

# THE WALL STREET JOURNAL.

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Last week: DJIA 20896.61 ▼ 110.33 0.5% NASDAQ 6121.23 ▲ 0.3% STOXX 600 395.63 ▲ 0.3% 10-YR. TREASURY ▲ 1 9/32, yield 2.331% OIL \$47.84 ▲ \$1.62 EURO \$1.0932 YEN 113.35

## What's News

### Business & Finance

Mutual funds lost as much as \$5.4 billion over the past five years from soured investments in Puerto Rico bonds, a Journal analysis found. A1

◆ Chinese banks are gaining ground on Wall Street rivals in the market for underwriting Chinese companies' overseas debt deals. A1

◆ Media firms are racing to be included in new "skinny" streaming bundles as consumers ditch pay-TV at a record pace. B1

◆ Lyft and Waymo, the driverless car division of Alphabet, said they would work together on self-driving auto technology. B1

◆ Bondholders would turn to Citgo if Venezuela were to default, but the state-owned firm doesn't have enough assets to go around. B8

◆ Gas exporter Cheniere saw its shares surge on news of a new U.S. trade plan with China. B3

◆ Jet makers Boeing and Airbus are catering to budget airlines as their growth continues to outpace legacy carriers. B3

◆ Western Digital filed a request for binding arbitration in its contract dispute with Toshiba. B4

◆ China's economic activity slowed in many sectors in April after a strong start to the year, a possible early sign of softness. A10

◆ Goldman is splitting its investment bankers who focus on health care and consumer and retail companies into two groups. B9

### World-Wide

◆ The cyberattack that spread world-wide is likely to keep growing as people return to work, law-enforcement officials warned, as investigators hunted for the perpetrator. A1, A6

◆ North Korea launched its 10th missile of the year and its most sophisticated yet, in a sign of the seriousness of its nuclear ambitions. A1

◆ The White House is racing to pick an FBI director, but Democrats threaten to block a vote until a Russia investigator is named. A4

◆ More Americans disapprove than approve of the Comey firing, but Trump's overall approval rating hasn't changed, a poll found. A4

◆ Conservative Republicans in the Senate are weighing faster and steeper cuts to Medicaid that could drop millions from coverage. A4

◆ Trump sometimes taped phone conversations when he worked as a businessman in New York, according to some former employees. A4

◆ Macron took office as France's president, vowing to overhaul the economy and reinforce the EU. A10

◆ The U.S. and Saudi Arabia are working on arms deals and financial investments aimed at boosting ties. A8

◆ Tillerson suggested that Trump might not move the U.S. embassy in Israel to Jerusalem if it could hurt Mideast peace efforts. A8

◆ Merkel's party won an upset victory in a state vote, lifting the German leader. A11

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# U.S. NEWS

THE OUTLOOK | By Bob Davis

## TPP Points Way Toward Other Deals

**O**n his first workday in the Oval Office, President Donald Trump killed the Trans-Pacific Partnership. He could spend the rest of his term trying to revive parts of it.

The 12-nation trade pact among Pacific Rim countries, negotiated under President Barack Obama, became a punching bag in the presidential election, opposed by both Mr. Trump, who called it "a horrible deal," and by Democratic nominee Hillary Clinton.

But the pact did plow new ground favorable to some U.S. interests, going well beyond the tariff and subsidy cuts in traditional trade deals. TPP would have boosted e-commerce by limiting restrictions on data flows and prohibiting participating countries from requiring computer servers be located domestically. It would have required state-owned enterprises to operate like commercial companies rather than political tools of the state. Intellectual-property protection would have been strengthened and restrictions to competition in services reduced. These are all longstanding goals of the U.S.

TPP had plenty of critics on the left, who argued labor provisions would be weakly enforced, and on the right, who complained patent protection for pharmaceuticals should have been stronger. Critics across the political spectrum said TPP's investment protections would have

encouraged U.S. companies to set up factories overseas.

Still, it also would have helped the new administration accomplish some of its major trade goals. First, because it included Canada and Mexico, it was in effect a backdoor renegotiation of the North American Free Trade Agreement, something the Trump administration is demanding. Second, although it didn't include China, it would have cemented relations with other Asian nations and given the U.S. a stronger hand in dealing with Beijing.

"Why reinvent the wheel when you can take an agreement and try to improve upon it?" said Jeffrey Schott, a trade economist at the free-trade Peterson Institute for International Economics.

**S**ome Trump trade officials are coming to the same conclusion. "We should learn from and build on earlier negotiated trade agreements," said U.S. Trade Representative nominee Robert Lighthizer in mid-March confirmation proceedings.

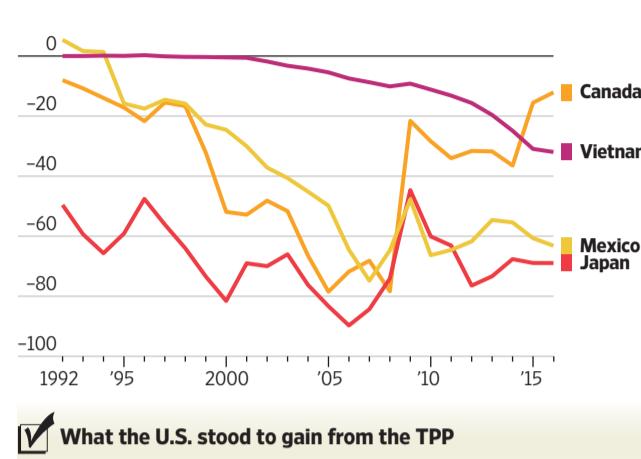
"In a renegotiation of Nafta, we should consider incorporating those provisions [in TPP] as well as improving areas where we may be able to go beyond TPP."

Two weeks later, the administration sent to Capitol Hill Nafta negotiating objectives that echoed TPP provisions on intellectual property, digital trade and services trade, state-owned enterprises and labor and

### Trading Places

The U.S. trade position is shifting with key Trans-Pacific Partnership nations.

#### U.S. trade balance



#### What the U.S. stood to gain from the TPP

- ◆ Opening of service sectors
- ◆ Prohibition on 'data localization,' which pushes technology out of U.S.
- ◆ Higher labor standards in low-wage countries
- ◆ Restrictions on foreign state-owned enterprise subsidies
- ◆ Protections for trade secrets
- ◆ Environmental issues subject to dispute settlement panels

Sources: Commerce Department (balance); 'Trans-Pacific Partnership: An Assessment,' Cathleen Cimino-Isaacs and Jeffrey Schott (checklist)

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environmental standards. The proposed changes were surprisingly mild, compared with Mr. Trump's campaign rhetoric. Congress had already mandated those TPP-style objectives in 2015 when it approved so-called fast-track legislation, which the White House would need to pass any new trade deal.

Mexico and Canada already agreed to TPP provisions, said Josh Bolten, president of the Business Roundtable, a lobbying group of CEOs. If negotiations were largely confined to those measures "it may be a pretty fast and successful negotiation."

On China, U.S. negotiators were pushing TPP provisions on state-owned enterprises and digital commerce, among others, as global norms Beijing would be expected to eventually adopt.

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Mr. Trump says he favors bilateral deals because he believes the U.S. can use its economic power to press smaller nations to make concessions. In multilateral deals, he argues, U.S. leverage is more diffuse.

**B**ut multilateral deals can prod some countries to make concessions. Malaysia feared the domestic political cost of making concessions to the U.S., so it couldn't conclude a free-trade pact during the Bush administration, say negotiators. But Malaysia was able to sign on to TPP, and agree to lower tariffs, because it could portray the deal as one involving other Southeast Asian nations.

Japan agreed to reduce its tariffs on beef and leave U.S. vehicle tariffs intact for 25 years, among other concessions, because it was able to add up all the concessions others had made that would help Japanese industry.

Mr. Lighthizer said the U.S. "intends to maintain its leadership in the region," including with bilateral agreements. Since then, Mr. Trump has courted Chinese President Xi Jinping, and the two countries recently announced a trade deal to end fights over beef, credit cards and natural gas. But a U.S. International Trade Commission report last year said multilateral deals that focus on specific industries or issues have had much bigger economic payoffs than bilateral agreements.

**TUESDAY:** Economists will be looking to see if April new-home construction data from the U.S. Commerce Department show improvement, given supply shortages. The notoriously volatile report showed March housing starts fell 6.8% from a month earlier to a seasonally adjusted annual rate of 1.215 million, well below what was expected. But starts in February hit their highest level since October 2007, buoyed by warmer weather. Economists surveyed by The Wall Street Journal expect April housing starts to have risen 3.7% to an annualized rate of 1.26 million.

The Federal Reserve releases April data on U.S. industrial production, after March's report showed a 0.5% gain as the weather cooled and demand for home heating surged, masking a drop in manufacturing activity. Economists surveyed by the Journal anticipate April's industrial production rose 0.3%.

April consumer price inflation data from the U.K. are expected to show that annual price growth accelerated to 2.7%, from 2.3% the previous month.

**THURSDAY:** Japan releases its gross domestic product for the first quarter (release time is Wednesday night in the U.S.). Economists believe Japan's economy grew for the fifth straight quarter.

**FRIDAY:** The European Commission's release of its consumer confidence measure will provide an early indication of what impact Emmanuel Macron's victory in the French presidential election could have on the eurozone economy's near-term growth prospects, if any. Eurozone consumer confidence has been firming this year.

## Moms Enjoy Their Day in the Sun



MY GIFT TO YOU: Samantha Sampson with her mother, Dawn Smith, Sunday outside New York's Metropolitan Museum of Art.

## CORRECTIONS & AMPLIFICATIONS

A "529" college-savings account typically can be opened in one's home state or any other state. However, in all but six of the states that offer tax deductions or credits for contributions, only the home-state accounts qualify. A college-savings Q&A column in the May 8 Journal Report incorrectly suggested that only six states allow out-of-state accounts.

Readers can alert The Wall Street Journal to any errors in news articles by emailing [wsjcontact@wsj.com](mailto:wsjcontact@wsj.com) or by calling 888-410-2667.

### ATLANTA

#### Collapsed Section of I-85 Reopens

All traffic lanes on a busy Atlanta highway have opened in time for Monday's rush-hour commute after a fire in March caused a section of roadway to collapse.

The repair on Interstate 85 came about a month earlier than Georgia transportation officials had first forecast. The highway carries about 240,000 vehicles a day in the chronically congested Atlanta area, which is home to major employers including Delta Air Lines Inc. and Coca-Cola Co.

## U.S. WATCH

Northbound lanes opened Friday and southbound lanes over the weekend, according to the Georgia Department of Transportation. The work involved removing 13 million pounds of debris.

—Jon Kamp

### NASA

#### Mega-Rocket Plans Face Added Delays

Budget and production issues have further delayed NASA's human exploration program for deep space, as federal watchdogs raise new safety concerns.

Initial blastoff of the National Aeronautics and Space Administration's Orion capsule and its biggest rocket, called the Space Launch System, has been pushed to 2019 from 2018, NASA said Friday.

Despite several years of development and projections of some \$15 billion invested in the overall project by then, the initial flight isn't slated to have astronauts on board as some NASA and White House officials had hoped.

Once the first crewed version of Orion blasts off to circle the moon, probably in 2022, industry experts and government documents suggest the mission will be more hazardous, particularly during re-entry, than early de-

signers and proponents of the system originally envisioned.

Astronauts inside Orion, for example, are expected to confront significantly greater risks during their return to earth than they are likely to face while riding commercially developed capsules back from the international space station, according to agency officials and documents.

—Andy Pasztor

### OREGON

#### Rural County to Vote On Gas Project Port

Residents of a coastal Oregon community are weighing whether to try to derail a liquefied-natural-gas export project, a decision that could put them at odds with the Trump administration.

Tuesday's ballot measure in Coos County would block the \$7.5 billion Jordan Cove Energy Project, a proposed LNG port that would be the first of its kind on the West Coast.

The measure would allow the transportation of fossil fuels within the county only if they are intended for local use.

The vote comes weeks after a White House adviser signaled the administration would approve the project.

—Associated Press

## Labor Shortage Hits Mushrooms

By SCOTT CALVERT

WEST GROVE, Pa.—Nine-plus hours into his shift, Marcos Pantoja was still plucking mushrooms off peat-moss beds, trimming stems with the flick of a knife. He had another hour of work left in the cool, windowless growing house.

The 39-year-old is toiling longer these days amid a labor crunch that is straining the more than 50 growers in Chester County, Pennsylvania's mushroom heartland, where almost half of America's mushroom rooms are produced.

"This is the worst it's ever been," said Tim Hihn, Mr. Pantoja's boss and co-owner of C.P. Yeatman & Sons Inc., which supplies Whole Foods Market stores under the Mother Earth brand. Mr. Hihn said he has 20% fewer workers than he needs.

To try to solve the labor shortage, growers have been increasing wages. Yeatman & Sons in January raised piece rates at one farm to \$1 for every five-pound box from 82 cents for large mushrooms and 80 cents for medium.

Phillips Mushroom Farms recently boosted the bonus harvester get after picking 55 pounds in an hour to 16 cents from 11 cents a pound, said general manager Jim Angelucci. Good pickers, who start at \$8.75 an hour, can collect 100 pounds an hour, he said, so the extra nickel can yield a \$2.25 bump to \$15.95 an hour.

Still, Mr. Angelucci worries it may not be enough to stop workers from peeling off for summer landscaping or construction jobs. "It's one of the things that keeps you awake at night," he said.

Labor is an issue across ag-

riculture, where seasonal work often dissuades employees from looking for a steady job in one place. Mushroom production is somewhat different: It is year-round and indoors. Some growers offer employees health and retirement benefits as well as paid vacation.

Even so, the pool of workers is tight—and has shrunk. Growers attribute this partly to the strong economy in Chester County, where unemployment fell to 3.5% in March.

The labor woes are hurting the county's production, which fell 9% to 395 million pounds between the 2013-14 and 2015-16 growing seasons. Its share of the U.S. market for Agaricus mushrooms, which include the white button and portobello varieties, fell to 43% from 49% over the period, according to U.S. Agriculture Department figures.

The industry has long relied on immigrants. But the Trump administration's more aggressive stance on illegal immigration has raised concerns even among documented workers.

The industry is advocating for the creation of a new guest-worker program, as well as a legal pathway for undocumented employees.

Most mushroom growers have failed in efforts to recruit locals for harvesting jobs, which can bring in as much as \$50,000 a year but often require workers to start by 5 a.m. and put in six days a week.

"We'd love to get people who live in this area," said Meghan Klotzbach, Mr. Hihn's daughter and regulatory manager for Mother Earth. "They graduate from high school, they just go to Wal-Mart to work. Why can't you come here and pick mushrooms?"



Marcos Pantoja, above, a worker at C.P. Yeatman & Sons. The West Grove, Pa., company says it faces a labor crunch.

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—Associated Press

JOE PENNEY/REUTERS

## U.S. NEWS

# Private Colleges Count On Big Discounts

BY MELISSA KORN

Private colleges are offering deeper tuition discounts than ever before, hoping to lure students and boost overall revenue—and it appears the strategy isn't working.

Tuition-discount rates for first-time, full-time freshmen hit a record 49.1% in the current school year, according to preliminary results from a National Association of College and University Business Officers survey of 411 schools. That 2016-2017 figure compares with 48% in the prior year.

At schools with fewer than 4,000 students—those for whom just a small shift in enrollment can have a big impact—the freshman discount rate was 50.9%.

The hefty discounts on sticker prices signal how pricing power is shifting from schools to students as some grow skeptical about the value of a costly college degree.

At the same time, the number of college students over all has been on the decline, with undergraduate enrollment sliding 1.9% last fall to 16.3 million, leaving schools to battle to lock in each admitted applicant. About half of survey respondents this year said their

full-time freshman enrollments declined or were flat.

As a result of the increased discounts and flagging enrollment, net tuition revenue barely budged at the smallest schools, up just 0.2% this year, well below the estimated 1.8% inflation rate for institutions of higher education.

"The path they're on may not be sustainable for very much longer," said Ken Redd, director of research and policy analysis at NACUBO. Calling the increasing discount rate a "troubling trend," he added that he isn't sure how schools can rein in the strategy.

About one in five respondents said they have implemented new pricing strategies, such as cutting sticker prices, to help boost revenue. Three times as many said they were focusing on strategic financial aid-like discounts.

Slashing these prices, with the expectation that schools would need to extend less financial aid, has had mixed results. Some administrators worry about risking their reputations, since many families equate price with quality.

Jim Troha, president of Juniata College in Huntingdon, Pa., said some families that already made deposits for next

fall are reporting that they got additional aid offers elsewhere, after the May 1 deposit deadline, and are asking Juniata to match the grants.

"It's behavior that we haven't seen before," he said, noting his own daughter was pitched more money from a peer school where she already was offered discounted tuition.

Mr. Troha, who said Juniata will likely end up 20 to 25 students below its average freshman class size of 393, said the school looks at such requests on a "case by case" basis but can't afford to bump everyone's scholarships. Juniata's discount rate is around 60%.

Another concerning trend in the latest tuition-discount report is that schools often have no dedicated revenue source to foot the financial aid bill. Last year, schools with endowments over \$1 billion funded just over one-third of institutional grant aid from their endowments, while those with endowments of less than \$25 million used that pool to cover 5.8% of aid.

Any funds they pull from the general operating budget for financial aid are dollars not going to things like academic investments and infrastructure upgrades.



Tuition-discount rates for first-time, full-time freshmen hit a record 49.1% in the current school year.

JACQUELYN MARTIN/ASSOCIATED PRESS

## Mixed Grades for Old Drug Policy

BY BETH REINHARD

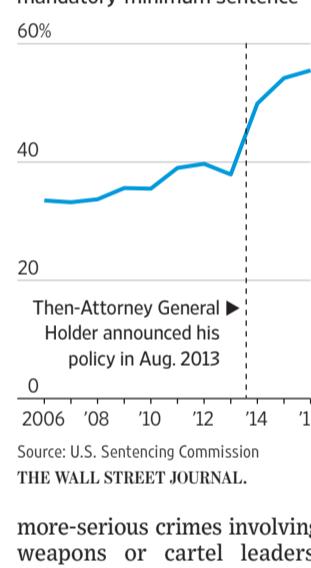
When Attorney General Jeff Sessions last week jettisoned an Obama administration policy aimed at sparing less-serious drug offenders from harsh sentences, he called his new, more aggressive approach "moral and just."

But the feeling among law-enforcement and legal professionals is more mixed. Government data, along with interviews with former U.S. attorneys who advised the Justice Department under President Barack Obama, suggest the previous policy achieved several, though not all, of its goals.

Then-Attorney General Eric Holder in 2013 pledged that federal prosecutors would focus on more dangerous drug traffickers and avoid charging less-serious offenders with crimes that required mandatory-minimum sentences. These long sentences, he said, had led to bloated, costly prisons and disproportionately ravaged minority communities.

Federal drug cases dropped by more than 19% between 2012 and 2016, according to the U.S. Sentencing Commission. Cases with charges carrying longer, mandatory-minimum sentences fell from nearly 60% in 2012 to roughly 45% last year. Prosecutions of

### Fighting Crime



Source: U.S. Sentencing Commission

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charge "the most serious readily provable offense," which means they would seek to build a case carrying the harshest penalties.

John Walsh, a former U.S. attorney in Colorado who served as chairman of an advisory committee to the attorney general's office, said Mr. Holder's policy allowed prosecutors to consider the circumstances of each case and pursue the most appropriate punishment.

"Instead of tying the hands of prosecutors, it gave us greater discretion," he said.

However, government statistics bear out a concern raised by Mr. Holder's critics: a decline in the share of federal convictions involving drug defendants providing information on other defendants. Cases involving "substantial assistance" from informants dropped from 23% in 2012 to slightly less than 22% last year. The figure was 25% in 2008, before Mr. Obama was elected.

"Mandatory-minimum sentences provide the incentive to acquire cooperation from the most significant drug traffickers," said Lawrence Leiser, a federal prosecutor in Virginia and the president of the National Association of Assistant U.S. Attorneys.

Mr. Sessions says the old guidelines failed to achieve an-

other important goal: improving public safety. The violent crime rate rose by more than 3% and the murder rate grew 10% from 2014 to 2015. Preliminary FBI data show those rates increased again in 2016.

"We intend to reverse this trend," Mr. Sessions said Friday in New York City. "We are returning to the enforcement of the laws as passed by Congress, plain and simple. If you are a drug trafficker, we will not look the other way."

William Otis, a former U.S. attorney in Virginia who served as special counsel to former President George W. Bush, agreed that the old policy let too many drug dealers off the hook. This has led, partly, to the recent surge in crime, he said. "If crime and heroin deaths are rising, nobody would consider that a success," he added.

Mr. Sessions's critics say the increased murder rate over the last two years is largely fueled by a few big cities such as Chicago. Nationwide, overall crime rates hover near multidecadal lows.

"With all due respect to the attorney general, I think the discussion would be in a better place if we were operating from the same set of facts on violent crime," said Barry Grissom, who served as the U.S. attorney in Kansas under Mr. Obama.

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## South Carolina Looks To Expand Bear Hunt

BY JON KAMP

Not far from Myrtle Beach's sun bathers, golfers and outlet shoppers, South Carolina lawmakers worry about another growing population: bears.

The number of black bears has climbed in the coastal plain that includes the tourist town to an estimated 300, but the state's efforts to encourage hunting of the mammals haven't yielded the desired result.

South Carolina first allowed bear hunting in the region six years ago. But hunters have disappointed, managing to kill only 13 bears since then. The state believes hunters need to kill 30 bears a year to keep the population in check.

"The bear population has been spiking over the years," said Alan Clemmons, a Republican state representative from the area who sponsored a bill

both chambers passed to license more hunters.

Under the bill, which is headed to the governor's desk, a new system would replace a lottery that granted limited permits. Starting this fall in the typically two-week bear season, anyone could get a bear permit provided they have a hunting license and big-game permit.

Much of the land in the region is privately owned, so the state hopes the new system will put more permits in the hands of landowners interested in hunting bears, said Charles Ruth, a wildlife biologist with the state's Department of Natural Resources.

South Carolina has two bear populations, in the mountains to the west and near the coast. The population of people in Horry County, which includes Myrtle Beach, has more than doubled since 1990.

Controlling bears through legal hunting has become common, though controversial. "I don't think we're really addressing the issue," said Wayne Brennessel, executive director of the Humane Society of South Carolina. "If the bears are a nuisance, maybe it's time to move the bears."

But capturing and moving bears is expensive, and there is no guarantee the omnivores will stay away, said Mr. Ruth, the state wildlife biologist.



GABRIEL GRAMIS/ZUMA PRESS

An American black bear

Brooks Brothers

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Our iconic Performance Polo, now crafted of 100% American-grown Supima cotton.

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BROOKSBROTHERS.COM/SUPIMA

A portrait of a man with short brown hair and a beard, wearing a white polo shirt. He is looking directly at the camera with a neutral expression. The background is a plain, light-colored wall.

## U.S. NEWS

# Justice Department Races to Fill FBI Job

Schumer suggests Democrats may slow process unless special prosecutor is named

The Trump administration is pressing to quickly pick the next FBI director, but congressional Democrats are threatening to withhold support for

By Aruna Viswanatha, Del Quentin Wilber and Louise Radnofsky

any nominee unless an independent investigator is appointed to look into possible ties between Russia and associates of the president.

Justice Department officials over the weekend held what they described as substantive discussions with at least eight candidates to lead the bureau. The broad list of contenders includes a top Republican senator, two senior officials at the

Federal Bureau of Investigation and a federal judge.

But President Donald Trump's firing last week of FBI Director James Comey just as the bureau is conducting its Russia probe has spurred Democratic resistance. Senator Minority Leader Chuck Schumer of New York on Sunday said he supported the idea of refusing to vote on a new FBI director nominee until a special prosecutor is named. "I think there are a lot of Democrats who feel that way," he said on CNN.

Top administration officials on Sunday defended the president's decision to fire Mr. Comey.

"The president is the CEO of the country," U.S. Ambassador to the United Nations Nikki Haley said on ABC. "He can hire and fire whoever he wants."

Mr. Trump signaled over the weekend that he could nominate a new director as soon as this week. Deputy At-

torney General Rod Rosenstein, whose recommendation was originally cited by the White House as the reason Mr. Comey was fired, prepared to brief the Senate this week on the Russia probe. Lawmakers are widely expected to question him about Mr. Comey's departure.

Attorney General Jeff Sessions spent part of the weekend at the Justice Department interviewing FBI director candidates.

Saturday interviews included a small circle of those involved in the decision, a White House official said. More progress on the pick could emerge Monday as these people hold briefings and compare notes, the official said.

The FBI is part of the Justice Department, but the White House would ultimately make the call and choose the nominee, who would also need to secure a majority in the Senate to be confirmed.

The candidates include:

- Two current FBI officials: Andrew McCabe, the acting director, and Adam Lee, the top agent in Richmond, Va. Messrs. McCabe and Lee are considered the leading candidates to be tapped as interim director until a permanent successor can be named and confirmed by the Senate, according to people familiar with the process. The agency is expected to name an interim director, which wouldn't need Senate approval, this week.

- Sen. John Cornyn (R., Texas). The senior lawmaker has never worked at the Justice Department, though he served as attorney general in Texas and as a state judge. He sits on the Senate Judiciary and Intelligence committees, which have primary oversight roles over the FBI, and he is close to Mr. Sessions.

- Former Republican Rep. Mike Rogers of Michigan. He previously served as chairman of the House Intelligence Committee.

of the House Intelligence Committee and now works as a CNN contributor. He received the endorsement Saturday from the FBI Agents Association, which represents more than 13,000 current and retired agents.

- Alice Fisher, a lawyer who served as a top Justice Department official in the George W. Bush administration

- U.S. District Judge Henry Hudson, a former federal and state prosecutor who, as a federal judge in 2010, ruled that a key provision of the Affordable Care Act was unconstitutional

- Frances Townsend, a top national-security adviser to Mr. Bush who held senior Justice Department positions in the Clinton administration

- Michael Garcia, a New York state appeals court judge who was the U.S. attorney in Manhattan in the George W. Bush administration

Also over the weekend, a former adviser to Senate Ma-

ajority Leader Mitch McConnell told Fox that Mr. McConnell thought Merrick Garland, the federal appeals court judge whom former President Barack Obama had nominated to the Supreme Court, would be a "fantastic" choice. Mr. Garland wasn't among the candidates brought it for an interview on Saturday, and it is unclear whether the administration would consider him.

Justice Department officials declined to provide details of the interview process.

The candidate interviews capped a tumultuous week, with the White House offering shifting explanations for Mr. Comey's dismissal. Lawmakers of both parties questioned whether the dismissal was related to the FBI's Russia probe. Russia has denied interfering in the election, and Mr. Trump and his staff have dismissed allegations that members of his campaign colluded with Russia.

## Poll Shows Partisan Split on FBI Firing

By AARON ZITNER

WASHINGTON—More Americans disapprove than approve of President Donald Trump's decision last week to fire James Comey as director of the FBI, but the tempest in Washington over the dismissal has done little to reshape views of Mr. Trump among the public, a new Wall Street Journal/NBC News survey finds.

Some 38% of people in the survey disapproved of the president's decision to fire Mr. Comey, while 29% approved. About one-third said they didn't know enough to have an opinion.

Views of Mr. Trump's decision were strongly shaped by party affiliation, with few Republicans disagreeing with the president's action and few Democrats supporting it.

Mr. Comey's dismissal was politically sensitive and dominated the conversation in Washington last week, as the Federal Bureau of Investigation chief had been overseeing a probe into Russia's alleged interference in the 2016 election and its possible ties to Trump campaign associates. Russia has denied wrongdoing, and Mr. Trump has called any suggestions of collusion with the Kremlin a "hoax."

The new Journal/NBC News survey found that more than nine people in 10 had heard about Mr. Trump's decision to fire the FBI chief, but there were few signs it had changed impressions of the president.

Some 39% of poll respondents said they approved of Mr. Trump's overall job performance, while 54% disapproved—almost identical to the results of a Journal/NBC News survey in April.

Asked about Mr. Trump's day-to-day role in leading the nation, regardless of how they viewed his policy stances, some 41% said they had "a great deal" or "quite a bit" of confidence in the president, while 57% said they had not much or no confidence in him. Those marks were slightly weaker than in April, when 45% said they had high confidence while 55% had said they had little or none.

As a whole, the public lacks a strong view of Mr. Comey himself. More than half surveyed viewed the former FBI director neutrally or had no opinion. Among the rest, nega-

### Skepticism Over GOP Health Plan

The new Wall Street Journal/NBC News survey also tested views of a Republican-backed overhaul of the Affordable Care Act that recently won approval in the House and is now in the Senate. Some 23% said the GOP health-care legislation was a good idea, while 48% said it was a bad idea.

Some 77% of Democrats viewed the legislation negatively, while 52% of Republicans supported it. Among independents, 18% called the bill a good idea and 44% called it a bad one.

—Aaron Zitner

tive views outweighed positive ones, 26% to 18%.

Asked whether Mr. Trump fired the FBI director to slow down the agency's investigation into Russian meddling in the election, 46% said that was the case, while 36% disagreed.

Asked whether the dismissal was due to "legitimate concerns" about how Mr. Comey had handled and released information about the FBI investigation into Hillary Clinton's use of a private email server, 38% agreed, while 43% disagreed.

Respondents were able to cite both possibilities, or none, as reasons they believed Mr. Comey had been fired.

Mr. Trump has cited several reasons for dismissing Mr. Comey, saying that he had been a "showboat" and "was not doing a good job." Mr. Trump also said that when he decided to remove Mr. Comey, "I said to myself, I said, 'You know, this Russia thing with Trump and Russia is a made-up story.'" Earlier, the White House had cited Justice Department criticism of Mr. Comey's handling of the Clinton email investigation.

The survey found a strong preference among people of all political affiliations for a special prosecutor or independent commission to take the lead in investigating Russia's involvement in the 2016 election.

The Wall Street Journal/NBC News telephone survey of 800 adults was conducted May 11-13. The margin of error was 3.46 percentage points.

## Trump Taped Calls as Businessman

BY ALEXANDRA BERZON

A tweet from President Donald Trump on Friday suggesting that he might have taped phone conversations from the White House made waves in Washington, but some former employees and a former associate said it wasn't a surprise to them that he would mention taped conversations.

As a businessman, Mr. Trump sometimes taped phone conversations with associates and others from his Trump Tower office in New York, according to three people who say they have direct knowledge of the recordings.

Mr. Trump had one or more recording devices that he used to tape phone calls from his office, the three people said. All are former high-level employees who worked for Mr. Trump over a span of three decades. They said they saw devices in use recording phone calls.

A fourth person said he knew that Mr. Trump had recorded a phone conversation with him because it was later entered into evidence in a lawsuit.

Representatives of the White House and the Trump Organization, Mr. Trump's company, didn't respond to requests seeking comment Friday.

Michael Cohen, Mr. Trump's personal attorney, said, "In the

decade that I worked for Mr. Trump, I have never seen a recording device attached to his phone, nor am I aware of any occasion where he taped a conversation."

The ex-employees said they were fearful to speak with their names attached. One former employee said he had signed a nondisclosure agreement.

Taping conversations isn't illegal in New York, nor in Washington, D.C., as long as one party in the conversation, such as Mr. Trump, is aware that it is being recorded. Florida, where Mr. Trump also has frequently traveled since taking office, generally requires all parties to consent to taping, although there is an exception for taping in public places where the parties wouldn't have a reasonable expectation of privacy in the conversation.

It is unclear whether or not Mr. Trump is making recordings in the White House.

Mr. Trump tweeted Friday morning that the recently fired former FBI chief James Comey "better hope that there are no 'tapes' of our conversations before he starts leaking to the press!"

In a press briefing Friday, the White House spokesman Sean Spicer declined to comment on whether any tapes featuring Mr.

Comey exist or whether the president regularly recorded conversations from the Oval Office.

When asked in a Fox News interview Friday whether there might be tape recordings of Mr. Comey, Mr. Trump said, "That I can't talk about. I won't talk about that."

Democratic legislators on the Sunday talk shows said that if tapes did exist, they were willing to seek them by subpoena if necessary.

*It is unclear whether or not the president is making recordings in the White House.*

"First of all, we've got to make sure that these tapes, if they exist, don't mysteriously disappear, so I've asked, others have asked, to make sure the tapes are preserved, if they exist," said Sen. Mark Warner of Virginia, the top Democrat on the Senate Intelligence Committee, speaking on ABC.

Rep. Raja Krishnamoorthi (D., Ill.), a member of the House Oversight Committee, in a statement Friday requested the

White House Counsel's Office provide the committee with "all tapes of the president's communications" with Mr. Comey, as well as any tapes of Mr. Trump's meeting with Russian officials Wednesday and of conversations concerning former national security adviser Mike Flynn.

"These White House tapes could accelerate current investigations as previous tapes have aided past inquiries," Mr. Krishnamoorthi wrote.

Taping one's conversations is uncommon but not unheard of in the world of high-stakes New York real estate, several prominent New York real estate attorneys said in interviews Saturday.

It occurs sometimes in business meetings or phone calls, and sometimes recordings resurface as transcripts in court, said Stephen Meister, a New York real estate attorney who has represented Mr. Trump in the past and said he had no knowledge of Mr. Trump recording phone calls.

The former employees said they had no knowledge of whether or not Mr. Trump used his taping methods now that he is president.

—Michael Rothfeld and Mark Maremont contributed to this article.

## Senate Weighs Cuts to Medicaid

BY STEPHANIE ARMOUR AND KRISTINA PETERSON

Conservative Senate Republicans are weighing faster and steeper cuts to Medicaid that could drop millions of people from coverage and mark the biggest changes to the program in its 52-year history.

The plan being pushed by lawmakers such as Mike Lee (R., Utah) is likely to face resistance from centrist GOP senators who are already concerned a health-overhaul bill passed by House Republicans would leave too many people uninsured. But the push for more aggressive Medicaid cutbacks indicates that if a bill ultimately passes both cham-

bers, it could significantly scale back the federal-state insurance program that covers 73 million low-income or disabled Americans.

Other measures in the GOP health initiative have drawn big headlines, but the Medicaid plan could affect many more people and shift costs onto hospitals and states.

"Much of the focus so far has been on pre-existing conditions, because it's easier to understand than a program for the low income," said Diane Rowland, executive vice president at the Kaiser Family Foundation. "But if you phase back expansion, you'll see a large number of low-income adults without access to care."

Conservatives say they want to incentivize states to spend Medicaid funds more prudently and give them more flexibility in how they use the federal funds.

Changes at the state level are already afoot. Wisconsin and Maine are pursuing new provisions that include work requirements, drug testing and time limits on coverage, which would reduce Medicaid enrollment and impose the first restrictions on traditional beneficiaries.

The House bill that passed earlier this month would let people in the 31 states and the District of Columbia that expanded Medicaid under the Affordable Care Act remain on

the program with enhanced federal funding, as long as they sign up before 2020. But it would halt federal money for new beneficiaries after that. It would also implement wholesale changes to funding Medicaid that would cut money for the program in all states.

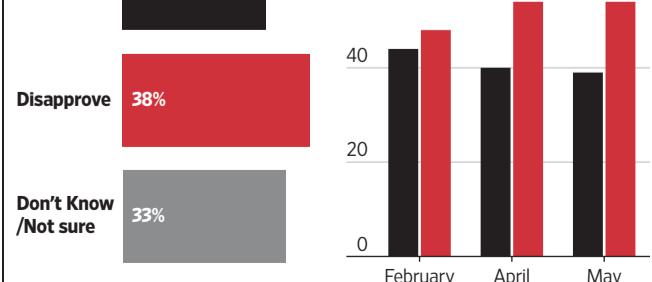
Fourteen million fewer people would be covered by Medicaid at the end of that time, compared with the number expected under the current law, according to the Congressional Budget Office.

Some conservative Senate Republicans, such as Mr. Lee, want to immediately start phasing back federal money for expansion enrollees, a process that would take 10 years.

### Stable Views of Trump

Opinions of President Trump's job performance changed little after he fired James Comey as FBI director.

**Donald Trump's decision to fire FBI Director James Comey**



Source: WSJ/NBC News telephone poll of 800 adults conducted May 11-13; margin of error: +/- 3.46 pcts. THE WALL STREET JOURNAL.

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## GLOBAL CYBERATTACK

# New Cyberattack Spurs Manhunt

Law enforcement in U.S. and Europe work with security experts to stop the malware

A cyber pandemic that tore through computer systems over the weekend has led to an international manhunt ahead of an expected renewed assault on Monday.

By Natalia Drozdiak in Brussels and Robert McMillan in San Francisco

Law enforcement groups in the U.S. and Europe, where the virus first struck Friday, were working with an informal posse of cybersecurity experts to stop the malware and find its perpetrators. The ransomware program, known as WannaCry or Wanna Decryptor, exploits vulnerabilities in Microsoft Corp.'s Windows systems.

Since Friday, computer security response teams across Europe along with counterparts in the U.S. have been exchanging clues in real time to understand how the initial infection took place and to determine how best to protect their systems. Law-enforcement agencies, including the EU's police agency Europol, have focused on tracking down the culprits behind the attacks.

We are "supporting the investigation with everything we have—this is big and clearly requires concerted cross-border response," Rob Wainwright, head of Europol, said on his verified Twitter account over the weekend. The International Criminal Police Organization, or Interpol, also tweeted Sunday that it is helping with investigations.

Security experts see WannaCry as the most significant global outbreak of a software worm since 2008's Conficker. "I think pretty much every law enforcement agency in the world is trying to find the people who launched the attack," said Costin Raiu, director of the global research and analysis team for Kaspersky Lab ZAO, a cybersecurity firm. "It's one of the most significant cyberattacks from the last 10 years."

"Law enforcement worldwide is now taking it very seri-



Security experts see the WannaCry ransomware program as the most significant global outbreak of a software worm since 2008.

ously, especially in the U.K.," said one member of law-enforcement familiar with the situation. The Federal Bureau of Investigation has a case open on the infection, which is being led by the agency's New York field office. The FBI sent out a notification Saturday, warning corporations of the risk, and providing technical details on how to detect and prevent the ransomware.

Reached Sunday, an FBI spokeswoman would neither confirm nor deny the existence of an investigation into the worm.

Beyond law enforcement, the hunt also involves an ad-hoc grouping of security professionals and anonymous cyber experts. In past worm outbreaks, industry investigators have created invitation-only "working groups," to share information.

But in the case of WannaCry, the investigation happened in the open as those nongovernment specialists shared data on the outbreak in real time, much of it over Twitter. Friday's FBI report borrowed heavily from this information exchange and credited "numerous open-

source reports."

### U.S. Agencies Work To Thwart Attacks

A Trump administration official said Sunday the Department of Homeland Security, Federal Bureau of Investigation, National Security Agency and other agencies were working "around the clock" to stop the spread of ransomware and find its perpetrators.

Hundreds of thousands of people across the globe have been hit by a cyberattack that began spreading Friday. In such situations, the Department of Homeland Security typically takes the lead on coordinating with the private sector, getting

information from the federal government to companies and individuals to defend their systems.

DHS and the FBI usually issue pertinent warnings, sometimes together, sometimes separately. On May 12, DHS representatives issued a statement through the press office to "encourage all Americans to update your operating systems" along with other, familiar tips about backing up data and ignoring unfamiliar links and files in emails. The press officials said the agency was ready to lend technical support, including overseas, for "critical infrastructure entities."

The United States Computer Emergency Readiness Team, a unit of DHS, published an alert

about the WannaCry ransomware, citing open-source reports. US-CERT said that it discouraged people from paying the ransom, "as this does not guarantee access will be restored."

Intelligence agencies don't operate domestically, but they do play a significant role in trying to understand the nature and source of malware in incidents like this. Suspects are typically overseas, which prolongs the process both of shutting attacks down and bringing perpetrators to justice.

Representatives for the CIA and the Office of the Director of National Intelligence declined to comment over the weekend.

—Louise Radnofsky and Shane Harris

More companies and institutions emerged as victims of the attack over the weekend, though by Saturday it was clear the scope of the infections had been stymied by the actions of a security researcher at a private company in the U.K.

The researcher triggered a so-called kill switch embedded in the virus itself. The malware had a way of switching itself

off by reaching out to a specific website. The researcher identified the website's domain and found it wasn't registered. He registered it himself, deactivating the current strain. That halted the spread but it doesn't decrypt affected computers. Experts warned that attackers could be able to quickly adapt with a new strain of the malware.

"I think it's possible that it will happen because these adversaries, they had a purpose, and they wanted to achieve an objective and I guess that they still have that objective," said Freddy Dezeure, head of CERT-EU, the computer response team that protects the EU's institutions, on Saturday. "We have to really continue to monitor it closely."

### Victims of the Hack

Some of the companies and entities that have disclosed being affected by the computer-system attacks:

Britain's National Health Service (up to 48 health-care groups in the national system)

Renault SA

Nissan Motor Co.

China National Petroleum Corp.

Russian Interior Ministry

FedEx Corp.

Telefónica SA

Deutsche Bahn

Sberbank (and other Russian banks)

Brazil's social security agency Rumah Sakit Harapan Kita and Rumah Sakit Dharmai (two hospitals in Indonesia)

### 5 THINGS

## Security Pros Provide Tips To Protect Against Hacks

The past few days have alerted the world to the dangers of "ransomware," and it has been an ugly awakening for victims. Ransomware, which has been on the rise for the past few years, encrypts files on a computer so that they can't be read and the device becomes essentially useless. It gets its name because the culprits post messages on victims' computers demanding payment, generally in the digital currency bitcoin, to undo the encryption (a promise they don't always fulfill).

The good news is that there are effective measures to protect against the software in Friday's attack, generally called WannaCry, and other Ransomware:

1. TAKE A LOOK AT THE COMPUTER'S OPERATING SYSTEM Still running Windows XP because it is good enough to get web browsing and emailing jobs done? Then the recent WannaCry headlines are warning sirens.

The first thing to do is download the emergency Windows XP patch Microsoft Corp. has made available. That will protect against the attack that WannaCry uses to spread. It is important to know that Microsoft is no longer providing regular software updates to Windows XP, which means there likely are many other unpatched flaws on the system that could cause problems later. The only way to address that is to upgrade the operating system (which could require buying new computers).

Windows 10 is protected from WannaCry.

2. UPDATE, ALWAYS When Windows Update messages appear on the PC, don't put things off: Update the computer. Microsoft issued the software that protects against the WannaCry worm on March 14, which means some of those who have been infected merely needed to follow instructions and they would have been shielded. While WannaCry spreads via a Windows bug, other forms of malicious software can spread through flaws in other software on a computer, such as Adobe Inc.'s Flash and Oracle Corp.'s Java. So the next time a prompt appears for a software update from those programs or others, take the time to install it. It helps.

3. BACK UP THE COMPUTER If backup copies of files exist, the ransomware threat rings hollow. And think beyond ransomware. Over time, a computer's file system faces a growing chance of becoming corrupted and unreadable. If it happens, you will be grateful you backed up those business records, videos of baby's first steps and photos of your Hawaiian vacation.

As The Wall Street Journal's personal technology columnist Geoffrey Fowler has noted, there are some really great automatic backup options available these days that run about \$50 to \$60 a year.

4. FLOAT OVER TO THE CLOUD Those willing to take a bigger leap can move their files to cloud services like Google Drive, Amazon Drive, Microsoft OneDrive, or Apple iCloud. That shifts a lot of the burden of protecting against malicious software to big companies with greater expertise and resources.

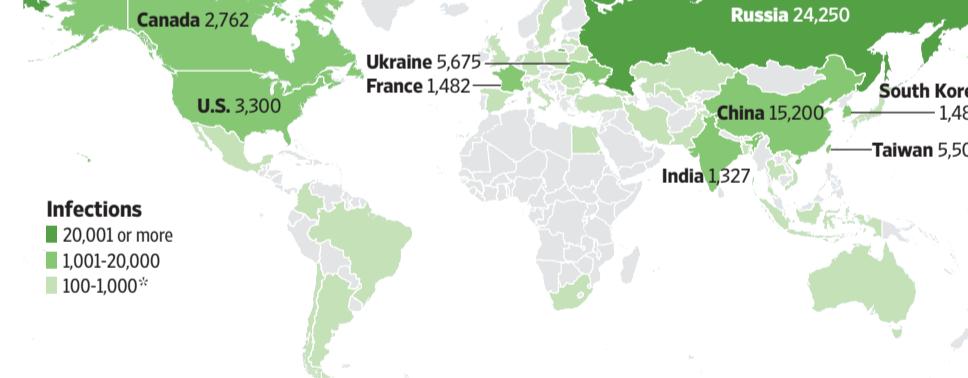
This can be done with existing PCs, or by buying special computers using Google's Chrome operating system or Microsoft's forthcoming Windows 10 S, which are designed with extra behind-the-scenes security precautions, and make it easier to seamlessly store files in the cloud. Even with cloud-based files, you still have to be careful not to open any dubious attachments on your own computer.

5. ANTIVIRUS TIME By now, all of the antivirus vendors have updated their products to detect WannaCry, along with countless other ransomware variants. Antivirus software provides no guarantee of avoiding the very latest attacks, but it is a sensible step that security experts recommend. The good news is that there are decent antivirus programs available free, including Microsoft's own Windows Defender.

—Robert McMillan

### Global Assault

A British researcher tracked 'WannaCry' infections in at least 153 countries and territories.



\*Not shown are countries with fewer than 100 infections

Note: Between 3:10 p.m. and 8:30 p.m. GMT Saturday.

Source: MalwareTech.com

THE WALL STREET JOURNAL.

able to provide certain services because of the virus. A swath of Chinese gasoline stations, run by China National Petroleum Corp., was closed because of the attack.

Russia's central bank said domestic banks had been targeted, according to state news agency RIA. Sberbank, Russia's largest lender, said Friday night its cyber infrastructure had been targeted but that it had fended off the attack, news wires reported. The country's interior ministry

said around 1,000 computers had been affected, but that the attack had been localized.

Britain's National Cyber Security Center said Sunday that there hadn't been any new attacks similar to Friday's, but that existing infections from the malware could continue to spread within networks.

"This means that as a new working week begins it is likely, in the U.K. and elsewhere, that further cases of ransomware may come to light, possibly at a significant

scale," the agency said.

The virus was slowed down over the weekend by the identification and activation of a "kill switch" embedded in the virus' code, computer experts said. But few believe it was halted completely, and one security expert had identified late Sunday at least one new strain, unaffected by the kill switch, though it was spreading slowly.

While the U.S. appears relatively unscathed compared with Europe and Asia, the Federal Bureau of Investigation, the National Security Agency and the Department of Homeland Security all were on the case. Tom Bossert, President Donald Trump's homeland security and counterterrorism adviser, held emergency meetings with cabinet members Friday night and Saturday morning at the White House, an administration official said.

Security experts have been able to track a small amount of bitcoin transactions they said were likely ransom linked to the attack. Unlike bank and other financial accounts, bitcoin accounts are theoretically untraceable to their owners.

The attack took advantage of security vulnerabilities in Microsoft Corp. software that was either too old to be supported by security patches or

hadn't been patched by users. Microsoft on Sunday said that the software tool used in the attack came from code stolen from the National Security Agency. The NSA has declined to comment on the matter.

An early sign of trouble at the Renault plant in Sandouville came when the assembly line's alarm system stopped working early Saturday—right after the demand for ransom appeared on TV screens. Tangy Deschamps, a 38-year-old who was working at the factory when the virus hit, said the alarms were failing to sound whenever workers tried to alert others to crooked or improperly welded parts.

Management told workers to unplug the machines.

Séverin Beuche, a local IT expert, was called to the plant Saturday morning to help restart the site.

"I've never seen something of this size," Mr. Beuche said. He and a crisis unit worked around the clock to rebuild servers that had been crippled.

The auto maker's cybersecurity team time pored over company computer systems before the factories were due to resume full production on Monday.

—Robert McMillan, Liza Lin and Louise Radnofsky contributed to this article.

### Cyberattack FAQs

WannaCry, the head of Europe's police agency said Sunday.

#### IS IT LIKELY TO SPREAD FURTHER?

The outbreak was slowed over the weekend by the actions of a private security researcher who found a "kill switch" inside the worm, halting its spread from one infected computer to a network. But experts warned Sunday that more computers could become infected as people return to work on devices Monday morning.

#### WHO HAS BEEN HIT?

Victims include Britain's National Health Service, FedEx Corp., car makers Nissan Motor

Co. and Renault SA, Germany's biggest train operator as well as Russian banks.

#### HAS ANYONE PAID THE RANSOM?

It is hard to say. Screenshots of affected computers indicate hackers are asking for as little as \$300 in bitcoin from affected users. The chief data officer at Telefónica, a Spanish telecom provider hit by the virus, said in a personal blog post that a bitcoin account associated with the attackers shows they haven't "achieved much real impact." That account had received only 25 payments by midafternoon Saturday in Europe.

—WSJ Staff

#### WHAT IS IT?

Attackers took advantage of flaws in Microsoft Windows systems to spread malware around the world on Friday. The "ransomware" encrypts files, effectively hijacking computer systems, and demands money, in the form of bitcoin, in exchange for decrypting them. Microsoft Corp. had issued a fix, or patch, for the flaw on March 14.

#### HOW BIG IS IT?

More than 200,000 victims in at least 150 countries were hit by the malware, dubbed



# Export Food, Not Jobs

**Main points from our Midwest job creation roundtable last week:**



- The Midwest is the world's low-cost producer of safe, high-quality meat, dairy and other foods. So the Midwest is perfectly positioned to export these products to the 2.5 billion people entering Asia's booming middle class.
- We support President Trump's great focus on trade and jobs for America because \$1 billion of exports generates 8,000 new American jobs.
- Our goal is to continue the national conversation about doubling America's food production industry to \$1.8 trillion and creating millions of new high-paying American jobs.

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## WORLD NEWS

# U.S. Nears Arms Deal Coveted by Saudis

Riyadh would receive gear Obama denied it; Trump seeks a leader for regional security

BY CAROL E. LEE  
AND MARGHERITA STANCATI

WASHINGTON—The U.S. and Saudi Arabia are working on a package of arms deals and financial investments aimed at elevating economic and security cooperation between Washington and Riyadh after several years of strained relations over the U.S. diplomatic outreach to Iran.

The potential agreements, coupled with Mr. Trump's scheduled arrival in Saudi Arabia this week or his first stop outside the U.S. since taking office, include a missile-defense system and heavy arms the Obama administration either refused to sell Saudi Arabia or pulled back from amid concerns about Riyadh's role in the conflict in Yemen, according to U.S. and Saudi officials.

While Mr. Trump has come under criticism for seeking warm, personal rapprochement with some world leaders and for bringing family members into the White House as advisers, these approaches have been welcomed by Saudi Arabia's royal family.

The proposed arms deal is taking shape as the White House tries to encourage a longtime Middle Eastern ally to take the lead on regional security but without alienating Israel, another critical friend in the region.

Part of Mr. Trump's goal is to get the Gulf states, principally Saudi Arabia, to help him achieve a peace agreement between the Israelis and Palestinians. Mr. Trump is scheduled to visit Israel after his stop in Riyadh.

A senior U.S. official said "every system that we're talking about" with the Saudis



President Donald Trump with Saudi Defense Minister and Deputy Crown Prince Mohammed bin Salman at the White House in March.

the Saudi king's 31-year-old son, Deputy Crown Prince Mohammad bin Salman, and the president's 36-year-old son-in-law and senior White House adviser, Jared Kushner, according to officials in Washington and Riyadh.

Mr. Kushner coordinates on the policy with the National Security Council, the State Department and the Pentagon, administration officials said.

"The Saudis know that the person who is trying to get Trump on our side is Kushner," said Ahmed al-Ibrahim, a Saudi businessman and political commentator. "He is the guy who has the Middle East portfolio."

Mr. Trump's premium on developing personal relationships with his counterparts is an approach the Saudis felt was missing with former President Barack Obama's administration. In turn, King Salman last month named another son, Prince Khaled bin Salman, as the new Saudi ambassador to Washington.

The monarchy in Saudi Arabia saw the election of Mr. Trump as an opportunity to reset ties with its most important strategic ally after relations soured during Mr. Obama's two terms in the White House largely because of differences over policy in the Middle East.

The monarchy felt betrayed by the Obama administration's conciliatory approach toward Riyadh's No. 1 foe, Iran, which culminated in the 2015 deal with Tehran to restrain its nuclear program in exchange for lifting economic sanctions.

"The narrative of the Obama administration was that Saudi Arabia and Iran must share the region," said Mohammed Alyahya, a Saudi political analyst and nonresident fellow at the Atlantic Council. "The Trump administration is very clear that it will put allies first."

—Jay Solomon

contributed to this article

### Tillerson Is Cautious On Embassy Move

WASHINGTON—Secretary of State Rex Tillerson suggested

that President Donald Trump might not move the U.S. embassy in Israel to Jerusalem if it could hurt efforts to jump-start the stagnant Middle East peace process.

In an interview broadcast Sunday on NBC, Mr. Tillerson

said the president "is being very careful to understand how such a decision would affect the peace process."

Mr. Trump repeatedly vowed on the campaign trail to move the U.S. Embassy from Tel Aviv to Jerusalem, a decision that could inflame tensions across the Middle East.

Israel seized East Jerusalem from Jordan in 1967 and declared the holy city its united capital, but most nations have refused to condone the annexation.

The president is also seeking new cooperation with Saudi Arabia on the fight against Islamic State and countering Iran's influence in the region, White House officials have said.

"You're going to see on this trip some steps toward beef-

ing up, and maybe even down the road formalizing, a security arrangement with Gulf states, Arab States and the United States," one official said.

Discussions over arms sales have been assigned higher priority over economic initiatives

as the two governments aim to complete agreements ahead of Mr. Trump's visit to Riyadh on Friday. "That's the easy part," a senior U.S. official said of economic talks. "The security stuff is harder."

Driving the outreach between the two countries are

In the interview aired Sunday, Mr. Tillerson said the president's embassy decision would be based on talks with regional leaders, and he suggested that Israel might not see the move as a top priority. "I think it'll be informed, again, by the parties that are involved in those talks,"

Mr. Tillerson said. "And most certainly Israel's view on whether Israel views it as being helpful to a peace initiative or perhaps a distraction."

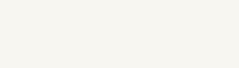
—Dion Nissenbaum

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## WORLD NEWS

# Manila Challenges Big Firms

Philippines takes on alleged anticompetitive behavior in test case by new regulator

BY JAKE MAXWELL WATTS

MANILA—Brian Chuahiock lives in a community built and owned by Ayala Corp., one of the Philippines' largest conglomerates. His savings account is managed by an Ayala-owned bank, his phone operates on Ayala's telecommunications network and he studies in a school in an Ayala-owned district.

Like many Filipinos, the 25-year-old is dependent on services provided by one of a handful of powerful and politically connected conglomerates. He admits he is "about as Ayala as you can be."

Manila is now confronting allegations of anticompetitive practices by conglomerates amid evidence from economists that their dominance is locking out competition, concentrating wealth and restraining development. The goal: introduce more competition to help modernize the economy.

The Philippine government isn't alone in its quest. Developing countries in Asia, Africa and Latin America have struggled for decades to dislodge long-entrenched oligopolies.

In its first major case, the Philippine Competition Commission last year challenged a planned acquisition by the country's two telecommunications companies, Philippine Long Distance Telephone and Globe Telecom, which is 30% owned by Ayala. But the companies won a court injunction to prevent the commission from completing its review and issuing a judgment.

In April, the case moved to the Philippines' Supreme Court, whose decision will define the commission's scope and influence. The two companies are set to complete their joint acquisition this month in defiance of the commission's demands, com-

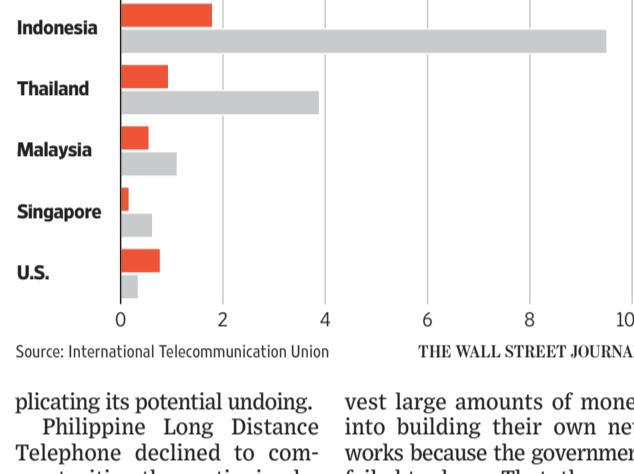


Brian Chuahiock, a 25-year-old Filipino, is dependent on a range of Ayala services.

### Where Talk Isn't Cheap

Consumers in the Philippines, whose telecommunications market is dominated by two companies, pay higher prices than most of their counterparts across Southeast Asia and in the U.S.

#### Cost as a percentage of gross national income per capita



ment. "Beyond our products and services, our businesses create multiplier effects for society and the economy, as we are committed to improving the lives of more people across the country," an Ayala spokeswoman said, adding the company is open to competition.

The Competition Commission said it "will not back down or be intimidated by companies who have grown accustomed to unregulated business practices that hamper competition and ultimately hurt the consumers."

Consumer advocates say mobile service illustrates a broader problem with many goods and services in the Philippines, where regional monopolies in property or utilities contribute to high prices.

Mobile and internet service is worse and the cost higher than in other countries, according to data from the International Telecommunication Union. Filipinos spend nearly \$10 on a basket of just 30 calls and 100 text messages, the union says, more than 3.4% of an average person's annual income. In the U.S., consumers spend an average 0.78% of their annual income for the same service.

plicating its potential undoing. Philippine Long Distance Telephone declined to comment, citing the continuing legal dispute. A Globe spokeswoman said "everything we are doing is actually within the interest of consumers," adding that the commission is "overstretching their mandate."

The two companies generally say they have had to in-

vest large amounts of money into building their own networks because the government failed to do so. That, they say, has increased costs for consumers. They also say that even if another player could raise enough cash to enter the market, the added competition would result in less money to reinvest in infrastructure.

Ayala says the company is good for economic develop-

# Xi Urges Shift in Global Relations

BY CHUN HAN WONG

BEIJING—China is using a forum to promote infrastructure-building across a swath of the globe in a bid to reshape the geopolitical world order.

Opening a two-day meeting with leaders from 29 countries and officials from dozens more, President Xi Jinping said Sunday his plan to knit Asia, Europe and Africa more closely through infrastructure will require going beyond economic and financial arrangements. To ensure success, he said, countries should give up old alliances and create a new international security framework.

"We should foster a new type of international relations featuring win-win cooperation, we should forge partnerships of dialogue with no confrontation and of friendship rather than alliance," Mr. Xi said in a speech.

On hand to endorse his vision were the presidents of Russia, Turkey, the Philippines and Indonesia, and others.

Mr. Xi portrayed China as a committed free trader and pledged more than \$100 billion

in new financing and assistance for projects and countries involved in an updated revival of ancient Silk Road trading routes. This Silk Road reboot, known as "One Belt, One Road," envisions constructing networks of ports, railways, pipelines and industrial parks.

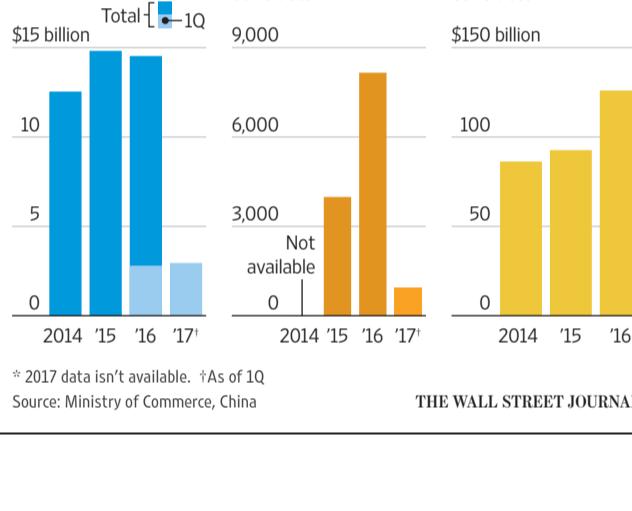
He said over the last three years China has invested more than \$50 billion in Silk Road countries, and Chinese officials have branded the venture a new form of globalization that is more inclusive and fairer than previous tides of world commerce.

Skepticism abounds about China's intentions. Some governments are concerned Beijing is using an economic initiative to further strategic interests and that Chinese companies will dominate their markets.

In the three-plus years since Mr. Xi first unveiled the Silk Road initiative, he and other Chinese officials have couched the effort as a cooperative one with other countries. They have largely steered clear of adding security dimensions, before Mr. Xi's speech on Sunday.

### Widening Belt

China is pushing investments under its One Belt, One Road initiative to boost trade links with more than 64 countries.



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## WORLD NEWS

# New Leader Shares Vision For France

BY MATTHEW DALTON

PARIS—Emmanuel Macron took office as president of France, launching the 39-year-old's mission to overhaul the French economy and reinforce the European Union.

At the start of a ceremony Sunday at the Élysée Palace, Mr. Macron strode on a red carpet toward François Hollande, the departing president who brought Mr. Macron into government as a personal adviser and then elevated him to economy minister. The two headed inside for a meeting to discuss the most sensitive matters of state.

Mr. Macron then proceeded to a ceremony on the other side of the palace, where the results of last week's election were read out and Mr. Macron officially became president. He is France's youngest head of state in the postwar era.

In his first speech shortly after, Mr. Macron said France

under his presidency would act as a bulwark for the international community.

"The world and Europe today more than ever need France," he said. "They need a France strong and sure of its destiny."

Sunday's ceremony caps a remarkable rise for Mr. Macron that is remaking France's political order. A former investment banker who had never run for office, Mr. Macron swept into the presidency by sidestepping France's mainstream political parties, which for decades have groomed the country's leaders.

Instead, Mr. Macron decided to form his own party, République en Marche, 13 months ago. Now he sits atop French politics, controlling a party that is fielding hundreds of candidates in coming legislative elections. Half of them are newcomers to politics and owe their political fortunes largely to Mr. Macron.



French President Emmanuel Macron was driven along the Champs-Élysées in Paris on Sunday.

Mr. Macron a week ago won the presidential election in a landslide against Marine Le Pen, a far-right nationalist who sought to pull France from the EU and close the country's borders.

He ran as a staunch defender of the bloc and a business-friendly centrist who would shake up France's tightly regulated economy.

Ms. Le Pen's message, however, resonated with large portions of the electorate who are opposed to immigration and

discontented with the country's long-running economic slump. She won 34% of the vote, the best showing by a French far-right party in the postwar era.

Mr. Macron on Sunday characterized his presidency as a mission to reinvigorate the economy and address the malaise that has fueled Ms. Le Pen's rise.

"Employment will be unblocked, businesses will be supported, initiative will be encouraged," Mr. Macron said.

French men and women who have been forgotten amid global upheavals must be better protected."

Mr. Macron's first order of business will be tending to France's relationship with Germany, the country's most important ally. Mr. Macron is scheduled to fly to Berlin on Monday to meet with German Chancellor Angela Merkel.

Mr. Macron has made changing the architecture of the eurozone a priority. His ideas include creating a shared budget for the common currency that could help member countries in economic distress. For that he will need the approval of Ms. Merkel, who has resisted similar overtures from French politicians in the past.

"The Europe that we need will be rebuilt, relaunched, because it protects us and allows us to bring our values to the world," Mr. Macron said. His team was due to receive France's nuclear-launch codes and briefings on the country's counterterrorism measures.

## WORLD WATCH

CHINA

### Economic Activity Suggests Softening

Growth in economic activity slowed in many sectors in April after a strong start to the year, a possible early sign of softness in the world's second-largest economy, official data showed.

Value-added industrial output, a rough proxy for economic growth, rose 6.5% in April from a year earlier, compared with a 7.6% increase in March, data from the National Bureau of Statistics showed. The increase came in lower than a median forecast 7% growth by 11 economists surveyed by The Wall Street Journal.

On a month-to-month basis, industrial production increased 0.56% in April, compared with a 0.83% rise in March.

Fixed-asset investment in nonrural areas of China climbed 8.9% in the first four months of 2017 from a year earlier, slowing from a 9.2% increase over the January-March period.

China's economy expanded 6.9% in the first quarter from a year earlier, the strongest pace in six quarters. —Pei Li

PORUGAL

### Pope Canonizes Two Fátima Visionaries

Celebrating Mass in Fátima, Portugal, on Saturday, 100 years after three shepherd children reported seeing an apparition of the Virgin Mary there, Pope Francis canonized two of the visionaries.

The pope declared that Francisco and Jacinta Marto, who died in childhood, would hereafter be "honored among the saints," drawing prolonged applause from a congregation gathered under a bright sun.

Pope Francis also struck an admonitory note, stressing that Fátima's importance lies less in the supernatural events that devotees believe occurred there—a total of six apparitions of the Virgin between May and October 1917—than in Mary's call to piety and peace.

The third Fátima seer, Lúcia Santos, became a nun and lived to the age of 97, dying in 2005. Three years later, Pope Benedict XVI initiated the normally lengthy process that could lead to her canonization.

—Francis X. Rocca

## CHINA

Continued from Page One

China's overall debt is now estimated to be almost triple gross domestic product, a level many experts view as dangerous. Bond yields rise as prices fall.

Historically, Western firms with connections and financial heft, including **Morgan Stanley**, **Goldman Sachs Group Inc.** and **HSBC Holdings PLC**, have had an advantage in helping Chinese companies tap global investors and financial markets despite China's regulations curbing foreign participation in onshore investment banking and trading.

In recent years, though, big Chinese financial firms like **China Construction Bank Corp.** have piled into the business of advising on stock listings in the offshore market of Hong Kong.

The same thing has happened in Chinese dollar-bond underwriting, where fierce competition among Chinese banks has pushed the number of firms per deal to an average of 6.4 in 2017, more than double the average for 2011 and roughly triple the number involved in similar deals in the U.S., the U.K. or Germany, according to Dealogic. Some recent Chinese dollar deals have involved more than 20 banks, according to Dealogic.

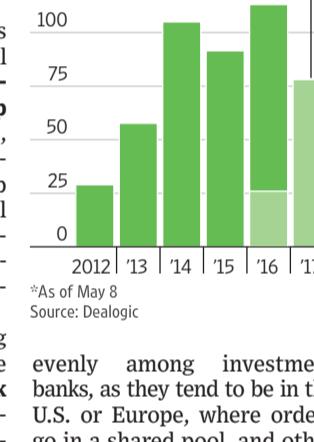
The competition hits profits, bankers say. Chinese companies have paid \$385 million in fees for underwriting their dollar-bond deals this year, second only to U.S. issuers, according to Dealogic. But fees on such deals for corporate clients were on average a little more than half of what they were for U.S. deals, Thomson Reuters data show.

Fees aren't distributed

### Shifting to China

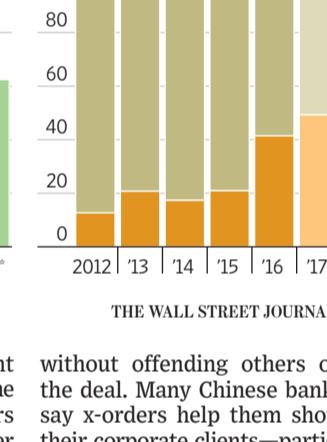
Chinese companies are raising a lot more money overseas...

#### Chinese dollar-denominated bond issuance



...and Chinese banks are handling a bigger share of those deals.

#### Chinese banks' share of volume handled by top 10 underwriters



Last year, **China Cinda Asset Management Co.** enlisted 23 banks to ensure the smooth launch of a dollar-denominated bond it was using to bolster capital. Cinda initially aimed to raise as much as \$4.45 billion. Bankers on the deal say orders, mostly anonymous, at one point were thought to total about \$10 billion. By the time pricing was finished and all the orders reconciled, the value had shrunk to \$3.2 billion.

Cinda didn't respond to requests for comment.

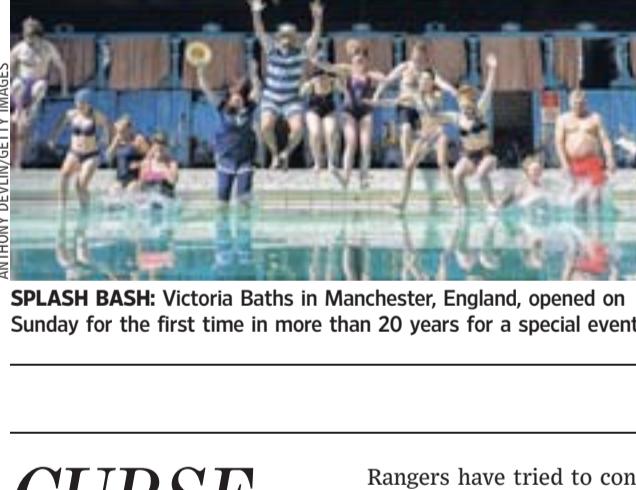
X-orders also make it impossible to know whether investors are stable long-term holders or fast-trading hedge funds—and thus, how the bonds will trade.

"That's one of the reasons we're not buying" Chinese U.S. dollar bonds, said Jan Dehn, head of research at fund manager Ashmore Group in London. "As soon as momentum weakens, all these overvalued bonds are in the hands of investors who flip them."

Many Chinese banks use their big stores of cash to buy into the bond deals they are arranging—something their relatively lean Western counterparts can't do. Chinese bankers say the practice encourages other investors to pile in and ensure the funding goes smoothly. Western bankers say their rivals are placing these orders to secure business from the issuer, and that the practice limits the number of bonds going to other investors.

Chinese banks issuing bonds outside the mainland are "importing book-building practices from the onshore market that tend to conflict with the typical collaborative international approach," said one senior debt-capital-markets banker at a big Western firm in Hong Kong.

ANTHONY DEVLIN/GETTY IMAGES



SPLASH BASH: Victoria Baths in Manchester, England, opened on Sunday for the first time in more than 20 years for a special event.

## CURSE

Continued from Page One  
tious," said Mr. Pariseau, 52 years old. "But a lot had gone wrong. I thought, maybe this whole Pele thing is possible."

The origins of Pele's curse has little basis in native Hawaiian religion, scholars say. One popular theory holds that park rangers in the 1940s, frustrated by tourists who kept making off with pieces of lava, came up with the story.

Lava has been flowing back toward the Big Island ever since, becoming an enduring headache for rangers, who deal with almost daily shipments.

In years past, the park maintained a display about the curse. Now, returned lava is added to a pile in a part of the park that is off-limits. There are thousands of pieces, some almost 3 feet long.

"Occasionally, you look at the postage and they paid \$100 to mail things back," said Bobby Camara, a longtime ranger who retired in 2013.

Rangers have tried to convince visitors the curse isn't real, though taking lava, or anything not sold in the gift shop, from the park is illegal.

"If there was a curse..." Jessica Ferracane, a spokeswoman for the park, started to say, then stopped. "There's no curse."

She declined to let a reporter take a photo of the lava pile, saying it may lead people to think lava will find a good home if they send it back. Park officials, who consider the idea of a curse "culturally inappropriate," are trying to discourage that. Yet the lava keeps arriving each year.

Even some Hawaii residents don't mess with lava rocks.

Alana Hong Eagle, born and raised in Honolulu, was horrified when she found her roommate had brought a plastic bag full "Pele's hair"—strands of lava that look like golden locks—from the Big Island to their house on Oahu.

The roommate left the bag on the dining-room table when she moved out. Ms. Eagle didn't touch it—the lava sat

there for months until a termite infestation drove her to move out as well.

"She thought maybe if she left it in Hawaii that she'd be fine," Ms. Eagle, age 31, said. "But I wasn't going to risk it."

Much of the lava shipped back ends up in the hands of Alton Uyetake, the officer in charge at the Hilo post office on the Big Island.

Sitting in his office recently, Mr. Uyetake was sur-

## FROM PAGE ONE



IAN LOVETT/THE WALL STREET JOURNAL

The coral is put back in the ocean; the sand is brought to beaches with sand of the same color; the lava is sent to the national park to join the ever-growing pile.

Then there are the returned store-bought items.

Mr. Uyetake keeps a collection on his desk of commercial goods that tourists, apparently confused about the curse, also sent back: Kukui nut necklaces of the kind sold all over Waikiki, cardboard coasters from Kona Brewing Company and a wooden Buddha statue.

"Why would somebody send this? It's not even lava," said Mr. Uyetake, picking up the necklace. "This is a commercial thing. And the Buddha, man. Someone paid like 38 bucks for this thing."

"To us it's funny, but to them it's real," he added.

The Big Island is made from lava rock. Pele, who according to legend lives in the Kilauea volcano, is viewed as a creator of the land—who can also destroy villages with lava flows.

Paying respect to the world around you is an important

part of the Hawaiian religion, said S. Nani Kaaiulii, a lecturer in religion at the University of Hawaii.

Ms. Kaaiulii, whose family has been on the Big Island for generations, sometimes chants before going into parts of the forest, to ask permission; if she needs flowers for a lei—a flower necklace—she will leave an offering, like another plant.

There is no trace of Pele's curse in early Native Hawaiian books, Ms. Kaaiulii said.

"I don't believe in curses," she said, "but I believe the so-called curse works. People sort of stopped taking stuff."

Many believe bringing lava back has helped.

Mr. Pariseau said his family's fortunes improved after they took another vacation to Hawaii and brought the lava rock back, nearly 10 years after they took it.

He got married again. His ex-wife reunited with her high-school sweetheart. His children are both thriving.

"I feel kind of silly," he said. "But seeing is believing."



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# Spotlight: Belt and Road brings new opportunities for U.S.-China cooperation

By XINHUA WRITERS GAO PAN,  
YANG SHILONG

The Belt and Road infrastructure investment project has brought new opportunities for cooperation between the United States and China since its inception three years ago, U.S. experts said.

Building upon the spirit of the ancient Silk Road, China proposed in 2013 to build the Silk Road Economic Belt, which links China with Europe through Central and Western Asia by inland routes, and the 21st-Century Maritime Silk Road connecting China with Southeast Asia, Africa and Europe by sea.

Currently, more than 100 countries and international organizations have already voiced support for the initiative, of which more than 40 have signed cooperation agreements with China.

## TRUMP ADMINISTRATION SHOWS MORE FLEXIBILITY

"I think it has been a quite worthy and reasonably successful initiative in the sense that a number of fair projects and the preparations are ongoing in about 40 countries already" in Asia, the Middle East, Africa and Europe, said Simeon Djankov, visiting fellow at the Washington-D.C. based Peterson Institute for International Economics.

While the Barack Obama administration had wrongly discouraged other countries from joining the China-initiated Asian Infrastructure Investment Bank (AIIB), Mr. Djankov believed the Donald Trump administration has shown more flexibility and an understanding that such a bank dedicated to infrastructure and the Belt and Road project are useful for Asia, the Middle East as well as Europe.

"My general view is...the Trump administration will be more forthcoming, perhaps not directly participating in the One Belt One Road projects but at least not preventing other countries from being active parts of it," Mr. Djankov, who served as former chief economist on finance and private sector affairs at the World Bank, told Xinhua.

"I think it would be beneficial



Chinese President Xi Jinping (R) and his U.S. counterpart Donald Trump take a walk in the Mar-a-Lago resort in Florida, the United States, April 7, 2017. LAN HONGGUANG / XINHUA

for the Trump administration to say that the United States is supportive of the Belt and Road Initiative," said Michael Swaine, a senior fellow at the Carnegie Endowment for International Peace, adding the U.S. government has been in recent years taking "a kind of wait-and-see attitude."

"It is not so much hostile as much as it's been... the United States is sort of 'it's a little too early to know here how viable this concept really is' and that's really led people to be cautious," he said.

Mr. Djankov said the U.S. government would hold a more positive view of the Belt and Road if the U.S. and China establish a dedicated dialogue on the initiative.

"It's useful for the U.S. to

understand better the benefits of this set of projects... and basically convert the resistance to the project on the side of the U.S. to a more positive attitude," he said.

Calling himself a "big supporter" of the initiative, Mr. Swaine believed it's not threatening American interests.

"I think it could reinforce incentives for cooperation in critical areas of the world, it can serve as a bridge for involvement by Western European countries and also by the United States. I think in concept, it is a very positive thing," he said.

## U.S.-CHINA COOPERATION UNDER BELT & ROAD INITIATIVE

Robert Hormats, vice chairman of international consulting

firm Kissinger Associates, said the United States should find ways of working with China on the initiative, as it's "very comprehensive," "very visionary" and "historically important."

During a meeting at the Mar-a-Lago estate in Florida last month, Chinese President Xi Jinping had told his counterpart Mr. Trump that China welcomes the U.S. to participate in the Belt and Road Initiative.

Cui Tiankai, Chinese Ambassador to the United States, hoped the United States takes a proactive role and attends the Belt and Road Forum for International Cooperation, which is scheduled for May 14 to 15 in Beijing.

The Belt and Road is an open, cooperative forum, not an arena for geopolitics, Mr. Cui said at

a conference in New York last month, adding it has opened a door of opportunities for U.S. companies.

"What the U.S. would like to see certainly is the maximum possible participation by U.S. companies in One Belt One Road projects," said Henry Levine, senior adviser at leading U.S. consulting firm Albright Stonebridge Group, noting China has already said that the Belt and Road projects are open to all countries.

"If in practice we begin to see through this open process, a lot of participation by U.S. companies, then people will be able to say it really is open and China is keeping its words, and this is a very positive thing," he said.

Mr. Swaine believed the United States is not in a position to invest huge amounts of money in the grand project, but it could invest expertise and a certain amount of services, which would also be useful for the initiative.

Mr. Djankov suggested Chinese and U.S. companies could cooperate in airport construction and the operation of logistical centers along the Belt and Road.

Helga Zepp-LaRouche, founder and president of Schiller Institute, a political and economic think tank, urged the United States to join the "fantastic new project."

"The Belt and Road cooperation could use the Chinese experience to build up U.S. infrastructure," she said at a conference last month. "This would also be a big boost to U.S. manufacturing: It would create jobs and revitalize the U.S. economy."

She believed the U.S. participation in the Belt and Road Initiative could help overcome geopolitical confrontation between the world's two largest economies.

"If the United States would leave geopolitics and cooperate in a 'win-win' mode, it reverses and eliminates the danger of a geopolitical confrontation, and there are many, many areas of possible cooperation," she said.

Mr. Djankov also believed it will "greatly enhance the overall understanding" between China and the United States if the two sides have one more economic channel for cooperation.

Gao Pan, Yang Shilong are writers for Xinhua News Agency.

## Belt and Road to rebalance global economy

By XINHUA WRITER  
ZHANG ZHENGFU

The world economy is going through a turbulent time, but the Belt and Road Initiative might just rebalance the things and help restore faith in globalization.

The current global economic order favors the strong and rich, those who write the rules and reap the lion's share of the profits, while the weak and poor are sidelined and neglected.

In a world still suffering the hangover of the global financial crisis and beset by rising protectionism, things are getting harder for developing countries. Shabby infrastructure, inadequate production capacity and funding shortages all come together to create a perfect storm of stalled progress.

True and lasting solutions to these global economic blues will only come when archaic relationships are remodeled and replaced with genuine cooperation. This is exactly what the Belt and Road Initiative is all about.

Proposed by Chinese President

Xi Jinping in 2013, the ambitious initiative — linking dozens of countries along a land-based Silk Road Economic Belt and an oceangoing 21st-Century Maritime Silk Road — is pioneering a new model of global economics based on the principles of mutual benefit, a far cry from the current winner-takes-all system.

The Belt and Road, stretching from Asia to Europe, has the potential to be one of the largest economic development projects in history.

Many of the countries involved have been caught in the subsidence of globalization, left forgotten and far behind. Their desire for industrialization is perfect fit with China's "going global" strategy to make best use of its vast industrial and infrastructure construction capacity.

New demand, created by increasing supply, is how the Belt and Road will rebalance the world economy.

Former Pakistani Prime Minister Shaukat Aziz said the Belt and Road would be a "game changer" for his country and the wider world,

a force for growth, prosperity, and peace, creating a better understanding between nations.

Last year the world economy had its worst year since the global financial crisis, with a 13% drop in foreign direct investment and weak trade growth. Official data pointed to much more dynamic trade and investment activities in regions along the Belt and Road.

Since 2013, China has invested more than USD 50 billion in countries involved in the initiative, covering infrastructure, industrial capacity, investment, trade, financial technology and social cooperation.

A total of 56 economic and trade cooperation zones have been set up by Chinese businesses in Belt and Road countries, generating nearly USD 1.1 billion in tax revenue and creating 180,000 local jobs.

Beyond trade and infrastructure, China's long-term goals for the Belt and Road also include policy coordination, financial integration and people-to-people bonds, all of which provide a new vision for the future of humanity.

It is not surprising the initiative



Peshawar-Karachi Expressway (Multan-Sukkur section), the largest transport infrastructure project of the China-Pakistan Economic Corridor, under construction by a Chinese company. Regions along the 392-km expressway account for more than 90 percent of Pakistan's total GDP. LIU TIAN / XINHUA

has won support from over 100 countries and international organizations.

The Belt and Road belongs to a different species. It is open to all, with results for all.

Chinese Foreign Minister Wang Yi compared the Belt and Road to a "circle of friends" open to all countries that share the same goals, rather than an exclusive club.

The Belt and Road will not

be built in a day. An ambitious blueprint must be translated into solid progress.

The two-day forum in Beijing which begins on May 14, at which 29 heads of state and government leaders are expected to attend, will provide a platform to do the job.

Zhang Zhengfu is writer for Xinhua News Agency.



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## WORLD NEWS

# State Elections Lift Merkel

By ANTON TROIANOVSKI

BERLIN—Angela Merkel's Christian Democratic Union beat the center-left Social Democrats in the regional election in Germany's biggest state, providing a major boost to the chancellor ahead of national elections in September.

The center-right Christian Democrats finished ahead of the Social Democrats 33% to 31.5% in Sunday's state election in North Rhine-Westphalia, according to a projection based on exit polls and early results released by ARD public television.

The result represented a major upset in German politics and underlined Ms. Merkel's political strength as she prepares to run for a fourth term. North Rhine-Westphalia—whose population of 18 million is more than one-fifth of Germany's total—has long been a stronghold

of the Social Democrats, who have governed in the state for all but five of the past 50 years.

The upstart, anti-immigrant Alternative for Germany party took 7.4%, meaning it will now have seats in 13 of Germany's 16 state parliaments. But the party's hopes to soar into double digits in a region with many working-class voters failed to materialize.

The pro-business Free Democratic Party won 12.5% according to the projection, its best result yet in the state, building momentum ahead of the party's campaign to try to regain seats in the national parliament in the federal election on Sept. 24.

The campaign in the state turned in part on the record of the Social Democratic premier, Hannelore Kraft, who has governed in partnership with the environmentalist Greens since 2010. Armin Laschet, the

Christian Democratic candidate, slammed her performance on the economy and in education. Security was also a major issue, in part because several suspected Islamist extremists, including the Berlin truck attacker Anis Amri, spent time in the state.

But the closely watched vote also sent a message nationwide, showing that despite German discomfort with Ms. Merkel's acceptance of more than a million refugees and migrants in the past two years, many voters still back her. Of those who voted for the Christian Democrats, 40% said the chancellor played a "very important" role in their decision, according to an Infratest Dimap exit poll.

"I think it has become clear that we have big problems to solve—in North Rhine-Westphalia but also in Europe and internationally," Ms. Merkel's

chief of staff, Peter Altmaier, said on ARD public television after the results came in.

The vote delivered a blow to Ms. Merkel's challenger in the September election, Social Democrat Martin Schulz, who hails from the region. Both politicians campaigned in the state in recent days, and Mr. Schulz said Sunday evening that the vote was "a resounding defeat" for his party.

Mr. Schulz, a former president of the European Parliament, has been scrambling to try to regain his early momentum after his surprise designation in January as the Social Democrats' challenger to Ms. Merkel.

The party's position in the polls surged to a near tie with the Christian Democrats after Mr. Schulz's designation, but it has fallen back to 10 points behind the Christian Demo-



Armin Laschet celebrated his North Rhine-Westphalia win on Sunday.

crats—37% to 27%—in two national polls published in recent days. The result in North Rhine-Westphalia, the last state to vote ahead of the national election, places the Christian Democrats in "a nearly optimal" starting position as the campaign approaches, University of Mainz political scientist Jürgen Falter said.

"People continue to feel taken care of" by Ms. Merkel, Mr. Falter said. "She has managed to more or less bend things back into shape after her mistake with opening the border."

For the Social Democrats, or SPD, the result represented a stunning setback in a state whose many blue-collar workers once formed a rock-solid base for the party.

## FROM PAGE ONE

### LOSSES

*Continued from Page One*  
have greater incentive to agitate for maximum recovery—and have greater potential for losses—because they purchased debt closer to par values. Mutual funds as a group still hold about \$14.6 billion of Puerto Rico's \$73 billion in outstanding bonds after selling off more than \$9 billion over the past five years, according to research firm Morningstar Inc.

Franklin and Oppenheimer hold most of the mutual-fund debt, according to Morningstar. Oppenheimer's paper and actual losses are as much as \$2.1 billion, and Franklin's are as much as \$1.6 billion, according to the Journal's analysis. Franklin has \$741 billion in assets under management, while Oppenheimer has \$230 billion.

"We are considering all appropriate legal remedies to protect and preserve the rights of our fund shareholders," said Oppenheimer spokeswoman Kimberly Weinrick in a recent statement.

Another six fund families—managed by Vanguard, Goldman, Western Asset, Lord Abbett, AllianceBernstein Holding and Dreyfus—sustained actual and paper losses of up to between \$100 million and \$200 million on their Puerto Rico holdings, according to the Journal's analysis.

The losses are relatively small for those firms, all of which have at least \$100 billion apiece in municipal-bond assets under management. "It's a tiny portion of the muni assets that we hold and has little impact on our returns," said Freddy Martino, a spokesman for Vanguard.

"We have lost money but the portfolio is very well diversified so overall shareholders have had very attractive returns over that time," said Dan Solender, director of tax-free fixed income for Lord Abbett.

Guy Davidson, director of municipal investments at AllianceBernstein Holding, said he is relieved the firm sold off most of its Puerto Rico debt in 2014. "No matter how you cut it, Puerto Rico's been a bad investment for most investors," he said.

For mutual funds, Puerto Rico's debt has long had a special appeal because the bonds are tax-exempt nationwide. Most municipal bonds are exempt from state taxes only in the state they are issued. The commonwealth's ballooning debt load appealed to state-specific mutual funds in places where local government bonds were scarce or expensive.

### How the Journal Added Up Damage

The losses for mutual funds that invested in debt issued by Puerto Rico are as much as \$5.4 billion over the past five years, according to a Wall Street Journal analysis of mutual-fund holdings and municipal-bond trades.

The Journal's total estimate is an aggregate of realized and unrealized mutual-fund losses over the past five years. That includes any drop in the market value of bonds held during the period, which the Journal calculated using the market values funds reported to Morningstar Inc. each quarter.

About 45% of the Puerto Rico debt mutual funds currently hold is in funds designated by Morningstar as single-state funds.

When Puerto Rico last tapped the bond market in March 2014, offering 8% interest, underwriters were flooded with orders from hedge funds and mutual funds for the junk-rated debt. Twenty mutual-fund families bought a combined \$263 million that quarter, according to Morningstar data.

Most funds that stocked up on the island's debt before prices began to slide have fallen behind their benchmarks, according to the Journal's analysis. That includes 13 of 15 funds that had at least 15% of their assets in uninsured Puerto Rico bonds in the first quarter of 2013. Most of these are single-state funds spanning the U.S., from New York to Arizona. Two of those lagging funds closed in 2013 and 2016.

*A diverse group of creditors will be competing for a limited pot of money.*

How much mutual funds and other creditors in Puerto Rico get back will depend in large part on which securities they own. For example, general-obligation bonds carry some of the commonwealth's strongest legal pledges, and holders of those bonds may fare better than many other investors.

Detroit paid an average of 81 cents on the dollar on its bonds in bankruptcy, while Stockton, Calif., and San Bernardino, Calif., paid an average of 60 cents, according to research firm Municipal Market Analytics. Many Puerto Rico bondholders are likely to suffer steeper losses, said Matt Fabian, a partner at the firm.

Bondholder recoveries are expected to be significantly lower than the total dollar value of the bonds' current market prices unless the federal control board overseeing Puerto Rico allocates more than it has so far, according to analysts, mutual-fund managers and the commonwealth's former adviser.

In March, the board approved spending \$800 million a year to pay debt over the next decade, about one-quarter of what is owed.

"The math is pretty straightforward," said Jim Millstein, adviser to the commonwealth for three years until the new governor took office in January.

To calculate gains or losses when funds sold or bought bonds during the period, the Journal used Municipal Securities Rulemaking Board trading data to determine the lowest price at which bonds could have been bought and the highest price at which they could have been sold.

The Journal limited its analysis to bonds that don't carry insurance and bonds backed by insurer **Financial Guaranty Insurance** Co., whose ability to pay claims is limited by a state-mandated rehabilitation plan.

The analysis also excluded capital appreciation bonds, which rise in value naturally over time, making comparisons difficult.

—Heather Gillers



**1922: OPENED OUR DOORS.**

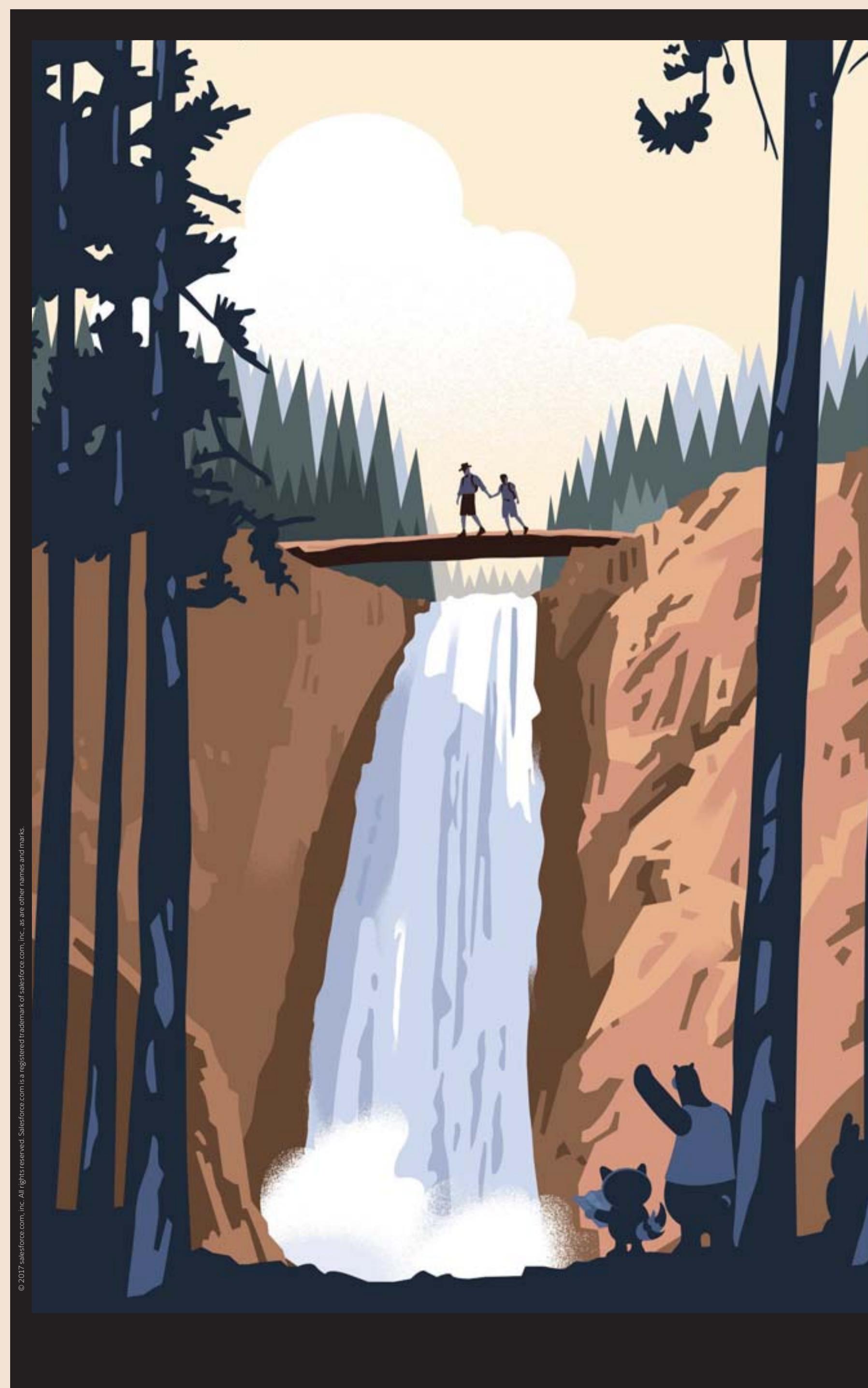
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## IN DEPTH

# Pyongyang Claims Advance in Latest Test

Sunday's launch comes as worries escalate over North Korea's nuclear ambitions

BY JONATHAN CHENG

North Korea said it successfully test-fired a newly developed "medium long-range" surface-to-surface missile capable of carrying a large nuclear warhead, claiming new advanced capabilities as it seeks the means to reliably deliver a nuclear-tipped long-range missile to the continental U.S.

The launch of the missile, which President Donald Trump said landed "close to Russian soil," comes as worries inten-

sify in the international community about North Korea's nuclear ambitions.

North Korean leader Kim Jong Un indicated in January that he seeks to develop an ICBM capable of delivering a nuclear warhead to the continental U.S., and North Korea has stepped up its missile tests since then. North Korea has test-launched 10 missiles this year.

Independent experts said the range of Sunday's missile exceeded that of any other weapon North Korea has successfully launched.

David Wright, co-director of the Global Security Program at the Union of Concerned Scientists, said in an analysis of the launch that, if fired at a conven-

tional angle, the missile could have flown 2,800 miles—far enough to reach the U.S. military base in Guam, and a "considerably longer range than its current missiles."

While North Korea's Taepodong-2 rocket has flown farther than Sunday's missile, North Korea classifies it as a satellite launcher that isn't designed to deliver a warhead back to earth. It is, however, banned by United Nations sanctions because similar technology could be used to make an intercontinental ballistic missile.

Sunday's missile flew 787 kilometers (490 miles) and reached a maximum height of 2,111.5 kilometers, according to Pyongyang's state-controlled Korean Central News Agency, an

unusually steep trajectory that Pyongyang said was used "in consideration of the security of neighboring countries."

KCNA said Mr. Kim was on hand for the launch of the new ballistic missile, which it called the Hwasong-12 and described as a "perfect weapon system." He warned the U.S. that the new missile moved North Korea closer to being able to retaliate against a U.S. military attack.

"If the U.S. dares opt for a military provocation against the DPRK, we are ready to counter it," KCNA quoted Mr. Kim as saying. "The U.S. had better see clearly whether the ballistic rockets of the DPRK pose actual threat to it or not," he added, using the acronym for North Korea's formal name,

the Democratic People's Republic of Korea.

Sunday's launch came just days after the election of South Korean President Moon Jae-in, who has advocated more engagement with Pyongyang. Mr. Moon convened an emergency meeting of the National Security Council hours after Sunday's launch, a spokesman for the presidential Blue House in Seoul said.

During the meeting, he condemned the missile launch as "a grave violation of U.N. Security Council resolutions" and expressed frustration at the North for testing a missile just days after Mr. Moon had said in his inaugural address that he would do whatever it takes to establish peace on the Korean

Peninsula, the spokesman said.

He called North Korea's missile test a "reckless provocation" and promised a decisive response, although he also kept open the possibility of dialogue, calling for "a change in attitude" by Pyongyang, the spokesman said.

The White House said Mr. Trump had been briefed on the launch.

"With the missile impacting so close to Russian soil—in fact, closer to Russia than Japan—the President cannot imagine that Russia is pleased," the White House said.

—Alastair Gale and Peter Landers in Tokyo, and Chun Han Wong and Charles Hutzler in Beijing contributed to this article.

## MISSILE

Continued from Page One

For decades, Mr. Kim's father and grandfather used the country's missile program to gain leverage in diplomatic talks and revenue from weapon exports. Technological advances came slowly. That changed when Kim Jong Il died and was succeeded by his youngest son, believed to be 33 years old.

The dictator has shown no interest in negotiating with the U.S. about the missile program, and North Korea's nuclear ambition and skill are advancing much more quickly.

The country is conducting missile tests with the frequency needed to ensure the weapons can be reliably used in conflict. A range of recent breakthroughs has forced the U.S. and its allies to review their missile defenses.

"Kim Jong Un very much wants to reach out and touch the homeland," Gen. Lori Robinson, head of the U.S. Northern Command, the part of the military responsible for defending the U.S. mainland, told the Senate Armed Services Committee in April.

Tackling the threat could become an early point of tension between President Donald Trump, who is trying to pressure Pyongyang into changing course, and new South Korean President Moon Jae-in, who favors diplomacy and economic engagement with North Korea.

In a factory about 60 miles north of Pyongyang, the capital city, dozens of computer-controlled machines, similar to those used by Samsung Electronics Co. to make smartphones, churn out intricate parts that can be used in missiles and nuclear centrifuges, according to photographs released by state media.

### Machine songs

In a visit to the same factory in 2013, Mr. Kim angrily demanded that engineers replace old devices for making parts with robots and computer numerical control, a process for high-precision machine tools, according to a state media report at the time. The government has composed songs about CNC machines and put them on postage stamps.

Photos from a return visit by Mr. Kim last August showed

one new long-range missile. "Basically, they can now produce anything [for missiles] that's made of metal," says Jeffrey Lewis, a missile specialist at the Middlebury Institute for International Studies in Monterey, Calif.

A U.N. panel that monitors sanctions on North Korea identified Tengzhou Keyongda CNC Machine Tools Co. of China as a supplier of the new CNC machines.

A sales manager at the company who declined to give his name said it sent machines worth about \$40,000 to North Korea through an intermediary firm "two or three years ago." The person said North Korea tried to buy more machines this year, but the company declined "since relations between the two countries are tense."

An ABB spokesman says the Zurich company doesn't sell equipment to North Korea but couldn't rule out the possibility some products were resold there.

North Korea has said through state media that it had no choice but to advance its nuclear and missile development to defend itself from attack. It has said its weapons program was impervious to sanctions and was already capable of hitting the U.S. with a nuclear-tipped missile.

The missile program was born in the 1960s when state founder Kim Il Sung created a military academy that was told to develop missiles that could reach as far as U.S. military bases in Japan.

Progress was slow until North Korea imported Soviet-made ballistic missiles from Egypt around 1980. North Korea copied them to make short-range Scud-type missiles. They became an important revenue source and were exchanged for oil, nuclear technology and other items from countries such as Iran, Syria and Pakistan.

North Korea successfully tested a medium-range missile in 1993, the year before Kim Il Sung died. In 1998, it launched a multistage rocket widely viewed as North Korea's first long-range missile test.

Successor and son Kim Jong Il was rarely shown in state media reports attending missile tests. During his 17-year reign, he seemed more interested in using missiles to extract concessions. In 2000, Kim Jong Il demanded \$1 billion from the U.S. to halt missile exports.

"So it's clear, since we export [missiles] to get money, if you guarantee compensation, it will be suspended," he told Secretary of State Madeleine Albright in 2000, she wrote in her 2003 memoir. Negotiations fell apart, and North Korea resumed missile testing and exports.

Its next major missile launch didn't come until 2006. Mr. Kim was wary of alienating South Korea and China, key sources of financial and diplomatic support, says Kim Kwang-jin, a former North Korean government official who defected in 2003 and now lives in Seoul.

"In contrast, Kim Jong Un owes nobody," says Mr. Kim, who isn't related.

Since taking power five years ago, the young dictator has met no other world leaders or traveled outside North Korea. That isolation likely motivates him to seek respect with military achievements, the former North Korean government official adds.

One of the first signs Kim Jong Un was serious about accelerating the missile program came with the elevation of North Korea's Strategic Rocket Force Command in March 2012, three months into his reign.

The move put missile devel-

KHA/REUTERS



North Korean leader Kim Jong Un in a government photo released in March that said he was watching a test of a new engine.

### Aiming at the United States

North Korea's weapons program is making progress toward its ultimate goal of mastering a long-range missile to threaten the U.S. with nuclear attack.

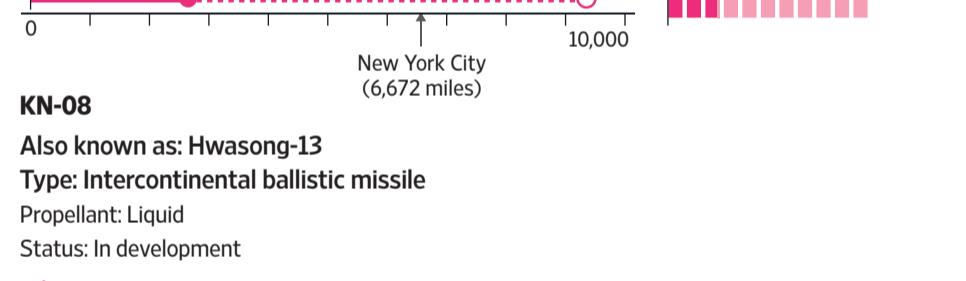
#### Taepodong-2

Also known as: Unha-3

Type: Intercontinental ballistic missile/Satellite launch vehicle

Propellant: Liquid

Status: Operational



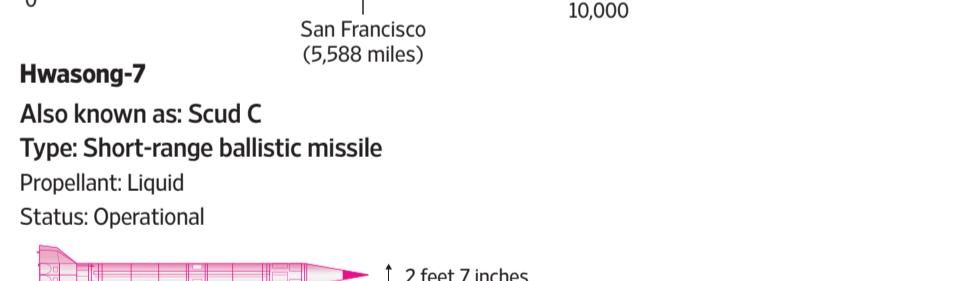
#### KN-08

Also known as: Hwasong-13

Type: Intercontinental ballistic missile

Propellant: Liquid

Status: In development



#### Hwasong-7

Also known as: Scud C

Type: Short-range ballistic missile

Propellant: Liquid

Status: Operational



Note: Figures have been converted from metric units.

Sources: Nuclear Threat Initiative (missile design characteristics); GlobalSecurity.org (missile design); CSIS Missile Defense Project (missile design characteristics)

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### Solid-fuel science

Markus Schiller, a rocket scientist at ST Analytics, a research and consulting firm in Munich, says making a solid-fuel missile is a "black art" that requires the presence of a sophisticated chemical-engineering industry to produce the fuel. Small mistakes can be catastrophic, like the 1986 Challenger space-shuttle explosion, caused by failure of a part in a solid-fuel rocket booster.

Iran's first test flight of a solid-fuel missile was in 2008, more than three years after its first ground test of a large, solid-fuel engine. Some experts speculate North Korea got help from other countries to develop its solid-fuel missiles or sent its own engineers abroad to learn needed skills.

Last year, the U.S. alleged cooperation between Iran and North Korea on missile development, which Tehran denies.

In another breakthrough, North Korea successfully launched last year a missile from a submarine. Only seven other countries have demonstrated the ability to fire missiles from submarines, including Pakistan earlier this year.

The technology is hard to master because the missile must be forced out of the water by high pressure—and then the engine must quickly ignite to initiate the missile's flight.

North Korea has held about a dozen tests of submarine-launched missiles since 2014, starting with land-based trials of the first part of the process.

Many experts say North Korea last August had its first successful launch from a submarine of a missile with an estimated operational range of about 620 miles. North Korea has just one old submarine capable of firing such missiles; satellite images show it is developing more.

On April 16, a ballistic missile believed by U.S. intelligence officials to be the first test of a new type of antiship missile exploded shortly after launch.

The launch spurred expectations among analysts that North Korea would successfully launch a similar missile, possibly within months. On April 28, North Korea fired its ninth missile so far this year. Sunday's launch was immediately seen as another sign of progress.

Some analysts say North Korea's record of exaggeration makes them cautious about its claim of being able to mount a nuclear warhead on a long-range missile that could reach the U.S. North Korea hasn't tested its KN-08 missile, the gravest potential threat in the country's arsenal.

"The motive may also be threat demonstration, but they are making real progress," says John Schilling, a rocket and missile specialist at the Aerospace Corp., which runs a research center for the U.S. Air Force.

—Kersten Zhang contributed to this article.

North Korea says it has no choice but to continue nuclear and missile development.

CNC machines with bright orange, robotic arms bearing the logo of Swiss engineering company ABB Ltd.

Weapons experts who study satellite images and photos released by North Korea say the newer machines have become ubiquitous in North Korean missile plants. The machines allow faster, more precise manufacturing of parts around the clock, reducing the need to skirt sanctions by importing similar parts. The United Nations bans any imports that could be used in weapons programs.

Weapons in an April Pyongyang parade to mark the 105th anniversary of the birth of state founder Kim Il Sung, the grandfather of Mr. Kim, included rocket casings that might have been made by the new CNC machines, missile experts say. North Korea also showed off what appeared to be at least

opment on par with the army and air force—and a direct reporting line to Mr. Kim, according to state media.

In 2013, Mr. Kim introduced his "byungjin" policy, which emphasized that North Korea can simultaneously pursue economic progress and nuclear weapons. "When one is firmly equipped with the capability to make precision strikes with nuclear weapons...no aggressor can dare to attack recklessly," he said.

The leader began assigning more people with technical skills to the missile program, rather than political appointees made by his predecessors, says Joseph Bermudez, an American expert on North Korea's military. Some of the newcomers might have picked up expertise while studying in India and other countries, according to recent U.N. reports.

The move put missile devel-

oped in 2015 to become a major general in the rocket command, previously worked on North Korea's space program and at the Second Academy of Natural Sciences, a major research center for North Korea's missile and nuclear efforts, say U.S. officials.

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The major general, who isn't related to the North Korean leader, began assigning more people with technical skills to the missile program, rather than political appointees made by his predecessors, says Joseph Bermudez, an American expert on North Korea's military. Some of the newcomers might have picked up expertise while studying in India and other countries, according to recent U.N. reports.

Kim Jong Sik, an engineer

rean leader to three residential areas set aside for scientists. He offered advice on plastering and furniture.

"Take care of them like their real parents would do so that they may not have any slightest inconvenience in their living," Mr. Kim said, according to a 2015 report by state media.

Advances in the missile program have accelerated since 2014. Among the most crucial: the introduction of solid-fuel missiles. For decades, North Korea used liquid-fueled missiles, which are powerful but dangerous to handle and slow to prepare for launch. The U.S. stopped using liquid-fueled missiles in the late 1980s after a series of ground explosions.

Solid-fuel missiles can be readied to fire within a few minutes because they are stored with fuel inside. They are also easier to move around on transporters because they

# GREATER NEW YORK



**MICHAEL APPELTON/MAYORAL PHOTOGRAPHY OFFICE**  
Mayor Bill de Blasio, at a church in Brooklyn in April, continues to connect personally and politically with the city's black community.

## Mayor Speaks, Blacks Hear

In use of vernacular, with biracial family, De Blasio is at ease amid black community

BY MARA GAY

New York City Mayor Bill de Blasio had come to the nearly all-black church last month to discuss a plan to close the jail at Rikers Island. But it was something else that had people talking.

"We don't have to live with mass incarceration," the mayor told the congregation at the Greater Allen A.M.E. Cathedral, in Queens. "As our youth might say, a lot of people are now woke."

In the pews, the mayor was greeted with smiles.

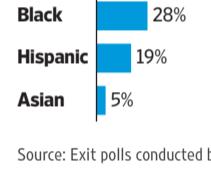
"Woke," often used by African-Americans and progressives to describe someone who is socially aware, isn't the kind of thing voters are accustomed to hearing from white politicians. But they have come to expect it from Mr. de Blasio, a 56-year-old white Democrat whose rise in New York City politics has been fueled by his strong support among black voters.

Those residents say they see a white man who is comfortable around black New Yorkers and black vernacular, who ran for office promising to curb police searches, and who has spent 23 years alongside his wife Chirlane McCray, a 62-year-old African-American.

### Election Math

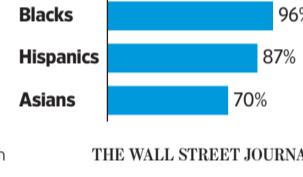
Blacks and other minorities comprise a majority of voters in New York City, and they heavily backed New York Mayor Bill de Blasio in the last election.

#### Percentage of voters in 2013 general mayoral election



Source: Exit polls conducted by Edison Research

#### Share of vote won by de Blasio by race and ethnicity



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can woman.

"He's for the people, he understands us," Monique Smith said recently outside the Greater Allen A.M.E. Cathedral. "And he's married to black woman."

Black and white New Yorkers see two different mayors.

In a Feb. 28 Quinnipiac University poll, 73% of black voters said they approved of Mr. de Blasio's job performance. Among white voters, 34% did.

In 2014, the mayor spoke about having to "train" his son in how to interact with police. The comments, which followed a grand jury decision not to indict an officer in the 2014 death of Staten Island resident Eric Garner, angered many police officers. But they were welcomed by many African-Americans, who saw the experience as a remarkable expression of solidarity.

"Every black parent in New York thought, 'Holy shit,'" said

Christina Greer, an associate political science professor at Fordham University. "To have a white mayor who says, 'I'm thinking about my black child' is a big deal."

Mr. de Blasio frequently tells congregations at black churches: "I want to give honor to God because without him this day would not be possible," a phrase linguists say is common in African-American houses of worship. He solicits donations with the greeting, "Sisters and Brothers," commonly used in African-American culture.

"He's definitely been around black people," said Ebro Darden, a host on hip-hop radio station Hot 97 (WOHT-FM, 97.1), on which Mr. de Blasio regularly appears.

The mayor said some have warned him against using the language. "They say to me, 'Oh you're going to alienate white people by saying 'brother and

sister,'" he said. "I want to show a lot of respect to people who have been so singularly disrespected."

Renée Blake, a linguistics and Africana-studies professor at New York University, said the mayor frequently communicates to black Americans in ways that are rare in public life. "His mimicry, his imitations of speech and mannerisms, his wordplay—all of it resonates with black communities," Ms. Blake said.

Mr. de Blasio, born to an Italian-American mother and a German-American father, said his comfort with blacks began in his hometown of Cambridge, Mass., where he lived for a time in what he described as a traditionally African-American neighborhood.

At times, the mayor's comfort with black culture has made him a target. A year ago, he made a joke about "CP Time" (slang for colored people time), which earned him a gentle scolding from then-President Barack Obama at the 2016 White House Correspondents' Dinner.

At a staff meeting a couple of years ago, Mr. de Blasio riffed about his unpopularity among white voters, joking that the feeling was mutual, according to someone who was there.

"I really honestly do not recall ever saying that," Mr. de Blasio said when asked about the remarks. "Don't get me wrong. Some of my best friends are white."

## Christie Scuffles For State Power Over an Insurer

BY KATE KING

New Jersey Gov. Chris Christie is waging an unlikely battle against the state's largest health insurer in his administration's waning months.

Mr. Christie, a Republican who has claimed credit for cutting corporate taxes and regulations during his nearly two terms in office, is calling for more state control of Horizon Blue Cross Blue Shield of New Jersey, which covers 3.8 million people.

The nonprofit insurer has been in the governor's crosshairs since his February budget address, when he called on the company to contribute to a new state addiction-treatment fund. The governor's office asked the insurer for \$300 million, a Horizon spokesman said, confirming reports.

Horizon, which reported \$12.2 billion in revenue last year, resisted, saying it would have to raise customer premiums to cover the cost. Mr. Christie has responded by criticizing the insurer with escalating intensity, blasting it for lobbyist expenses, executive pay and perks.

The governor, who rarely backs down from fights, has publicly battled teachers unions and other opponents throughout his tenure. His latest target, though, has befuddled political observers and put Democratic lawmakers in the unusual position of defending a corporation from government interference.

"Republicans always lament

governmental overreach into the private sector, and yet here's the governor proposing to do just that," Assemblywoman Sheila Oliver, a Democrat, said in a statement.

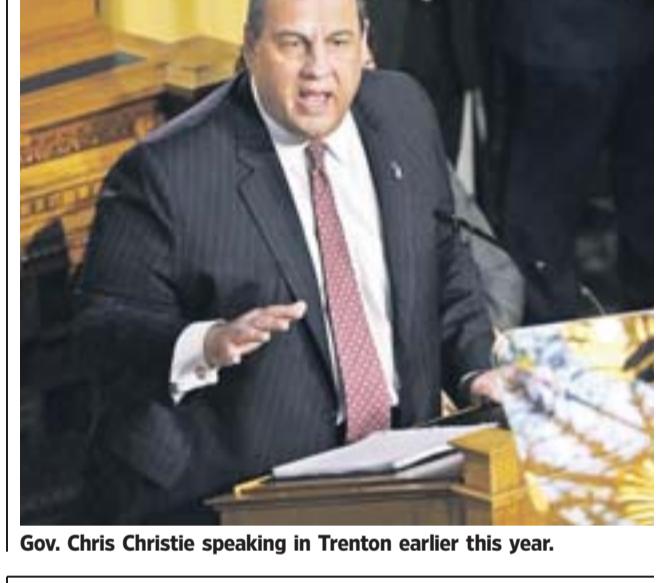
Mr. Christie has proposed legislation that would give the state's Department of Banking and Insurance more control over Horizon's finances, require the company to publicly disclose executive and lobbyist salaries and bonuses, and to add four state-appointed members to its board.

The governor also wants Horizon to deposit any profits that exceed reserves required for it to remain in good standing with the Blue Cross Blue Shield Association into a revolving fund administered by the state for health services for low-income residents.

"A portion of that should go to help people, I think, who are drug- and alcohol-addicted in this state and who are dying at alarming rates," Mr. Christie said Thursday.

A spokesman for the insurer said the governor is attempting to "inject statehouse politics into the insurance that protects the health care of nearly four million New Jerseyans."

Assembly GOP leader Jon Bramnick said he supports Mr. Christie's efforts to force Horizon to contribute funding. "This is not a governor taking money from a private corporation," he said. "A nonprofit that controls most of the insurance policies in this state, I don't think that it's evil to ask them to help."



**MEL EVANS/ASSOCIATED PRESS**  
Gov. Chris Christie speaking in Trenton earlier this year.

## Lender Stymies Medallion Owners

BY PAUL BERGER

Yellow taxicabs have enough problems today in New York City competing with ride-hailing companies like Uber that are picking up fares and driving down medallion values.

But a more immediate issue for some medallion owners is Melrose Credit Union, of Queens, N.Y., which finances the loans on thousands of medallions.

The credit union was seized in February by New York state regulators and placed under the conservatorship of the National Credit Union Administration, a federal agency that accused the credit union of "unsafe and unsound practices."

David Beier, president of the Committee for Taxi Safety, a leasing association based in Long Island City, Queens, said that since the federal regulator took over the credit union its loan terms have become severe, demanding large down payments, imposing high interest rates and seeking people's homes as collateral.

John Fairbanks, a spokesman for the National Credit Union Administration, said that the regulator has installed its own management at the credit union and is, in effect, running the lender. Mr. Fairbanks said the regulator wouldn't comment on the complaints made by medallion owners.



**KATHY WILLENS/ASSOCIATED PRESS**  
Some taxi medallion owners object to loan terms being set by a credit union seized by regulators.

A spokesperson for New York State Department of Financial Services didn't respond to a request for comment on Sunday.

In 2015, Melrose held a security interest in about 3,100 medallions as collateral for loans totaling about \$1.6 billion, according to an unrelated lawsuit.

Those medallions have plunged in value in recent years as ride-hailing drivers proliferated. Uber Technologies Inc., the leading ride-hailing service in New York City, has grown to 51,000 vehicles competing for fares with

13,500 medallion holders.

A medallion is a metal shield issued by the city's taxi authority for a taxi driver to operate legally. Medallion values have fallen to about \$550,000 from a peak of about \$1.2 million in 2013, said Andrew Murstein, founder of Medallion Financial Corp., a leading industry lender.

Mr. Murstein said he believes that medallion values have bottomed out. He said that delinquencies fell last quarter for the first time since 2013 and that fleet operators have started buying at prices over \$550,000.

Medallion owners believe they can survive, but only if lenders work with them.

Mr. Beier, the leasing association president, said that Melrose's terms contrast with most other lenders, which are tailoring loans to struggling taxi drivers. Medallion owners typically refinance their loans every three years.

On Friday, Mr. Beier's group sent a letter to Mark McWatters, the regulator's acting chairman, urging the group to show more flexibility so that medallion owners can stay in business while continuing to pay off loans.



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## GREATER NEW YORK

# Village Feel In Store for Mall's Future

By KEIKO MORRIS

Kushner Cos. has a new partner in its bid to remake its old-school New Jersey suburban mall, bringing in a seasoned retail real-estate company with a history of revitalizing malls.

The New York developer has joined forces with Rouse Properties, a company owned by affiliates of Brookfield Asset Management Inc., as it moves to revamp the Monmouth Mall in Eatontown, N.J., into more of an open-air shopping village.

Renamed the Heights at Monmouth, the roughly \$500 million project will feature a walkable streetscape, more dining and entertainment venues, and apartments.

"This is where malls are heading, and we need to transform it for the next generation," said Kushner President Laurent Morali.

The venture aims to get ahead of the changes buffeting the retail industry, which include consumers increasingly opting for online shopping and reducing the time they spend in malls.

The 1.5-million-square-foot Monmouth Mall hasn't been hit with large vacancies like other malls across the U.S. But retail and real-estate analysts and brokers say even owners of top-performing shopping centers in strong locations are aggressively redeveloping their properties.

"The trophy landlords, though they don't have to do this today, they are moving today because they already have market share and dominance, and they aren't going to give it

up," said Garrick Brown, national retail research director for Cushman & Wakefield.

Mall and shopping center owners have gravitated toward the open-air format with fine dining and entertainment such as laser tag and Cirque du Soleil programs. The rationale: more time spent at these centers translates into more dollars spent, said Adelaide Polisinelli, a principal at real estate services firm Eastern Consolidated.

Mall developers and owners have brought in other components such as housing and offices as a way to ensure steady foot traffic and stable revenue, said Greg Portell, the lead partner in the retail practice of A.T. Kearney, a global strategy and management consulting firm.

Kushner's plans for Monmouth Mall go back at least to 2015, when it bought out the stake of Vornado Realty Trust, its former joint-venture partner in the mall, for \$38 million. The Eatontown borough council approved zoning changes to the site that include as many as 700 residential units, medical offices, indoor and outdoor dining, a food hall and entertainment uses such as a multipurpose plaza for performances, indoor sports facilities and a bowling alley.

Eatontown officials are eager to ensure the borough's largest taxpayer remains viable, said Mayor Dennis J. Connelly. Its total annual tax bill, which includes county, borough, school and library taxes, was about \$5.1 million in 2016. Almost \$1.9 million went to the borough.

The mall's largest draw has been its movie theater, he said. During the latest holiday sea-



KENNETH PARK ARCHITECTS

A rendering of the plans for Monmouth Mall in Eatontown, N.J., which Kushner Cos. and Rouse Properties are redeveloping into a shopping village with entertainment space and residential units. Below, the exterior of Monmouth Mall.



son, he said he noticed the mall didn't draw the sort of crowds and traffic it had in the past.

"Our town relies on the Monmouth Mall to survive, and we have for years," Mr. Connelly said. "We need it to be successful today and in the future."

The mall also caught the eye of Rouse because of the

similarity to one of its properties on the other side of the country that is also undergoing a transformation, the company's chief executive, Brian Harper, said. The Shoppes at Carlsbad in Southern California boasts a dense and affluent surrounding population and a location just a few miles from the ocean, Mr. Harper said.

"You have a lot of wealthy consumers living there year round and no critical-mass center anywhere close," Mr. Harper said, referring to the Monmouth Mall site. "I knew it would be a home run if we created the biggest and best mousetrap in this area."

Rouse, which owns 36 retail centers in the U.S., is redevel-

oping the Carlsbad property, adding more entertainment retailers such as a multiplex cinema that is now open and a streetscape of upscale dining venues. The second phase will include luxury housing, Mr. Harper said.

The Heights at Monmouth, which is about 50 miles south of Manhattan on the Jersey Shore, will include an indoor marketplace, with restaurants, shops, themed food vendors and wine bars. The site will feature an undulating stairway and curving glass monument at the entryway and walking paths and terraces with water features—all designed to create a gathering spot.

Kushner and Rouse are still negotiating with tenants to determine which will remain in the property. The mall's tenants now include Macy's and J.C. Penney.

The redeveloped property is expected to open in 2020.

"We need to make the mall evolve to the next iteration," Mr. Morali said. "Then we will be able to truly benefit from the existing community and its demographics and its shopping power."

## PROPERTY WATCH

### WESTCHESTER COUNTY Insurance, Health Firms Fuel Leasing Activity

Office leasing in Westchester County was strong in the first quarter, fueled by insurance and health-care leases, according to a report from real estate services firm JLL.

Tenants closed on 453,678 square feet of leases during the quarter, according to the report. The steady deal activity contributed to a positive net absorption of 431,543 square feet of space, a stark difference from the 195,864 square feet of negative

net absorption in the fourth quarter of last year. Net absorption is the amount of available space at the beginning of the quarter minus the available space at the end of the period.

Westchester County's overall vacancy rate fell to 21.7%, a 0.7 percentage point decrease from the same period last year, according to JLL data. Average asking rents fell to \$26.91 a square foot, a 0.4% drop from the same period last year.

Insurance and health-care firms led the way with a number of deals in the White Plains central business district, the report said. Easy access to mass

transit is attractive to companies, said Chris Callahan, managing director and Westchester County market lead for JLL.

Continued conversion of lower-tier office buildings for other purposes including medical, retail and multifamily housing also has helped improve office market statistics, Mr. Callahan said. Medical, life science and research space command higher rents than those of suburban office properties and likely will be repurposed for those industries, he noted.

—Keiko Morris

### NEW JERSEY

#### Effort Aims to Boost Affordable Housing

A real-estate industry veteran is teaming up with business-school professors at New Jersey's Montclair State University to create an affordable housing training program.

Philip Cali Jr., who comes from a family of builders and developers, has formed a nonprofit called Pristine Sustainable Affordable Homes Inc. to work with commercial real estate students from the Feliciano School of Business and New Jersey municipalities to develop housing for low- and moderate-income residents, according to the nonprofit's representatives.

"Our local communities face a crisis in providing affordable housing to area residents," said Mr. Cali in a written statement.

In collaboration with Pristine Homes, the university will offer a program that includes a minimum 18-month paid internship. Students will participate in assignments such as financial analysis and project and business management. The nonprofit will serve as the developer, said Anthony Palazzo, a clinical specialist at the business school.

The goal: Develop 1,000 units for low- and moderate-income residents by 2020, committing 10% of the units to veterans and people with special needs.

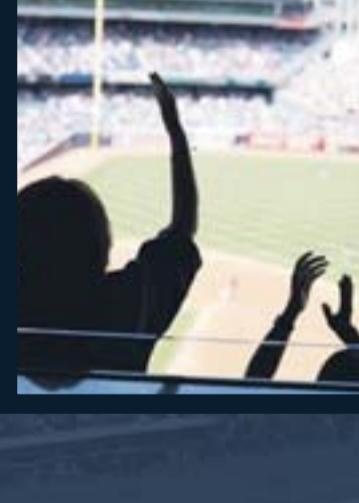
Mr. Cali grew up in the real-estate industry. Decades ago, he joined his late uncles, Angelo Cali and John J. Cali, and his cousins in building the family business into a national real-estate company that eventually became Mack-Cali Realty Corp.

—Keiko Morris

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# LIFE & ARTS



BY KELLY CROW

**GROWING CONFIDENCE** in the recovering art market this spring has tempted owners to dust off their trophy works—and put them on the block.

Starting Monday in New York, the world's chief auction houses will roll out five days of sales of impressionist, modern and contemporary art aimed at bringing in a collective \$1.3 billion or more. That's up from their \$1.2 billion from sales during a market slump last May but shy of the \$2.1 billion the houses got two years ago from auctions when the market began to peak.

"The market isn't frothy, but it's strong and sensible," said Robert Manley, Phillips' worldwide co-head of 20th century and contemporary art, a mood he said enticed art foundations and artists' estates—the art-world equivalent of institutional investors—to put pieces up for sale and try to ride the latest wave. These sellers include the Roy Lichtenstein Foundation and the Jean-Michel Basquiat estate.

Heavyweight asking prices are also creeping back. Christie's contemporary sale on Wednesday evening contains seven works with pricetags of \$20 million or more; only three works crossed that bar at its similar sale last May. Christie's plans to ask at least \$50 million for Francis Bacon's first portrait of his lover, 1962's "Three Studies for a Portrait of George Dyer," and \$35 million for Cy Twombly's 1962 homage to mytho-

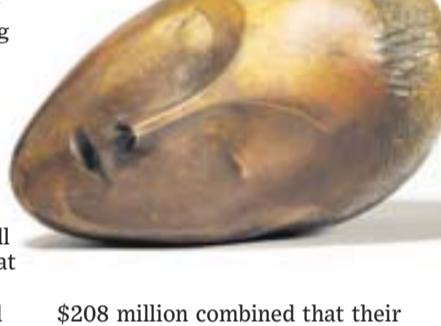
## ART AND AUCTIONS A Steady Market Brings Out Trophies

Works that haven't changed hands in decades go on the block this week at auctions in New York

logical bestiality, "Leda and the Swan." On Thursday, Phillips will ask at least \$25 million for Peter Doig's "Rosedale," a 1991 painting of a Toronto manor house in the snow. Mr. Doig's current record, set two years ago, is \$25.9 million for a 1990 painting of a white canoe, "Swamped."

Sotheby's plans seek at least \$60 million for Basquiat's untitled 1982 painting of a black skull surrounded by sky-blue patches at its Thursday sale. Sotheby's said it's so sure that the Basquiat will break the artist's \$57.3 million auction record—set last May by an untitled image of a devil—that the house promised to give the skull's seller, Lise Spiegel Wilks, an undisclosed sum worth at least as much as the record if the skull sells for less.

All three houses built in plenty of financial arrangements to offset their risk in putting these behemoths on the market. Sotheby's told sellers of 39 works worth



\$208 million combined that their pieces would sell no matter what, either to the house or to 19 outside investors who have pledged to buy works if no one else steps up in the sales. That means that Sotheby's has essentially presold roughly 43% of the minimum value of its spring series ahead of time. Christie's made similar guarantees for \$302 million worth of art, or roughly 45% of the minimum possible value of its sales this week.

"Some sellers wanted a little

extra insurance," said Simon Shaw, co-head of Sotheby's worldwide impressionist and modern art department.

Other trends to track:

### SELFIE ART

In recent seasons, collectors paid premiums for abstract art with universal wall power, like Mark Rothko or Clyfford Still. But this

week, figurative art could hold sway. Nude scenes and self-portraits are "all over these sales," said Sara Friedlander, head of Christie's post-war and contemporary art department in New York. Expect feverish bidding for Philip Guston's 1979 "Painter at Night," which Christie's estimates will sell Wednesday for at least \$8 million, and Rudolf Stingel's 15-foot-tall self-portrait from 2006, "Untitled (After Sam)," which Christie's aims to sell for at least \$10 million in the same sale. On Tuesday, Sotheby's will ask \$30

million-plus for an early Egon Schiele nude from 1909, "Danaë."

### FRESH TO MARKET

The death of a respected collector can be a lucky break for auctioneers because estate material that's been tucked away for decades in someone's home can become a bidding goldmine. This season, a host of estates head to market, which is why 60% of the pieces in Christie's Monday sale of impressionist and modern art haven't been to auction in at least a decade. Among them, Constantin Brancusi's bronze "Sleeping Head," which is estimated to sell for at least \$25 million. Sotheby's has countered with its own auction first-timers like Kazimir Malevich's 1915 "Suprematist Composition with Plane in Projection," which Mr. Shaw calls "fantastically pure." He estimates it will sell for at least \$12 million Tuesday. There's also Edgar Degas's 1860 "Young Spartan Girls Provoking the Boys," which has been in the seller's family for 98 years. Estimate: \$4 million-plus.

### TEST OF TIME

Several artists are also undergoing major tests of their price levels and global appeal this week, including wrinkly abstract-painter Simon Hantaï and feathery abstract-painter Mark Grotjahn. Christie's is also betting on a market boost for Francis Picabia, the French avant-garde painter. On Monday, Christie's will ask least \$700,000 for Picabia's neoclassical collage from 1929, "Xanthe." Two days later, the house will ask \$1.5 million or more for the artist's 1941-42 double portrait "Adam and Eve."



Clockwise from top, Francis Bacon's 'Three Studies for a Portrait of George Dyer'; Constantin Brancusi's 'Sleeping Head'; Egon Schiele's 'Danaë'; Kazimir Malevich's 'Suprematist Composition with Plane in Projection' and Jean-Michel Basquiat's untitled painting from 1982.

FROM TOP: CHRISTIE'S IMAGES LTD. 2017 (2); SOTHEBY'S (3)

## HEALTH

# THE MEDICAL RIDDLE OF STEVE KERR'S BACK

BY RACHEL BACHMAN AND BEN COHEN

**STEVE KERR** was a fit 49-year-old former professional athlete who regularly golfed and surfed. Then his back started bothering him.

The Golden State Warriors had recently won the 2015 NBA championship when their coach found himself in excruciating pain. It became so bad that Mr. Kerr struggled to walk. He decided to undergo surgery to repair a ruptured disk. Now he regrets it.

Mr. Kerr's procedure, the most routine surgery for back patients, led to a rare complication: a spinal fluid leak that continues to affect him nearly two years later and has sidelined him during the NBA playoffs. It remains possible the coach of the best team in basketball won't return this season.

"If you have a back problem, stay away from surgery," Mr. Kerr, now 51, said to reporters in April. "I can say that from the bottom of my heart. Rehab, rehab, rehab."

His comments warning against surgery quickly became the talk of operating rooms, where the procedure has helped

countless patients. "It's like a knife to my heart," said Hyun Bae, a professor of orthopedic surgery at Cedars-Sinai Medical Center in Los Angeles. "When you look at the data, it clearly shows the patients who had surgery had a faster and more reliable recovery."

As Mr. Kerr struggles to recover, millions of others face the same question he did: When is the right time for elective back surgery?

Nearly 30% of all U.S. adults each year suffer from back pain, according to data from the Centers for Disease Control and Prevention. Mr. Kerr's case has puzzled the medical community. Doctors say his initial surgery—microdiscectomy, in which herniated-disk material that's pressing on a nerve or the spinal cord is removed—is the safest and most effective operative procedure for patients with back problems. Research has shown the procedure is more successful than nonsurgical treatment for patients whose pain has persisted for several months.

There may soon be a better way to prescribe treatments. A predictive calculator for outcomes based on an array of patient

Please see BACK page A17



Golden State coach Steve Kerr is missing the NBA playoffs due to symptoms from a complication of his 2015 back surgery. Many with back pain face the question of whether to get surgery.

EZRA SHAW/GETTY IMAGES

## LIFE & ARTS



WHAT'S YOUR WORKOUT? | By Jacqui Devaney

# She Can Skateboard for Hours

Anna May Dutton, 35 years old, carves out time to shred in Jackson, Wyo., on a board she built herself

**ANNA MAY DUTTON** started skateboarding to channel her adolescent energy. She's still shredding two decades later.

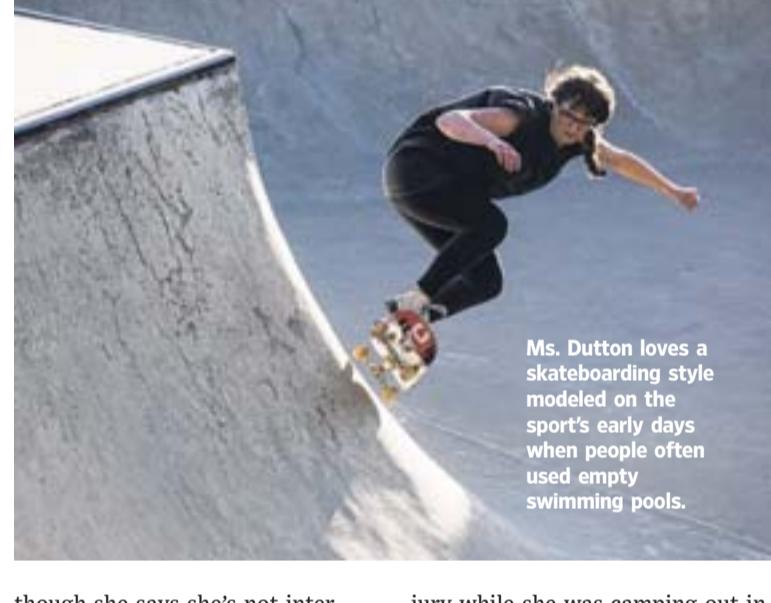
In 1993, when Ms. Dutton was 12 and living in a Seattle suburb, she got her first skateboard—"access to the rest of the world," she says. "I was a really hyper kid and a risk-taker."

When Ms. Dutton, now a 35-year-old floral designer based in Jackson, Wyo., started skating, she was often the only girl at skate parks. Now, being a female skater is considered normal.

"You go to the skate park, and whether you know anyone or not, by the end of it you've got someone to go get a beer with after," she says.

As she immersed herself in the skate community, Ms. Dutton's style caught the attention of a few major skate brands. In 2014, she became the first female sponsored by SHUT Skateboards, one of New York's first skateboard companies, and has picked up sponsorships with Rockstar Bearings, HUF shoes and Jivaro Wheels.

Skateboarding has come with victories and setbacks for Ms. Dutton. In 2014, she won the House of Vans all-women's competition,



Ms. Dutton loves a skating style modeled on the sport's early days when people often used empty swimming pools.

though she says she's not interested in competitions. "I just really wanted to skate that bowl...but yeah, I got first place," she says.

She has suffered injuries. When she broke the fifth metacarpal in her hand, a friend fashioned a makeshift splint out of a skateboarding magazine, a shoelace and Ms. Dutton's scarf. She got the in-

jury while she was camping out in Puerto Rico with her friends, and decided to continue instead of seeing a doctor right away.

To those who debate if skateboarding is a sport or an art: "I'd say it's more in the vein of martial arts than a sport," she says. "There's a more personal, and sometimes even spiritual, experience."

### The Workout

Ms. Dutton typically skates between two and four hours during each session. She has also used her skateboard to deliver flowers.

Although skateboarding is an individual activity, it isn't a solitary one for Ms. Dutton. Vert skating, or pool riding, is the style of skating she prefers. Vert style is modeled on the earliest days of skateboarding, which often took place in empty backyard swimming pools.

"I always love super fast carve grinds," she says, explaining the move as popping the board onto a curve on the lip of the bowl and using momentum to glide across the edge. One of her favorite tricks is the frontside disaster, a move where she rotates 180 degrees with the board and lands on the lip of the bowl, teetering between each set of wheels, and eventually drops back into the bowl. She is always evolving her style by watching other skaters work on new moves.

During the summer, Ms. Dutton skates every day. She prefers to ride her bike to the skate park with her board strapped to her back. "If you bike to the skate park, your legs are warm," she says. In the winter months, she

skates at least once a week at an indoor skate park and supplements her workout with snowboarding.

### The Diet

"Nuts, berries and then a burrito!" she says. Ms. Dutton also trades out the burrito for a salad or a pizza, depending on how heavy her skating was that day. One of her favorite meals is the crispy duck salad at a Jackson restaurant called Local.

### The Cost & Gear

Ms. Dutton builds her skateboards herself. She uses a SHUT skateboard deck, typically preferring wider boards, around 8.5 inches across. She outfitts the rest with Rockstar bearings and Jivaro wheels. In all, her board costs around \$150, but with her sponsors she pays around \$30 out of her own pocket. Ms. Dutton wears \$65 high-top HUF sneakers when she's riding. The public skate park she goes to is free.

### The Playlist

"On the dance floor, bring me some R&B, but at the skate park metal and punk definitely get you going," says Ms. Dutton, citing bands like Metallica, Slayer and Dead Moon as her must-haves.

## TELEVISION

# A TIMELY SOCIAL SATIRE FROM EVELYN WAUGH COMES TO TV

BY TOBIAS GREY

**POST-BREXIT** Britain is on the Waugh path.

The first television adaptation of Evelyn Waugh's satirical debut novel "Decline and Fall" has been hailed by British critics for how its depiction of a deeply divided country resonates today.

The three-part BBC series begins airing May 15 in the U.S. on subscription streaming service Acorn TV. "So much of the book feels bang-up-to-date," says British screenwriter James Wood, who adapted Waugh's 1928 novel. "As far as Waugh was concerned, much of the British establishment was mad and narcissistic and out of control."

When the series ran in the U.K. in March and April, the premiere episode drew 4.49 million viewers. The high drama and humor in "Decline and Fall" distinguish the series from other British shows set in the early 20th century, such as "Downton Abbey" and "Mr. Selfridge."

"Decline and Fall" features Eva Longoria, a star of "Desperate Housewives," in her first role in a British TV period piece. She plays a rich South American socialite with shady business dealings. "Poirot" star David Suchet takes a rare comic turn, playing the obsequious headmaster of a rundown Welsh boarding school for boys.



Jack Whitehall and Eva Longoria star in the TV adaptation of 'Decline and Fall.'

The show's naive hero, Paul Pennyfeather, played by rising British comedian Jack Whitehall, ends up teaching at the school after being expelled from Oxford University. Paul has to leave Oxford after falling victim to a prank by a group of debauched undergraduates who are members of the Bollinger Club. Waugh allegedly based the society on Oxford's elite Bullingdon Club, an all-male students' dining group that still exists. Former Bullingdon members include conservative politicians such as David Cameron, Boris Johnson and George Osborne.

TV producers were reluctant to adapt "Decline and Fall" in part because of the racism of many characters in the novel, says Mr. Wood. While working on "Decline and Fall," Mr. Wood recalls a film-director friend advising him to cut a scene where an Af-

rican-American jazz musician named Chokey accompanies Ms. Longoria's character to a school sports day and is ridiculed by the attending gentry. Mr. Wood decided to keep the scene but not some of Waugh's more scabrous dialogue.

He added a personal touch to the first episode by having a pig's head tossed out a window of Scone College, where the Bollinger Club is having a party. The scene is Mr. Wood's nod to the so-called Piggate scandal of 2015, when an unauthorized biography of David Cameron alleged that the former prime minister, while a student, put "a private part of his anatomy" into a dead pig's mouth as part of an initiation ceremony. In response to the allegation, Mr. Cameron told reporters in 2015 that his representatives had issued "a very specific denial," to which he had nothing to add.

Mr. Wood also wrote a scene for the second episode where a journalist disguised as a sheikh infiltrates a dinner party to eavesdrop on political gossip. This echoes the working methods of real-life undercover journalist Mazher Mahmood, who unearthed numerous scoops for British tabloids before being sentenced last year to 15 months in prison after being found guilty of conspiring to pervert the course of justice.

"There are a few inside jokes," Mr. Wood says. "But not that many were needed because so much of the book feels like it was written for today."

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## LIFE & ARTS

### ART REVIEW

# Colored by Their Surroundings

BY KAREN WILKIN

New Windsor, N.Y.

**FIFTY YEARS AGO,** Ralph E. Ogden, the founder of the Storm King Art Center, traveled to the Adirondack home and studio of the sculptor David Smith, who had died in an automobile accident, age 59, in 1965. Ogden selected 13 of Smith's idiosyncratic steel constructions, the most daring and ambitious works to enter Ogden's collection, at the time. This bold acquisition set the course of Storm King as we know it today: a vast outdoor installation of large-scale modern and contemporary sculptures, including site-specific installations and earthworks, framed by the Hudson Highlands.

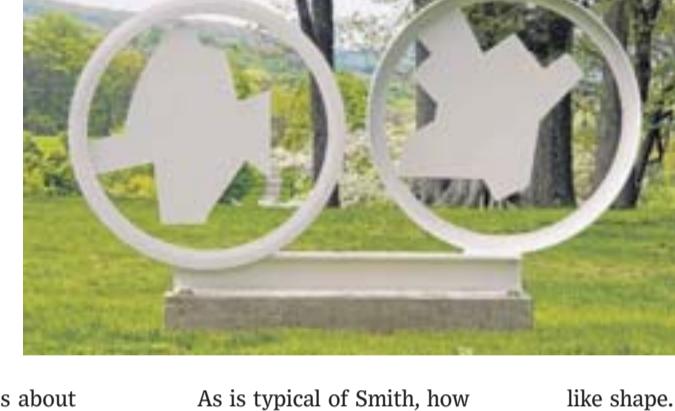
Smith's work has remained special to Storm King, where several exhibitions devoted to him have been organized, including a three-year series evoking the installation of his work in the fields surrounding his home. Now "David Smith: The White Sculptures" celebrates his use of the color white—the first show to focus on the subject. The selections, installed indoors and out, range from tiny coral and wire figurative constructions made in 1932 to six of the eight assertive, large white-painted steel sculptures he made between 1961 and 1963. A few of Smith's works on paper and large drawings of nudes, along with photographs of the exhibited sculptures, some made by Smith himself, provide context.

Smith habitually painted his steel constructions to protect their surfaces, boasting that they had more layers of auto enamel—his usual choice—than most luxury cars. But he was a painter before he was a sculptor and never abandoned working in two dimensions. He also painted his constructions because he wished to fuse the two disciplines into colored structures that would, in his words, "beat either one." He preferred, he said, "kind of raw colors," as we can



see from a large, never-before-exhibited 1961 piece, installed indoors—a tense, vaguely anthropomorphic abstraction that pits a greenish-cream tank-end "head" against a spiky, roughly brushed blue-gray "body." The sculpture's pristine paint makes the surfaces of some of the other works look rather shabby.

But the exhibition is about white-painted works such as three sculptures from the "Primo Piano" series (all 1962), which have not been seen together for decades. Here they are placed outdoors, in changing light, against wooded hills, just as Smith contemplated them in his fields. All are confrontational compositions in which geometric shapes—discs, rectangles, a teardrop—hover above open "bases" of flat, horizontal bars. A few elements reach emphatically into space—an angled square, a concave rectangle—making the subtle, more soft-spoken overlapping of rectangle against I-beam or circle against bar seem overwhelmingly important.



As is typical of Smith, how things touch and what is in front of what—the evidence of his hand, placing his industrial materials—become intensely dramatic. Seen outdoors, against a background of spring-green leaves and white dogwoods, the three massive sculptures become delicate, almost disembodied. We see through the framing bars, concentrate on the spaces between elements and the voids in the centers of some discs. That the sculptures are white—only "Primo Piano II" has a single punctuating dark-bronze element—cancels out any suggestion of silhouette. The elegant, planar constructions become interchangeable with the landscape behind

Above, from left: 'Primo Piano I' (1962), 'Circle and Box (aka Circle and Ray)' (1963), 'Untitled' (1963), 'Primo Piano II' (1962) and 'Primo Piano III' (1962); left: '2 Circles 2 Crows' (1963)

them, framing trees and hills, geometric against inchoate nature, but no more or less important. This uncanny quality is intensified in "2 Circles 2 Crows" (1963) nearby: a pair of ample, slender rings placed side by side, each containing, off-center, a flat bird-

like shape. Again, our expectation of silhouetting is canceled by the whiteness of the sculpture.

Whether Smith intended to use color on the sculptures left in white paint at his death has been acrimoniously debated. The critic Clement Greenberg, a close friend and supporter since the 1940s, a valued studio visitor, and a trustee of Smith's estate during his daughters' minority, authorized stripping what he believed was a base coat. Smith's intentions were unknown, Greenberg argued, but the artist was clearly satisfied with the unpainted forms. Rosalind Krauss, who had stated in her catalog of the artist's work published after his death that Smith in-

tended the "Primo Piano" pieces to be polychromed, then launched a major campaign against the stripping. Smith's daughters came of age, dismissed the trustees, and arranged for the restoration of the stripped paint.

Seeing sculptures such as the "Primo Piano" series or "2 Circles 2 Crows" in shifting daylight can convince us that Smith intended them to remain white. In his last years, he worked in stainless steel, delighting in the way the burnished surfaces took on the color of their surroundings. White-painted steel is almost as light-responsive as stainless, suggesting that Smith considered the sculptures to be complete. There's ample time to test my theory. "David Smith: The White Sculptures" remains on view well into the fall, so we'll be able to see how these works respond to changing light, weather, and foliage color. We could learn a lot.

#### David Smith: The White Sculptures

Storm King Art Center, through Nov. 12

Ms. Wilkin is an independent curator and critic.

## BACK

*Continued from page A15*  
data is in the testing stages, according to leaders of the NeuroPoint Alliance, a non-profit data-gathering association created by the American Association of Neurological Surgeons.

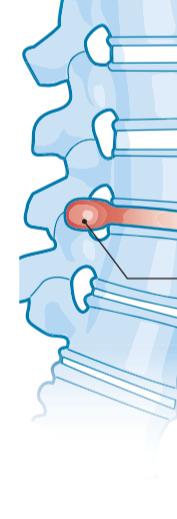
NeuroPoint's goal is to bring the calculator into wider use to better help patients decide whether and when to have surgery.

Back pain is among the most common—and miserable—types of pain. It can make the most basic tasks uncomfortable and often has no clear cause. Back surgeries typically are performed in response to chronic pain, defined as persisting for more than 12 weeks, after conservative measures have failed. Subacute pain lasting fewer than 12 weeks is best treated with natural and psychological therapies, according to new guidelines.

Most ruptured disks heal on their own eventually, but meanwhile can cause debilitating pain in the legs lasting months or years. Many doctors recommend surgery to end the pain.

The Spine Patient Outcomes Research Trial (SPORT) study compared surgical and nonsurgical treatments for disk herniation among roughly 500 patients across 11 states and tracked their results through a randomized trial. It sorted good candidates for back surgery into two groups: one that was assigned operative treatment and one that rehabbed with physical therapy and other methods.

Patients who underwent microdiscectomy got better faster. The research also found that rehabbing first didn't close the window for successful surgery. Almost half of the patients assigned to the nonoperative group still opted for surgery within eight years. "It made everybody step back and try everything before routinely offering discectomy," said Heidi Prather, a professor of physical medicine and rehabilitation at the Washington University School of



#### Anatomy of a Herniated Disk

A deteriorated lower-back spinal disk can rupture, causing disk material to spill out, causing hip or leg pain, numbness or weakness.

Normal disk

Herniated disk

In a microdisectomy operation, a surgeon removes the dislodged material.

Sources: The Spine Hospital at the Neurological Institute of New York; Anthony Asher, neurosurgeon, Carolina Neurosurgery & Spine Associates, Charlotte, N.C.

THE WALL STREET JOURNAL.

#### Medicine in St. Louis.

Mr. Kerr seemed like an excellent candidate for surgery, and he has said in interviews that several of his friends had benefited immediately from the same, common procedure. (He couldn't be reached for comment.) But his own back surgery, by a doctor he hasn't named publicly, resulted in a different kind of pain. A spinal fluid leak from a dural tear during the procedure left him with lingering complications like headaches and other discomfort that have required secondary operations and upended his life.

Less than 5% of microdiscectomies result in spinal fluid leaks. Even those complications can be remedied quickly. Patients like Mr. Kerr who suffer from complications for years after surgery are highly unusual.

"I don't want to say it's one in a million, but you don't really hear about this," said Wellington Hsu, a Northwestern University professor of orthopedic surgery.

Anthony Asher, a neurosurgeon with Carolina Neurosurgery & Spine Associates in Charlotte, N.C., is the director of the Quality Outcomes Database maintained by the NeuroPoint Alliance. The six-year-old database contains detailed information from about 40,000 spine-surgery patients and how they have fared as long as two years after the procedure.

Earlier this year, doctors

began using the database to calculate predicted outcomes for elective spine surgery. The calculator uses more than 30 patient- and surgery-specific variables, ranging from a patient's age and occupation to mental-health status. The calculator then predicts the likelihood of a patient's desired outcome—being able to return to manual-labor work, for instance—versus the likelihood of negative outcomes such as long-term disability.

So far, 27 patients have used the calculator, which is already yielding surprises. Patients taking significant doses of opioid drugs on a continuing basis, for example, are less likely to achieve a meaningful outcome from surgery than patients taking lower doses or no opioids, says Clinton Devin, associate professor of orthopedic surgery and neurosurgery at the Vanderbilt Spine Center in Nashville, Tenn., and co-vice director of the database.

"The thought was, 'Well, you take care of their pain, these people are able to get off opioids,'" he says. "But that isn't the case. You're better off weaning them off opioids before surgery."

Dr. Asher recalled one patient the calculator predicted had a slim chance of improvement through surgery and a significant chance of a worse outcome. "The patient was much more willing to accept continued conservative therapy," Dr. Asher says.



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## OPINION

# Robots Will Save the Economy

By Bret Swanson  
And Michael Mandel

Some anxious forecasters project that robotics, automation and artificial intelligence will soon devastate the job market. Yet others predict a productivity fizz. The Congressional Budget Office, for instance, expects labor productivity to grow at the snail's pace of 1.3% a year over the next decade, well below the historical average.

There's reason to reject both of these dystopian scenarios. Innovation isn't a zero-sum game. The problem for most workers isn't too much technology but too little. What America needs is more computers, mobile broadband, cloud services, software tools, sensor networks, 3-D printing, augmented reality, artificial intelligence and, yes, robots.

For the sake of explanation, let's separate the economy into two categories. In digital industries—technology, communications, media, software, finance and professional services—productivity grew 2.7% annually over the past 15 years, according to the findings of our report, "The Coming Productivity Boom," released in March. The slowdown is concentrated in physical industries—health care, transportation, education, manufacturing, retail—where productivity grew a mere 0.7% annually over the same period.

Digital industries have also experienced stronger job growth. Since the peak of the

last business cycle in December 2007, hours worked in the digital category rose 9.6%, compared with 5.6% on the physical side. If health care is excluded, hours worked in physical jobs rose only 3%.

What is holding the physical industries back? It is no coincidence that they are heavily regulated, making them expensive to operate in and resistant to experimentation. The digital economy, on the other hand, has enjoyed a relatively free hand to invest and innovate, delivering spectacular and inexpensive products and services all over the world.

### The problem today is too little technology. Physical industries haven't kept up.

But more important, partially due to regulation, physical industries have not deployed information technology to the same extent that digital industries have. The physical category makes up 75% of private-sector employment and 70% of output—but only 30% of all IT investments. This is also because it's taken longer to figure out how to apply info-tech to physical processes like transportation and mining, compared with inherently information-based sectors like finance and media.

Information technology not only makes existing processes more efficient, it empowers

entirely new business models, products and platforms. The physical category's "information gap" is a drag on growth and helps explain the productivity paradox: Many workers seem not to have benefited from apparent rapid technological advance.

Fortunately, many physical industries are poised for dramatic transformations into digital industries—if we let them.

The shale oil and gas boom is an IT story, since 3-D modeling of underground formations enables horizontal drilling and hydraulic fracturing in the right places. This shift to digitized mining has not destroyed jobs. Rather, hours worked in oil and gas rose 17% since 2007.

Or consider the digitization of retail and distribution. E-commerce has added 397,000 jobs since December 2007, which more than makes up for the 76,000 full-time-equivalent jobs lost at bricks-and-mortar stores.

What about the automation of bus and truck driving, the new employment scare story? Because robo-trucks won't have to pull over for naps or bathroom breaks, they'll be able to put on many more miles. Thus, they will require many more highly trained mechanics, who on average earn substantially more than truck drivers.

Manufacturing is another case where job losses more often have resulted from too little technology. Outside of computer and electronics manufacturing, productivity has mostly stagnated, and the most

unproductive factories are the most vulnerable to low-wage foreign competition.

Perhaps no industry needs a productivity revolution more than health care. But one appears to be on the way. Soon sensors on and in our bodies may help patients communicate with doctors and nurses, reduce office visits, and flood databases with information needed to better diagnose, prevent, and cure disease. With computational bioscience, scientists will design new therapies in the cloud, tailoring them for individuals and slashing development costs. Robots will assist in more surgeries, body imaging will get better and cheaper, and 3-D printed pills and artificial organs will be added to the doctor's tool kit.

Americans would benefit significantly from unlocking the physical economy to leverage technology and encourage breakthrough business models. If U.S. productivity growth in the physical sector were to return merely to its rate of the late-1990s, U.S. output would be \$2.7 trillion larger in 2031 (in 2016 dollars). Closing the information gap should thus be job one.

*Mr. Swanson is president of Entropy Economics LLC, a visiting fellow at the American Enterprise Institute, and a fellow at the U.S. Chamber of Commerce Foundation. Mr. Mandel is chief economic strategist at the Progressive Policy Institute and a senior fellow at the Mack Institute for Innovation Management at the Wharton School.*

make his FARC deal law. Then he enshrined it above the constitution, even though the public rejected it in a national plebiscite. He also got his country's Congress, which he controls, to give him rule-by-decree powers during its implementation.

Colombia is now a place where the president's political enemies, or their relatives, often wind up in jail. Former President Álvaro Uribe's brother Santiago has been behind bars since early 2016, though he has never been convicted of any crime.

Coca production has soared under Mr. Santos. So he may think he has the U.S. over a barrel: either hand over the foreign aid or watch narco-trafficking spin further out of control. Mr. Trump might want to inform Mr. Santos that while extortion runs wild in his Colombia, it is considered bad form in the U.S.

The dilemma highlights the foolishness of the U.S. war on drugs, which seeks to defoliate the South American continent to curtail narcotics demand in the U.S. The plan has failed and emboldened Andean criminal organizations, which pocket the profits from a lucrative cocaine business in the U.S., gain power in rural areas, and destabilize democracies.

Under Mr. Uribe Colombia regained wide areas of the country that had been lost to organized crime—primarily the FARC working with other criminal groups—and re-established the presence of the state

throughout the country. When Mr. Santos took office the FARC had been defeated.

Mr. Santos told me in 2012 that the FARC initiated the peace talks. But according to his brother Enrique, long a friend to Colombia's terrorist left, that is not true. As I explained in this space last year, in his 2014 first-person book,

Mr. Rubio is a champion of freedom in the region. If he is serious, Mr. Santos won't get a dime, because the centerpiece of the Havana agreement is "not one day in jail" for FARC.

Money is fungible so there is no way to keep U.S. aid from going to, for example, special courts for FARC confessions, which Mr. Rubio says he opposes.

Mr. Rubio insists the FARC deal is an internal matter and shouldn't weigh on U.S. funding decisions to help the Colombian military. But Colombia is no longer the ally it was under Mr. Uribe. Mr. Santos' friends are Cuba and Venezuela. He has not been helpful in pressuring Caracas to return to democracy. Since when does Washington ignore an antidemocratic power grab when assessing whether a country is worthy of foreign aid?

*Write to O'Grady@wsj.com.*

**President Santos is a better friend to Cuba and Venezuela than to the U.S.**

&lt;/div

## OPINION

### REVIEW & OUTLOOK

## Obstruction of the Executive

Progressives have been lamenting the erosion of "democratic norms" in the Trump era, but they'd have more credibility if they didn't trample constitutional norms in their own rush to run President Trump out of town.

Start with Democratic Senator Mark Warner's assertion on Fox News Sunday that Attorney General Jeff Sessions should play no role in vetting the next director of the Federal Bureau of Investigation.

"I think it's inappropriate that the attorney general, who was supposed to recuse himself for anything dealing with the Russian investigation, and clearly the Russian investigation is tied into who the next FBI director is going to be because the President fired [FBI director James] Comey because of his ties to the Russian investigation," Mr. Warner said Sunday.

Fox's Chris Wallace: "You don't believe he [Mr. Sessions] could be part of this?"

Senator Warner: "I don't believe he should be part of this review process if he can have a true recusal."

Mr. Wallace didn't follow-up, so we will. Mr. Sessions has recused himself from the Russia probe, but the FBI director reports to the Attorney General on hundreds of other matters beyond that one investigation. The AG has not recused himself from those matters. Mr. Warner seems to be saying that Mr. Sessions's narrow recusal disqualifies him from supervising the FBI director at all.

Yet Mr. Comey's usurpation of the power of the AG and Deputy AG last year in the Hillary Clinton email probe is one reason Mr. Comey deserved to be fired. The FBI is part of the Justice Department, not an independent actor who reports on his own to Congress and the public. Mr. Warner is essentially saying that the executive branch must disable the normal rules of constitutional accountability at the Justice Department because of the Russia probe. (Richard Epstein and Ken Starr ably elaborate on this point nearby.)

The same goes for the argument oft-heard

### Democrats peddle an absurd standard of FBI accountability.

this weekend that President Trump obstructed justice by dismissing Mr. Comey. Harvard professor Laurence Tribe became the first prominent progressive to say that Mr. Trump should be impeached for this act, and he won't be the last. Mr. Tribe is offended that Mr. Trump said in an interview that he didn't like the Russia probe and that

was on his mind when he fired Mr. Comey.

But this is an absurd standard. Presidents often disagree with decisions their deputies make, and sometimes they fire them for it. Are we supposed to believe that if a President opposes something an FBI director is doing, then a President can't fire him?

Mr. Tribe is establishing a standard by which an FBI director—or even an Attorney General—could never be fired. All a director would have to do is begin a single investigation that might affect the President, and then he would be liberated from supervision. This would de facto strip the President of his constitutional authority to supervise the executive branch.

As for obstruction of justice, this is defined under federal law as a specific act that interferes with a pending judicial proceeding. A President offering an opinion, however ill-advised, on a counterintelligence investigation is not obstruction. Neither are stupid tweets.

Genuine acts of obstruction include destroying evidence, intimidating witnesses, lying to the FBI or blocking investigators from doing their jobs. None of that has been alleged here, and Acting FBI director Andrew McCabe has said his agents are moving full-speed ahead with ample resources to do the job.

If Democrats believe evidence exists to impeach the President, the proper venue for offering it is the House Judiciary Committee. No doubt that's what they'll do if they retake the majority in 2018. Meantime, they shouldn't be allowed to deform the institutions of government to serve their partisan purposes. If they want to impeach Mr. Trump, they will have to follow American democratic norms.

## The Methane Rule Canary

Republicans in Congress have repealed 13 Obama Administration regulations thanks to a potent tool known as the Congressional Review Act. But last week the Senate failed to kill a costly energy rule, and the defeat is a warning about the Trump Administration's ebbing political capital.

The Bureau of Land Management's \$1.8 billion rule is ostensibly about reducing methane on federal lands, not that the government needed to intervene: Methane emissions from venting and flaring have dropped 77% since 2011, while oil and gas exploration has boomed. BLM has no legal authority to issue the rule, one reason the rejection passed the House with relative ease.

But a procedural motion on Wednesday failed on the Senate floor, where the bill would have never arrived unless GOP leaders thought they had the votes. Three Republicans voted no: Susan Collins of Maine, Lindsey Graham of South Carolina and John McCain of Arizona.

Ms. Collins is a moderate from a swing state, and the climate-change lobby worked on Mr. Graham. Some sources say Mr. McCain was a surprise defector and voted no to register his unhappiness that Senate leaders stuck a waiver for U.S. Trade Representative Robert Lighthizer

### A Senate defeat shows the cost of eroding Trump approval.

into the recent spending bill. The waiver overruled a ban on someone who has represented foreign governments serving as trade rep. Mr. McCain's office called such allegations "ridiculous" and said he wants BLM to revise the regulation instead. A congressional review action prohibits an agency from issuing "similar" rules.

All 48 Democrats voted no, and apparently maintaining a 100% rating on the Trump Resistance Scorecard is more important than serving your constituents. North Dakota's Heidi Heitkamp felt liberated to endorse a rule that will substantially raise costs for energy producers in her state. Great fodder for 2018 ads against Ms. Heitkamp and other energy-state Democrats like Joe Manchin of West Virginia.

The larger point is that all of these Senators felt they could oppose the measure without paying a political price. This is what happens when a President's approval rating is close to 40%. Senators look out for themselves and governing becomes much harder.

The Interior Department, which oversees BLM, can withdraw or revise the methane rule, and Interior Secretary Ryan Zinke should make that a priority. The GOP cannot afford similar failures on tax reform or health care.

## Trump's Pretty Good China Deal

Wilbur Ross made some startling claims after Thursday's announcement of a 10-point agreement with

### Modest trade benefits for both sides, even if they were overhyped.

China on trade. The U.S. Commerce Secretary boasted that the "herculean accomplishment" was "more than has been done in the whole history of U.S.-China relations on trade," putting the relationship on "a new high."

The hyperbole may be due to the Trump Presidency's bumpy ride and the need for a policy victory. But overstatements tend to backfire, as this one did once trade experts examined the details. That's unfortunate because the Administration deserves credit for setting aside its protectionist threats for the hard work of negotiating a trade-expansion agreement.

The deal is modest but potentially significant. Beijing's two most important pledges are an end to the ban on U.S. beef and to the barriers against payment giants Visa and Mastercard entering the Chinese market. We've heard those promises before. Premier Li Keqiang said in September that beef imports would resume "soon," and China was supposed to end the monopoly of its Unionpay payments network under its 2001 accession to the World Trade Organization. Nevertheless, the July time frame is new and encouragingly close.

In return, the U.S. will allow imports of Chinese cooked chicken and sell natural gas to China. The latter is largely meant as political reassurance to investors in U.S. LNG export terminals. The U.S. also gave reassurance that investment by Chinese entrepreneurs is welcome and recognized the importance of President Xi Jinping's "Belt and Road" initiative to improve

trade infrastructure in Asia.

The deal is positive for both sides and should dial back tension over trade in the short term. But Mr. Ross may have planted a land mine by claiming that China's market opening will reduce the bilateral trade deficit this year. That seems unlikely. Beef exports are expected to reach a few

billion U.S. dollars a year, a modest sum in the overall relationship. Building facilities to export natural gas will take years, and Mastercard and Visa will need about 18 months at least to expand in China.

The trade deal comes at a moment when consistency in U.S. relations with China is imperative. On Sunday North Korea launched what appears to be a new type of ballistic missile, which some experts said could have flown 2,800 miles on a normal trajectory.

No doubt the urgency of dealing with this threat is one reason Mr. Trump in an interview with the Economist magazine last week praised Mr. Xi as "a great guy." But his seeming willingness last month in Mar-a-Lago to accept the Chinese President's excuses for failing to rein in North Korea no doubt discomfited allies and friends in Asia, already anxious about Beijing's maritime aggression. The U.S. is now asking these nations to unite as it works to shape a policy to deal with Pyongyang.

While it's good that Mr. Trump has pulled back from protectionism, dampening the swings in the way his Administration portrays China relations would bring better results. Mr. Ross's accomplishment would have found a more appreciative reception if he had simply said that hard negotiating gets results from Beijing but much work remains to be done.

## OPINION

## LETTERS TO THE EDITOR

### Is Mortgage-Interest Deduction the Best Way?

Regarding your editorial "Houses of Lobbyists" (May 6): Buying a home isn't the only way to build a nest egg, but middle-class families can't get a \$200,000 bank loan to invest in stocks. They can, however, get a loan to buy a house. Unfortunately, eviscerating the mortgage-interest deduction (MID) would undermine households that have taken this step. Household ownership in real estate currently stands at \$23.1 trillion, and even a 5% drop in home values could destroy \$1 trillion in household wealth.

What's more, the National Association of Realtors commissioned research that examines a tax system like the one the Journal promotes. The research found that homeowners with household income between \$50,000 and \$200,000 would see an average tax increase of \$815 immediately following enactment.

The MID supports the middle class. On average 70% of homeowners with a mortgage claim this deduction and 90% of all mortgage interest paid gets deducted, according to the National Association of Home Builders.

The deduction has been around for generations in part because homeownership is essential to wealth-building. Today, the net worth of average homeowners far outpaces that of non-owners, and a home represents millions of families' largest asset. That sounds like a "productive" investment to us, and it's worth defending.

GRANGER MACDONALD  
Chairman, National Association of Home Builders

WILLIAM E. BROWN  
President of the National Association of Realtors  
Washington

Your editorial ignores the pass-through tax benefits received by the renter. The tax code actually subsidizes renters over home buyers. Consider the owner of a housing unit (home, apartments, etc.).

The owner of the housing unit who rents receives the total mortgage interest and tax deductions plus the additional 15 deductions that can be claimed on schedule E, and can still claim the larger of the standard deduction or itemized (all other) deductions. The renter is subsidized through the pass-through of all of these deductions which result in lower rents, and still lets the renter claim the larger of the standard deduction or larger deduction. If any renter doubts this, ask what would happen to their rent if the owner of the housing unit was no longer permitted to use these deductions.

JAMES M. GEYER  
Rolesville, N.C.

Thank you for recognizing in passing that housing is in fact consumption, an insight lost on most consumers and even on many policy makers. We have it hardwired into our vocabulary that renting equates to throwing money away, while buying is an "investment," but this is an artificial distinction encouraged by a strong bias toward homeownership. No one expects to make a capital gain on money "thrown away" at the grocery store. We understand that this is consumption we literally cannot live without. How is having a safe place to sleep, whether rented or owned, any different? Households would do well to start from the premise that both renting and buying are normally money-losing ventures, and then focus on the more practical question of which sce-

nario costs less, in present value terms.

BENJAMIN KRUEGER  
Washington

Homeownership may be a social good, but so too are lower tax rates and a simpler tax system that are broader and longer lasting in effect than a tax subsidy for homeowners. Most homeowners will be no worse off if the higher standard deduction matches or exceeds their potential itemized deductions. If at the margin the tax benefits of owning a home are reduced relative to other investment options, housing prices increases might be trimmed, but first-time buyers will find that a blessing, particularly if interest rates start to rise in a stronger economy.

The housing market, after an initial hiccup, will adjust to the marginal effect, if any, of a higher standard deduction, and a stronger economy ultimately will be beneficial to home buyers and sellers, as well as renters who also support the housing market.

ED GRAHAM  
Gainesville, Fla.

Many of us have made long-term decisions based on current law. We simply can't quickly reverse our decisions to conform to what is being proposed now. If the administration wants to "incentivize" citizens toward a simpler tax system without wrecking real-estate markets, an easy fix is to freeze the current tax code for, say, 10 years, and give each taxpayer the option of using either the current system or the new system during that period. If the new system is better for me, I'll jump on it tomorrow morning. If I have to sell my house, move out of the region, or change careers, give me the time to do it without wrecking my life.

TONY PAVONE  
Half Moon Bay, Calif.

In an era when long-term employment has become the exception rather than the rule, our present policy of encouraging homeownership is directly at odds with the need for a more mobile workforce. Doubling the standard deduction and encouraging larger 401(k) contributions would give us the workforce we need while providing families with an alternative means of acquiring wealth.

JEFFREY M. PAWLICK  
Canton, Ga.

You suggest that the home-mortgage deduction should be capped at \$250,000 to avoid too much of a benefit to the wealthy. While a \$300,000 mortgage may represent wealth in areas of the country, in New York City this would represent a mortgage on a one-bedroom apartment shared with three other "owners" each with their own \$300,000 mortgage for a total of \$1.2 million. I submit that these four sharing a one-bedroom apartment would not feel "wealthy." And there lies the rub—the cost of living varies so greatly around the country that it would take IBM's Watson to find a "fair" resolution to the inequity. Those living in high-tax states don't care if they are paying federal or state taxes; they see it as taxes to government. Any attempt to draw a line between the wealthy and the "not so wealthy" is flawed without the cost-of-living factor which could never be worked out in Congress.

S. HORWITZ  
Bethesda, Md.

### More Government Isn't Puerto Rico's Answer

Regarding Mary Anastasia O'Grady's "Puerto Rico's Broken Promise" (Americas, May 1): We can only achieve significant growth when we come to a consensus that more government won't be the solution. After speaking and working with countless business owners and entrepreneurs on the island, I've heard from frustrated local job creators that they want to get government out of the way.

The World Bank's ease of doing business index scores 10 categories affecting business in any economy and ranks 190 nations according to this measure. Puerto Rico stands at 55, between Peru and Rwanda. How could we ever expect investment and prosperity in a policy environment that is toxic to doing business?

The process of obtaining business and construction permits has recently been simplified, meaning the government has somewhat removed its heavy hand. Coupled with January's labor reform, it's clear we're going in the right direction. But many challenges remain.

In the category of taxes, which measures the difficulty and expense of the tax structure, Puerto Rico stands at 135. Our top marginal corporate-tax rate is the second highest in the world

and any serious effort to restore growth to our island must involve a dramatic reduction of this burden.

While most of the growth-killing policies are implemented at the local level, the federal government could help by exempting Puerto Rico from the antiquated Jones Act of 1920, which prevents the island from using the significantly cheaper services of foreign companies when shipping between the island and the U.S. mainland.

JOSEPH W. MILLIGAN  
Fundación Libertad Puerto Rico  
San Juan, Puerto Rico

### Pepper ... And Salt

THE WALL STREET JOURNAL



"I want to fire Sims,  
but I can't remember where he is."

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## OPINION

# Rosenstein's Compelling Case Against Comey

By Kenneth W. Starr

The long knives are out. The ultimate doomsday scenario for a constitutional republic in peace-time—calls for impeachment of the president—has now been augmented by a growing chorus of voices demanding a far less dramatic but nonetheless profoundly serious step: appointment of a special prosecutor. Even for this less drastic move, the calls are way off base. At a minimum, the suggestion is premature.

**Demands for a special prosecutor are way off base. The guardrails of our republic are secure.**

The developing narrative, trumpeted on the weekend talk shows, is that Deputy Attorney General Rod Rosenstein must appoint a special prosecutor to restore his long-established reputation for integrity and professionalism. Attorney General Jeff Sessions has recused himself from the entire matter.

The basic complaint is that the newly appointed second-in-command at the Justice Department lost public confidence by crafting a three-page memorandum to the attorney general that severely criticized then-FBI Director James Comey, whom President Trump quickly fired. At least one senator has already mocked Mr. Rosenstein's May 9 memorandum as "laughable." They are wrong.

Let's see what the Rosenstein memorandum actually says. It is titled "Restoring Public Confidence in the FBI." Mr. Rosenstein rightly praises the bureau as "our nation's premier investigative agency." Mr. Rosenstein singles out Mr. Comey for high praise as "an articulate and persuasive speaker about leadership and the immutable principles of the Department of Justice." The memorandum goes on to praise the FBI chief for his long and distinguished public service.

Mr. Rosenstein then turns to the director's profound failures during his stewardship of the FBI. Above all, the new deputy attorney general states: "I cannot defend the Director's handling of the conclusion of the investigation of Secretary [Hillary] Clinton's emails." In this Mr. Rosenstein echoes the vehement complaints by Democrats during the 2016 campaign, and indeed comments only last week by Mrs. Clinton herself. Even Republicans had raised an arched eyebrow at what the director did and when he chose to do it. The deputy attorney general goes on to express befuddlement that Mr. Comey still refuses "to accept the nearly universal judgment that he was mistaken."

The memorandum then identifies the fatal offense of any FBI leader—the usurpation of the authority of the Justice Department itself. In a power grab, Mr. Comey had announced the ultimate prosecutorial decision, namely that Mrs. Clinton would not be prosecuted. The FBI director had no authority to do that. That was not all. Mr. Comey, the memo went on, "compounded the error" by holding a press conference releasing "derogatory information



Rod Rosenstein at his confirmation hearing on Capitol Hill, March 7.

about the subject of a declined criminal investigation." This was all way outside the foul lines of Justice Department professionalism.

Succinctly, but with devastating effectiveness, the Rosenstein memorandum demonstrates Mr. Comey's egregious violations of long-settled Justice Department practice and policy. Mr. Rosenstein draws from the director's testimony before Congress and his unprecedented letter to Congress days before the election. He addresses Mr. Comey's argument that had he failed to insert himself once again into the presidential campaign—as voting was already under way in many states—it would have constituted "concealment."

Balderdash, the deputy attorney general concludes, albeit in more polite language. Prosecutors, to say nothing of FBI directors, are not to set out a confidence-shattering bill

of particulars with respect to any potential defendant's conduct, and certainly not a presidential candidate in the heat of a national campaign.

Finally, the Rosenstein memorandum sets forth paragraph after paragraph recounting the scathing criticism of the director's woefully timed election interference. The deputy attorney general demonstrates that his own conclusions are shared by a wide range of respected former officials of the Justice Department in both Democratic and Republican administrations. One example: President Clinton's deputy attorney general, Jamie Gorelick, is quoted as condemning Mr. Comey for having "chosen personally to restrike the balance between transparency and fairness, departing from the department's traditions."

There's nothing "laughable" about what the Rosenstein memorandum says. In setting forth undisputed and

fireable offenses, the memorandum bespeaks professionalism, integrity and fidelity to Justice Department policy and practice, as befits the Harvard-trained lawyer and career prosecutor who was overwhelmingly confirmed by the Senate only weeks ago.

Rod Rosenstein is universally respected, a broad-based admiration founded on his long service and distinguished record in the Justice Department. Unless stepping aside represents the deputy attorney general's considered judgment as the right thing to do, calling in a special prosecutor now would simply cause further delay, add greater cost, and disrupt the continuing work of the FBI.

The bureau's investigation into Russia's involvement in the 2016 election is continuing, under the leadership of Acting Director Andrew McCabe. In addition, the work of the bipartisan Senate Intelligence Committee is well under way. Regardless of the unhappy fate of one public servant, the guardrails of constitutional republic are in place. And with its 10,000-plus special agents, the world's most respected law-enforcement agency, the Federal Bureau of Investigation, should be encouraged to get on with the job, and a respected deputy attorney general permitted—with accountability to Congress—to come to his considered judgment. That's precisely the kind of structural protection that the Founders had in mind over two centuries ago.

*Mr. Starr served as a federal judge, solicitor general and White-water independent counsel.*

## Russia Recognizes Jerusalem as Israel's Capital. Why Can't the U.S.?

By Eugene Kontorovich

President Trump's visit to Israel next week is expected to lead to some announcement about his Jerusalem policy. The trip will coincide with celebrations of the 50th anniversary of the city's reunification after the Six Day War. Only days after the visit, the president will have to decide between waiving an act of Congress or letting it take effect and moving the U.S. Embassy to Jerusalem from Tel Aviv—as he promised last year to do if elected.

Jerusalem is the only world capital whose status is denied by the international community. To change that, in 1995 Congress passed the Jerusalem Embassy Act, which mandates moving the U.S. Embassy to a "unified" Jerusalem. The law has been held in abeyance due to semiannual presidential waivers for "national security" reasons. President Obama's final waiver will expire June 1.

There's no good reason to maintain the charade that Jerusalem is not Israeli, and every reason for Mr. Trump

to honor his campaign promise. The main arguments against moving the embassy—embraced by the foreign-policy establishment—is that it would lead to terrorism against American targets and undermine U.S. diplomacy. But the basis of those warnings has been undermined by the massive changes in the region since 1995.

While the Palestinian issue was once at the forefront of Arab politics, today Israel's neighbors are preoccupied with a nuclear Iran and radical Islamic groups. For the Sunni Arab states, the Trump administration's harder line against Iran is far more important than Jerusalem. To be sure, a decision to move the embassy could serve as a pretext for attacks by groups like al Qaeda. But they are already fully motivated against the U.S.

Another oft-heard admonition is that America would be going out on a limb if it "unilaterally" recognized Jerusalem when no other country did. An extraordinary recent development has rendered that warning moot. Last month Russia suddenly

announced that it recognized Jerusalem as the capital of Israel.

Note what happened next: No explosions of anger at the Arab world. No end to Russia's diplomatic role in the Middle East. No terror attacks against Russian targets. Moscow's dramatic Jerusalem reversal has largely

**Trump must soon decide whether to move the embassy. Doing so would help promote peace.**

been ignored by the foreign-policy establishment because it disproves their predictions of mayhem.

To be sure, Russia limited its recognition to "western Jerusalem." Even so, it shifted the parameters of the discussion. Recognizing west Jerusalem as Israeli is now the position of a staunchly pro-Palestinian power. To maintain the distinctive U.S. role in Middle East diplomacy—and to do something historic—Mr. Trump must

go further. Does the U.S. want to wind up with a less pro-Israel position than Vladimir Putin's?

The American response to real attacks against U.S. embassies has always been to send a clear message of strength. After the 1998 al Qaeda bombings of U.S. embassies in Kenya and Tanzania, Washington did not shut down those missions. Instead it invested in heavily fortified new facilities—and in hunting down the perpetrators.

Moving the embassy to Jerusalem would also improve the prospect of peace between Israel and the Palestinians. It would end the perverse dynamic that has prevented such negotiations from succeeding: Every time the Palestinians say "no" to an offer, the international community demands a better deal on their behalf. No wonder no resolution has been reached. Only last week, Palestinian Authority President Mahmoud Abbas insisted that new negotiations "start" with the generous offer made by Israel's Prime Minister Ehud Olmert in 2008. Relocating the embassy would demonstrate to the

Palestinian Authority that rejectionism has costs.

If Mr. Trump nonetheless signs the waiver, he could do two things to maintain his credibility in the peace process. First, formally recognize Jerusalem—the whole city—as the capital of Israel, and reflect that status in official documents. Second, make clear that unless the Palestinians get serious about peace within six months, his first waiver will be his last. He should set concrete benchmarks for the Palestinians to demonstrate their commitment to negotiations. These would include ending their campaign against Israel in international organizations and cutting off payments to terrorists and their relatives.

This is Mr. Trump's moment to show strength. It cannot be American policy to choose to recognize a capital, or not, based on how terrorists will react—especially when they likely won't.

*Mr. Kontorovich is a department head at the Kohelet Policy Forum and a law professor at Northwestern University.*

## The Trump Trade Team's Vocabulary Problem

By Chad P. Bown  
And Alan O. Sykes

President Trump finished his 100th day in office much as he started his first—with a rally denouncing trade agreements that echoed his inaugural address reference to American "carnage." He also announced a new executive order targeting the World Trade Organization. Mr. Trump's trade policy thus far features clear disdain for the multilateral, rules-based WTO. He has indicated that any trade deals negotiated by his administration will be country-by-country. Both history and economics suggest this strategy is doomed to fail.

In April Commerce Secretary Wilbur Ross put forward the clearest articulation to date of the administration's anti-WTO sentiment: "If there's a country that has relatively few barriers against us, we

should have relatively few against them. The only problem is, the World Trade Organization has what's called a 'most-favored-nation clause,' meaning that of all the countries with whom we do not have a free-trade agreement, we must charge the same tariff on the same item to each of those countries as we charge to the others. So, that's a significant impediment toward getting to anything like a reciprocal agreement."

This statement reflects a misunderstanding of the MFN clause. American negotiators adopted MFN with the Reciprocal Trade Agreements Act of 1934, as they sought a way out of the Great Depression. Historically, attempts by European countries to negotiate and sustain trade deals without MFN had largely failed.

To illustrate why, consider a simple hypothetical. Suppose that before any trade agreements the U.S.,

Japan and China each apply import tariffs of 25%. Then the U.S. sits down with Japan and negotiates a deal to cut tariffs to 10%, but only with each other. In other words, there is no MFN clause requiring U.S. or Japanese negotiators to give that same 10% rate to China.

Now suppose Japan negotiates a second deal, with China. They reach an agreement lowering tariffs to 5%, again only with each other. Clearly the U.S. loses. American companies will be unable to compete with Chinese exporters in Japan's market. The U.S. therefore gains little in exchange for reducing tariffs on Japanese goods.

Without MFN, policy makers can't prevent trading partners from going out and striking better deals with competitors. With MFN, if Japan and China agree to a subsequent deal that gives China better terms, Japan has to give those same terms to the U.S.

But what is to prevent President Trump—after he strikes the 10% deal with Japan—from subsequently offering a better deal to China? Japan would anticipate this "America First" move from the beginning. Without MFN to protect its exports, Japan wouldn't sign the first U.S. deal.

**It's not clear that officials understand the meaning of 'reciprocity' and 'most favored nation.'**

In short, MFN provides an incentive for countries to sign long-term deals. It protects a country's exporters from losing out when trading partners subsequently negotiate deals with other countries. Before MFN was introduced in 1934, some

trade negotiations went nowhere. Others concluded with deals that ultimately unraveled.

Trump administration officials have made frequent appeals to the necessity of "reciprocal agreements." Mr. Trump himself said recently that trade deals "have to be fair, and somewhat reciprocal." But the principle of reciprocity does not mandate that countries must respond to a 10% U.S. import tariff on cars with 10% auto tariffs of their own. That would be what some have called "full reciprocity." What really matters to economists, according to Columbia University's Jagdish Bhagwati, is "first-difference reciprocity," or matching concessions from initial conditions.

Think of it as reciprocity at the margins. If the U.S. wants China to reduce its auto tariff to 10%, negotiators must offer something of value, such as a reduction to the current 37.5% U.S. tariff on footwear. The deal is attractive and sustainable if both sides can expand exports commensurately.

As a historical note, not everyone in President Franklin Roosevelt's administration was sold on MFN and reciprocity. The 1930s also featured a boisterous White House debate, with significant resistance to the idea coming from presidential adviser George N. Peek and Agriculture Secretary H.A. Wallace. Luckily, Secretary of State Cordell Hull managed to win Roosevelt over.

The result of U.S. commitment to MFN and reciprocity has been an open, nondiscriminatory and rules-based trading system that has served the American and global economy well for decades.

*Mr. Bown is a senior fellow at the Peterson Institute for International Economics. Mr. Sykes is a professor at Stanford Law School.*

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## Notable & Quotable: Comey

*From "Attention, liberals: Comey deserved to be fired, and the Constitution is just fine" by Richard Epstein, Vox.com, May 11:*

The common response to this line of attack is that criticisms of Comey's conduct in the Clinton investigation had nothing to do with the president's decision. . . . But it is also the case that Comey has made no effort to distance himself from this earlier conduct, and indeed affirmed in his Senate testimony of May 3, 2017, that with respect to his October 28 letter on Clinton, even though the episode had made him "mildly nauseous," he would do it all over again.

The past events thus are linked closely to the future events. If the

mistakes Comey made could have justified his firing in either 2015 or 2016, the passage of time does not cure those improper decisions.

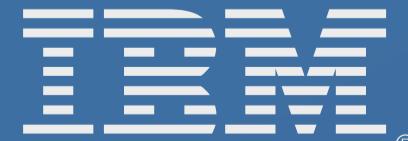
It requires contortions to convert an action that has independent justification into one that prompts talk of obstruction of justice and impeachment. In effect, one difficulty with that extravagant assertion is that it makes Comey de facto immoveable from office so long as he continues to conduct this investigation. That cannot be the proper analysis because Comey has many other administrative responsibilities, including maintaining morale inside the office. No one should be able to guarantee his term in office by conducting a nonstop investigation of the president.

*Mr. Bown is a senior fellow at the Peterson Institute for International Economics. Mr. Sykes is a professor at Stanford Law School.*

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# BUSINESS & FINANCE

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## TV Networks Hustle to Join Stream

By SHALINI RAMACHANDRAN

The surge in cord-cutting has set off a race among media companies to be included in new "skinny" streaming bundles that are reshaping the American television landscape.

Cord-cutting reached a record pace in the first quarter as consumers continue to ditch pricey pay-TV subscriptions and seek more online alternatives. Over the past five years, nearly 8 million U.S. households have abandoned traditional pay TV or eschewed signing up entirely, according to Wall Street re-

search firm MoffettNathanson. Earnings reports from **Discovery Communications** Inc. and **Walt Disney** Co. last week underscored the trend, stoking investor worries about the long-term sustainability of the cable subscription revenues that have long powered media companies' growth.

To drive new revenue, media companies have been hustling to get their flagship channels into new streaming bundles. But new entrants' preference for slimmer, cheaper packages is splintering the age-old cable bundle.

With **Dish Network** Corp.'s

Sling TV, **AT&T** Inc.'s DirecTV Now and **Sony** PlayStation's Vue being joined by live TV services from **Hulu** and **You-**

*Media companies have striven to get flagship channels into streaming bundles.*

**Tube** TV in the past couple of months, some clear network winners and losers are beginning to emerge in the new

streaming pay-TV world.

Major channels such as TNT, Nickelodeon and Discovery Channel are finding themselves left out of some new services—a stark departure from traditional cable and satellite TV providers that have long carried every major network to stay competitive with rivals.

"This is when the marketplace will separate the wheat from the chaff," said **CBS** Corp. Chief Executive Leslie Moonves earlier this month.

Broadcast networks and sister cable channels owned by Disney, **21st Century Fox** and NBCUniversal are in all of the

new streaming bundles, while cable channels from the likes of **Viacom** Inc., Discovery and A+E Networks are having more trouble getting in. That is in part because some of the new entrants prioritized broadcast and sports networks over purely entertainment channels.

Still, **Time Warner** Inc.'s networks can't be found on YouTube TV, even though its TNT channel carries NBA and college basketball games.

**CBS**, whose broadcast net-

Please see **CORD** page B2

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### Tuning Out

The year-over-year decline in pay-TV subscriptions reached a record pace in the first quarter.



Source: MoffettNathanson

THE WALL STREET JOURNAL.

## Lyft and Waymo in Driverless Team-Up

By GREG BENINGER AND JACK NICAS

Ride-hailing startup **Lyft** Inc. and **Waymo** LLC, the driverless car division of Google parent **Alphabet** Inc., said they would work together to develop autonomous-vehicle technology, dealing another potential blow to rival **Uber Technologies** Inc.'s ambitions.

The two companies said Sunday they will collaborate on developing products and technology for autonomous autos. In statements, they declined to elaborate more specifically on the terms of the deal or what the work would entail.

A person familiar with the deal said Lyft will help Waymo expand tests of its self-driving technology through an effective taxi service. The two companies have also discussed Lyft plugging Waymo's driverless cars into its pool of available taxis so any user could summon them, this person said. The exact nature of how this would work is still unclear.

The New York Times reported on the deal between Lyft and Waymo.

A deal with Lyft may signal Waymo is moving closer to commercializing its vehicles. Waymo has logged more than 3 million miles on city roads since it began working on the technology in 2009, but until this year it had not allowed the public to ride in its vehicles.

That changed in February when Waymo began allowing a select group of families and urban commuters in the Phoenix area to ride in its vehicles.

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Apple's new headquarters, Apple Park, in Cupertino, Calif., last month. The project cost an estimated \$5 billion and commanded years of attention from top executives.

## At Apple, One Ring to Bind Them All

Booming technology titans build glitzy architectural marvels to project power

By TRIPP MICKLE AND ELIOT BROWN

**Apple** Inc. employees last month began testing the company's latest innovation: Apple Park, one of history's most expensive corporate campuses and the leading example of the tech industry's newfound love for splashy architecture.

The first of 12,000 Apple headquarters employees moved from several drab, stone buildings in Cupertino, Calif., to space across town in the 2.8-million-square-foot circular building that resembles a spaceship. It features a seamless, curved-glass exterior and a theater architect said was designed to look like a MacBook Air. The estimated \$5 billion project commanded years of attention from top Apple executives including Chief Design Officer Jony

Ive, according to three of the more than 100 architects working on it.

Apple Park is the most lavish in a spate of glitzy architectural projects by tech titans at a time when their businesses are booming. **Facebook** Inc. and **Alphabet** Inc. have tapped top architects Frank Gehry and Bjarke Ingels for expansions, Amazon is building giant glass globes containing an indoor forest in Seattle, and business-software company **Salesforce.com** Inc. paid to put its name on a new 61-story tower that will be San Francisco's tallest building.

"This is what rich, wealthy and powerful individuals have done since the Pharaohs built the pyramids—you build a building that projects power to the world," said Louise Mozingo, an urban-design professor at the Uni-

versity of California, Berkeley, who wrote a book on corporate campuses.

The trend marks a departure for the tech industry, which long eschewed corporate palaces in favor of bland, low-slung office buildings like those on Apple's existing campus.

The new buildings are designed to project companies' identities. Amazon, named after the rainforest, last week started planting trees in the glass spheres at the base of its new headquarters. Alphabet's latest design for a new Google building calls for a public walkway that goes through a building topped by a soaring glass canopy, conveying openness. Facebook's Gehry-designed building, completed in 2015, features plywood that embodies the informality of Mark Zuckerberg, its hoodie-wearing chief executive.

Apple's late CEO, Steve Jobs, helped initiate the boom. In 2009, he enlisted British architect Norman Foster to help bring a showcase headquarters to Silicon Valley.

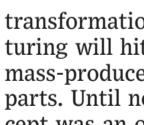
Apple, which recently set a record by topping \$800 billion in market capitalization, says the new campus is designed to bring together disparate staff and foster collaboration to create new products.

Since unveiling plans in 2011, Apple's design team has sought to influence everything from sprinklers to door handles. It commanded so much time of architects that **Foster + Partners**, which is based in London, opened an office in the Bay Area, two architects said.

**Foster + Partners** didn't respond to requests for comment. Apple declined to comment.

KEYWORDS | By Christopher Mims

## 3-D Printing Is Taking Its Next Step: Your Shoes



This may be the year you get 3-D-printed shoes.

By the end of 2017, the transformation of manufacturing will hit a milestone: mass-produced printed parts. Until now, that concept was an oxymoron, since 3-D printing has been used mainly for prototyping and customized parts.

But the radical innovation of 3-D printing techniques means we are finally going to see some previously impossible designs creep into our consumer goods. In the long term, it also means new products that previously would have been impractical to produce, and a geographical shift of some manufacturing closer to customers.

I have two very different examples of this milestone, one plastic, the other steel. There is a running shoe from **Adidas AG**, with a 3-D-printed latticed sole that looks almost organic, like

the exposed roots of a plant.

Then there is a steel hinge, indistinguishable from any other metal part except for incredibly fine striations in its surface, as if it had been deposited like sandstone rather than forged. In a feat impossible with conventional manufacturing, all three moving pieces of the hinge were crafted together.

3-D printing is more than two decades old, but to date the process has been limited to making novelties, prototypes, bits of machines for factories, or expensive specialized parts, like fittings for prosthetic limbs or fuel nozzles in jet engines.

After years of searching for a 3-D printing tech that is up to the challenge of sneakers, Adidas came upon a startup called **Carbon Inc.**, which has raised \$222 million to date. Instead of the plodding process of depositing plastic one layer at a time from a nozzle, Carbon's "digital light synthesis"

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## CORD

Continued from the prior page  
work isn't carried by Sling TV or DirecTV Now, has poured resources into its own streaming service and hasn't prioritized gaining carriage on every new offering, holding out for better terms.

The cord-cutting phenomenon traces its roots to 2010, when pay-TV growth fell below new household formation for the first time, according to MoffettNathanson. From a peak of roughly 100 million homes, pay-TV subscriptions declined in a slow trickle for years until an acceleration in recent quarters. The firm estimated that traditional pay-TV subscribers declined a record 2.4% in the first quarter from a year earlier.

AMC CEO Josh Sapan estimated earlier this month that Sling TV, DirecTV Now, YouTube TV and Sony have added between 2 million and 2.5 million customers so far, mitigating but not making up for defections.

Adding to pressure on networks, some consumers are cord-shaving, or downgrading

to cheaper packages from traditional operators. Several traditional operators' slimmer bundles leave out some well-known networks such as ESPN and Nickelodeon, for instance. ESPN said that if those bundles grew in popularity to become the operator's most or second-most distributed packages, ESPN would have to be included contractually.

The confluence of events has left media companies scrambling to explain their plans for growth to Wall Street.

After Disney reported a slightly increased pace of subscriber declines at ESPN, Disney CEO Bob Iger promised new streaming services focused on certain sports or teams. Given that ESPN's flagship programming won't be offered, those services are "likely to be a niche offering, which may limit the benefits," wrote Barclays analyst Kannan Venkateshwar in a research note.

Over the last several decades, TV programmers and cable providers invested together to ride the growth of U.S. subscriptions. Pay-TV distributors asked media companies to create more channels, which helped

distributors justify annual rate increases and handed more profits to media companies.

Fierce competition among cable, satellite and phone companies benefited TV networks because no distributor wanted to be stranded without a set of networks offered by a rival.

Now, new entrants like Hulu are prioritizing entry retail prices under \$40 a month, even if it means forgoing channels like Nickelodeon or AMC. Instead, they are touting technological differentiators such as personalization and vast digital video-recording storage.

During talks with cable programmers like A+E and Discovery, YouTube TV said it would only offer certain networks in a more expensive tier—a move that would have triggered contractual clauses with traditional distributors to allow them to do the same, some people familiar with the talks said. "The downside risk was so enormous that all of us independently said 'no thank you,'" one media executive said.

Moreover, the streaming cable-TV services aren't as concerned about profits yet. Analysts say it is unlikely YouTube

TV can make money off subscriptions alone at its \$35-a-month price. It may be more interested in making a play for premium TV-ad inventory.

For Hulu, creating competition in the content marketplace benefits its owners—Comcast Corp., Fox, Disney and Time Warner—even if it loses money.

Some investment bankers say that the new entrants' "Swiss cheese" model for content is damping prospects for mergers among big media companies, which are loath to acquire any straggler cable networks that could weigh down carriage negotiations.

Companies including Viacom, AMC, Scripps, A+E and Discovery that have been left out of certain streaming bundles are advocating for traditional pay-TV providers to offer an entertainment-only bundle priced between \$15 and \$20 a month with no expensive sports channels.

Charter Communications Inc., is deeply engaged in those discussions, some media executives said, and could launch such a streaming bundle to customers in its service areas by year-end.

## 'King Arthur' Falls on Its Sword

BY ERIC SCHWARTZEL

The king is dead. Long live the comic book.

"King Arthur: Legend of the Sword" became the first major flop of the summer movie season this weekend, proving no match for Marvel Studios' hold-over "Guardians of the Galaxy Vol. 2" at the box office.

"King Arthur," directed by Guy Ritchie and starring Charlie Hunnam as the Excalibur-wielding monarch, cost nearly \$175 million to produce but collected an estimated \$14.7 million in the U.S. and Canada this weekend. The adaptation was released by Time Warner Inc.'s Warner Bros.

Overseas returns were also weak, adding only \$29.1 million from 51 countries. China, the world's second-largest box office, contributed only \$5 million.

"This is painful," said Jeff Goldstein, president of domestic distribution at Warner Bros.

"This character just didn't resonate. It felt a little like a history lesson" to moviegoers.

## Estimated Box-Office Figures, Through Sunday

FILM	DISTRIBUTOR	WEEKEND*	CUMULATIVE	% CHANGE
1. <i>Guardians of the Galaxy Vol. 2</i>	Disney	\$63	\$246.2	-57%
2. <i>Snatched</i>	Twentieth Century Fox	\$17.5	\$17.5	--
3. <i>King Arthur: Legend of the Sword</i>	Warner Bros.	\$14.7	\$14.7	--
4. <i>Fate of the Furious</i>	Universal	\$5.3	\$215	-38%
5. <i>Boss Baby</i>	Twentieth Century Fox	\$4.6	\$162.4	-23%

\*Friday, Saturday and Sunday Source: comScore

ica. "Snatched" is Ms. Hawn's first movie role since 2002.

Fox's parent company, 21st Century Fox, and News Corp, owner of The Wall Street Journal, share common ownership.

The new releases were no match for "Guardians of the Galaxy," which added \$63 million for a two-week total of \$246.2 million. The hit from Walt Disney Co. has grossed \$630.6 million worldwide.

## BUSINESS & FINANCE

# Television's 'Upfront' Season Opens

BY JOE FLINT  
AND SUZANNE VRANICA

Big broadcast and cable networks will try to put a positive spin on declining ratings, audience fragmentation and cord-cutting when they present programming plans for the 2017-18 TV season to advertisers this week in New York.

Known as "upfront" season, this is when advertisers commit to spending billions of dollars on shows they think have the best chance of breaking through the clutter.

Comcast Corp.'s NBC kicked things off Sunday when it unveiled a fall schedule meant to return it to dominance on Thursday, a big night for advertisers. The network will move its hit freshman drama "This Is Us" to that night from Tuesdays, and surround it with a revival of the comedy "Will & Grace" and a new "Law & Order" series called "True Crime" that will dramatize the 1990s Menendez Brothers murder trial.

Other networks presenting their lineups this week include CBS, ABC, Fox, ESPN, TNT and TBS.

Hits are becoming scarce for traditional networks as new, commercial-free platforms such as Netflix and Amazon Prime siphon viewers away and the amount of original programming available there and on cable grows.

With that in mind, some networks are reaching into the nostalgia basket. Walt Disney Co.'s ABC is bringing back the singing talent show "American Idol," which Fox decided had run its course after the 2014-15 season.

Spinoffs, prequels and sequels remain popular. CBS will offer "Young Sheldon," about the childhood of the Sheldon character on its hit comedy "The Big Bang Theory."

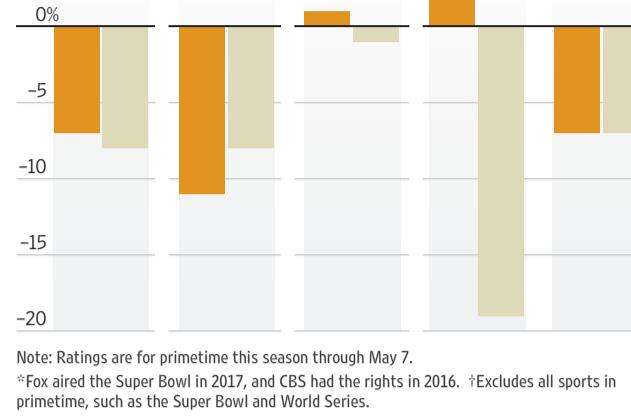
There is also more reluctance to make schedule changes, even if it means keeping shows that might be

## Rough Ratings

Broadcasters are hoping their fall shows boost ratings after viewership, excluding sports, declined this season.

### Percentage change in viewers from previous year

■ Includes sports\* ■ Excludes sports†



Note: Ratings are for primetime this season through May 7.

\*Fox aired the Super Bowl in 2017, and CBS had the rights in 2016. †Excludes all sports in primetime, such as the Super Bowl and World Series.

Source: Nielsen

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close to that show said. For Warner Bros., the value of "Blindspot" in overseas sales was worth cutting the license fee NBC pays, the person said.

Networks will often favor keeping a show whose rights they own over one that is from an outside supplier. Ownership of a show allows the network to capitalize on revenue from reruns, streaming and international sales. CBS renewed "Elementary," which it owns, for a sixth season but canceled Warner Bros.-owned "Two Broke Girls," even though both shows have roughly the same-size audience.

The networks are heading into what looks like a tough selling season. The ad market is showing some signs of softness in North America, according to advertising executives. Many TV networks posted lower ad revenue for the first quarter, thanks to ratings weakness and softness in ad spending by categories such as automotive.

Analysts are predicting that ad pricing will increase in the mid-single-digit percentage range compared with last year and the overall volume of ad dollars being committed during the upfront will be down slightly.

Last year, overall prime-time upfront ad revenue for broadcast networks was up 4.6% to \$8.75 billion, estimates Media Dynamics Inc., while cable-TV upfront revenue was up 4.5% to \$9.87 billion. The uptick was welcome news for broadcast networks, which had experienced several years of declines in total dollar volume committed during the upfront.

Networks were helped last year by some marketers' concerns about issues in the digital-ad market, including the risk of fraud and uncertainty over how viewable ads are.

Some network executives hope for a similar

## BUSINESS NEWS

# U.S.-China Trade Plan A Boon for Cheniere

BY CHRISTOPHER M. MATTHEWS

A new U.S.-China trade plan could be a boon for companies looking to export U.S. natural gas, and is already lifting **Cheniere Energy Inc.**, the early mover in the nascent industry.

Shares of the Texas-based company, the only one to date to export liquefied natural gas from the lower 48 states, rose 3.3% Friday following overnight news of the trade plan. Cheniere's shares are up more than 40% over the past year.

Cheniere and others planning to export the natural gas that has become abundant in the U.S. because of shale drilling hope the trade plan represents a blessing from the Chinese government to open one of the world's fastest-growing import markets.

"The Chinese have had concerns about the U.S. honoring long-term contracts with a Chinese counterparty, so we're really pleased with the language that came out," Cheniere Chief Executive Jack Fusco said in an interview.

Cheniere has a first-mover advantage, owning the only operational export terminal on the U.S. Gulf Coast, and thus far has sent nine spot cargoes to China. But more than 30 others, including **Exxon Mobil Co.** and **Tellurian Inc.**, are building or await regulatory approval for the billion-dollar export terminal facilities.

U.S. exporters face competition from other gas-rich nations closer to China, and the preliminary 10-point bilateral trade plan, released by both governments Thursday, provided few concrete changes to boost gas trade. Still, Cheniere and its competitors believe a symbolic statement of support from Beijing will carry weight with the country's state-controlled energy companies.

# Budget Airlines Are Spending

Plane makers Boeing and Airbus build up significant jet orders from discount carriers

BY DOUG CAMERON  
AND ROBERT WALL

When **Boeing Co.** was developing the latest iteration of its most popular jetliner, it devised a modified version with an extra emergency door that allowed it to add seven more seats.

The reason for the spinoff: to win an order from **Ryanair Holdings PLC** of Ireland.

The rollout of the 737 Max 8 jet, which Boeing aims to start delivering this month, shows how the aviation industry increasingly caters to the discount airlines that once relied heavily on secondhand planes.

The list of early buyers still includes stalwarts such as **American Airlines Group Inc.** and low-fares pioneer **Southwest Airlines Co.** But some less-familiar names such as **Lion Air** of Indonesia and **Norwegian Air Shuttle ASA** have placed huge orders for Boeing's 737 Max jet, a single-aisle plane that analysts expect to generate as much as half the aerospace company's profits over the next 25 years.

The rival **Airbus SE A320neo** jet that started flying commercially last year is just as crucial to the European plane maker's profitability.

Boeing and Airbus have built up a record backlog of more than 11,000 orders for the workhorse short-haul jets over the past five years, and are sold out of most models through the end of the decade. With growing demand from discounters and established airlines seeking more efficient jets, plane makers say they are raising annual output of single-aisle jets from about 1,000 in 2016 to almost 1,300 by the end of the decade.

The manufacturers were initially dismissive of low-cost



A wing for a Boeing 737 Max jet under assembly in Renton, Wash., this year. Budget carrier Lion Air is among the jet's buyers.

carriers but now embrace them, said Tony Fernandes, chief executive of budget carrier **AirAsia Bhd**, which has more than 400 Airbus jets on order. "We have seen a big difference from the manufacturers," he said.

The biggest new jet orders are now coming from budget carriers as their growth continues to outpace that of legacy carriers such as American. Budget airlines' share of the global fleet reached 25% last year, rising from just 7% two decades ago.

The industry transformation started by Southwest in 1971 has changed airline strategy world-wide. Carriers used to buy multiple types of jets so they could tailor them to different routes. Now, they focus on one or two types to simplify their business, packing them with as many seats as possible to lower costs.

That has pushed aircraft makers to find a sweet spot for their new jets that satisfies airlines that are fixated on costs and less willing to split deals between more than one plane maker.

Building new jets requires billions of dollars in investment, and potential sales increasingly have become winner-take-all battles for Airbus and Boeing, said Klaus Heinemann, a veteran aviation financier who backed a number of discount carriers and recently stepped down as chairman of **Finnair Oyj**, Finland's flag carrier. "It's a bigger gamble," said Mr. Heinemann. "If you get it wrong, you really get it wrong."

The discount airlines, for instance, took a central role in the design of the 737 Max, as well as the Airbus A320neo family, both of which have new and more fuel-efficient engines that make them cheaper to operate.

The discount carriers also are gravitating to the largest version of the jet they have selected as markets mature and passenger numbers increase. One-third of the Boeing jets sold are configured with the maximum number of seats permitted by regulators, said Randy Tinseth, vice president of marketing at Boeing Commercial Airplanes.

## Steady Ascent

Budget carriers are among the biggest buyers of workhorse Airbus A320 and Boeing 737 jets, especially the new, more fuel-efficient variants.

### Airbus A320neo



### Boeing 737 Max



Source: the companies

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## TECHNOLOGY

WSJ.com/Tech



A Falcon 9 SpaceX rocket lifted off in Florida on May 1. SpaceX expects to average close to two launches a month for all of 2017.

## Good Launch Would Lift SpaceX

By ANDY PASZTOR

If Elon Musk's SpaceX racks up another successful rocket launch this week, the blastoff could go a long way toward convincing critics that the company has recovered smartly from a pair of spectacular explosions in 2015 and 2016 that cast a pall over its future.

The unmanned Falcon 9 mission from Florida's Kennedy Space Center, slated for Monday, is carrying a commercial communications satellite for Inmarsat PLC. The launch is partly intended to showcase how nimble Space Exploration Technologies Corp., as the closely held company is officially called, has become in executing swift back-to-back launches. Monday's scheduled launch comes two weeks after the last SpaceX mission, which would

match a three-year-old company record for the shortest time between consecutive launches.

SpaceX management has said it foresees averaging close to two launches a month for all of 2017, though its an-

week it test fired the core nine engines of a Falcon Heavy, a beefed-up version of its workhorse Falcon 9 rocket, featuring more thrust and a total 27 engines. The initial launch of the new rocket, targeted for later this year, would mark another important milestone in expanding SpaceX's capabilities. Initially, SpaceX projected the Falcon Heavy would be flying by 2013.

Mr. Musk has said the company spent roughly \$1 billion developing the heavy-lift rocket but the engineering turned out to be more difficult than anticipated—or “crazy hard” as he described it during a March press conference. A major challenge is ensuring the engines start firing precisely at the right instant.

As launch rates increase, SpaceX hopes to significantly cut prices by increasingly rely-

ing on reusable boosters. The next blastoff using “flight proven” main engines, as the company calls them, is scheduled for the middle of next month.

In addition to ambitious launch plans, industry officials said SpaceX also is stepping up design work on a previously announced satellite project that could include more than 4,000 small spacecraft and may cost more than \$10 billion. One of the current concepts envisions satellites weighing more than 800 pounds, equipped with six antennas and with a projected lifespan of roughly five years, according to industry officials familiar with the project.

The company has declined to reveal technical details, but it has announced plans to launch the first prototype satellite as early as this year.

8  
Annual high-water mark so far for total SpaceX launches

nual high-water mark so far has been eight launches. Looking ahead, Mr. Musk's team has sketched out an aggressive timetable featuring launches as frequently as once a week by 2019.

SpaceX also has notched progress in other areas. Last

week it test fired the core nine engines of a Falcon Heavy, a beefed-up version of its workhorse Falcon 9 rocket, featuring more thrust and a total 27 engines. The initial launch of the new rocket, targeted for later this year, would mark another important milestone in expanding SpaceX's capabilities. Initially, SpaceX projected the Falcon Heavy would be flying by 2013.

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## A Toshiba Sale Hits Resistance

By TED GREENWALD

Western Digital Corp. on Sunday ratcheted up the pressure in its dispute with Toshiba Corp., filing a request for binding arbitration to prevent the troubled Japanese company from selling its stake in operations jointly owned by the two companies.

In its arbitration request, Western Digital claims Toshiba breached its contract by transferring its interest in the flash-memory joint ventures to an affiliated company without Western Digital's consent.

The request is the latest spat between Western Digital and Toshiba, which is trying to sell its profitable memory-chip business in an effort to bolster its ailing finances. Western Digital, which jointly owns a flash-memory semiconductor plant in Japan with Toshiba, has said the Japanese company promised not to sell its stake without Western Digital's approval.

Toshiba has accused West-

ern Digital of interfering with the chip-business sale and threatened to sue the California company.

A Toshiba spokesman on Monday declined to comment on Western Digital's arbitration request but reiterated his company's view that the planned sale doesn't violate any agreement and that Western Digital has no right to stop it.

Western Digital said on Sunday that the contracts forming the joint ventures include provisions that require one party's consent before the other party can sell its stake. Western Digital also said the agreements allow one party to seek arbitration and an injunction if it believes the other party has breached the terms.

Toshiba in its most recent earnings report warned its future was uncertain after losses at its U.S. nuclear unit, Westinghouse Electric Co., which filed for bankruptcy in March. Toshiba has said selling the chip business is crucial to survival.

## LYFT

Continued from Page One

nix area to use a mobile app to summon self-driving minivans, similar to the ride-hailing services of Lyft and Uber, but for free—and with software steering the cars instead of humans.

Waymo and Lyft each bring two assets to the agreement: Waymo's self-driving technology and Lyft's network of taxis operating in more than 300 cities across the U.S.

The companies also happen to be fierce rivals of Uber. Waymo is in the midst of a legal battle with Uber over driverless cars, alleging the ride-hailing company and a former Google executive stole trade secrets to be used in its development of self-driving technology. The judge in the case

recently recommended to federal prosecutors the allegations be investigated as a criminal matter and denied Uber's request it be settled in arbitration. Uber has denied wrongdoing and said it plans to defend itself in court.

Lyft is Uber's chief ride-hailing rival in the U.S., though it is a distant second in market share and valuation. Lyft is working with General Motors Co. to develop self-driving taxis and has said it is planning tests of the vehicles as soon as this year. GM last year invested \$500 million into Lyft, now valued at around \$7.5 billion; Uber is valued by investors at nearly \$70 billion.

A GM spokesman said the Waymo-Lyft partnership doesn't affect its relationship with Lyft.

—Mike Colias contributed to this article.

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## MIMS

Continued from page B1  
printers transform a liquid plastic into a solid using UV light and oxygen. This yields products comparable in quality to molded plastics at a competitive speed and cost, at least when making tens of thousands of a given object.

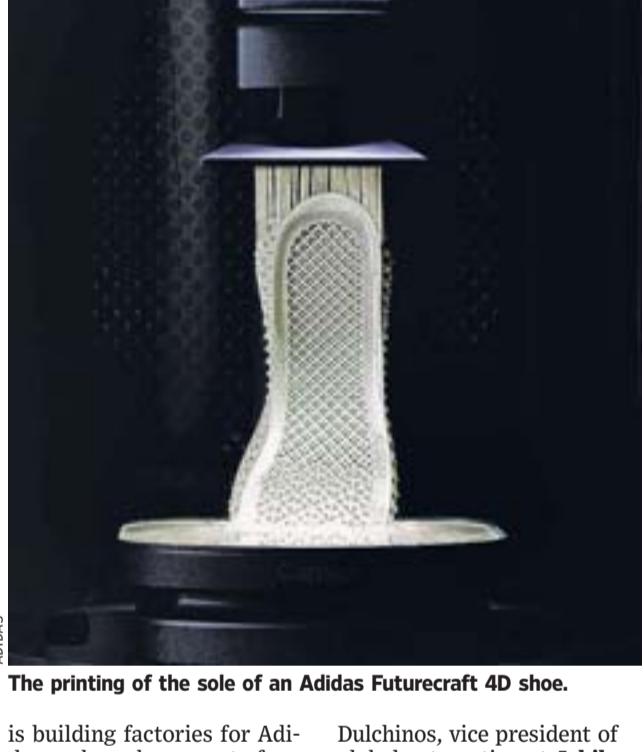
Because traditional manufacturing requires molds, casts and machining, it has high upfront costs. It is great if you want to make a million of something, but not so great if you want fewer. What the 3-D printing business has finally figured out is how to speed up the process dramatically while also using cheaper and stronger materials.

HP Inc. and Desktop Metal Inc. are leveraging actual inkjet printer technology. HP's Multi Jet Fusion printers, which start at \$130,000, literally draw with heat-absorbing ink on plastic powder, rapidly building layers one-tenth of a millimeter at a time.

Desktop Metal's manufacturing-grade system, which starts at \$360,000, uses inkjets to shoot a binding agent meant to hold tiny bits of metal together so they can be fused in what is basically a big oven. These technologies are rapidly distancing themselves from the type of 3-D printing now popular with do-it-yourselfers, which more closely resembles a hot glue gun.

Both HP and Desktop Metal are breaking with tradition in 3-D printing by throwing out the “razor and blades” model, where 3-D printing companies made money by selling specialized printing materials. HP is joining with BASF SE and more than 50 other companies, which will formulate their own powdered plastics for HP's 3-D printers. Desktop Metal's process uses powdered metals, a commonly available material typically used in a process known as metal injection molding.

You can expect a huge variety of the bits and bobs inside everyday objects to be 3-D printed in the next year, including plastic parts for automobiles, says Matthias Weisskopf, senior vice president of technologies at Oechsler AG. The company



The printing of the sole of an Adidas Futurecraft 4D shoe.

is building factories for Adidas and produces parts for German automobile makers. Another big application will be replacement metal parts for construction equipment, says Don Jones, director of global aftermarket parts strategy at Caterpillar Inc.

For both Caterpillar and Oechsler, moving to 3-D printing is also about bringing manufacturing closer to end consumers. Caterpillar's problem is that servicing equipment means maintaining a costly, spread-out network of parts warehouses.

It hopes to supplant these with print-on-demand parts. Adidas is building “Speedfactories” in Germany and the U.S.—in Atlanta—where it can produce goods on demand.

Adidas hasn't said how much its 3-D printed shoes will cost, but it has said they would be priced as a “premium” product. It expects to have shipped about 5,000 pairs by the end of 2017 and more than 100,000 by the end of 2018.

There are myriad barriers to 3-D printing becoming a mainstay of manufacturing, however. While the new technologies offer a markedly lower per-part cost than previous 3-D printing techniques, the cost doesn't remain competitive when quantities exceed 20,000 or so, says John

Dulchinos, vice president of global automation at Jabil Circuit Inc. A U.S. manufacturer of consumer electronics from Disney's theme-park wristbands to internet-connected gym shorts, Jabil is currently testing both HP and Desktop Metal printers for making production parts.

With traditional manufacturing, the high upfront costs of building molds and tooling can translate to ever-lower costs per part. With 3-D printing, costs are more or less the same to make one object or 10,000.

The other big issue? These parts have yet to be certified for the kind of extreme durability required in, for example, automobiles.

That is why Ford, which has been experimenting with 3-D printing almost since its invention, has yet to sell vehicles with printed parts, says Ellen Lee, technical leader of additive manufacturing research at the auto maker.

Meanwhile, I did some unscientific tests of my own, ones that, in my experience, no 3-D printed object would survive. I took the Adidas running shoes on a long, punishing run through city streets, sure that at any moment they'd fall to pieces. They didn't. Then I took a hammer to the steel hinge. I'm no John Henry, but it survived.



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*Attorneys for Lehman Brothers Holdings Inc. and Certain of Its Affiliates*

UNITED STATES BANKRUPTCY COURT  
SOUTHERN DISTRICT OF NEW YORK

In re  
Lehman Brothers Holdings Inc., et al.  
Debtors.

The complete 9019 Motion and related exhibits (the "Motion") associated with this Notice can be found for review and downloaded, free of charge, at (i) the website of the Debtors' Claims and Noticing Agent, Epiq Bankruptcy Solutions, LLC ("Epiq") available at <http://dm.epiq11.com/LBH> (the Motion is located within Docket No. 55232) or (ii) the website of the RMBS Trustees' Noticing Agent, The Garden City Group ("GCG") available at <http://lbhirmbssettlement.com/pdflib/LehmanBrothersHoldingsIncMotion.pdf>.

You may also request a copy of the Motion, free of charge, by directly contacting (i) Epiq at (646) 282-2400 or email at [Lehman@epiqsystems.com](mailto:Lehman@epiqsystems.com) or (ii) GCG at (855) 907-3115 or email at [Questions@lbhirmbssettlement.com](mailto:Questions@lbhirmbssettlement.com).

Chapter 11 Case No.  
08-13555 (SCC)

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(A) APPROVING RMBS SETTLEMENT AGREEMENT, (B) MAKING CERTAIN REQUIRED  
FINDINGS REGARDING DECISION OF RMBS TRUSTEES AND LBHI DEBTORS TO ENTER  
INTO RMBS SETTLEMENT AGREEMENT, (C) SCHEDULING ESTIMATION PROCEEDING  
TO DETERMINE RMBS CLAIMS AND APPROVING RELATED PROCEDURES REGARDING  
CONDUCT OF HEARING, AND (D) GRANTING RELATED RELIEF

PLEASE TAKE NOTICE that, on April 27, 2017, Lehman Brothers Holdings Inc. (the "Plan Administrator"), as Plan Administrator under the *Modified Third Amended Joint Chapter 11 Plan of Lehman Brothers Holdings Inc. and Its Affiliated Debtors*, on behalf of itself and the other affiliated debtors in the above-captioned cases (collectively, the "LBHI Debtors") filed the Motion of Lehman Brothers Holdings Inc. Pursuant to Fed. R. Bankr. P. 9019 And 11 U.S.C. § 105(a) For Entry Of Order (A) Approving RMBS Settlement Agreement, (B) Making Certain Required Findings Regarding Decision Of RMBS Trustees And LBHI Debtors To Enter Into RMBS Settlement Agreement, (C) Scheduling Estimation Proceeding To Determine RMBS Claims And Approving Related Procedures Regarding Conduct Of Hearing, And (D) Granting Related Relief (the "Motion"). Capitalized terms used but not defined herein shall have the meanings given to them in the Motion.

PLEASE TAKE FURTHER NOTICE that a hearing will be held on the Motion before the Honorable Shelley C. Chapman, United States Bankruptcy Judge, at the United States Bankruptcy Court for the Southern District of New York, Courtroom 623, One Bowling Green, New York, New York 10004 (the "Bankruptcy Court") on **July 6, 2017 at 10:00 a.m. (prevailing Eastern Time)**, or as soon thereafter as counsel may be heard.

PLEASE TAKE FURTHER NOTICE that objections, if any, to the Motion (including approval of the Trustee Findings and the Debtors' Findings) must be made in writing, state with particularity the grounds therefor, conform to the Federal Rules of Bankruptcy Procedure and the Local Bankruptcy Rules for the Southern District of New York, be filed electronically in text searchable portable document format (PDF) with the Court in accordance with General Order M-399 (General Order M-399 can be found at [www.nysb.uscourts.gov](http://www.nysb.uscourts.gov), the official website for the Court), by registered users of the Court's case filing system and by all other parties in interest (with a hard copy delivered directly to the Judge's Chambers), and be served in accordance with General Order M-399, and upon (i) the chambers of the Honorable Shelley C. Chapman, One Bowling Green, New York, New York 10004, Courtroom 23; (ii) Wilkie Farr & Gallagher LLP, 787 Seventh Avenue, New York, New York 10019 (Attn: Paul V. Shalhoub, Esq. and Todd G. Cosenza, Esq.) and Rollin Braswell Fisher LLC, 8350 East Crescent Parkway, Suite 100, Greenwood Village, Colorado 80111 (Attn: Michael A. Rollin, Esq. and Maritza D. Braswell, Esq.), attorneys for LBHI and certain of its affiliates; (iii) Gibbs & Bruns LLP, 1100 Louisiana, Suite 5300, Houston, Texas 77002 (Attn: Kathy Patrick, Esq. and Robert Madden, Esq.), attorneys for the Institutional Investors; (iv) Chapman

& Cutler LLP, 111 West Monroe Street, Chicago, Illinois 60603 (Attn: Franklin H. Top III, Esq. and Scott A. Lewis, Esq.), Morgan, Lewis & Bockius LLP, 101 Park Avenue, New York, New York 10178 (Attn: Michael S. Kraut, Esq.), Seward & Kissel LLP, 1 Battery Park Plaza, New York, New York 10004 (Attn: M. William Munno, Esq. and Daniel E. Guzman, Esq.), Alston & Bird LLP, 1201 West Peachtree Street, Suite 4900, Atlanta, Georgia 30309 (Attn: John C. Weintraub, Esq.), Holwell Shuster & Goldberg LLP, 750 Seventh Avenue, 26th Floor, New York, New York 10019 (Attn: Michael S. Shuster, Esq.) and Nixon Peabody LLP, 437 Madison Avenue, New York, New York 10022 (Attn: Dennis Drebsky, Esq.), attorneys for the Trustees; and (v) the Office of the United States Trustee for the Southern District of New York, U.S. Federal Office Building, 201 Varick Street, Suite 1006, New York, New York 10014 (Attn: William K. Harrington, Esq., Susan D. Golden, Esq., and Andrea B. Schwartz, Esq.) so as to be actually filed and received by no later than **June 22, 2017 at 12:00 noon (EDT)** (the "Objection Deadline").

PLEASE TAKE FURTHER NOTICE that the relief requested in the Motion may be granted without a hearing if no objection is timely filed and served as set forth above and in accordance with the order, dated June 17, 2010, implementing certain notice and case management procedures in these cases (Docket No. 9635) (the "Case Management Order").

Dated: April 27, 2017

New York, New York

/s/ Paul V. Shalhoub

Paul V. Shalhoub

Todd G. Cosenza

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*Attorneys for Lehman Brothers Holdings Inc. and Certain of Its Affiliates*

## CLASS ACTIONS

## LEGAL NOTICE

## If You Bought a Lithium Ion Cell, Lithium Ion Battery or Lithium Ion Battery Product, Class Action Settlements May Affect You.

## Lithium Ion Battery Products include, but are not limited to, notebook computers, cellular (mobile) phones, digital cameras, camcorders and power tools.

## Why was this notice published?

Settlements have been reached with four groups of defendants in a class action lawsuit involving Lithium Ion Cells ("Li-Ion Cells"), Lithium Ion Batteries ("Li-Ion Batteries") and Lithium Ion Battery Products ("Li-Ion Products"). A Li-Ion Battery is a cylindrical, prismatic or polymer battery that is rechargeable and uses lithium ion technology. A Li-Ion Product is a product manufactured, marketed and/or sold by Defendants, their divisions, subsidiaries or Affiliates, or their alleged co-conspirators that contains one or more Lithium Ion Cells manufactured by Defendants or their alleged co-conspirators. Li-Ion Products include, but are not limited to, notebook computers, cellular (mobile) phones, digital cameras, camcorders and power tools.

## What is this lawsuit about?

The lawsuit alleges that Defendants and co-conspirators engaged in an unlawful conspiracy to fix, raise, maintain or stabilize the prices of Li-Ion Cells. Plaintiffs further claim that direct purchasers from the Defendants of Li-Ion Cells, Li-Ion Batteries and/or Li-Ion Products manufactured by a Defendant may recover for the effect that the alleged conspiracy had on the prices of the purchased items. Plaintiffs allege that, as result of the unlawful conspiracy involving Li-Ion Cells, they and other direct purchasers paid more for Li-Ion Cells, Li-Ion Batteries and Li-Ion Products than they would have absent the conspiracy. Defendants deny Plaintiffs' claims.

## Who's included in the settlements?

The settlement classes include persons and entities who, from January 1, 2000 through May 31, 2011, or from May 1, 2002 through May 31, 2011, bought a Li-Ion Cell, Li-Ion Battery and/or Li-Ion Product directly from one or more of the Defendants, or any division, subsidiary or affiliate thereof, or any alleged co-conspirator in the United States.

## Who are the Settling Defendants?

Settlements have been reached with Defendants Hitachi Maxell, Ltd., and Maxell Corporation of America (collectively "Maxell"); Defendant NEC Corporation ("NEC"); Defendant Panasonic Corporation ("Panasonic"); and Defendant Toshiba Corporation ("Toshiba") (collectively "Settling Defendants"). The Panasonic Settlement also resolves claims against the SANYO Defendants. A complete list of Defendants is set out in the Long Form of Notice available at [www.BatteriesDirectPurchaserAntitrustSettlement.com](http://www.BatteriesDirectPurchaserAntitrustSettlement.com).

## What do the settlements provide?

The settlements provide for payments totaling \$49,850,000 in cash, plus interest, to the settlement classes. Some Settling Defendants have agreed to produce witnesses in the case against the remaining Defendants. Money will not be distributed to members of the settlement classes at this time. The lawyers will pursue the lawsuit against the other Defendants, to see if any future settlements or judgments can be obtained in the case and then be distributed together, on a *pro rata* basis based on the value of your Li-Ion Cell, Li-Ion Battery and/or Li-Ion Product purchases, to reduce expenses.

## What are my rights?

If you wish to remain a member of the settlement classes you do not need to take any action at this time. If you do not want to be legally bound by one or more of the settlements, you must exclude yourself in writing by **June 26, 2017**, or you will not be able to sue, or continue to sue, any Settling Defendants about the legal claims that were or could have been asserted in this case.

If you wish to object to any aspect of one or more of the proposed settlements, you must do so in writing no later than **June 26, 2017**. The settlement agreements, along with details on how to object to them, are available at [www.BatteriesDirectPurchaserAntitrustSettlement.com](http://www.BatteriesDirectPurchaserAntitrustSettlement.com). The U.S. District Court for the Northern District of California will hold a Fairness Hearing on **August 29, 2017 at 2:00 p.m.**, at 1301 Clay Street, Courtroom 1, 4th Floor, Oakland, CA 94612, to consider whether the settlements are fair, reasonable and adequate. If there are objections, the Court will consider them at that time. You may appear at the hearing, but don't have to. We do not know how long these decisions will take. The hearing may be moved to a different date or time without additional notice, so it is a good idea to check the website for information. Please do not contact the Court about this case.

The Court has appointed the law firms of Saveri & Saveri, Inc.; Pearson, Simon & Warshaw, LLP; and Berman DeValero as Class Counsel, to represent Direct Purchaser Class members.

This is a Summary Notice. For more details, call toll free 1-844-778-5952, visit [www.BatteriesDirectPurchaserAntitrustSettlement.com](http://www.BatteriesDirectPurchaserAntitrustSettlement.com), or write to In re: Lithium Ion Batteries Antitrust Litigation, Settlement Administrator, P.O. Box 4098, Portland, OR 97208-4098.

## COMMODITIES



CARLOS GARCIA RAWLINS/REUTERS

A refinery complex belonging to Citgo's parent and Venezuelan state oil company PdVSA.

# Dozens of Creditors Crowd Around Citgo

By JULIE WERNAU

Bondholders looking for compensation if Venezuela defaults know that one big pot of money remains: the assets of state-owned oil refiner **Citgo Holdings Inc.**

But there is a problem. Dozens of companies are lining up with claims on those same funds.

Venezuela last year pledged all of Citgo's equity as collateral to bondholders and to state-owned Russian oil producer Rosneft in debt deals. In addition, at least 43 companies—including ConocoPhillips Co. and Canadian mining firm **Crystallix International Corp.**—are pursuing legal claims against the government, according to the World Bank's International Center for Settlement of Investment Disputes. These companies say they weren't paid when Venezuela's government expropriated their assets there.

Now, with Wall Street judging that a default may only be a matter of time, it is becoming clear that there isn't nearly enough of Citgo to go around.

"There are more hands out than there are assets to pay them," said Russ Dallen, a partner at investment bank Caracas Capital Markets, based in the Venezuelan capital.

A default would trigger rights enabling any of the claimants to attempt to seize Citgo, triggering cross-default clauses in Venezuelan sovereign bonds if they remain unpaid once a final court order is issued, according to Credit Suisse. Attorneys say that would send creditors into a frenzied legal battle for assets that could take years to resolve.

Citgo reported in bond-offering documents that its 2015 equity value was \$8.3 billion. But many analysts believe the true figure is at least \$3 billion lower now, and possibly more as rising oil prices and growing stockpiles of fuel squeezed profits for refiners. It also reflects a multibillion-dollar dividend Citgo paid to its parent, **Petróleos de Venezuela SA**, or PdVSA, the state-owned oil company.

Meanwhile, claims on Citgo appear to be ballooning. Venezuela's total potential liabilities related to claims pending before the International Center for Settlement of Investment Disputes could reach around \$10 billion, Credit Suisse estimated in March. These companies are converging on Citgo because it is Venezuela's most accessible source of dollar-based assets, attorneys say.

Based in Houston, Citgo owns refineries in Lake Charles, La.; Corpus Christi, Texas; and Lemont, Ill. The company also owns valuable networks of pipelines and fuel-distribution terminals in the eastern U.S.

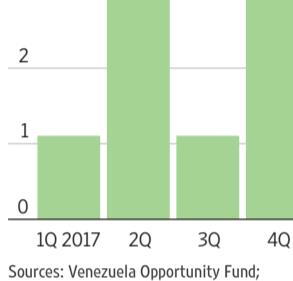
Earlier this month, Sens. Ben Cardin (D, Md.) and Marco Rubio (R, Fla.), along with a number of other senators, proposed legislation calling for President Donald Trump to prevent Russian oil giant Rosneft from seizing the company. Foreign control of Citgo would pose a "significant risk" to U.S. energy and national security, the legislation said. Rosneft is currently under U.S. sanctions, which would prevent a takeover of U.S. assets.

"The prize here is Citgo and we are getting closer to it," said Robert L. Weigel, a lawyer for Crystallix, which won a \$1.4 billion arbitration award last year against Venezuela follow-

## Coming Due

Venezuela owes \$10 billion to bondholders in 2017 and chances for a default are growing

## 2017 bond payments due



## Remaining Value Is Open Question

Creditors and companies around the world are mounting competing claims for Citgo's assets in the increasingly likely event of a Venezuelan default. But it isn't clear how much value remains.

Citgo, the Houston-based subsidiary of Venezuela's state-owned oil company **Petróleos de Venezuela SA**, is the largest foreign owner of U.S. domestic refinery capacity. With three refineries in the U.S. and a network of terminals and pipelines running across 24 states, the company has increasingly become a source of cash for struggling Venezuela.

What the company is worth today is unclear, and estimates vary widely. PdVSA said last year in a bond document that Citgo's 2015 equity value was \$8.3 billion. But many analysts place the value much lower than that.

One banker calculated that Citgo's equity was worth between \$3 billion and \$5 billion, based in part on a Moody's Investors Service's 2017 earnings forecast.

Whatever Citgo's value, it is almost certainly less than the more than \$10 billion in arbitration claims against the Venezuelan government, made by companies operating in Venezuela whose assets were nationalized under the government's socialist regime.

Citgo was founded in 1910 as Cities Service Co. by Henry Doherty, an oil pioneer from Columbus, Ohio. Over the next 20

years, it expanded through the discovery of oil fields in Kansas and the purchase of refineries in Oklahoma and Texas. In 1964, the company shortened its name to Citgo to sound catchier in marketing campaigns.

Occidental Petroleum Corp. acquired Cities Service in 1982. A year later, Occidental sold the Citgo brand to **Southland Corp.** owner of 7-Eleven stores.



## BANKING & FINANCE

# Regulatory Blitz Rattles Chinese Banks

New banking czar's flood of directives and discovery of fraud has China's lenders reeling

BY CHUIN-WEI YAP

BEIJING—The past two months have been tumultuous for Chinese lenders as a new banking czar has unleashed a blizzard of new directives, uncovered a fraud scandal and issued heavy fines.

Since his appointment to head the China Banking Regulatory Commission in February, Guo Shuqing has become a central figure in Beijing's crackdown on risk, making moves that have rattled markets.

The 60-year-old Mr. Guo is navigating narrow straits: He has to tame a freewheeling industry without killing a tentative recovery in bank profits or causing too much disruption. President Xi Jinping has stressed the need for a stable financial sector ahead of a major Communist Party leadership shuffle this fall.

On Friday, the CBRC tried to reassure investors that it was aware of the threat of overregulation and emphasized the campaign's value in reducing risk in the long term. "We're hoping now to avoid risks that have resulted from the regulations to resolve risk," said Xiao Yuanqi, a CBRC department head.

Among Mr. Guo's first orders: an eight-month audit of risky assets across Chinese banks.

"The banking system currently shows symptoms of using a bullpen to cage a cat," Mr. Guo said in the written directive circulated to banks, a reference to overly loose regu-

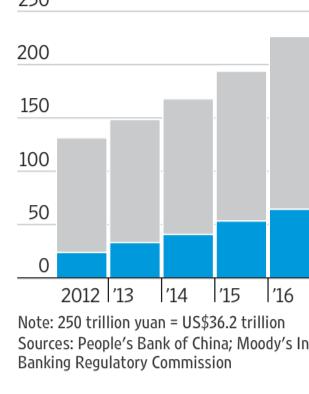
### Chasing Shadows

China's bank regulator is applying a heavy hand in trying to control a surge in nontraditional, high-yield investment products.

#### China's banking assets

In trillions of yuan

Shadow-banking products Total

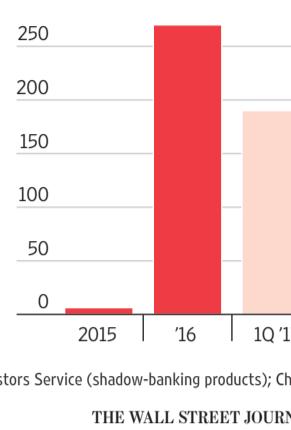


Note: 250 trillion yuan = US\$36.2 trillion

Sources: People's Bank of China; Moody's Investors Service (shadow-banking products); China Banking Regulatory Commission

#### Fines levied on banks

In millions of yuan



THE WALL STREET JOURNAL.



SHU ZHANG/REUTERS

Regulatory head Guo Shuqing has become a central figure in Beijing's crackdown on lender risk.

lation. "Rules aren't being followed. Those who were caught before have been repeating their offenses."

His directive triggered an inspection last month at **China Minsheng Banking Corp.**, a midsize lender, that uncovered at least 1.65 billion yuan (\$239 million) illegally solicited from investors, allegedly for nonexistent wealth-management products.

The discovery refocused attention on high-profile failures of such products, a burgeoning subset of lightly regulated credit under the umbrella of "shadow banking."

Banks like Minsheng are marketing to their customers these products that are typically designed by financial-service firms such as trust companies and securities houses and other brokerages. In many cases, banks describe these transactions as neither assets nor liabilities, and so they demur the need to account for

them on their balance sheets, essentially hiding risky loans.

Shadow banking in China has nearly tripled in size to around 65 trillion yuan (\$9.4 trillion) by the end of 2016 from five years earlier, equal to around 87% of gross domestic product, according to **Moody's Investors Service**.

Minsheng attributed its lapse to wrongdoing by some employees. In response, investors protested outside the bank branch where the problems began, chanting and unfurling a banner that read "Minsheng, return our money!"

Minsheng, in coordination with the bank regulator, swiftly guaranteed that investors would get back what they invested.

Despite the quick quelling of the protests, the episode underscored the difficult balancing act Mr. Guo has to strike in drawing attention to problems without triggering

investor anger or roiling the financial system in ways that are hard to control.

At **Ping An Insurance Group Co.** about a year ago, investors protested a defaulted product for weeks outside the company's headquarters, clashing with police. Around the same time, an investor protesting soured products sold by asset-management firm Global Wealth Investment (Beijing) Co. stabbed the firm's chief executive.

Mr. Guo, a former head of China's securities regulator who also guided one of China's largest lenders, **China Construction Bank Corp.**, out of crippling debt, is returning to financial regulation at a time when slow growth and a mountain of debt pose serious challenges to China's financial health.

He has a reputation for hands-on leadership and directness and has been mentioned as China's next central-

bank governor. His comeback to banking after four years of governing Shandong province has been welcomed in financial circles.

Asked on his third day as banking czar about his regulatory agenda, Mr. Guo deflected the question. "My head is still swimming with industrial upgrading programs in Shandong: for example, the three main ways it's improving its rural toilets," he said.

He quickly moved into high gear. Along with the heightened inspections, the commission has sharply increased penalties on banks that violate rules and this month it ordered closer scrutiny of loan collateral.

Mr. Guo's CBRC has handed down some of the highest individual fines on public record. That includes a 16.7 million yuan (\$2.4 million) fine of Ping An Bank Co. and 11.9 million yuan for **China Huaxia Bank Ltd.**, on charges including

breaching internal controls and illegally guaranteeing repayment of investments.

In the first quarter this year, the regulator levied 190 million yuan in fines, compared with 270 million yuan in all of 2016 and 6.3 million yuan in 2015.

It is likely Minsheng will face a fine from the regulator; the bank said it doesn't yet know for how much. Minsheng said the employees are under police detention; it isn't clear if charges have been filed.

The uncertainty around the sector has made investors nervous. Chinese markets this past week extended their decline since mid-April. "Unless there is clear sign of a reverse in tightening regulations, the market is likely to tumble further as panic selling continues," said Zhang Gang, an analyst at Central China Securities.

—Grace Zhu contributed to this article.

## EQUITIES

AHEAD OF THE TAPE | By Steven Russolillo

# 4

The number of times the Dow industrials have fallen or risen by 1% or more this year, the least for any comparable period since 1965

## Calm Descends on Dow

The stock market is at its quietest in half a century.

The Dow Jones Industrial Average has risen by 1% or more just three times this year and has fallen 1% or more only once. That marks the fewest 1%

moves for the blue-chip index

MONEYBEAT

for any period between the beginning of the year and May 12 since 1965, according to the WSJ Market Data Group.

It is a contrast to last year, which started with a 10% correction in the Dow, and proceeded to mark a number of twists and turns around the British vote to leave the European Union in June and the U.S. presidential election in November.

And the calm in major indexes appears to be strengthening, as evidenced by the broader S&P 500, which has had an absolute daily move of less than 0.5% for 13 consecutive trading sessions through Friday, the longest such streak since 1995.

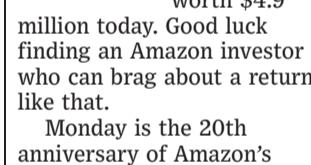
Another measure, the CBOE Volatility Index, an options-based measure of expected stock-market swings over the next 30-days, hit its lowest level in nearly a quarter-century last week.

—Ben Eisen

### ONLINE



For more MoneyBeat blog posts, go to [blogs.wsj.com/MoneyBeat](http://blogs.wsj.com/MoneyBeat)



A \$10,000 investment in **Amazon.com Inc.** 20 years ago would be worth \$4.9 million today. Good luck finding an Amazon investor who can brag about a return like that.

Monday is the 20th anniversary of Amazon's initial public offering. Its vertiginous stock chart is a reflection of the internet giant's dominance. Shares have gone from under \$2 on a split-adjusted basis to \$961.35 at Friday's close.

The 36% compounded annual gain by buying Amazon at its first-day closing price earned an investor 155 times what would have been made in the S&P 500, including dividends. At \$460 billion, Amazon now has the fourth-largest market capitalization in the S&P 500.

"This massive outperformance has led to an explosion in hindsight bias, with investors fooling themselves into believing Amazon's

ascent was somehow obvious or inevitable," writes Michael Batnick, director of research at Ritholtz Wealth Management and author of the popular "Irrelevant Investor" blog. "You had to be some sort of sociopath, void of any human emotions, to earn these monstrous gains."

Zooming in on Amazon's stock chart shows a wild ride. It is one that likely sapped gains from market-timing investors who either bought or sold at the wrong time.

History shows stock investors regularly underperform the market's returns. Volatility often triggers irrational behavior when investors almost always would fare better by ignoring the noise. Similar patterns are only exacerbated when focusing on individual securities.

As Mr. Batnick points out, Amazon shares have had daily declines of 6% 199 times. The stock has fallen 15% over a three-day span on

### Wild Ride

Amazon stock's steepest drawdowns each year



Source: Irrelevant Investor

THE WALL STREET JOURNAL.

October 2001. Most investors just couldn't ride that out. "There is a very real cost associated with the outperformance that we choose to ignore when looking at a chart," Mr. Batnick says.

It isn't just retail investors who have expressed regret for missing out on Amazon, which only recently started turning profits and has always sported an astronomical valuation. Warren Buffett said earlier this month at the Berkshire Hathaway annual meeting that he "underestimated the brilliance" of Amazon boss Jeff Bezos and that the odds that he would succeed were "not at all obvious."

Plenty of people might brag that they saw the potential that eluded the most successful investor of all time.

Unfortunately, few if any had the Buffett-like discipline to actually hang on for this extremely profitable 20-year ride.

THE TICKER | Market events coming this week

Monday	TJX Cos.	0.79/0.76	EIA report: natural gas Previous change in stocks in billions of cubic feet up 45
Wednesday	Mort. bankers indexes	7	Leading indicators March, previous up 0.4% April, expected up 0.4%
Tuesday	Building permits	1.26 mil.	Philadelphia Fed survey April, previous 22 May, expected 18.5
	April, expected	1.27 mil.	Earnings expected* Estimate/Year Ago(\$)
	Previous change in stocks in millions of barrels		Applied Materials 0.75/0.34 Autodesk (0.23)/(0.10) McKesson 3.00/2.44 Ross Stores 0.80/0.73 salesforce.com 0.26/0.24 Wal-Mart 0.96/0.98
	Crude oil	down 5.2	
	Gasoline	down 0.2	
	Distillates	down 1.6	
	Housing starts	1.215 mil.	
	March, prev.	1.26 mil.	
	April, expected	1.26 mil.	
	Industrial production	up 0.5%	
	March, previous	up 0.5%	
	April, expected	up 0.3%	
	Earnings expected*	Estimate/Year Ago(\$)	
	Home Depot	1.61/1.44	
	SINA	0.17/(0.04)	
	Staples	0.17/0.17	
	Initial jobless claims		
	Previous	236,000	
	Expected	240,000	
	Deere & Co.	1.65/1.56	
	Foot Locker	1.39/1.39	
	Friday		
	Earnings expected*	Estimate/Year Ago(\$)	

\* FACTSET ESTIMATES EARNINGS-PER-SHARE ESTIMATES DON'T INCLUDE EXTRAORDINARY ITEMS (LOSSES IN PARENTHESES) • ADJUSTED FOR STOCK SPLIT NOTE: FORECASTS ARE FROM DOW JONES WEEKLY SURVEY OF ECONOMISTS



The gardening department of a California Home Depot store. The home-improvement retailer posts quarterly results Tuesday.

# HEARD ON THE STREET

FINANCIAL ANALYSIS & COMMENTARY

WSJ.com/Heard

Email: [heard@wsj.com](mailto:heard@wsj.com)

## OVERHEARD

One word: slime. American children's recent penchant for the gooey stuff has spawned thousands of how-to videos, thrown kitchen tables across the country into disarray and created a cottage industry of slime producers. It has also been a bright spot for certain U.S. companies.

Elmer's glue is a key slime ingredient, and that has been good news for Elmer's parent **Newell Brands**.

On its earnings call last week, Newell Chief Executive **Michael Polk** said the company is "driving new brand activity to markets around making slime with Elmer's to meet the incredible consumer-driven need to make slime."

**Office Depot** is seeing that firsthand.

On its earnings call, Chief Executive **Gerry Smith** said that the company's marketing teams "noticed the slime trend was building in February on social media," and the company responded by quickly increasing its glue inventory and partnering with Elmer's to make a child-friendly recipe.

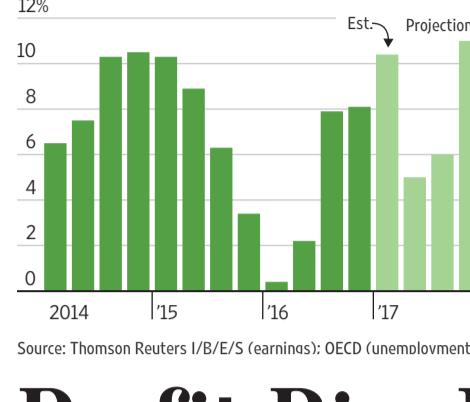
The result, according to Mr. Smith: "We sold more glue in the first quarter than we did in the entire year of 2016."

Craft chain **Michaels**, which has styled itself the "ultimate slime headquarters" is also catching the wave. Credit Suisse analysts said in a note last month that they were encouraged by the retailer's "trend-right product placement in the stores, namely prepackaged bundles that include ingredients for slime located near store entrances."

Alas, no fad can last forever. The marketing team might not have broken the news to management yet, but there are these things called fidget spinners...

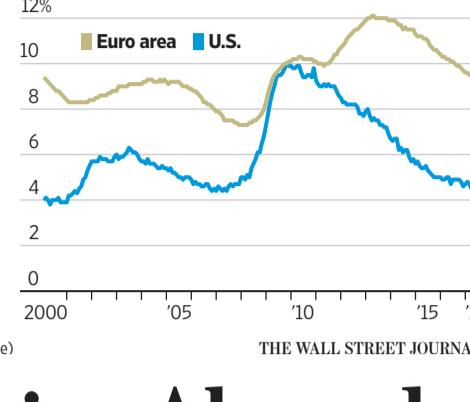
## Offshore Opportunity

S&P 500 earnings, excluding the energy sector, change from a year earlier



Source: Thomson Reuters I/B/E/S (earnings); OECD (unemployment rate)

Unemployment rates for the U.S. and euro area



THE WALL STREET JOURNAL.

## Watchmakers Are Having a Bad Time

Out with English noblemen, in with techies and women. Sweeping board and management changes say more about the risks facing Cartier owner **Richemont** and other luxury groups than an underwhelming quarter for watch sales.

Richemont shares fell 5% Friday as investors digested lower-than-expected growth for the quarter through March. Stellar results from handbag makers **LVMH** and **Kering** had buoyed hopes of a rapid recovery from last year's woes, which have been attributed, among other things, to terrorist attacks and the 2015 yuan devaluation.

Richemont's less sparkling performance has also hit shares in its key peer,

**Swatch**, and to a lesser extent those of LVMH, which also has a watch business. Emerging markets, meanwhile, have largely recovered from the financial stresses that walloped them last year, and are benefiting from the improvement in Europe and other parts of the developed world, points out J.P. Morgan Chase & Co. economist Joseph Lupton. That should in particular benefit U.S. multinationals that sell into global supply chains.

The upshot is that the more business a company does overseas, the better its profit growth ought to be in the year ahead. So larger companies, which tend to have greater overseas exposure, might shine. The same is true of more globally exposed areas of the market, such as the technology sector.

More U.S.-focused companies, such as retailers, and more broadly, small companies, could get left out.

For investors, it is time to get more worldly.

—*Justin Lahart*

he would support a universal basic income, why acquisitions usually fail, why the Swiss franc isn't strong ("it's the market value of trust")—it was how to adapt to change.

This concern is also apparent in his nonexecutive appointments. The Duke of Wellington and Lord Renwick of Clifton won't be seeking re-election at this year's annual general meeting.

Among the five new non-executives are two male technology executives (including Nikesh Arora, who left Japanese telecom and tech giant **SoftBank** last year under a cloud of controversy), a female financier and a female economics professor from China.

E-commerce is the obvious technology trend affecting luxury groups: Next month, LVMH will open a multibrand e-commerce portal to compete with **Yoox Net à Porter**, in which Richemont owns a 24% stake.

Luxury groups are slowing their investments in new retail outlets, but spending on new technology may have to pick up.

Investors should probably worry less about sales and more about costs.

—*Stephen Wilmot*

## Profit Rise Lies Abroad

This year is shaping up to be a very good one for American companies. Just not at home.

First-quarter earnings per share at companies in the S&P 500 are on track for a gain of 14.6% versus a year earlier, according to Thomson Reuters I/B/E/S. Analysts are saying the rest of the year looks good, too.

Those forecasts might prove accurate, but probably not because of what is happening in America. A range of factors will make doing business overseas much more profitable for U.S. companies. This situation could create a sharp divide between the stock market's haves and have-nots.

The U.S. economy remains stuck in the same slow-growth track, but with the unemployment rate at 4.4%, the job market has gone from tightening to tight. That has set the stage for wages to accelerate, putting earnings at risk.

Analysts at Goldman Sachs estimate that for every percentage-point increase in labor-cost inflation, earnings for companies in the S&P will get shaved by 0.8 percentage point. Goldman's economists estimate wages are now up 3% on the year.

Throw in the likelihood of Federal Reserve interest-rate increases, and the greatly diminished odds of a corporate tax cut this year, and it is hard to be all that upbeat about U.S. profits growth.

But the U.S. accounts for only about 44% of the sales at the companies that comprise the S&P 500, according to S&P Dow Jones Indices.

The rest comes from overseas, and the profits outlook there is stronger.

Growth outside the U.S. appears to be picking up, there is still plenty of labor-market slack in many countries, and central banks are still a while off from raising rates.

Consider the euro area in particular, which according to the Commerce Department accounts for about 40% of the income generated by U.S. multinationals' overseas operations. Europe is growing more rapidly than the U.S., but its unemployment rate, at 9.5% in March, is much higher. Put simply, says Bank of America Merrill Lynch economist Ethan Harris, "the U.S. is running up against labor-supply constraints and Europe isn't."

That ought to translate into substantially stronger profits growth for U.S. multinationals' European opera-

tions. Workers aren't in a position to ask for raises and companies, which aren't running close to capacity, don't need to add new workers quickly to meet rising demand.

An added bonus: The euro has been strengthening in recent months, which translates into higher dollar profits.

Emerging markets, meanwhile, have largely recovered from the financial stresses that walloped them last year, and are benefiting from the improvement in Europe and other parts of the developed world, points out J.P. Morgan Chase & Co. economist Joseph Lupton. That should in particular benefit U.S. multinationals that sell into global supply chains.

The upshot is that the more business a company does overseas, the better its profit growth ought to be in the year ahead. So larger companies, which tend to have greater overseas exposure, might shine. The same is true of more globally exposed areas of the market, such as the technology sector.

More U.S.-focused companies, such as retailers, and more broadly, small companies, could get left out.

For investors, it is time to get more worldly.

—*Justin Lahart*



Source: FactSet

## MARKETS

THE DAILY SHOT | By Lev Borodovsky

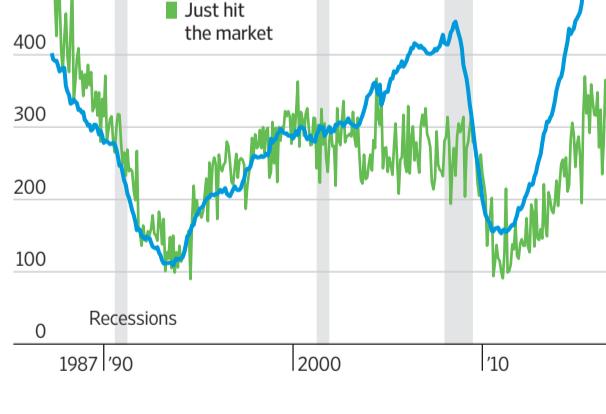
## Hard Times Hit High-End Housing

Rising demand for luxury apartments has spurred an epic building boom that now threatens the health of this sector of the U.S. housing market. While overbuilding so far seems limited to the priciest properties, analysts are watching this segment closely for any signs of spillover.

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A massive inventory of new apartments has or is about to hit the market.

### New privately owned housing units



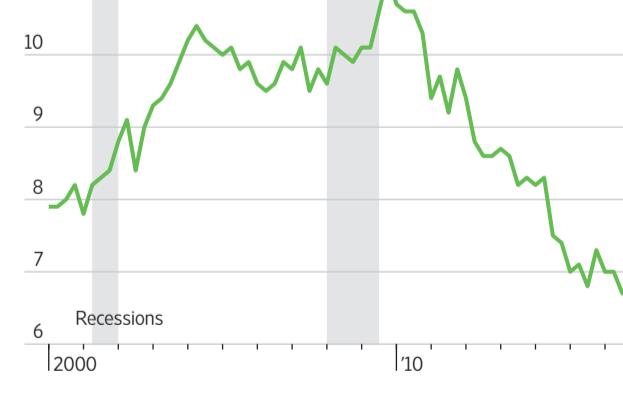
Multifamily loan growth to developers and landlords is slowing.

### Multifamily property loans, percentage change from a year earlier



As a result, vacancy rates are no longer declining and could begin climbing.

### U.S. rental vacancy rate



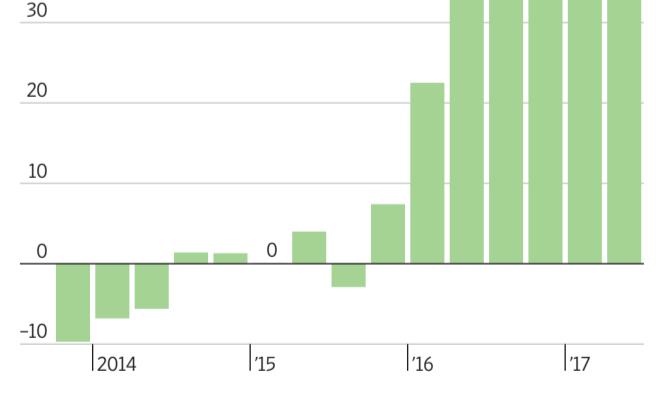
Permits for new multifamily units have declined meaningfully from the postrecession highs.

### New privately owned housing units authorized



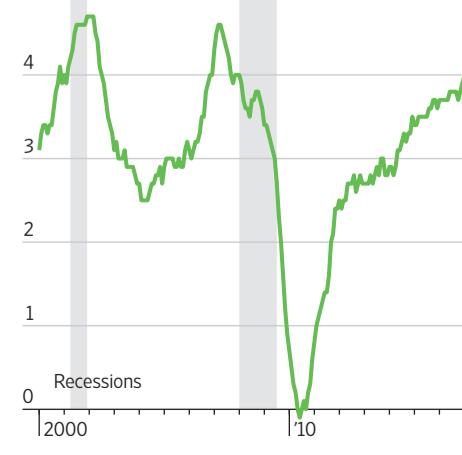
With competition in the space heating up, banks are becoming more cautious in lending—on both new construction and existing apartment purchases.

### U.S. banks tightening real estate lending, quarterly net percentage



Rental inflation remains high but it could be peaking as renter competition heats up.

### Rental inflation



The luxury-apartment business has boomed in recent years, but rising supply is now weighing on shares of firms such as Equity Residential, a real estate investment trust.

### Percentage change since 2015





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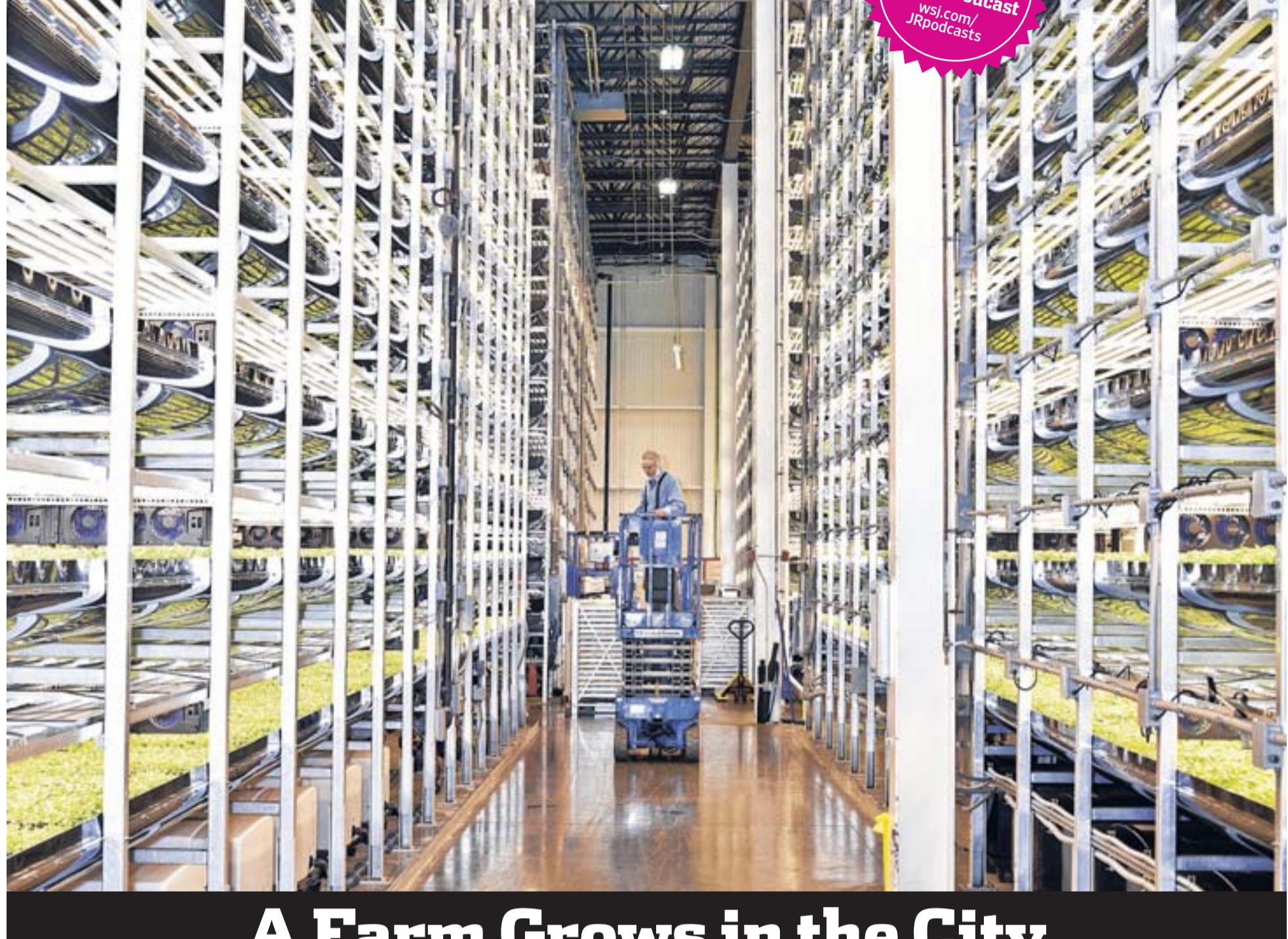
# AGRICULTURE

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Monday, May 15, 2017 | R1

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## A Farm Grows in the City

Startups are leading the way to a future in which more food is grown closer to where people live

BRYAN ANSELMI FOR THE WALL STREET JOURNAL (4)



BY BETSY MCKAY

**B**ILLIONS OF PEOPLE around the world live far from where their food is grown.

It's a big disconnect in modern life. And it may be about to change.

The world's population is expected to reach 9.7 billion by 2050, 33% more people than are on the planet today, according to projections from the United Nations. About two-thirds of them are expected to live in cities, continuing a migration that has been under way around the world for years.

That's a lot of mouths to feed, particularly in urban areas. Getting food to people who live far from farms—sometimes hundreds or thousands of miles away—is costly and strains natural resources. And heavy rains, droughts and other extreme weather events can threaten supplies.

Now more startups and city authorities are finding ways to grow food closer to home. High-tech "vertical farms" are sprouting inside warehouses and shipping containers, where lettuce and other greens grow without soil, stacked in horizontal or vertical rows and fed by water and LED lights, which can be customized to control the size, texture or other characteristic of a plant.

Companies are also engineering new ways to grow vegetables in smaller spaces, such as walls, rooftops, balconies, abandoned lots—and

kitchens. They're out to take advantage of a city's resources, composting food waste and capturing rainwater as it runs off buildings or parking lots.

"We're currently seeing the biggest movement of humans in the history of the planet, with rural people moving into cities across the world," says Brendan Condon, co-founder and director of Biofilta Ltd., an Australian environmental-engineering company marketing a "closed-loop" gardening system that aims to use compost and rainwater runoff. "We've got rooftops, car parks, walls, balconies. If we can turn these city spaces into farms, then we're reducing food miles down to food meters."

### Moving beyond experiments

Urban farming isn't easy. It can require significant investment, and there are bureaucratic hurdles to overcome. Many companies have yet to turn a profit, experts say. A few companies have already failed, and urban-farming experts say many more will be weeded out in the coming years.

But commercial vertical farms are well beyond experimental. Companies such as AeroFarms, owned by Dream Holdings Inc., and Urban Produce LLC have designed and operate commercial vertical farms that aim to deliver supplies of greens on a mass scale more cheaply and reliably to cities, by growing food locally indoors year round.

At its headquarters in Irvine, Calif., Urban Produce grows baby kale, wheatgrass and other organic greens in neat rows on shelves stacked 25 high that rotate constantly, as if on a conveyor belt, around the floor of a window-

less warehouse. Computer programs determine how much water and LED light the plants receive. Sixteen acres of food grow on a floor measuring an eighth of an acre.

Its "high-density vertical growing system," which Urban Produce patented, can lower fuel and shipping costs for produce, uses 80% less fertilizer than conventional growing methods, and generates its own filtered water for its produce from humidity in the air, says Edwin Horton Jr., the company's president and chief executive officer.

"Our ultimate goal is to be completely off the grid," Mr. Horton says.

The company sells the greens to grocers, juice makers and food-service companies, and is in talks to license the growing system to groups in cities around the world, he says. "We want to build these in cities, and we want to employ local people," he says.

AeroFarms has built a 70,000-square-foot vertical farm in a former steel plant in Newark, N.J., where it is growing leafy greens like arugula and kale aeroponically—a technique in which plant roots are suspended in the air and nourished by a nutrient mist and oxygen—in trays stacked 36 feet high.

The company, which supplies stores from Delaware to Connecticut, has more than \$50 million in investment from Prudential, Goldman Sachs and other investors, and aims to install its systems in other cities globally, says David Rosenberg, its chief executive officer. "We envision a farm in cities all over the world," he says.

AeroFarms says it is offering project management and other services to urban organiza-

tions as a partner in the 100 Resilient Cities network of cities that are working on preparing themselves better for 21st century challenges such as food and water shortages.

### The bottom line

Still, these farms can't supply a city's entire food demand. So far, vertical farms grow mostly leafy greens, because the crops can be turned over quickly, generating cash flow easily in a business that requires extensive capital investment, says Henry Gordon-Smith, managing director of Blue Planet Consulting Services LLC, a Brooklyn, N.Y., company that specializes in the design, implementation and operation of urban agricultural projects globally.

The greens can also be marketed as locally grown to consumers who are seeking fresh produce.

Other types of vegetables require more space. Growing fruits like avocados under LED light might not make sense economically, says Mr. Gordon-Smith.

"Light costs money, so growing an avocado under LED lights to only get the fruit to sell is a challenge," he says.

And the farms aren't likely to grow wheat, rice or other commodities that provide much

Please turn to the next page

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## JOURNAL REPORT | AGRICULTURE

# Shipping Alliances Stir Fears Among U.S. Farmers

Growers, already hit by a strong dollar, worry that fewer vessels will be available for exports

BY MICHAEL A. POLLICK

AS A STRONG dollar makes U.S. commodities more expensive globally, American farmers are finding it tougher to compete in export markets. Now some worry that a recent restructuring of the ocean shipping industry will make it more difficult and costly just to deliver U.S. commodities abroad.

Since last year, 11 large con-

ting on a smaller number of U.S. ports.

That is a big concern to farmers who ship certain products—such as hay, cotton, lumber, almonds and frozen beef—in steel containers. U.S. freight rates so far haven't risen much, but they will before long, because of lessened competition, says Robert Sinner, a North Dakota soybean grower and exporter. "The bottom line is, we're going to have fewer choices" in making export shipments, he says.

Container firms say the changes will benefit customers. "In general, our view is that alliances enable container shipping lines to optimize networks and benefit from economies of scale," says Michael Storgaard, a spokesman for A.P. Moeller-Maersk A/S.

"This potentially allows the individual partners to market more competitive and attractive services: more ports and direct services, better coverage and higher frequency."

Historically, federal law has given ocean carriers broader latitude than many industries, allowing them to cooperate in such things as reducing capacity, altering routes and even discussing freight rates, says Peter Friedmann, executive director of the Agriculture Transportation Coalition, a Washington, D.C., lobbying and trade group for farm interests.

But some in the government appear now to have a different view. Last November, in a letter to the Federal Maritime Commission, a senior Justice Department official cited concerns about "a significant increase in concentration in the industry" resulting from the new alliances. The department recently subpoenaed se-

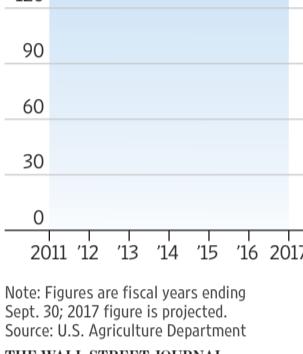


BEN MARGOT/ASSOCIATED PRESS

The port of Oakland, Calif., plans this year to raise the height of cranes and begin construction on more warehouses. It is one of the few U.S. ports able to accommodate large new container vessels being put into service by shipping companies.

### Choppy Ride

U.S. agricultural exports by year. Exports have been buffeted by a strong dollar and weak foreign economies, and could face a new challenge from changes in the ocean-freight business.



Note: Figures are fiscal years ending Sept. 30; 2017 figure is projected.  
Source: U.S. Agriculture Department  
THE WALL STREET JOURNAL

tainer shipping companies, including Denmark's Maersk Line and Germany's Hapag-Lloyd, have entered three new cooperative operating arrangements, or alliances, affecting 90% of shipments on global trade routes. The pacts aim to cut costs and reduce overcapacity, and commodity producers expect they will result in fewer and larger vessels call-

nior shipping-company executives, but has declined to comment on the investigation.

Port calls have been falling since before the new alliances formed, though. Sailings to U.S. ports from Asia recently were running at a weekly rate of 57, down from 65 four years ago, according to Alphaliner, which tracks such activity. However, with larger vessels coming into use, overall capacity has risen 4% to the U.S. West Coast and 22% to the East Coast in that same period, the data show.

"There is no evidence to suggest that there is any shortage of vessel capacity to cater to U.S. agricultural exports," and the drop in the frequency of service hasn't severely limited choices for shippers, says H.J. Tan, a consultant with Alphaliner.

Overall capacity isn't the biggest worry for farmers, as the dollar's strength continues

to weigh on export sales of agricultural goods. It is more a matter of coping with logistical and economic mismatches, some say.

Container lines have a disincentive to serve farmers, because freight rates, which are based on cargo value, are typically much higher for imports of manufactured goods than for exported farm products, says Walter Kemmies, a transportation and ports specialist at commercial real-estate firm Jones Lang LaSalle. Thus, shipping companies prefer to route vessels to ports near major consumer markets. That leaves fewer ships and fewer containers within reach of more sparsely populated areas where commodities are produced.

That disparity may grow worse as companies adopt larger and larger ships. Of the 30 biggest U.S. ports, fewer than a third currently have harbor channels deep enough

to accommodate the biggest new vessels. The shift to larger vessels has put a lot of stress on ports, says Emma Griffith, an analyst at Fitch Ratings. "The infrastructure isn't in place for handling one huge ship, and there is a cascading effect from backups in getting the ship unloaded and getting new cargo on board."

At the ports of Seattle and Tacoma, Wash., two terminals are being revamped to accommodate more of the largest vessels. The ports also expect to spend more than \$13 billion to improve rail and truck access.

From Casselton, N.D., Mr. Sinner's family business, Sinner Bros. & Bresnahan, sends food-grade soybeans to 15 countries, where they are processed into products such as tofu and soy milk. Using containers offers better assurance of food safety and makes it easier to trace shipments, which Mr. Sinner says are im-

portant issues to customers in Japan and Southeast Asia.

But getting empty containers can be a hassle, Mr. Sinner says. In the Upper Midwest, many container vessels end up in Chicago. Farmers must arrange, at additional cost, to have containers delivered to locations where they can be loaded.

Mr. Sinner says the advent of the new alliances has caused some disruptions. In April, a scheduled shipment for some 15 containers of soybeans from his farm was abruptly delayed by two weeks. That angered customers in Asia, where high temperatures and humidity make it impractical to store soybeans used in food processing.

"Hiccups like this create a lot of anxiety and frustration for everyone," Mr. Sinner says.

**Mr. Pollock is a writer in Ridgewood, N.J. Email him at [reports@wsj.com](mailto:reports@wsj.com).**

## A Farm Grows in the City

Continued from the prior page

of a daily diet, because there is less of a need for them to be fresh, Mr. Gordon-Smith says. They can be stored and shipped efficiently, he says.

The farms are also costly to start and run. AeroFarms has yet to turn a profit, though Mr. Rosenberg says he expects the company to become profitable in a few months, as its new farm helps it reach a new scale of production. Urban Produce became profitable earlier this year partly by focusing on specialty crops such as microgreens—the first shoots of greens that come up from the seeds—that generally grow indoors in a very condensed space, says Mr. Horton, who started the company in 2014.

### Lessons learned

One of the first commercial vertical-farming companies in the U.S., FarmedHere LLC, closed a 90,000 square-foot farm in a Chicago suburb and merged with another company late last year. "We've learned a lot of lessons," says co-founder Paul Hardej.

Among them: Operating in cities is expensive. The company should have built its first farm in a suburb rather than a Chicago neighborhood, Mr. Hardej says. Real estate would have been cheaper.

"We could have been 10 or 20 miles away and still be a local producer," Mr. Hardej says.

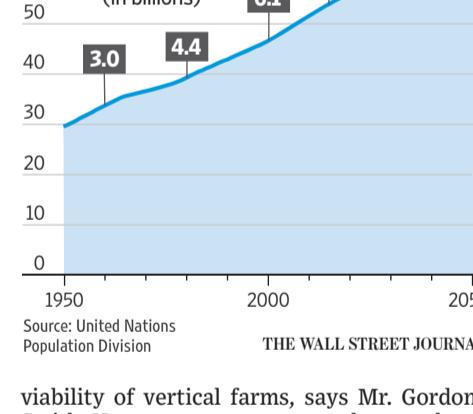
The company also might have been able to work with a smaller local government to get permits and rework zoning and other regulations, because indoor farming was a new type of land use, Mr. Hardej says. While FarmedHere produced some crops profitably, it spent a lot on overhead for lawyers and accountants "to deal with the regulations," he says.

Mr. Hardej is now co-founder and chief executive officer of Civic Farms LLC, a company that develops a "2.0" version of the vertical farm, he says—more efficient operations that take into account the lessons learned. Civic Farms is collaborating with the University of Arizona on a research and development center at Biosphere 2, the Earth science research facility in Oracle, Ariz., where it runs a vertical farm and develops new technologies.

New technology will improve the economic

### Where the Mouths Are

The percentage of the world's population living in urban areas. The urban share has risen from less than one-third in 1950 to 55% now and is projected to top 66% in 2050.



Source: United Nations Population Division



BetterLife Growers will use 'tower gardens' like these to grow lettuce and herbs in Atlanta.

viability of vertical farms, says Mr. Gordon-Smith. New cameras, sensors and smartphone apps help monitor plant growth. One company is even developing augmented-reality glasses that can show workers which plants to pick, Mr. Gordon-Smith says.

"That is making the payback look a lot better," he says. "The future is bright for vertical farming, but if you're building a vertical farm today, be ready for a challenge."

Some cities are trying to propagate more urban farms and ease the regulatory burden of setting them up. Atlanta Mayor Kasim Reed created the post of urban agriculture director in December 2015, with a goal of putting local healthy food within a half-mile of 75% of the city's residents by 2020. The job includes attracting urban-farming projects to Atlanta and helping projects obtain funding and permits, says Mario Cambardella, who holds the director title.

"I want to be ahead of the curve; I don't want to be behind," he says.

Many groups are taking more low-tech or

smaller-scale approaches. A program called BetterLife Growers Inc. in Atlanta plans to break ground this fall on a series of greenhouses in an underserved area of the city, where it will grow lettuce and herbs in 2,900 "tower gardens," thick trunks that stand in large tubs. The plants will be propagated in rock wool, a growing medium consisting of cotton-candy-like fibers made of a melted combination of rock and sand, and then placed into pods in the columns, where they will be regularly watered with a nutrient solution pumped through the tower, says Ellen Macht, president of BetterLife Growers.

The produce will be sold to local educational and medical institutions. "What we wanted to do was create jobs and come up with a product that institutions could use," she says.

The \$12.5 million project is funded in part by a loan from the city of Atlanta, with Mr. Cambardella helping by educating grant managers on the growing system and its importance.

### Change at home

Another company aims to bring vertical farming to the kitchen. Agrilution GmbH, based in Munich, Germany, plans to start selling a "plantCube" later this year that looks like a mini-refrigerator and grows greens using LED lights and an automatic watering system that can be controlled from a smartphone. "The idea is to really make it a commodity kitchen device," says Max Loessl, Agrilution's co-founder and chief executive officer, of the appliance, which will cost 2,000 euros—about \$2,200—initially.

The goal is to sell enough to bring the price down, so that in five years the appliance is affordable enough for most people in the developed world, Mr. Loessl says.

Biofilta, the company Mr. Condon co-founded, is marketing the Foodwall, a modular system of connected containers, an approach

that he calls "deliberately low tech" because it doesn't require electricity or computers to operate. The tubs are filled with a soil-based mix and a "wicking garden-bed technology" that stores and sucks water up from the bottom of the tub to nourish the plants without the need for pumps. The plants need to be watered just once a week in summer, or every three to four weeks in the winter, says Chief Executive Marc Noyce. The tubs can be connected vertically or horizontally on rooftops, balconies or backyards. "We've made this gardening for dummies," Mr. Noyce says.

The Foodwall can use composted food waste and harvested rainwater, helping to turn cities into "closed-loop food-production powerhouses," Mr. Condon says.

He and Mr. Noyce were motivated to design the Foodwall by a projection from local experts that only 18% of the food consumed in their home city of Melbourne, Australia, will be grown locally by 2050, compared with 41% today, Mr. Noyce says.

"We were shocked," says Mr. Noyce. "We're going to be beholden to other states and other countries dictating our pricing for our own food."

"Then we started to look at this trend around the world and found it was exactly the same," he says.

Traditional, rural farming is far from being replaced by all of these new technologies, experts say. The need for food is simply too great. But urban projects can provide a steady supply of fresh produce, helping to improve diets and make a city's food supply more secure, they say.

"While rural farmers will remain essential to feeding cities, cleverly designed urban farming can produce most of the vegetable requirements of a city," Mr. Condon says.

**Ms. McKay is a senior writer in The Wall Street Journal's Atlanta bureau. She can be reached at [betsy.mckay@wsj.com](mailto:betsy.mckay@wsj.com).**

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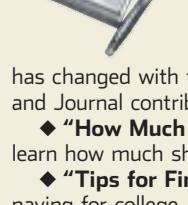
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## JOURNAL REPORT | AGRICULTURE

# For Big Data, Farm Revolution Is On Hold

Startups designed to use information to boost agricultural productivity are struggling. So now tech companies are changing their approach.

BY ELIOT BROWN

FOR FARMERS—and the tech companies that want them as customers—data has been a disappointment.

A few years ago, the agricultural world was full of promises about how the widespread use of data was going to change farming. Companies sprang up that offered to collect huge amounts of information about everything from weather patterns to the soil on farms to the health of crops. The sales pitch: With all this detailed information, farmers would get untold insights into what was happening on their land. And they could use that information to boost production.

But the revolution has been slow to catch on. Many farmers who used the digital services found it difficult to digest the mountains of information and figure out how to put it to use. Many others simply weren't sold on the idea, or couldn't afford the investment as crop prices fell.

### A new approach

This has changed the outlook to the point where venture capitalists, who drove much of the investment into data-based farming, are approaching agriculture in a different way. Instead of betting on legions of companies that provide farmers information, they're now pumping money into companies that offer tools and services, such as robotic farm equipment, or on biotechnology and genetic editing of plants, that bring faster and more obvious results.

"It has been a challenge, because the promise of technology hasn't been able to keep up with expectations,"

says Rob Leclerc, chief executive of AgFunder, an online investment marketplace where companies seek funding.

In 2016, investments in data-driven agriculture—known as precision agriculture—fell 39% from a year earlier, according to AgFunder, due in part to a broader decline in drone investments. At the same time, investors see promise in agricultural technology that goes beyond data. Venture-capital investments in the agricultural sector overall rose to \$560 million last year from \$201 million in 2015, according to PitchBook—and that total excludes hardware like satellites that can be used in agriculture but also have other uses.

Meanwhile, many of the startups at the forefront of the drive toward data have struggled or shifted focus.

One of the better-funded data-driven startups, FarmLink LLC entered liquidation in February. Its harvesting equipment gathered data on yields as it picked grain, to give farmers insights about how to plan for the next year. Geoffrey Berman, who represents FarmLink creditors, says the Kansas City, Mo., company shut down after it couldn't find additional funding.

### Growing interest

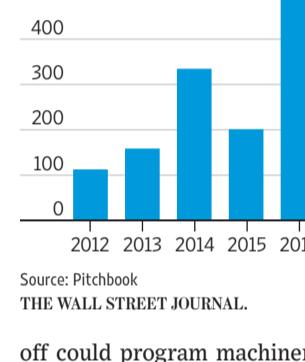
The mania for data-focused farming was sparked largely by Monsanto Co.'s nearly \$1 billion acquisition of agriculture-data firm Climate Corp. in late 2013. Chasing after such success, venture capitalists and entrepreneurs plunged into companies that could both produce data and provide it to farmers.

The general theory: Farmers armed with hyperlocal data on soil, weather and run-



BLUE RIVER TECHNOLOGY

**Seed Capital**  
Overall global venture-capital funding for agricultural technology, which has risen even as data-driven projects have fallen out of favor

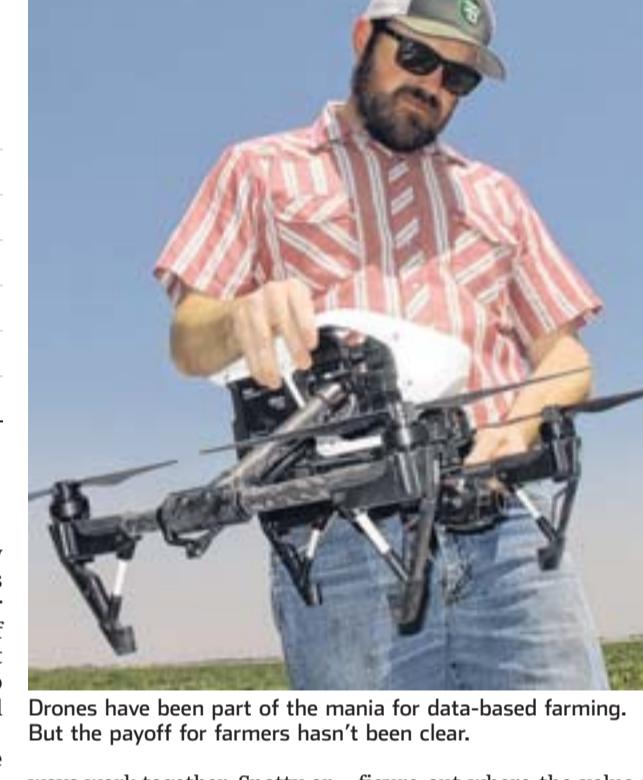


Source: Pitchbook

THE WALL STREET JOURNAL.

off could program machinery to plant specific types of seeds and fertilizer. Once a tractor moves into a sandier type of soil, for instance, a different seed pops out best suited to the environment. Yields could soar.

Since then, farmers have been deluged with data coming from countless sources, from soil sensors to outer space. But even if farmers want information from drones, satellites and on-ground sensors, it is hard to get the most out of them. Many farmers aren't trained on how to use software to deal with the data and integrate it with their farming equipment, and different types of machines don't al-



Drones have been part of the mania for data-based farming. But the payoff for farmers hasn't been clear.

ways work together. Spotty or nonexistent cell reception in rural areas makes it hard for machines to communicate.

Then there is problem of interpretation. While data will tell a farmer things like how much corn a chunk of a field is producing, it is far harder to understand why it is producing and what lessons can be applied to next year's crop.

"Everybody is still trying to

figure out where the value in data is," says Aaron Ault, a corn and soy farmer on 3,000 acres in Indiana who is also involved in an effort with ties to Purdue University to better integrate agricultural data.

### Finding new ground

Arama Kukuta, a partner at agtech-focused Finistere Ventures, says that as a result of the integration challenges, his

firm is setting its sights on less-crowded agricultural areas.

Mr. Kukuta's firm has invested in **Plenty United** Inc., one of a handful of startups trying to grow leafy greens and other produce in dense indoor locations, through hydroponics and ultraviolet lighting. The theory is that these companies can produce crops like organic lettuce at a level similar to farms, but closer to cities.

Mr. Kukuta and other investors are also looking at robotics companies such as **Blue River Technology** Inc., a Silicon Valley startup that makes low-slung machines that tractors drag over rows of lettuce. Armed with a camera and pesticide gun, the device scans for weeds and squirts them with pesticides.

Jorge Heraud, the company's chief executive, says the company's machines save farmers enough on pesticide use to pay for themselves in as little as 2.5 years. Farmers now use Blue River's product on more than 15% of the country's lettuce crops, he says.

Now it is trying to prove it can extend beyond its "lettuce bot" and into bigger categories. Currently in testing: machines that can spray targeted pesticides within cotton fields.

**Mr. Brown is a reporter in The Wall Street Journal's San Francisco bureau. He can be reached at eliot.brown@wsj.com.**

# Seat Cushions Made With Soybeans. Sneakers Made With Corn.

A crop glut has farmers seeking out new uses for their harvests



pecting record acreage of soybeans this year.

The hunt for alternative uses for grains and oilseeds isn't new. **NatureWorks** LLC, the world's first and largest maker of a bioplastic called PLA, started in 1989 as a Cargill research project. But the multi-year glut, which has pushed many farmers deeper into debt and some out of business, adds urgency to that work.

**Argo Genesis Chemical** LLC of Illinois recently developed its own highly flexible, soy-made plastics for use in products like road-paving materials, cardboard and diapers adhesives. The company says such compounds can help shield manufacturers from volatile oil prices.

"Long term, we see this being the way the plastics industry moves," says Steve Davies, spokesman for NatureWorks. "There's tremendous potential to grow."

For consumers of these new products, the use of corn and soybeans could be a positive. Many consumers are willing to pay a premium for sustainability. Switching to raw materials that can be grown year after year allows companies to tout their "green" credentials, though researchers are divided over the overall environmental impact.

Still, these new uses account for only a fraction of the output in an industry geared toward cranking out billions of bushels a year for animal feed, alcohol and food. Some 96% of global agricultural land is used to produce food, feed and pas-

tures, according to trade association European Bioplastics. Crops for bioplastics took up just 0.01% in 2014; rubber and cotton plants along with crops for biofuel made up much of the remainder.

"Those fringe uses of corn are so specialized that they're interesting, but really people are looking for uses that develop 5 billion bushels of demand," said Tom Pfizenmaier, a founding partner at Summit Commodity Brokerage in Des Moines, Iowa. "That's where the big swing could come."

But boosters see room for rapid growth, and point to ethanol's trajectory in the U.S. as an example. Less than 1% of U.S. corn was used as ethanol in the 1980-81 crop year, according to the Agriculture Department. In 2015-16, 5.2 billion bushels, or 38%, of the U.S. crop became biofuel.

### Getting a fraction

Some food-security groups say steering grain and soybeans to factories takes away land that will be needed to feed a growing global population. Others say the added value from such alternative uses won't trickle down to the farmers themselves, since they aren't the ones processing the grains into higher-priced products.

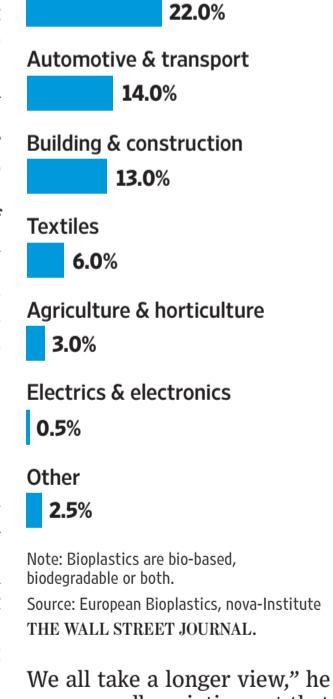
"A lot of these folks are going to continue to be caught in the system where they're getting a tiny fraction of what the final product brings to the processors," says Greg Fogel, policy director at the National Sustainable Agriculture Coalition. "That's not going to solve the problems that currently exist with the rural farm economy."

John Motter, an Ohio farmer and chairman of the United Soybean Board, says that for now U.S. farmers need all the buyers they can find.

"Farmers are businessmen.

### Where You'd Least Expect It...

Bioplastics uses totaled 4.2 million metric tons in 2016. A breakdown of where they went by market segment:



Note: Bioplastics are bio-based, biodegradable or both.

Source: European Bioplastics, nova-Institute

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We all take a longer view," he says, proudly pointing out that the seats in his 2013 Ford F-250 pickup truck are made from oilseed foam.

That's the kind of business opportunity farmers want U.S. companies to see in their fields. "Ford isn't running soy in their seats because they think it's a neat thing to do," says Keith Cockerline, director of industrial uses at the United Soybean Board. "It's because they're making money at it."

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the recipes for **Ford Motor** Co. seat cushions, **IKEA** mattresses, **Danone** SA's yogurt cups and **Procter & Gamble** Co.'s Olay moisturizers. **Adidas** AG's Reebok brand recently unveiled sneakers made with corn. **Lego** A/S earlier this year said it was toying with using grain-based materials to mold its famous bricks.

Industry groups also are calling for more research into new ways that the crops could replace petroleum as a raw material in industrial and construction applications.

"We're sitting on a pretty good surplus," says Paul Bertels, vice president of the National Corn Growers Association.

tion, which recently called for more research to put corn in more products. "We stepped back and said, 'We need to find new uses.'

### Growing stockpiles

U.S. corn and soybean stockpiles swelled to a combined 10.35 billion bushels in the first quarter of 2017, a record. Soybean futures have fallen more than 10% at the Chicago Board of Trade since mid-January. Corn prices are also under pressure. Analysts expect big harvests in South America to increase the global glut, and the U.S. Department of Agriculture said in March that U.S. farmers also are ex-

## JOURNAL REPORT | AGRICULTURE

# Why Ultrafiltered Milk Is Causing Such a Ruckus

The protein source, used mainly in cheese, is at the center of a U.S.-Canada trade battle

BY MATTHEW KASSEL

A FIGHT OVER a little-known dairy product sits at the center of increasing tensions between the U.S. and Canada over broader trade issues.

If the dispute goes unresolved, some observers say, it could have ripple effects in global dairy markets. It also could contribute to efforts by some, including advisers within the Trump administration, to dramatically reshape the North American Free Trade Agreement, which some experts warn could be a disaster for U.S. farmers.

Here's what is happening. U.S. dairy farmers and processors in Wisconsin, New York and Minnesota have been hurt by a newly adopted Canadian pricing policy that encourages Canadian dairies to buy certain types of milk products domestically. The specific product in the trade dispute is a milk-protein concentrate called ultrafiltered milk that is used primarily in cheese-making to increase yields. In 2016, the U.S. exported \$102 million in ultrafiltered milk to Canada, according to the U.S. Agricul-

ment on the domestic measures of our members."

Because Canada has relatively strict dairy policies and a supply-management system that controls the amount of milk that reaches market, experts say U.S. milk tends to be cheaper than Canadian milk. One result, in recent years, was the demand from Canadian cheesemakers for U.S. milk proteins like ultrafiltered milk, a relatively new milk protein that was developed well after Nafta was put in place. There are no explicit terms in the treaty for dealing with ultrafiltered milk, since it doesn't fit into any of the dairy chapters that existed when Nafta was signed. "Under Nafta, ultrafiltered milk doesn't face the same trade restrictions as other dairy commodities," says Mr. Newton of the American Farm Bureau Federation.

Even though the protein isn't mentioned in Nafta, its fate is intertwined with that of Nafta because the dispute has forced not just politicians in Washington but also suffering farmers to reconsider the terms—and potential loopholes—of an agreement that was hammered out nearly 25 years ago.

Farmers in Wisconsin have been hit particularly hard by Canada's new policy. In early April, **Grassland Dairy Products** Inc., a processor in Greenwood that took in more than one million pounds of raw milk daily for its ultrafiltered milk operation, mailed cancellation letters to 58 Wisconsin farms along with some in Minnesota, according to Daniel Smith, an administrator at the Wisconsin Agriculture Department for trade and consumer protection.

Grassland has taken back four farms for contractual reasons, Mr. Smith says, and most of the other farms have found new buyers for their milk after a brief but disruptive transition. But business overall is still parlous at a time when the industry is dealing with a global milk glut and a spring flush is imminent.

"We have been producing more and more milk in the upper Midwest, and we've reached a point where other processors are full to the gills," says John Umhoefer, executive director of the Wisconsin Cheese Makers Association.

Two dairy cooperatives in upstate New York that sold ultrafiltered milk to Canadian buyers have also suffered. Cayuga Milk Ingredients, a processing facility in Auburn, lost \$30 million in annual export sales when the Canadian milk spigot was turned off. And O-At-Ka Milk Products, a plant in Batavia, has seen 70% of its ultrafiltered-milk business evaporate since February, according to Craig Alexander, vice president of dairy ingredients and regulatory affairs at O-At-Ka.

"We'll have quite a bit of pain as a result," Mr. Alexander says, though because O-At-Ka is a co-op and the impact of losses is shared, its producers will suffer less. O-At-Ka is on the lookout for domestic milk buyers and is also tinkering with its milk products to offset its losses.

"We're not going to drop producers [dairy farms] to solve the problem," Mr. Alexander says.

Other experts in dairy markets aren't so sanguine about how individual farmers will fare if the current dispute isn't worked out.

Brian Gould, a professor of agricultural and applied economics at the University of Wisconsin-Madison, predicts that Canada's new pricing policy will have little effect on markets other than within the U.S. and Canada.

"For the industry, there is not going to be much of an impact," Mr. Gould says. "But for individual farmers, it will be devastating."

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American dairy farmers have been left scrambling by a Canadian policy that dried up demand for ultrafiltered milk from the U.S.

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JOURNAL REPORT | AGRICULTURE

# Farmers Scramble to Adapt To Volatile Weather

Among the tools: no-till farming, misting and faster planting



PHOTOS: ARTERRA/GETTY IMAGES (L); ANDIA/GETTY IMAGES (R)

BY HEATHER HADDON

More recently, a long dry spell followed by floods in California has hurt farmers there, while throughout the Midwest, Southeast and parts of New England, producers of apples, berries, peaches, maple syrup and other crops have battled dramatic temperature swings.

## Taking steps

Two-thirds of the 5,000 farmers surveyed in a 2013 report by Purdue University said they believe the climate is changing, and more than half said they need to take steps to protect their land.

Ernie Shea, president of Solutions From the Land, a three-year-old nonprofit promoting land-management techniques for changing weather conditions, says affected farmers are increasingly concerned. They're coming to him and saying, "This is about my business being at risk, and I'm suffering losses," Mr. Shea says.

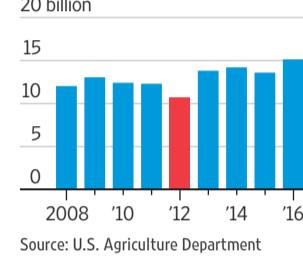
Fred Yoder, a farmer in Plain City, Ohio, says he was lucky to lose just half of his corn, soy and wheat crop in 2012 because he adopted no-till farming, an ancient technique that is being embraced by farmers anew. Instead of removing the remains of previous harvests, the method

## The 2012 Disaster

Many farmers have been taking additional steps to counter extreme weather since the 2012 drought caused crop failure in 22 states.

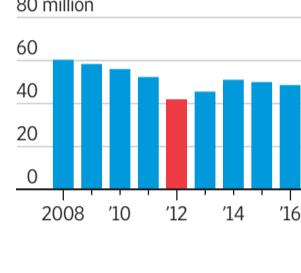
### How production of these three crops slumped:

Corn, in bushels

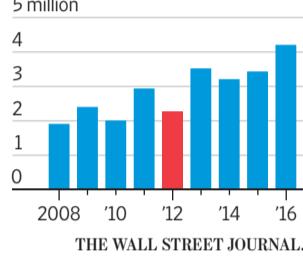


Source: U.S. Agriculture Department

Hay, in tons



Maple syrup, in gallons



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leaves stalks and roots in the ground to protect the soil from erosion and drought.

"It's mainly about survival," says Mr. Yoder, chair of the North American Climate Smart Agriculture Alliance, a group of growers working on planning for weather changes. "The only way to survive is to produce more with less."

No-till agriculture is just one of the techniques farmers are adopting to improve the health of their soil. Others are planting cover crops such as legumes and grasses as a way to preserve their soil's water content in case of a drought.

Farmers also have to increasingly worry about too

much water coming at once. After a dry spell followed by a deluge in the Midwest last year, sugar-beet farmers are installing drainage systems to carry excess water away from their crops, according to the American Sugar Beets Association.

Growers are also trying to plant faster to cut down the growing and harvest season, because the longer the season, the more vulnerable crops are to changing weather. Commercial breeders are working on peppers that could mature before the withering heat of July and August, according to horticulture experts at the University of California, Davis. Some farmers are using GPS systems

and satellite-guided planters to seed their fields as quickly and precisely as possible.

"When you have good weather, you want to carry out about as many tasks as you can in a quick time," says Greg Page, former chief executive of Cargill Inc., the Minneapolis-based food giant.

## Fighting Frost

Temperature swings are a particular concern. Vintners in California have installed huge fans to help move cold air off fields to preserve grapes in the event of sudden frosts. Scientists are studying ways to combat excessive heat and insufficient periods of cold,

which can cause fruit trees to bud too early and make them susceptible to cold snaps.

Scientists at Michigan State University are testing a misting system that can help keep fruit and nut trees dormant for a week or two after a warm spell. James Flore, a Michigan State professor emeritus, says experiments showed misting could help Midwestern apple growers protect their fruit after an early frost in 2013, and they hope to have it in more widespread use next year.

"It's one tool in their arsenal," Mr. Flore says.

Other researchers are promoting crops that thrive in more volatile weather and resist pests that become more prevalent as temperatures climb. But it can take decades to develop a new crop variety and bring it to market, and weather patterns are changing much more quickly than that.

"Most people in the breeding world are very concerned," says Charles Brummer, director of the UC Davis Plant Breeding Center, about volatile weather. "We are evaluating as many plants as possible and doing it rapidly."

*Ms. Haddon is a Wall Street Journal in Chicago. Email [heather.haddon@wsj.com](mailto:heather.haddon@wsj.com).*

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