

SPECIAL SECTION  
DISRUPTION'S  
FALLOUT

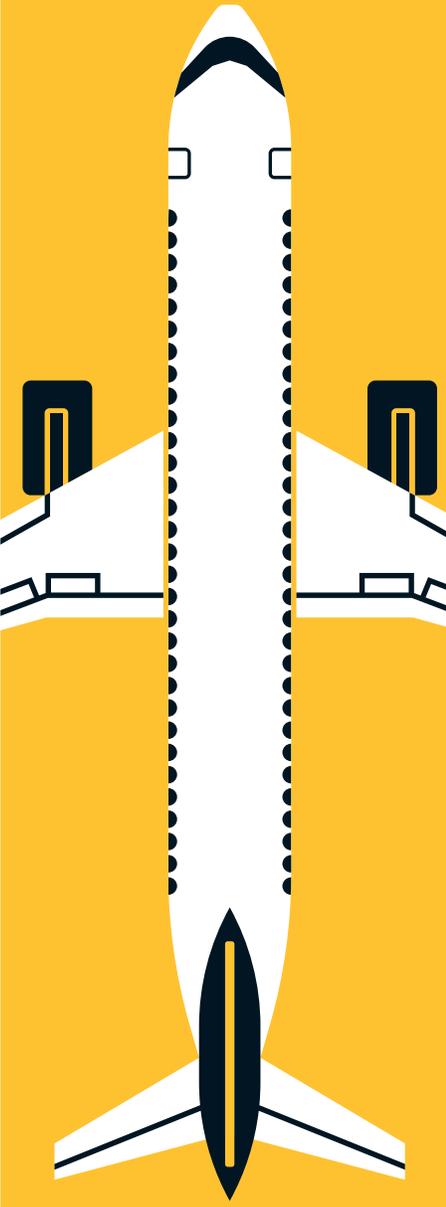
# QuickTake

Hard-to-explain topics, explained simply

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**\$1t**  
Size of Norwegian fund considering fossil-fuel divestment



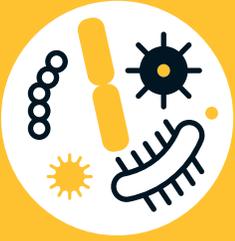
**2021**  
Expected first delivery of China's C919 jet challenging Boeing and Airbus



**\$800b**  
Market value of Bitcoin and other cryptocurrencies in January 2018



**34**  
Countries taxing sweetened beverages to reduce sugar consumption



**38t**  
Number of microbes, mostly beneficial, living in the human gut



**1/2**  
Share of world's recyclable paper and plastic once exported to China



**105m**  
Square feet of U.S. retail space shuttered in 2017, a record



**83%**  
Vladimir Putin's average approval rating since 2015





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# Editor's Letter

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In a knowledge economy where ideas and information matter, conveying understanding has become more important than ever. Sometimes what's needed is an explainer, rather than a standard news story.

It's in this light that I introduce the ninth edition of QuickTake magazine. In succinct, authoritative guides, Q&As and graphics, QuickTakes provide a fun-to-read entry point for current and complex issues. You can use them to get smart fast on financial trends, global affairs and public policy puzzles.

A library of more than 350 QuickTakes can be found on the Bloomberg Terminal at QUICK <GO>; individual stories can be found on the web. These are living articles, revised and updated as events unfold, with links to videos and more resources for curious readers.

I hope you'll find the time with QuickTakes well spent.



John Micklethwait  
Editor-in-Chief  
Bloomberg  
July 2018



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## Cyberwarfare

By Jordan Robertson and Laurence Arnold

The dogs of war are now digital. Nations have turned to cyberwarfare to attack everything from weapons systems to power grids. p31



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**1**



**DISRUPTION'S  
FALLOUT**

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**How Amazon is scaring  
businesses from banks to  
grocery stores**

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**U.S. malls are quiet, even  
though times are good**

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**The big question about  
Bitcoin is still, “What is it?”**



# Retail Apocalypse

By Matt Townsend, Jenny Surane and Christopher Cannon

**Internet sales aren't a new threat to brick-and-mortar stores. E-commerce has grown steadily in the U.S. from just over 3 percent of all retail sales in 2008 to about 9 percent in 2017. Yet the pace of American store closings jumped sharply last year: 9,108 were shuttered and just 4,881 opened. The so-called retail apocalypse intensified despite a growing economy, shrinking unemployment and sky-high consumer confidence.**

## So who's worried?

Investors and executives in almost every industry worry about being "Amazoned." Repeatedly over the last few years, announcements or rumors of Amazon's interest in a new business line have resulted in a sell-off of stocks in related companies. The day Amazon announced it was buying the Whole Foods Market Inc. supermarket chain in 2017, other grocers, packaged-food companies and restaurants that might be in Amazon's way shed about \$50 billion in collective stock market value. (Many recovered after a brief panic.)

## How dominant is Amazon?

It accounts for about 44 percent of U.S. online sales, which hit \$453 billion in 2017. But looking through a wider lens, Amazon accounts for less than 2 percent of what American consumers spend at stores, restaurants and websites annually. Its U.S. sales are one-third the size of Walmart's. And two-thirds of Amazon's sales come from the U.S., even after the company made a big push into Germany, Japan and the U.K.

## What do Amazon's critics say?

U.S. President Donald Trump has said the company doesn't compensate the U.S. Postal Service enough for package delivery. He and other critics also have said Amazon puts mom-and-pop retailers out of business and doesn't pay its fair share of taxes. Amazon's contract with the Postal Service is confidential but the service is legally prohibited from charging shippers less than its delivery costs. Still, one analyst calculated in 2015 that the company was paying about \$2 a package, or about half the commercial rate. While Amazon has displaced many small retailers, the company says it also helps small businesses by providing a marketplace used by 300 million customers. Amazon says it pays taxes where required.

## Why are so many stores closing?

Even as online sales were expanding, the U.S. furiously added malls and stores. In many regions, store growth outpaced consumer spending. Several large retailers were also acquired by private equity investors, who loaded them up with debt.

## Is it getting worse?

There's more shakeout to come. As more big retailers, such as Toys "R" Us, go bust, and mall "anchor tenants" like Macy's and J.C. Penney close stores, the amount of new empty retail space is set to surpass the record 105 million square feet shuttered in 2017. Fewer mall shoppers can drive smaller stores out of business, fueling predictions that a quarter of all American malls could shut by 2024. The U.S. has about 24 square feet of shopping space per person, much more than any other developed nation.

## What's online shopping's role?

It's certainly been devastating for many retailers, especially bookstores. But social factors have also taken a toll. As more workers are allowed to wear casual clothes to the office, overall spending on apparel has fallen. And twenty-somethings want to lay out more for experiences and less for things.

## Trouble in Store

U.S. store openings and closings, excluding grocery and restaurants



## Why did store closings spike in 2017?

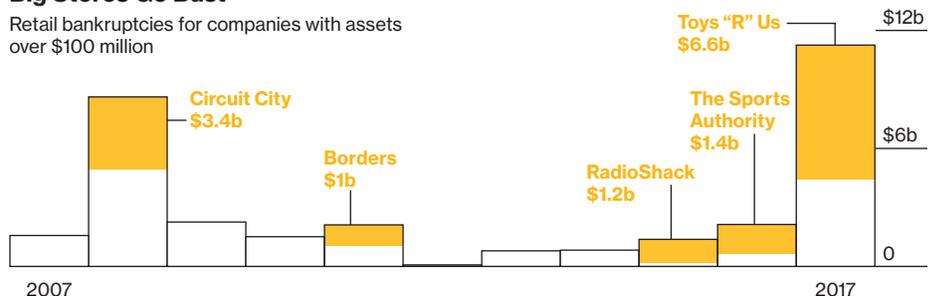
Until then, struggling retailers were helped by low interest rates, as the U.S. Federal Reserve pumped money into the economy after the 2008 financial crisis. The Fed is now raising rates, so loans cost more. Even profitable retailers are finding it tough to make debt payments.

## How many jobs have been lost?

The total number of retail workers peaked at 15.9 million in January 2017; by year-end the number had fallen by 52,000. That 0.3 percent drop occurred as the total number of employed Americans grew 1.3 percent. Empty stores can spread a sense of blight, displace low-income workers and erode a community's tax base.

## Big Stores Go Bust

Retail bankruptcies for companies with assets over \$100 million



# Crypto's Many Questions

By Sam Mamudi, Olga Kharif and Matthew Leising

Five years after Bitcoin broke into the public consciousness, investors and regulators around the world are still grappling with the same questions: What exactly is it? Why all the excitement? Should I buy it? If anything, the questions have multiplied as alternatives such as Ethereum, Ripple's XRP and Bitcoin Cash have attracted cult-like communities of followers and billions of dollars. Are these so-called cryptocurrencies the future of money? Here's a guide for those feeling at sea in these turbulent digital waters.

## Are cryptocurrencies a real thing?

Let's just say they're worth a fair amount, even after some pretty huge price swings. In one of the wildest investment manias in history, the total market value of all traded cryptocurrencies exploded late last year to peak at about \$800 billion in January by one count; the only publicly traded companies in that vicinity were Apple, Microsoft and Google's parent, Alphabet. Four months later, though, the value of crypto-assets had plunged by about two-thirds, as regulators began to crack down and fear of big losses began to replace fear of missing out.

## Is Bitcoin money?

In a way, yes, though it's not necessarily a useful form of it. It's possible to buy or sell some things with Bitcoin but very few people do. Extreme volatility is perhaps the biggest argument against treating cryptocurrencies as you would

the dollar or the euro. The hallmark of a reliable currency is that it provides a stable store of value. You wouldn't want to spend Bitcoin on groceries today if you thought its value might soar tomorrow, or take your salary in Bitcoin if you thought it might plunge.

## So what is it?

Born out of the bitterness that followed the 2008 financial crisis, Bitcoin and its imitators aren't bills or coins printed or policed by a government or bank. They're electronic assets created and monitored by a community of users acting in a decentralized way, following protocols set down by the person or persons who dreamed them up. The "crypto" in the name refers to the encryption techniques used by so-called Bitcoin miners. And all the new currencies revolve around what's seen as Bitcoin's real innovation – blockchain, a publicly visible, largely

anonymous online ledger that records the calculations miners perform to verify transactions without the need for a central authority.

## Why are so many people down on Bitcoin?

You mean, why did legendary investor Warren Buffett call it "rat poison squared"? There's a long list of reasons: Besides the massive price swings, Bitcoin and other cryptocurrencies have been connected with scams, money laundering, tax evasion, cyberthefts, exchange outages, excessive speculation and more. Risks like these may have been easier for regulators to overlook when Bitcoin and its peers sat on the far fringes of finance, but they are moving ever closer to the mainstream. The stakes are much higher now that mom-and-pop investors and Wall Street banks alike are piling in.

## Is it time for a closer look?

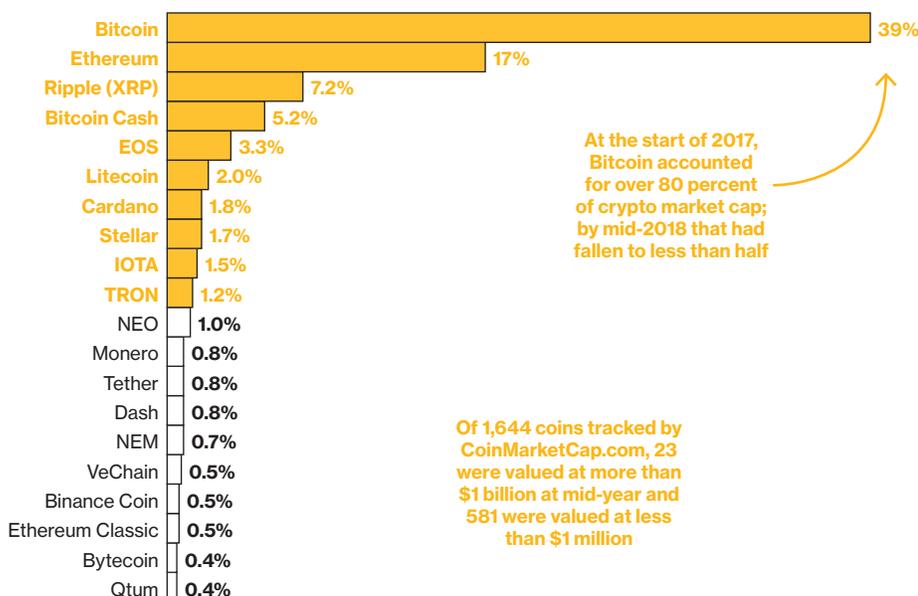
A wide range of regulators are trying to get a handle on cryptocurrencies. Turns out there's little agreement about what they fundamentally are: currencies, commodities, securities or something entirely new. Thus you'll see them called crypto-assets, digital tokens, coins or just "crypto."

## How are crypto-assets like commodities?

The vision behind Bitcoin laid out in a 2008 pseudonymous manifesto promised that no more than 21 million will ever be created. That means it's sometimes compared with scarce commodities such as gold, whose value is determined solely by what people are willing to pay for it. Crypto-assets have become popular in places where hyperinflation erodes the buying power of the local currency (think Zimbabwe), or where sanctions block purchases (think Venezuela and North Korea).

## Bitcoin's Little Brothers

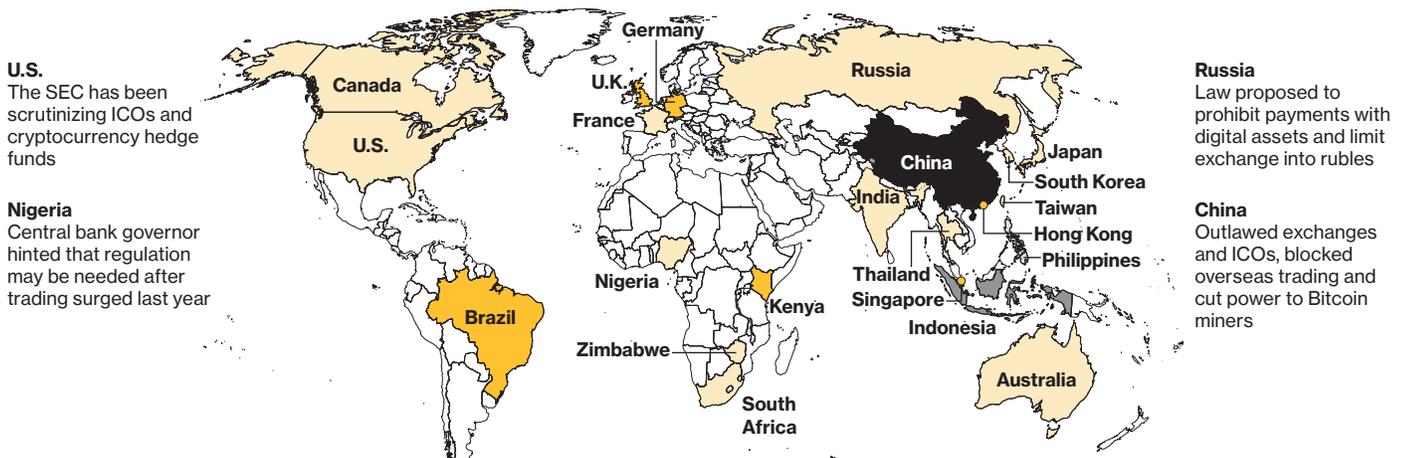
Each currency's share of the crypto market, as of May 31, 2018



## Getting a Handle on Crypto

Regulation varies widely, with many legal grey areas

Lighter regulation  Tighter regulation



### How are they like securities?

There's an argument that some crypto-assets have the same characteristics as stocks, such as a share of ownership in a common endeavor and the expectation of making a profit from work done by a company. Much of the focus is on new coins or tokens offered by startups through so-called initial coin offerings, or ICOs. While they take different forms, ICOs let companies bypass the venture-capital process by selling coins instead of shares. In some cases, the founders say coin buyers are prepaying to use a service that the company will build. In the U.S., the Securities and Exchange Commission has opened a broad probe into whether entities running ICOs are violating its rules by offering what are really securities. China has banned ICOs entirely. That didn't stop them from raising more than \$9 billion worldwide through the first five months of 2018.

### How are regulators clamping down?

Their approaches have run the gamut, from an exchange-licensing regime in Japan to a largely hands-off system in Switzerland, though the anonymous and borderless nature of many digital coins makes them tough to control. China, once the world's most active Bitcoin market, banned crypto-asset exchanges in 2017 and blocked access to overseas trading platforms. The crackdown came during government campaigns to stop money from leaving the country and to reduce financial risk. Most countries, notably the U.S., have not yet formulated a comprehensive regulatory strategy. But U.S. prosecutors are investigating whether traders have been manipulating the price of digital currencies.

### How can I buy Bitcoin?

There are a bunch of ways, all with different risks. Individuals can buy crypto-assets directly from online exchanges that will trade them for regular currencies like the dollar, the euro or the yen. Most of the exchanges will offer to hold the asset for you in a digital "wallet," although an alarming number of exchanges have been hacked. You can also hold the asset for yourself, in a digital wallet or in so-called cold storage: for instance, a thumb drive disconnected from the internet. Since December 2017, investors can place a wager on Bitcoin – betting it will either rise or fall – without having to own it directly, via futures contracts traded on two big U.S. exchanges.

### What's Wall Street's approach?

Until recently, it mostly kept its distance. Now there's lots of interest if not yet much action. Lenders including JPMorgan, Bank of America and Citigroup have barred customers from using their credit cards to buy cryptocurrencies to avoid the risk

associated with these transactions. But Goldman Sachs Group Inc. planned to begin trading Bitcoin futures on behalf of customers. And everybody in finance is at least dabbling in blockchain, which is seen as an innovative way to handle transactions that could potentially upend a wide range of industries.

### Why are there so many digital coins?

There are thousands of Bitcoin rivals, and it's not clear how many of them are going to prove either legal or useful. Some were developed to overcome what their creators saw as flaws in Bitcoin, such as slow transaction times or high fees. Die-hard fans of these newer currencies think they'll eventually overtake their bigger cousin. The largest rival is Ethereum, which has a total market value half the size of Bitcoin. These so-called alt-coins are certainly getting more attention: By mid-2018 they accounted for more than half of all the money in crypto-assets, compared with less than a fifth at the start of 2017.

### Who are the crypto true believers?

Here's a short list of enthusiasts: Teenagers and hackers drawn by a disdain for authority and the libertarian aspirations behind Bitcoin's creation. Technology geeks who believe they're disrupting the marketplace and getting in early on the next chapter in the history of money. Financial firms and central banks that think something important will come out of all this even if Bitcoin withers. And there are also plenty of investors who aren't true believers but who expect to find one to sell their holdings to if crypto prices soar again.

### One Wild Ride

Bitcoin soared to \$19,511 on Dec. 18, 2017



GRAPHIC MAP AS OF MARCH 26, 2018, BASED ON REGULATION OF EXCHANGES, TOLERANCE OF ICOs, ALLOWANCE OF CRYPTO PAYMENTS, CONVERSION TO CONVENTIONAL MONEY, PLANNED LEGISLATION AND WARNINGS FROM REGULATORS; SOURCE: BLOOMBERG (MAP AND BITCOIN PRICE)

# The Touch-Screen Generation

By Giles Turner

Ever since Socrates complained about the written word ruining memories, people have been wringing their hands over the potential harms of technological innovation. At least Socrates never had to worry about his Snapstreaks. Now researchers say social media could be making more teens depressed, and there's plenty of parental panic about the attention-sapping effects of the smartphone age.

## Is technology disrupting childhood?

Absolutely. Today's smartphone-wielding teens and preteens are glued to their devices and posting on social media even as they deal with the traditional adolescent stew of self-identity, peer pressure and hormones. They're figuring it out in front of an audience of hundreds, if not thousands, of "friends" commenting in real time on what they do and – via Snapchat and Instagram – how they look. Snapstreak, a Snapchat feature that congratulates users for consistently messaging their friends, has been criticized for being addictive by England's children's commissioner. An online survey by the U.K.'s Safer Internet Centre of 1,500 8-to-17 year olds in 2017 revealed that 1 in 8 had shared a selfie in the last hour. Even some Silicon Valley executives say they want their offspring raised low-tech.

## What does the research show?

Among the data points from various surveys: The average age for getting a first smartphone in the U.S. is about 10, and half of British and American kids have social media accounts by age 12. About a quarter of teens say they are online "almost constantly." In a 2015 study, about 1 in 10 girls in the U.K. reported using social networking sites for more than three hours on a normal school day – and those that did were more likely to have a higher difficulties score, a measure of mental health. A study led by Jean Twenge, a psychologist at San Diego State University, found that U.S. teens who spend more time online are less happy than those who pursue other activities. In other research, Twenge posited that social media is contributing to a rise in teen depression.

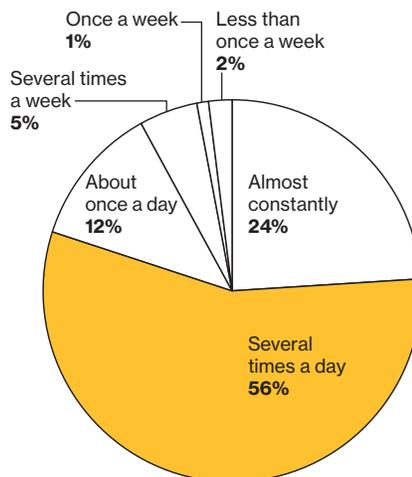
## Is there a contrary view?

One obvious problem in blaming social media for miserable young people is the supposition that there has ever been a halcyon time for teenagers. Researchers

from the Oxford Internet Institute and Cardiff University analyzed data from 120,000 15-year-olds and concluded that, up to a certain point, teenagers' well-being actually rose as their connectivity increased. While too much screen time can have a negative effect, the research showed other factors, such as eating breakfast and getting enough sleep, were more important. That tipping point was reached at about 2 hours of smartphone use on weekdays. One big problem with all the existing research is how fast smartphones took off and social media developed, making in-depth and timely studies difficult. Snapchat was founded only in 2011.

## Time Spent Online

Share of teenagers 13 to 17 who reported using the internet at each frequency in a 2015 study



## Teenage Tipping Point

A separate 2017 study of 120,000 15-year-olds in the U.K. identified the point at which weekday use of technology began to hurt well-being. Results on weekends were higher.

Video-game play

1h40m

Smartphone use

1h57m

Watching videos

3h41m

Computer use

4h17m

## Aren't there age restrictions?

Since most sites just ask registrants to click a box to verify they're of age, the limits are rather easy to circumvent. On Facebook, Instagram, Snapchat and Twitter, users generally have to be at least 13 years old to create an account. Some countries have stricter rules: The minimum age for a Google account is 14 in South Korea and 16 in the Netherlands.

## Who's raising concerns?

Certainly many parents just want to throw the phone in the rubbish bin and make kids go play outside. A collection of pediatric and mental health experts are lobbying Facebook to discontinue Messenger Kids, a version of its Messenger app for children 6 to 12, saying young kids are "not old enough to navigate the complexities of online relationships." Another group of former employees from Google, Facebook and elsewhere created the Center for Humane Technology to raise alarms about the vulnerabilities caused by addictive products.

## Are the tech giants listening?

They're at least trying to appear to be. In January, two of Apple's big shareholders – activist investor Jana Partners LLC and the California State Teachers' Retirement System – urged the company to address a "growing societal unease" with smartphone use and worries it could hurt children. In June, Apple said the next version of its mobile operating system includes new features for parents. Google is adding more parental controls on its YouTube Kids app after reports that it hosted inappropriate videos. The moves may not be enough. In the U.K., Health Secretary Jeremy Hunt threatened in April to regulate Google, Twitter, Snapchat and other companies, saying their failure to prevent underage use left parents with an "invidious choice" – giving in to children too young to use their platforms or isolating them from their peers.

PHOTO: GUILLAUME ZUIL/AGENCE WJ/REDOX

GRAPHICS SOURCES: PEW RESEARCH CENTER (TIME SPENT); OXFORD INTERNET INSTITUTE, CARDIFF UNIVERSITY (TIPPING POINT)



# Facebook's Stumbles

By Sarah Frier

**Apology tours. Threats of regulation. Hostile questions from lawmakers in the U.S. and Europe. Facebook Inc. and co-founder Mark Zuckerberg have been in the hot seat lately, facing a backlash against the company's growing influence across the globe. The anger extends to other tech companies, like Alphabet Inc.'s Google and Twitter Inc., that share elements of the social-media giant's business model. There's no shortage of ideas about what Facebook and the others should do. There's no consensus, either.**

## Why are so many people mad at Facebook?

There have always been concerns about privacy and harmful content. But anger has grown since revelations about how Facebook's algorithms amplified misinformation during the 2016 presidential race, helping Russia run a campaign to divide U.S. society. In April, Zuckerberg had to testify in Congress after reports that the U.K. political consultancy that helped elect Donald Trump, Cambridge Analytica, had obtained personal information on up to 87 million Facebook users. In June, lawmakers in the U.S. demanded further answers about partnerships between the company and device makers, including Huawei, a Chinese company seen by the U.S. as a security threat, that may have allowed them to improperly access broad user data too.

## Why is all that a big deal?

Facebook has been caught off guard repeatedly about how its policies could be exploited. It was unprepared for how misconduct on the site, with its 2 billion users (not counting those of other apps the company owns, like Instagram and WhatsApp), can cause damage in the real world. And not just in the U.S.: Fake news spreading on Facebook has spurred outbreaks of violence against minorities in Sri Lanka, Myanmar and elsewhere, raising questions about the platform model of Facebook, Google, Twitter and other companies.

## What's the issue with platforms?

They position themselves as neutral conduits for people to share information. But they also shape what users see by promoting certain kinds of content. Now, as they try to clean up their sites, there's disagreement about how much power they should have over

what users can say and read, and to what extent they can use the data on their users to target advertising – the key to their massive earnings.

## What can be done about this?

As far as data goes, the European Union's new General Data Protection Regulation, or GDPR, asserts that users own their own data and sets strict rules for what companies can and can't do with it. On content, the U.S. has a new federal law that holds websites liable for knowingly facilitating crimes such as sex trafficking. Members of Congress from both parties have discussed rules for digital political ads that would require disclosure of their sponsors, as is now the case for print or broadcast ads. Germany has adopted, and other European countries are considering, laws that make social-media companies liable if they don't quickly remove hate speech or fake news.

## What does Facebook say?

Even as Zuckerberg says Facebook is open to regulation, the company is trying hard to show that successful self-regulation can make new laws unnecessary. Facebook is hiring thousands of people to improve its content moderation. But it doesn't have enough moderators in all the different languages its users communicate in.

Eventually, the company says, artificial intelligence programs will be able to spot problems in real time around the globe.

## What do critics say?

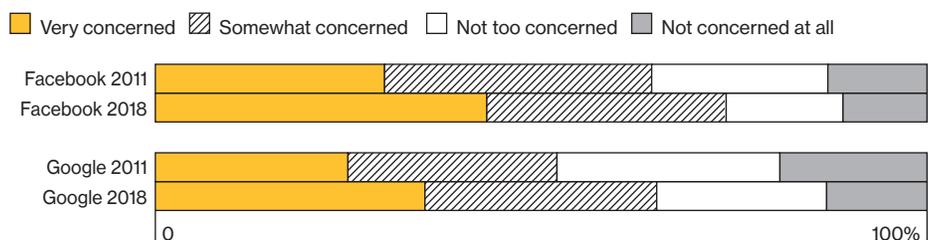
For the first time, lawmakers are starting to point to Facebook as a monopoly-like power, with unprecedented control over human communication. Civil libertarians don't like the idea of social-media companies intervening to block speech, whether on their own or in response to regulations. Interest groups tracking GDPR are already pinpointing ways in which Facebook and Google may not be in compliance.

## What does all this mean for the businesses?

Facebook's stock dipped after the Cambridge Analytica revelation, but it quickly rebounded. Advertisers worry that the new regulations and debate could end up strengthening Facebook and Google. If the companies keep a tighter hold on all the information they get from users, that makes advertisers more dependent on the social networks for reaching potential customers. More broadly, if countries turn to Facebook and Google for solutions to problems like fake news or civil strife, that could cement their status as gatekeepers for a society's information flow.

## Growing Privacy Concerns

In surveys, Americans were asked how concerned they were about privacy using each service



GRAPHIC: 2018 POLL CONDUCTED WITH 1,509 ADULTS APRIL 2-8; SOURCE: GALLUP

# Net Neutrality

By Gerry Smith and Todd Shields

The internet is a global network, a set of values and a giant moneymaking opportunity. In the U.S., figuring out how those go together has led to years of public policy conflict, fought under the banner of “net neutrality.” It’s a slogan that broadly means everything on the internet should be equally accessible. Another way to put it is that those who control the network shouldn’t get to use that power to favor some kinds of content over others. In such general terms, net neutrality has become the kind of consensus notion that even the big companies dominating internet services say they agree with. But they also spent years fighting rules put in place to enforce it. The administration of President Donald Trump has come down on their side, opening the door, critics warn, to an internet curated by big business.

## The Situation

The U.S. Federal Communications Commission has scrapped net neutrality rules enacted in 2015. The regulations had barred firms such as cable giant Comcast Corp. and wireless carrier AT&T Inc. from either blocking any content or singling out any offering for quicker or slower delivery. Internet service providers applauded the FCC’s reversal and many said that they didn’t plan to discriminate among types of content, though there are now no specific rules forbidding that. The FCC did leave in place a provision requiring companies to disclose any disparate treatment. Supporters of the old rules are pushing to resurrect them at the state level and are challenging the FCC’s about-face in Congress. Ditching the rules was unpopular with voters, and Trump’s political opponents hope to exploit that in congressional elections in November. Elsewhere in the world, net neutrality regulations are spreading. In 2015, the European Union introduced measures requiring that internet companies handle all traffic equally. India’s 2016 rules prevent service providers from charging different rates for different types of content.

## The Background

The term “network neutrality” was coined in 2002 by Tim Wu, a law professor and author. He argued that no entity should be able to decide what kind of material was and wasn’t permitted on the internet. Wu also recognized the expense of maintaining the cables, utility poles and cell towers necessary to channel the internet to our computers, phones and other devices. He proposed that internet providers be allowed to recoup their

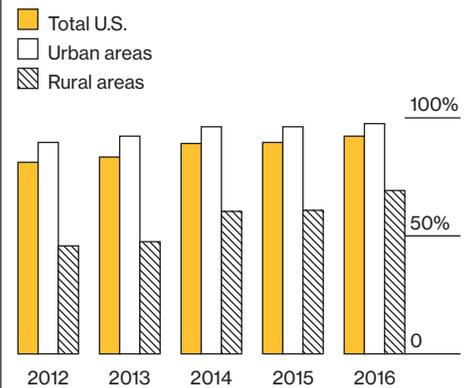
costs by charging consumers rather than producers of websites. Customers would pay based on the speed of their internet connections and would be able to access all material available online at the same delivery rate, or whatever pace the larger network supports at any given moment. Net neutrality means the website for your cousin’s Kickstarter campaign is on an equal footing with that of any Fortune 500 company. It means that movies on a startup channel stream can’t be impeded to run slower than those on Netflix. The FCC adopted Wu’s ideas in 2005, but its subsequent enforcement attempts were blocked by courts, which said the agency lacked the requisite regulatory authority. The 2015 rules fixed that by applying to the internet the same legal authority that underpins regulation of public utilities, such as water or electricity. Those rules have now been overturned.

## The Argument

Trump’s FCC chairman, Ajit Pai, says the previous “last-century, utility-style” rules are the opposite of the “light touch” regulation the internet needs. Advocates of minimal oversight argue that it will encourage more internet providers to enter the market, driving down prices for consumers. The providers themselves have long said they should be able to charge websites – especially

## Access to High-Speed Internet

U.S. population with access to fixed internet allowing for high-quality voice, data and video



bandwidth hogs like movie streaming and esports channels – to offset the huge costs of expanding networks to convey their data. Under the new rules, service providers will still be policed for anticompetitive behavior, by the Federal Trade Commission. Pai’s critics say he’s cleared the way for providers to create fast and slow lanes for the internet, with only the biggest websites able to afford first class and costs eventually passed on to consumers. They warn that the companies will become gatekeepers of the information highway, free to block sites for not paying up or for political reasons. People on both sides of the debate say that their position is better for the roughly 30 percent of America’s rural residents who don’t have any access to high-speed internet. Advocates of the new rules say internet providers can expand faster if websites effectively share the costs. Opponents argue that providers will increasingly focus on urban areas, since content providers are more likely to pay for access to high-density, higher-profit markets.

# 2002

Year the term “net neutrality” was coined

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**Chapter**

# 2



# ECONOMY & FINANCE

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Has Trump triggered  
a trade war?

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Central banks once again  
dream of soft landings

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Like roller coasters,  
volatility's ups and downs  
can be frightening

# Buzzwords

The language of economics and finance is constantly shifting. Here's your guide to the lingo.

## PING POOL

By Annie Massa

There are casinos that welcome everyone, by the busload. Then there are casinos for high rollers only. In financial markets, stock exchanges are the first kind. Ping pools are the second. And like anything else with a velvet rope, they're generating intense interest among those left outside. Ping pools are alternative stock-trading venues, mostly run by large electronic-trading firms. Like dark pools – the private exchanges inside some of Wall Street's biggest banks that let big investors swap large blocks of stock in secret – ping pools offer more privacy than well-known public exchanges. But dark pools bring orders together from many different investors. By contrast, the company operating a ping pool handles the transactions itself,

using its own money to buy what investors want to sell, and selling what they want to buy. Dark pools account for about 15 percent of U.S. stock-market trading, while ping pools handle less than 2.5 percent. The VIP investors who use ping pools can benefit from better prices and avoid paying exchange fees, while enjoying the kind of privacy found in dark trading. For the pool operators, trading only with investors they know reduces risk, and thus costs. The ping pool name? It comes from brokers "pinging" pool operators with an order from a big customer. The pools are also turning up in a slightly different form in Europe, as "systematic internalizers," a setup that allows banks to use their own capital to trade with clients.

## MINSKY MOMENT

By Enda Curran

The mere mention of a "Minsky moment" – a sudden crash of markets and economies that are hooked on debt – is enough to send shudders through policy makers. The name stems from the work of Hyman Minsky, a U.S. economist who explored how excessive borrowing fuels financial instability. Record debt levels and sky-high financial market valuations have kept Minsky's model prominent, drawing warnings from the International Monetary Fund and others. Janet Yellen, the former chair of the U.S. Federal Reserve, once described his work as "required reading." Minsky theorized that financial panics happen after a prolonged period of economic prosperity that has encouraged investors to take on excessive risk. At that point, Minsky wrote, there's an increase in "speculative and Ponzi finance." When a destabilizing event occurs, investors are forced to sell assets to raise money to repay loans. That in turn sends markets into a spiral amid a demand for cash. One often-cited example came in 1998, following the bursting of asset bubbles in Asia, when Russia defaulted on its domestic debt. (It was during that crisis that the term "Minsky moment" was coined.) The global financial crisis of 2007-08 is considered another Minsky moment, since it was caused by the implosion of the U.S. subprime mortgage market, where risks had mounted without regulators noticing. Worries now focus on planned interest rate increases by central banks that have provided ultra-easy money since the crash and on possible hidden risks in the mountain of opaque private debt in China.

## MACHINE LEARNING

By Nishant Kumar

A growing number of hedge funds are putting money behind the idea that a subset of artificial intelligence called machine learning could provide a way to get back on top after a string of rocky years for the sector. All AI programs apply rules known as algorithms to data. Machine learning programs search for patterns in more data than even the most sleep-deprived junior analyst could examine. Then they test those hypotheses against even more data and alter their algorithms based on the results. As it turns out, finding patterns isn't that hard – but finding ones that work reliably in the real world is. One quantitative analyst, or quant, estimates the failure rate in live

tests is about 90 percent. A quant unit of Man Group Plc needed three years of work to gain enough confidence in a machine-learning strategy to devote client money to it. If you let the programs roam too freely through the world of data, they can find meaningless patterns, such as the S&P 500 Index rising or falling in lockstep with something clearly unconnected, like the homicide rate in England. But when quants complicate their models, a problem called overfitting, they can also flop. Machine learning has yet to deliver Earth-shaking returns. And when volatility returned to markets with a bang in February 2018, quant funds had their worst month since at least 2008.

# RISK ON, RISK OFF

By Michael P. Regan

Sometimes markets are described as “risk on” or “risk off.” Both terms are shorthands to describe a swing in global market sentiment. When investors are optimistic about the outlook for the economy, or feel that markets are mispricing the outlook, they will bid up the price of riskier assets. That’s “risk on.” When fresh data or alarming news creates uncertainty about the future, they tend to sell off risky assets in a hurry and buy assets seen as safe havens, ones that are usually less vulnerable to a weakening outlook or deteriorating investor confidence.

That’s “risk off.” Stocks are the most obvious risk-on asset, especially those with higher prices relative to their profits or in industries that are more dependent on economic growth. The shares of companies with slower-growing, but stable, profits and dividends like utilities will often outperform other stocks during periods of risk off, though they may not necessarily gain in a sharp enough market drop. For bond investors, lower-rated but higher-yielding corporate and sovereign issues are considered risk-on assets. So are industrial metals like copper

and emerging-market currencies. When markets turn risk off, you can usually expect U.S. Treasuries, German bunds and gold to outperform. Among currencies, the yen tends to rally as investors unwind “carry trades” in which they borrowed the Japanese currency at a low interest rate to buy higher-yielding assets in other markets. Big gains in products tied to equity volatility indexes like the Cboe Volatility Index (VIX) are a sure sign of a risk-off market as investors bid up the price of options that protect against further losses in stocks.

## WEALTH MANAGEMENT PRODUCTS

By Jun Luo and Laurence Arnold

WMP doesn’t sound as alarming as TNT, but there are reasons regulators worry that China’s so-called wealth management products might blow up someday. The value of those assets tripled in four years to more than \$4.5 trillion, most of which existed off banks’ balance sheets. A recent crackdown slowed their growth but hasn’t ended anxiety over what’s seen as the riskiest part of China’s mountain of private debt. Many investors think WMPs are guaranteed, which they’re not. Sold by banks, WMPs have emerged as a key tool for lenders to attract funds. Investors are lured by yields that have ranged between 3 percent and 5 percent, compared with 1.5 percent for one-year bank deposits. The WMPs invest in everything from bonds to property and can be exposed to struggling industries like mining. What are the risks? For one thing, banks could face the equivalent of a run if investors turn cold on the products, which mostly have terms of six months or less. Banks use WMPs to sidestep lending restrictions and capital requirements. WMPs are increasingly investing in each other, meaning one soured product could infect others. Financial regulators have banded together to draft rules for WMPs and other asset-management products that aim to make it clear that there is no implicit government guarantee on any product, despite a history of Chinese bailouts. Tighter controls slowed growth in total assets in WMPs to 1.7 percent in 2017, from 24 percent in 2016.

## SOFR

SECURED OVERNIGHT FINANCING RATE

By Alexandra Harris

What will interest rates be on new mortgages, student loans or derivatives? For decades, they were tied to a benchmark called Libor, the London interbank offered rate. Then it was discovered that bankers were fiddling with Libor to help their traders make money. At least in the U.S., Libor may be giving way to SOFR, a new measure that stands for Secured Overnight Financing Rate. It was introduced in April by the Federal Reserve Bank of New York. SOFR is designed to address Libor’s biggest weakness: It’s largely a fiction. Libor is derived from a daily survey of about 20 large banks that estimate how much it would cost to borrow from each other without putting up collateral. Because fewer banks make such unsecured loans, Libor became easy to rig. The manipulation that resulted led to billions of dollars in fines paid by U.S. and European lenders. That’s one reason SOFR is based instead on repurchase agreements, or repos, overnight loans in which banks briefly swap Treasury bonds they hold for cash. The volume of trading underpinning SOFR is significantly larger than for Libor: In 2017, it regularly exceeded \$700 billion daily, versus an estimated \$500 million daily for three-month dollar Libor. Other countries are developing their own post-Libor benchmarks, also based on overnight lending, with names like Saron (Switzerland), Sonia (U.K.) and TONA (Japan). The big question? Whether the market will actually use them. For all its flaws, Libor at least is familiar.

# Trade War

By Andrew Mayeda and Bryce Baschuk

**After months of threats, U.S. President Donald Trump on June 1 imposed tariffs on steel and aluminum imports from Canada, Mexico and the European Union. They countered with planned tariffs of their own, putting the world on the edge of an all-out trade war. The metals levies, which act like a tax on imports, had already taken effect for most of the rest of the world, and Trump planned still more tariffs on \$50 billion worth of products from China in retaliation for what he called decades of theft of American know-how. Trump has said “trade wars are good and easy to win.” Yet many U.S. business leaders and economists have opposed the Trump tariffs for fear the U.S. could be the biggest loser in the end.**

## How did this start?

In early 2018, Trump ordered up levies of 25 percent on imports of steel and 10 percent on aluminum in an effort to protect U.S. manufacturers and jobs from a worldwide glut of low-priced exports. At first, he exempted certain countries from his blows on a case-by-case basis, leading to confusion about how much of his offensive was real and how much was posturing. But when the EU, Mexico and Canada wouldn't agree to his terms to remain exempted, Trump moved ahead.

## Is it a trade war then?

Trump's tariffs and the tit-for-tat retaliation – imposed and threatened – meet the traditional definition of a trade war, in which countries slap import restrictions on each other in an attempt to harm the other's trade. In practice, protectionist skirmishes involving a few tariffs or exchanges of threats haven't usually become full-blown trade wars. This time, Trump's invoking of national security to justify tariffs, which could

invite similar claims by other nations, has stoked fears of an all-out conflict. Singling China out for retaliation and demanding concessions in unrelated trade agreements are new elements of this conflict that are also raising concerns.

## Why did Trump invite this fight?

He campaigned on a promise to reduce the U.S. trade deficit, which he has characterized as a sign of economic and political weakness. Trump said the gap, which is the difference between imports and exports, had ballooned because of bad trade deals struck by previous presidents. Soon after taking office, he demanded talks to rewrite the North American Free Trade Agreement and ended the U.S.'s involvement in the 12-nation Trans-Pacific Partnership, steps that appealed to his base of voters in depressed manufacturing regions. By the end of 2017, the U.S. trade deficit had risen to \$568 billion, up from \$505 billion in 2016.

## What happened in previous trade wars?

One of the most notorious examples is the Smoot-Hawley Act passed by Congress in 1930 and which is often blamed for deepening the Great Depression. The law hiked U.S. tariffs by an average of 20 percent, initially to protect American farmers but then broadened as other industries lobbied for protections. As countries reacted by imposing barriers of their own and devaluing their currencies – a step that curbs imports by making them more expensive in local terms – global trade fell off a cliff.

## Who wins in trade wars?

No one, if history is any guide. When President George W. Bush raised steel tariffs in 2002 in a bid to save jobs by reducing imports, about 200,000 jobs

were lost as a result, including about 13,000 in raw steel-making, by one estimate. Workers' wages fell economy-wide, investors saw lower returns on capital and gross domestic product declined slightly, the U.S. International Trade Commission reported.

## Are tariffs the only weapon in trade wars?

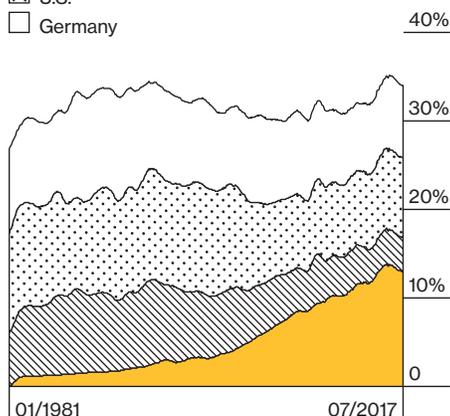
No, there are many others. Clamping down on Chinese investments in the U.S., which Trump has also done, is one example. Intentionally weakening one's currency is another. One big worry for the U.S. is that China, the U.S.'s biggest creditor, could scale back its purchases of U.S. government debt. Countries through the years have used other means to protect homegrown companies, a policy known as mercantilism. Some practices are blatant, such as imposing quotas on imports and subsidizing domestic industries to give them a leg up in international trade, which Trump has accused China of doing. Other tactics are less public, such as imposing unusual product specifications, lengthy inspections of goods at entry ports and intricate licensing requirements.

## Why is free trade so unpopular these days?

Not long ago, free trade was widely seen as the world's economic engine. Many countries opened borders, reduced tariffs and lifted quotas in pursuit of better living standards. Trade's allure diminished, however, once companies in rich countries shipped plants and jobs offshore to lower costs and increase profits. Trade's social and economic effects, including the collapse of manufacturing towns in the U.S. industrial heartland, are often more visible than its benefits, which can also be unevenly distributed.

## China's Trade Dominance

Share of total world exports



# Soft Landing

By Rich Miller

It's mid-2018, and U.S. unemployment is at rock-bottom levels, wages are rising and consumers are brimming with confidence. What could go wrong? Plenty, if the Federal Reserve missteps, as central banks often do in such heady times. The reason is that inflation, which has been unusually quiescent, could come surging back if the tight labor market overheats, causing wages and prices to spiral upward. The Fed hopes to avoid that by raising interest rates, but the economy could shrink if it tightens credit too much. The ideal is what economists call a soft landing. Achieving this much-desired and often elusive condition can be more art than science.

## What's a soft landing?

It means slowing the economy enough to prevent it from overheating, but not so much as to trigger a recession, in which output falls for two consecutive quarters. It takes a combination of smart policy-making – using the lever of short-term interest rates to affect inflation, jobs and economic growth – and luck. Mark Zandi, the chief economist of Moody's Analytics, likens it to “landing in the fog on an aircraft carrier that's in the middle of choppy seas.”

## Has the Fed ever accomplished this?

Only once, in 1994 and 1995, under then-Chairman Alan Greenspan. He viewed inflation of about 2.5 percent as too high, so he doubled short-term interest rates to 6 percent and succeeded in slowing economic growth without killing it off. But that triggered a steep run-up in long-term interest rates. Heavy borrowers were hit especially hard. Mexico was compelled to seek a bailout from the U.S. and the International Monetary Fund.

## Can the Fed do it again?

Theoretically, yes. But the job market back then wasn't especially tight, giving the Fed some time to prevent the economy from overheating. Unemployment of 3.8 percent (as of May) is already below what many economists say is its long-run sustainable rate. So achieving a soft landing would mean slowing growth and edging up unemployment, too. But as former New York Fed President William Dudley has noted, the economy “has always ended up in a full-blown recession” whenever joblessness has risen by more than 0.3 percentage point.

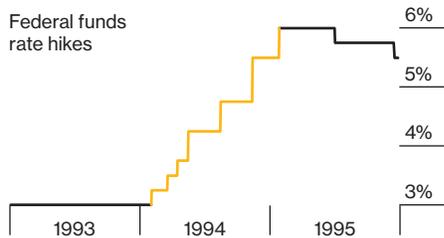
## So why doesn't the Fed leave well-enough alone?

In a word, inflation. It's not a big problem, having hit the central bank's 2 percent target in March,

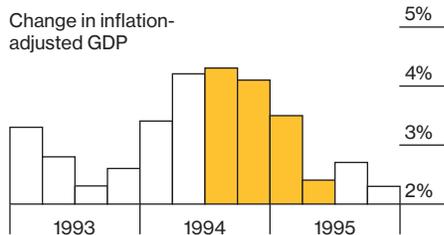
## Alan Greenspan's Soft Landing

The former U.S. Federal Reserve chairman cooled an overheated economy in 1994-95 without triggering a recession

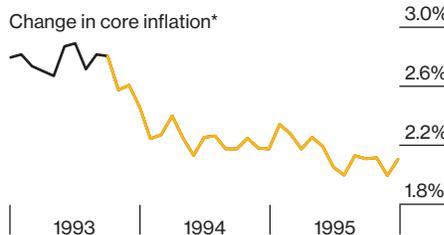
### The Fed doubled short-term interest rates ...



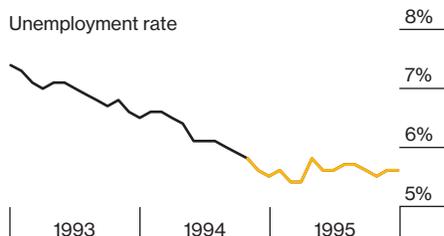
### ... which slowed U.S. growth ...



### ... and caused inflation to fall ...



### ... while unemployment leveled off



after undershooting it for much of the past six years. The worry is that inflation will continue accelerating if the economy keeps powering ahead and available workers become even scarcer. To prevent a wage-price spiral, the Fed would have to jack up interest rates to levels that could cause the economy to contract. Some economists think central bankers in the past have overreacted to inflation signs, depriving workers of the wage gains they'd make in a tight labor market.

## Is a wage-price spiral the Fed's only concern?

No, some officials also worry that low interest rates risk pumping up asset prices to bubble levels. That's what happened in the middle of the last decade when housing prices rose too high – with disastrous results. This time the worry is over stocks and bonds, and especially risky corporate bonds.

## What's the Fed's strategy?

Gradually edge up interest rates to keep asset prices from rising too high and unemployment from falling too low. After raising interest rates three times in 2017, policy makers have nudged them up more this year and have plans for additional increases through 2020.

## Are other central banks seeking soft landings?

The European Central Bank is contemplating ending a program of asset purchases – more than three years after the Fed ended its bond buying. Inflation in the euro zone is still well below the ECB's goal, making any talk of overheating premature. This is even truer for Japan. After almost two decades of declining prices and stagnant growth, Japan's economy has improved markedly over the past two years. But the Bank of Japan is still pursuing stimulative measures.

GRAPHIC: CORE INFLATION IS THE CHANGE IN PERSONAL CONSUMPTION EXPENDITURES MINUS FOOD AND ENERGY. SOURCES: U.S. FEDERAL RESERVE (RATE HIKES), COMMERCE DEPARTMENT (GDP AND INFLATION), BUREAU OF LABOR STATISTICS (UNEMPLOYMENT)

# Volatility

By Joanna Ossinger and Cecile Vannucci

**Mom-and-pop investors fear it. Traders by and large love it, and normally miss it when it's gone. Volatility was absent from the financial markets for an unusually long time before rushing back. It's once again on everyone's radar screen, and likely to stay that way for a while. Volatility not only affects investments; investing in volatility has become something of a cottage industry.**

## What is volatility?

Basically, the up-and-down movement of a market. Downward moves tend to get more attention and be more associated with volatility, as they also tend to fuel concern about what's coming next.

## How is it measured?

The most prominent tracker is the Cboe Volatility Index, or VIX, a U.S. stock-volatility index that compiles data on current trading to provide a market estimate of future volatility. It's sometimes referred to as the "fear gauge" because it tends to rise when stocks go down.

## How does the VIX capture fear?

By looking at how much traders are paying for options on the S&P 500 index. An option is a contract that gives the holder the right (but not the obligation) to buy or sell securities at set prices when the underlying asset reaches set levels. Traders often use options and other derivatives as insurance policies against market fluctuations or to bet on the moves themselves. The more an option costs, the larger the move needed to generate a return that will make it pay off. So option prices reflect, among other things, the size of the swings – the volatility – traders expect.

## What's typical volatility for stocks?

The long-term average for the VIX is about 19.3, with its lowest levels being in the 8-10 range. Its intraday record high is 89.53, set on Oct. 24, 2008, at the height of the global financial crisis. After spending most of 2017 around 10, the VIX spiked to 38 on Feb. 5 before falling back to just below its average.

## How do people invest in the VIX?

They can't invest directly in the VIX, which is just a number, but can make bets on which way the VIX will go by using futures, options or VIX-based exchange-traded products. The emergence of a whole crop of products tied to the VIX has led to questions about whether VIX trading is itself influencing the index or market volatility as a whole. Questions have also been raised about whether some trades are meant to manipulate its level.

## Can the VIX be gamed?

VIX futures contracts are paid off according to the prices at which market makers are trading S&P 500 options at a set time every Wednesday. The VIX has had some big moves on days on which lots of futures are settled, raising concern among academics and some market participants that some

big trades at crucial moments were intended to nudge the settlement price up or down. Cboe, which maintains that allegations of manipulation are "without merit," said it's working to improve the settlement process.

## Are there other volatility gauges?

Yes. They exist for indexes such as the Russell 2000, the Euro Stoxx 50 and India's Nifty 50. The Merrill Option Volatility Estimate looks at implied volatility of one-month U.S. Treasury bond options. The JPMorgan Global FX Volatility Index keeps track of currency swings. There's even volatility of volatility – the Cboe VVIX measures the expected volatility of the 30-day forward price of the VIX.

## Is trading volatility like trading stocks?

They have similarities, including the ability to go short or long. "Short volatility" is a bet that volatility will continue to go down, or at least stay at very low levels. "Long volatility" is the opposite, a bet that volatility will increase. With the VIX falling for a third year in 2017, shorting volatility became very popular: A Bank of America Corp. survey in early January found that the strategy had become the most crowded trade in the markets.

## How'd that work out?

In February, volatility jumped when uncertainty over the impact of rising Treasury yields hit the stock market, helping to drive wild swings in U.S. shares. Volatility had been unusually low for an unusually long period of time, and many people were betting on that staying the same. Some of them weren't paying enough attention to the risks, or didn't hedge their bets to the extent they might have needed to. In addition, some securities, such as VIX-based exchange-traded notes, ran into trouble because their designs weren't conducive to surviving a big market turn like that.

## Long Nap, Rudely Awakened

The VIX, the most-watched measure of volatility, hit a record low in 2017 before bouncing back

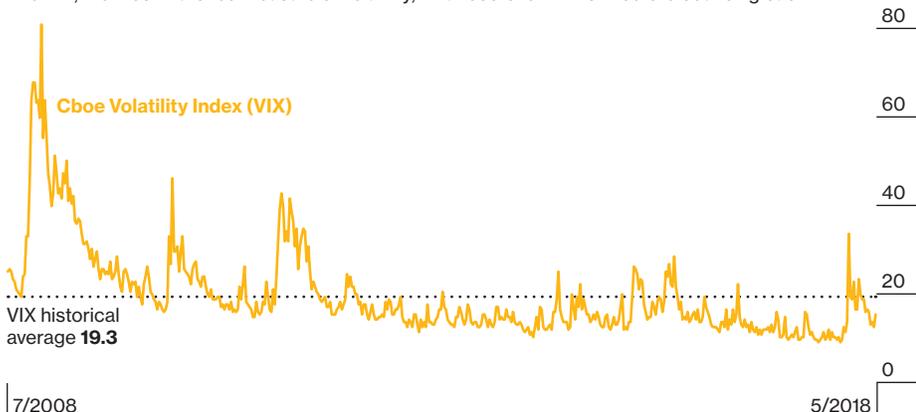


PHOTO: ALBERT GEA/REUTERS

GRAPHIC SOURCE: CBOE



# Short Selling

By Benjamin Robertson

**If you buy low and sell high, chances are you'll be richer and everybody will be happy. Sell low after borrowing high and you may be rich, but odds are quite a few people will be anything but pleased. That's the short seller's predicament, and why investors who bet that stocks will drop get threatened with everything from temporary restrictions to serious jail time, particularly during times of market turmoil. Shorts, as they're known, say they're keeping markets and companies honest. Critics say their practices can blur into market manipulation. Regulators are keeping a wary eye on them.**

## The Situation

Short sellers borrow shares, sell them, buy them back at a lower price and profit from the difference – unless the stock rises. The biggest headlines these days are being made by so-called activist shorts, even though they account for only a small slice of short selling. Most shorting is done by hedge funds and institutional investors to cushion their investments against falling stock prices or to bet that shares have risen too high. Activists, on the other hand, research companies to find targets that they allege have dodgy business or accounting practices, spread the word (sometimes anonymously) and, if all goes as planned, watch the stock slump. Although activist shorts have been calling out companies for decades, their numbers have swelled thanks to the rise of social media as a platform for disseminating theories and analysis. In 2017, shorts began campaigns against 186 companies globally, versus 130 in 2013, according to Activist Insight Ltd. The campaigns have spread geographically, too, with shorts turning their attention to Australia, Japan, Singapore and South Africa. Some predict Europe will be the next frontier. Many authorities dislike the practice – the former head of the New York Stock Exchange has described short selling as “icky and un-American.”

## The Background

Dutch traders were shorting as long ago as the 1600s, including during the tulip bubble. Napoleon labeled short sellers of government securities “treasonous.” Short selling stocks – as opposed to, say, tulips – is particularly challenging because equity markets have a long-term track record of moving up rather than down. Still, it can be done. Jesse Livermore, known as the “King of the Bears,” made a fortune

shorting railroad operator Union Pacific shortly before the 1906 San Francisco earthquake. The collapse of Enron Corp. in 2001 marked a notable scalp for shorts including Jim Chanos, who had been among the first to question its accounting. Starting in 2011, Muddy Waters' Carson Block raised the profile of the new breed of activist shorts by taking aim at under-the-radar Chinese companies listed in North America, including the now bankrupt Sino-Forest Corp. The practice can be perilous: Block said he stopped shorting Chinese companies for a time because “tattooed gangsters” came looking for him. Short selling remains legal in most stock markets, unlike so-called naked short selling – shorting without having first borrowed the shares. When markets go bad, governments and regulators sometimes impose restrictions in an effort to help stem the slide. The U.S. targeted short selling during the Great Depression and joined the likes of the U.K., Germany and Japan in limiting short selling or banning it during the financial crisis that erupted in 2008. China's regulator blamed “malicious” short selling in part for a stock market crash in 2015, placing limits on the practice as well as arresting traders.

## The Argument

Critics say short sellers can transform downturns into full-blown panics. They also point to the ability of shorts to hoodwink investors by spreading false rumors before exiting a trade, a technique known as “short and distort.” Defenders say the potential for abuse shouldn't discredit all shorts any more than “pump and dump” schemes disgrace all investors who whip up interest in a stock to push it higher and then sell it. Short sellers say they are skeptics who alert investors to bouts of market euphoria, identifying mispricing or deception that analysts, auditors and investors overlook. The name of Chanos's firm is Kynikos – a Greek term from which the English word “cynic” was derived. Often vilified as market outlaws, investors betting against the housing market were portrayed as the good guys in the 2015 film “The Big Short.” Shorts have some backing from researchers: One paper found that the practice discourages the manipulation of earnings reports, while another showed that shorts made more accurate predictions of the share performance of U.S.-listed Chinese companies than stock analysts did. A third concluded that activist shorts were usually “factually right.”

## Notable Short-Selling Campaigns

Activists make money when negative information they publish drives down a share price; if it goes up, they lose

Target	Short seller	Primary allegation	Stock change
Enron (2000)	Kynikos Associates/Jim Chanos	Misleading accounting	Fell to near zero
Lehman (2008)	Greenlight Capital/David Einhorn	Misleading accounting	Fell to near zero
Sino-Forest (2011)	Muddy Waters/Carson Block	Major business fraud	Fell to near zero
Herbalife (2012)	Pershing/Bill Ackman	Pyramid scheme	Rose 163%
Lumber Liq. (2013)	Kase Capital/Whitney Tilson	Unsafe materials	Fell 79%
Valeant Pharma. (2015)	Citron Research/Andrew Left	Accounting fraud	Fell 82%
China Huishan (2016)	Muddy Waters/Carson Block	Misleading accounting	Fell 85%
Steinhardt (2017)	Viceroy Research/Fraser Perring	Accounting fraud	Fell 92%

GRAPHIC: STOCK PRICE CHANGES THROUGH MAY 31, 2018; SOURCE: BLOOMBERG

# Sexual Harassment on Wall Street

By Max Abelson

Since movie mogul Harvey Weinstein was accused of sexual harassment and assault in late 2017, powerful men have been pushed out of jobs in the media, the arts, politics and the restaurant business after they were accused of egregious behavior. Something is different on Wall Street, where companies have seemed practically immune. Why hasn't #MeToo seriously hit finance?

## Is harassment less prevalent in finance?

Some executives have made that case. They've said the industry cleaned out bad behavior more than a decade ago after a string of high-profile lawsuits revealed that women were enduring harassment at top companies. As a result of those cases, which cost banks millions of dollars in legal settlements, Wall Street widely adopted anti-harassment training earlier than many other industries. Spokesmen for the biggest U.S. banks have said the work environment for women has improved – that their policies both foster respect and make it easier for employees to lodge complaints.

## Is that true?

Insiders in the industry say that the problem of sexual harassment didn't go away. In a letter to industry regulators, three U.S. senators said the paucity of public revelations in finance was the result of forces that "discourage speaking out." Bloomberg interviews with current and former Wall Street women support that perspective. The women, who asked not to be identified, said they were grabbed, kissed out of the blue, humiliated and propositioned by colleagues and bosses, or witnessed others being treated that way. Most of those harassed, and women quoted elsewhere, said they'd stayed quiet about what they'd endured because of financial and cultural factors.

## What's money got to do with it?

People in finance – women no less than men – tend to be drawn to the industry by money, and complaining about a colleague can jeopardize a lucrative career. Much of Wall Street pay is in the form of bonuses, doled out at the almost complete discretion of bosses who more

often than not are men. Women made up about 29 percent of senior managers in financial services in the U.S. in 2015 – the same as in 2007, according to a government study. No woman has ever run a major Wall Street bank.

## How is culture an issue?

The women interviewed said their companies prize discretion, expect sacrifice, fixate on reputation and are built on relationships. Some of them said they worried that pointing fingers would permanently alienate bosses, colleagues and even rivals. Researchers have argued that in male-dominated organizations, ambitious women may tolerate sexual harassment in an effort to fit in and gain access to the highest status group.

## Hasn't anyone complained?

Yes, but such cases in the finance industry rarely attract public attention. That's because many complainants are barred from speaking openly by confidentiality clauses they signed as a condition of employment. Wall Street was an early adopter of mandatory arbitration agreements, which require employees to settle job-related complaints through closed-door arbitration, where the parties are usually required to keep the outcome secret. Employees give up the right to sue in open court, where cases might receive attention from the media and the public.

## Has the #MeToo movement inspired any changes?

It's focused criticism on mandatory arbitration. Supporters of the process say some complainants appreciate the confidentiality. But a number of studies have concluded that though the procedures are speedier and less

## So you think you know what sexual harassment is?

Since the late 1970s, U.S. courts have ruled that unwelcome sexual advances in the workplace constitute discrimination on the basis of sex. Successive cases have refined the law, which typically forms the basis of employer policies. True or false? — *Christie Smythe*

## A harasser must be in a superior role to the harassed.

- **False** Peers can harass, for example, by choosing whether to collaborate with a colleague based on his or her receptivity to advances.

## It's not harassment if an employee voluntarily participated in sexual acts.

- **False** The issue is whether sexual advances were unwelcome.

## To prove a case, it's not necessary to show economic or tangible injury.

- **True** It's sufficient to show that harassment created a hostile work environment.

## A single use of vulgar language, or putting an arm around a colleague, can constitute harassment.

- **False** Courts look for behavior that is sufficiently severe or pervasive enough to alter the conditions of employment.

costly than trials, they result in fewer wins and smaller monetary awards for employees. Another complaint is that an arbitrator's decision generally is not open to appeal. In response to the #MeToo movement, Congress began considering a bipartisan proposal barring mandatory arbitration in sexual-harassment cases. The attorneys general of every U.S. state collectively urged the nation's lawmakers to take such action.

# Where Brexit Hurts Most

By Emma Ross-Thomas

Two years after Britain voted to leave the European Union, the task of untangling itself from its neighbors is proving fiendishly complex. Former World Trade Organization chief Pascal Lamy says it's like taking an "egg out of an omelette." Brexit, as the pullout has become known, is bringing risks to people and businesses that could get caught on the wrong side of a newly erected border. Deep disagreement among the British themselves on the best approach is complicating the process. With the U.K. set to exit the 28-nation bloc in March 2019, there are still more questions than answers about what Brexit will mean.

## Cross-border supply chains

Brexit means the U.K. must potentially give up one of the greatest benefits of being in the EU: the ability to buy and sell stuff with the 27 other members as if they were all one country. Leaving the so-called single market could cripple cross-border supply chains that have built up over decades. Cars assembled in the U.K., for example, are only about 40 percent British-made on average, and parts can cross borders many times in the process. The EU is the destination for about half of U.K. exports.

## Customs checks

One way to keep some of those trade benefits would be to stay in a customs union with the EU. That means the U.K. would adopt the same set of tariffs as the EU for outside countries and avoid new customs checks. But it would also prevent the U.K. from striking its own trade agreements with the likes of China, India and the U.S., a freedom that's critical for many pro-Brexit campaigners. In any case, the timeline for the Brexit talks means that negotiations on the details for future U.K.-EU trade won't take place until after exit day. So importers and exporters will probably be allowed to operate under the old rules until at least 2020.

## The Irish border

After Brexit, the U.K.'s new land border with the bloc will run through the island of Ireland. At the moment the divider is an invisible line between the Republic of Ireland (which will remain part of the EU) and Northern Ireland (a region that's part of the U.K.). Both sides have pledged not to let a policed frontier emerge, fearful that any physical signs of a border – even cameras operating on some sort of seamless, technologically controlled boundary – could reignite sectarian

violence or renew questions about a united Ireland. There's no obvious solution.

## The fight for the City

To ensure they'll be able to keep serving EU customers, firms in Britain's financial industry, known collectively as the City of London, have been setting up subsidiaries elsewhere in the region and moving employees to cities including Frankfurt, Paris and Dublin. They aren't taking any chances, since they don't know what kind of access they'll get

after the split. Britain wants a system based on "mutual recognition" of rules that would enable London-based staff to continue to sell stocks, bonds and other financial products to customers across the bloc. The EU instead proposed a system based on so-called equivalence, in which the bloc would grant selective access to certain lines of business on a case-by-case basis. Even that would be revocable.

## Citizens' rights

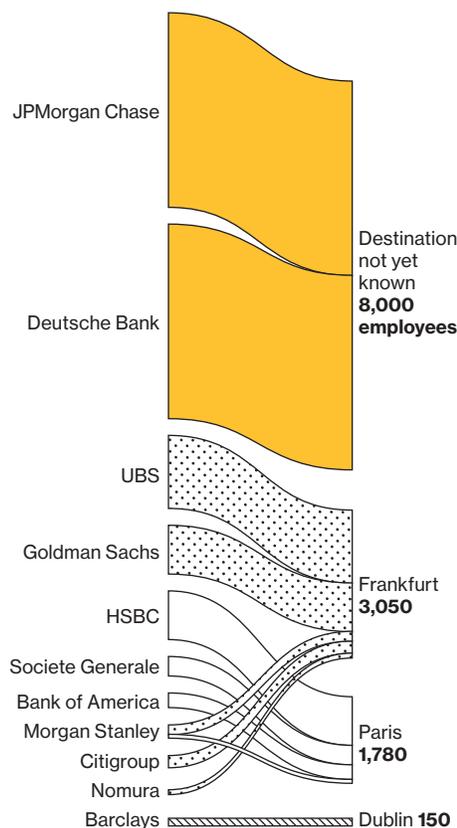
The two sides agreed in December 2017 on a deal that would protect the rights of more than 3 million EU citizens now living in the U.K. and about a million British citizens residing in the bloc. It basically allows them to stay where they are and continue to enjoy pensions and access to health care where they live. But the agreement is subject to a final divorce deal being reached, so affected citizens are still in a state of limbo. What immigration policy will look like in the future is still up for negotiation, although the U.K. has said repeatedly that it will halt the policy of "free movement" that allowed an unlimited number of EU citizens to settle in Britain.

## Could Brexit be reversed?

Polls don't offer much evidence that Britons have changed their mind. But there are plenty of campaigners trying to reverse Brexit. Their big opportunity will be when the negotiated divorce deal comes to the U.K. Parliament for approval, which is expected to happen in the fall. Anti-Brexit lawmakers might try to muster a majority to reject the deal or force the government to put it to a second referendum. Failing that, they may try to adjust the terms or send negotiators back to the table for another go.

## London's Banker Exodus

Destination cities for bankers uprooted by Brexit, based on Bloomberg reports



# China's Jet Challenge

By Bloomberg News

**Massive, low-grade manufacturing has raised much of China out of poverty. Can high-tech wizardry lift its economy to the skies? China is on a mission to upgrade its factories, a vision that includes the long-held goal of producing passenger aircraft. It's a market that two companies — Airbus SE and Boeing Co. — have dominated for decades, and one that the Chinese state manufacturer Comac intends to shake up in three years or so with its C919 jet. There's plenty of business to go around, with China on course to become the No. 1 market for airplanes and passengers. So should the industry heavyweights of Europe and North America be worried? And how prepared are travelers, both at home and abroad, to embrace "Made in China" aircraft?**

## The Situation

After at least two postponements, the C919 successfully completed its maiden test flight in May 2017. Within a year, Comac, or Commercial Aircraft Corp. of China Ltd., had orders and commitments from 28 mostly Chinese buyers for 815 airplanes. Chinese authorities are now seeking agreements on the plane's airworthiness with U.S. and European regulators to open the way for flights and sales outside China. The C919 is a 158- to 168-seat, single-aisle jet and is built mostly with customized versions of parts from other manufacturers, such as the engine from CFM International Inc., a Franco-U.S. venture. Whatever its impact on Boeing and Airbus, a C919 ready for the market would be a boon for Comac's web of international suppliers, from General Electric Co. to Honeywell International Inc. Still, full-scale production is several years away and can hardly be assured. Comac's initial foray into the aviation market — a 90-seat jet called the ARJ21 — took eight years to go from first flight to commercial operation in 2016. Comac

executives say the C919 will "definitely" get there faster, with China Eastern Airlines Corp. due to take its first delivery around 2021. In other plans, Comac has formed an alliance with Russia's United Aircraft Corp. to design and manufacture a twin-aisle jet capable of flying from Beijing to New York.

## The Background

China's early bids to develop passenger jets flopped. There was the Y-10, which took decades to go from initial design to its first test flights in the 1980s. But government interest then waned as business with the West opened up. Then there was the MD-82, a joint venture that collapsed after Boeing acquired China's partner, McDonnell Douglas, in 1997. President Xi Jinping's plan for a more sophisticated manufacturing sector, known as "Made in China 2025," brought renewed impetus, since that strategy hinges on advanced industries such as aerospace. (China's first aircraft carrier was launched shortly before the C919's test flight.) Boeing, whose

founder William Boeing built its first plane in 1916 in Seattle, had developed a stranglehold on passenger jet sales by the time Airbus — a 1960s amalgamation of European aerospace bodies — began taking significant market share in the 1980s and 1990s. The pair now more or less split the business, accounting for 97.4 percent of the global market for single-aisle jets alone in 2017. They also roughly divide equally the market in China, where passenger aircraft sales will total more than \$1 trillion between now and 2035, according to Boeing. In terms of passengers, China is forecast to overtake the U.S. as the largest air travel market as soon as 2022.

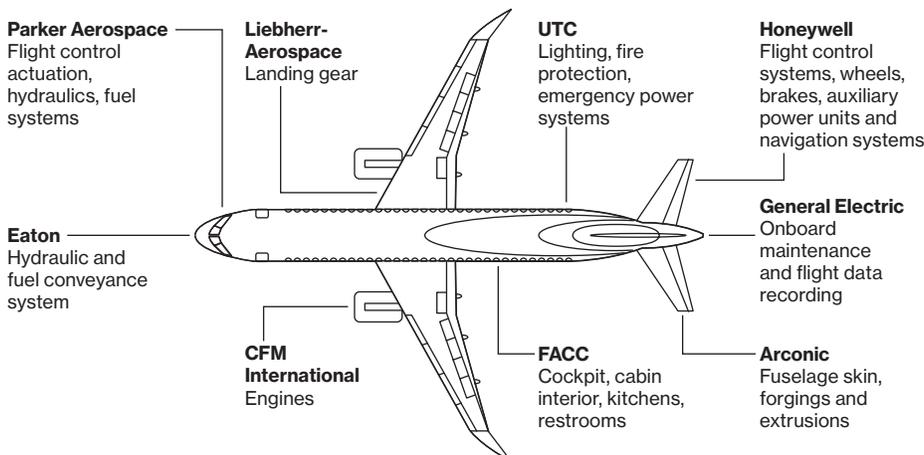
## The Argument

Getting into the major league with Airbus and Boeing may be a few decades away, as airlines typically prefer planes with proven track records for reliability and safety. There's more to it, too, than building reliable aircraft: Comac will have to compete with the industry giants on after-sales service for repairs and maintenance. Acceptance in Europe and the U.S. will be a challenge, analysts say, as even Chinese consumers soured on domestically manufactured high-speed trains after 40 people died in an accident in 2011. Critics also argue that Comac is replicating outdated versions of jets, rather than creating state-of-the-art aircraft. Other industry watchers say the C919 is not intended to become the best-selling single-aisle aircraft, but rather a stepping stone for Comac to build something better with indigenous technology. Either way, a China-based company — backed by the government — is well-placed to take significant business from the established manufacturers, at least at home.

*Dong Lyu contributed to this article.*

## Western Partners for a Made-in-China Plane

Some of the foreign suppliers contributing to the new Comac C919 single-aisle passenger jet



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**Chapter**

**3**



**WORLD  
AFFAIRS**

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Cyberwarfare, the  
new kind of conflict  
no one is ready for

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Movies! Women driving!  
Signs of change in  
Saudi Arabia

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How populism's poster child  
is rattling Europe

## Dreamers & DACA

By Erik Larson and Andrew Harris

In the U.S. immigration debate, Dreamers and DACA refer to people brought to the U.S. as children without documentation. The Dreamers name comes from the Development, Relief and Education for Alien Minors Act – DREAM Act, for short – a bipartisan bill that would have created a path to permanent residency or citizenship for many of them. After it was blocked by conservatives, President Barack Obama in 2012 announced a program he called Deferred Action for Childhood Arrivals, or DACA, that allowed some Dreamers to apply for renewable, two-year permits that protect them from deportation and allow

them to work legally. The offer applied only to those who had been brought to the U.S. before 2007 and, at the time of application, were older than 15, had a high school diploma or equivalent and had no criminal record. When the program began, about 1.3 million immigrants were eligible and about 800,000 enrolled. Most have little connection to their previous countries. President Donald Trump, who campaigned on a promise to end DACA, issued an order to phase out permits in March 2018 unless Congress acted. A string of immigration proposals then failed in the Senate. But federal judges blocked Trump's order.

## SPECIAL COUNSEL

By Laurence Arnold and David Voreacos

From the moment Robert Mueller was named as a special counsel to examine Russia's interference in the 2016 U.S. election and any possible role involving President Donald Trump's campaign, he's been the center of global attention. Less well-known: exactly what's so special about Mueller's position – and whether Trump can fire him. A special counsel is a lawyer from outside of government named by the U.S. attorney general to take over an investigation that poses a conflict of interest for the Justice Department. Usually, a counsel reports to the attorney general. But in this case, Mueller answers to the deputy attorney general, Rod Rosenstein, who made the decision in May 2017 to give the case to a special counsel and chose Mueller, a former FBI director. Rosenstein's boss, Attorney General Jeff Sessions, who'd been a Trump campaign adviser, had recused himself from overseeing the probe. In his order appointing Mueller, Rosenstein gave him a broad mandate, instructing him to investigate "any links and/or coordination between the Russian government and individuals associated with the campaign," as well as – and this is key – "any matters that arose or may arise directly from the investigation." Trump has called Mueller's investigation a "disgrace," but the 1999 rule that created the current version of the position vested the power to fire a counsel in the Justice Department official supervising the investigation – in this case, Rosenstein. Under that rule, a dismissal would have to be on a finding of "misconduct, dereliction of duty, incapacity, conflict of interest" or "other good cause." Rosenstein has said that he sees no such reason to dismiss Mueller. A bipartisan bill to protect Mueller was introduced in the Senate, but Majority Leader Mitch McConnell said he would block a vote.

## MACEDONIA

By Eleni Chrepa and Slav Okov

It's a dispute that goes back more than seven decades – and, in a sense, over 2,500 years. Greece and a neighbor to the north aren't fighting over territory or where the border should be. The row is about what constitutes "Macedonia," the name taken by a small country that was born out of the breakup of Yugoslavia. The roots of the conflict go back to World War II. The southernmost of six Yugoslav republics, the "People's Republic of Macedonia" was cultivated under federal leader Josip Broz Tito. That was seen by the U.S. as a possible front for aggression toward Greece. The dispute then simmered for decades until Yugoslavia disintegrated. In 1991 the southern region declared independence as the Republic of Macedonia. Greece lodged a protest at the United Nations

Security Council, alleging theft of historic and cultural identity. It says the name Macedonia should refer only to its northern region, which was Alexander the Great's stronghold in ancient times. Still, in 1993, the new country joined the UN under the provisional name Former Yugoslav Republic of Macedonia. Now it wants to join the North Atlantic Treaty Organization and the European Union. Greece vetoed the republic's accession to NATO in 2008 and later halted the start of EU negotiations. The two sides resumed UN-mediated talks at the end of 2017 after a new government took office in the republic, replacing one led by a nationalist party. Greece opposes the use of the Macedonia name without the addition of a qualifier such as "Northern," "New" or "Upper."

# Cyberwarfare

By Jordan Robertson and Laurence Arnold

**A March 2018 alert from U.S. security agencies warned of a new kind of attack. Agents of Russia's government, it said, had targeted "government entities and multiple U.S. critical infrastructure sectors," including energy, water and aviation. Russia, and the U.S. itself, are among the world's practitioners of cyberwarfare, or state-sponsored invasions of computer networks and the myriad activities they guide. In the months after the alert, there were no official reports of attacks. Then again, it's hard to know when and where cyberwarfare occurs, and who's fighting.**

## What is cyberwarfare?

It's an attack on computer systems that has the backing of one nation (or, by some definitions, a transnational group like a terrorist organization) with the intent of hurting another nation, on a scale that might spur military retaliation.

## What forms can it take?

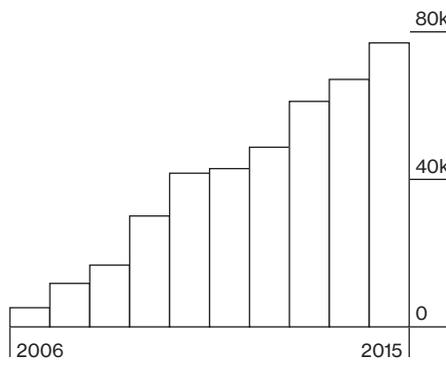
Any of the common methods of cyber misconduct, including infecting a computer system with a virus or other malware, freezing its contents and demanding payment with ransomware, disabling it with a flood of messages in a denial of service attack or hacking data for the purpose of espionage. (U.S. concerns about Chinese telecom giants ZTE Corp. and Huawei Technologies Co. include worries that China's government could use their products to spy on Americans.) A cyberwarfare attack also could aim to sabotage a critical system, like one guiding the launch of missiles. Russia's manipulation of social media in an attempt to sway Western elections is generally considered a form of cyberwarfare. So is the so-called Stuxnet worm, said to have been developed by U.S. and Israeli intelligence, that sabotaged Iranian nuclear centrifuges starting in 2009.

## Why all the worry?

If influencing elections seems tame, consider what full-blown cyberwarfare could mean: the complete and prolonged shutdown of a power grid (something that Ukraine has experienced twice, presumably at the hands of Russian cyberwarriors); the wipeout of data centers by malware that overheats circuits; the scrambling of bank records to cause financial panic (a 2013 attack froze three major South Korean banks); interference with the safe operations of dams and nuclear

## Target: U.S. Agencies

Information-security incidents reported by government agencies to the U.S. Computer Emergency Readiness Team



plants; or the blinding of radar and targeting systems of fighter jets.

## Who are the combatants?

In addition to Russia, the U.S. and Israel, nations with active cyberwarfare programs are thought to include China, the U.K., Iran and North Korea.

## Is cyberwarfare waged by actual soldiers?

Some nations, including the U.S., have dedicated cyberwarfare units that conduct intelligence-gathering operations and support military missions. But the Russian "troll farms" that are accused of meddling in the 2016 U.S. elections are separate entities that engage in what's known as information warfare – the art of manipulating public opinion. These can be actors who maintain an arm's-length distance (presumably for deniability reasons) from their sponsoring organizations. North Korea's notorious hacker army is believed to have begun as part of the military. Its specialty is earning money for the ruling regime, by methods ranging from filching bank card data

to much larger schemes. North Korean hackers are suspected of being behind the theft of \$60 million from Taiwan's Far Eastern International Bank in October 2017.

## Aren't attacks on civilians supposed to be off-limits?

Armies firing bullets and bombs are guided by rules of war that date back centuries and are meant to reduce civilian suffering. Terrorist attacks, by design, are intended to kill and scare civilians. Cyberwarfare sits somewhere in the middle. In 2013 a think tank affiliated with the North Atlantic Treaty Organization published a 282-page manual that attempts to apply existing law to cyberwarfare – defining which targets are off-limits (schools and hospitals, for example) and under what circumstances a country can respond to a hack attack with military force. But as the Tallinn Manual (named for the Estonian capital, where the think tank is based) itself notes, it "is not an official document" and "must be understood only as an expression of the opinions of two international groups of experts as to the state of the law." In April dozens of technology companies including Microsoft Corp. and Facebook Inc. signed a pact that they will "not help governments launch cyberattacks against innocent citizens and enterprises."

# 2

Takedowns of Ukraine's power grid by attacks blamed on Russia

# Saudi Arabia's Shift

By Glen Carey and Dana El Baltaji

For Saudis, life is changing. A ban on women driving was lifted in June, and the government is permitting commercial movie theaters to open. There are more gender-mixed music concerts and other kinds of entertainment, including professional wrestling. The loosening up comes as the biggest economy in the Middle East struggles to urgently wean itself from oil revenue, which fuels a vast welfare state. That means fitting in better with the modern world and tampering with the cash-for-loyalty contract that Saudi kings have had with their subjects for decades. The man forging this future is Saudi Arabia's 32-year-old crown prince, Mohammed bin Salman, who has amassed unprecedented power, cracked down on dissent and embarked on a grand remake. Two years into the reform drive, Saudi Arabia is trying to save money and speed up social change against a backdrop of one of the world's most conservative religious establishments.

## The Situation

Government funds are pouring into education, health care and tourist resorts as part of a campaign called Vision 2030. It includes \$500 billion for a futuristic megacity on the Red Sea coast to be called Neom. At the same time, Saudi Arabia is increasing military spending and reining in clerics, journalists and activists through intimidation and arrests. Dozens of princes were locked up for about three months in the Ritz-Carlton Hotel in Riyadh and forced to hand over billions of dollars to the state in what authorities called a weeding out of corruption. Meanwhile, subsidies on basics like electricity have been cut, and more revenue is being raised with a value-added tax. There are renewed efforts to get more Saudis working, since youth unemployment is about 30 percent and expatriates fill half the country's jobs. Women are increasingly encouraged to work, despite traditional disapproval of face-to-face contact with men. There has been some pushback. After canceling bonuses for state employees that had long been taken for granted,

the government reinstated the perks in 2017 after complaints on social media. To help fund the transformation, Saudi Arabia plans to partly privatize its state-run oil company, Aramco, and create the world's largest sovereign wealth fund.

## The Background

The kingdom was founded in 1932, with the Al Saud family ruling under a compact with clerics belonging to the austere Wahhabi form of Islam, who kept control over social and religious laws. The country became the biggest oil exporter in the 1970s and remained resistant to Western cultural influences and political liberalization. The throne of Saudi Arabia, one of the world's last remaining absolute monarchies, passed in 2015 to King Salman, who then set up his favorite son to be the first from a new generation of princes to take charge of the country's 21 million citizens. An economic transformation became vital after oil prices plunged in 2014, ballooning the budget deficit and forcing the kingdom to burn through foreign currency reserves at a record pace. Prince Mohammed has also pushed

# 30%

Saudi Arabia's youth unemployment rate

Saudi Arabia deeper into regional conflicts, including a war in neighboring Yemen. Previous efforts to reduce the reliance on government handouts and expand the private sector have had only limited success, in part because many Saudis lack marketable skills and continue to view many occupations as beneath them.

## The Argument

With the world's biggest petroleum fields and about \$500 billion in foreign reserves, Saudi Arabia can continue to rely on its oil money for some time. The question is whether it can reconfigure the economy and create enough jobs for its people before the clock runs out. While it's becoming less tradition-bound and isolated, Saudi Arabia is still mainly a conservative, male-dominated society. The crackdowns have raised concerns that the considerable powers of the state are being concentrated in the hands of just one man, unnerving some of the foreign investors the country will need to prepare for the post-hydrocarbon age. With almost half of Saudis under the age of 25 and the size of the workforce expected to double by 2030, Saudi Arabia can no longer afford its unproductive population. At the same time, if more Saudis earn their own living and are asked to pay taxes, they could begin to demand a greater say in how their country is run.

## Burning Cash

Saudi Arabia's foreign reserves are drained when oil's price slumps



PHOTO: TASNEEM ALSULTAN/THE NEW YORK TIMES/REXUS

GRAPHIC: OIL PRICE IS PER BARREL; SOURCES: SAUDI ARABIAN MONETARY AGENCY, ICE FUTURES EUROPE



# Yemen's Crisis

By Glen Carey and Sarah Algethami

In Yemen, a three-year war has produced what United Nations officials have called “the worst man-made humanitarian crisis of our time.” Schools, hospitals and other civilian sites have been repeatedly attacked. Yet disease and hunger rival bombs and gunfire as the biggest dangers to ordinary people. Yemen was already the poorest country in the Middle East. The war, UN officials warn, has put it at risk of famine.

## Who's fighting whom?

Broadly, on one side are Houthi rebels, members of a Shiite Muslim tribe from the northern mountains, who took control of the capital, Sana'a, and other cities in 2015. They complain of marginalization of their community and are supported by Shiite-majority Iran. On the other side stand forces of the internationally recognized Yemeni government and allied militias backed by Saudi Arabia and its coalition of mainly Sunni Muslim nations.

## How bad has it become for civilians?

The death toll from fighting has been estimated at about 10,000. Human-rights groups have documented repeated cases of airstrikes on civilian targets by the Saudi-led coalition and indiscriminate artillery fire into cities by the Houthis. In other ways, life has become wretched and perilous, on a mass scale. UN officials have said that 80 percent of Yemen's

28 million people need outside assistance for protection or to stave off hunger. An estimated 2.2 million children are acutely malnourished. Within Yemen, the war has driven about 2 million people from their homes.

## Why is there so much hunger?

Yemen relies heavily on imports for its food supplies: The country grows only about 5 percent of the wheat it consumes. That's because freshwater for crops is scarce, and farmers increasingly have turned to cultivating the more profitable khat, a narcotic leaf that 90 percent of Yemeni men chew daily. The Saudi-led coalition has disrupted food and other supplies coming into Yemen by imposing a naval blockade on ports in the Houthi-controlled north, notably Hodeidah and Salif, which normally handle about 80 percent of imports. Coalition ships have held up vessels bound for the ports for significant periods or diverted them

to other countries. For their part, the Houthis extract payments on goods that are trucked through the areas they control, forcing up food costs.

## Why is disease such a threat?

Yemen was hit by a massive outbreak of cholera, an acute diarrheal disease, starting in mid-2017. More than a million people were sickened, and about 2,200 died. Cholera is bred by poor sanitation and a lack of clean water – conditions created when wastewater treatment plants reduced operations because of fuel shortages caused by import disruptions. An outbreak of diphtheria, which destroys respiratory tissue, began claiming more lives later in the year.

## Is the blockade legitimate?

The advocacy group Human Rights Watch has argued that the Yemen blockade violates established norms of naval warfare, codified in the San Remo Manual, because its impact on civilians is disproportionate to its military benefits. The group has called on the UN Security Council to sanction those responsible.

## What do coalition leaders say?

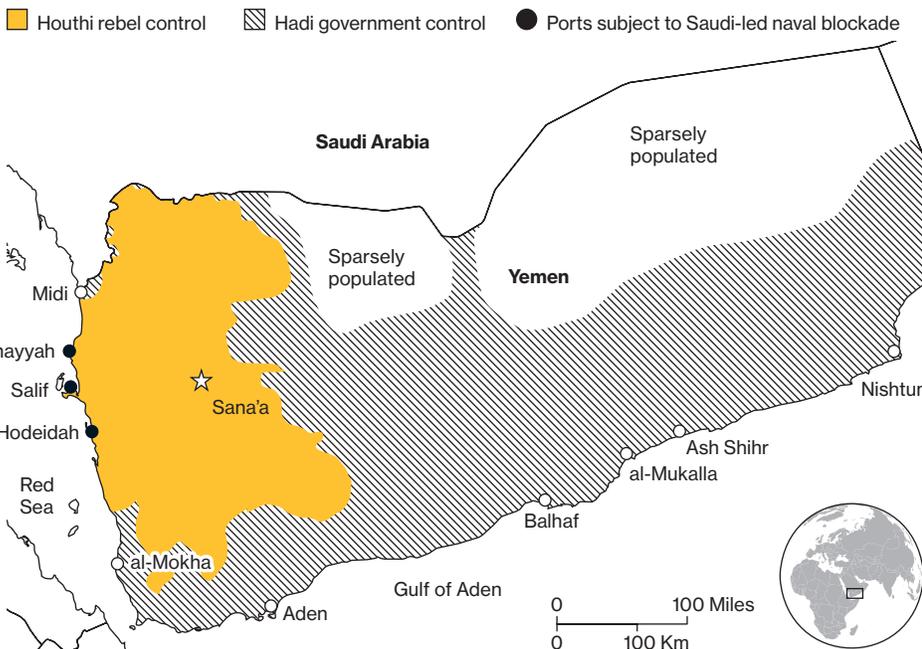
They say the blockade is aimed at preventing the Houthis from receiving arms shipments from Iran. The rebels have periodically shot missiles into Saudi Arabia, although they began after the coalition started bombing Yemen. Saudi officials have also expressed concern that allowing ships to call on Houthi-controlled ports gives the rebels a source of fees that help fund their war efforts.

## How's the rest of the world reacted?

In early 2018, Germany suspended arms exports to Saudi Arabia and its fighting partner the United Arab Emirates. Norway also ceased such sales to the U.A.E. The U.S. and U.K. support the coalition with weapons sales and logistical help. The UN has partnered with humanitarian groups to provide assistance to Yemen's neediest people.

## The Front Lines

A naval blockade exacerbates a humanitarian crisis in Yemen



# The Future of Jihad

By Caroline Alexander and Tarek El-Tablawy

**Islamic State, the most destructive militant Islamist group in modern times, has been subdued in Iraq and Syria. Its self-declared caliphate is in ruins, like the grandest ambitions of its forerunner, al-Qaeda. But the story of modern jihad — holy war waged on behalf of Islam — is far from over. Both groups live on through a collection of like-minded jihadis spread across the Muslim world. They continue to fight to overthrow governments they consider heretical, aiming to establish their ideas of purified Islamic societies and lashing out at foreign powers.**

## The Situation

Islamic State's fighters in Iraq and Syria were squeezed by an array of forces — notably a coalition led by the U.S. Meanwhile, affiliated groups ballooned in number elsewhere. Al-Qaeda, which was crippled after launching the Sept. 11, 2001, terror attacks on the U.S., quietly rebuilt as world powers focused on battling its spinoff. Today, al-Qaeda prefers to work through local groups and often tries to hide its connection to them. Islamic State and al-Qaeda affiliates have continued to sponsor and inspire terrorist attacks in the U.S. and Europe, often by radicalized individuals with no known tie to any organization. But their greatest impact is in the Muslim world. Civil wars have been on the rise globally since 2003, according to a 2017 academic study; about two-thirds of the new conflicts are in mainly Muslim countries, and the vast majority of rebel groups profess radical Islamist views. Most are fighting to erase borders and create a caliphate, a state claiming dominion over all Muslims. Having a transnational goal has enabled jihadi leaders to raise donations and recruits from many different countries.

## The Background

The fight by Afghanistan's jihadis to push out Soviet occupiers in the late 1980s attracted Arab volunteers who sought a purpose amid rampant unemployment and loss of hope in nations headed by iron-fisted leaders. When the Afghan battle ended, the volunteers returned home to continue fighting holy war. Among them was Osama bin Laden, a Saudi, who formed al-Qaeda. Arguing that the U.S. and its allies were the "far enemy" preserving apostate Arab regimes, al-Qaeda declared war on them in 1998, killing almost 3,000 people in

## Jihadi Hot Spots

- **Afghanistan**  
Khorasan Province, an Islamic State affiliate, conducts extremely lethal attacks on civilians, especially Shiite Muslims, considered heretics by Sunni jihadis.
- **Egypt's Sinai Peninsula**  
Sinai Province, an Islamic State affiliate, attacks security forces and religious minorities and took credit for the 2015 bombing of a Russian plane that claimed 224 lives.
- **Libya**  
Jihadis affiliated with Islamic State held the city of Sirte for more than a year and have been tied to terrorist attacks in Berlin in 2016 and Manchester, U.K., in 2017.
- **Nigeria**  
Boko Haram, which pledged allegiance to Islamic State, targets security forces and civilians and has kidnapped hundreds of schoolgirls.
- **Philippines' Mindanao region**  
Four Muslim insurgent groups allied with Islamic State seized the city of Marawi in 2017 and held it for five months.
- **Somalia**  
Al-Shabaab, an al-Qaeda ally, commits terrorist attacks in nearby countries and domestically, including an October 2017 bombing in Mogadishu that killed more than 500 people.
- **Syria**  
Jabhat al-Nusra, al-Qaeda's strongest franchise, has an estimated 10,000 men under arms fighting the Syrian regime.
- **Yemen**  
Al-Qaeda in the Arabian Peninsula claimed responsibility for the 2015 attack on offices of the French magazine Charlie Hebdo and was fingered in three attempts to blow up U.S.-bound airplanes.

the Sept. 11 attacks. In response, U.S. and allied forces drove al-Qaeda from its sanctuaries in Afghanistan, though remnants of the group survived. The U.S.-led invasion of Iraq in 2003 gave birth to Islamic State, which recruited fighters to resist the foreign occupiers. Both groups draw followers from the

Sunni branch of Islam. The Arab Spring rebellions of 2011 enabled jihadis to exploit chaos in several nations, including Syria and Libya. Islamic State began capturing territory in 2014 in Iraq as well as Syria, where unrest had led to civil war. Arab militants energized radical Muslims farther away, in places such as Southeast Asia and Africa's Sahel region. Jihadi groups have succeeded in recruiting followers even though they advocate a much stricter form of Islam than most Muslims embrace. In a 2015 Pew Research Center survey of 11 countries with significant Muslim populations, participants overwhelmingly registered negative attitudes toward Islamic State.

## The Argument

Are military campaigns against jihadis just a game of whack-a-mole? Armed intervention by the U.S. and its allies, including drone strikes, often produces civilian casualties, which can then fuel recruitment of new radicals. Some analysts argue that foreign involvement also lends support to the militants' case that alien powers help maintain illegitimate regimes. Supporters of military action say that U.S. and European governments have much at stake: In addition to the threat of orchestrated attacks on their soil, their diplomatic missions, businesses and expatriate citizens remain targets where jihadis operate. Plus, the governments that are the main targets are often ill-equipped to face the threat alone. At the same time, foreign firepower may give authorities in majority-Muslim nations the comfort to put off reforms that could diminish the appeal of holy war. Those include measures to create more economic opportunities and expand political freedoms.

# Vladimir Putin

By Henry Meyer

**He's among the West's most distrusted politicians, but at home in Russia, Vladimir Putin's popularity is unrivaled. In a culture that admires strength, the president's muscular style of nationalism resonates, as he flaunts his country's "invincible" new nuclear weapons and defies the West over military interventions in Syria and Ukraine. In power longer than any Soviet leader other than dictator Joseph Stalin, he's come to symbolize a concept of managed democracy and conservatism that values political strength over individual freedoms. His personal appeal has been tested by economic hardship caused by a fall in oil prices and sanctions provoked by his government's assertive behavior. But his standing with Russians has hardly been dented.**

## The Situation

Putin cruised to a fourth term in March elections with a landslide victory, though Russian and international observers complained the vote wasn't fair. His victory came amid an escalation of tensions with the West after the U.K. accused Russia of staging a nerve-agent attack on a former Russian double agent living in Britain and his visiting daughter. Relations were already strained by allegations of Russian cyberattacks and efforts to influence elections in the U.S. and Europe. Before that, Putin had been isolated over his annexation of Ukraine's Crimean Peninsula in 2014 and his role in a pro-Russian rebellion in Ukraine. U.S. President Donald Trump expressed interest in improving relations with Russia. But an investigation into whether his election campaign colluded with the Russians deferred that impulse, and ties actually worsened. With a three-year Russian military campaign in Syria that shored up President Bashar al-Assad against rebels backed by the U.S. and its allies, Putin challenged America's dominant role in the Middle East. In his 2018 state-of-the-union address, he played videos showing off new Russian weapons – at one point targeting what appeared to be the U.S. – and said the arms proved the West had failed to contain Russia.

## The Background

Putin, 65, honed his survival techniques as a deprived child in postwar Leningrad (now St. Petersburg). Two older siblings died during the 900-day German siege against the city in World War II, according to a 2013 book by a distant relative. His mother barely survived. In a 2000 autobiography, Putin wrote that the family lived in a small room in a communal apartment without hot water or a proper bathroom. There he said he chased rats, learned martial arts

and dreamed of working in intelligence. In 1989, as a spy in East Germany, he was forced to destroy documents when crowds tried to break into the office of the KGB, the Soviet spy agency and secret police force. He said the discovery of the powerlessness of his Soviet bosses traumatized him. When Communism collapsed, Putin switched his public allegiance from the atheistic ideology to the Russian Orthodox Church, to which two-thirds of the population profess to belong. As president, Putin presents a

## Vladimir Putin

- **1952** Born Oct. 7 in Leningrad to a factory foreman and his wife
- **1975** Graduates in law from Leningrad State University; joins KGB foreign intelligence service
- **1985** Begins five-year stint with KGB in East Germany
- **1990** Becomes assistant rector for international affairs at Leningrad State and adviser to city government
- **1996** Transferred to Moscow to join President Boris Yeltsin's staff
- **1998** Becomes director of Federal Security Service, the post-Soviet spy agency
- **1999** Appointed prime minister; becomes acting president when Yeltsin resigns
- **2000** Elected president
- **2008** Leaves presidency because of term limits; appointed prime minister
- **2012** Re-elected president
- **2013** Relations with U.S. deteriorate with backing for Syrian President Bashar al-Assad and asylum for NSA leaker Edward Snowden
- **2014** Annexes Crimea in conflict over Ukraine
- **2015** Faces recession that becomes Russia's longest in two decades
- **2018** Elected in a landslide to a fourth term as president

carefully constructed public personality through TV. He appears daily as an ironman of action, rebuking government officials, hosting foreign leaders, even taming wild animals and hang gliding. Cultivating his aura of power, Putin is legendary for showing up late – he's kept the pope, Queen Elizabeth II and German Chancellor Angela Merkel waiting. Sports are a passion – he's a black belt in judo, a swimmer, skier and keen ice-hockey player. Occasionally, the Putin stone face softens: After winning a third presidential term in 2012 following a tumultuous challenge from street protesters, he shed tears at a televised victory rally. More typical: In 2007, he met Merkel at his Sochi residence and let his pet Labrador retriever sniff his unnerved guest. She's known to be afraid of dogs.

## The Argument

Putin once described the collapse of the Soviet Union as the greatest geopolitical catastrophe of the 20th century. He sees himself as a guardian of Russia's unique place in the world, under assault from a decadent West. His constituents appear to take a similar view, given that his approval ratings remain strong despite adversities caused by a two-year recession that ended in 2016, the longest in more than two decades. Barring a change in the constitution, which limits presidents to two consecutive terms, Putin can't run again for the office when his term expires in 2024. He's been grooming a new generation of technocrats, one of whom could emerge as his chosen successor. Alternatively, he could repeat the maneuver he used in 2008 after serving two presidential terms: becoming prime minister to keep the reins of power. Or he could create some new role for himself to maintain his dominance.

# Europe's East-West Rift

By Zoltan Simon

Almost three decades after the fall of the Iron Curtain, tensions are again threatening to divide Europe. Anti-immigrant, socially conservative movements have roiled politics in places as different as Britain and Italy. But they've made their greatest gains in Hungary and Poland, where populist leaders are challenging the settled norms of democracy in the European Union. The key figure is Viktor Orban, who as Hungary's prime minister has turned against the ideals of his former benefactor, the Hungarian-born billionaire and philanthropist George Soros, to champion what Orban calls the "illiberal state." French President Emmanuel Macron has called the struggle over values a kind of "European civil war."

## What's Orban up to?

His Fidesz party again prevailed in April elections, giving him a third consecutive parliamentary supermajority. The government has widened a crackdown against nongovernmental organizations and moved to silence dissent by undercutting the media and the judiciary. Political pressure led Soros's Open Society Foundations, one of the world's biggest funders of NGOs, to decamp from Budapest to Berlin. Central European University, founded by Soros to train future leaders in ex-communist Europe, is in legal limbo and considering moving to Vienna.

## How has he changed Hungary?

After his election in 2010, Orban pushed through a new constitution, curtailed the power of courts, appointed allies to head key institutions and changed the electoral system in ways that helped him keep power. The 55-year-old leader has gathered support by targeting immigrants, particularly Muslims, whom he's called "invaders." To protect what he calls "Christian Europe," he built a fence on Hungary's southern border and forced asylum-seekers into detention camps when a flood of Middle Eastern refugees arrived in 2015.

## Who's following his lead?

In Poland, the Law & Justice Party has led a similar assault against courts, the media and other fixtures of democratic governance since taking power in 2015. Other former communist nations such as the Czech Republic and Slovakia have resisted taking in refugees, while Romania has weakened anti-corruption laws. A nationalist party in Slovenia led by an Orban ally won the most votes in an election in June. In western Europe, nationalists of all stripes have cited Orban as an inspiration. German Interior Minister Horst Seehofer, a leading

dissenter to Chancellor Angela Merkel's welcoming stance toward refugees, is an Orban fan. So is Stephen Bannon, former chief strategist to U.S. President Donald Trump, who called Orban a "great hero."

## What are their goals?

Orban portrays himself as a counterpoint to Europe's liberal democratic model, which he said was destined to lose its competitive edge to centralized states like China. Poland's de facto leader, Jaroslaw Kaczynski, is seeking a return to Europe's Christian roots from the multicultural values enshrined in the EU. Others, from Czech caretaker Prime Minister Andrej Babis to the populist leaders who took power after Italy's March election, are resisting deeper EU integration.

## Why is eastern Europe a hotbed of populism?

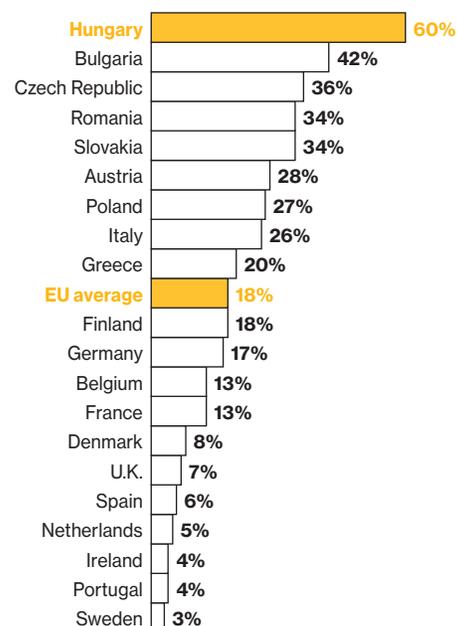
There's a rich vein of frustration among people who feel left behind by the post-communist transformation. Many of the countries have very short histories as functional democracies; most adults grew up with limited rights. There is also disillusionment with the system that produced the 2008 global financial crisis. While some pockets of eastern Europe, such as the Czech Republic, are now richer than parts of western Europe, relatively low wages and continued hardship elsewhere have fueled discontent.

## What do critics say?

That the rhetoric is contrary to the values the EU has been built upon. European Commission President Jean-Claude Juncker pointed out during the refugee crisis in 2015 that Europeans of all nationalities were forced to emigrate at some point in history, including those in eastern Europe now opposed to a resettlement system. Others have noted that Orban's attack on Soros, who is

## Not on My Street

Share of people who said they would be totally uncomfortable having an immigrant as a neighbor



Jewish, has had anti-Semitic overtones. What's more, a new class of politically connected oligarchs in Hungary holds sway over an ever-greater slice of the economy. Slovakia's government fell in March after the murder of an investigative journalist focused public anger on corruption.

## What can the EU do?

EU leaders are debating whether subsidies from the bloc's budget for poorer countries should be linked to the rule of law, possibly denying them billions of euros in financing. The group is also considering using a long-dormant law that could potentially strip Poland and Hungary of their voting rights in the bloc, though the two nations have vowed to use their veto powers to protect one another.

# South Africa's Chance

By Mike Cohen

**When the African National Congress swept to power under Nelson Mandela in South Africa's first multiracial elections in 1994, its campaign slogan assured "a better life for all." That vision, already somewhat faded, was tarnished during the almost nine-year presidency of Jacob Zuma, which was characterized by scandal, corruption and economic stagnation. Now a new president, Cyril Ramaphosa, has rekindled hopes by starting to clean house. While it could take years to undo the damage that's been done to Africa's largest economy, "Ramaphoria" has driven consumer confidence to an all-time high, spurred predictions of higher economic growth and prompted foreign investors to take another look.**

## The Situation

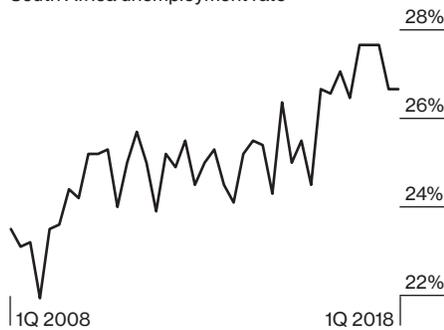
After years of party infighting led to the dramatic ouster of Zuma in February, Ramaphosa took office and began to crack down on corruption. Some of Zuma's most inept ministers were fired, and the new administration began to revamp the leadership of state companies implicated in graft. Zuma was indicted on multiple charges, including racketeering and money laundering. Ramaphosa is seeking \$100 billion in new investment over the next five years – an ambitious goal since total foreign investment was just \$1.5 billion in 2017 and the economy shrank in the first quarter of this year. He's tried to calm investors rattled by the ANC's moves to change the constitution to allow land expropriation without compensation, which the party says will step up the redistribution of wealth to black citizens. Ramaphosa insists any policy shift won't be allowed to harm the economy or agricultural production. Voters will judge his performance in national elections in 2019. Disillusionment with Zuma has eroded the ANC's popular support for years and cost it control of Johannesburg, the economic hub, and Pretoria, the capital, in municipal votes in 2016.

## The Background

European settlement in South Africa dates from 1652, when the Dutch East India Co. established a supply post in Cape Town; the British occupied it in 1795 to secure the sea route around the southern tip of Africa. Colonialism spread as the Dutch – known as Boers or farmers – migrated to the interior. Discovery of inland gold and diamond deposits spurred the Anglo-Boer Wars, which the British won in 1902. White colonists adopted a constitution in

## Unemployment's Grip

South Africa unemployment rate



1910 that disenfranchised black South Africans, whom they viewed primarily as cheap labor. In 1948, the government started implementing a legal system of separation of races known as apartheid, or apartness. It denied black people the vote, stripped them of land and provided only rudimentary education and health-care services. South Africa endured decades of economic sanctions and an armed struggle by the ANC and other groups. Mandela, who'd led calls for the ANC to take up arms, served 27 years in prison before the government agreed to free him in 1990 and hold multiracial elections. Ramaphosa, born in 1952, has played an integral part in South African politics since the early 1980s. He founded the biggest mineworkers' union and led talks that ended apartheid. After losing the contest to succeed Mandela to Thabo Mbeki, he started his own investment company, which benefitted from requirements that white investors partner with black shareholders. He ended up with stakes in businesses ranging from mining to consumer goods. Ramaphosa returned to full-time politics in 2012, when he was elected as the ANC's deputy leader;

Zuma appointed him deputy president in 2014. He secured control of the ANC in late 2017.

## The Argument

Over the years, South Africa's government has been able to point to some successes: The economy has almost trebled in size, and the poverty rate has fallen from 67 percent in 2006 to 56 percent in 2015. Ramaphosa's political and business experience has raised hopes that he can revive the struggling economy and address the plight of an army of poor. The task of rebuilding will be helped by the fact that the nation has transport links and energy supplies that are the envy of Africa, a trove of untapped minerals and independent courts. Yet racial inequalities persist, and companies remain largely controlled and managed by whites. The 26.7 percent unemployment rate will likely stay elevated, as a poorly managed public-schools system, ranked among the world's worst, means more than half of the children who start school don't complete the full 12 years. Efforts to clean up the state are likely to be frustrated by the scores of Zuma allies who occupy key posts. But if Ramaphosa succeeds, South Africa could emerge as an example of good governance and democracy for the rest of the continent.

# \$100b

Ramaphosa's goal for foreign direct investment over the next five years



# Wave Election

By Greg Giroux

When the same party controls both the U.S. presidency and Congress, ambitious legislation can happen. Look at the Affordable Care Act, known as Obamacare, passed under Democrats in 2010, or the bill that cut \$1.5 trillion in taxes that was passed by Republicans at the end of 2017. But the congressional elections coming on Nov. 6 could bring one-party government to a halt and increase the odds for gridlock in Washington. An analysis by Bloomberg Government of historical data, election maps and public polling shows that this could be a “wave election” that breaks in favor of the Democrats.

## What’s a wave election?

One in which a political party makes major gains in the House or Senate. All 435 House of Representatives seats and 35 of the 100 Senate seats are on the ballot. Before the election, the Republicans hold a 235-to-193 edge in the House. Republicans have a 51-to-49 advantage in the Senate.

## Can Democrats win a majority?

In midterm elections, those that come halfway through a president’s four-year term, the party in control of the White House tends to suffer a voter backlash. One theory is that anger

energizes citizens, so those opposed to the president and his policies are more motivated to turn out at the polls than those happy with the status quo. The backlash can be severe: Since the end of World War II, the president’s party has had a net loss of 26 House seats and 4 Senate seats on average. Democrats have had strong showings in elections to fill vacancies since Republican Donald Trump became president, adding to the speculation that they can capture the House. It could be harder for Democrats to take the Senate. They’d have to retain almost all their current seats, 24 held by the party and two by independent senators who typically vote with them, and pick up two or three of the Republican’s seats, five of which are in states Trump won by large margins.

also should be able to run on strong economic growth.

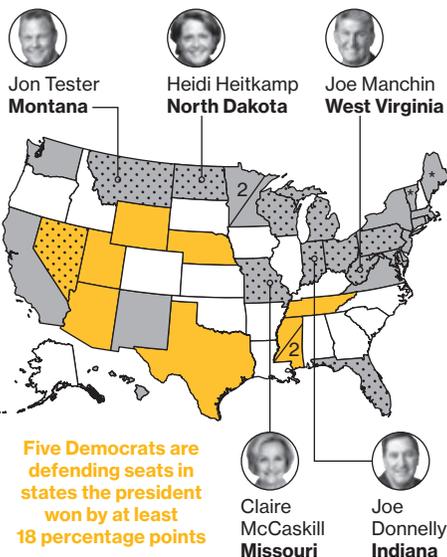
## What happens if Democrats win?

Even if only one chamber flips to the Democrats, Trump’s ability to get major legislation passed would likely be thwarted, and his administration would face investigations and subpoenas from congressional committees led by Democrats that are probing whether the Trump campaign colluded with a Russian effort to undermine the 2016 election.

## Why Democrats Will Have a Hard Time Taking the Senate

Senate seats up for election in 2018, compared with results of the 2016 presidential election, where Republican Donald Trump ran against Democrat Hillary Clinton

- Republican in state won by Trump (8)
- Republican in state won by Clinton (1)
- Democrat or Independent in state won by Clinton (16)
- Democrat in state won by Trump (10)
- No election (17)



## What are polls saying?

That the public is in a sour mood about where the country is headed. Trump’s approval rating at the end of May, 40 percent, is near the lowest of any president 16 months into his term since 1945, according to Gallup polling data. The less popular the president, the more seats his party tends to lose.

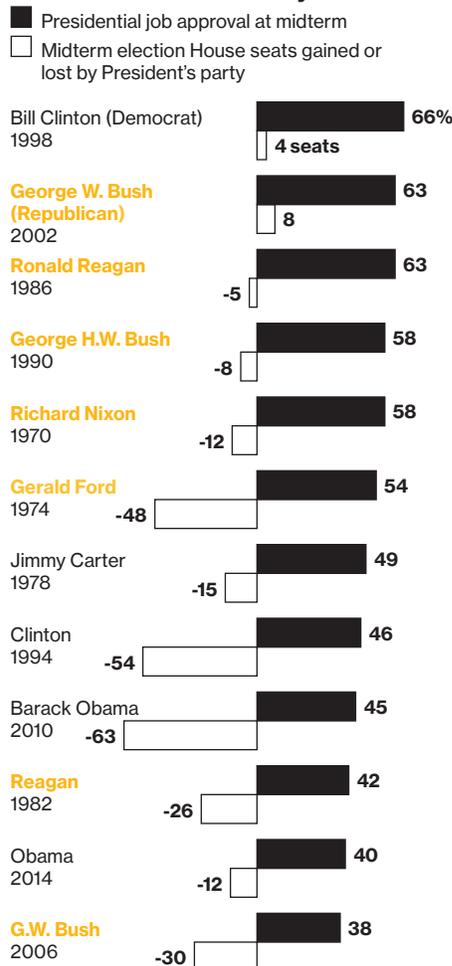
## Do Republicans think they’ll lose?

House members haven’t said so, but many are heading to the exits. Led by current House Speaker Paul Ryan, who’s retiring after serving 20 years in Congress, 48 House Republicans as of May 31 have announced they’ll retire, run for another office or resign. Among Democrats, the number of departures is 20. Three Senate Republicans decided not to run for re-election; no Democrat chose to leave.

## Do Republicans have any advantages?

Yes. Those include favorable electoral maps drawn by Republican-dominated state governments after the last census in 2010. Republican candidates

## President’s Midterm Party Losses



PHOTOS: COURTESY U.S. SENATE (5); GRAPHIC: BERNIE SANDERS OF VERMONT AND ANGUS KING OF MAINE, BOTH INDEPENDENTS RUNNING FOR REELECTION, CAUCUS WITH DEMOCRATS; SOURCES: BLOOMBERG AND U.S. SENATE (MAP); GALLUP (PRESIDENTIAL APPROVAL RATINGS); AMERICAN PRESIDENCY PROJECT (SEATS LOST)

# Venezuela's Collapse

By Patricia Laya

Venezuela has more oil than Saudi Arabia and more poverty than Colombia. Once one of Latin America's richest countries, it's now plagued with shortages of everything from toilet paper to antibiotics. It's been a steep downward spiral since the heady days when the late President Hugo Chavez set out to use an oil boom to light a socialist path to prosperity not just for the poor in Venezuela but across South America. Chavez died in 2013, about a year before oil prices fell sharply. His protégé and successor, Nicolas Maduro, has tightened his grip on power as opponents complain of economic mismanagement, corruption and political oppression. Critics inside and outside the country hope for Maduro's departure, but no solution has emerged that would protect Venezuela's 30 million people from further harm.

## The Situation

Maduro, 55, was reelected president in May in a contest widely seen as a charade: Most prominent would-be contenders either boycotted the contest or were barred from entering it. Hundreds of thousands of Venezuelans have fled to nearby countries in response to a violent crackdown on street protests, a lack of jobs and an inability to feed their families. In 2017, the aid agency Caritas International said more than 11 percent of children under age 5 were suffering from moderate to severe malnutrition, yet Maduro has rejected humanitarian aid. Oil output has plunged to 1940s levels, partly for lack of money for maintenance but also because hungry workers have grown too weak for heavy labor. Late last year, Venezuela defaulted on a portion of its debt. That included the \$3 billion in so-called hunger bonds that Goldman Sachs Group Inc. bought in 2017 at a deep discount – leading to criticism it was helping finance a regime that prioritized paying creditors over feeding hungry Venezuelans. The U.S. and European Union have imposed sanctions against the country for human-rights abuses, political repression and graft. Early this year, Venezuela introduced the world's first state-issued cryptocurrency, the Petro. The U.S. called it a scam and

promptly forbade Americans from purchasing it. While Venezuela no longer publishes basic statistics, the International Monetary Fund estimated that inflation exceeded 2,400 percent in 2017 and would zoom higher in 2018. The nonprofit group Transparency International ranks Venezuela 169 out of 180 countries for corruption because of high levels of it among officials.

## The Background

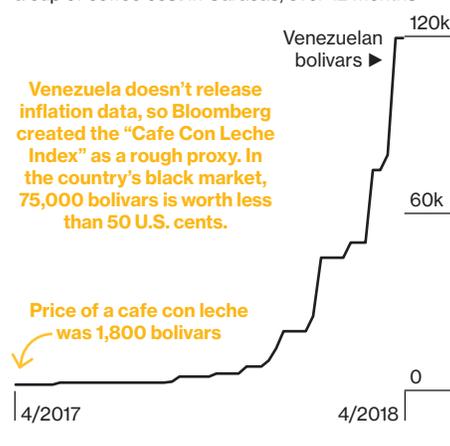
Chavez, a former paratrooper jailed for two years after leading a failed coup in 1992, was first elected president in 1998 and revolutionized Venezuelan politics with fiery anti-U.S. rhetoric. He nationalized thousands of companies or their assets, reducing the country's capacity to produce anything but oil. He channeled revenue to the poor and expanded Venezuela's influence in the region by doling out cheap oil. He used widespread support to transform a pluralistic democracy into a largely authoritarian system. Under Maduro, with the oil bonanza's end in 2014, Venezuela could no longer rely on oil revenue, which accounts for 95 percent of foreign currency earnings, to pay for imports, creating widespread scarcities. As discontent grew, Maduro and his allies have retained power in part by jailing opponents and curtailing press freedoms. After the opposition won control of the parliament, Maduro last year stripped the body of its power and handed it to what the U.S. says is a puppet assembly.

## The Argument

Maduro has held onto power but without giving much of a plan for turning the country around. He has said that some of the economic squeeze will be fixed with the Petro, which is backed

## Hyperinflation in Venezuela

Inflation exceeded 6,500 percent, based on what a cup of coffee cost in Caracas, over 12 months



by oil, but has offered no mechanism for exchanging the digital tokens for hard assets. He hopes to negotiate a debt restructuring, but U.S. sanctions prevent American investors and banks from participating, complicating the process. Expatriates, diplomats and others have proposed responses to the worsening crisis, ranging from the modest (increased support for countries accepting fleeing Venezuelans) to the radical (military intervention, similar to the U.S.'s removal of Manuel Noriega from the presidency of Panama in 1990). When President Donald Trump in 2017 mused openly about the latter, Latin American countries quickly objected. Some Maduro critics instead hope for a military coup – a wave of officer arrests in early 2018 could signal growing dissension – while others find military rule unacceptable. The U.S., Europe and Asia could ban the country's oil imports and hasten Maduro's demise, still others have suggested. But that would worsen the humanitarian crisis.

# 11%

Share of Venezuelan children under age 5 suffering from malnutrition

SOURCE: BLOOMBERG

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**Chapter**

# 4



# ENERGY & ENVIRONMENT

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p46

**Divestment helped end  
apartheid. Can it  
save the planet?**

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p47

**Europe is at odds with  
Russia but addicted  
to its natural gas**

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p51

**Half the world's  
big cities are at risk  
of a major earthquake**

# Buzzwords

Energy and environmental issues breed new catchwords all the time. Here's help decoding them.

## DI ST RIB UT ED GE NE RA TI ON

By Chris Martin

One way of describing distributed generation is as the opposite of the way we've gotten electricity since the days of Thomas Edison. In the old model, utilities build a handful of massive power plants and funnel their power out through a network of wires and cables known as the grid. In distributed generation, power comes from a range of sources with many owners. These sources can be as small as a homeowner's rooftop solar panels or

as large as an entrepreneur's wind farm. That power is meant to be consumed on the spot, but any excess can be shipped where it's needed or as the shifting forces of supply, demand and price dictate. Power sources can also be tied together in a microgrid. Proponents of distributed generation say it's a better fit for renewable energy and will increase the grid's resilience – a major concern given the climate change-driven trend toward more

storm damage. There's one big hurdle: a grid owned by utility companies that may see distributed generation as a threat. In the U.S., some states have adopted policies called net metering that require utilities to pay for power that's fed into the grid. States with lots of solar-powered homes like California are moving to a system in which the rates paid to households or businesses producing their own power reflect their share of the costs of operating the grid.

## ARAMCO

By Anthony DiPaola and Wael Mahdi

The world's most valuable company may be Aramco, as Saudi Arabian Oil Co. is better known. The sprawling state-owned producer, sitting atop one-fifth of the globe's known petroleum reserves, pumps more crude than the top four publicly traded oil companies combined. Crown Prince Mohammed bin Salman, the Saudi king's influential son, says the company is worth in excess of \$2 trillion, more than double the size of Apple Inc. Aramco may also be the world's most profitable company: A first glimpse at its finances showed that it churned out \$33.8 billion in net income in the first six months of 2017, easily outstripping the biggest U.S. companies. The Saudi government is planning a partial privatization of Aramco to create a war chest for a post-hydrocarbon age. Some banks have valued a 5 percent stake at \$50 billion to \$75 billion. Owned by the Saudi state since 1980, Aramco generates almost 90 percent of government income. The company built the refineries and petrochemical plants that form the backbone of the world's 15th-biggest economy. The question now is whether it can help build a nonoil future.

## ENVIRONMENTAL SOCIAL GOVERNANCE

By Melissa Mittelman and Emily Chasan

Companies traditionally have been held accountable for one bottom line: profit. Now a growing number of investors are basing decisions on what's known as ESG figures as well – measures of how a company performs on environmental, social and governance issues. Assets managed using a broad definition of the approach reached \$23 trillion at the start of 2016, including \$8.7 trillion in the U.S., by one estimate. Ethical investing started with church-affiliated organizations in Sweden in 1965 but has grown to encompass a broad group of investment styles that are known variously as sustainable, values-based, socially responsible or impact investing. Investment managers like BlackRock Inc. now are pushing companies to explain how they make a positive contribution to society and offering customers more ESG investment options. The European Union is now requiring companies to publish reports on their social and environmental impact. A fledgling market in so-called green bonds – debt sold for environmentally friendly purposes – is growing quickly, with global annual issuance expected to surpass \$250 billion in 2018.

# OPEC Fights Back

By Grant Smith

Since its creation more than a half-century ago, OPEC has been jolting the world. The 14-member club of oil exporters is the textbook case of a successful cartel, wielding immense control over the world's most critical commodity. As waves of new technologies and petroleum discoveries have upended the global energy trade, OPEC's obituary has been written many times. Yet the Organization of the Petroleum Exporting Countries has just as often defied its critics. Now it's facing another challenge for long-term survival as the U.S., once its biggest customer, unleashes record supplies of shale oil and the planet turns to renewable energy. So OPEC is again deploying its most trusted tool: cutting output to push up prices. But whether such a tactic can still succeed is unclear.

## The Situation

Weakened by an oil glut in late 2016, OPEC members launched their first intervention in eight years with a pact to cut production. Steered by Saudi Arabia, they even joined forces with Russia, for years a fierce competitor. By mid-2018 the gamble had paid off: The surplus was eliminated, and oil touched a three-year high of more than \$80 a barrel. That prompted U.S. President Donald Trump to complain about rising oil prices on Twitter, and the U.S. quietly asked some OPEC producers to pump more. Not all of OPEC's success was down to hard work, however. The implosion of Venezuela's oil industry amid an economic crisis there also helped shrink supplies, offsetting cheating on production quotas by other nations, notably Iraq. The danger for OPEC now is whether its success backfires: Higher prices have spurred a frantic return to "fracking" by shale-oil drillers and enabled the U.S. to overtake Saudi Arabia and Russia as the world's No. 1 oil producer. If prices climb higher, an even bigger wave of shale oil could sweep away all of OPEC's gains.

## The Background

OPEC formed in 1960 when Saudi Arabia, Iran, Iraq, Kuwait and Venezuela sought to wrest power from the giant U.S. and European oil companies that determined

the price of crude. It shot to prominence in 1973, when its Arab members imposed an oil embargo on Western countries in retaliation for their support of Israel. Though OPEC gave up on using oil for political goals, it still operated as the "swing producer," raising or cutting output when supplies – and thus prices – were too high or too low. Currently OPEC accounts for about 40 percent of world output, controls the bulk of global reserves and operates the most profitable fields on the planet. Yet as "petro-states," OPEC's members depend on high oil prices to fund government spending. In some, notably Venezuela and Nigeria, the burden is intensified by corruption and mismanagement. Saudi Arabia has a further incentive to hold prices high as it's pursuing a partial privatization of its state oil company, Aramco. OPEC's latest challenge emerged as U.S. production, once in terminal decline, began to soar in 2011 thanks to fracking – blasting apart underground rocks with high-pressure liquids to tap the oil and gas within. The group's first response was to keep pumping, waiting for this new source to fizzle out. But as prices tumbled from \$115 in mid-2014 to \$27 in early 2016, OPEC reversed course.

## The Argument

How long can OPEC keep it up? As well as the tie-up with Russia, the cartel has expanded its powers by building an alliance with 10 other nonmember countries, a pact the producers say may become permanent. The world's appetite for oil isn't going away: Most forecasters expect that consumption will keep expanding for at least another two decades and any decline will be slow. OPEC has a built-in competitive advantage, since its Middle Eastern

## Who Needs High Oil Prices

Estimated per barrel oil price needed to balance 2018 government budgets

Iran	\$52
Gabon	\$56
U.A.E.	\$61
Kuwait	\$63
Qatar	\$68
Ecuador	\$74
Angola	\$78
Saudi Arabia	\$83
Algeria	\$84
Iraq	\$86
Nigeria	\$124
Libya	\$170
Venezuela	\$223

The Brent oil price of \$77.59 on May 31 left many countries under water

# 10

Number of countries that joined the 14 OPEC members to cut supply

members can produce crude at about a third of the cost of U.S. shale. Yet the cartel's share of the market is much smaller now than during its 1970s heyday. Its current intervention took far longer to raise prices than the six months originally envisaged by Saudi Arabia. Plus the threat of shale hasn't diminished; it's now a matter of how aggressively it comes back. Then there's the growing popularity of electric cars and renewable energy, technologies that could mean demand for oil peaks sooner than expected.

# Divesting Fossil Fuels

By Kelly Gilblom

Can you strike a blow against climate change by getting rid of your oil company stocks — and can you do it without losing money? The move by Norway's \$1 trillion sovereign wealth fund to consider selling its oil and natural gas holdings has led many institutional investors to reconsider the financial side of the question. The leaders of what's called the climate divestment movement, however, have focused on the environmental benefits. Their movement has been picking up steam. But whether, when and in what way divestment could reshape the energy market is a complicated question.

## What's the climate divestment movement about?

It has been championed since 2012 by the activist group 350.org, whose name is a reference to what some scientists consider the maximum safe level of atmospheric carbon in parts per million. Its goal is to "keep carbon in the ground," in part by weakening fossil-fuel producers. Adopting a tactic from the fight in the 1970s and 1980s that helped force South Africa to give up apartheid, it urges universities and others to divest themselves of stocks from coal and oil and gas companies.

## How has that gone?

The group says that so far almost 900 institutions, from pension funds to family foundations, mostly in North America and Europe, have made some level of commitment to divesting, although 350.org is unable to say how much of their \$6 trillion in total assets has actually left the sector. In addition, it says that more than 58,000 individuals have divested about \$5.2 billion. Most institutional investors have limited their share sales to companies producing the dirtiest fuels, such as coal and bitumen from tar sands.

## Has that had an impact?

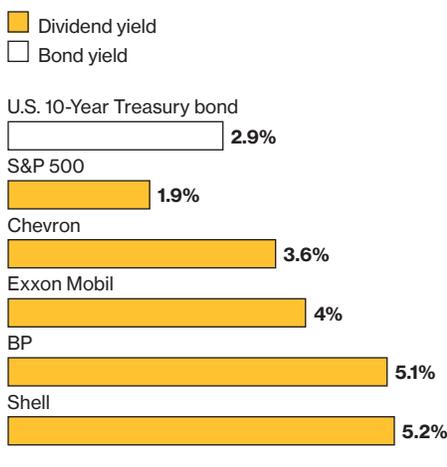
Not in economic terms. Coal companies are under pressure, but that's mostly because of low prices for natural gas. Many oil and gas companies saw their stock prices rise over the past year as demand for their products increased and crude prices rebounded. But groups like 350.org say symbolic rejection can help "revoke the social license of the fossil fuel industry."

## Is there an economic argument for divesting?

Sort of. Oil companies themselves see demand for their products peaking, but not until sometime from 2025 to 2050, and then slowly declining. Advocates

## Oil's Dividend Edge

Oil company dividends are reliably higher than the steady payments from government bonds or the broader stock market



say climate change has exponentially increased the risk of backing fossil fuel companies, so investors should put their money elsewhere for the sake of their own fortunes.

## Why is the Norway fund considering divesting?

The world's biggest wealth fund and largest equity investor, it controls about 1.5 percent of global stocks. The fund, which was largely built on oil and gas profits, says it wants to shield Norway against a "permanent drop in oil and gas prices," although it's steered clear of talk of peak demand. The thinking is that given the country's overall exposure to the sector — including its ownership in Statoil ASA, Norway's biggest company — it didn't make sense to also tie up other financial assets in fossil fuels.

## What are the arguments not to divest?

For most investors, having money in an oil company is almost unavoidable. Behemoths such as Exxon Mobil Corp. and Royal Dutch Shell Plc are included

in every major equity index — core investments, like it or not, for the mutual funds that almost everyone's pensions or 401(k)s are invested in. Then there are the dividends. Oil companies distribute money to shareholders with a fervor matched by few others. If you bought a share of Shell during World War II, you would have received a flat or increasing dividend payment every quarter without exception.

## So does divesting mean taking a financial hit?

Exiting now could mean passing up those fat dividends and possibly rising share prices, while waiting longer risks losses if government action or the rapid spread of renewable power and electric cars cuts demand sooner than anticipated.

## If everyone divested tomorrow, what would happen?

First of all, the sheer size of oil holdings means it would be hard for everyone to sell at once — the Norwegian selloff will be done over years. Cheaper shares might make it harder for the companies to raise funds but wouldn't cut demand for fossil fuels. Renewable energy sources like wind and solar are growing rapidly but from a tiny base.

## Is there another approach?

While New York City announced in January a goal of divesting fossil fuel companies from its pension holdings, New York state is not following suit. Its pension fund is part of a group that sees oil companies, with their vast balance sheets and skilled workforces, as potentially part of the climate solution. They've decided to engage companies from within, as shareholders. Those efforts have had some success, like a recent push to get Exxon to better disclose the risks it faces from climate change.

# Russia's Grip on Gas

By Anna Shiryaevskaya and Elena Mazneva

Europe's relations with Russia are at their lowest point in decades. At the same time, the Continent's buying more Russian natural gas than ever. Europe vowed to become less dependent on Russia's energy exports, after gas shipments headed west were twice disrupted. Now a plan to double shipments to Germany, the biggest buyer, through a new pipeline is dividing European leaders and becoming a growing worry for the U.S. There are fears the links will enhance Russian President Vladimir Putin's ability to use natural gas to squeeze critics and reward allies.

## The Situation

Europe last year purchased record volumes of gas, worth \$38 billion, from Russia's Gazprom PJSC, in part to make up for depleted fields in the U.K. and the Netherlands. Natural gas provides about 22 percent of Europe's energy mix; about a third of that comes from Russia. Construction of the Nord Stream 2 pipeline under the Baltic Sea to Germany will begin this year, led by Gazprom and partly financed by European energy companies. A group of 39 U.S. senators wrote to President Donald Trump asking him to block the project, saying it would make American allies "more susceptible to Moscow's coercion and malign influence." Poland, Slovakia and other countries that host existing pipelines are also opposed, warning that the plan will tighten Russia's hold over the region by giving it the capacity to bypass countries at will, including Ukraine. Russia has been locked in conflict with Ukraine since 2014, when a pro-Russian president there was forced from power and Russia seized the country's Crimean Peninsula. The aggression triggered U.S. and European sanctions against Russia. More recently, the U.K. said it would seek to secure gas from other sources after blaming Russia for the nerve-agent poisoning of a former spy in England in March. The Kremlin has denied involvement.

## The Background

With its vast Siberian fields, Russia has the world's largest reserves of natural gas. It began exporting to Poland in the 1940s and laid pipelines in the 1960s to deliver fuel to captive satellite states of what was then the Soviet Union. Even at the height of the Cold War, deliveries were steady. But since the breakup of the Soviet Union, Russia and Ukraine have quarreled repeatedly over the pipelines through Ukrainian territory that carry the bulk of Russia's Europe-bound gas. In 2006 and 2009, disputes over pricing and siphoning of gas led to cutoffs of

Russian supplies. The second shutdown lasted almost two weeks in the dead of winter. Slovakia and some Balkan countries had to ration gas, shut factories and cut power supplies. Since then, the most vulnerable countries have raced to lay pipelines, connect grids and build terminals to import liquefied natural gas, a supercooled form of the fuel that can be shipped from far-away fields, such as those in Qatar. Russia relies on oil and gas to fund more than a third of its government budget.

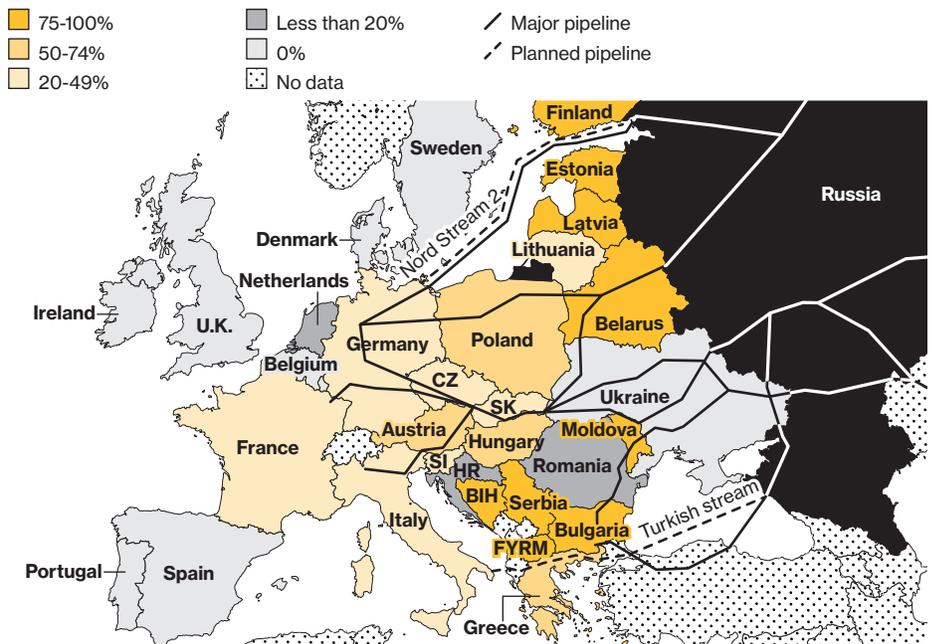
## The Argument

Russia has urged Europe to keep diplomatic disputes and its energy trade separate. So far, it largely has, though German Chancellor Angela Merkel said Nord Stream 2 couldn't go ahead if Russia uses it to isolate Ukraine and damage its economy. She said the project won't disrupt the continent's efforts to diversify

its energy sources, since other pipeline expansions will bring more gas from places such as Scandinavia. Forging a unified European position has been hard, partly because dependence on Russian pipelines varies so widely: Spain doesn't use any, while it makes up 97 percent of Bulgaria's supply. Alternative sources of energy for powering Europe's homes and factories come at a much higher price (LNG) or pollute much more (coal). The issue has been complicated by Germany's decision to shun nuclear power after reactor meltdowns at Japan's Fukushima plant in 2011 and from the phaseout of coal in countries from the U.K. to Italy to meet goals for reducing carbon emissions. Europe could produce more of its own gas were it not for widespread opposition to fracking, a technique to tap gas trapped in rock layers that has been blamed for earthquakes and groundwater pollution.

## Who's Dependent on Russian Gas?

About a third of Europe's gas comes from Russia



# The Recycling Crisis

By Eric Roston

Is recycling worth it? When it took off four decades ago, recycling was seen as one of the environmental movement's great successes. It morphed into a gigantic global trade, with freighters that carried China's exports abroad returning home with half the planet's scrap paper and plastic stuffed into their otherwise-empty containers. Then China changed its mind, leaving cities and towns around the world stuck with growing piles of waste. That's forced them to reconsider the cost of being green.

## The Situation

Recycling markets were upended in 2017 when China, as part of an antipollution crackdown, announced it would stop importing most used plastic and paper. One reason: Too many imported recyclables were contaminated, sometimes with hazardous substances like lead and mercury. The decision sent prices of scrap plastic and recovered paper tumbling, creating a crisis for municipalities that had relied on such sales to subsidize curbside recycling. In the U.S., the average price of used corrugated cardboard fell 36 percent. It hasn't been easy to find other takers for used plastic, since lower oil prices have made virgin plastic cheaper than recycled. While other nations like India and Vietnam have been importing more recyclables, they don't come close to handling the amount China once did. And few industrial nations have enough capacity to recycle all the material on their own. Some communities are running out of room to store the mounting stockpiles and have stopped collecting plastic, paper products or glass. Some places in Australia and Canada have sent existing piles to landfills or burned them. At the same time, under pressure from consumers, several well-known companies have pledged to use more recycled and biodegradable goods. In 2018 companies

including Coca-Cola, Unilever and Walmart said they'll aim to use packaging that is 100 percent reusable, recyclable or compostable by 2025.

## The Background

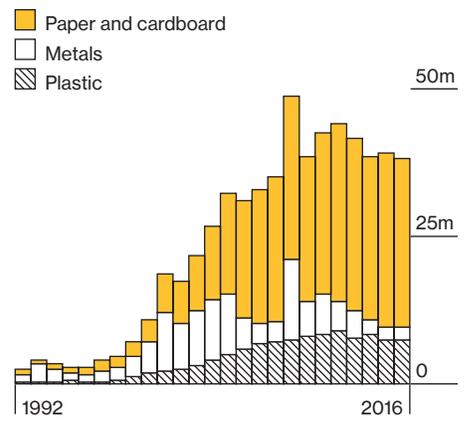
During both world wars, metals were recycled for use in weapons and vehicles; paper was collected to preserve trees for construction and shipping. After that, most nations' waste was sent to incinerators that belched smoke or to landfills that could leach toxins into ground water. In the U.S., the passage of the Clean Air Act and Clean Water Act in the early 1970s meant that communities had to scramble to find other solutions; many began to offer recycling programs as a way to cut down on garbage. China's recycling trade took off in the 1990s as its exports of goods such as textiles and toys rose sharply. Its manufacturers were hungry for plastics and metals to refashion into new products and used paper to make cardboard boxes to pack them up. Recycling collectors in the rest of the world often found it more economical to sell to this market than to local processing plants. European countries began to shift some of the burden in the mid-1990s by setting rules that required manufacturers of goods ranging from cardboard boxes to mattresses to handle recycling their products themselves.

## The Argument

Recycling is more expensive than tossing items into the trash. In 2016 it cost New York City \$18 per ton more to collect and process recyclables than to dispose of regular refuse. Improper recycling adds to the cost. Just one pizza box in a cardboard recycling pile can ruin the whole batch, since oils in it can't be separated from the paper

## How the World Relied on China

Total weight of scrap material imported by China each year, measured in metric tons



fiber. Recycling plastics and electronics can be dangerous, exposing workers to serious health risks. And there are natural limits. Paper can only be recycled five to seven times before the cellulose fibers become too short to be reused; most clear plastic bottles can't be turned into new bottles. Yet recycling does save energy. Making soda cans from recycled aluminum requires 95 percent less energy than mining and using raw ore. Recycling also helps keep toxic materials out of landfills. The upheaval that followed China's decision prompted calls for bans and fees to discourage plastic use; localities started to pass on their higher recycling costs to homeowners and businesses. Many areas have announced plans to build new recycling plants; public-private partnerships, bankrolled by companies that have made recycling pledges, are offering to support the effort with low-cost loans. Environmentalists still encourage recycling, but they also offer other solutions: Buy less stuff in the first place and look for products that last.

# 1/2

Share of world's scrap paper and plastic China once took in



# Carbon Capture

By Eric Roston

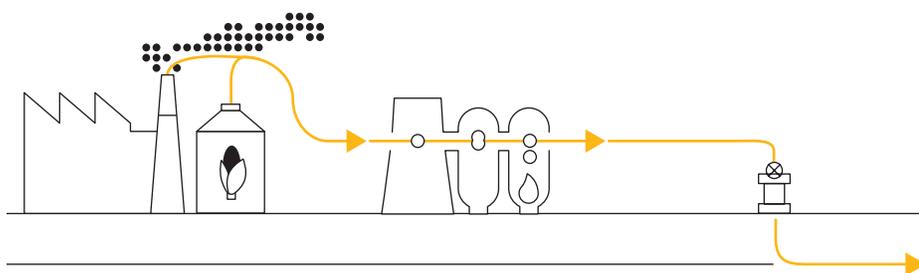
We humans are all too good at putting carbon dioxide into the atmosphere. Can we come up with a way to vacuum it out? As climate predictions grow more dire, scientists are concluding that large-scale carbon removal — enough to massively reduce carbon levels, not just lower the rate of increase — is humanity's best hope for avoiding calamity. Current technology, however, is a long way from being able to meet those goals.

## Carbon Capture and Storage

Carbon is captured from exhaust streams of power generators or industrial plants.

It's then compressed and dispatched by pipelines to special geological sites...

...where it's injected deep into oil wells to boost production.



## Couldn't we just plant a gazillion trees?

Don't laugh. Trees are the original carbon scrubbers. The 2015 international Paris agreement set a goal of limiting warming to 2.0C (3.6F) above pre-industrial levels, plus a more ambitious target of 1.5C. A United Nations panel says that a reforestation program big enough to offset a quarter of our CO<sub>2</sub> emissions in 2030 could give us a better than even chance of meeting the 2.0C goal. The catch: High-quality land three times the size of India would be needed.

## How much carbon will need to come out?

We've already put 45 percent more carbon dioxide in the air than there was before industrialization. Every day, another 100 million metric tons of it goes up. Reducing those emissions to zero would not be enough to reach the 1.5C goal. By one estimate, from now to 2100, we'd need to remove more than 800 gigatons of CO<sub>2</sub> — the equivalent of 20 years of emissions at current rates.

## What does carbon removal mean?

It comes in two main flavors: carbon capture and storage (CCS) and carbon reduction. Projects using CCS collect CO<sub>2</sub> as it's emitted. When coal supporters talk about "clean coal," they mean CCS.

## How well do CCS projects work?

There are more than 20 CCS projects around the world, but most are tests or demonstrations. The field's biggest black eye is a gas-and-coal plant equipped with the technology in Mississippi that came in more than three times over its original \$2.4 billion budget and is no longer in use. In a recent report, Royal Dutch Shell Plc suggests that meeting the 2.0C goal would require 10,000 large-scale CCS facilities by 2070.

## What's the other kind?

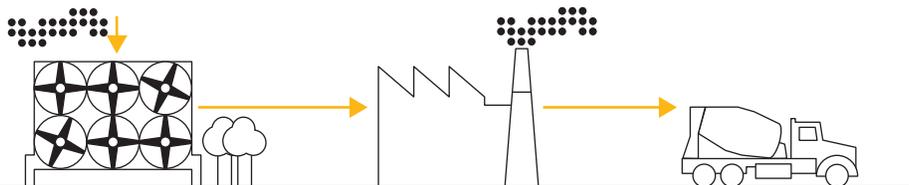
Carbon dioxide removal, or CDR. That means pulling it out of the ambient air, something harder to do than capturing it in an exhaust flue.

## Carbon Dioxide Removal

Carbon is captured chemically from the open air by machines that remove it many times faster than trees.

The plant is built alongside factories that take in concentrated CO<sub>2</sub> as a raw material ...

... and use it to make products such as fuels, plastics and concrete.



## How does that work?

One good thing about CO<sub>2</sub> is that it can be dissolved in chemicals and then released. Research labs and start-ups are developing competing methods for these so-called reversible reactions. Zurich-based Climeworks AG, for instance, builds large banks of filters that suck in air and combine the CO<sub>2</sub> with chemicals called amines. Global Thermostat LLC in New York uses nitrogen-based chemicals while Carbon Engineering Ltd. of British Columbia captures CO<sub>2</sub> in calcium carbonate before separating it out again.

## How effective is carbon removal?

It's mostly still in the demonstration phase. The first commercial Climeworks plant can take 900 tons of CO<sub>2</sub> out of the air every year. The bad news: More than 400,000 plants working at that level would be needed to cancel out 1 percent of current emissions.

## Are there other approaches?

Yes. One is a variation of CCS called bioenergy with carbon capture and storage (BECCS). First, plants are grown that absorb CO<sub>2</sub>. Then that biomass is burned to generate power. Those emissions are captured, making for a carbon-neutral system. Here again, the amount of land that would be needed to grow enough biomass is many times the size of India.

# Earthquake Readiness

By Jeffrey Taylor

At least half the world's largest cities are considered to be at moderate or high risk of a major earthquake. Fears of the next "Big One" affect such major population centers as Tokyo, Mumbai, Jakarta, Mexico City, Manila, Los Angeles, San Francisco, Sao Paulo, Istanbul and Tehran. With the world becoming ever-more urbanized — almost two-thirds of the population will live in cities by 2050 — earthquake preparation is a massive, long-term challenge thrust into the hands of short-term elected leaders. What steps should be taken today to protect people, companies and economies from a threat so remote that it could strike once in a lifetime, if that?

## The Situation

While cities differ greatly in their preparations, many in fault zones are moving more urgently to revisit disaster plans in the wake of Japan's harrowing 2011 Tohoku earthquake, which unleashed a tsunami that triggered a nuclear meltdown and killed more than 15,000 people. Los Angeles is requiring owners to strengthen certain wood-frame and concrete buildings, more than 15,000 in total, and San Francisco is requiring retrofits of wood-frame apartment buildings that house a total of more than 115,000 people. In Peru, where the capital city of Lima has a perilous combination of unsteady housing built atop unstable soil, the national civil-defense institute holds nationwide earthquake evacuation drills as critics warn of mass fatalities in a major temblor. Japan, Taiwan, Italy and Mexico are among the earliest adapters of earthquake warning systems, which detect the first waves of a quake and enable rapid public warnings, via broadcast media and text messages to mobile phones, as well as automated slowdowns or shutdowns of vulnerable industrial and transportation systems. A system for the U.S. West Coast will get its first tests this year, though its longer-term viability will depend on securing funding. Improvements to Mexico City's schools and other public buildings after a catastrophic 1985 quake meant fewer deaths in a September 2017 temblor, though it still killed almost 400 people.

## The Background

Shaking is a fact of life. Earth experiences several hundred observable quakes daily, with a major one — magnitude 7 or greater — happening more than once per month on average. There even are so-called induced tremors, or small quakes caused by oil extraction and other human activities. Coastal cities in the seismically hyperactive "Ring of Fire," including Tokyo, Jakarta and

San Francisco, share not just proximity to fault lines and volcanoes but a soft and saturated soil that can amplify the destruction of a quake's shakes. Although scientists say major earthquakes are not increasing in frequency, the potential for damage is bound to rise when cities grow taller, denser and richer. There are 283 million people in metropolitan areas at some risk of being killed, hurt or evacuated due to an earthquake, according to global reinsurer Swiss Re.

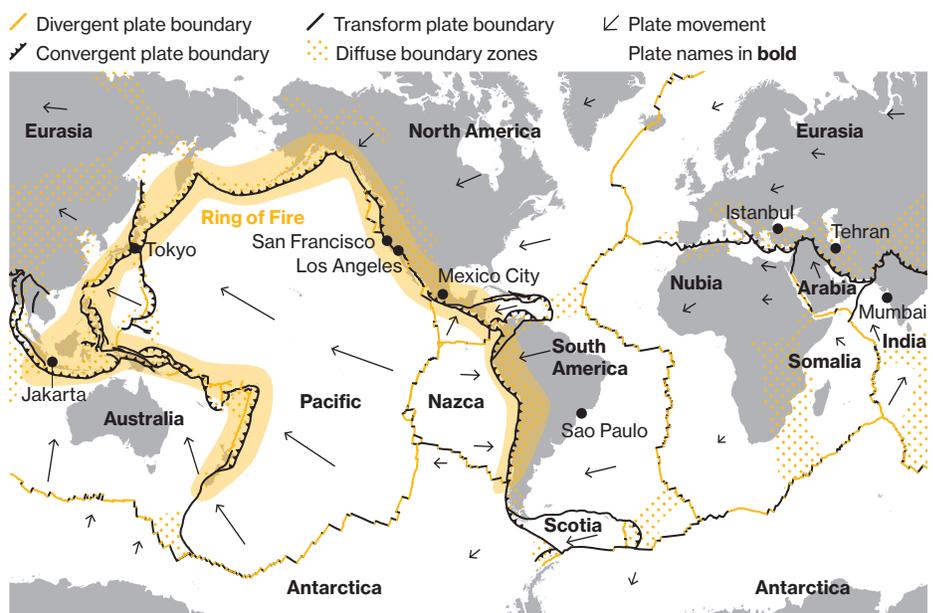
## The Argument

Retrofitting cities that date back hundreds of years isn't cheap or painless. The benefits are largely theoretical, while the cost to stretched budgets is tangible. Progress can seem excruciatingly slow. Los Angeles is giving owners of potentially at-risk buildings as many as 25 years to make improvements. San Francisco is letting its skyline grow

taller and denser despite lingering doubt that high-rise buildings can be made quake-proof. In India, efforts to improve engineering and building code enforcement have mostly languished, leading one expert to lament the lack of "champions for seismic safety." In Turkey, the government is criticized for undoing some earthquake-preparation measures it pledged after a 1999 quake killed at least 17,000 people. All that may explain the move toward early-warning systems, which could give people a tiny window — perhaps just seconds, but conceivably a minute or more — to evacuate buildings. Technology may come to the rescue with cheaper ways to warn those at risk: U.S. researchers are exploring how to employ the motion sensitivity and ubiquity of smartphones to create a massive network that would automatically detect earthquakes and issue near-instantaneous warnings.

## Earthquake Zones

Earth's crust deforms as plates pull away, dive under and slide past each other



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Chapter

5



**HEALTH &  
SOCIETY**

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How naming and shaming  
could fix the pay gap  
for women

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China's message to couples:  
Have another baby, please

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What are the odds  
sports betting brings  
new problems?

# HEAT NOT BURN

By Lisa Du and Grace Huang

Big Tobacco has a new hope: the fast-growing trade in heat-not-burn products. Faced with long-term declines in smoking and stricter policies on tobacco use and sales around the globe, companies have been counting on e-cigarettes to keep business up, but some consumers say the products don't deliver the satisfaction or flavor they crave. Heat-not-burn devices are designed to do just that and, like e-cigarettes, without producing harmful smoke and tar of conventional cigarettes. While consumers often use the terms interchangeably, heat-not-burn products

contain tobacco; e-cigarettes don't. Most heat-not-burn products work by heating a tobacco-containing stick that releases nicotine that's inhaled. The sticks are heated to about half the temperature at which standard cigarettes burn. E-cigarettes, by contrast, heat nicotine-laced liquid to create a vapor that's inhaled. Heat-not-burn devices are said to approximate the taste of traditional cigarettes better than e-cigarettes and deliver more nicotine. So far, the research is too preliminary to form solid conclusions about health effects.

# BOTBOTBOTBOTBOT BOTBOTBOTBOTBOT

By Selina Wang

What's a bot? The news sometimes seems full of them, in often alarming ways, from the Russian bots that invaded social media during the 2016 U.S. presidential campaign to the software bug that briefly had Alexa, the virtual assistant in Amazon.com Inc.'s Echo home speakers, breaking out in random laughter. A bot is a computer program that executes automated tasks over the internet – a software counterpart to the steel-and-cable robots welding cars or assisting surgeons. A simple bot might tweet a weather report once an hour. Chatbots like Alexa are programmed to

mimic human dialogue. On Facebook, WeChat, Twitter and other services, chatbots can perform relatively simple tasks like placing food orders for users or booking airline tickets. But bots can also be tied together into "botnets" of tens of thousands of accounts that coordinate social media activity on a massive scale. Twitter found more than 2 million automated election-related tweets from Russia-linked accounts. And now, artificial intelligence is making a new generation of bots more powerful and more lifelike – for better or worse.

## Right

to

Try

By Michelle Fay Cortez

Making it easier for terminally ill patients to get access to experimental drugs is a broadly popular idea in the U.S. In May, President Donald Trump signed into law a bipartisan bill meant to do just that. Starting with Colorado in 2014, 40 states have enacted their own versions. Under the new federal law, a patient with a life-threatening disease who's exhausted all approved treatment options and can't participate in a trial of an experimental drug would be allowed to take an unproven medicine without the permission of the Food and Drug Administration. The legislation protects manufacturers from liability or increased regulatory review should a patient be harmed – or even killed. Only the patient, his or her physician and the drugmaker would need to agree. Currently, such patients can apply through their physicians to receive experimental drugs with FDA permission. The bottleneck, however, isn't so much the FDA but rather drug companies that limit patient access to unproven treatments. In some cases, a limited supply is an issue. The companies also worry about undermining clinical trials or the fallout from any adverse effects. Some physicians and medical ethicists as well as the drug industry and even patient-advocacy groups opposed the bill. They said taking the FDA out of the process removes protections for patients.

# Why Women Earn Less

By Claire Suddath

There are many ways to look at the explosive issue of why women earn less than men: Are we comparing men and women in similar jobs at the same company? Are aggregate figures skewed by the fact that more women work in schools and hospitals and fewer advance to the top ranks of lucrative professions such as banking? What the numbers lay bare depends on how they're assembled. Yet revelations about the gender pay gap provoke outrage, whether in Hollywood, professional sports, at the BBC or among Uber drivers. Some of that fury has been fueled by a new law in the U.K. that forces large companies to disclose their pay gaps, putting real numbers on wage inequality. Advocates say the flood of data will push women's wages up. Skeptics say it's a simplistic way to look at a stubborn problem.

## The Situation

The largest-ever set of statistics emerged this year as companies with 250 or more workers in Britain were required to unveil a blunt, uniform assessment of what women in their overall workforce earn versus men. Some of the widest gaps appeared at banks such as HSBC Holdings Plc and Goldman Sachs Group Inc., both of which pay women less than half of what men earn on average. That's largely because women are underrepresented in senior roles. A new German law gives workers the right to compare their pay with up to six colleagues of the opposite sex who have similar jobs. In the U.S., President Donald Trump's administration reversed an Obama-era rule that would've compelled companies to report pay information to the government. Some companies are doing it anyway, although on their own terms. Under pressure from activist shareholders, several large U.S. banks, including Citigroup Inc. and JPMorgan Chase & Co., disclosed figures that revealed – after adjusting for factors such as job title and geography – an identical 1 percent gap. That led some critics to question how they calculated the data. In the U.S., the typical job-to-job gap for workers of equal education and experience is 5.4 percent.

## The Background

Historically, the pay gap reflected widely held beliefs that women should stay at home and doubts that they could perform jobs as well as men. Thus they earned lower salaries even as they entered the workforce in larger numbers. When the U.S. passed the Equal Pay Act in 1963, American women earned, in aggregate, roughly 60 percent of what men did.

Over the next 30 years that figure rose to about 80 percent, but women's incomes relative to men have been stagnant since the 1990s. These days, the debate is colored by the fact that women still do a disproportionate share of household work and child care, so they are more likely to work part time, work from home or drop out of the workforce after they have children. Nordic countries are often lauded for having near economic parity, but they still have female workforces that earn at least 15 percent less than men on average. The gap is most acute in Asia, where the Organization for Economic Cooperation and Development reports a wage gap of 26 percent in Japan and 37 percent in Korea.

## The Argument

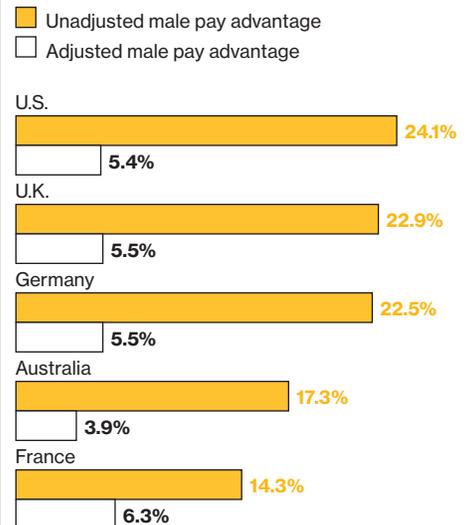
Critics say the disclosure rules create a burden for employers and that the data can distort the issue, sowing confusion and damaging reputations. When comparing how much all women earn versus all men, much of the gap is caused by women's overrepresentation in lower-paying fields such as education, nursing or administration. Yet studies show that the gap widens as women age, have children and enter higher-paying careers. In that sense, the figures can

# 1%

Self-reported gender wage gap at several large U.S. banks

## Mind the Gap

Adjusted 2016 figures control for differences in age, education, job title, employer and location



highlight a gap in economic opportunity. Supporters of more equality say the new transparency provides a deeper level of insight that makes it easier to address discrepancies and monitor results. Many companies have revised their hiring and compensation practices in an effort to create an egalitarian workforce. The Silicon Valley company Salesforce Inc., for example, runs an annual analysis of its staff and adjusts the salaries of any employee – woman or man – found to be inexplicably underpaid. Then there's the question of whether fixing the disparity means paying women more or paying men less. To address its 9.3 percent average gender pay gap, the BBC decided not just to raise the salaries of underpaid women, but also to reduce the salaries of select men.

# China's Two-Child Policy

By Bloomberg News

**Please have another baby. That's China's new message for couples after decades of limiting families to just one child. Why the turnabout? China is aging. By 2040, projections show that 24 percent of the population will be aged 65 or older, a slightly higher rate than in the U.S. and more than twice India's share. This threatens an economic boom that's been built on a vast labor supply. And there may not be enough able-bodied people to take care of all those seniors. So in 2016, China changed its rules to allow as many as two children. But many couples weren't convinced that two were better than one. So China may remove the limits altogether.**

## The Situation

China's State Council is weighing whether to end family-size rules. There are growing concerns among policy makers that drastic action may be needed to face a quickly graying society. The nation's population will peak at roughly 1.45 billion by 2030 and then hover around 1.4 billion until the middle of the century. The International Monetary Fund says the number of people in their prime working years – ages 15 to 59 – could fall by 170 million three decades from now. The aging workforce may already be chipping into gains in productivity, with the increase in China's output per hours worked at its lowest level since 1999. The lifting of the one-child rule worked at first. The number of newborns in 2016 was 18.5 million, a jump of more than 2 million compared with 2015, though the average number of births per woman over a lifetime, 1.7, was still below the 2.1 needed to maintain a steady population. In 2017, births fell to 17.2 million; China has not released enough data to be able to calculate lifetime births per woman for that year.

## The Background

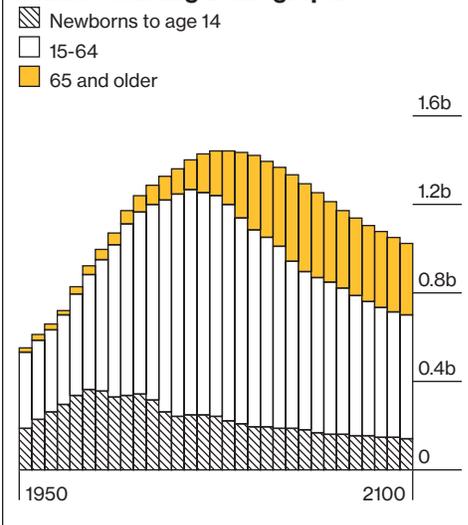
After the creation of the People's Republic of China in 1949, the

government trained tens of thousands of “barefoot doctors” to bring health care to poor and rural areas. The mortality rate plummeted, and the population growth rate rose from 1.6 percent in 1949 to 2.5 percent just five years later. This prompted the first attempts to encourage family planning in 1953. Still, the total population expanded to more than 800 million in the late 1960s. By the 1970s, China was facing food and housing shortages. In 1979, its leader, Deng Xiaoping, decided to limit most couples to just one child. (There were exceptions for rural farmers and certain situations, like when a first child was handicapped.) It worked: The annual population growth rate averaged just 0.6 percent. But to enforce the rules, Human Rights Watch says, China forced women to have abortions. Children born outside the state plan weren't allowed to have their *hukou* – a government registration needed to go to school, buy train tickets or find a job. The traditional preference for sons caused many parents to abort female fetuses, and the male-to-female ratio reached 120-to-100 in some provinces. The imbalance empowered single women to reject suitors without money, leaving a generation of single men called “bare branches” because they can't add to their family trees. In remote rural areas, some men have even bought Vietnamese wives from human traffickers. The sex ratio for births has been dropping in recent years, though the 2016 figure, 115 boys for every 100 girls, was still above the natural rate of 105 to 100.

## The Argument

It could be difficult to persuade Chinese couples to have more children. High living costs, long work hours and surging child-care expenses mean

## China's Shifting Demographics

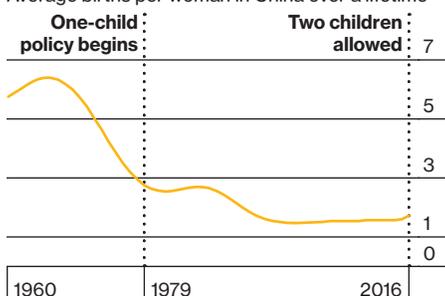


that many couples feel that they can only afford to have one child – or none. A survey by Zhaopin.com, a job recruitment site, found 33 percent of women had their pay cut after giving birth and 36 percent were demoted. While scrapping the cap altogether to allow more than two children would drive faster fertility improvements, in smaller cities, where couples have been more willing to have a second child, hospitals and pediatricians have been overwhelmed by the baby boom. Officials might need to build up medical services and schools and work out new tax breaks for families before lifting all family-size limits. Immigration isn't likely to be an answer, as China currently has strict limits on foreign workers. Businesses aren't waiting for reinforcements. Labor shortages have pushed manufacturers in the Pearl River Delta, China's export powerhouse across the border from Hong Kong, to invest in automation and robots.

*Yinan Zhao contributed to this article.*

## Stalled Fertility

Average births per woman in China over a lifetime



GRAPHIC: CHINA HAS NOT RELEASED FERTILITY DATA FOR 2017; DEMOGRAPHIC FIGURES AFTER 2015 ARE PROJECTIONS. SOURCES: WORLD BANK (FERTILITY RATE); UNITED NATIONS POPULATION DIVISION (DEMOGRAPHICS)

# Sports Betting

By Ira Boudway and Grant Clark

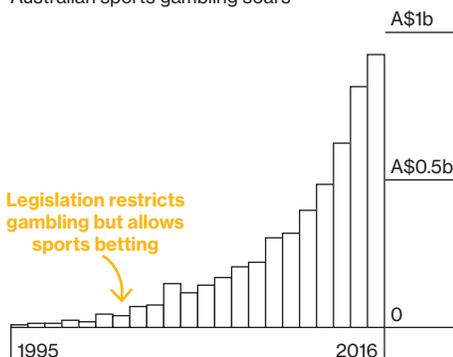
One of the main objections to legalizing sports betting used to be that it would tempt players and officials to rig games. But that's become something of a moot point following an explosion of illegal sports gambling via online bookmakers. In fact, many sports bodies and law enforcement agencies now argue that the best way to combat match fixing is to bring sports betting out of the shadows. Whatever the risks, the potential tax windfall from legalization may be too alluring to pass up. The U.S. is about to become the biggest test case in sports gambling history.

## The Situation

Betting on sports is legal in a slew of countries from Australia to western Europe (the U.K. has the biggest legal market) but flourishes globally even when it's outlawed. In the U.S., where a 1992 law had limited the practice almost exclusively to the state of Nevada, illegal sports wagers are estimated at \$50 billion to \$150 billion annually. That compares with Nevada's record \$4.8 billion of legal sports bets in 2017. The landscape is about to shift, though, after the U.S. Supreme Court in May freed New Jersey to legalize sports gambling and other states to follow. Even the professional U.S. sports leagues, traditionally wary because of concerns that betting would encourage corruption, have come around to the idea. In fact, the National Basketball Association and Major League Baseball are seeking 1 percent of all bets placed on their games. The challenge for legal bookmakers everywhere is whether they can lure gamblers who've grown accustomed to wagering with local bookies or on overseas or illegal websites. Globally, 80 percent of sports bets are placed via the black market,

## Game On

Australian sports gambling soars



according to a 2014 report by the International Centre for Sports Security. Betting syndicates in Asia, where sports gambling is largely illegal or restricted, have instigated some of the most notorious cases of match fixing. Europol, the European Union's law enforcement agency, found one such syndicate fixed 380 soccer games from 2011 to 2013, including in the European Champions League.

## The Background

The internet has transformed sports betting. After the U.K. legalized betting establishments in 1961, the shops that still line major shopping streets had by law to be kept drab to deter customers from lingering. Now, bettors can place a wager at home or on the go via their smartphones. It's possible to bet on just about any professional sport played just about anywhere, and not just on winners and losers but also on the minutiae: the number of fouls or who'll win the third game in a tennis match. That allows gamblers to profit from their prescience but also broadens the scope for corruption, particularly at off-the-radar events. Match-fixing scandals have rocked not only soccer but cricket, tennis and even sumo wrestling in recent years. It's been almost 100 years since eight players for the Chicago White Sox were banned from baseball for life for throwing the 1919 World Series. To counter such threats, sports ruling bodies such as the International Olympic Committee and the NBA have linked with data-mining companies to monitor for suspicious betting activity.

## The Argument

The strongest case for legalization is that sports betting goes on regardless of whether the law permits it, so

# \$150b

Estimate of annual U.S. illegal sports bets

# 380

Number of soccer games a betting syndicate fixed over two years

why not regulate and tax it? Doing so gives bettors greater assurance their wagers will be honored and raises government funding that otherwise flows into the pockets of illegal bookmakers or even organized crime. Detractors say the benefits don't justify the social costs of gambling, from addiction to indebtedness. (Two in five Australian sports bettors have a gambling problem, one survey found.) They argue that the same limits for tobacco and alcohol advertising should be in place for bookmakers to protect vulnerable younger people. Athletes and academics also warn of a growing gambling culture around sports, in which the odds become the focus of attention rather than the pleasure or pain of following the action. Doomsayers maintain that the sports-betting genie is out of the bottle, making match fixing inevitable and putting the integrity of sports at risk in much the same way that performance-enhancing drugs has done.

# Americans and Their Guns

By Esmé E. Deprez

Each new mass shooting in the U.S. reignites a debate over the country's treatment of gun rights as virtually sacrosanct. Americans own more guns than anybody else on Earth, even adjusted for population. (Yemenis are second.) Firearms are involved in the deaths of more than 35,000 people annually in the U.S., about two-thirds of which are suicides. Guns are also integral to the story of the nation's founding. The National Rifle Association, the dominant pro-gun group, has for decades persuaded courts and lawmakers to relax gun restrictions and to prevent the passage of new ones. A new wave of killings, however, may be ever so slightly loosening the NRA's grip.

## The Situation

Some of the deadliest mass shootings in modern U.S. history have unfolded in the past few years: Parkland, Florida (17 killed at a high school in 2018); Sutherland Springs, Texas (26 killed in a church in 2017); and Las Vegas (58 killed at a concert in 2017). Public opinion has been shifting toward tighter gun controls: In a poll of likely voters taken after the Parkland high school shooting, 66 percent said they backed stricter laws, up 19 percentage points from 2015. The Parkland incident also gave voice to a new group of activists – students themselves – whose demands for tougher controls have begun to produce results. After years of mostly declining to strengthen national laws, Congress – at the behest of President Donald Trump, a gun-rights ally – enhanced the 1994 law requiring buyers of guns from licensed dealers to pass a background check. In Florida, the legislature raised the minimum age for firearms purchases to 21 from 18. National retailers, including Dick's Sporting Goods Inc., raised the minimum age to buy guns to 21 from 18. Some banks said they no longer would

lend to companies that make assault-style guns used for non-military purposes. Other banks have stopped issuing NRA-branded credit cards.

## The Background

The U.S. is one of three countries to include gun-ownership rights in its constitution. (Mexico and Guatemala are the others.) The right “of the people to keep and bear arms,” enshrined in the Second Amendment, was established in the 18th century to allow states to form militias. In 2008, the U.S. Supreme Court ruled that the amendment also protects the gun rights of individuals. Beyond the legalities, the gun is a cultural icon in the U.S. It was a necessary instrument of soldiers in the Revolutionary War and cowboys roaming the Wild West. More recently, semiautomatic guns that fire bullets in rapid succession – also called assault weapons – have gained popularity among law-abiding gun owners and mass killers alike. Gun rules are largely determined by the states, and in recent years a majority of them have weakened restrictions by allowing guns in more places, including schools

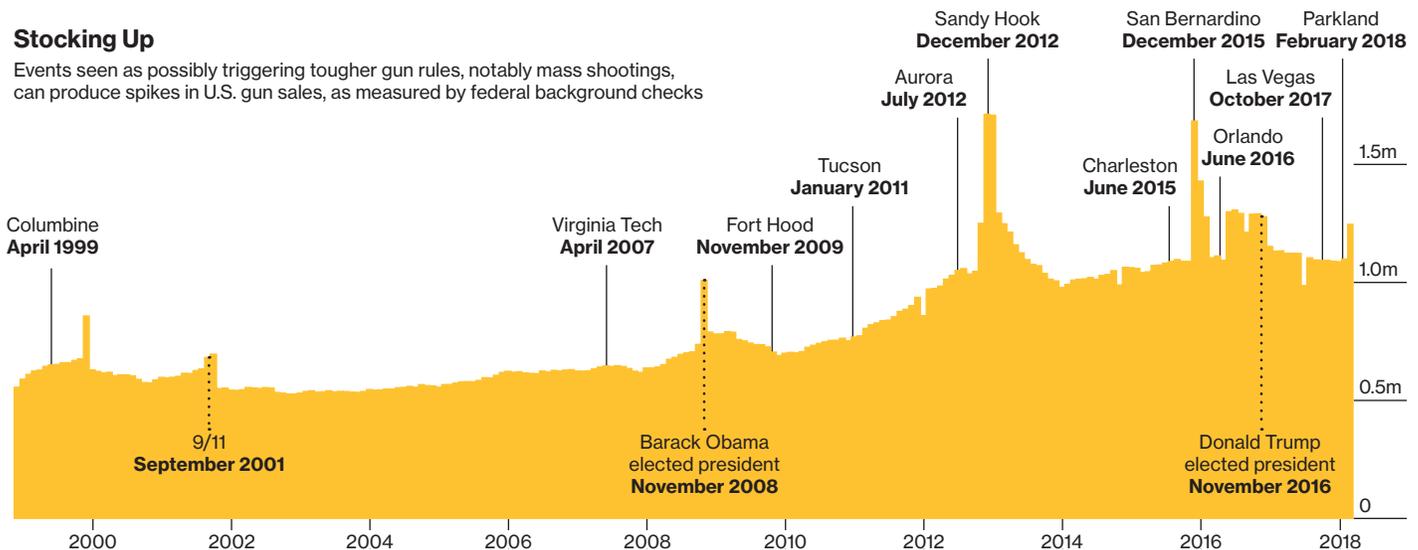
and churches. Mass shootings in other countries, although less common, have also led to debates over regulation. Australia enacted strict gun laws after a massacre that left 35 people dead in 1996; since then, there has been only one mass shooting.

## The Argument

Gun owners, many of whom live in rural areas, view gun controls as an attack on their way of life. The NRA has argued that criminals simply ignore gun regulations. Many NRA-backed lawmakers have said shootings don't prove the need for new regulations and that it's better to arm more people, including teachers, so they can defend themselves and others. They've noted that since Congress let a ban on assault weapons expire in 2004, shootings in the U.S. have declined. Gun-control groups (some backed by Michael R. Bloomberg, founder and majority owner of Bloomberg News parent Bloomberg LP) say the drop – part of an overall decrease in violent crime – occurred for other reasons, notably improved policing.

## Stocking Up

Events seen as possibly triggering tougher gun rules, notably mass shootings, can produce spikes in U.S. gun sales, as measured by federal background checks



GRAPHIC: DATA INCLUDE NUMBER OF FEDERAL BACKGROUND CHECKS FOR GUN PURCHASES FROM LICENSED DEALERS, SEASONALLY ADJUSTED THROUGH MARCH 2018; MONTHLY CONCEALED-CARRY PERMIT CHECKS NOT INCLUDED; SOURCE: FEDERAL BUREAU OF INVESTIGATION'S NATIONAL INSTANT CRIMINAL BACKGROUND CHECK SYSTEM

# The Human Microbiome

By John Lauerman

Even when you think you're alone, you've got a lot of company. Of the cells you carry around, only about half, it turns out, are human. The rest belong to microorganisms — bacteria, fungi, protozoans and viruses — that are on and inside you. That may sound unsanitary, but most of them are either harmless or beneficial. Many researchers think that in our overzealousness to kill bad germs, we've knocked off some underappreciated good ones, depleting the diversity of our microbiota, whose collective genes are known as the human microbiome. According to one theory, this has contributed to the recent increase, in industrialized countries, of autoimmune diseases such as diabetes, multiple sclerosis and lupus. That's led to a spate of new research on whether a better relationship with our fellow travelers could undo that rise, and whether some of our microbes could be deployed to make us even healthier.

## The Situation

Scientific findings have come quickly, connecting human microbiota to infectious diseases such as HIV and hepatitis, noncommunicable ones like heart disease and cancer, and even psychiatric disorders such as autism and depression. The discoveries have sparked an explosion of research by drug companies and academic labs into possible treatments and cures. The idea, usually, is to alter organisms in the gut, where about 99 percent of human microbiota live. Some of the most promising research involves fecal transplantation — the introduction through colonoscopy, endoscopy or enema of a donor stool. In early human trials, it's shown potential as a superior treatment for recurrent infection with *C. difficile*, a pathogen often contracted in hospitals that causes diarrhea and kills about 30,000 people a year in the U.S. Obesity has been discussed as another tantalizing target. In experiments, fat mice transplanted with microbes from thin mice lost weight and vice versa.

## The Background

Researchers connected to the Human Microbiome Project, an international effort led by the U.S. National Institutes of Health, have cataloged more than 10,000 microbial species among our companion germs. The average human gut contains about 38 trillion microbes, weighing about 0.2 kilograms (0.4 pounds). Compared with people in less-developed countries, those in industrialized states have significantly less diversity in the microorganisms that populate their bodies. An excessive use of antibiotics, both in medicine and agriculture, is thought to be a leading cause. Lower rates of natural childbirth and breast feeding are others: Those

practices pass microbes from mother to child, perhaps explaining why cesarean section babies have higher rates of asthma and allergies, and formula-fed babies are at an elevated risk of obesity and diabetes. Less socializing, outdoor activity and exposure to animals may

also deplete microbiota. Scientists for years have known that growing up with a dog lowers a child's chance of having asthma — by 13 percent, according to one study — and microbial diversity has become the leading explanation. Family members, it seems, swap microbes by petting their dogs and being licked by them.

## Our Many Germ Companions

Microbes say and do more than we ever knew

### Mouth

Bacteria in saliva have been shown to correlate with a diagnosis of rheumatoid arthritis

### Lung

Long thought to be sterile, the lung, it turns out, hosts an abundance of microbiota

### Gut

Microbiota here synthesize vitamins and aid in digestion, extracting energy from indigestible dietary fibers

### Vagina

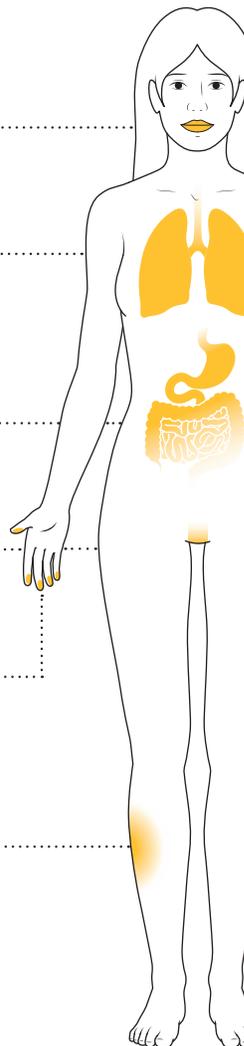
Diversity is generally best, but here a prevalence of the bacterial species *lactobacillus* is a sign of good health

### Fingers

Individuals leave microbial "fingerprints" distinct enough to have forensic implications

### Skin

One study suggested microbes on the skin protect against melanoma



## The Argument

Researchers stress that therapies based on microbiome science will take time to develop. Meanwhile, there's widespread agreement among scientists that people in industrialized countries would do themselves a favor by going easy on antibiotics. Already blamed for breeding resistance in bacteria and thus creating superbugs, antibiotic overuse is now a suspect in killing off good as well as bad bacteria in the human gut. Physicians say they often prescribe unnecessary antibiotics for viral infections because their patients expect it and there's no time to explain that a bacteria killer won't destroy a virus. A public-information campaign in the U.S. aimed at reducing patient demand has corresponded with a decline in antibiotic prescriptions. U.S. farmers use antibiotics intensively on livestock both to treat and prevent disease. Usage is much lower in most countries in the European Union, which has banned dosing healthy animals since 2006. Another possibility for encouraging a better microbial balance is to take in "good" microbes, called probiotics. They can be found in food such as yogurt, miso and soy beverages or in dietary supplements. Some researchers see potential in probiotics, but the case for them requires more investigation, and there are no established protocols for how much or what strains to consume for various purposes.

# Sugar

By Mary Duenwald

Humanity has a love-hate relationship with sugar. It's a treat reserved for the end of a good meal, a focal point for holidays, even a term of endearment. But sugar is an enemy, too, long disparaged as empty calories that cause tooth decay and weight gain. In recent decades, sugar's bad image has grown much worse. For many, it's displaced fat and starch at the top of the list of dietary bogeymen. Public-health experts have stepped in with advice that we distinguish between naturally occurring sugars — what's found in milk and oranges, for example — and "added" sugars that sweeten soft drinks and other packaged foods. Increasingly, governments are treating sugary sodas like cigarettes and alcohol and taxing them to discourage consumption.

## The Situation

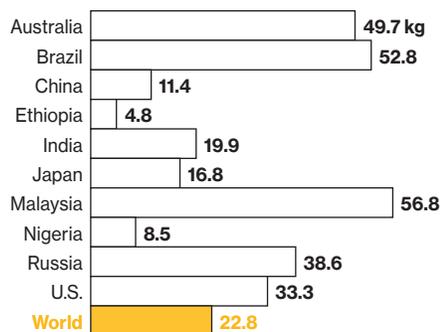
With obesity and its attendant health problems — diabetes, heart disease and cancer — on the rise, advocacy groups are working to persuade people to cut back on added sugar, fingered as a major culprit. (Among such groups is Bloomberg Philanthropies, the charity of Michael Bloomberg, founder and majority owner of Bloomberg News parent Bloomberg LP.) In the U.S., where 4 in 10 adults are obese, the average person gets more than 13 percent of total calories from added sugar. The World Health Organization recommends a maximum of 10 percent, or about 12 teaspoons a day. (A 12-ounce can of Coca-Cola contains about 9.3 teaspoons.) To make the advice stick, more than 30 countries and a handful of U.S. cities have begun to tax sugary beverages, which studies suggest are particularly unhealthy. Another strategy is to strengthen labeling requirements for packaged foods. Chile, where people take in more calories from sugary drinks than anywhere else in the world, now requires conspicuous front-of-package stop signs on foods high in sugar (or sodium, saturated fats or calories) and forbids advertising such products to children. In the U.S., products will have to carry a notice of their added sugar content by 2020.

## The Background

Molecule for molecule, added sugars are no less wholesome than natural ones. Whether it's honey, molasses, refined cane sugar or the sweet stuff in an apple, it's glucose, fructose or a combination of the two. But natural sugars come in limited amounts as part of a package that contains nutrients and fiber, which slows sugar digestion. That gives the liver more time to metabolize it instead

## The Sweet Tooth Varies Around the World

Annual per capita sugar use, average 2014-2018



of turning it into fat and setting the stage for diabetes, heart disease and more. By contrast, added sugars typically come in abundance and, in the case of soda, unaccompanied by nutrients. That extra sugar prompts bacteria in the mouth to produce acids that erode tooth enamel. Drinking sugary beverages exacerbates anyone's tendency to become obese, because people can drink a lot of soda without feeling full. Suspicions that sugar may be habit-forming are supported by evidence that laboratory rats demonstrate the classic addiction symptoms of craving, bingeing and withdrawal. Low-calorie foods and drinks containing artificial sweeteners obviously cut back on calories, but some evidence indicates that they may increase appetite and, because they are so sweet, keep people craving the taste of sugar.

## The Argument

The way to prevent added sugar from causing problems, soda companies have argued, is to see that people get plenty of exercise. Burning calories indeed helps keep weight off, but limiting those going in, studies show, makes a bigger

difference. Some critics object to soda taxes on the grounds that they're a nanny-state measure, an unnecessary intrusion by government into personal behavior. Others argue that they hurt the poor and threaten jobs in the food industry. However, Mexico's experience with a peso-a-liter soda tax imposed in 2014 suggests that wealthier people, who are less sensitive to prices, end up paying the taxes, while poorer people cut out sugary drinks. Researchers have found no evidence of employment losses from the tax. There, and elsewhere, the measures appear to be working. Mexico's tax ushered in a 7.6 percent drop in consumption over two years, according to research funded by Bloomberg Philanthropies. Residents of Philadelphia dialed back their urge for a daily soda by 40 percent after a 2017 city tax went into effect. In the U.K., a soda tax levied not simply by the liter but according to the amount of sugar per liter has pushed beverage makers to reduce the sugar content in their products.

# 12

Maximum teaspoons of added sugar the World Health Organization recommends daily

# 40%

Share of adults in U.S. who are obese



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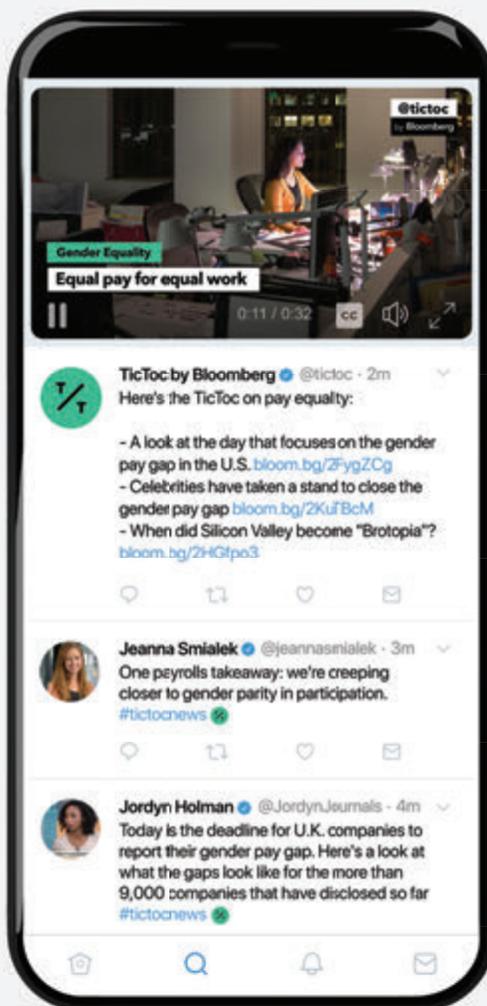
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