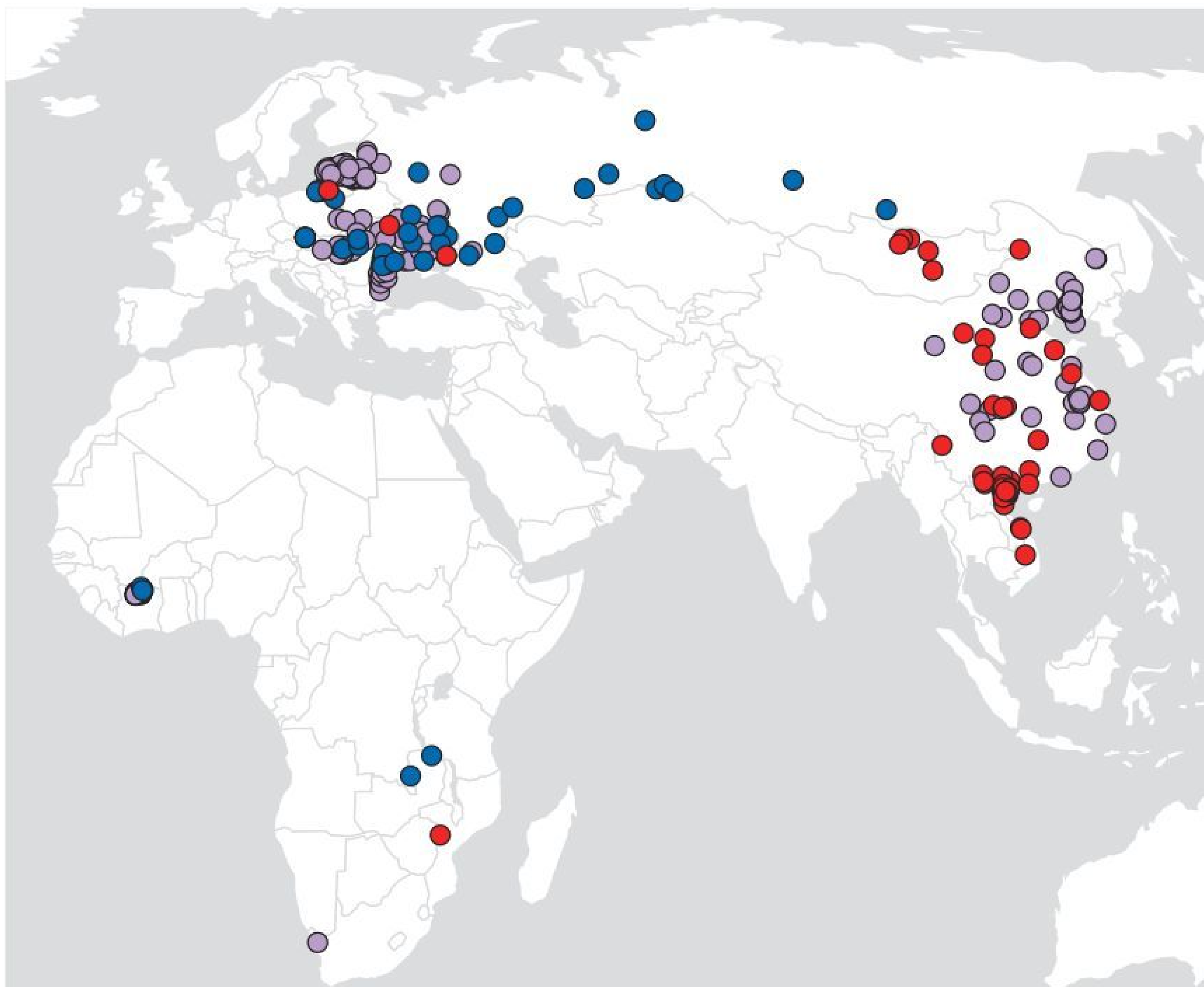
Because pork is the largest component of China's consumer price basket and influences prices for other meat, a 35 percent increase in pork prices this year would push inflation to 5.2 percent by yearend, according to Citigroup, more than double 2018's rate. The Chinese government will likely treat any pork-related inflation as an extraordinary ▶



DORLING KINDERSLEY/ALAMY. DATA: ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT

Swine fever outbreaks

● 2017 ● 2018 ● 2019



event separate from general cost increases, says Liu Ligang, chief China economist at Citigroup. Still, if inflation rises beyond the central bank's ceiling of 3 percent, it could constrain the People's Bank of China from taking aggressive measures to boost the economy. "This is a supply shock, not a demand shock, and as a result this could be transitory," Liu says. "But this could be a prolonged supply shock given the severity of the disease."

For Chinese President Xi Jinping, the epidemic may add to pressures to finalize trade negotiations with U.S. President Trump, so as to ease the importation of much-needed pork, poultry, and beef supplies. With the distractions of a tariff war out of the way, Chinese policymakers would be able to focus more of their energies on quelling outbreaks, says Suderman of INTL FCStone.

The contagion is also highlighting the urgent need for government investment in outbreak preparedness, according to Amanda Glassman, chief operating officer of the Center for Global Development, a think tank based in Washington, D.C. African swine fever in China shows that "animal and human disease surveillance systems are not working as well as they should," she says. "This should concern everyone, given that the potential economic impact of large-scale outbreaks is huge." *—Dan Murtaugh and Enda Curran*

THE BOTTOM LINE African swine fever could wipe out as much as one-third of China's hog production and complicate central bank efforts to stimulate the economy.

"This could be a prolonged supply shock given the severity of the disease"

Trump's Dangerous Trust in Tariffs

● For an administration that believes trade barriers boost growth, dialing up duties makes sense

It's an almost universal view among economists, derived from history, that tariffs and trade wars are bad for economies. Protect an industry, say, steel, from foreign competition, and you raise costs for a far greater number of domestic companies that depend on steel as an input. You also invite retaliation that hurts other parts of your economy–say, farmers. In short: Narrow short-term benefits lead to bigger and broader long-term costs.

But what if the leader of the world's largest economy doesn't believe that to be true? As he dialed up pressure on China over the past year and again in recent days, President Trump has increasingly seized on the idea that his trade wars are boosting U.S. growth and therefore strengthening his hand, according to people familiar with the White House's internal deliberations, who asked not to be named because of the confidential nature of the talks.

That may be as ominous a development for the global economy as the 15 percentage point increase in import duties on Chinese goods that the administration has promised to unleash on May 10 to punish Beijing for rescinding concessions made earlier in trade negotiations. Trump's alternative theory of economics hinges on two pieces of recent data. A better-than-expected first reading of the U.S.'s gross domestic product in the first quarter of this year had the economy growing at an annual 3.2 percent, in part because of a full percentage point boost from net exports. And employment data showing the U.S. added a net 263,000 jobs in April has only added to the case made by the president's again-ascendant trade hawks.

In a May 5 tweet raising the ante, Trump declared his tariffs "are partially responsible for our great economic results." Treasury Secretary Steven Mnuchin echoed the view when speaking with reporters the next day, saying, "There's no question that some of the trade policies helped in the GDP number." There's a grain of truth in these statements. Imports slowed in the first two months of this year, which helped boost the growth rate thanks to the way GDP is calculated.

Trump's threat of a further hike in tariffs effective on Jan. 1 caused companies in the U.S. to advance purchases of goods from China on the target list in the final three months of 2018. This "supply chain padding" helped lead to both a buildup in inventory stockpiles and a narrowing of the trade gap, according to Carl Riccadonna, chief U.S. economist for Bloomberg Economics. The effect was to make "growth appear stronger than meets the eye," he says, noting that data on final sales, which excludes trade and inventories, had the economy growing at a rate of just 1.4 percent.

The headline jobs number for April, which put unemployment at a half-century low of 3.6 percent, also hid weaknesses. Manufacturing employment grew by just 4,000 jobs, with nonsupervisory production jobs—the factory line jobs Trump has promised to bring home—declining by 4,000. Meanwhile, there are signs that employment gains in industries protected by Trump's tariffs are petering out. The primary metals sector, which includes steel and aluminum producers, lost 2,000 jobs in April.

To be sure, the U.S. economy is looking healthier than many others. The reality is also that the sort of pain economists talk about when they discuss trade wars can be hard to quantify. It's often said that the political problem faced by proponents of free trade is that globalization's broader benefits, such as lower consumer prices, are diffuse, while the pain, in the form of closed factories, is more localized and easier to identify. With protectionism the opposite holds true: The pain is harder to identify than the benefits.

The direct impact of tariffs could be consequential. Bloomberg's own economists calculate that a 25 percent tariff on all imports from China would shave 1.5 percentage points off U.S. growth—a cut that would halve the rate seen in the first quarter. Trump's backers argue the sacrifice is worth it in the context of what they see as an existential innovation war with an increasingly muscular China.

Robert Lighthizer, the U.S. trade representative leading the negotiations with Beijing, argues that the Chinese industrial subsidies and intellectual property theft that the Trump administration is seeking to address have had a big negative impact on the U.S. economy for years and that ending them will be good for American workers and businesses. "These are not benign actions that we are objecting to," Lighthizer told reporters on May 6.

Adam Posen, who leads the pro-trade Peterson Institute for International Economics, says for too long investors, businesses, and even some of Trump's own advisers have believed that the president might be talked into a change of heart on trade by either wild swings in markets such as those triggered by his most recent tariff salvo or the pain in farm states, most of which he won in 2016. "The upshot of all this is he's not going to be deterred by the market in the end. He is not going to be deterred by whether this polls well in Iowa," Posen says. "This is what he genuinely believes—that a mercantilist protectionist trade policy is good for the U.S."
—Shawn Donnan, Jennifer Jacobs, and Jenny Leonard

● Lighthizer

THE BOTTOM LINE Recent data appear to support Trump's belief that his protectionist policies are lifting growth and employment. But once you dig into the numbers, it's tough to see how.

Harvesting Anger in Putin's Heartland

● The Russian president's opponents are seeking to capitalize on discontent over broken promises to improve health services

Passengers on the sleek German-made trains racing through the Russian countryside between Moscow and St. Petersburg at more than 140 miles per hour can taste the high life. The dining car's menu lists a half-bottle of French Champagne and a scoop of black caviar for 10,600 rubles ($163).

They probably don't take much notice of Okulovka, just over halfway into the four-hour journey. It's a town in Novgorod, a region where more than a third of the people don't have running water. Glaring economic disparities are hardly new in Russia. But pockets of disquiet rarely seen in the Vladimir Putin era are now putting Okulovka and similarly depressed towns in the Russian hinterland on the political radar.

Doctors and other hospital staff in the region have been leading protests brought on by the president's unfulfilled pledge of better pay for healthcare personnel and by service cuts at clinics and hospitals. They're being supported by a fledgling trade union backed by a leading Kremlin critic.

Putin's approval rating stands at above 60 percent nationwide, and to many in Novgorod he still can do no wrong. Concern, though, that traditionally loyal sections of the population are turning against the authorities has raised an alarm in the

LIGHTHIZER: COURTESY USTR. DATA: WORLD ORGANIZATION FOR ANIMAL HEALTH, AS OF APRIL 4, 2019

▲ Moshenskoye in the Novgorod region

◀ government, two people close to the presidential administration say.

Protests used to be confined to the big cities. Now they're in Putin's heartland, often barren places where promises of a better life ring increasingly hollow. Federal statistics released in March showed that more than a third of Russians can't afford to buy two pairs of shoes a year.

"We have everything in Russia—natural wealth, an educated population," says Dmitry Sokolov, a 48-year-old activist who's playing a key role in mobilizing disgruntled medical staff in the Novgorod region. "The problem is with our leadership—it's rotten. And people are getting fed up."

In Okulovka (population 10,000) about 500 people turned out for a March 16 rally denouncing the authorities' policy of "optimizing" medical services, which is prompting cutbacks and suppressing wages for doctors and nurses. On a recent visit, pay slips from an ambulance worker and nurse showed monthly income of as low as 10,000 rubles. While the protest in freezing temperatures lasted two hours, a concert held at the same time in the town's House of Culture to commemorate the anniversary of the annexation of Ukraine's Crimea peninsula drew a mere handful.

Yury Korovin, 60, is the only remaining surgeon at Okulovka hospital, which until last year had four. Two left in March for better-paying jobs in the neighboring Leningrad region. "I come in and ask the nurse, 'What medicines have we got?' She says, 'Nothing!'" Korovin says on April 5 in a hotel room in Okulovka where activists gather. "Patients have to bring their own sheets."

The Okulovka demonstration wasn't an isolated event. In January, 200 people turned out to denounce cuts to health services in Shimsk, a town of 3,500 also in the Novgorod region. In Saratov, a city in southwestern Russia, residents held a rally in February against the closing of a children's hospital.

Sokolov, who earns his living selling heating stoves, says his communications with other activists have been monitored by the authorities. On a visit to a clinic in Moshenskoye, a small locality about 55 miles east of Okulovka, a security official with the district health authority was waiting to prevent him from entering.

The clinic used to offer round-the-clock care but since March 1 is open only from 8:30 a.m. to 5 p.m. There's just one ambulance serving an area with 6,500 inhabitants. In case of an off-hours emergency, residents must now travel to Borovichi, the regional hub about 30 miles away, says Elena Serebryakova, an electricity company employee who joined Sokolov in the effort to enlist Moshenskoye's medical workers into the "Alliance of Doctors." There's

ANDREY RUDAKOV/BLOOMBERG. DATA: NATIONAL BUREAU OF ECONOMIC RESEARCH only one bus a day between the two locations.

The losers are people like Valentin Fetodov, 71, who suffers from a rare skin disease. He must now spend 1,600 rubles of his 12,000-ruble monthly pension on taxi fares every time he has to visit a specialist in Veliky Novgorod, the region's capital. Pulling up his trouser leg to show red and crusty skin, he says he also has to pay for his own medicine. Asked if he thought the protests could change things, he says: "There's no point. I don't believe in anything anymore."

Russia is a country with 100 billionaires, and yet 13 percent of the population lives below the poverty line according to national standards, or twice that based on international norms. In campaigning for another six-year presidential term last year, Putin pledged to halve the poverty rate by 2024. But the Kremlin's focus now is on salting away billions of dollars in oil profits for fear of new Western sanctions, so little government spending is making its way to ordinary citizens. It doesn't help that annual gross domestic product growth has barely topped 2 percent since 2013.

"For 15 years people's incomes were rising, and now for five years things have been going in the opposite direction," says Denis Volkov, an analyst at the independent Levada polling agency in Moscow. "Their life is getting worse, and they have no hope for the future. Are we going to end up like Venezuela? No. But more and more people are complaining."

According to the Public Opinion Foundation, voting intentions for Putin fell to 45 percent by mid-2018, from 74 percent in 2015, and have remained at broadly the same level since. Novgorod's governor, Andrei Nikitin, is part of a new crop of loyal Putin technocrats that the Kremlin has dispatched to the regions to improve public services and blunt discontent. In a May 7 interview, Nikitin acknowledged that the need to bring medical budgets into balance has forced some unpopular measures. "But the final goal is to make medicine as accessible as possible," he said.

Russia allocates about 3 percent of GDP for health, a third of the level of Western European nations, and spending has been falling in inflation-adjusted terms over the last six years. In March, though, Nikitin announced 2 billion rubles of government funding to upgrade a hospital in Valdai, an area in Novgorod where Putin and his associates have properties.

Meanwhile in Moshenskoye, pensioner Galina Emilianova says the quality of health care has steadily worsened. Her 73-year-old sister-in-law was operated on last September for appendicitis, but within a few days surgeons had to cut her open again, and recently for the third time.

Emilianova, 65, lives with her ailing husband in a municipal apartment with no hot water, gas, or sewage connection. To get access to the mains for cold water a few years ago, she had to take out a 30,000-ruble loan, equivalent to two months' pension. "The authorities don't care," she says. "They can go to elite hospitals. They have money and cars. They can go anywhere they want. Where can we ordinary people go?" Still, Emilianova doesn't blame Putin for her predicament. "I voted for him. He just has bad people working for him. He can't keep tabs on all of them."

Opposition leader Alexey Navalny is hoping to build political capital by highlighting Putin's failure to fully implement 2012 presidential decrees that raised salaries of doctors, medical staff, and other professions. He's teamed up with the Alliance of Doctors trade union, led by Anastasia Vasilieva, a Moscow ophthalmologist, which since last August has set up more than 20 regional branches. Some 10,000 people across Russia have registered online with Navalny's Anti-Corruption Fund to press their case with the authorities for higher pay, most of them anonymously.

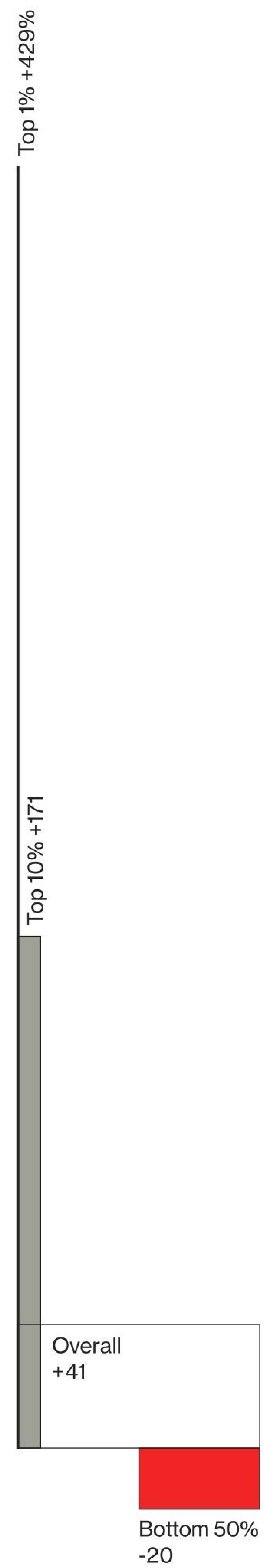
Fear is the main inhibitor, according to Vasilieva. At a visit by Sokolov to the Okulovka hospital, security arrived within 15 minutes and called the police. "The authorities are trying to stamp this out," Vasilieva says. "Medical workers are afraid they'll fire them and take away their last means of subsistence."

But more people are overcoming their apprehension. In December, when the hospital in Okulovka announced it was eliminating one of the three ambulance crews, Sokolov says he collected 400 signatures for a petition opposing the decision in less than a day. Medical staff who belong to the union have been protesting on and off by working to rule, an alternative to strike action involving following contracts and hours to the letter.

Oleg Andrianov, a 68-year-old former policeman and firefighter who's been writing protest letters over health-care cuts, supports the action. Underneath a political poster of a smiling young family dressed in traditional peasant costumes in a wheat field are the words: "United Russia Together With the President," referring to the ruling party. "United Russia Together With the President—against the people," Andrianov says, pointing to it. "That's how it really is." —*Henry Meyer and Ilya Arkhipov, with Gregory White*

THE BOTTOM LINE Protests over service cuts at clinics and hospitals and low pay for health workers are erupting in parts of Russia that were once Putin strongholds.

● Real income growth for segments of the Russian population, from 1989 to 2016



POLITICS

Keep Your Political Enemies Close

Early polls show Argentina's president and his predecessor each have a chance of winning this year's election—but only if they face each other

Edited by
Jillian Goodman and
Janet Paskin

Investors' worst fears for Argentina were confirmed in late April, when a poll from well-known consulting firm Isonomia showed President Mauricio Macri, the great hope of investors when he was elected in 2015, losing narrowly in a runoff election to populist former President Cristina Fernández de Kirchner. The price of Argentine bonds plunged, and the country's chance of default in the next five years rose to 60 percent, from 49 percent a week earlier.

Kirchner and Macri are bitter rivals. She refused to attend his swearing-in ceremony after he defeated her party's candidate in the 2015 presidential election. He says she ruined the country's economy and fostered a culture of corruption. Much of Macri's time in office has been spent trying to rebuild investor confidence after Kirchner refused to negotiate defaulted debt with holdouts. Even so, last year he was forced to go to the International Monetary Fund for a record $56 billion bailout after a combination of high inflation and rising U.S. interest rates soured investors on the Argentine peso, sending the currency into free fall.

Yet with presidential elections coming this year, Macri and Kirchner also need each other. Various polls show them finishing first or second in the initial round of voting, with Roberto Lavagna, a former economic minister who presided over the boom of the mid-2000s, coming in third. Polls also show Macri and Kirchner losing to Lavagna by a wide margin in a two-person runoff. So it appears that the only way one of them can win the presidency is to run against each other.

"In almost any other circumstance, the president of Argentina would face guaranteed defeat," says Benjamin Gedan, director of the Argentina Project at the Wilson Center in Washington. "In almost any other circumstance, the former president would not have a prayer to return to office. A significant portion of voters for either of those two would be holding their nose while they cast their ballot."

Macri and Kirchner represent dramatically different approaches to running the nation's economy. Public spending soared under Kirchner's administration. She fixed the exchange rate, raised tariffs, and made it illegal for Argentines to exchange pesos for dollars at banks. The IMF censured Kirchner's government in 2013 for publishing inaccurate inflation and growth data.

Macri was elected in 2015 on pledges to restrain inflation, cut labor costs, reduce social security spending, and end protectionism. He made changes swiftly, lifting currency controls and restoring relations with Europe and the U.S. But by 2018, lingering high deficits and national debt, combined with an emerging-markets sell-off, pushed the currency over a cliff. The IMF bailout forced Macri to speed up deeply unpopular spending cuts, which sent his approval ratings to new lows. If current trends continue, Argentina will have been in recession for three of his four years in office.

"You have the prospect of a free-spending populist returning to Argentina, replacing a pro-market administration that's undertaken an unprecedented degree of austerity to right Argentina's ship," Gedan says. "In any sense of policy and personality, they're polar opposites."

Just a year and a half ago, Kirchner didn't look like a presidential contender. She ran for the Senate while facing multiple corruption probes, finishing a humiliating second as Macri's party scored sweeping victories. The result still won her a seat in the Senate, which also gave her legal immunity. Last year a newspaper investigation, which led to dozens of arrests, alleged that bribes were delivered to her homes in Buenos Aires while she was in office. Kirchner denies any wrongdoing. "It was quite unthinkable and improbable to see the ex-president in such a competitive position today," says Lucas Romero, director of Argentine polling firm Synopsis.

Despite the alleged corruption dogging Kirchner and the economic plight weighing on Macri, each has an approval rating of about 30 percent. But it's early days. The first round of voting isn't until Oct. 27, and a runoff wouldn't be until Nov. 24. While Macri has confirmed he'll run, he hasn't started campaigning. Kirchner, who's yet to enter the race formally, was to make her first public appearance of the year on May 9 for the release of her memoir–and was expected to declare her candidacy–almost a year to the day after Macri sought the IMF lifeline.

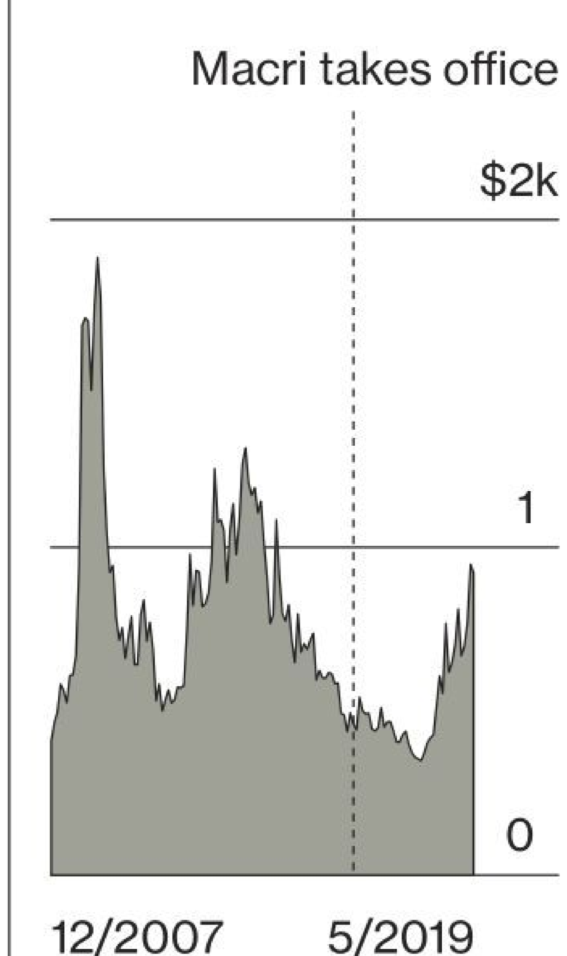
The bribery investigation is just one of many factors that could influence voters between now and October. Macri loyalists fear a return to populism greatly increases chances of default and the unwinding of Macri's pro-market stance and U.S.-friendly foreign policy. Those on Kirchner's side want to put an end to austerity policies that have failed to stabilize the economy. If she loses, chances rise that she could face jail time.

To win, Macri needs the economy to recover and inflation to cool. He also needs calm markets–another global sell-off that thwarts the peso would doom his reelection bid. Says Romero: "All the anger that a major part of the electorate had with the ex-president once she left office has smoothed over a little by the anger that's grown with this government." *—Patrick Gillespie*

THE BOTTOM LINE Austerity has so far failed to stabilize Argentina's economy, but investors say a return to the free-spending practices of previous administrations is unacceptable.

"In almost any other circumstance, the president of Argentina would face guaranteed defeat"

● Difference in yield on Argentine and U.S. government bonds



FROM LEFT: AP PHOTO. GETTY IMAGES. DATA: JP MORGAN

Nashville Wants to Be the Next Austin, But Tennessee Won't Make It Easy

● Business interests in the state capital have held off a slew of anti-LGBT bills

Three hours into an otherwise sleepy meeting of Tennessee's Senate Judiciary Committee in late April, state Senator Paul Rose made his case for a bill that would allow faith-based adoption agencies to reject same-sex couples as potential parents.

"I realize there will be consequences for voting 'yes,'" said Rose, who represents a suburban district northeast of Memphis. "But I also encourage you to think about the consequences of voting against the bill as you face your God."

His argument drew audible gasps from the gallery, but the legislation easily passed out of committee. Afterward a woman approached Rose to shake his hand and thank him for his service. A week later the bill's sponsor punted the vote until the next legislative session, bowing to pressure from corporations that had lined up in opposition.

The increasingly powerful business community centered in Nashville views that bill and a handful of others like it as a threat to the city's relatively new status as the state's economic hot spot.

Led by the Nashville Area Chamber of Commerce, the city has sought to position itself as more affordable but no less hip than Austin, Denver, or Portland, Ore. The campaign is working. Two years ago, Nashville passed Memphis to become the state's biggest city. The population has grown more than 10 percent, to about 691,000, since 2010; in the same period, the city's gross domestic product rose 64 percent, to $133 billion. Residents are also better off, with average household income just under $56,000, up almost 40 percent from a decade ago.

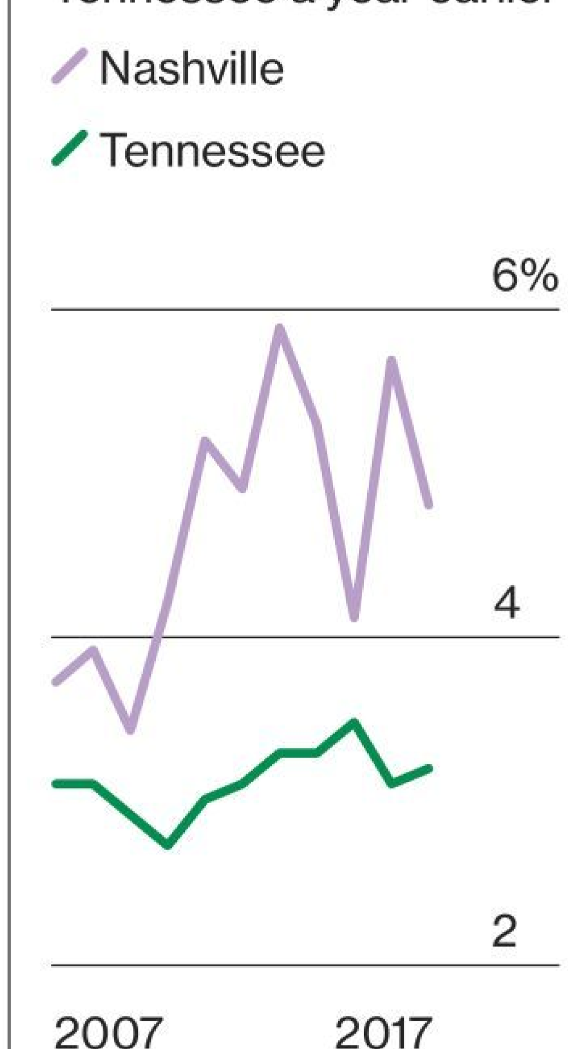
Big, coastal corporations have noticed. A year ago, AllianceBernstein Holding LP announced plans to relocate its headquarters and 1,000 employees to a new tower in Nashville by 2020. Six months later, Amazon.com Inc. chose the city for an operations center, a development that will require two new buildings and create 5,000 jobs. "Our culture was a big feature of what we proposed," says Ralph Schultz, chief executive officer of the chamber of commerce. "We're open, we're welcoming, we're collaborative."

The state's newly elected legislators have a different vision for Tennessee, one that's far more conservative than metro Nashville. In addition to the adoption bill, state legislators have proposed measures to defend public schools that want to restrict transgender students' access to bathrooms and ban cities from favoring companies that promote diversity and protect LGBT workers when they award contracts. Both passed the Tennessee House of Representatives but were delayed until next year, again the result of corporate objections—and what Joe Woolley, CEO of the Nashville LGBT Chamber, described as impassioned behind-the-scenes lobbying. Republicans did score one victory: A bill to amend the law on indecent exposure to include incidents in restrooms and locker rooms was signed into law on May 2.

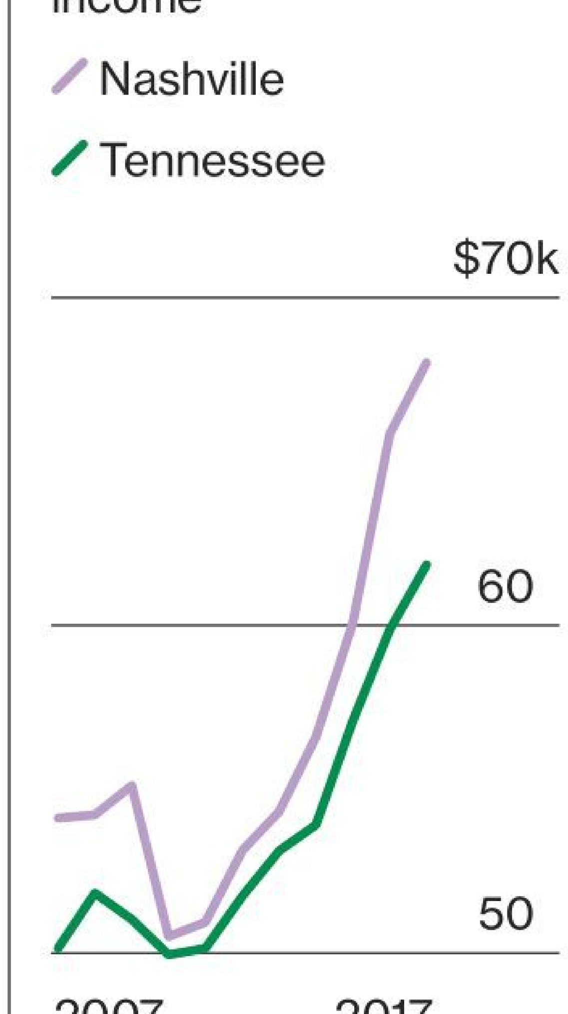
Lots of blue cities have flourished in deeply conservative states, with Austin first and foremost. But Nashville's boom has come more recently, running parallel to a movement among large U.S. companies to champion diversity and inclusion. While Tennessee has never been liberal, Nashville boosters are concerned that passing laws widely seen as anti-LGBT could slow the city's momentum. "You could see businesses leave or decide not to invest further, and businesses that are considering a move to Tennessee making the decision to go elsewhere," says Jeff Yarbro, a Democratic state senator who represents Nashville and opposes the bills. "I would like for us to signal that we're a more welcoming state."

Nashville's current and future corporate citizens argue that the laws would be a drag on business. Amazon, AllianceBernstein, Bridgestone Americas, Dell, Salesforce.com, and Postmates signed an open letter urging legislators to vote down the proposals because "legislation that explicitly or implicitly allows discrimination against LGBT people and their families creates unnecessary liability for talent recruitment and retention, tourism, and corporate investment to the state."

● Share of residents who lived outside Tennessee a year earlier



● Median household income



Meanwhile, Taylor Swift denounced the "slate of hate" in the state legislature. In April, as Nashville played host to its first National Football League draft, the Tennessee Titans NFL team issued a statement cautioning state lawmakers that the legislation would "impact our ability to secure events like the 2019 NFL Draft, major conventions, major athletic contests, and other events that benefit our local and state economy."

In trying to fend off the legislation, business leaders have repeatedly invoked North Carolina, which suffered a broad-based boycott after passing a 2016 law to invalidate protections for LGBT workers in Charlotte and restrict bathroom use by transgender people. The NCAA said it would avoid the basketball-crazy state. PayPal Holdings Inc. scrapped plans to build an operations center in Charlotte, and German lender Deutsche Bank AG froze a $9 million plan to expand a software center employing hundreds of people in Cary, outside Raleigh. The legislation has since been revoked.

The co-sponsors of the Tennessee bills declined repeated requests for comment. It's possible the boom in Nashville has created a sense of economic invincibility among the conservatives pushing the bills, says Chris Carpenter, who studies LGBT economic issues at Vanderbilt University in Nashville. "There are cranes on every street corner," he says. "Nashville is the 'it' city. People don't think about it ending or being slowed down by any kind of public policy."

Carpenter says they may be right: There's a lot to like about Nashville. Taxes are low. Housing is affordable. The city buzzes with the energy of its historic music scene and throngs of college students from a handful of universities. This wouldn't be the first time companies have looked past conservative legislation in the state, including a 2016 law that allows therapists to refuse to treat patients based on religious objections.

Still, Butch Spyridon, president and CEO of the Nashville Convention & Visitors Corp., says he's worried the anti-LGBT legislation could also discourage tourism, which contributed $6 billion to the economy last year. British Airways' new nonstop London-to-Nashville flight is the carrier's fastest-growing route in a decade. The state's economic players say they'll continue to do what they can. "We may be the hottest destination in the country," Spyridon says. "Everybody's enjoying the benefits of it. Why would you want to mess with that golden goose?" —*Erik Larson*

THE BOTTOM LINE Nashville has benefited from the attentions of major corporations, which have brought people and cash into the city. Civic leaders don't want Tennessee to stop that momentum.

ILLUSTRATION BY TOMI UM. DATA: IPUMS USA

Elections Turkey

Late on May 6, Turkey's election board invalidated the results of a March mayoral election that cost President Recep Tayyip Erdogan's AK Party control of Istanbul. The decision sent stocks tumbling, and the opposition party called the move a coup.

What's the back story?

Erdogan has been consolidating power for the better part of the past decade. In 2017 a constitutional referendum granted him authority to appoint ministers and judges and put much of the country's economic policy at his discretion. Last year, the day after he was sworn in to a second term, he named his son-in-law finance minister.

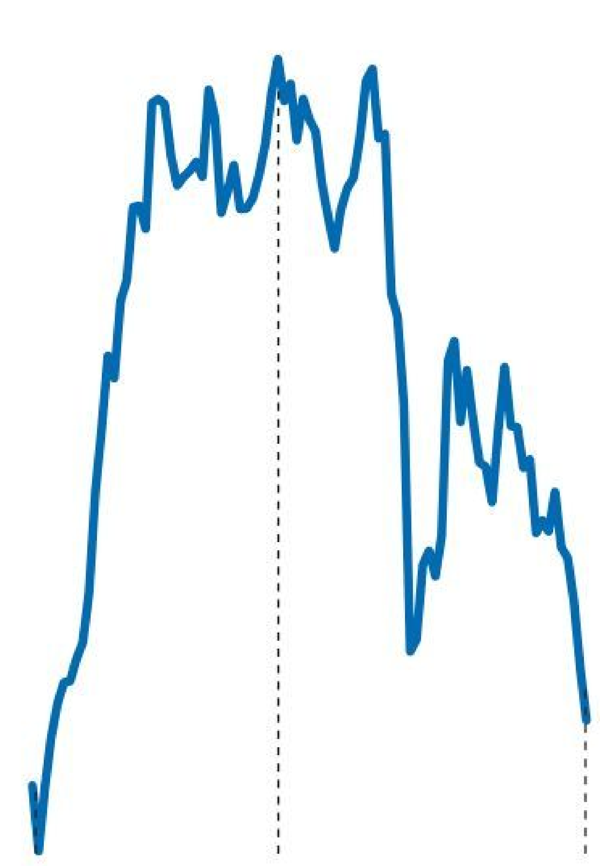
Why is Istanbul so important?

The city is the country's largest metropolis and its commercial center—more important, it's where Erdogan got his political start. AKP has built an important patronage network there, doling out contracts for infrastructure projects to Erdogan supporters. The president told lawmakers in 2016: "If we lose Istanbul, we lose Turkey."

What happens next?

New elections have been scheduled for June 23. Some in the main opposition party, CHP, which won narrowly in the original vote, called for a boycott, saying Erdogan's party can't be trusted to run a free and fair ballot. But CHP's leadership says it will campaign again for the post, and smaller parties are aligning with them.

Borsa Istanbul 100 Index

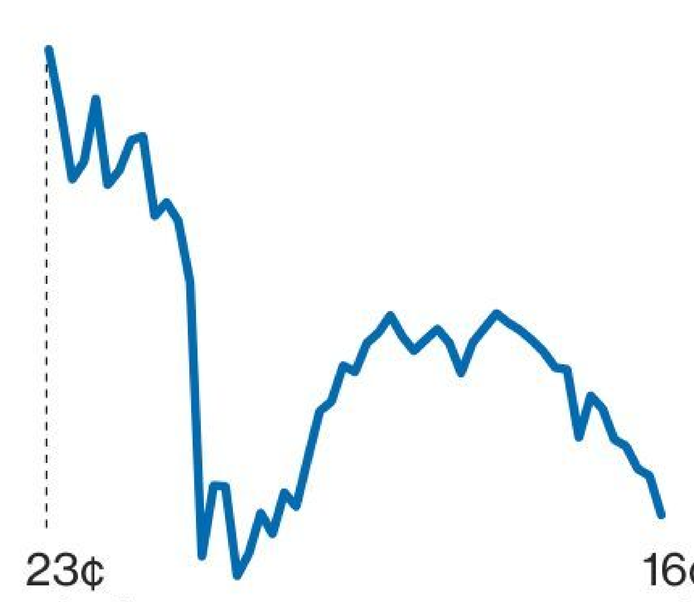


Six weeks of political chaos present a major threat to Turkey's economy, which slipped into its first recession in a decade just before the March vote. The lira hit a seven-month low after the election board announced its decision, while Turkish stocks erased their 2019 gains at the next morning's market open. The central bank is likely to face pressure to stabilize the currency by raising interest rates—a move sure to anger Erdogan, who's consistently called for keeping borrowing costs low.

How bad could things get?

Pretty bad. The lira has experienced a series of shocks in the past year and may face more if Turkey accepts a $2 billion delivery of Russian missiles. That could provoke U.S. sanctions, on top of steel tariffs put in place last year.

Price of one lira



DATA: COMPILED BY BLOOMBERG

They're Coming

▲ Gore cornea lens held over a Gore-Tex jacket

For Your Eyeballs

W.L. Gore, one of the world's most innovative companies, is hunting for new product lines—and reinventing itself in the process

By Drake Bennett
Photographs by Jeremy Liebman

Scrubbed in and gowned, Esen Akpek perches on a stool over a surgical table, her blue-gloved hands miming the procedure she's about to perform. In front of her, fixed in the beam of her operating scope, the eye of an anesthetized female rabbit bulges through a slit in a surgical drape. A video screen mounted near Akpek's head shows the feed from the scope: the albino eye, lids pried open, glares out like the Eye of Sauron.

Akpek is a professor of ophthalmology at the Johns Hopkins University School of Medicine in Baltimore. One of her specialties is corneal replacement, in which she substitutes the thin, transparent layer at the front of the eye with a donor or artificial one. Compared with the retina's specialized neural network or the iris's quicksilver diaphragm, the cornea is a simple piece of biological equipment. Its clarity allows light to enter the eye, and its curvature helps focus that light onto the retina, where it becomes the images we see. But the cornea's simplicity belies its importance. Damage to it, through disease or trauma, renders millions of people sightless—a 2017 study in the *Lancet Global Health* ranked this the fifth-leading cause of blindness. Today's operation is a test of a promising artificial cornea.

The procedure begins with Akpek suturing a thin metal ring to the veined, white sclera to hold the eye in place. With a custom stamp, she inks on a gunsightlike grid to guide the incision. Then, with a cylindrical blade and scalpels, she begins to excise the cornea. Occasionally she narrates the procedure. "I like this one," she says of a concave cutting tool—a "spoon thing," she calls it, in her Turkish-accented English. Onscreen her movements are decisive and quick; observed directly they're mere twitches, the gestures of a ringmaster directing a flea circus.

It's a routine that normally doesn't have much of an audience, but Akpek's operating room is bustling. A chemical engineer named Anuraag Singh takes notes, asks questions, and suggests tweaks. A suspendered physicist named Thomas Schmiedel monitors an optical coherence tomography display showing a cross section of the cornea. From time to time Akpek will ask him to help orient her; at some moments he'll chime in unasked. Two other engineers mostly observe, speaking quietly.

All four men work for W.L. Gore & Associates Inc., the manufacturer best known for Gore-Tex, the waterproof membrane used in high-end outerwear. The company also makes air filters, headlight vents, heart stents, guitar strings, and more. Its membranes help batteries power electric cars. Its specially coated cables connect the electronics on the International Space Station. And it made the experimental implant Akpek is now folding, tacolike, with her tweezers and fitting into the rabbit's eye. If all goes well, the company will soon be making lots more of these. This is Gore's first foray into the eye, and success would provide a new market, a new mission, and, hopefully, new momentum.

In business school lecture halls and the "Management & Leadership" aisles of airport bookstores, Gore has long been lauded less for what it makes than for *how* it makes. Bestselling authors such as Jim Collins and Gary Hamel hail the privately held manufacturer as a paragon of organizational excellence—a workers' democracy where engineers unencumbered by shortsighted investors and middle managers perform feats of materials wizardry.

Yet Gore has lately entered corporate middle age, and it's proving vulnerable to the challenges presented by that stage of life. In the past decade, as the markets for its most successful products have matured, the company has reached "a stall point," as Jack Kramer, then its chief technology officer, put it in an interview last June. (He's since retired.) "We need a few big new things, a few big new spaces." To find these, one of the business world's favorite case studies is exploring what the business world has to teach it in turn.

In the late 1950s, Wilbert Lee Gore, a DuPont research chemist, became obsessed with a polymer called polytetrafluoroethylene. PTFE was by no means obscure: Discovered decades before at DuPont, it was commercialized in 1945 under the brand name Teflon. Renowned for its extraordinary slipperiness, it's also highly flexible, immune to ultraviolet radiation and extreme temperatures, minimally flammable, and chemically inert.

The carbon-fluorine bond is one of the strongest known to chemistry; in PTFE, a phalanx of fluorine atoms walls off a carbon spine. This structure prevents the polymer from reacting with other materials, whether it's an egg crisping in a nonstick pan or corrosive gas running through lined valves and pipes in the complex where the Manhattan Project enriched its uranium. "In a sense, it is the ultimate all-American material," Gore once said.

DuPont, however, was only interested in manufacturing the compound, turning translucent crystals of raw fluorite into resins that other companies could process into miracle coatings. In 1958, Gore quit his job and became a DuPont customer himself. He and his wife, Genevieve, headquartered their new company in the basement of their home in the Delaware farm country near Wilmington. W.L. Gore's earliest products were PTFE-insulated wires and cables, some of which found their way aboard the first communications satellites and, in 1969, went to the moon with Neil Armstrong and Buzz Aldrin.

In October of that year, the Gore family made its own giant leap. Bill and Vieve's eldest son, Bob, a chemical engineer and the company's head of research, set out to see

This is Gore's first foray into the eye, and success would provide a new market, a new mission, and, hopefully, new momentum

whether PTFE could be stretched to cover more surface area, making it more cost-effective. In a lab at the company's plant in Newark, Del., he heated rods of the cloudy polymer and pulled carefully at each end. Time after time, the fluorocarbon barely stretched before starting to break. Finally, near the end of another fruitless day, he took a sample from the oven and winged his arms back in a frustrated jerk.

To his shock, the material didn't snap. It stretched, and in a way that seemed to defy physics. Hoping for a 50 percent extension, he'd achieved something closer to 1,000 percent. And the PTFE didn't stretch the way stretchy things normally do, thinning out as it elongated. It telescoped, retaining its thickness. The expansion was internal: Folded molecular chains were yanked straight, opening up billions of microscopic spaces throughout. It was as though Bob had taken a piece of string cheese and, with a tug, transformed it into a rope of Swiss 10 times as long.

▲ Akpek in an operating theater at Johns Hopkins

The new, air-filled polymer, dubbed expanded PTFE, promised much more than savings. Lighter and yet stronger than regular PTFE, ePTFE and its tiny pores proved perfect for capturing both helpful and harmful substances. Many engineering problems are about letting certain things in while keeping others out, and Gore's researchers swiftly set to policing the world's structural borders. Within a few years the company was making Gore-Tex air purifier filters and then prosthetic blood vessels for bypass operations. The polymer's pores provided a space for the recipient's own cells to grow into, while its chemical inertness reduced the risk of inflammation and infection. ePTFE's flexibility and resilience allowed the grafts to survive for decades in the high-impact environment that is the human body.

The first Gore-Tex "waterproof and breathable" rain gear went on sale in 1976. Veteran backcountry hikers and skiers, Bill and Vieve Gore had long been aware of the limitations of existing raincoats, whose impermeable fabrics reliably kept out rain and snow but just as reliably left wearers damp with trapped perspiration. The structure of ePTFE offered a solution: The pores, though minuscule, were still hundreds of times larger than the individual molecules that comprise water vapor. Even the smallest raindrop, on the other hand, contains trillions of water molecules bound together. That meant evaporating sweat could easily pass through ePTFE, while rain could not. Gore chose not to make most of the clothing incorporating its technology, instead selling the membrane to licensees, which turn it into North Face parkas and Patagonia ski shells. The agreements strictly mandate how Gore-Tex is incorporated into the final products, ensuring, for example, that its logo is always visible.

Over time, Gore engineers became mad rolfers of ePTFE, perfecting a set of esoteric techniques to tune its molecular structure and, thereby, its capabilities. They learned how to make it stronger, or thinner, or as pillowy as meringue. They combined it with other polymers to make a fabric that allowed hazmat suits to vent heat and perspiration. They adjusted its pore size so it could hold particles of mercury-trapping carbon for Gore-brand smokestack filters. They created stents and surgical patches, high-tension ropes for deepwater oil rigs, and premium dental floss (a silky tendril marketed as Glide). The company grew and grew, crossing $1 billion in revenue in 1996, $2 billion in 2007, and $3 billion in 2012. Today it's at $3.7 billion.

For all ePTFE's uncanny versatility, though, Gore's leaders and admirers tend to credit human, not molecular, structure for the company's success. Its unique organizational approach was first codified in 1976, when Bob Gore took over as chief executive officer and his parents distributed a now-legendary eight-and-a-half-page memo to everyone at the company. Written by Bill, it set out the precepts that had shaped "our Association" since its founding.

With its references to the psychologist Abraham Maslow's hierarchy of needs and the zoologist Konrad Lorenz's work on animal aggression, the memo was an unlikely piece of writing to have emerged from the mind of a chemical engineer. The 20th century corporation, Gore argued, was at odds ▶

◀ with human nature. As a species, we're aggressive yet loyal, improvisational and curious; we self-organize, intuitively acting on the same social instincts that governed bands of paleolithic hunter-gatherers. But when organizations grow beyond a certain size—Gore pegged the number at about 150 people—the resulting command-and-control measures begin to ossify, strangling our innate sociability and drive.

Still, it was possible, he insisted, for a growing global business to run itself like a tribe. His vision was of a loose confederation of task forces that formed to take on different projects. For years after the memo was issued, the company would open a plant (the word it uses for all of its offices, even the few without manufacturing capabilities) whenever an existing one expanded past a couple of hundred workers. Associates didn't have assignments, they had "commitments." Bill called his model the lattice organization.

As Gore thrived, outsiders adopted similar approaches, to the point that corporations everywhere grew lousy with talk of flat management structures. And though it now counts 10,000 associates, Gore, too, has kept the faith. It does have bosses, including a CEO named Jason Field, and executives do make executive decisions. But Gore research teams still function like caucuses, with engineers signing on to projects that pique their interest and decisions still requiring consensus. Ideas live and die on collective enthusiasm; authority is temporary and contingent on the job at hand. The company routinely finds itself on lists of the best places to work, and its highly trained, eminently employable employees rarely leave—turnover in its North American offices is 2 percent. (By contrast, the Gore family itself has struggled with team dynamics, spending a decade embroiled in litigation after one of Bill and Vieve's five children, Susan, "adopted" her ex-husband in 2003 in an unsuccessful attempt to gain more company shares.)

But despite Gore's organizational flexibility, most of its firepower is focused on a single polymer. And competition is growing. A number of alternatives to Gore-Tex have made inroads into the market. A small materials manufacturer created eVent in 1999; fleece company Polartec LLC came out with NeoShell in 2010; Columbia Sportswear Co. released OutDry Extreme in 2016. And today an auto firm or appliance maker looking for a basic ePTFE membrane for one of its products can choose from a plethora of suppliers who will sell it for cheaper than Gore.

For a while, the company was leery of pursuing ambitious ideas that emerge from the lattice. The cornea implant actually dates to 2004, when Singh encountered a colleague, Gopalan Balaji, in the lunch line at a company event. Both are

▲ Testing outdoor gear at a Gore lab in Elkton, Md.

from India, a country plagued, like much of the developing world, by a lack of eye banks. Corneal blindness seemed to them like something Gore could and should tackle: The few artificial corneas on the market are difficult to implant and prone to complications. "There's millions of people outside the U.S. who are blind," Balaji told Singh. "We have unique materials. We have done this kind of work. What do you say?"

They recruited Schmiedel, an optics specialist, and reached out to Akpek at Hopkins. But the project fizzled. Like DuPont a half-century before, Gore's leadership didn't want to gamble on an unfamiliar new market, and the idea was shelved.

Four years ago, under the direction of then-CEO Terri Kelly, Gore began looking for ways to take more chances. The company has traditionally advanced via intermittent, oblique leaps, hopping like a chess knight into new businesses with little apparent connection to its existing ones. ▶

◀ It was an electronics manufacturer that decided to also be a medical-device company and then, for good measure, a fabrics business. “Historically, when we’ve created large jumps in growth it’s usually by the addition of another division,” says Greg Hannon, the executive Kelly ultimately tapped to lead her initiative. Hannon believed Gore had grown too conservative, too incremental—more king than knight.

There are good reasons for a large, well-known, profitable company to be more cautious than a startup. It has more money and jobs at stake, and more regulation to contend with. But even an unorthodox company needs to keep growing to ensure long-term success. And so Gore, aging star of the management circuit, decided to bring in a guru: the innovation theorist Steve Blank. An entrepreneur who first learned electronics as an Air Force mechanic in the Vietnam War, Blank is popular in Silicon Valley startup circles. His central idea is that small companies (and the big ones that increasingly ape them) shouldn’t wait until they have a polished product to see if the world wants it. Instead, they should go to market early and often, with beta versions, with prototypes, even with mere concepts, and let the resulting customer feedback tell them what the product should be. If you’ve heard the term “lean startup,” you’ve heard about Blank’s ideas.

Blank addressed Gore’s leadership in 2015, at a company plant in Phoenix. There was a sense among the executives there, he recalls, that the company had lost “that feel for how to take risks that great entrepreneurs know instinctually.” He told Hannon about a program he’d helped start with the National Science Foundation to address researchers’ chronic inability to turn technological breakthroughs into products. Scientists learned how to write rudimentary business plans, then were paired with experienced entrepreneurs. I-Corps, as it was called, became the germ of Gore’s effort.

“Most of our meetings we’re around the table, all kind of hunched over, feeling, touching, poking at things”

When Kramer retired as CTO last year, Hannon replaced him, handing over leadership of the project to a biomedical engineer named Mike Vonesh. Based at Gore’s Flagstaff, Ariz., plant, Vonesh is slim, with a Pepsodent smile, a gentle, unplaceable drawl, and special expertise in prostheses. The initiative he inherited from Hannon had I-Corps-style

▲ Testing fire gear in Elkton

teams with "technical leads," "business leads," and external mentors. But it centered around a wholly internal venture capital market Gore had created. Its engineers would pitch their ideas to investment committees of colleagues with relevant technical, financial, and market expertise. The process was Darwinian: Concepts without clear market appeal were winnowed, while those that showed promise got additional funding rounds and more manpower.

The first two products to emerge from this bake-off were a thin insulation material intended to line women's dress shoes and a membrane that could dissipate heat from laptop and cellphone processors, allowing them to run more efficiently. Both used silica aerogels, a class of materials formed by replacing the water in a gel with air. They're extraordinary insulators but also extraordinarily fragile. The two Gore teams solved this problem by loading up a tough form of ePTFE with aerogel particles. The shoe insulation, Gore-Tex Thermium, is already on sale, and the electronics insulation has been rolled out in a line of Dell laptops.

▲ Schmiedel, Singh, and Balaji in Elkton

Vonesh's "lean cohort" program—"I wish we had a better name," he apologizes—also inspired Balaji, Singh, and Schmiedel to dust off the cornea project and pitch it to an investment committee, which gave them seed funding. They used the money to conduct Blank-inspired interviews—almost 100 of them, with hospitals, insurance reps, ophthalmologists. They also created a prototype. "We didn't have the right design," Singh recalls. "We took Krazy Glue and cut pieces of ePTFE and stuck it all together."

More important, though, they hit on the right materials. Asking around among his colleagues, Balaji had discovered a polymer Gore uses in its surgical patches—it's a fluorocarbon but it isn't ePTFE—that happens not only to be transparent but to bend light in the same way human cornea tissue does. And unlike the plastic used in existing corneal transplants, it has the softness and flexibility of eye tissue, as well. The Gore team melded the clear polymer with an outer ePTFE flange into which the eye's own tissue could grow.

Over the following months, in collaboration with Akpek, the team reworked and refined the design: the radius of curvature, the flange shape, the openings for nutrients. "We love putting prototypes and materials on the table," Singh says. A typical meeting would involve the surgeon and the engineers "all kind of hunched over: feeling, touching, poking at things." Schmiedel heat-molded the implants on a small steel press he'd built with Gore machinists, the piston tipped with optical glass. (The machining marks on steel would have left traces on the transparent polymer.) Akpek tried out the early iterations in "explanted" eyes—from rabbits, then pigs, then human donors—and once the team had a prototype it liked, it got funding for the in vivo rabbit study, which started in September 2017. Each time Akpek implanted a new rabbit, the Gore team would drive down to Baltimore to witness the procedure and, increasingly, to help. She took to calling them the bros.

The rabbit patients showed no signs of the complications associated with existing artificial implants, results that pleased Akpek tremendously. "Infection or melt happens more frequently with artificial corneas, and when it happens, it's bad," she says. "Overnight, that patient will go blind." The rabbits' immune systems hadn't attacked the implants, nor were there signs of glaucoma, another side effect of existing implants.

If all goes well, Akpek and the team will try out their implant in humans in 2020 and bring it to market in 2026. It will be a long and uncertain road, but the team is far enough along that they're preparing for a U.S. Food and Drug Administration trial and scaled-up production. Colleagues with more experience in those areas are beginning to join the effort.

"The big idea that I see large companies getting wrong and Gore getting right," Blank says, "is that innovation is not a point activity, it's an end-to-end process. You need a pipeline." He's already using Gore as a happy-ending case study for the other companies he advises.

For their part, the cornea bros are thinking about the next branch of the pipeline. The world is getting older, and a lot of eyes will need repairs in the coming years. Not surprisingly, Balaji hesitates to describe their new project in any detail, citing competitive fears. Besides, he says, "even if I did, it'll change tomorrow." Ⓑ

‘IT WAS ENGINEERING THAT WOULD HAVE TO BEND’

BY PETER ROBISON

ILLUSTRATION BY SOPHY HOLLINGTON

HOW DID BOEING, RENOWNED FOR ITS ENGINEERING CULTURE, END UP IN SUCH A TAILSPIN? BY PUTTING ITS BOTTOM LINE ABOVE ALL ELSE

THE SIMULATORS IN WHICH PILOTS TRAIN TO FLY airliners are engineering marvels in themselves. Picture a squat pod raised 10 feet in the air and mounted on spider legs that let the whole contraption move up, down, left, right, forward, and back. To meet Federal Aviation Administration requirements, the pilots sitting inside must be shown a realistic representation of what they'd see outside a real cockpit, so images are projected onto a curved mirror. Many simulators use cinema-quality sound to create a cacophony of alerts and warnings. Each machine costs $15 million or more, and airlines pay hundreds of dollars an hour for pilots to use one.

As Boeing Co. developed the 737 Max, the newest version of its most profitable and now most infamous plane, engineers repeatedly invited FAA officials to look over their designs in one of the company's Seattle simulators—an even more realistic mock-up built from pieces of actual aircraft. One purpose was to find out how to ensure that pilots switching to the new plane from previous 737 models never had to get inside one and take what's known as Level D training. "We showed them all these scenarios, and then we'd ask, 'Would this change equal Level D?' " recalls former Boeing engineer Rick Ludtke.

Boeing got what it wanted: Pilots moving from a 737-800 to a 737 Max would need at most Level B training, which they could complete in an hour or two on an iPad. That let airlines deploy the $120 million plane more quickly. For Boeing, it was an important selling point that gave customers one less reason to defect to its European rival Airbus SE.

Since the crashes of two Maxes within five months—a Lion Air flight last October and an Ethiopian Airlines flight this March—the pressure and maneuvering around simulator training has struck Ludtke as essential to understanding how an emphasis on costs twisted a process that's supposed to produce the best, safest planes. "They could have done better and should have done better, but better wasn't an option," says Ludtke, who started at Boeing in 1996 and holds two U.S. patents in flight crew alerting systems. Federal investigators probing the Max recently interviewed Ludtke for hours about the connection between simulator requirements and the new software system linked to the crashes, known as the Maneuvering Characteristics Augmentation System, or MCAS.

Managers didn't merely insist to employees that no designs should lead to Level D training. They also made their desires known to the FAA team in charge of 737 training requirements, which was led by Stacey Klein, who'd previously been a pilot at now defunct Skyway Airlines for six years. "She had no engineering background, her airplane experience was very limited," Ludtke says. "It was just an impossible scenario." FAA spokesman Greg Martin says the position Klein occupies, "while substantial," is primarily that of "an organizer, facilitator, and executor of the FAA policy and guidelines," and that in her role she calls on experts from multiple organizations.

In a statement, Boeing says, "The 737 Max was certified in accordance with the identical FAA requirements and processes that have governed certification of previous new planes and derivatives. The FAA considered the final configuration and operating parameters during Max certification, and concluded that it met all certification and regulatory requirements." Yet somehow a company renowned for its meticulous engineering installed software that drove the aircraft into the ground while the pilots searched desperately for answers.

The crisis, according to more than a dozen interviews with former employees and FAA inspectors and hundreds of pages of internal emails and records, is best understood as part of a larger drama that's played out as Boeing has reshaped its workforce in an all-consuming focus on shareholder value. The push for efficiency has only accelerated under Dennis Muilenburg, who since becoming chief executive officer in 2015 has demanded price concessions from suppliers, heaped more cost demands on engineers, and cut the workforce about 7 percent while making many more planes.

Adam Dickson, a manager of fuel systems engineering for the 737 Max, retired in November after almost 30 years at Boeing—in part, he says, because of dismay over performance targets that risked sacrificing safety for profits. "It was engineering that would have to bend," he says. The company's priorities were expressed in annual performance reviews in which engineers were measured in part on how much their designs had cost. "Idea's [*sic*] are measured in dollars," as a manager put it in one engineer's annual evaluation. Boeing rejects the suggestion that it prioritizes cost. "At no time did our performance targets reward or encourage a trade off against safety," the company says.

Ludtke was laid off just after the Max was certified in 2017. Employment on his team, known as flight crew operations, had been cut in half, from 30 to 15, he says. The workers managed how pilots interacted with the plane's software and controls—the very issue suspected of flummoxing crews in the Lion Air and Ethiopian Airlines tragedies. The constant shuffle helps make sense of missteps that have since come to light. Pilots first complained they hadn't been told about the MCAS software. It was tied to a sensor suspected of malfunctioning. Then Boeing disclosed on May 5 that a cockpit light warning of the sensor's malfunction wasn't turned on in every Max, as buyers had been assured—something the engineers realized months before the first plane went down, but didn't pass on to customers or the FAA. ▶

"IT WAS PRETTY INTENSE LOW MORALE BECAUSE OF ALL THE LAYOFFS—CONSTANT, GRINDING LAYOFFS, YEAR AFTER YEAR"

◀ Ludtke has embraced a role as a kind of gadfly, speaking frequently to reporters about the pressures he and others faced at Boeing. "They were targeting the highly paid, highly experienced engineers," he says. "Over time that's eroded the company's ability to successfully design and manage programs. They do it strictly by cost, and they do it more so with every airplane."

The crisis marks a profound test for Muilenburg, himself a former engineer who first worked at Boeing as a summer intern in 1985. At the company's annual meeting in Chicago in April, family members of crash victims stood outside in a driving rain, holding up photos of loved ones and signs reading, "Prosecute Boeing & execs for Manslaughter" and "Boeing's Arrogance Kills." Inside, Muilenburg apologized. "We own it," he said of the accidents, while also insisting there was no "technical slip or gap." Investors so far stand behind him—the stock is up 11 percent this year, though it dips with each revelation about the crashes—and the FAA may bless Boeing's software update for the Max as soon as late May. That would be the first step toward getting the 387 planes already in customers' hands back in the sky this summer.

Even if that happens, there are congressional inquiries, a Justice Department criminal probe, lawsuits from victims' families, airlines to mollify, and regulators in multiple countries to satisfy. In short, Muilenburg must navigate unfamiliar skies: Boeing, the pride of American manufacturing, the epitome of engineering excellence, now operates under a cloud of suspicion and skepticism. The company hopes that its next plane, the 777X, will begin commercial flights in 2020. Ludtke's group worked on that plane, too. Boeing is again seeking FAA approval for a plane as an update of an existing model, in this case the 25-year-old 777.

ONE CURIOSITY ABOUT BOEING IS THAT EVEN ITS white-collar workforce is unionized. For decades, the largest of the engineers' unions, the 23,000-member Society of Professional Engineering Employees in Aerospace, had a mostly cordial relationship with management. Some Boeing CEOs had themselves been members. But in 2000 the engineers walked out for 40 days, all but halting aircraft production. Soon after, the company moved its headquarters from its historic base in Seattle to Chicago. It eventually began shifting work to states less friendly to unions, notably South Carolina.

A new Boeing strategy had been launched a year before the strike at a retreat in the California desert for 280 senior managers. Phil Condit, then the CEO, was the architect of the purchase of McDonnell Douglas, a move that shifted the company's center of gravity from commercial jetliners to military programs such as the F-15 fighter. It wasn't going well—costs rose, production lines bottlenecked—and Condit had tapped the former McDonnell Douglas CEO, Harry Stonecipher, to fix operations. What managers heard at the retreat was a kind of a scared-straight message. Condit told them the stock price was so depressed that Boeing could face a takeover. Chief Financial Officer Deborah Hopkins underscored the importance of benchmarks such as return on net assets, one of Stonecipher's favored metrics.

The relentless message: Shareholders would henceforth come first at Boeing. The important thing was not to get "overly focused on the box," Hopkins said in a 2000 interview with Bloomberg. "The box"—the plane itself—"is obviously important, but customers are assuming the box is of great quality." This was heresy to engineers, to whom the box was everything. The strike that year was formally over wages and benefits, but workers described it as a referendum on management.

Meanwhile, the competitive threat from Airbus was escalating. In 2003 the European manufacturer surpassed Boeing in deliveries for the first time. When Boeing, by then run by Stonecipher, embarked the following year on the 787 Dreamliner, it handed much of the work to outside suppliers in an attempt to keep down costs. The plane instead entered service three years late and billions of dollars over budget.

The next CEO, James McNerney, a former General Electric Co. executive, vowed no more "moonshots" in aircraft development. After costly strikes by machinists in 2005 and 2008, he also challenged unions head-on. In 2009, Boeing said it would open its first jetliner assembly line outside the Seattle area, shifting some production of the 787 to a plant in North Charleston, S.C., formerly owned by a supplier that made much of the fuselage for the plane. The workers there were unionized, but they voted to abandon the union to help secure the new work.

At the time, some executives at Boeing were pushing for an update of the 737, a 1960s-era design that analysts considered ripe for replacement. It might have entered service late this decade. But in December 2010, Airbus surprised Boeing by announcing the development of the A320neo—as the name suggests, an update of an established model. It quickly gathered orders, and Boeing responded in 2011 by announcing its own update: the Max.

In part by dangling the threat of shifting production of future aircraft to South Carolina, Boeing secured long-term contracts with its two major unions, the engineers and the machinists. In July 2014, McNerney, who was approaching 65, was asked on a conference call with journalists if he planned to retire that year. He was feeling confident enough to joke, "The heart will still be beating, the employees will still be cowering."

They were. It was a climate that didn't reward people willing to buck managers, says Mark Rabin, who worked in a flight test group that supported the Max and was laid off in 2015 after a 17-year Boeing career. "It was pretty intense low morale because of all the layoffs—constant, grinding layoffs, year after year," he says. "So you really watched your step and were careful about what you said."

Managers also felt heat to hit ambitious cost targets, says Dickson, the former supervisor of fuel systems engineering for the Max. The sales team would sell planes for delivery four years out at prices the company couldn't yet hit from an engineering standpoint—creating immense pressure throughout the organization to drive down costs. In 2016, Boeing started asking for specific time and cost reductions as part of managers' performance evaluations, Dickson says, and by 2018, his superiors warned in "very directly and threatening ways" that pay was at risk if the targets weren't met.

Shop floor workers reported similar demands on schedule and cost. In 2016, William Hobek, a quality manager at Boeing's 787 plant in South Carolina, filed suit in federal court claiming he'd been fired after repeatedly reporting defects up the chain of command. When he complained, a supervisor replied, "Bill, you know we can't find all defects," according to the suit. Hobek called over an inspector, who quickly found 40 problems, the suit claims. (It was later settled; Hobek declined to comment for this story, citing settlement terms.) Al Jazeera in 2014 sent a hidden camera into the plant and caught some employees on tape saying they'd never fly on the planes because of shoddy workmanship.

Some of Boeing's machinists are determined to reestablish union representation at the plant, and last May they scored a big win when a unit of flight readiness technicians voted 104 to 65 to join the union. Boeing responded by saying it was a "micro-unit" barred by federal law and appealed to the National Labor Relations Board to void the election. The union says the company has since fired six of the technicians, and it's filed several complaints on their behalf. ("Boeing terminated these individuals based on well-publicized, long-standing, and objectively obvious safety, compliance, and conduct policies," the company says.) In April a number of current and former workers at the plant vented to the *New York Times* for a front-page exposé of production problems. They described defective manufacturing, debris left on planes—wrenches, metal slivers, even a ladder—and pressure not to report defects.

SCRUTINY OF THE MAX HAS ALSO EXPOSED THE almost fraternal relationship between Boeing and its regulator, the FAA. The 1958 act that established the agency allowed it to hand off many aspects of the certification process to Boeing and other manufacturers. In 2009 the system was expanded further, allowing Boeing to directly choose and supervise the employees who vouch for safety as authorized FAA representatives.

Boeing began putting more junior employees into the roles, and some employees believed that was because they'd be more willing to listen to managers and less likely to dig in their heels, Dickson says. "How long do you want to keep polishing that apple?" was a phrase managers often used with engineers who wanted to keep testing, he says. The message: It's fine, let's keep things moving. The FAA's Martin says the agency regularly reviews the workers Boeing and other manufacturers put in certification roles "to determine if there is any information that indicates that the individual has demonstrated a lack of care or judgment, or a lack of integrity, or is otherwise unsuitable."

Now Boeing is seeking FAA approval for the 777X as an update of an existing model, the 777. Internal tensions about this approach are being exposed in the proceedings of a wrongful termination suit brought by a former Boeing engineer, Michael Neely, who claims he was fired in 2016 after citing design and safety problems.

Neely had been working for Boeing's space and defense operation in Alabama when he was brought to the Seattle area to help define a plan to adapt an electrical load management system from an earlier model of the 777. Disagreements escalated as a deadline approached for Boeing to send plans for the system to the electrical contractor, a GE unit. Neely argued that reusing the previous system, essentially an enormously complicated and computerized version of a fuse box, wasn't adequate for the new design and didn't meet FAA standards, according to emails filed in the suit. Within months, GE, too, had objected, saying the system would need to be significantly expanded.

Of course, friction and intense disagreements are common in every aircraft program. Such programs are an industrial undertaking like no other, involving tens of thousands of people and taking years to complete. But with the Max's grounding in March, Boeing has now had two airplanes taken out of the air by the FAA in six years, following battery fires on the Dreamliner in 2013. (There were no fatalities.) The last model the FAA grounded was the McDonnell Douglas DC-10, in 1979.

It isn't assured that the Max's prospects will recover as fast as Boeing and investors expect, Barclays Capital analyst David Strauss wrote on May 7, citing a survey of fliers suggesting that almost half will be unwilling to fly on the Max for a year or more. The same day, Carter Copeland of Melius Research LLC wrote in a note to investors that the most consequential outcome might be the end of a system that's helped save both Airbus and Boeing time and money—the FAA's approval of "heavily modified" aircraft as extensions of previous designs. If the agency were forced to consider them as "clean sheets," he wrote, it would add as long as two years (and additional cost) to their development timelines.

The evidence suggests that what Boeing needs is a full-throated commitment to safety and engineering over cost. Muilenburg would seem perfect for the job—he's a "Boeing lifer" who's said his ambition as a young man was to become "the world's best airplane designer." In his public comments about the 737 Max, though, he has shown an extremely limited range of vocabulary, and he frequently boils his plan down to this: a software update. He insists that the design and certification process for the Max went exactly as planned.

On March 27, Boeing invited 200 airline representatives, regulators, and pilots to Seattle for a first look at the changes it had made to the MCAS software. A day before, a group of engineers was summoned to a session with Muilenburg and Kevin McAllister, head of the commercial airplanes business. McAllister spoke emotionally, and a staffer wept in the background. Then Muilenburg fielded five or six questions with the same artfully vague responses he's provided reporters. A company spokesman says Muilenburg was greeted warmly. An engineer present had a different take: It was, he told colleagues, "a nothingburger." —*With Julie Johnsson, Ben Elgin, and Margaret Newkirk*

HOW BARILLA PUT PRIDE IN ITS PASTA

In 2013 the pasta giant's chairman publicly rebuked gay families and set off an international boycott of its products. His CEO worked to reprogram the company into an inclusive, accepting workplace and made it OK to buy Barilla again

By Thomas Buckley
Photograph by Bobby Doherty

On a warm September evening in 2013, Claudio Colzani drove his Audi the 100 or so miles from Milan to Parma, home for almost two centuries to the world's largest pasta empire. He had joined Barilla SpA as chief executive officer less than a year before and was on his way to a dinner with its chairman, Guido Barilla, who was giving a live interview on national station Radio 24. As the sun edged lower in his rearview mirror, Colzani turned up the volume and listened as his boss walked the hosts through the company's family heritage—its spaghettis and sauces. Then Barilla dropped a bombshell he would spend half a decade atoning for.

"I would never do a commercial with a homosexual family, not for lack of respect, but because we don't agree with them," Barilla said on Italy's best-known radio talk show. If gay customers didn't like that, they could go buy another brand of pasta, he said. Barilla, who together with his three siblings owns 85 percent of the company's shares and holds an individual stake worth about $1.1 billion, extolled the values of the "classic family" that the brand targeted. The chairman, who turned 60 last year and has five children, further clarified that he opposed adoption by gay parents.

Colzani was stunned. He immediately called Luca Virginio, the company's head of communications, shouting into the phone, "What the hell is going on?" It would take another half-hour to arrive at Parma's Ristorante Cocchi and confront his boss about the magnitude of his mistake. In that time, and in the weeks that followed, social media ignited with outrage as people accused Barilla of homophobia. Amid calls for a global boycott, Colzani's family and friends asked what he was doing running that sort of business, and members of his leadership team said they felt deeply uncomfortable. Harvard pulled the pasta from its dining halls, and major retailers in the U.S. and Europe asked to meet with Colzani to clarify the company's stance. The list of celebrities pledging to shun the brand included Jodi Picoult and Chrissy Teigen, who suggested in a tweet to her 11 million followers that she would fund gay pornography filmed in a bathtub filled with linguine.

"I was concerned about the market share, but I was ▶

◀ much more worried about people perceiving Barilla as an out-of-date brand," Colzani said in a February interview at Barilla's headquarters, a steel-and-glass low-rise next to a sprawling factory that produces almost 1,000 tons of pasta per day. (Through a spokesman, Guido Barilla and his siblings declined to be interviewed.) The finance team alerted Colzani to a marginal dip in the company's sales, but the commercial impact was microscopic. In the consumer-goods industry, short-term losses can usually be recovered through small price adjustments. At $3.2 billion (excluding currency fluctuations), Barilla's revenue was ultimately higher in 2013, the year its chairman made the comments, than in 2012, and higher still in 2014.

CEO Colzani shows off Italy's most popular pasta

Because the bigger preoccupation for consumer brands tends to be cachet—an abstraction valued in the tens of billions of dollars on their balance sheets as "intangible assets"—irrelevance can have worse financial consequences than brief buffers in a company's revenue streams. In February, Kraft Heinz Co. admitted its products were failing to connect with diners who increasingly turned their back on industrialized food when it wrote $15.4 billion—more than half the group's annual sales—off the value of Oscar Mayer hot dogs and Velveeta processed cheese.

For decades, Barilla was unshakable. As the flag-bearer for mass-market pasta, the company not only survived Atkins and other low-carb diets but thrived on an image of authenticity. In the U.S., dry pasta brands are generally interchangeable, only further anonymized when doused in marinara. But Barilla's serial promotion of its ties to Italian home cooking in television ads set to an Andrea Bocelli song earned it a quarter of the U.S. pasta market. Colzani now watched that carefully curated image unravel in real time. He measured the brand's declining appeal with customers on a monthly basis using tools developed by Millward Brown, a market-research company owned by advertising conglomerate WPP Plc. In 2014, Barilla dropped 21 spots on the Reputation Institute's annual ranking of companies.

Before Barilla, Colzani had enjoyed a 25-year career at Unilever, most recently in New Jersey, where he was chief customer officer and sat on the diversity committee. He first registered an interest in joining Barilla after hearing its chairman speak at a consumer-products forum in Barcelona in 2011 about the company's commitment to fighting obesity through better nutrition. But the 2013 incident served as a stark reminder that, in Italy, "the debate on LGBT issues came very, very late compared to many other European countries," Colzani said. He attributed the lag to the overwhelming influence of religion on moral philosophy in a country where about 70 percent of citizens identify as Catholic.

Colzani called former colleagues for counsel and appointed a chief diversity and inclusion officer. He leaned on workplace consultants Korn Ferry for advice and formed an external advisory board. U.S. public-relations company Edelman was drafted to steer communications. Colzani started spending about $5 million a year devising an ambitious reputational turnaround. For the past five years the company has earned the highest possible score on the Human Rights Campaign's corporate equality index. Barilla transformed from a pasta giant that would never feature homosexuals in its campaigns into one that sells spaghetti in homoerotic packaging.

Barilla was founded by Pietro Barilla in 1877 as a small bakery on a merchant road in downtown Parma, a city with pillared churches and bustling piazzas at almost every turn. It has a storied association with the country's finest food—its namesake province is home to the acclaimed Culatello cut of cured ham and to Parmigiano cheese, often imitated outside the region as "Parmesan."

Today, Barilla is a superpower. It owns about a dozen food brands, including high-end Voiello pasta and Wasabrod, the world's largest producer of Scandinavian crispbread, and last year sold about $4 billion worth of products in more than 100 countries. For much of its early history, Barilla had incomparable clout in Italy's pantries, boasting in commercials that its products were the backbone ingredients in the majority of pasta dishes plated in family homes across the nation. Today it accounts for a little less than half of Italy's pasta, with its nearest rival, De Cecco, making up a distant 10 percent. Twenty years ago, Barilla generated almost all of its revenue at home, but now, Italy accounts for about a third of its sales. That number is expected to drop as Barilla seeks growth from developing markets such as Russia and

PHOTOGRAPH BY GAIA CAMBIAGGI FOR BLOOMBERG BUSINESSWEEK

Turkey, Colzani said. He's also bullish on new noodles aimed at the post-yoga crowd: vegan and gluten-free penne made from red lentils.

The business has fallen out of family control only once, for about a decade, when it was reluctantly sold to U.S. chemical conglomerate W.R. Grace & Co. In the early 1970s the construction of Barilla's new factory on the outskirts of Parma took an enormous financial toll, and Italy's government set price controls on the majority of the company's products. Since reacquiring Barilla in 1979, the family has advocated for the sort of costly long-term initiatives that tend to fare better at private companies than publicly listed ones.

Colzani said that during his six years at the helm, he's never had a conversation with the Barillas about boosting profit. Instead, discussions have revolved around environmental efforts, such as hiking the company's costs by about €40 million ($45 million) a year to rid its supply chain of palm oil, which it did in 2017. Barilla is also working with the farmers who supply the durum wheat for its pasta to end their use of glyphosate-based herbicides, which the World Health Organization classifies as probably carcinogenic to humans.

This sort of progressive work only fuels the romanticism Barilla enjoys as one of Italy's largest family-owned businesses. This same dynamic has been championed by the families behind chocolatier Ferrero SpA's generous funding of literature and science programs, distiller Davide Campari-Milano SpA's partnership with the contemporary art fair in Turin, and coffee giant Luigi Lavazza SpA's mission to improve livelihoods in the countries from which it sources its beans. "I think most of the owners perceive the company as an extension of their families, and one positive is that it triggers a sense of belonging for employees," Massimo Magni, who lectures on organizational behavior at Bocconi University's school of management, said of the nation's corporate kindred. "But a pitfall is that the family will often take more of a paternalistic approach than a management approach."

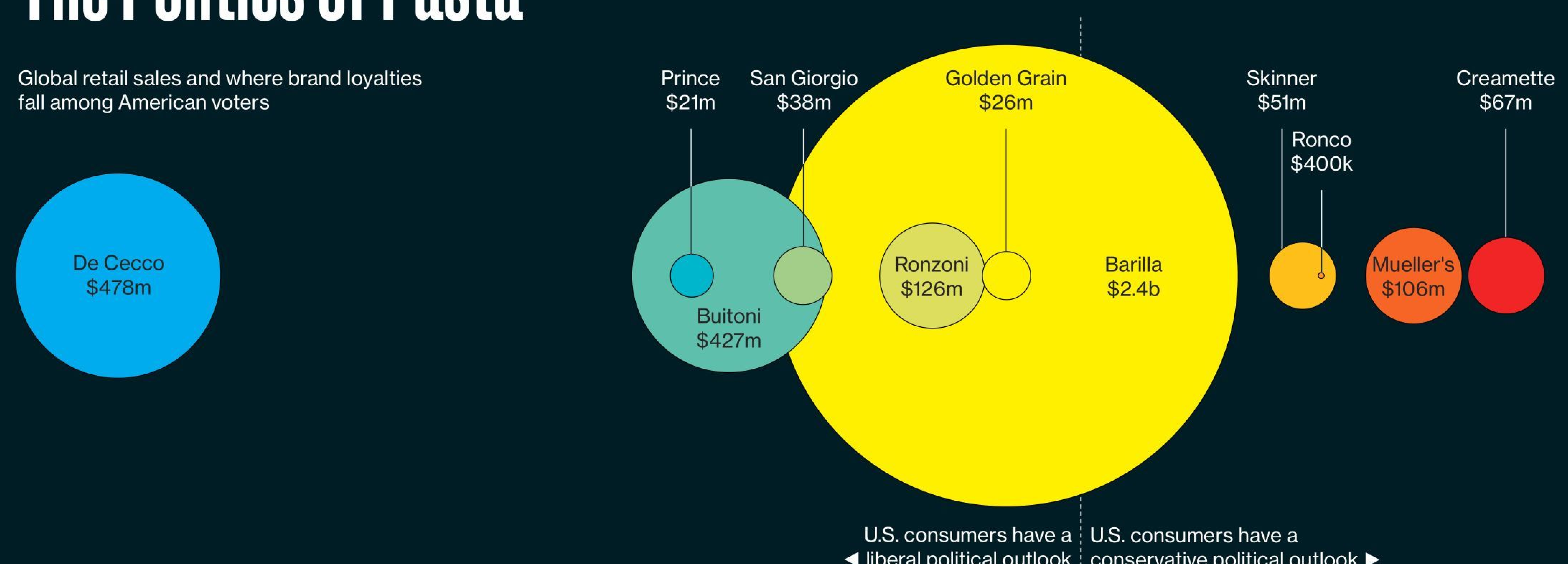
That sense is even stronger at a company such as Barilla, which brands its namesake product as a cornerstone of national identity. The alignment of its advertising with the Italian idyll of a nuclear, traditional family gathered around a home-cooked lasagna reflected a lifestyle the vast majority of the country's citizens are proud to lead. Italy still has one of the worst records for gay rights in Western Europe, according to a regional arm of the International Lesbian, Gay, Bisexual, Trans and Intersex Association. Last year the country placed in the lower half on the advocacy group's annual ranking of European nations, based on marriage equality, reports of hate crimes, and other metrics.

Barilla is not the only Italian pasta maker to come under fire for homophobia. In February, Italy's Supreme Court ruled that Gian Luca Rana, the CEO of Verona's family-owned Pastificio Rana SpA, had caused "concrete and serious prejudice to the dignity" of a manager he'd repeatedly addressed as *finocchio*, the Italian word for "fennel," which is also a homophobic slur. Rana defended his use of the word as innocuous in the context of collegial workplace banter. Even though Guido Barilla immediately apologized for the comments he made on the Radio 24 talk show, he drew ire for sounding phlegmatic—he referred to having offended "the sensitivities of some people."

Some attitudes are less equivocal. In the first parliamentary session that followed the chairman's interview, Gianluca Buonanno, a politician in the right-wing Lega party, provoked two openly gay colleagues with a fennel bulb and attempted to physically assault one of them. The following month, in an unconnected event, a 21-year-old gay medical student who had been a victim of bullying dialed 10 suicide hotlines before jumping to his death from the 11th floor of a former pasta factory in Rome. "Italy is a free country but there is homophobia," a note found after his death reportedly read. "Those who have these attitudes must deal with their conscience." It was the third suicide by a young gay man in Rome that year. ▶

The Politics of Pasta

Global retail sales and where brand loyalties fall among American voters



DATA: EUROMONITOR INTERNATIONAL, SIMMONS RESEARCH NATIONAL CONSUMER STUDY, FALL 2018

◀ During this same period of time, workers at Barilla—which employs about 8,500 globally at more than 50 factories and offices—expressed shock and dismay. The chairman's comments struck some as especially provincial, given his otherwise international outlook. "I know Guido very well, and he told us many times in small groups that he made a mistake and apologized for embarrassing us as employees, because he's not like that, and the company isn't like that," said Alessandro Spadini, who's worked for the pasta maker for almost three decades and runs the Pedrignano plant adjacent to its headquarters.

The fourth Barilla in as many generations to lead the company, Guido Barilla joined the business in 1986 and drove much of its expansion abroad before taking over the chairmanship from his father, who died in 1993. After studying philosophy in Italy, he'd started his career at several food companies in the U.S., a country to which he'd retained a sentimental connection after competing as a track-and-field athlete at Boston College. He keeps an apartment in Manhattan, and two of his sons are enrolled at his alma mater in Massachusetts, where they're members of the soccer and tennis teams.

Outside of a board directorship at French yogurt giant Danone SA, Barilla lives and breathes the family's pasta empire. He dresses the part of the modern industrialist, matching understated ties to dark suits cut to his tall, slim frame. Before his on-air misstep, his only public eccentricity had been the styling of his gray hair, which oscillates between a military trim and an unkempt musketeer's mop. He eats Barilla pasta daily and prefers it unadulterated, renouncing sauce in favor of light Parmigiano shavings and a shallow spoonful of olive oil.

The most remarkable thing about the chairman's interview was just how unremarkable it was in the context of the hostile rhetoric of Italy's most powerful businessmen. In 2015, Domenico Dolce and Stefano Gabbana, the billionaire founders of the eponymous Milan-based fashion house, proclaimed in an interview with *Panorama* magazine that "the only family is the traditional one" and that children conceived with the help of in vitro fertilization were the "synthetic" sum of "semen from a catalogue" and a "rented uterus." Despite being a couple for 23 years before a split in 2005, they also spoke out against same-sex marriage. Their views were condemned by leading voices: Elton John called for a boycott, and Victoria Beckham expressed her love and support for his family, which was conceived through IVF. In recent months, haute couture powerhouses Gucci SpA and Prada SpA have introduced and subsequently withdrawn an $890 turtleneck sweater deplored for resembling blackface imagery and a $550 monkey figurine reminiscent of anti-black caricatures. Although the companies have denied any subliminal messaging, the designs come as Italy's xenophobic discourse soars under its right-wing government, which views immigration as a threat to national identity.

At Barilla, Colzani is determined that the company resist the backward direction of the country, which entered recession for the third time in a decade in January and has seen the annual number of racial and homophobic attacks steadily rise. He's adamant that instead of priding itself on reflecting the country's culture, Barilla should lead it by projecting a better ideal. After the radio interview, Colzani plotted three chapters: apology, investigation, and promotion. "We were simply trying to be a good citizen. Now, we're trying to be a role model."

"I got a lot of grief from the LGBT community when I agreed to help him out," Mixner said. "But I told them that the purpose of a movement is to change minds"

The strategy to right-size Barilla's image falls in line with a wider attempt the business has taken to appeal to more-discerning shoppers. Over the past decade, with carbohydrates under siege from fashionable ketogenic and paleo diets, the company has directly funded or is tied to more than 10 peer-reviewed studies that have touted pasta's nutritional benefits. The Barilla Center for Food & Nutrition has co-hosted breakfasts at the World Economic Forum in Davos promoting sustainability initiatives.

The radio interview effectively rescinded Barilla's seat at the table with progressives, whom it needed to ensure the long-term viability of the brand. "I would guarantee that there would have been virtually no drop-off in sales, because capability—Does the pasta taste good? Is the distribution effective?—means more to the customer than character, which has more saliency with employees, retailers, and community partners," said Rupert Younger, who leads the Oxford University Centre for Corporate Reputation and is a co-founder of communications company Finsbury. Instead, a typical betterment catalyst in cases such as Barilla's is the landslide of staff—including senior managers—voicing their anger at the discriminatory statements, he said.

The week after his comments, Chairman Barilla agreed to meet with Parks Liberi e Uguali, a nonprofit that works with employers on LGBT inclusion, and the Tyler Clementi Foundation, which focuses on ending bullying and online harassment. Colzani implemented diversity and inclusion training and unconscious bias courses for the entire workforce. Now employees are asked every

18 months whether they feel their leaders are committed to building more-diverse teams. (In the latest assessment, 72 percent of participants said yes, up from 65 percent in the previous one.) Almost 1,000 workers have formed and joined employee resource groups, each focused on a specific theme, such as refugee training or gender and sexual identity. Beatrice Burlenghi and Martina Olivola, the leaders of the latter group, nicknamed Voce, distributed Barilla-branded rainbow bracelets to employees after meeting with a similar group at General Electric Co. that had done the same.

All the company's efforts are supervised by Kristen Anderson, the chief diversity and inclusion officer and a former chemical engineer on Barilla's research and development team. She also heads an internal committee of about a dozen employees that meets every two months to gauge progress on initiatives such as co-creating packaging with disabled customers and promoting women to leadership positions. Colzani's request for a separate board of external advisers was tougher to deliver on, because most of the potential candidates Barilla approached didn't want to be affiliated with the company, Anderson said. David Mixner, a civil rights activist, author, and playwright once named by *Newsweek* magazine as the most powerful gay man in America, refused four times to meet with Guido Barilla before finally agreeing to it as a personal favor to a friend who worked in public relations.

Packaging lines at Barilla's factory in Parma

PHOTOGRAPH BY GAIA CAMBIAGGI FOR BLOOMBERG BUSINESSWEEK

"I joined the boycott and said I wouldn't meet with him, because I'm so sick of going to these things and hearing nothing but apologies," Mixner said. He finally relented and met the chairman for lunch at the Glass House Tavern near Times Square. Before sitting down at the restaurant, which has a crispy chicken salad named after him, Mixner instructed the waiters to speed up the service so he could leave within the hour. He and Barilla ended up spending four hours at the table, during which the 72-year-old Mixner spoke of the pain he'd suffered for being gay. He'd spent three years estranged from his family, lost jobs, and been the target of a hate crime. Barilla said his family had a long history of combating injustice, with his father having been involved with members of the resistance against Italy's fascist regime in the 1940s.

The company now pays Mixner an annual stipend of $25,000 to serve on the advisory board. It has also sponsored some of his plays, the proceeds of which have gone to the Ali Forney Center, an organization based in New York that helps homeless gay youths find shelter, and efforts to advance marriage equality in Italy. Since his lunch with Barilla, Mixner has become the chairman's most trusted confidant on diversity issues. "I got a lot of grief from the LGBT community when I agreed to help him out," Mixner said. "But I told them that the purpose of a movement is to change minds."

At the company's annual staff meeting in December, Barilla showed a short film in which an American employee narrated, "Five years have passed since the beginning of our journey." Pictures of Mixner and the company's chairman hugging flashed on the screen to a solemn piano solo as the narrator said that Barilla had come to learn that love is blind, because it makes no distinctions of gender, religion, or race.

Two months earlier, at the Pasta World Championship in Milan, Barilla did exactly what its chairman had promised would never happen: It unveiled a limited edition of its most popular product, Spaghetti No. 5, wrapped in a box illustrated with two women holding hands, a single strand of pasta held between their lips in a nod to Walt Disney Co.'s *Lady and the Tramp*. It was designed by Olimpia Zagnoli, an Italian artist who had advocated for boycotting Barilla in 2013.

There's still a way to go. When Burlenghi, the Voce team leader, participated in the most recent Pride march in Milan wearing a Barilla T-shirt, she was asked by fellow attendees if the company had paid her to walk on its behalf. Barilla hasn't received many compliments for its efforts from its former critics, Colzani said. "They say, 'You're OK. You're still in repair mode.' Which I think is a fair comment. We'll always try to improve ourselves before telling others we're fine."

Barilla still leans on its heritage, though. In the middle of the lobby at the company's headquarters, a screen updates about every 10 seconds with thousands of Instagram posts pooled from every continent that promote the Mediterranean diet or dishes made with Barilla's products. Opposite, a floor-to-ceiling painting hangs on the wall, based on a black-and-white photograph of the pasta maker's first shop in Parma. The canvas is brightened by a loud diagonal dash of yellow that reads, "*Di che pasta sei fatto?*" a colloquialism in Italian that means "What are you made of?" B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An Island Unto Yourself

These eight private escapes are stunning, secluded, and secure for the long term
By James Tarmy

Summer at The Shore

Solar-powered Eshpabekong Island, north of Toronto, could be yours

May 13, 2019

Edited by Chris Rovzar

Businessweek.com

No one buys a private island looking for a faster pace. The key is creating a place that functions as an actual refuge—one where you can live for weeks, if not months, without interruption.

But when Eric Bloch's grandfather bought a 32-acre island off the coast of Roatan, one of the bay islands of Honduras, it was only equipped to be a weekend getaway. "He bought it in 1962, and I think it cost about $2,000," says Bloch, an architect in Zurich. At the time, his grandfather lived on the mainland, where he owned fruit plantations. "The island was completely uninhabited," Bloch says. "He put in a runway and dug a canal where you could dock boats."

After his grandfather's death, Bloch's mother inherited the island. In the mid-1990s, she decided to develop it into a permanent compound where the family could spend weeks at a time. She built it out of what Bloch calls "simple tropical-wood structures." The exception, he says, is a reinforced-concrete hurricane shelter.

The main house has eight bedrooms, each of which has an en suite bathroom. There are also facilities where a staff of up to 12 can stay. The island, Bloch says, is designed to sustain a comparatively large group. Its solar panels "work about 85 percent of the time—it depends on how many people are on the island," he says. "If you have 16 friends and they're all city people who want to blow-dry their hair, it's going to drain the batteries pretty quickly." (Should the system fail, there are generators.) Together, two massive cisterns can store 40,000 gallons of water, enough to get through six months of dry season. The only thing the location lacks, he says, is food, which has to be brought in.

"The island is beautiful for 10 days or two weeks," he says. "If you wanted to stay for longer, you could, but after a while, it gets pretty lonely. You want to see people." *sothebysrealty.com*

Fort Morgan Cay, Honduras

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Price: $19.5 million
Size: 32 acres
Bedrooms: 8, plus staff quarters for 12

The Motukawaiti house opens out to the water

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Motukawaiti Island, New Zealand

Price: About $10.7 million
Size: 94 acres
Bedrooms: 5

Located in the Cavalli Islands, near the northern tip of New Zealand, Motukawaiti is the only one of the cluster left in private hands. The complex has a large contemporary house with an open-plan kitchen and living room, which is adjacent to two smaller studios with sleeping areas. The entire compound is powered by solar panels and a backup generator, and water is collected on roofs and stored. Much of the island is wild, but there are a few luxury amenities, including a pool and lounge areas. It's accessible by boat from Matauri Bay, which itself is fairly remote—Auckland is more than a three-hour drive away. *vladi-private-islands.de*

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Potato Island, Connecticut

Price: $4.9 million
Size: 1 acre
Bedrooms: 4

East of New Haven, this tiny plot of land is a few minutes' boat ride off the coast and part of the storied Thimble Islands. The house, set on the tip of the island and overlooking the Long Island Sound, was built in 1912 and renovated in 1998. Inside are stone fireplaces, an eat-in kitchen, large living areas, and a master suite with a jacuzzi and steam shower. The property has manicured gardens and lawns and a swimming pool with a separate outdoor granite hot tub. You can access the house only by boat (unless you're willing to let a helicopter obliterate those flower beds), but the deep-water dock can accommodate a variety of craft. The house has its own solar panels and a water hookup to the town of Branford on the mainland. *christiesrealestate.com*

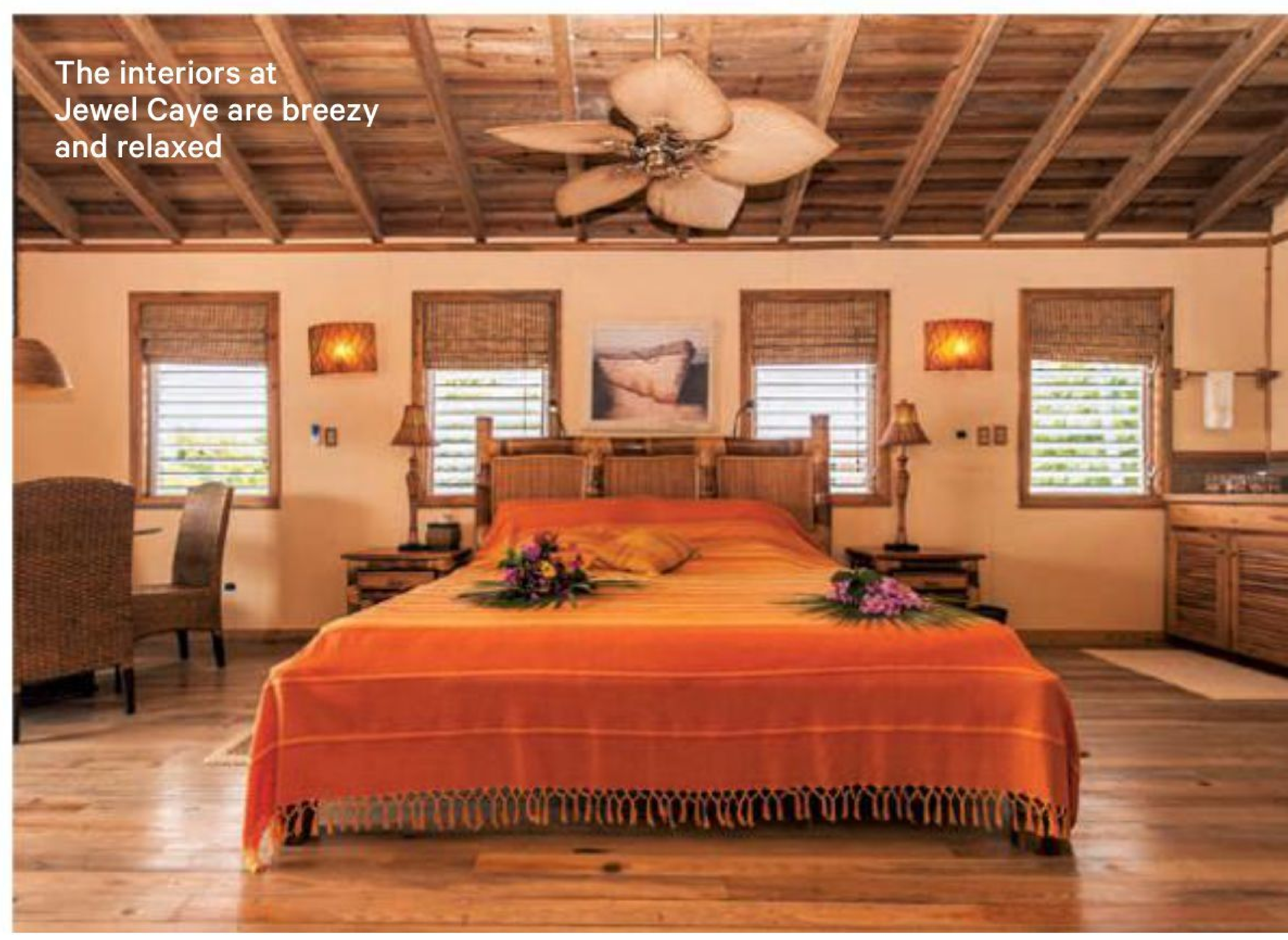
A bedroom at Fort Morgan Cay

OPENING PAGE: COURTESY PRIVATE ISLANDS INC. THIS SPREAD, CLOCKWISE FROM BOTTOM LEFT: COURTESY SOTHEBY'S INTERNATIONAL REALTY; COURTESY VLADI PRIVATE ISLANDS (2); COURTESY CHRISTIE'S INTERNATIONAL REAL ESTATE

The development occupies only a small corner of Motukawaiti

At Potato Island, a granite hot tub is embedded in the rocks

A master house porch nudges up to the water



The interiors at Jewel Caye are breezy and relaxed

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Jewel Caye, Belize

Price: In the range of $3 million to $5 million
Size: 2 acres
Bedrooms: 8, plus staff quarters for 10

Set in the Caribbean 6.5 miles east of Belize's Hopkins Village, the compound has a master house on each end of the island, with attached guest accommodations. Between them are staff quarters that sleep 10. The *pièce de résistance* is a floating "clubhouse" accessed by a 120-foot walkway. It has a kitchen, dining room, bar, and glass bottom, so guests can admire the coral reef below. The island has 33,550 gallons of water storage and solar-powered electrical systems, satellite TV, and Wi-Fi. *privateislandsonline.com*

The Venetian fort can be reached by boat or helicopter

Ridotto di Crevan, Venice

↙

Price: Upon request
Size: 1.5 acres
Bedrooms: 4

When Napoleon occupied Venice, ending the city's thousand-year run as a republic, he made few changes to the city's infrastructure. But one addition was a small fort—*ridotto*—on one of the lagoon's 118 islands. After his fall, the city passed into Austrian hands, and in 1866 it was annexed by Italy. The fort was eventually sold into private hands. (Even so, because it's in the Venetian lagoon, its island is considered part of a Unesco World Heritage Site.)

Today, the fort has been converted into a villa, and the grounds, which feature mature fruit trees, are secluded from the rest of the city. Along with the refurbished 1,800-square-foot villa (which is air-conditioned, making it something of a rarity in the area), there's a separate caretaker's apartment. The lawn is large enough for a helicopter to land, and there's also a dock, in a sheltered harbor with mooring facilities. The former fort is only a 20-minute boat ride from the Piazza San Marco and 25 minutes from the airport on the mainland. Alternately, it's moments from the colorful Burano Island, known for its lace production, and Torcello, home to a magnificent Byzantine basilica. *vladi-private-islands.de*

FROM TOP: COURTESY PRIVATE ISLANDS INC. (2); COURTESY VLADI PRIVATE ISLANDS

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Ilha da Josefa, Brazil

Price: 32 million reals ($8.1 million)
Size: 13.6 acres
Bedrooms: 8

Located in Angra dos Reis, a vacation area between Rio and São Paulo, the island compound comprises 16 buildings with a combined 21,000 square feet of space. Although there's a helipad, the mainland is only a 10-minute boat ride away. With its proximity to the coast, power is supplied by underwater electrical lines, but there's a freshwater source on Ilha da Josefa itself. *christiesrealestate.com*

At Ilha da Josefa, the tides lap at the front steps

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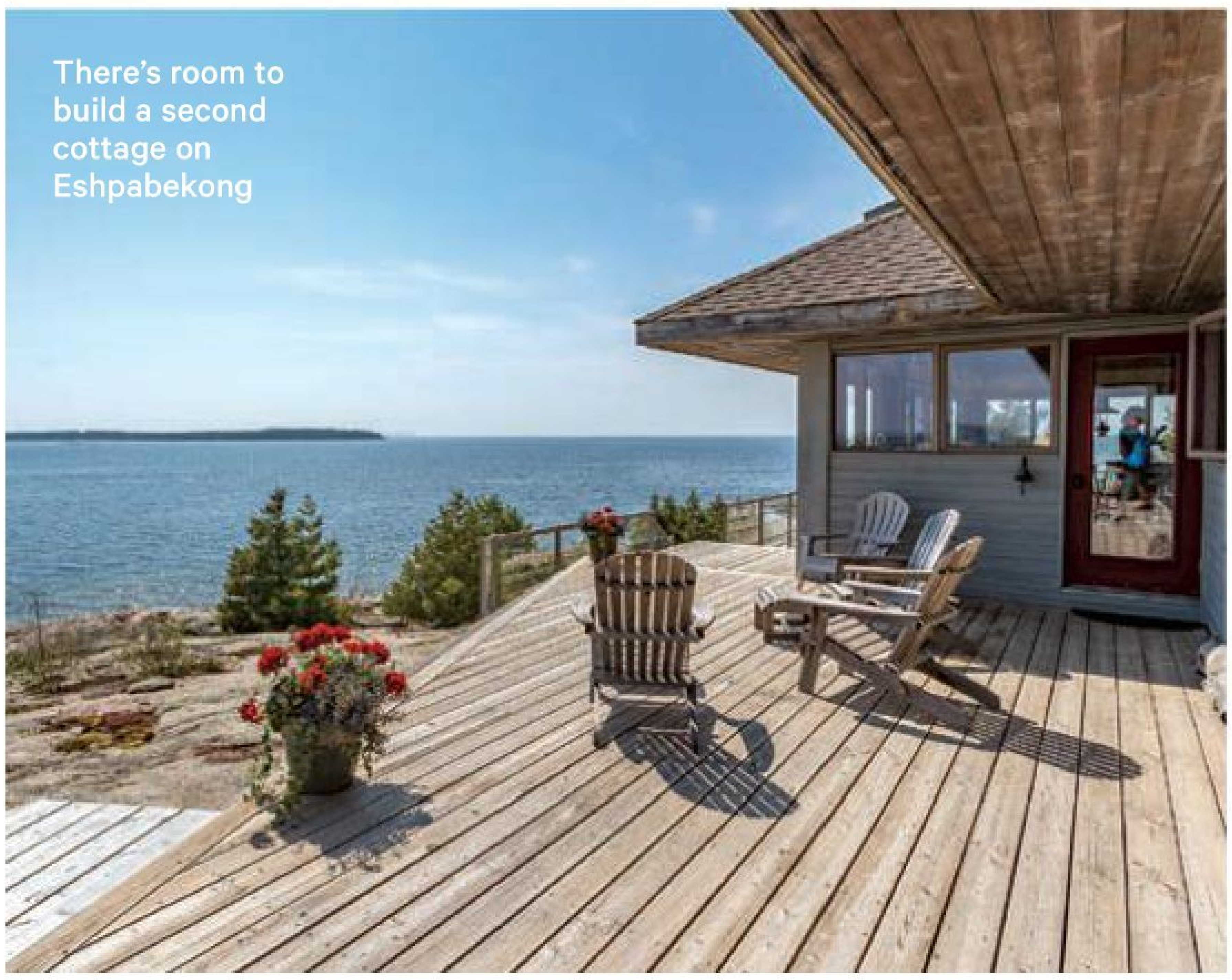
Eshpabekong Island, Ontario

Price: $2.5 million
Size: 10.5 acres
Bedrooms: 3

Eshpabekong, a group of four small islands in Lake Huron's Georgian Bay, is about two hours north of Toronto (the travel time includes the drive and boat ride). There's a timber-frame cottage on the 10.5-acre main island, as well as a 100-foot-long dock where boats moor once the lake unfreezes in late spring. Solar panels and backup generators provide power. The current owners have secured municipal approval to build a second cottage plus two sleeping cabins should buyers want to create a fully realized compound. *privateislandsonline.com*



There's room to build a second cottage on Eshpabekong

Most of Lataro is a conservation reserve

Lataro Island, Vanuatu

↙

Price: About $10 million
Size: Approximately 800 acres
Bedrooms: 4, plus staff quarters for 18

Lataro is covered in old-growth rainforest and sits among almost 4 square miles of coral reefs; 90 percent of the island is a conservation reserve. (It's one of the only remaining habitats of the highly endangered coconut crab, the largest terrestrial crab on the planet.) The compound has solar power and ample water reserves. The South Pacific property is in fact a 75-year leasehold that expires in 2082. *vladi-private-islands.de*

Get Ready to Shell Out

Jewelry inspired by the beach is this season's hottest accessory. *By Paula Knight Photograph by Magdalena Kmiecik*

For many, the peak of puka-shell relevance came and went with David Cassidy in *The Partridge Family*. For jewelry designer Irene Neuwirth, who grew up near the ocean in Southern California, that beach influence never waned. "I was really into puka shells in college," she says. "I love using stones that feel like they come from the bottom of the sea."

Jewelry inspired by the beach was one of the biggest trends in this year's collections. Cowrie, cockle, sunray venus, and scallop shells are being paired with conventional precious stones such as diamonds and emeralds.

Brazilian designer Silvia Furmanovich has used shells over her 18-year career to highlight the "beauty that already exists in nature." One of her favorite books is *Gift From the Sea*, Anne Morrow Lindbergh's 1955 collection of essays in which shells evoke meditations on the stages of human life. This year she created a pair of earrings made with natural shell, turquoise, and diamonds. They go with just about anything: "It depends on the person," she says. "But you could even wear them for a black-tie event."

Neuwirth's puka-shell-inspired necklace doesn't use real shells, but the string of opal beads is designed to look like something a beach bum might wear. There's a hiding-in-plain-sight factor that boosts its sentimental value. "It's such an intimate thing," she says, "because nobody knows what it is."

1. 22-karat gold shell earrings with pearls by Lalaounis, *$7,800; 212 439-9400* **2. Les Charmantes necklace with vintage and antique charms** by Haute Victoire, *$5,900; hautevictoire.com* **3. Earrings with shell pendants in metal with aged gold finish, crystals, and mother-of-pearl** by Gucci, *$890; gucci.com* **4. Knotted opal candy necklace** by Irene Neuwirth, *$8,980; ireneneuwirth.com* **5. Gold clamshell brooch** by Oscar de la Renta, *$190; available at Nordstrom* **6. Shell earrings with diamonds in white enamel, 18-karat gold, and platinum** by David Webb, *$37,000; 212 421-3030* **7. Earrings in 18-karat gold with diamonds, turquoise, and natural shells** by Silvia Furmanovich, *$10,600; available at Bergdorf Goodman* **8. Pearl necklace with crystal-encrusted shell charm** by Alexander McQueen, *price upon request; available at Alexander McQueen—Madison Avenue* **9. Diamond and emerald Sea Flower ring in pink gold and ivory** by Selim Mouzannar, *$6,820; selimmouzannar.com*

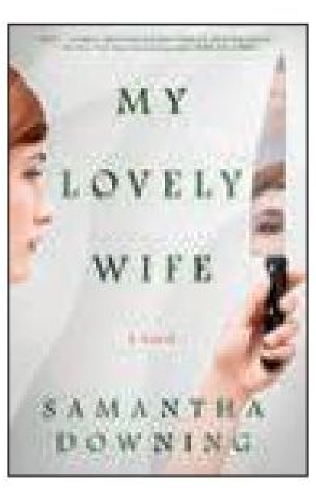
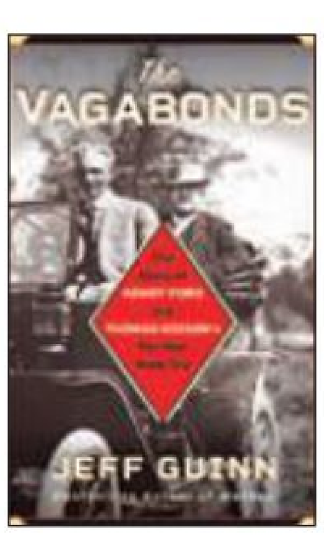
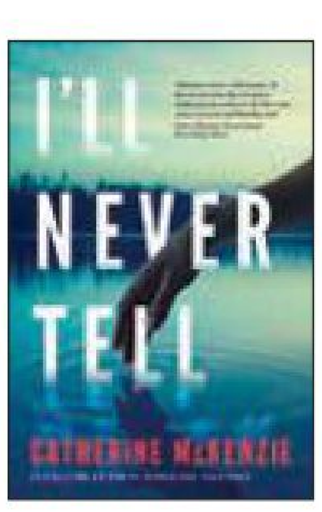
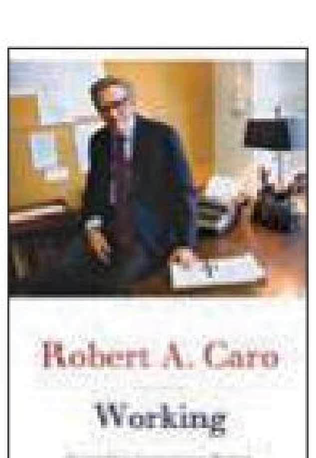
PROP STYLIST: GOZDE EKER

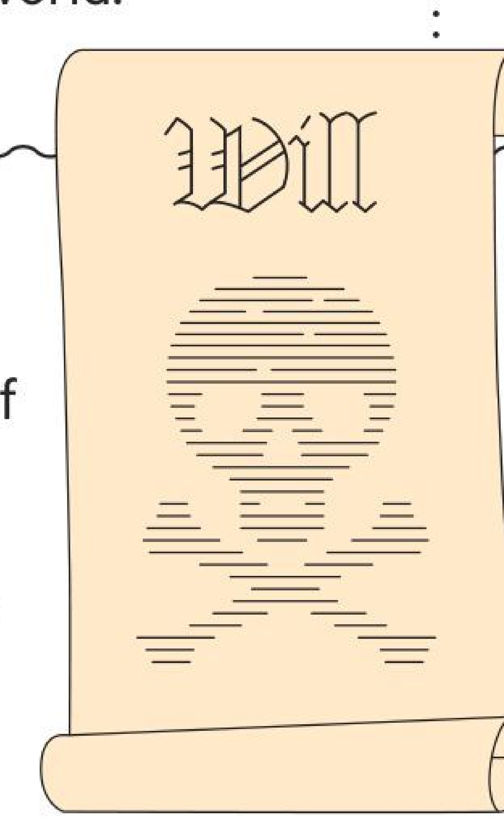
KEY: Love affair · Exotic locale · Murder · Rich folks · Mind games · True story

The Great Getaways Of Summer 2019

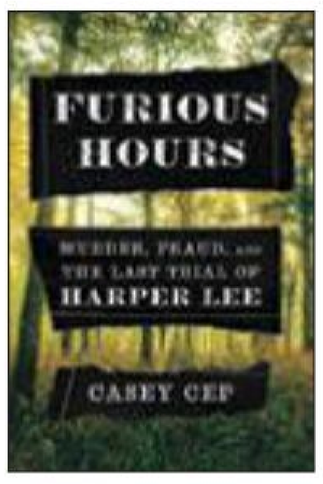
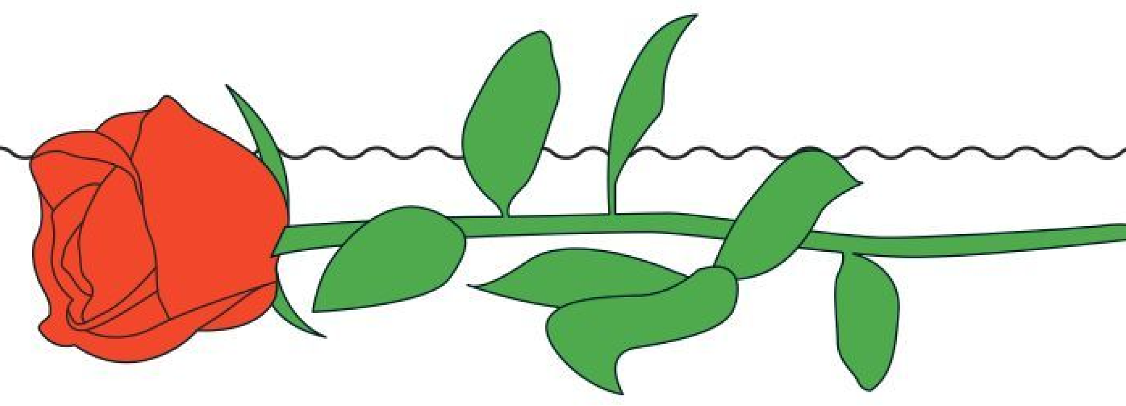
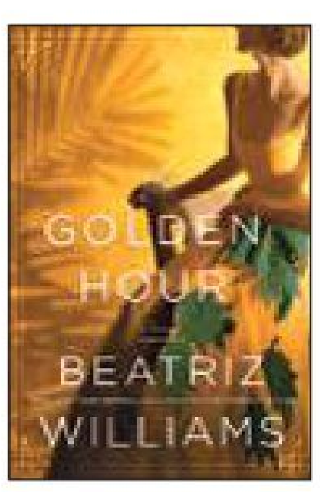
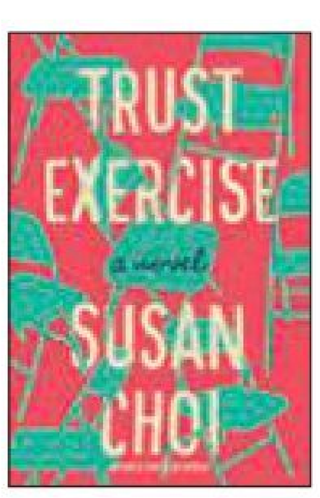
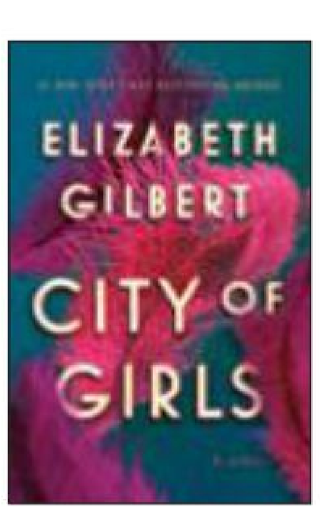
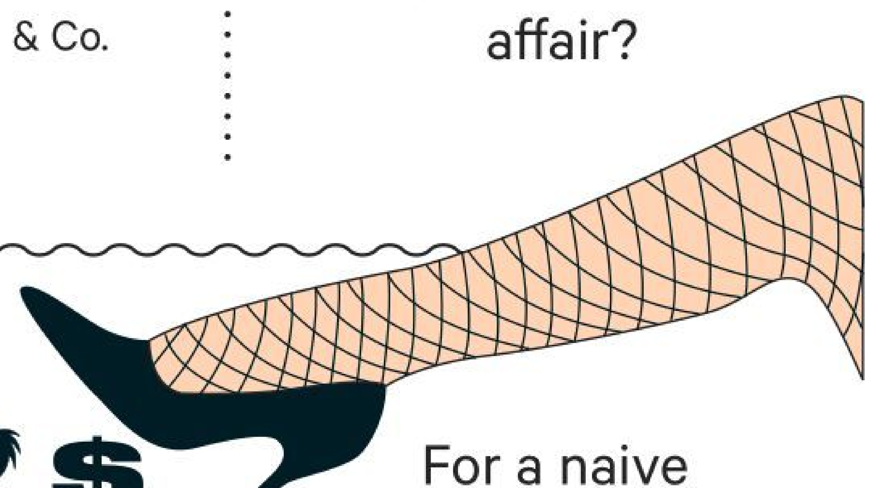
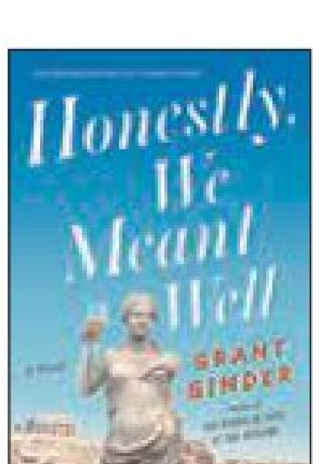
The best books of the beach season all feature something in common: A desire to escape place, time, or circumstance

By Claire Ballentine

BOOK	CENTRAL ESCAPE	SYNOPSIS	BEST LINE
 ***My Lovely Wife*** by Samantha Downing, Berkley	Instead of couples therapy, what if you kept your marriage alive by murdering young women?	A suburban couple's proclivity for violence spirals out of control when the discovery of a victim's body generates intense public interest, requiring an elaborate cover-up.	"Millicent killed Robin the same way I had killed Holly. No hesitation. All instinct. And it was sexy."
 ***The Vagabonds*** by Jeff Guinn, Simon & Schuster	Hit the road with best friends Henry Ford, Thomas Edison, and Harvey Firestone at the dawn of the automotive era.	Nearly every year from 1914 to 1924, the three titans of American industry took a highly publicized road trip to promote "the possibilities of car travel." It happened to be a pivotal decade that transformed the world.	"It seemed a foolproof plan. And then, on August 2, President Warren G. Harding died."
 ***I'll Never Tell*** by Catherine McKenzie, Lake Union Publishing	Imagine how different your life would be if your parents ran a summer camp.	The five MacAllister siblings reunite at the family's camp in rural Canada after the death of their parents. Their father's will stipulates that four of them must determine if older brother Ryan killed camper Amanda Holmes 20 years ago.	"Her father had been spying on them. All of them. For twenty years."
 ***Working*** by Robert A. Caro, Knopf	Put yourself in the shoes of America's most recognized biographer.	*The Power Broker* author Robert A. Caro became a successful nonfiction writer in the U.S. through a journalistic approach to truth ("Can it be verified?") and novelworthy prose. His new book provides a peek into how he manages it all: hard work and a brilliant wife.	"Interviews: Silence is the weapon, silence and people's need to fill it—as long as the person isn't you, the interviewer."



ILLUSTRATIONS BY JACI KESSLER LUBLINER. IMAGES COURTESY PUBLISHERS

BOOK	CENTRAL ESCAPE	SYNOPSIS	BEST LINE
 ***Furious Hours*** by Casey Cep Knopf	After working with Truman Capote on *In Cold Blood*, Harper Lee decamps back south to report her own crime novel.	An Alabama reverend, accused of murdering a growing list of family members for insurance money, is shot dead at the funeral of one of them. The trial of his killer captures the attention of the state's most famous author.	"A murdered person's name always becomes synonymous with her murder; a murdered person's death always threatens to eclipse her life."
BW PICK  ***Three Women*** by Lisa Taddeo Simon & Schuster	Take your pick of perspectives: an unloved housewife, a student in love with her teacher, or a restaurateur with a voyeuristic husband.	 Lisa Taddeo tracked three women and conducted thousands of hours of interviews with them to understand, and portray, the nuances of female desire.	"She wipes her eyes and walks out and passes the rest of her senior year like a kidney stone."
 ***The Golden Hour*** by Beatriz Williams William Morrow	A society reporter heads to Nassau in 1941 to cover the infamous Duke and Duchess of Windsor and their colorful coterie.	A shocking death under the Caribbean sun. A cover-up with a whiff of royal privilege. Williams mixes those ingredients with spies, swindles, love affairs—plus a dash of racial animosity—and the result is a zesty romantic cocktail. 	"Murder. It's one of those words, isn't it, that sounds as dreadful as the deed itself."
 ***Trust Exercise*** by Susan Choi Henry Holt & Co.	What would happen if someone shed fresh light on your most intense high school love affair?	A three-part novel that has "Reese Witherspoon film adaptation" written all over it starts with a love story at a performing arts high school in the '80s, then upends what you thought you knew, complete with revenge fantasy and unexpected final reveal.	"Therapy can seem like a revision of memory, like you're saving your life by destroying your story and writing a new one."
 ***City of Girls*** by Elizabeth Gilbert Riverhead Books	 For a naive 19-year-old girl, nothing could be more alien than dizzy, post-Prohibition New York.	At 89, Vivian Morris takes a rollicking look back on her days as a promiscuous girl working with a cast of flamboyant characters at her aunt's theater in the 1940s. 	"At some point in a woman's life, she just gets tired of being ashamed. After that, she is free to become whoever she truly is."
 ***Honestly, We Meant Well*** by Grant Ginder Flatiron Books	A remote, run-down island is lovely for a vacation but maybe not where you want to live the rest of your life.	The Wright family needs to flee—their lives, their mistakes, and each other. Still, a hilariously misguided visit to certain overlooked ruins in Greece ends up unearthing more than just ancient history.	"A mistake is mismatched socks or taking the Bay Bridge at rush hour. You didn't make a mistake this time, Dad. You made a baby."

Meet the Beach Blazer

Rosé finally has the wardrobe companion it's been waiting for

By Chris Rovzar Photograph by Hannah Whitaker

Every summer has its vice.

In 2015 it was the oversize pool float, which appeared on Instagram in unicorn or flamingo form, endlessly squished between moist, golden thighs. In 2017 it was the RompHim, a carefree merger of shorts and shirt that started as a Kickstarter campaign and somehow swelled to seemingly capture all of global douchedom in a single pastel garment.

In 2019 you'd be wise to prepare your eyeballs for this year's version—the beach blazer. It's a half-tuxedo, half-towel concoction that solves the eternal summer conundrum: How do I dress formally, but also not wear pants?

This is what Manhattan web developer Marko Andrus was daydreaming about in early 2014, as he looked toward a season in the Hamptons. "What's that cozy layer you bring to the beach and put on at the end of the day?" he wondered. "For many people it's a hooded sweatshirt, which I think is kind of gross. You're not making a chic fashion statement."

Andrus ordered some yards of terry cloth and took them to his tailor on the Upper East Side to be made into a blazer. A few weeks later, "I was running around on Nantucket in it," he recalls. "People were stopping me on the beach and saying, 'Who the hell are you, and where did you buy this?'"

Thus was born Bask Poolside Supply Co., a beachwear business specializing in what Andrus calls the "toweling blazer," which generally has regatta-style piping and comes in white, navy, and black. Unlike a bathrobe, the $325 jackets are snug and neatly structured. Andrus estimates he's made more than 10,000 so far, including 2,500 black-and-red blazers ordered by Mexican beermaker Dos Equis, which will distribute them this summer as part of its "Keep It Interesante" campaign.

In early 2016, two brothers, Federico and Gabriel Uribe, were working on a similar idea across the Atlantic Ocean. They'd observed that innovation in beach-centered clothing was rare. "It doesn't matter whether you buy a pair of swim trunks for 30 bucks or 300 bucks," Gabriel says. "At the beach, everybody sort of looks the same." They unveiled their collection, 209 Mare, at the 2017 Monaco Grand Prix. The flagship garment was a €345 ($386) tuxedo-style jacket with a velvet shawl collar and tidy waist sash.

It's a look that existed in the preppy glory days of the past—similar jackets have been spotted from Ralph Lauren, Brooks Brothers, Lacoste, and Brioni. And the big brands may catch on again: Swimwear powerhouse Orlebar Brown started selling a $495 beach blazer in navy with white piping a few weeks ago that's proven popular. "Ironically, it was a pretty proud day for us," Uribe says. "If a major player like Orlebar Brown sees potential in this, we must be on the right path."

For now the jackets are mostly available online. But get ready to see them out on the sand this summer; Bask and 209 Mare have made deliveries everywhere from Montauk to Mykonos. As Andrus says, "Wherever spoiled people congregate, you're going to find someone wearing a Bask blazer." B

The Bask toweling blazer

The Cold Standard

A high-tech ice chest can keep your Champagne chilled for days. *Photograph by Jessica Pettway*

For maximum insulation, the most reliable coolers use plastic formed by roto-molding—rotating heated material in a cast—which creates more durable material than an injection mold, whose corners and joints can falter. Orca, founded in 2012 by outdoor enthusiasts keen to make a superior ice chest, pairs this solid build with a padded stainless-steel handle, a lid gasket for an airtight seal, and, in newer models, LED lights that turn on when it's opened. The 20-quart base model ($200) comes with a net attachment on the back for more storage and Orca's trademark clasps, in the shape of a whale's tail.

THE COMPETITION

• Yeti, the brand likely most familiar to choosy cooler consumers, makes a 35-quart, $250 chest. Manufactured in Thailand, the Tundra 35 comes with a dry basket and has two sturdy rope handles.

• California-based Pelican Products Inc. is known for a wide range of durable cases, despite their being injection-molded. Its $225 Elite Cooler holds 30 quarts, secures with latches, and has an integrated bottle opener and two cup holders.

• The Rovr RollR 45 costs $370 and has a 45-quart capacity, rugged wheels, a dry bin, and an extra bin that sits on top. Plus it has six spots for add-ons such as a cutting board and umbrella holder.

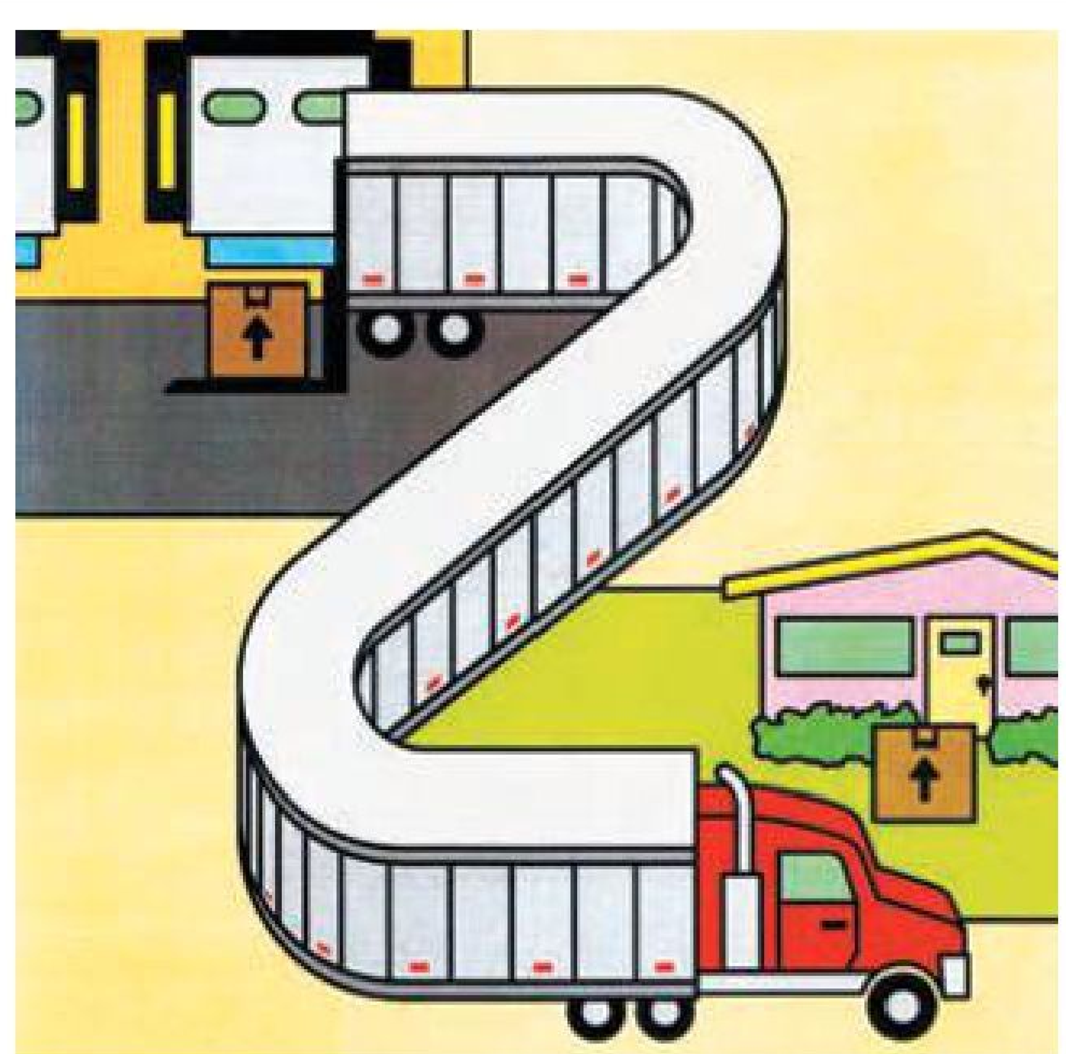
THE CASE

Orca's chilling chops equal—and in some tests outdo—those of more-storied brands. Its 3-inch-thick insulation can keep food fresh for up to 10 days, and it's the only brand that adds (for $150) a built-in, rechargeable battery-powered light, lending a fridgelike domesticity to outdoor adventures. The padded handle makes it easier for one person to carry it over sand, whether to claim a spot by the water or set up by the bonfire. *$200; orcacoolers.com*

Honeywell's Bet On E-Commerce Pays Off

By Brooke Sutherland

Amazon.com Inc. raised the bar for its retail rivals yet again with its April announcement that it would roll out free one-day shipping for top customers. Stepping up the pace from the previous two-day shipping window will be costly: Amazon will spend $800 million in the current quarter alone to modify its logistics network, forcing competitors to make sizable investments to keep up. One likely beneficiary of the apparently insatiable demand for ever-faster shipping is Honeywell International Inc. and its Intelligrated warehouse automation business.



Honeywell's $1.5 billion acquisition of Intelligrated in 2016 is one of the rare large, technology-focused deals that's been a smashing success. Intelligrated's products—which include voice-directed systems that accurately guide employees to goods within massive warehouses—help companies reduce costs and shorten the time between orders coming in and packages going out.

Unlike General Electric Co.'s ill-fated—now more or less defunct—attempt to become a top 10 software provider, the payoff from this bet has been swift for Honeywell. Intelligrated boosted its sales by double digits in the most recent quarter, continuing its blockbuster growth.

And while Amazon is an important customer, it's not the only one: Roughly two-thirds of the top 50 U.S. retailers use Intelligrated's technology. The U.S. may be in the "middle innings" of converting traditional retail sales to e-commerce, Honeywell Chief Executive Officer Darius Adamczyk said in an interview with Bloomberg TV, but there's still a huge untapped opportunity in Europe, India, and other overseas markets. Honeywell last year paid €425 million ($490 million at the time) to acquire Germany-based warehouse automation company Transnorm. In 2017 it bought a 25 percent stake in Flux Information Technology Co., a provider of warehouse and supply-chain management software in China, and formed a joint venture with the company.

Apart from the Transnorm purchase, Honeywell hasn't done much M&A since Intelligrated. That's not for lack of trying or a lack of cash. Prices of would-be takeover targets aren't what Honeywell would like them to be, and it's adamant about not overpaying. Targets like Intelligrated don't come along every day, and for now investors are willing to be patient while Honeywell hunts for the next one. Ⓑ

—*Sutherland is a deals columnist for Bloomberg Opinion*

30%

● LEAPS AND BOUNDS
Intelligrated's 2018 orders were up about a third from 2017, and the most recent quarter's sales extended a streak of double-digit growth.

● GROWING PAINS
The business's profitability is weaker than Honeywell's as a whole, but sales will shift from equipment to service contracts, which helps.

ILLUSTRATION BY GEORGE WYLESOL

Bloomberg Businessweek (USPS 080 900) May 13, 2019 (ISSN 0007-7135) S Issue no. 4614 Published weekly, except one week in February, April, June, July, September, and two weeks in December by Bloomberg L.P. Periodicals postage paid at New York, N.Y., and at additional mailing offices. Executive, Editorial, Circulation, and Advertising Offices: Bloomberg Businessweek, 731 Lexington Avenue, New York, NY 10022. POSTMASTER: Send address changes to Bloomberg Businessweek, P.O. Box 37528, Boone, IA 50037-0528. Canada Post Publication Mail Agreement Number 41989020. Return undeliverable Canadian addresses to DHL Global Mail, 355 Admiral Blvd., Unit 4, Mississauga, ON L5T 2N1. Email: bwkcustserv@cdsfulfillment.com. QST#1008327064. Registered for GST as Bloomberg L.P. GST #12829 9898 RT0001. Single Copy Sales: Call 800 298-9867 or email: busweek@nrmsinc.com. Educational Permissions: Copyright Clearance Center at info@copyright.com. Printed in the U.S.A. CPPAP NUMBER 0414N68830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