

THE WALL STREET JOURNAL.

DOW JONES | News Corp *****

MONDAY, MAY 22, 2017 ~ VOL. CCLXIX NO. 118

WSJ.com

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Last week: DJIA 20804.84 ▼ 91.77 0.4% NASDAQ 6083.70 ▼ 0.6% STOXX 600 391.51 ▼ 1.0%

10-YR. TREASURY ▲ 25/32, yield 2.243%

OIL \$50.33 ▲ \$2.49

EURO \$1.1207 YEN 111.26

What's News

Business & Finance

Huntsman is near an accord to merge with Swiss rival Clariant, in an all-stock deal that would create a chemicals giant with a combined market value of about \$14 billion. **A1**

◆ Arconic shareholders are set to choose between board candidates offered by the firm and by Elliott, in a vote that will test the power of activist investors. **A1**

◆ Ford is weighing significant changes to its top leadership amid tension among executives and dissatisfaction with the stock price. **B1**

◆ Online lenders are regaining the confidence of investors, who have been purchasing securities backed by their loans. **B1**

◆ The Fed is unlikely to return to its precrisis role on the sidelines of financial markets after its expansive stimulus, analysts say. **B1**

◆ U.S. dairy farmers are struggling with a drop in global demand, three years after expanding their herds amid high milk prices. **B1**

◆ Japan's SoftBank and the Saudi sovereign-wealth fund launched the world's largest tech fund, with \$93 billion of committed capital. **B4**

◆ Saudi Arabia agreed to commit \$20 billion to Blackstone's infrastructure fund, joining a parade of investors in U.S. public works. **B8**

◆ Oil producers are eager to extend output cuts by nine months, the Saudi energy minister said. **B8**

◆ "Alien: Covenant" eked out a first-place finish at the weekend box office. **B3**

World-Wide

◆ Trump called on Muslim nations to confront "Islamic extremism" and sought the backing of Arab allies to fight terrorism and Iran's influence. **A1**

◆ The U.S. and Saudi Arabia unveiled over \$400 billion in deals and potential investments during the president's visit to Riyadh. **A5**

◆ The landslide re-election of Iranian leader Rouhani threatens to put the U.S. on a collision course with Europe over Tehran policy. **A6**

◆ NATO plans a new spending initiative aimed at filling armament gaps, as the alliance faces pressure from Washington. **A7**

◆ Trump's budget proposal will include provisions to replace many foreign military grants with loans. **A4**

◆ North Korea successfully launched another ballistic missile, which flew about 310 miles before splashing down in the Sea of Japan. **A9**

◆ The 11 countries left in the TPP trade agreement backed a proposal to continue with the pact, despite the U.S. withdrawal. **A9**

◆ Texas' governor is set to sign into law a bill to penalize school administrators who fail to report teachers' sexual misconduct. **A3**

◆ Democrats are running more veterans as candidates in congressional districts they consider in play in the 2018 elections. **A4**

◆ The pope said he would elevate five men from four continents to the College of Cardinals in June. **A9**

CONTENTS Markets B9
Business News B3 Opinion A19-21
Crossword A8 Sports A18
Head on Street B9 Technology B4
Journal Report, RI-6 U.S. News A2-4
Keywords B1 Weather A18
Life & Arts A15-17 World News A5-9



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President Donald Trump, first lady Melania Trump, Saudi King Salman bin Abdulaziz Al Saud, center, and Egyptian President Abdel Fattah Al Sisi, left, gathered around a globe Sunday at the opening of the Global Center for Combating Extremist Ideology in Riyadh.

Trump Urges Unity on Terror

President signs deals on security, weapons as he calls on Arabs to confront extremism

By CAROL E. LEE
AND MARGHERITA STANCATI

RIYADH, Saudi Arabia—President Donald Trump called on Muslim leaders across the globe Sunday to confront "the crisis of Islamic extremism" as he sought to rally Arab allies around a renewed, joint effort

to combat terrorism and Iran's influence in the Middle East.

Mr. Trump's speech here set the tone for his first international trip as president, a nine-day journey that is putting him face-to-face with leaders across the Middle East and Europe. He said the U.S. global role should be guided by what he called a "principled realism" which appears to emphasize transactions on economic and security agreements over other issues such as human-rights abuses.

"We will make decisions

based on real-world outcomes—not inflexible ideology," he said in his remarks before several dozen Muslim leaders in the Saudi capital.

Mr. Trump urged other nations to share with the U.S. the moral and financial responsibility for global challenges. "Muslim-majority countries must take the lead in combating radicalization," he said.

He sought to underpin his remarks with new security cooperation with America's Arab allies. The measures include

an agreement to target terrorism financing, with the U.S. and Saudi Arabia opening a center in Riyadh focused on the effort, and the formation of a military alliance in the Gulf that would coordinate with the U.S. to counter shared regional threats.

Please see TRUMP page A6

◆ Taxes, budget focus for Trump despite probes..... A4

◆ U.S. Saudis tout deals in tough setting..... A5

◆ Saudis bet \$20 billion on public-works fund..... B8

Please see DEAL page A2

THE QUANTS RUN WALL STREET NOW

Software-driven trading, once a novelty, is becoming dominant

By GREGORY ZUCKERMAN
AND BRADLEY HOPE

Alexey Poyarkov, a former gold-medal winner of the International Mathematical Olympiad for high-school students, spent most of his early career honing algorithms at technology companies such as Microsoft Corp., where he helped make the Bing search engine smarter at ferreting out pornography.

Last year, a bidding war for Mr. Poyarkov broke out among hedge-fund heavyweights Renaissance Technologies LLC, Citadel LLC and TGS Management Co. When it was over, he went to work at TGS in Irvine, Calif., and could earn as much as \$700,000 in his first year, say people familiar with the contract.

The Russian-born software engineer, who declined to comment, as did the hedge funds, had almost no financial experience. What TGS wanted was his wizardry at designing algorithms, sets of rules used to power calcula-

tions and problem-solving, which in the investment world can quickly parse data and decide what to buy and sell, often with little human involvement.

Up and down Wall Street, algorithmic-driven trading and the quants who use sophisticated statistical models

to find attractive trades are taking over the investment world.

On many trading floors, quants are gaining respect, clout and money as investment firms scramble to hire mathematicians and scientists. Traditional trading strategies, such as sifting through balance sheets and talking to companies' customers, are falling down the pecking order.

"A decade ago, the brightest graduates all wanted to be traders at Wall Street investment banks, but now they're climbing over each other to get into quant funds," says Anthony Lawler, who helps run quantitative in-

Please see QUANTS page A10

This Toddler Just Loves to Eat, And China Loves to Watch

Xiaoman, 2½ years old, is an online sensation, bringing fame and a Pampers ad

By KATHY CHU
AND MENGLIN HUANG

The cherub-cheeked toddler licked her bowl clean, then carefully picked out each noodle that had fallen into her bib, polishing them off one by one.

"More, more!" cried Bai Caihan, a 2½-year-old girl in Beijing who is famous to Chinese as Xiaoman, her name in online videos where she devours everything from whole fish to lettuce leaves to watermelon.

A video posted last month of Xiaoman biting off tender morsels of yellow durian, an Asian fruit with a pungent smell that

makes many people recoil, has piled up more than 2.8 million views. She licks the juice off her fingers, reaches out her arms and cries "More durian!"

In China, about 800 million people carry a smartphone. An awful lot of them are fascinated by watching other Chinese eat online.

An eating channel launched last year by Meipai, an app that hosts Xiaoman's videos, has received more than 12 billion views. Competitive eater Mizijun gobble down everything from pig feet to cream cakes, and a young man who calls himself JaySin dances and cooks

Please see FOOD page A10

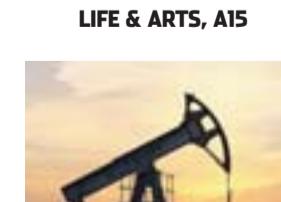


Xiaoman

INSIDE

FIVE SECRETS OF STEADY EXERCISERS

LIFE & ARTS, A15



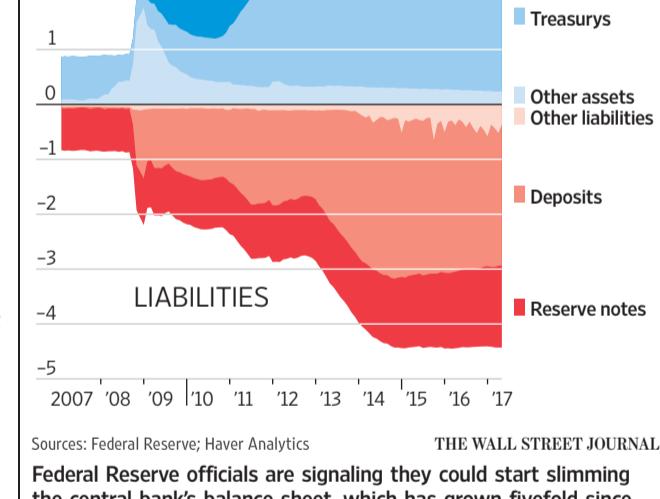
GET READY FOR PEAK OIL DEMAND

JOURNAL REPORT, RI

Markets Wary of Fed's Next Move

The Federal Reserve's assets and liabilities

\$5 trillion



Sources: Federal Reserve; Haver Analytics

THE WALL STREET JOURNAL.

Federal Reserve officials are signaling they could start slimming the central bank's balance sheet, which has grown fivefold since the financial crisis, but analysts worry about market disruption. **B1**

Arconic Vote Is Test Of Activists' Power

By DAVID BENOIT

The future of Arconic Inc. is up for grabs this week in a tightly fought shareholder vote that will test the growing power of activist investors.

At a shareholder meeting in Purchase, N.Y., Thursday, Arconic shareholders will vote to fill five seats on the company's 13-member board.

They will choose among candidates offered by the company itself and Elliott Management Corp., an activist hedge fund that wants to overhaul the \$12 billion maker of parts for airplanes and automobiles.

A board shake-up could have a profound effect on Arconic, formerly part of aluminum giant Alcoa Inc., as the new board will select the company's new chief executive and determine the company's trajectory for years to come. It also could have broader implications for activist investors, who have become ever more aggressive in their pursuit of higher returns.

Elliott already has locked up around 20% of the vote. The hedge fund, Arconic's largest shareholder with an 11.6% stake, has public backing from First Pacific Advisors LLC and Orbis Investment Management Ltd.

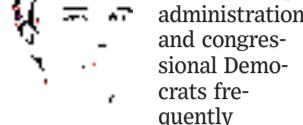
It has also won key endorsements from influential proxy-advisory firms. Institutional Shareholder Services Inc. suggested investors vote for two of Elliott's nominees, while Glass Lewis & Co. backed all four Elliott nominees.

Arconic, meanwhile, has the support of at least one top-15 shareholder, according to people familiar with the matter. And asset manager Douglas C. Lane & Associates has urged its clients to back Arconic's slate, even though one of its portfolio managers had been critical of the board and former Arconic CEO Klaus Kleinfeld, according to a letter to clients reviewed by The Wall Street Journal. The firm's clients hold 0.5% in ag-

Please see VOTE page A9

U.S. NEWS

THE OUTLOOK | By David Harrison



The Trump administration and congressional Democrats frequently bemoan America's aging infrastructure and have promised to spend money aggressively to fix it. Less noisily discussed: The nation is already making substantial progress in some key areas of decaying infrastructure.

American bridges have been getting sounder. In 2000, more than 15% of the country's bridges—roughly 89,460—were listed as being in poor condition, or "structurally deficient," under federal standards. By last year, that number had dropped to 56,000, or 9.1% of all bridges.

Moreover, the share of bridges built according to outdated design standards, known as "functionally obsolete," has declined from 15.5% in 2000 to 13.8% in 2015. Functionally obsolete bridges aren't necessarily unsafe, but they may have lanes that are too narrow or weight restrictions that prevent heavier trucks from crossing them.

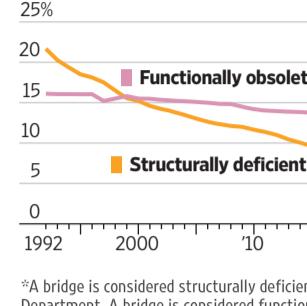
The reason for the improvements: State and local transportation officials nationwide have been targeting aging bridges for upgrades and safety enhancements. A 2012 federal transportation law also required states to set up a plan for improving or preserving their infrastructure assets and penalized states that let bridges deteriorate too much.

Federal spending on

Not Falling Down

The state of U.S. bridges has been improving for decades.

Status of bridge conditions*



Top states by percentage of structurally deficient bridges

State	Percentage
Utah	3.1%
Arizona	2.6%
Florida	2.1%
Texas	1.7%
Nevada	1.6%

Bottom states by percentage of structurally deficient bridges

State	Percentage
West Virginia	17.3%
South Dakota	19.6%
Pennsylvania	19.8%
Iowa	20.5%
Rhode Island	24.9%

*A bridge is considered structurally deficient if it has reached a certain level of deterioration under standards set by the Transportation Department. A bridge is considered functionally obsolete if it was built under older design standards.

Source: Transportation Department

bridges has stayed relatively flat at around \$6.8 billion a year since 2013, according to a 2016 report from the Government Accountability Office. But state and local funding has more than doubled from about \$5.4 billion in 2006 to \$11.5 billion in 2012.

The decline in the number of troubled bridges is at odds with frequent references by officials to worsening bridges dotting the landscape, and the broader narrative of America in decline.

"Our bridges are unsafe," said President Donald Trump in February. Oregon Rep. Peter DeFazio, a Democrat, that month called for action in Congress, saying: "We need to fix the 140,000 bridges that are falling down."

The story of American infrastructure is in fact more complex than often portrayed. Interstate

highway conditions have also steadily improved over the past few years. Only about 2% of rural interstates and freeways and 6% of urban highways are in poor condition, according to Transportation Department data. That's an improvement from 1994,

when 6.5% of rural interstates and 15% of urban interstates were in poor condition.

Missouri is a case study among states where the outlook is improving. It recently completed a \$685 million project repairing or replacing 802 bridges. The share of the state's bridges that were deficient dropped from 27.5% in 2000 to 13% in 2016. In Pennsylvania, where officials are replacing 558 bridges statewide through a public-private partnership, the share of deficient bridges fell from around 25% in 2000 to 20% last year.

Transportation experts say the 2007 collapse of a 40-

year-old bridge in Minneapolis that killed 13 people galvanized state and local officials.

"The industry as a whole understood the consequences of not taking care of your assets," said Barton Newton, manager of complex bridges for the global engineering consulting firm WSP and California's former state bridge engineer. But the cause of the Minneapolis bridge's fall wasn't disrepair—it was later found to have been caused by a design flaw.

Despite the progress, state transportation officials say they can't afford to let up on the effort to repair infrastructure and they can't afford to lose funding. As bridges age, more of them need upgrading.

Many bridges date from the postwar infrastructure push of the 1950s to the 1970s. They weren't meant to last more than about 50 years. Today, four out of 10

bridges are at least 50 years old and more than half are over 40 years old. That will force officials to struggle to keep up. Some improvements come at a cost of more potholes elsewhere, officials say.

The Transportation Department estimates that as of 2012, the backlog for bridge rehabilitation stood at \$123.1 billion, roughly 10% more than its 2010 estimates.

"The work never really ends," said Bryan Kendro, a vice president at Star America Infrastructure Partners who helped design Pennsylvania's bridge replacement project while working as a top official in the state's transportation department.

In Pennsylvania, state officials estimate between 200 and 250 bridges become structurally deficient every year. Last year, the state repaired more than 500 bridges, thanks in part to its rapid replacement program.

That's made a difference in places like Meadville, a town of about 13,000 not far from Erie. Last year, the town cut the ribbon on a new bridge over French Creek that had been closed for nine years.

Nearby businesses had suffered from a decline in traffic, said Patricia Mattocks, who helps manage four family-run garden-supply stores, including one that sits a few hundred feet from the bridge.

"We've got bridge work going on all over here," Ms. Mattocks said. "It's good to see them being fixed."

ECONOMIC CALENDAR

TUESDAY: April U.S. new-home sales figures from the Commerce Department come as builders are stepping up construction of single-family houses and more first-time buyers are in the market. Economists surveyed by The Wall Street Journal forecast sales fell 1% to a seasonally adjusted annual rate of 615,000. Sales in March had risen for the third straight month.

WEDNESDAY: Minutes from the Federal Reserve's May monetary policy meeting will be scrutinized for clues on when the U.S. central bank might start reducing its \$4.5 trillion balance sheet and how that could affect the pace of interest-rate increases.

The National Association of Realtors' April U.S. existing-home sales report will shed light on the strength of home-buyer demand in light of rising prices and tight inventory. Economists surveyed by the Journal expect existing-home sales declined 11% to an annual rate of 5.65 million.

FRIDAY: U.S. demand for durable goods improved modestly in March, signaling slow manufacturing activity, and economists surveyed by the Journal expect the Commerce Department to report that orders of these products fell 1.8% in April.

Forecasters expect only a small revision to the first-quarter U.S. gross domestic product growth figure of 0.7% reported in April, in the second estimate from the Commerce Department. Perhaps more important, this report will include new data on corporate profits, an indication of how businesses are doing under the new administration.

DEAL

Continued from Page One
generate annual revenue of more than \$13 billion.

The expected tie-up comes amid a period of consolidation in the chemicals industry as companies seek to cut costs by eliminating overlapping operations and products, and seek new sources of revenue by tapping new markets and customers. The deals are also meant to help the companies combine resources to bolster the research and development for new products.

"Combining our companies should give us more stable and steady earnings, increased margins and new growth opportunities," Mr. Huntsman said in an interview. "For either side to get to a \$20 billion enterprise value would take many, many years of organic growth." He added that the deal will "double our reach without stressing the balance sheet."

Another potential benefit of the Huntsman-Clariant tie-up is a broader, more balanced geographic footprint. The so-called annual synergies from putting the companies together could reach \$400 million.

U.S. paint and coatings maker PPG Industries Inc. is currently in a battle to acquire Dutch rival Akzo Nobel NV for \$27 billion in cash and stock. Its advances have been repeatedly rebuffed and the next week or so is expected to be crucial in determining whether the deal happens or not. Meanwhile Praxair Inc. and Germany's Linde AG are trying to complete their merger to create the biggest industrial-gas player with a market value of more than \$66 billion.

The lack of major revenue growth last year by Huntsman and Clariant demonstrated the challenging environment that the chemicals industry faces. Huntsman reported a 6% revenue decline to \$9.66 billion in 2016, hurt in part by soft de-

mand and difficulty raising prices for some products. The company's additives and other performance-enhancing chemical products posted the biggest revenue decline both for the year and in the fourth quarter when competitive market conditions and lower average selling prices weighed on results.

Clariant fared better, posting revenue of 5.85 billion Swiss francs (\$5.96 billion) last year, up 2% from the prior year. The company attributed that revenue gain to relatively strong growth in Asia, the Middle East and Africa, which helped to offset a weaker performance in North America, Europe and Latin America. The company said demand for higher margin specialty industrial and consumer chemicals used in products such as laundry detergent and aircraft de-icing fluid was particularly strong.

Both companies' shares have nevertheless performed well, helping set the stage for the proposed merger, which came together in a matter of a few weeks after years of on-and-off discussions, a person familiar with the matter said. Each company had a market value of roughly \$7 billion as of Friday.

The planned merger brings together two of the most recognized names in the chemicals industry. And both have incorporated deal making as a key part of their strategies to expand. Huntsman's roots date back to 1970, when Jon Huntsman Sr. founded Huntsman Container Corp. Since then, the company has made a series of acquisitions and joint ventures in Europe, India and China as part of its global expansion plans.

Clariant was formed in 1995, a spinoff from the chemical company Sandoz, whose history dates back to Basel in 1886. Clariant has also been an active acquirer, targeting acquisitions in the U.S. and Europe to broaden its portfolio of specialty chemicals.

A Circus Leaves the Ring for the Last Time



SAY GOODBYE: Trainer Alexander Lacey with Maasai the lion at the Ringling Bros. and Barnum & Bailey circus Sunday in Uniondale, N.Y. Declining sales and rising costs prompted the circus to close.

Biden Tells Students Divisions Won't Last

Former Vice President Joe Biden assured graduating students that the country's current divisions brought on by a presidential election that "churned up some of the ugliest realities" of society will be temporary.

Mr. Biden told seniors at Colby College to resist the impulse to capitulate after an election that played to society's "baser instincts."

"It's time for America to get up. It's time to regain our sense of unity and purpose. It's time for us to restart realizing who in God's name we are," he said during a sunny commencement address on the library lawn.

The Democrat who served two terms with President Barack Obama expressed his own distaste for the state of affairs.

"This past election cycle churned up some of the ugliest realities in our country. Civilized discourse and real debate gave way to the coarsest rhetoric and stoking of our darkest emotions," he said.

But he said the corrosive politics and us-against-them populism won't be permanent. "I assure you it's temporary. I assure you it's transitory. The American

people will not sustain this attitude," he said.

—Associated Press

MARYLAND

Suspect Is Charged In Student Stabbing

A University of Maryland student was charged Sunday with fatally stabbing a visiting student on campus in what police have described as an unprovoked attack that rattled the school over graduation weekend.

Sean Christopher Urbanski of Severna Park was charged with first- and second-degree murder as well as first-degree assault in the attack that took place early Saturday at the campus in College Park, police said.

The University of Maryland Police Department said the 22-year-old Mr. Urbanski was arrested after witnesses identified him.

No attorney was listed for Mr. Urbanski on online court records and a message left at a number listed for his home wasn't immediately returned.

Police said a Bowie State University student was with two friends near a bus stop at the campus around 3 a.m. when he was stabbed in the chest with a folding knife.

—Associated Press

GASOLINE PRICES

Average Price Per Gallon Falls to \$2.40

The average price of regular-grade gasoline fell half a cent nationally over the past two weeks to \$2.40 a gallon, an industry analyst said.

Trilby Lundberg of the Lundberg Survey said Sunday that

gas prices rose in several Western and Midwestern cities. A sharp decline in the rest of the country kept prices down overall.

Mr. Lundberg said the average price is nine cents higher than a year ago. The highest average gas price, \$3.10 a gallon, was in the San Francisco Bay Area. The lowest, \$2.02, was in Jackson, Miss.

—Associated Press

CORRECTIONS & AMPLIFICATIONS

JBS executives told prosecutors in Brazil that the meatpacking company paid a total of \$123 million in bribes to the country's politicians over recent years. In some editions Saturday, a Page One article about Brazil's political crisis incorrectly stated the amount as \$400 million.

Rep. Ken Buck is a Colorado Republican. An article on federalism in Review on Saturday incorrectly said that he is from Ohio.

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U.S. NEWS

Texas Measure Targets Improper Teachers

Administrators could be charged if they fail to report incidents of sexual misconduct

BY TAWNELL D. HOBBS

A former Texas teacher is in prison after being sentenced in January for having sexual relations with a 13-year-old student that resulted in her becoming pregnant. Another teacher in the state this year is facing a sex-assault charge, and has yet to enter a plea, for allegedly paying a student nearly \$28,000 to keep quiet about their sexual relationship.

As similar alleged incidents

rise in the state, Texas legislators have passed one of the toughest bills nationally to penalize administrators who ignore such misconduct. Some teachers suspected of such acts have been able to resign and join other school districts in a move that some legislators call "passing the trash."

Texas Gov. Greg Abbott is expected to sign the bill into law in coming days to make it a criminal offense for school superintendents and principals to not report inappropriate teacher-student relationships.

The bill, which passed with bipartisan support in the Texas Senate and House, comes with tougher administrative penalties for teachers who commit inappropriate

acts, which include sexual contact and sexual intercourse with students.

"I want legislation that puts real consequences for those teachers, and we must also penalize the administrators who turn a blind eye to such abuse and pass these teachers along to other schools," Mr. Abbott said during his State of the State Address in January.

Monty Exter, a lobbyist with the Association of Texas Professional Educators, a professional group of about 100,000 members, said his group supports the bill. "Anytime we can strengthen protections for students, that's a good thing," he said. "It's a broadly held belief that even one instance of misconduct

with a student is one too many."

Reported cases in Texas involving alleged inappropriate relationships by educators have increased over the past seven years—from 141 in 2009 to 222 in the fiscal year ended August 2016, according to the Texas Education Agency. For this fiscal year that began Sept. 1, the number of cases was 191 as of April 30—on track to meet or exceed last year's count.

Laws that address improper relationships between teachers and students vary by state, as do penalties for administrators who fail to report the conduct.

There isn't an official nationwide system to track im-

proper teacher-student relationships, so it is unclear if there is a national uptick. Reporting requirements for educator misconduct can also differ by state.

Research by a group that focuses on teacher misconduct, called Stop Educator Sexual Abuse, Misconduct and Exploitation, indicates a national increase in teachers arrested for sex offenses based on news reports—from 459 in 2014 to 540 in 2016.

The bill in Texas puts the state at the forefront of criminalizing school leaders who conceal inappropriate conduct by educators, said Terri Miller, volunteer president of the Las Vegas-based group.

"This is an extraordinary

effort," Ms. Miller said.

Under current law, Texas superintendents must report an educator's criminal record or misconduct that results in termination or resignation to the state within seven business days. Those who don't comply risk sanctions, such as reprimand, suspension or revocation of certification.

Under the bill, superintendents—and principals—who conceal educator sexual misconduct would face a felony charge, punishable upon conviction by up to two years in jail. And those who help such offenders get a job at a school, despite knowing their background of misconduct, risk having their state certificate revoked.



Some University of Notre Dame graduates walked out of Sunday's commencement as Vice President Mike Pence began to speak.

Pence Speech Met With Quiet Protest

BY TAWNELL D. HOBBS

Vice President Mike Pence delivered the commencement address Sunday at the University of Notre Dame, touching on freedom of expression—an ideal on display as several dozen graduates walked out of the ceremony and others booed them as they left.

Mr. Pence, who was raised Catholic and is the former governor of Indiana, where the Catholic university is located, didn't miss a beat in his speech as the group of graduates could be seen standing and then silently departing in videos posted online. About 3,100 students participated in the commencement exercise.

Marc Lotter, Mr. Pence's press secretary, said the students who walked out made up a small percentage of the grad-

uates. When asked about Mr. Pence's thoughts on the walkout, Mr. Lotter referred to the vice president's speech.

"He was celebrating the need for freedom of expression and speech, and highlighting Notre Dame's commitment to that in his speech," he said.

It isn't the first time that students at the university have protested high-profile elected officials at commencement. In 2009, then-President Barack Obama's graduation address sparked protests by antiabortion advocates, who marched outside the Notre Dame's gates.

"The important thing was that everyone had their voice heard," said Bryan Ricketts, an organizer of the walkout and one of the graduating seniors who left during Mr. Pence's speech. "As soon as Pence began his speech, we all left. We had a

graduation-ceremony moment right outside the stadium. We thanked everyone for being there and sang our alma mater."

Mr. Ricketts, 22, said reasons for the protest included a belief that during his time as governor Mr. Pence targeted civil rights protections for gay, bisexual and transgender people and fought against "sanctuary" cities, which limit cooperation with immigration law enforcement. He also cited concern that low-income people could lose their health care under the new administration.

Pat Crane, the outgoing president of the Notre Dame College Republicans who also graduated Sunday, said the students walking out was disruptive. He said he considers it "a pretty cowardly act" that went against free speech.

Mr. Pence, whose wife and

first-generation Irish-American mother were in the audience, told the students that it was "deeply humbling" to participate in the commencement ceremony. He received applause throughout the speech. He referred to how some of the university's beliefs align with those of President Donald Trump, such as standing strong to protect religious liberty and standing for the "unalienable right to life at home and abroad."

Mr. Pence also hit on freedom of speech to the applause of audience members.

"Notre Dame is a campus where deliberation is welcomed—where opposing views are debated and where every speaker, no matter how unpopular or unfashionable, is afforded the right to air their views in the open for all to hear," he said.

A Century Later, Sailor Is Saluted

BY SCOTT CALVERT

One of the earliest American casualties of World War I will soon have his name etched in stone at an overseas U.S. military cemetery, a century after the 20-year-old sailor's death.

Seaman Herbert Renshaw fell overboard off the coast of South Carolina during a naval patrol on May 22, 1917, weeks after the U.S. entered the war. But probably due to a clerical error by Navy officials, he was never listed on a monument to the missing at Brookwood American Cemetery in England.

That is about to change after Robert Laplander, a Wisconsin songwriter-turned-historian, documented the omission with help from a biology professor in Maryland. The federal agency responsible for U.S. cemeteries and memorials overseas says it will correct the oversight.

"We want to make sure every American is appropriately commemorated," said Timothy Nosal, external affairs chief at the American Battle Monuments Commission. Its acting



WICHICAGO NEWS

secretary last month approved engraving the seaman's name, possibly this summer. The Brookwood chapel's interior walls are inscribed with the names of more than 560 U.S. soldiers, sailors and Coast Guardsmen lost at sea during World War I, many near the U.K. and France. Though Seaman Renshaw perished far from European shores, he died in "outside waters" in wartime and was technically on the battlefield.

Seaman Renshaw's 70-year-old niece, Gail Renshaw Blackwell, was born 30 years after her uncle's death and didn't know there was a memorial to the missing in England. Still, she said she is grateful his name will be added. "I just really appreciate it," she said.

For Mr. Laplander, this is the biggest success yet of the Doughboy MIA project, a citizen-led effort he launched in 2015 to investigate cases of the 4,223 service members listed as missing in World War I. About half died on the battlefield, the rest were lost at sea.

While the Defense Department has a unit dedicated to accounting for missing personnel, that effort applies only to conflicts since World War II. One goal of Doughboy MIA—doughboy was a common term for troops deployed to Europe—is to put a name to soldiers buried in graves marked unknown. In the Renshaw case, it instead found that one of the missing never received his due recognition.

"It's a different kind of discovery, but we look at it as being a major victory since the job is to remember them, and here we've done it," said the 51-year-old Mr. Laplander, who lives in Waterford, Wis.

California Democrats Choose State Chief

BY ALEJANDRO LAZO

The California Democratic Party elected Eric Bauman to its top leadership post Saturday, narrowly defeating an insurgent candidate whom supporters of Vermont Sen. Bernie Sanders had rallied around.

Delegates to the state Democratic Party convention in Sacramento chose Mr. Bauman as a successor to departing Chairman John Burton, who has been credited with helping solidify the party's control of the state, even at a time when much of the rest of country has been awash in a sea of red.

Supporters of Mr. Sanders had backed Kimberly Ellis, who had promised to reorder the party establishment and redefine what it means to be a Democrat in the deeply blue state.

Mr. Bauman received 1,493 votes while Ms. Ellis got 1,431. A third candidate, Lenore Albert-Sheridan, received seven.

Considered more of a traditional candidate, Mr. Bauman has said that he hopes to build on the party's considerable success, which includes holding every statewide elected position, a two-thirds control of both houses of the state legislature and a sizable congressional delegation.

"California must remain the bastion of resistance against Donald Trump, and the shining

beacon of hope, leading the way, pushing the envelope on progressive policy for the rest of the nation to follow," Mr. Bauman said.

Ms. Ellis told supporters that she would potentially contest the election results and not concede.

"In the spirit of not being afraid to facilitate difficult conversations, and tell hard truths, I want you to know that we have some serious concerns about the vote count," Ms. Ellis told supporters Saturday night, according to video posted on Facebook.

"So I want you all to know that we have been in communication with ... legal counsel, and I want you to know that this race is not over," she added.

Ms. Ellis said that she would be meeting later Sunday with Mr. Burton, the state party chairman, about "concerns about the way some of those votes were cast."

Mr. Bauman said Sunday that the race was indeed "over," and that "we are all united together to move the California party forward."

A win for Ms. Ellis could have proved a significant victory for supporters of Mr. Sanders after his choice to head the national party, Rep. Keith Ellison (D., Minn.), was defeated in February by former Labor Secretary Tom Perez.


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U.S. NEWS



Sen. Tammy Duckworth (D., Ill.), who lost her legs in Iraq, says people are surprised to hear there are Democrats in the military.

Democrats Tap Vets for 2018

By REID J. EPSTEIN

WASHINGTON—Democrats now believe more congressional districts will be competitive in next year's midterm elections than once thought and they have a strategy to try to capture at least some of them: run military veterans as candidates.

Democrats must win at least a net 24 seats in 2018 to take a majority in the House. With GOP President Donald Trump less popular at this point in his term than any president in modern history, Democratic officials believe between 75 and 100 House districts will be in play then—dozens more than previous estimates.

As candidates, veterans can frame their effort as a continuation of their national service. They also allow Democrats to appeal to segments of the electorate that have fled the party in recent elections. It recalls their strategy in 2006, when they took control of the House by fielding candidates who could appeal to voters in more-conservative districts.

Already, the party is running veterans in competitive congressional districts across the country: Fifteen veterans have launched 2018 House campaigns, and 10 more may enter races by this summer, Democratic officials said.

"It is time that Democrats genuinely show that we can have a bigger tent and not just be entirely defined by the old

Ex-Soldier Eyes GOP-Held Seat

In upstate New York, former Army intelligence officer Pat Ryan, a Democrat, is preparing to challenge GOP Rep. John Faso. Mr. Ryan, 35, said his military background would be an asset in a district that voted for Barack Obama in 2012 and Donald Trump last year.

"It's a slightly Republican district, so people are going to have to feel that the candidate is doing this for something beyond just party for a greater purpose," Mr. Ryan said.

Mr. Ryan, who was raised

in the district in Kingston, N.Y., was a sophomore at the U.S. Military Academy in West Point during the Sept. 11 attacks. He served two tours in Iraq and now lives in New York City, where he works for a tech company. Mr. Ryan said he and his wife plan to move to the district in coming weeks.

"I've never felt a stronger calling to step up and fight than I have in the past months," he said. "The lack of trust and faith in the basic institutions of our government is growing to the point that I'm very concerned."

An aide to Mr. Faso declined to comment.

—Reid J. Epstein

liberal left," said Massachusetts Rep. Seth Moulton, a Marine combat veteran of the Iraq war who is leading the party's recruiting effort among veterans.

Told that Democrats believe 75 to 100 districts will be in play next year, Matt Gorman, the National Republican Congressional Committee communications director, laughed. "They are undefeated in moral victories," Mr. Gorman said.

The Democratic Congressional Campaign Committee has spoken with about 300 potential 2018 candidates, an official said, though dozens will compete against each other in primary contests.

For the first time this year, the DCCC is working with

"Veterans have a chance to carry districts that other Democrats won't be competitive in," said Jon Soltz, the VoteVets founder and chairman. "They're less political and they're not career politicians and they're not Washington."

Last month, Illinois Sen. Tammy Duckworth convened a meeting with Mr. Moulton, VoteVets and the DCCC to coordinate recruiting and financial efforts.

"Ever since I first ran, people were saying, 'We didn't know there were Democrats in the military,'" said Ms. Duckworth, who lost both of her legs in Iraq and was first

elected to the House in 2012. Of the 80 military veterans serving in the House, just 19 are Democrats.

"There's a real fiction in our national narrative that the Republican Party has the corner on the market on patriotism," said Chrissy Houlahan, a former Air Force captain who is challenging GOP Rep. Ryan Costello in a suburban Philadelphia district that Hillary Clinton carried in November.

While the DCCC has remained neutral in primaries that don't involve incumbents, VoteVets is set this week to endorse Ms. Houlahan, along with Jason Crow against GOP Rep. Mike Coffman in Colorado and Doug Applegate and Josh Butner against GOP Reps. Darrell Issa and Duncan Hunter in Southern California. All the Democrats are veterans.

It is by no means certain that the veterans would emerge from Democratic primaries that are expected to be crowded. Ms. Houlahan, like each of the four VoteVets-backed candidates, already has Democratic opposition.

Veterans face other political challenges. Their military service often takes them far from home and the voters there.

They don't come with a political base like previously elected officials. Few can tap a network of wealthy friends.

"If they've been on active duty, they may not have lived in their hometowns for 15 to 20 years," Ms. Duckworth said.

Taxes, Budget Focus for Trump Despite Probes

BY PETER NICHOLAS
AND BYRON TAU

WASHINGTON—President Donald Trump is thousands of miles away, but his policy agenda faces tests back home this week as he looks to shift the focus from Russia investigations to his plans for boosting American military power and revamping the tax code.

The White House on Tuesday will roll out a budget proposal crystallizing the president's priorities in a blueprint that calls for large cuts to social safety-net programs such as Medicaid and food assistance while increasing Pentagon and border-security spending.

While Mr. Trump visits Pope Francis in Rome on Wednesday, Treasury Secretary Steven Mnuchin in Washington will testify about Mr. Trump's 2018 budget plan before the House Ways and Means Committee. The same congressional panel will hold a separate hearing devoted to a tax overhaul aimed at reducing rates and speeding job growth—a centerpiece of Mr. Trump's campaign message.

Following a drumbeat of revelations about Mr. Trump and Russia over the past two weeks, the White House and congressional Republican leaders are eager to show that they can deliver on policy promises.

"People in the country need to know that we are busy at work trying to solve their problems," House Speaker Paul Ryan said.

A potential land mine for the Trump administration is a report coming out this week from the Congressional Budget Office. The nonpartisan CBO will release its evaluation of the health-care bill that narrowly passed the House on May 4 following an intensive lobbying push by the White House.

The analysis could influence the bill's fate in the Senate by giving lawmakers a fuller picture of how much the measure will cost and how many people might lose insurance coverage.

Meantime, the congressional machinery devoted to the Russia probe continues.

A high-profile witness will appear before the House Intelligence Committee this week as part of the panel's investigation into alleged Russian interference in the 2016 election.

tion, including questions about whether anyone from Mr. Trump's campaign colluded with the Kremlin.

John Brennan, the former Central Intelligence Agency director under President Barack Obama, will testify publicly on Tuesday—a hearing that is expected to shed new light on how the Obama administration's intelligence agencies came to the determination that Russia interfered in the 2016 election.

The Senate Intelligence Committee is also preparing for a hearing with former Federal Bureau of Investigation Director James Comey after Memorial Day. A final date hasn't been set. But the hearing is expected to be a moment of high-drama, with Mr. Comey facing questions about a memo he wrote saying that Mr. Trump asked him to back off an investigation into former national security adviser Michael Flynn.

The administration and GOP leaders aim to show they can deliver on promises.

Asked whether he had said any such thing to Mr. Comey, Mr. Trump told reporters at a news conference last week: "No. No."

Many presidents in modern times have endured distracting investigations that threatened to derail their agendas. Former Republican President Ronald Reagan faced the Iran-Contra scandal, while Democrat Bill Clinton dealt with long-running inquiries into the real estate deal known as Whitewater and the probe into his affair with Monica Lewinsky.

Last week, the Justice Department named former FBI Director Robert Mueller as a special counsel to head the investigation arising from allegations that Russia interfered in the presidential race. Some allies of Mr. Trump believe this is a welcome development that will enable the White House to concentrate on its priorities and defer to Mr. Mueller while the investigation plays out.

—Nick Timiraos
and Jacob M. Schlesinger
contributed to this article.

WASHINGTON WIRE

RUSSIA INVESTIGATION

Trump 'Hamstrung' With Russia: Aide

President Donald Trump is limited in his ability work with Russia because of probes into Moscow and his 2016 campaign, according to his national security adviser. Mr. Trump wants to confront Russia over Ukraine and Syria and work with it to fight terrorism, H.R. McMaster said Sunday on ABC.

Mr. Trump met with Russian diplomats after firing the head of the Federal Bureau of Investigation, which was leading one of the probes. The New York Times reported Mr. Trump told the Russians the dismissal relieved pressure on him related to Russia.

"The gist of the conversation was that the president feels as if he is hamstrung in his ability to work with Russia to find areas of cooperation because this has been obviously so much in the news," Mr. McMaster said.

Mr. Trump has denied collaboration with Moscow and dismissed reports as "fake news."

—William Mauldin

McCain Walks Back 'Watergate' Remark

Sen. John McCain (R., Ariz.) walked back comments that the controversy surrounding potential collusion between associates of President Donald Trump and Russia was reaching "Watergate size and scale." Mr. McCain said Sunday on Fox News he was referring to the way the administration was managing the situation. "Now the question is, how is it handled?" he said.

—Kate O'Keeffe

In Budget, Foreign Grants Would Become Loans

By FELICIA SCHWARTZ

WASHINGTON—President Donald Trump's budget proposal this week will include provisions to end many foreign military grants administered by the State Department and replace them with loans, a move that could affect up to \$1 billion in aid to dozens of countries if Congress approves, U.S. officials said.

An internal State Department memo reviewed by The Wall Street Journal names Pakistan, Tunisia, Lebanon, Ukraine, Colombia, the Philippines and Vietnam as among countries that could be affected.

Typically, the State Department's Office of Security Assistance receives about \$6 billion to dispense as military aid grants. That sum includes \$3.1 billion for Israel, about \$350 million for Jordan and about \$1.3 billion for Egypt. Those grants will be preserved in the 2018 budget, officials said.

Pakistan, which usually receives about \$265 million in grant assistance, will see that number go down to about \$100 million under the new budget, officials said.

Most other countries will see their assistance converted from grants to loans.

The grants have allowed countries to buy U.S. equipment such as ammunition, vehicles and naval boats.

Mr. Trump's administration is set to release his full budget proposal Tuesday. The administration is considering cuts of up to 31% to the State Department and the U.S. Agency for International Development, the



One proposal means less money toward foreign military grants for Secretary of State Rex Tillerson.

Journal has reported.

Mr. Trump's budget is expected to propose large cuts to domestic programs and safety-net spending, such as Medicaid, food assistance and other antipoverty efforts, to curb deficits over the coming decade without touching the largest drivers of federal spending—Social Security and Medicare.

Altogether, the budget will seek to reduce funding by \$1.7 trillion over a decade to entitlement programs such as Medicaid and food assistance, whose use swelled after the 2007-09 recession, according to a person familiar with the matter.

The president will also propose increases in funding for

the U.S. military, infrastructure and border security.

Congressional officials, along with current and former U.S. officials, said a concern is that eliminating the military-grant program would cause countries to look to U.S. rivals, such as Russia and China. The internal State Department memo outlines what officials see as the likely effects of cuts.

"Without such assistance, partners will likely either not develop/sustain those capabilities, or may turn to other countries (e.g., Russia, China) to assist them in developing them," the memo says.

The internal memo says most countries offered loans are unlikely to take them.

"Converting FMF grants to a

loan support mechanism will not assist the vast majority of countries that receive this support, since they would not desire to take out, or would not qualify for an international loan," the memo says.

Officials with the White House's Office of Management and Budget didn't respond to questions about the cuts, and have deferred comment until the full budget is released. Officials from most potentially affected countries didn't address the comments.

Pakistan's ambassador to the U.S., Aizaz Chaudhry, said: "Pakistan believes that our relations with the U.S. are a high priority. The two countries need to further strengthen mutually beneficial economic,

trade and investment relations."

Mr. Trump has spoken frequently about what he sees as the need for U.S. partners abroad to pay for more of their own defense needs and for Washington to focus on U.S. priorities. But a congressional aide said the shift from grants to loans was unlikely to "play very well" among lawmakers.

"There's real concerns among authorizers over this," he said. "If you care about U.S. influence with these countries for counterterrorism and national security purposes, this will go a long way to kill it."

The memo cites Lebanon, which it said "may lack the ammunition and vehicles necessary to maintain operations against ISIS" without the U.S. grant program.

Cameroon, Chad and Niger, "may be unable to maintain their airlift, intelligence, surveillance and reconnaissance and protected mobility capabilities necessary to defeat Boko Haram," the memo says.

The cuts could affect Ukraine's ability to deploy countermortar radars in its struggle with pro-Russia separatists backed by Moscow, the memo says.

Andrew Shapiro, a former Obama administration official who headed the State Department's bureau of Political Military Affairs, said the grant program benefits U.S. diplomats and U.S. companies.

"The program helped am-

bassadors, defense attachés and visiting officials develop relationships," he said.

—Nick Timiraos
and Jacob M. Schlesinger
contributed to this article.

WORLD NEWS

U.S., Saudis Tout Deals in Tough Setting

Billions in agreements, potential investments come despite host of barriers in kingdom

The U.S. and Saudi Arabia touted more than \$400 billion in deals and potential investments during President Donald Trump's visit to Riyadh, collectively sending a message that the kingdom was open for business.

By Margherita Stancati in Riyadh and Nicolas Parasie in Dubai

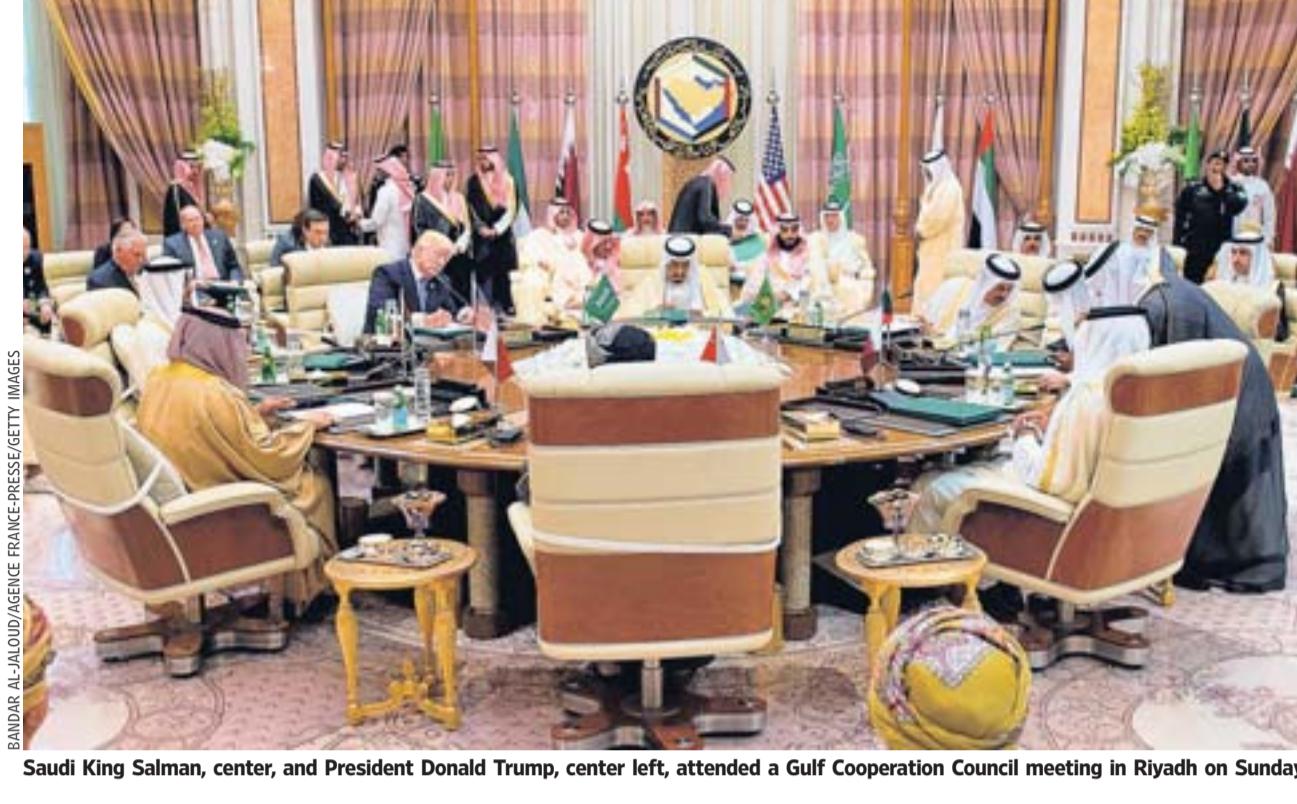
That was the easy part. Saudi Arabia remains a tough place for foreign companies, observers say.

Challenges range from the lack of bankruptcy legislation to a culture of personal connections. Government policy decisions are sometimes abruptly reversed. And there is a lack of clarity on legal matters, too, due to the coexistence of both civil law and Islamic Shariah law.

Despite some positive changes, "the current system remains treacherous for foreign investors to navigate," said Riyadh-based lawyer Christopher Johnson, who is also vice chair of the American Business Group of Riyadh, a body that promotes U.S. business interests in the kingdom.

Some officials acknowledge change will require time and patience. "The Saudi government is not very efficient," said an economic adviser to the royal court. "It's an area in which we're not doing very well."

Many blue-chip companies aren't deterred. The U.S. and Saudi Arabia over the weekend unveiled a raft of multibillion-dollar agreements in sectors including energy, technology and health care. Among them is a partnership between General Electric Co., Saudi Arabia's ministry of oil and a gov-



Saudi King Salman, center, and President Donald Trump, center left, attended a Gulf Cooperation Council meeting in Riyadh on Sunday.

ernment program for joint ventures. The deal, valued at \$12 billion, focuses on power generation, digitization technology and oil and gas.

The scope and size of the agreements are in tune with Saudi Arabia's desire to develop new industries at home. That is a central goal of a government effort to reduce the country's dependence on oil. That change, Saudi energy minister Khalid al-Falih said Sunday, "requires our industrial base to grow in the order of magnitude."

But as oil prices have fallen, the business environment has become more challenging. The Saudi government stopped paying construction giants such as the Saudi Binladin Group, resulting in tens of thousands of layoffs of mostly Asian blue-collar workers but also Western engineers and project managers.

Many international banks are positioning themselves to reap the benefits of Saudi Ara-

bia's economic liberalization, including the public offering of the world's largest oil company, Saudi Arabian Oil Co., or Saudi Aramco, which could fetch the Saudi government as much as \$100 billion.

But many global lenders have struggled to find their footing in the country. BNP Paribas SA and Standard Chartered PLC lent to Ahmad Hamad AlGosaibi & Brothers, a Saudi Arabian conglomerate that defaulted on its debts almost eight years ago, forcing its creditors into a \$6 billion restructuring that still hasn't been fully resolved.

Two years ago, HSBC Holdings PLC's Saudi Arabia unit came under investigation by regulators in the kingdom for its role in a stock listing that has left investors nursing heavy losses. HSBC's Saudi unit last year said it has taken provisions to settle issues related to the regulator's investigation, without elaborating.

Stifling Climate

Saudi Arabia ranks low on the World Bank's Ease of Doing Business index

RANK COUNTRY

1	New Zealand
2	Singapore
3	Denmark
8	U.S.
26	United Arab Emirates
78	China
94	Saudi Arabia
120	Iran
190	Somalia

Source: World Bank

THE WALL STREET JOURNAL.

breached market regulations. Deloitte said it was disappointed but respected the regulator's decision.

In the World Bank's Doing Business Index, Saudi Arabia ranks 94 out of 190 economies. In terms of starting a business, Saudi Arabia ranks 147, trailing its Gulf neighbors in the United Arab Emirates and even Iran.

The government recently established new arbitration centers to handle commercial disputes and is working on a new procurement law for government agencies and on an insolvency law, according to the kingdom's investment agency.

It also introduced a business law last year that includes measures to better protect minority shareholders, and officials have pledged to bring government bodies into the digital age by allowing more business transactions to be handled online.

◆ SoftBank, Saudis launch high-tech investment fund B4

U.S. Defense Deals With Riyadh Open Up Jobs

The arms agreements with Saudi Arabia formally signed by the U.S. over the weekend could help protect domestic jobs in an industry that has cut tens of thousands of workers over the past five years, and also boost employment in the Gulf nation.

Lockheed Martin Corp., Boeing Co. and Raytheon Co. announced a mix of deals as part of the slew of trade agreements signed by the U.S. government during President Donald Trump's visit.

U.S. officials said the defense deals—which include proposed sales and final approvals for sales that have been in the works for many years—were potentially worth \$109 billion. Most have yet to be completed and hinge on further government-to-government talks, with the Pentagon then contracting with U.S. defense companies to supply the equipment.

Lockheed Martin said it had amassed \$28 billion in potential new business from Saudi Arabia, including the planned sale of four modified Littoral Combat Ships, reviving a plan ditched on cost grounds two years ago. It is also selling 150 Black Hawk helicopters that would be assembled at a new plant in Saudi Arabia, creating 450 jobs there.

Saudi Arabia also wants to acquire Lockheed's Thaad missile-defense system, which has already been bought by the United Arab Emirates, and Raytheon said it was setting up a new Saudi-based defense arm encompassing munitions and cybersecurity.

—Doug Cameron



President Donald Trump, shown with Arab leaders in Riyadh, the Saudi capital, on Sunday

Trump's Message Received Warmly by Mideast Leaders

By WILLIAM MAULDIN

WASHINGTON—President Donald Trump's Middle East visit achieved a measure of foreign-policy success by shortening up U.S. alliances, distracting from the president's domestic difficulties and sidestepping some of the thornier problems simmering in the region, according to lawmakers and Mideast experts.

In a speech in the Saudi Arabian capital, Mr. Trump challenged the heads of state in the region to help in "honestly confronting the crisis of Islamist extremism and the Islamist terror groups it inspires," saying terrorists should be driven "out of this earth." Mr. Trump also said "all nations of conscience must work together to isolate Iran, deny it funding for terrorism," without providing concrete details of U.S. strategy toward Tehran.

"This is someone who is making it clear that we're making common cause with those who are prepared to take on ISIS and the Iranians," said Dennis Ross, a former U.S. envoy in the region and senior fellow at the Washington Institute for Near East Policy.

Mr. Trump's messages were received warmly by the lead-

ers in the region because their governments are some of the biggest targets for terrorism and are also under pressure from Iran, which supports militants in Iraq, Syria and Yemen.

"It is to some extent preaching at the choir," said Anthony Cordesman, strategy chair at the Center for Strategic and International Studies.

"All of this sends a kind of message about American re-

his warm rhetoric for their leadership—signals a shift away from Mr. Obama's policy in the region, which Mr. Trump has blamed for the turmoil there.

The trip also shows Mr. Trump appears eager to use his international authority to work with allies and court success on the global stage as he faces political headaches back home that may hamper his domestic goals, said Aaron David Miller, a former senior State Department official now at Washington's Woodrow Wilson International Center for Scholars.

In his speech Sunday, Mr. Trump had to strike a balance between cooperation with the majority-Muslim countries and loyalty to his domestic political base, which includes supporters who backed his campaign promise to ban Muslims from entering the U.S.

The speech in Riyadh isn't likely to win Mr. Trump support among Muslims. "One speech cannot outweigh years of anti-Muslim rhetoric and policy proposal," said Nihad Awad, the executive director of the Council on American-Islamic Relations, a Muslim advocacy organization.

—Kate O'Keeffe and Tamer El-Ghobashy contributed to this article.

solve and American concern for its Arab allies."

The visit served as reassurance for Saudi Arabia and allied nations after former President Barack Obama appeared to seek closer relations with Iran while negotiating a nuclear agreement with the country, and after the 2016 presidential campaign raised questions about the U.S. appetite for foreign entanglements.

Mr. Trump's decision to visit Saudi Arabia and Israel before other countries—and

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March 2017

CSI LEASING

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Senior Secured Credit Facility

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March 2017

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Senior Secured Credit Facilities

Joint Lead Arranger and Bookrunner

February 2017

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Joint Book-Running Manager

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WORLD NEWS

Uphill Battle for Iranian Moderate

Country's entrenched interests could resist efforts to increase foreign investment

BY ASA FITCH
AND ARESU EQBALI

TEHRAN, Iran—A decisive re-election win for Iranian President Hassan Rouhani is likely to fuel his push for foreign investment and better relations with the West, but it may also mobilize conservative forces that have resisted rapprochement and advocate domestic development.

Mr. Rouhani has called for more foreign investment and trade as part of his plans to ease unemployment and raise living standards. And he has pledged to continue efforts to get sanctions on Iran lifted, as some were under the 2015 deal with six world powers to curb Tehran's nuclear ambitions.

Yet going down that path could lead Mr. Rouhani, who captured 57% of the vote in Friday's election, into confrontation with some of Iran's most powerful interests, concentrated around Supreme Leader Ayatollah Ali Khamenei, who has the final say in most matters of state.

"The next four years will challenge Rouhani considerably," said Behnam Ben Taleblu, a senior Iran analyst at the Foundation for Defense of Democracies in Washington.

Despite Mr. Rouhani's sound defeat of his main hard-line rival, Ebrahim Raisi, he is likely to face considerable resistance from conservative institutions such as the Islamic Revolutionary Guard Corps, or IRGC, an elite arm of the military charged with defending the country's Islamic revolution.

The IRGC oversees the country's ballistic-missile program, which recently drew new U.S. sanctions. The IRGC also operates a business empire with interests ranging from infrastructure and energy to telecommunications and real estate.

For any Iranian president, the IRGC is a power center to be reckoned with. For Mr. Rouhani, who has advocated a more open marketplace with



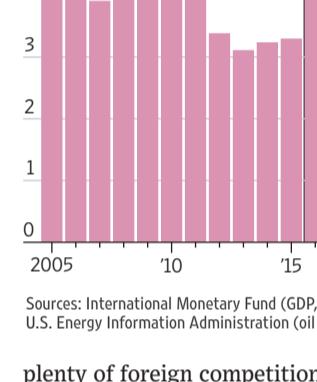
President Hassan Rouhani, who won 57% of Friday's vote, stands to the lower right of a picture of Supreme Leader Ayatollah Ali Khamenei.

Economic Lifeline

The 2015 nuclear deal lifted many economic sanctions on Iran and revived its oil industry.

Crude oil production

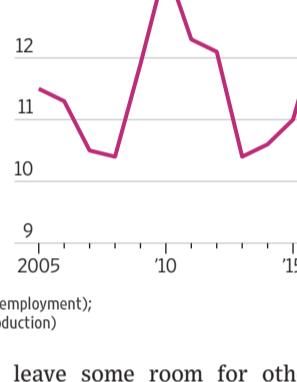
Million of barrels a day



Sources: International Monetary Fund (GDP, unemployment); U.S. Energy Information Administration (oil production)

Unemployment

Percentage of total labor force



Sources: International Monetary Fund (GDP, unemployment); U.S. Energy Information Administration (oil production)

Gross domestic product

Annual change



Sources: International Monetary Fund (GDP, unemployment); U.S. Energy Information Administration (oil production)

low it to fund Iranian military interests abroad and lead the country's participation in the Syrian and Iraqi conflicts.

In the past, resistance to the IRGC's aims has led to tension between presidents and the clerical establishment. The IRGC clashed with Mohammad Khatami, the reformist who was president between 1997 and 2005, over what it saw as the president's weak response to student protests in 1999. Mr. Khatami lost those political battles, and is currently barred from appearing in media.

It isn't impossible for Mr. Rouhani to work with the IRGC. He negotiated with foreign companies, including France's Total SA, to develop Iran's giant South Pars gas field after IRGC entities dominated projects there under hard-line President Mahmoud Ahmadinejad, Mr. Rouhani's predecessor.

The IRGC could even benefit from Mr. Rouhani's push to win the removal of all sanctions that remain on Iran after the nuclear deal—including many that target the IRGC. But the IRGC's commanding position in the Iranian economy is unlikely to change quickly.

They say Iran's regional aggression increased over the past four years, despite Mr. Rouhani's more pragmatic policies, particularly its support for Shiite militias fighting in Syria, Iraq and Yemen. Few of the U.S. president's top aides, however, believe Mr. Rouhani can deliver serious change in a political system dominated by hardline Supreme Leader Ayatollah Ali Khamenei and its elite military unit, the Islamic Revolutionary Guard Corps.

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Trump administration officials privately worry Mr. Rouhani's re-election could help shelter Iran's hardline factions from the increased financial and military pressure the U.S. seeks to exert. European leaders roundly applauded his victory this weekend and outlined a policy toward Iran diametrically opposed to Mr. Trump's.

"EU ready to continue work for full JCPOA implementation, bilat engagement, regional peace, and meet expectations of all people in #Iran," European Union foreign-policy chief Federica Mogherini tweeted Saturday.

The Trump administration is currently conducting an interagency review of its overall Iran policy, including whether to maintain U.S. support for the nuclear agreement.

On Wednesday, the administration extended the life of the nuclear deal by granting sanctions waivers to companies and countries trading oil with Iran. But the White House also imposed new financial penalties on Iranian and Chinese firms allegedly involved in developing Tehran's ballistic missile program.



President Donald Trump speaking in Saudi Arabia on Sunday

operative closely involved with Mr. Trump's campaign, responded to a photograph of King Salman placing a medal around the president's neck by writing on Twitter: "Candidly, this makes me want to puke."

As president, Mr. Trump has issued two travel bans targeting Muslim-majority countries (not Saudi Arabia) he deemed terrorism threats. Both orders are now tied up in the courts. In a May 17 commencement address at the U.S. Coast Guard Academy, he said, "We have to stop radical Islamic terrorism."

On Sunday, Mr. Trump deliberately opted not to use that phrase. His prepared remarks cited the threat of "Islamist extremism." In the speech he ultimately delivered, the president tweaked the phrase a bit. He stressed the need to combat "the crisis of Islamic extremism and the Islamists and Islamic terror of all kinds."

A senior White House official explained the president's stumbling over his prepared remarks by saying, he was "an exhausted guy."

TRUMP

Continued from Page One

The U.S. and Saudi Arabia agreed during the weekend to a \$109 billion arms package and a further \$300 billion in other deals and potential investments.

"This agreement will help the Saudi military to take a far greater role in security and operations having to do with security," Mr. Trump said.

Saudi King Salman bin Abdulaziz Al Saud, who spoke at the summit alongside Mr. Trump, pledged that Muslim leaders will "not hesitate to prosecute anyone who supports or finances terrorism in any shape or form."

Mr. Trump's speech marked a departure from his rhetoric toward Muslims during the presidential campaign, the intention of the shift being to gain traction for important elements of his policy agenda. Most notably, Mr. Trump decided not to use the phrase "radical Islamic terrorism."

Instead, he made a concilia-

tory effort to draw a distinction between religion and terrorism carried out in its name. It "is not a battle between different faiths, different sects, or different civilizations" but "a battle between good and evil," he said.

King Salman issued his own condemnation of terrorism as contrary to the teachings of Islam.

Both the U.S. and Saudi leaders delivered harsh rebukes of Iran, which on Saturday re-elected moderate President Hassan Rouhani over a hard-line opponent.

Aniseh Bassiri Tabrizi, a Middle East expert who focuses on Iran at Royal United Services Institute, a London think tank, said Mr. Trump's approach to Iran is likely to harden Saudi opposition to pursuing dialogue with Iran, and the country will "instead continue framing its policies in the region through a sectarian lens."

Mr. Trump avoided sensitive issues of human rights, repressive regimes and official support for Muslim clerics in the region who inspire some militant extremists. The ab-

sence of a human rights discussion drew quick criticism from Democratic and Republican lawmakers.

Speaking in a nation with some of the most restrictive policies toward women, Mr. Trump briefly mentioned the importance of "empowering women." Earlier Sunday, the World Bank announced at an event with the president's daughter and senior White House adviser, Ivanka Trump, that Saudi Arabia and the United Arab Emirates have

pledged a combined \$100 million to a fund that will assist women entrepreneurs and small-business owners.

Mr. Trump stressed that, under his leadership, the U.S. won't lecture other countries about "how to live, what to do, who to be or how to worship." Mr. Trump's softer tone on Islam as a tolerant religion could play well among some in the region. But it also risks alienating some of the president's supporters back home.

Roger Stone, a Republican

How President's Speech Compares With Obama's Cairo Address

BY CAROL E. LEE

RIYADH, Saudi Arabia—President Donald Trump's first major speech to the Muslim world was an opportunity to formally turn the page on an approach his predecessor had outlined just months into his presidency.

Mr. Trump's speech Sunday in Riyadh and President Barack Obama's 2009 speech in the Egyptian capital of Cairo differ dramatically in both substance and style.

Yet their goals were essentially the same.

"I've come here to Cairo to seek a new beginning between the United States and Muslims around the world, one based on mutual interest and mutual respect," Mr. Obama said in July 2009.

Mr. Trump told dozens of

Muslim leaders that their gathering together in Riyadh "is a symbol to the world of our shared resolve and our mutual respect" and could mark the beginning of "a new renaissance" in the Middle East.

Mr. Obama's 6,036 words-long speech lasted an hour. Mr. Trump's, which was 3,401 words, took 34 minutes.

At the time of their speeches, both leaders were seeking warmer relations with the Muslim world, which had become strained under their predecessors for different reasons.

Mr. Obama took office facing a war-wary country. The U.S. was embroiled in an unpopular war in Iraq and had tens of thousands of troops in Afghanistan.

"Unlike Afghanistan, Iraq

was a war of choice that provoked strong differences in my country and around the world," Mr. Obama said, while Mr. Trump promised to "apply new approaches informed by

experience and judgment" to the terrorism fight.

Mr. Trump's speech came just months after he was elected president on a promise to focus on domestic concerns, challenge the global status quo on trade and security alliances and escalate the fight against

terrorism. He spoke amid strained U.S. relations with allies in the Middle East, largely over Mr. Obama's diplomatic outreach with Iran, their archrival.

Their speeches underscore the starkly different approaches each adopted toward Iran early in their presidencies. Mr. Trump was combative, saying "Iran funds, arms, and trains terrorists, militias and other extremist groups that spread destruction and chaos across the region."

Mr. Obama offered diplomatic talks to the Iranian regime. "There will be many issues to discuss between our two countries, and we are willing to move forward without preconditions on the basis of mutual respect," he said.

Mr. Obama cast himself as an interlocutor who under-

stood Muslims based on his personal experiences living as a boy in Indonesia and having a Kenyan father whose family includes Muslims.

Mr. Trump doesn't have that background to draw on, and he was sharply critical of Muslims during his presidential campaign.

Instead, Mr. Trump chose to convey his commitment to the region by becoming the only president to choose the Middle East for his first official trip abroad.

Mr. Trump's speech was intended to convey a message that his administration prioritizes security and economic cooperation over human rights, or at least is willing to diminish public discussion of the latter in order to make progress on the former.

Mr. Obama made clear he

didn't see the world that way. Rather he saw the U.S. as a moral authority on human-rights issues and linked to the policy agenda he was pursuing.

He stressed in his speech the importance of Muslim countries upholding human rights, including freedom of religion and for women, whereas Mr. Trump said: "We are not here to tell other people how to live, what to do, who to be, or how to worship. Instead, we are here to offer partnership based on shared interests and values."

Mr. Obama tended to offer direct policy prescriptions for global challenges, which was telegraphed in his Cairo speech.

Mr. Trump keeps more of a distance, preferring to give parties maximum room to reach agreement.

WORLD NEWS

Haley Vows Refugee Support

BY FELICIA SCHWARTZ

ZAATARI CAMP, Jordan—United Nations Ambassador Nikki Haley, touring a sprawling refugee camp and other facilities in Jordan serving refugees, vowed support on Sunday for those displaced by the region's conflicts.

As she stood overlooking the camp—which has become Jordan's fourth-largest city—Ms. Haley said the U.S. would remain the top provider of humanitarian aid for the Syria conflict. The six-year-long Syria conflict has killed 400,000 and displaced millions, according to the U.N.

"We're the No. 1 donor here through this crisis, that's not going to stop," Ms. Haley said after U.N. officials briefed her on the camp. She also took a tour of a supermarket, viewed vocational training classes and met with eight women who live there.

Ms. Haley said her open-armed approach to refugees didn't conflict with President Donald Trump's rhetoric regarding Syrian refugees.

Her pledge comes as the administration looks to cut funds to U.N. programs and is battling in court to impose strict limits on refugees and immigration. The U.S. has provided \$6.5 billion in humanitarian aid to the conflict since 2012, mostly under the Obama administration.

Ms. Haley's visit to Zaatari Sunday was part of a packed four-day schedule in Jordan and Turkey, where she said she hopes to take stock of conditions for refugees in camps and the quality of other services provided to them.

On Monday she will meet with Jordan's King Abdullah II, visit the U.S. Embassy in Amman and tour a facility that provides psychological support to Syrian schoolchildren. Later Monday she travels to Turkey to meet Turkish officials and visit a refugee camp.

"I'm here to make sure that we're doing everything that the United States can possibly



Nikki Haley talks with Syrian refugee children during a visit to the Zaatari refugee camp Sunday.

do on the ground to make sure they know that we love our Syrian brothers and sisters," Ms. Haley said.

The trip is her first as the U.S. ambassador to the U.N.

In the less than five months she has been on the job, Ms. Haley has emerged as a leader in articulating President Donald Trump's foreign policy. At times, she has taken a view more in line with the foreign-policy establishment Mr. Trump railed against on the campaign trail.

Ms. Haley, for example, was the first Trump administration official to suggest that Mr. Trump might respond militarily to a chemical weapons attack in Syria's Idlib province in April. After the U.S. did so, she told the U.N. Security Council the U.S. would be prepared to strike again.

Ms. Haley spoke about her admiration for the Syrian people throughout Sunday's events. Her stops included a visit to a border crossing between Jordan and Syria that is a main hub for humanitarian aid deliveries; a U.S.-built school in Amman where Syrian and Jordanian children

take lessons; and an airport to inspect World Food Program aid that will be airdropped into Deir Ezzour, Syria.

Her words, as well as the numerous hugs, kisses on the cheeks and handshakes she exchanged with Syrian refugees Sunday sharply contrasted with Mr. Trump. Early in his presidency, he moved to ban

The U.N. ambassador toured a refugee camp, now Jordan's fourth-largest city.

all Syrian refugees from entering the U.S.—a move that is being held up in court—and has described them as potential security risks.

"The fact that I'm here shows we want to see what else needs to be done," she said, when asked if Mr. Trump's efforts to cut U.N. funds and his rhetoric about Syrian refugees and other migrants from predominantly Muslim countries interferes

with her message.

Ms. Haley said the Trump administration didn't know enough about Syrian refugees to let them into the U.S., but regardless the U.S. should focus on trying to keep families together and create the right conditions to help them return to Syria.

"From the administration's standpoint, if they're going to protect the American people, they have to know who's coming in," she said. "Every person I've talked to whether it was the group of women, whether it was the families, whether it was the children, anybody, the No. 1 thing they said was 'we just want to go home!'"

Ms. Haley's trip was her first to Jordan. She traveled with a small group of aides and listened to several briefings on education, aid delivery and refugee camps.

She spoke with eight women who lived at Zaatari, some who had been there as long as six years. Ms. Haley asked them if they ever thought of leaving the refugee camp.

"Where should we go?" one responded.

NATO to Act on Trump's Call for More Spending

BY JULIAN E. BARNES

BRUSSELS—The North Atlantic Treaty Organization, under pressure from the administration of President Donald Trump, is planning a new spending initiative that will use additional money to fill armament gaps, according to a draft of the proposal reviewed by The Wall Street Journal.

Officials said they expect the program to be approved at a gathering of allied leaders here on Thursday that is to be attended by Mr. Trump—a move that would mark progress on an important foreign-policy goal for the president as he contends with political controversies in Washington.

Under the plan, NATO members would be required to submit national blueprints detailing how they will meet alliance targets, which say each country should devote 2% of economic output to military spending.

In addition, they are to specify how money will be used to fill existing gaps in weaponry identified by the alliance, such as shortages of warships and air-defense systems. The plans will also track commitments of troops to NATO missions.

Mr. Trump's administration has made increasing European military spending a central part of its agenda. This year, Defense Secretary Jim Mattis called on allies to adopt spending plans or risk unspecified changes in the American defense commitment to Europe.

The new NATO plan includes compromises. Some U.S. officials have said they wanted to toughen up current spending guidelines, which call for allies to hit the 2% target within a decade, and make them explicit requirements rather than goals.

But that isn't part of the new proposal, and European diplomats said the U.S. wasn't pushing for those changes in the run-up to Thursday's meeting.

Some European politicians have argued the 2% goal is neither realistic nor wise. "Money is a contentious issue," said Bruno Lévé, an expert on NATO at the German Marshall Fund in Brussels. "There is a trans-Atlantic gap," he said.

NATO officials say one of the alliance's primary goals is eventually to reduce Europe's dependency on the U.S.—also a Trump administration demand.

—William Horobin in Paris contributed to this article.



Spanish air force F-18s took part in a military exercise in April.

A woman in a black dress stands in a studio filled with lighting equipment and cameras. The background features a large window showing a city skyline. The text "WHAT'S YOUR GREATER?" is overlaid in large, white, sans-serif letters across the center of the image.

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WORLD NEWS



Demonstrators in Brasilia on Sunday called for the resignation of President Michel Temer, after he lashed out at allegations he took bribes.

New Bribe Allegations Shake Brazil

By SAMANTHA PEARSON
AND LUCIANA MAGALHÃES

SÃO PAULO—Allegations by executives at meat processor **JBS SA** that they paid bribes to the president and his two predecessors mark an escalation of the clash between Brazil's political establishment and its business magnates, putting the company and the government at further risk.

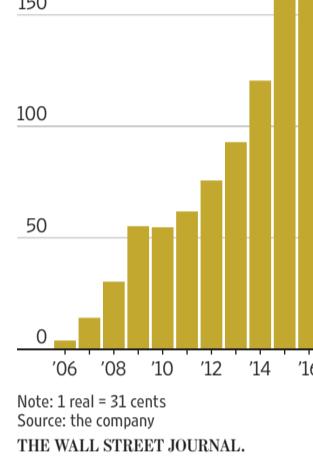
JBS's allegations, leaked by Brazil's *O Globo* newspaper on Wednesday and released by the Supreme Court on Friday, come a month after the court ordered investigations into one-third of sitting ministers following disclosures by construction giant **Odebrecht SA**.

Brazil's business magnates are increasingly betraying former allies in government in plea deals in a desperate attempt to keep themselves and their families out of prison.

Executives at JBS—which is planning a U.S. initial public offering of its international unit—told prosecutors they had paid \$4.6 million to President Michel Temer in recent years and \$30 million and \$50 million, respectively, into offshore accounts held by his predecessors, Dilma Rousseff and Luiz Inácio Lula da Silva. All three have denied

Beefing Up

Net revenue of JBS, in billions of reais



THE WALL STREET JOURNAL.

lions of dollars in less than 24 hours....It was the perfect crime," Mr. Temer said. JBS denies illegal trades.

If Brazilian market regulator CVM finds JBS guilty of insider trading, prosecutors may ask for even more than the \$3.4 billion they currently demand as part of a promised leniency deal with JBS, a person close to the negotiations said.

Luis Octavio da Motta Veiga, CVM's former head, said even if JBS is cleared, he believes the group will struggle to find new business.

"I think it's unlikely that after corrupting more than 1,800 politicians they will be received with open arms in Western financial markets," he said, referring to testimony cited by local media in which JBS said it paid bribes to 1,829 politicians.

Part of the latest allegations are based on a recording that Joesley Batista, JBS chairman and part of the family that controls the beef-and-chicken empire, secretly made of a conversation he had with Mr. Temer at the president's home.

"You can count on me!" Mr. Batista can be heard saying, cozying up to the president.

Mr. Temer accused JBS of doctoring the recording and asked the Supreme Court on

Saturday to suspend the corruption probe of the president, which began on Thursday, until the audio file could be verified.

"Ever since Brazil's dictatorship ended [in 1985], certain sectors of the economy and politicians have been bound together—they became one," said Rafael Alcadipani, an academic at Brazil's Getulio Vargas Foundation.

But the country's three-year Car Wash corruption investigation, which has drawn in some of the country's major industries, is forcing the country to revise its version of crony capitalism, he said.

"It's like a particularly litigious divorce—the companies and the government are separating from each other but stabbing each other in the back as they go," Mr. Alcadipani said.

Mr. Temer on Saturday blamed Mr. Batista for putting Brazil's economic recovery in jeopardy. After signing a plea deal with prosecutors in early May, Mr. Batista flew out of Brazil with his wife and young son. "He damaged Brazil, tricked Brazilians and now he's living in the U.S.," Mr. Temer said.

But while the president has branded Mr. Batista as a villain, some Brazilians call the billionaire a national hero.

PHILIPPINES

Duterte Reports Xi Threatened War

President Rodrigo Duterte said his Chinese counterpart had threatened him that Beijing would "go to war" if Manila began drilling for oil in the South China Sea.

The alleged inflammatory comments—mentioned offhand by the Philippine president during a speech Friday—came as the two countries have sought to reset ties after years of contention over conflicting claims in the South China Sea.

Mr. Duterte said he had told Chinese President Xi Jinping that the South China Sea "is ours and we intend to drill oil there. If it's yours, well, that is your view but my view is I can drill the oil."

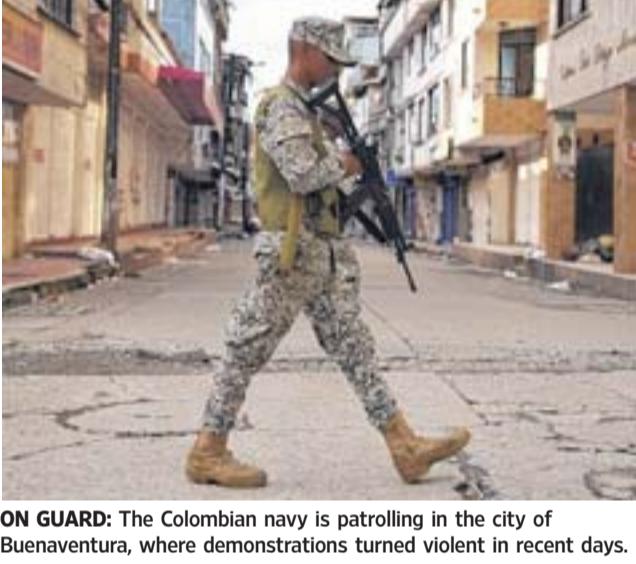
The Philippine leader said Mr. Xi told him the two countries are friends. "We do not want to quarrel with you. We want to maintain warm relationship but if you force the issue we will go to war," Mr. Xi reportedly said.

China's Foreign Ministry didn't respond to a request for comment. —*Jake Maxwell Watts*

AFGHANISTAN

Taliban Kill at Least 20 Service Members

Militants launched attacks on



ON GUARD: The Colombian navy is patrolling in the city of Buenaventura, where demonstrations turned violent in recent days.

several checkpoints in the southern part of the country, killing at least 20 security forces, according to a provincial official.

Gul Islam Seyal, spokesman for the governor in Zabul province, said on Sunday that the battles began late Saturday when dozens of Taliban fighters launched coordinated attacks on security posts in the Shah Joy district. At least 10 other security-force members, including national and local policemen, were wounded, he said.

Mr. Seyal said the Taliban also fired several mortar rounds on Qalat, the provincial capital.

The Taliban didn't immediately claim responsibility but they have stepped up attacks in Afghanistan since announcing their spring offensive last month.

Also on Sunday, authorities said a German woman and an Afghan security guard were killed and a Finnish woman was kidnapped from a Kabul guesthouse overnight.

The killings took place at 11:30 p.m. local time Saturday, said Najib Danish, deputy spokesman for the Interior Ministry. There was no immediate claim of responsibility for the attack or the kidnapping. Kabul police have begun an investigation, he said.

Karoliina Romanoff, a Finnish Foreign Ministry spokeswoman, confirmed that a Finnish citizen was kidnapped but had no details. —*Associated Press*

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WORLD NEWS

North Korea Fires Missile Into Japan Sea

Tokyo condemns latest test launch, the results of which Kim Jong Un calls 'perfect'

BY JONATHAN CHENG

SEOUL—North Korea successfully launched its second ballistic missile in a little more than a week, increasing the pace of its testing as it seeks to develop the ability to strike the continental U.S. with a nuclear-tipped weapon.

North Korea fired the missile from the Pukchang airfield, about 40 miles north of the capital, Pyongyang, at about 4:30 p.m. Sunday local time, according to the U.S. Pacific Command and South Korea's Ministry of Defense.

The missile flew about 310 miles, a spokesman for Seoul's Defense Ministry said, adding that authorities were analyzing the details of the test launch.

A spokesman for the U.S. Pacific Command said it tracked the missile until it splashed down in the waters between Korea and Japan.

North Korean leader Kim Jong Un on Monday called the results of the missile launch "perfect" and ordered mass production of the solid-fuel missile for military deployment, North Korea's state media reported.

Mr. Kim personally super-



People watched a televised image of a North Korean missile launch at a railway station in Seoul, South Korea, on Sunday.

authorities said at the time that the missile didn't leave North Korean territory.

In contrast, Sunday's successful test launch is further evidence of added momentum for North Korea's missile program, coming on the heels of the testing of an advanced missile a week earlier that took many North Korea missile watchers by surprise.

Taken together, the two launches underscore the rapid progress the country is making as part of a drive to be able to threaten the continental U.S. In last week's test, North Korea launched a new intermediate-range ballistic missile that it claimed was capable of carrying a large nuclear warhead. It called the missile the Hwasong-12.

Independent analysts have said that, based on their calculations, the Hwasong-12 could reach the U.S. military base in Guam, more than 2,000 miles from Pyongyang.

Victor Cha, Korea chair at the Center for Strategic and International Studies in Washington, said after the Hwasong-12 test that the successful launch "demonstrates that we have once again underestimated North Korea's nuclear and missile capabilities." He said the Hwasong-12 "represents a leap in ballistic-missile technology."

—Peter Landers in Tokyo contributed to this article.

Asia Trade Partners To Go On Sans U.S.

BY JAMES HOOKWAY

The 11 countries left in the Trans-Pacific Partnership trade agreement backed a proposal to continue with the pact, despite U.S. President Donald Trump pulling out of it in January, New Zealand's trade minister said.

Todd McClay, who chaired the meeting on the sidelines of an Asia-Pacific Economic Cooperation meeting in Hanoi, Vietnam, on Sunday suggested the path was open for the U.S. to rejoin if it changed its mind.

"It's clear that each country is having to consider both economic values and strategic importance of this agreement, but in the end there is a lot of unity among all of the countries and a great desire to work together to come up with an agreement among 11 that not only delivers for all of our economies and the people of our countries, it's also open to others countries in the world to join if they can meet the high standards in the TPP agreement," the Associated Press quoted Mr. McClay as saying.

He and other trade ministers from the bloc of 11 also issued a statement saying they had resolved to "launch a process to assess options to bring the comprehensive, high-quality agreement into force." They also emphasized that they would work on ways to allow the U.S. to rejoin the group, as well as providing the scope for other countries to join.

Mr. McClay said high-level talks would resume when leaders of the Asia-Pacific Economic Cooperation forum meet in Vietnam in November.

Meanwhile, the U.S.'s new

trade representative, Robert Lighthizer, held a series of bilateral meetings in Hanoi with key trading partners, reflecting in part the Trump administration's position that forging individual, country-to-country trade deals would better serve American interests than would multilateral trade pacts such as the TPP.

It is unclear what a TPP would mean without access to U.S. markets, a key draw for many of the countries that joined negotiations.

Supporters hope, however, that moving ahead will prevent more than five years of work hammering out the trade rules from being wasted, and keep the agreement on life support in case political conditions eventually change in the U.S.

Some in the region are concerned China will become the sole power determining the terms of trade in Asia, while also establishing the principle of linking labor and intellectual-property protection standards to market access.

Beijing, which hasn't been involved with the TPP, is pushing its own Asia-based free-trade pact, the Regional Comprehensive Economic Partnership.

So far only Japan and New Zealand—which in recent weeks lobbied for the idea of pushing ahead with the TPP without the U.S.—have ratified the agreement in their domestic legislatures, something all member countries must do for it to come into effect.

Japan is the largest economy involved in the deal, which also includes New Zealand, Australia, Chile, Canada, Mexico, Peru, Vietnam, Singapore, Malaysia and Brunei.

Arconic says it has changed more than nine directors over the past 16 months, including Elliott's three picks in 2016, and argues that the hedge fund's attempts to nominate four more directors would give too much sway to a single shareholder.

The company has told shareholders an Elliott win would embolden activists to go too far, criticizing Elliott's personal attacks on Mr. Kleinfeld.

An Elliott victory, even a partial one, could signal few companies are safe, said Chris Young, a Credit Suisse Group AG banker who advises companies in fights with activists.

"It's not just let's fix the basket cases, now it's let's make the company the best it can be, even after all the self-help steps," Mr. Young said.

Thursday's vote offers a

New Cardinals From Distant Flocks

BY FRANCIS X. ROCCA

ROME—In a surprise announcement, Pope Francis said he would elevate five men from four continents to the College of Cardinals in June, continuing his practice of adding men from the peripheries of the Catholic world to the body that will elect his successor.

In doing so, the Argentine pope again passed over dioceses in Italy, the U.S. and other countries whose bishops traditionally receive the rank.

The new cardinals, whom the pope will bestow with red hats at a Vatican ceremony on June 28, hail from Mali, Spain, Sweden, Laos and El Salvador.

"Their origins in diverse parts of the world manifest the catholicity of the church, which is spread throughout the world," the pope told a congregation in St. Peter's Square on Sunday.

Three of the cardinals come from countries with minuscule numbers of Catholics: Mali, Sweden and Laos.

And in El Salvador, a majority-Catholic country, Pope Francis will be giving the red hat not to the archbishop of San Salvador, the country's most prominent bishop, but to one of his assistants, Bishop José Gregorio Rosa Chávez.

Cardinal-designate Rosa Chávez was a close associate of the late Archbishop Oscar Romero, a martyred champion of social justice whom Pope Francis approved for beatification, the church's highest honor short of sainthood, in 2015.

Meanwhile, Pope Francis again declined to give red hats to traditional recipients, such as the archbishops of Turin and Venice and those of Los Angeles and Philadelphia.

Last November, the pope made Archbishop Joseph

Refreshing the Ranks

On Sunday, Pope Francis named 5 new cardinals who will be eligible to vote in a future conclave.

Number of voting-age cardinals, including those named by Pope Francis on Sunday*

Pope Benedict XVI	Pope Francis	St. John Paul II
53	49	19
By pontificate		

Total 121

By region	Central America	5
Europe	North America	Africa
53	17	15
By region	Asia	South America
Europe	15	12
North America	15	Oceania
Africa	12	4

*Excludes a Scottish prelate who has given up the right to vote in conclaves due to sexual improprieties.

Note: Another reaches the age of 80 in Feb. 2018, making him ineligible to vote.

Source: Vatican

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San Salvador's assistant Bishop Chávez, center, is one of the picks.

played host to Pope Francis last fall, when the pope traveled to Sweden for a commemoration of the 1517 Lutheran Reformation, part of his efforts to reconcile Catholics and Protestants.

Although Pope Francis continues to increase the college's geographic diversity, he isn't straying from the prescribed numerical limit.

Five is an unusually small number of cardinals to create; popes typically elevate three times as many men to the rank on a single occasion.

These new appointments—the fourth batch appointed by Pope Francis—will bring the number of cardinals eligible to participate in a papal election to 121.

That number includes Italian Cardinal Antonio Maria Vegliò, who reaches the mandatory retirement age of 80 next Feb. 3.

His birthday will then bring the number down to the limit of 120 established by Pope Paul VI.

Forty-nine of those, or 40%, will have been named by Pope Francis.

VOTE

Continued from Page One

be trusted to depart from Mr. Kleinfeld's strategy.

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Swing Voters

Arconic's biggest investors, with a combined 47%, hold the keys to Thursday's board vote in a bitter five-month fight with activist Elliott Management.

HOLDER	STAKE OWNED	EXPECTED VOTE
Elliott Management	11.6%	Elliott
Vanguard Group	9.5%	Unknown
BlackRock	6.6%	Unknown
First Pacific Advisors	4.6%	Elliott
State Street Global Advisors	4.4%	Unknown
Orbis Investment Management	3.5%	Elliott
Oak Hill Capital Partners	2.0%	Unknown
Credit Suisse	1.7%	Unknown
Manning & Napier Advisors	1.5%	Unknown
Invesco	1.3%	Unknown

Source: S&P Global Market Intelligence

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"Now we are on the margins of a new event horizon. Almost any company can be marginally improved."

Thursday's vote offers a

to sway the outcome of board fights.

Though activists in recent years have targeted ever larger companies, it is rare for such campaigns to go all the way to a vote.

DuPont Co.'s 2015 scuffle with Nelson Peltz's Trian Fund Management LP was the last major board fight to make it to a vote. The chemical company's shareholders narrowly rejected Mr. Peltz and Trian's other nominees, which was seen as an endorsement of DuPont's strategy for the business. Later that year, Ellen Kullman stepped down as CEO after performance slipped, and the company reached a deal to merge with Dow Chemical Co.

The Arconic vote likely will hinge on Vanguard Group, BlackRock Inc. and State Street Global Advisors, index

funds that collectively hold some 20% of the company's stock. Many institutional investors have approached activist fights with trepidation, willing to entertain change but wary of giving hedge funds with shorter time horizons too much power.

Arconic has insisted that its strategy of working closely with customers to win long-term contracts will lead to greater long-term gains. Elliott, for its part, wants to shake up how the company is run, hoping that will lead to more efficient spending and improve stock gains.

Elliott and Arconic each have spent millions of dollars wooing shareholders. Elliott mailed shareholders a video player to watch its pitch. Arconic says in a filing it expects to spend about \$17.5 million on the fight.

FROM PAGE ONE

VOTE

Continued from Page One

be trusted to depart from Mr. Kleinfeld's strategy.

Arconic says it has changed more than nine directors over the past 16 months, including Elliott's three picks in 2016, and argues that the hedge fund's attempts to nominate four more directors would give too much sway to a single shareholder.

The company has told shareholders an Elliott win would embolden activists to go too far, criticizing Elliott's personal attacks on Mr. Kleinfeld.

An Elliott victory, even a partial one, could signal few companies are safe, said Chris Young, a Credit Suisse Group AG banker who advises companies in fights with activists.

"It's not just let's fix the basket cases, now it's let's make the company the best it can be, even after all the self-help steps," Mr. Young said.

"Now we are on the margins of a new event horizon. Almost any company can be marginally improved."

Thursday's vote offers a

rare chance to gauge the sentiment of big institutional investors, who collectively control enough shares in most big publicly traded U.S. companies

IN DEPTH

QUANTS

Continued from Page One
vesting at GAM Holding AG. The Swiss money manager last year bought British quant firm Cantab Capital Partners for at least \$217 million to help it expand into computer-powered funds.

Guggenheim Partners LLC built what it calls a "supercomputing cluster" for \$1 million at the Lawrence Berkeley National Laboratory in California to help crunch numbers for Guggenheim's quant investment funds, says Marcos Lopez de Prado, a Guggenheim senior managing director. Electricity for the computers costs another \$1 million a year.

Algorithmic trading has been around for a long time but until recently was an overlooked presence on Wall Street. An article in The Wall Street Journal in 1974 featured quant pioneer Ed Thorp. In 1988, the Journal profiled a little-known Chicago options-trading firm that had a secret computer system. Journal reporter Scott Patterson wrote a best-selling book in 2010 about the rise of quants.

Prognosticators imagined a time when data-driven traders who live by algorithms rather than instincts would become the kings of Wall Street.

That day has arrived. In just one sign of their power, quantitative investment firms are now responsible for 27% of all U.S. stock trades by investors, up from 14% in 2013, according to the Tabb Group, a research and consulting firm in New York.

Quants have almost caught up to individual investors, which outnumber quants and collectively have 29% of all stock-trading volume.

At the end of the first quarter, quant-focused hedge funds held \$932 billion of investments, or more than 30% of all hedge-fund assets, estimates HFR Inc. In 2009, quant funds held \$408 billion, or 25% of all hedge-fund assets.

Quants received \$4.6 billion of net new investments in the first quarter, while the overall hedge-fund business saw withdrawals of \$5.5 billion.

Beating humans

The computers are outperforming humans at picking investments. Over the past five years, quant-focused hedge funds gained about 5.1% a year on average. The average hedge fund rose 4.3% a year in the same period.

In the first quarter, quant funds rose about 3%, compared with 2.5% for the average hedge fund.

Quants have been helped by two transformative forces. Regulatory scrutiny has made it hard for investors to obtain an edge through methods such as prodding company executives for information or tapping expert networks that included employees of public companies.

Even more important, investors now have at their fingertips an expanding ocean of data about the global economy and financial data, such as changes in earnings estimates and accounts receivable.

The next frontier: tapping data from drones and other cutting-edge sources to help understand companies and the economy in real time.

Quants are different from high-frequency traders, who tend to focus on very short-term trades that might last just milliseconds. High-frequency traders have been under pressure as market volatility dips and competition grows.

Exchange-traded funds also use algorithms but are geared more to investors who want ex-

posure to certain industries or sectors.

Quantitative-driven trades can last anywhere from a few minutes to a few months. The biggest quant firms, including Renaissance, Two Sigma Investments LLC, D.E. Shaw Group, PDT Partners and TGS, make thousands of trades and manage tens of billions of dollars in investor assets.

Some analysts worry that firms and investors stampeding into the quant business might be disappointed. The most successful quants have been operating for years. And hiring Ph.D.s doesn't guarantee profits.

More competition could hurt returns and give a false sense of security about the market's stability. In 2007, what became known as the "quant meltdown" was caused largely by the similarity of strategies among quants, who simultaneously rushed to sell, causing losses at other firms and more selling.

Mathematician William Byers, who wrote the 2010 book "How Mathematicians Think," warns that rendering the world in numbers can give investors a deceptive belief that predictions churned out of computers are more reliable than they truly are. The more investors flock to complicated algorithmic models, the more likely it is some algorithms will be similar to one another, possibly fueling larger market disruptions, some analysts say.

So far, though, nothing has stopped the quant arms race, which is creating new jobs previously unheard of in the finance industry.

Citadel, of Chicago, has a chief scientist to run its analytics and quantitative strategies. In August, Balyasny Asset Management LP hired data scientist Gilbert Haddad, formerly of Schlumberger Ltd. and General Electric Co., to overhaul data and analytics at the New York hedge-fund firm. He studied nanoparticles at the University of Wisconsin and has a Ph.D. in engineering.

"You take tours of offices, and everyone is always pointing out some guy off in a corner, working on his own," says Alexandre Agachi, chief operating officer at Empiric Capital Ltd., a startup quant hedge fund in London. "They say with pride: 'Over there is our quant. He's building signals.'

It's common for hedge funds to retool themselves to fit the latest popular strategy. Many funds dove into mortgages after the financial crisis ebbed. Some turned into "macro" in-



April's meeting of the Thalesians, a group of quants, above. Marc Henrard, below, head of quantitative research at OpenGamma.

vestors in anticipation of global economic shifts.

Hedge-fund billionaire Steven A. Cohen's investment firm, Point72 Asset Management, with \$12 billion in assets, is shifting about half of its portfolio managers to what it calls a "man plus machine" approach.

Teams that use old-school research methods are working alongside data scientists. Financial analysts are taking evening classes to learn data-science basics. Point72 is plowing tens of millions of dollars into a group that analyzes reams of data, including credit-card receipts and foot traffic captured by apps on smartphones. The results are passed on to traders at the Stamford, Conn., investment firm.

Point72 lost money in most of its traditional trading strategies last year, say people familiar with the results. The firm's quant investors made about \$500 million.

Matthew Granade, Point72's chief market-intelligence officer, recently encouraged London School of Economics students to learn basic programming languages, like R and Python, to become more competitive when they graduate. Investors are shifting their preference from "artisan to engineer," he said.

Billionaire Paul Tudor Jones is one of the best-known investors in history. The former cot-



ton trader anticipated the 1987 stock-market crash and made gigantic profits with quick bursts of trading, averaging annual gains of more than 17% since then. His hedge-fund firm, Tudor Investment Corp., barely made any money in 2014 and 2015, though.

By last year, Mr. Jones was feeling pressure from more successful quant traders, according to people close to the firm. In October, Mr. Jones chose Dario Villani, an Italian with a doctorate in theoretical physics who was hired in 2015, to help rejuvenate Tudor.

Hunkered down with a team of quants and other Tudor employees in a small house on an estate in Greenwich, Conn., Mr. Villani began developing computer programs to replicate trading positions of Tudor's portfolio managers using instruments that better allow the firm to increase risk to improve returns without endangering the hedge fund or Tudor, people familiar with the matter say.

Despite the changes, Tudor's two key funds were flat in 2016 as well as so far this year, even as markets have climbed.

Humans have long searched relentlessly for ways to gain an information edge. Legend has it that financier Baron Rothschild built a network of field agents and carrier pigeons in 1815 that may have given him a jump on the Battle of Waterloo outcome. Today's quants hope to digest—and act on—economic and corporate information faster than traditional investors.

Hedge funds with quant-focused strategies have been poring over private Chinese and Russian consumer surveys, illicit pharmaceutical sales on the dark web—a network of

websites used by hackers and others to anonymously share information—and hotel bookings by U.S. travelers, according to Quandl Inc., a platform for such data.

In the late 1990s, an algorithm might have simply tried to ride the momentum of a stock's price rise, buying at a certain price level and selling at a predetermined moment.

Today's algorithms can make continuous predictions based on analysis of past and present data while hundreds of real-time inputs bombard the computers with various signals.

Much of that push is coming

from investors such as Pepperdine University in Malibu, Calif.

Last year, the college placed about 10% of its \$750 million portfolio in big quant funds, including those run by Man Group PLC of London and AQR Capital Management LLC, Greenwich, Conn.

Until then, Pepperdine had "essentially zero" quant investments, says Michael Nicks, its director of investments. "The narrative of fundamental investing is much more comfortable to digest," he says. "Finding a company with good prospects makes sense, since we look for undervalued things in our daily lives, but quant strategies have nothing to do with our lives."

After "years and years of self-education" and dozens of meetings with quant managers, says Mr. Nicks, Pepperdine decided it was ready to make the leap.

—Rob Copeland contributed to this article.

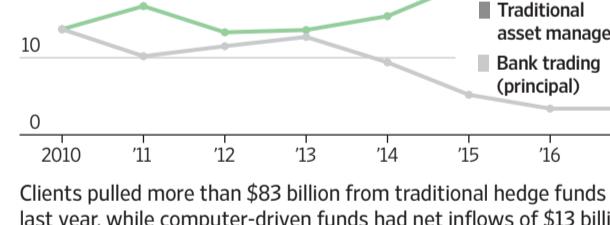
ONLINE

Read part 2 of our series on the rise of quants at wsj.com/markets

Rising Quants

Quantitative hedge funds are responsible for a record 27% of U.S. stock trading by investors, up from 14% in 2013.

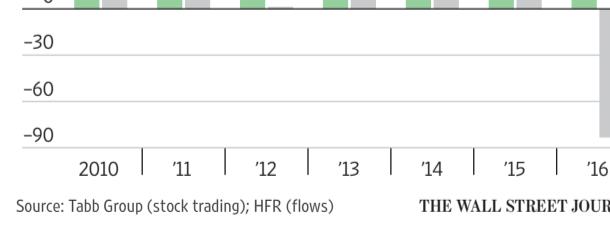
Share of stock trading by type of investor



Clients pulled more than \$83 billion from traditional hedge funds last year, while computer-driven funds had net inflows of \$13 billion.

Net flow into hedge funds

Quant **Non-quant**



Source: Tabb Group (stock trading); HFR (flows)

THE WALL STREET JOURNAL.

She eats methodically with a spoon and fork, and sometimes her fingers, washing food down with swigs of milk or water. She leaves little mess. Her online name translates into "little man."

As she chomps and slurps, Xiaoman has sparked a debate about eating habits in a country where the culture is closely tied to food and feeding the country's swelling population of 1.3 billion is a challenge.

On social media, some parents praise Xiaoman for her vigorous appreciation of food, wishing their children were less picky. Others worry about the dangers of overindulgence. "Does she have cavities?" one online commenter asked.

The toddler's mother, Duan Yu, a makeup artist in Beijing, says she didn't set out to make Xiaoman famous. Ms. Duan

started posting the eating videos a year ago to document her daughter's life, just like any other proud parent would, she says. The mother stays off camera.

Other parents soon sought her advice about how to prepare the same foods that Xiaoman eats and how to get their kids to eat vegetables. Ms. Duan says the trick is: Don't let them eat too many snacks.

Ms. Duan says she is no food expert and reads lots of parenting blogs. Instead of spoon-feeding, which is common among parents and their toddlers in China and elsewhere in Asia, Ms. Duan simply gives Xiaoman utensils so she can feed herself.

At mealtimes, Xiaoman usually gets three large spoons of rice along with a serving of meat or fish and vegetables.

There are no second helpings, no matter how much Xiaoman cries, her mother says.

One video shows Xiaoman at a restaurant feasting on an Indonesian salad of vegetables, eggs, tofu and potatoes drenched in peanut sauce. She doesn't look up when two fans come up behind her to take selfies, even when one drapes her hand on the toddler's shoulder.

Some viewers wrote that Xiaoman's food bowls look larger than her head and that she eats too much. Ms. Duan says the portion sizes are normal for her daughter's age. She made a video of Xiaoman's visit to the doctor to show the toddler is healthy.

The amount of food "looks big in the video, but it is very little," says Ms. Duan. "The lens is a wide lens."

As China's fascination with

Xiaoman has grown, so have her opportunities. She has an agent, Candy Chan, a director at Models International, who also represents Hong Kong supermodel Qi Qi. The toddler "eats everything by herself and appreciates

ety-TV shows.

A live-streaming event held this month by Chinese e-commerce giant Alibaba Group Holding Ltd. to promote its shopping festival featured Xiaoman eating a bowl of fish, tomato and green pepper with a blue Pampers crown perched atop her head.

"Xiaoman is eating so well," gushed the announcer. "If she were my daughter, I'd give her a sticker or a flower as a prize!"

Forks and bowls playing on her celebrity status are sold online but weren't approved by Xiaoman's parents, her mother says.

It's a lot to stomach. Ms. Duan says she isn't seeking to profit from her toddler daughter's fame. Besides, the way online fame comes and goes, "I don't think she's going to be famous for long," the mom says.

FOOD

Continued from Page One

through meals.

It's the Chinese version of "mokbang," or "eating broadcast," which gained popularity in South Korea a few years ago with streaming late-night chowdowns shown live.

"There's a spiritual satisfaction to watching people eat," says Xiaoyu Zhuang, Meipai's operations manager. Not to mention, he adds, "kids are lovely."

Xiaoman is perhaps the youngest eating sensation in China. Viewers are transfixed by her expressive face, bangs, high-pitched voice, chewing sounds and unusually good manners. Fans call her the "cute baby foodie."

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GREATER NEW YORK

Democrats Tussle on Staten Island

By MARA GAY

As the first African-American elected to higher office on Staten Island, the only majority-white borough in New York City, Deborah Rose is used to a good political fight. But the two-term Democrat this year faces an especially tough battle for her seat on the City Council.

Kamillah Hanks, who is running against her in the District 49 Democratic primary, stunned many on Staten Island earlier this year by raising \$27,875 in donations—at the time over \$18,000 more than the incumbent's \$9,801.

The 44-year-old founder of the nonprofit Historic Tappan Park Community Partnership, Ms. Hanks has never held elected office. Arguing it is time for a change, the African-American candidate has said in recent interviews that she will bring a fresh perspective.

Ms. Rose, who's in her 60s, has "had her eight years. Look, eight is enough. She has accomplishments," Ms. Hanks said. "I have a very different style, which is contemporary."

Ms. Rose has since caught up to Ms. Hanks in political donations, outstripping her by thousands of dollars in the most recent filing. But political operatives and observers say the primary race is likely to remain competitive given the increased economic development in the district, on Staten Island's North Shore, and locals' wariness about the gentrification that has accompanied it.

"Things are hotter politically because of all the money coming in," said Richard Flanagan, a political-science professor at the College of Staten Island. The district is slated to get a new mall later this year and has seen increased residential development along its waterfront.

A third Democratic primary challenger, Philippe-Edner Apostol-Marius, has also entered the primary. The 26-year-old has raised just over \$3,000. Republican officials on Staten Island said they would begin to consider candidates this week.

Ms. Rose's 2009 victory has



Councilwoman Deborah Rose, left, faces a challenge from newcomer and fellow Democrat Kamillah Hanks, right, in District 49.



Pressure to Deliver On the North Shore

Deborah Rose, who has represented Staten Island's District 49 since 2010, said she immediately felt pressure to show she wasn't only out to help African-Americans, but all constituents, including the district's sizable number of Republicans.

"It was as if I had something to prove to everybody," she said.

Her North Shore district, a lone Democratic stronghold in the city's most conservative borough, is home to most of Staten Island's minority and immigrant

communities.

While the borough is about 64% white, according to 2010 U.S. Census data, District 49 is more diverse: 40% of the population is white, 29% Hispanic, 22% African-American and 8% Asian.

Ms. Rose said the 2014 death of Eric Garner, an unarmed Staten Island man who collapsed after being placed in a chokehold by a police officer during an arrest for allegedly selling untaxed cigarettes, made her job tougher, bringing racism and other issues that had been simmering in the district to the forefront.

—Mara Gay

remained a point of pride for many in the district. New York state Assemblyman Matthew Titone, a Democrat and the first openly gay man elected to higher office on Staten Island, said Ms. Rose's election was personal for him. "The Staten Island I grew up in was always diverse," he said. "But when Debi was elected, it helped solidify that fact."

Ms. Hanks said the reaction

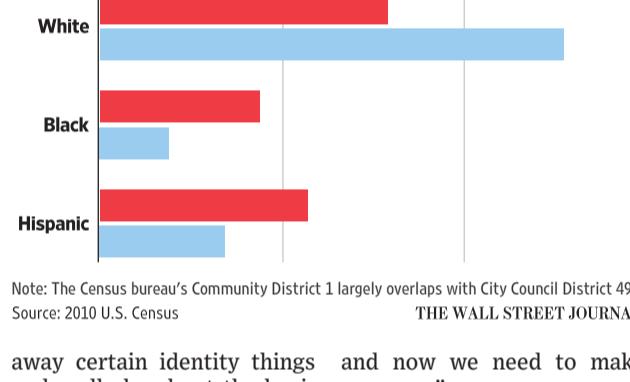
to her candidacy from older black Staten Islanders has at times been visceral. "One said to me, 'It's Debi. How could you?'" she recalled.

"I stand on her shoulders. There's no doubt in my mind about having the utmost respect for her. You're running against an icon, history," she said. "But I can't pay attention to that."

Saying it was time to "put

Primary Colors

Staten Island's North Shore is more racially diverse than the rest of the borough.



Note: The Census bureau's Community District 1 largely overlaps with City Council District 49

Source: 2010 U.S. Census

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away certain identity things and really be about the business," Ms. Hanks promised to improve constituent services, help residents with local issues like street repairs and be a more visible presence in the district.

"You don't get a pass on doing your job because you are the first African-American running for office," Ms. Hanks said. "We've made that history and now we need to make progress."

Ms. Rose said those criticisms are unfair and ticked off a list of her accomplishments, including the work she has done toward improving the North Shore's waterfront area and increasing development, which is expected to bring more jobs. "I've made my district a much better place than I found it," she said.

De Blasio Sets Out For Bronx This Week

By MARA GAY

New York City Mayor Bill de Blasio and his senior aides are headed to the Bronx, where they will move the city's operations for the week on the second stop of a five-borough tour.

Beginning Monday, Mr. de Blasio, who is up for re-election this year, will work from Bronx Borough Hall, city officials said.

Last month, the Democratic mayor spent a week on Staten Island, braving voters in the city's most conservative borough, where he is deeply unpopular, losing in 2013 by nearly double digits.

The trip to the Bronx may take on a different tone, as the borough is heavily Democratic. But Bronx Borough President Ruben Diaz Jr. has been publicly critical of the mayor, and is an ally of Gov. Andrew Cuomo, often a rival of Mr. de Blasio. A spokesman for Mr. Diaz didn't respond to a request for comment about the mayor's visit.

Mr. de Blasio plans to hold a town hall in the borough on Wednesday, taking questions from residents at a local high school, city officials said. He also plans to visit the Hunts Point Produce Market, discuss literacy at a school and visit a mosque, the officials said.

A Quinnipiac University poll released May 17 found that 70% of voters in the borough approved of the mayor's job performance, while 26% disapproved. Citywide, 60% approved, while 34% disapproved.

The Bronx has seen increased development in recent years, as well as falling crime rates, leading to something of a comeback.

Yet the borough has the city's highest poverty rate, 27.1%, according to city data in 2013. Citywide, 21.5% of New Yorkers are living below the poverty line.

"There's no borough that's a better fit for the mayor's theme of equity for the Bronx," Councilman Ritchie Torres, a Bronx Democrat, said in a phone interview. "Historically the Bronx has not gotten as much love from the city."



Fordham Road in the Bronx.

Volunteers Help City Track Empty Storefronts

By KATE KING

Longtime Manhattan resident Nancy Brandwein said she was surprised that the storefront across from Columbia University sat vacant for so long.

The former tenant, a noodle shop, closed after a fire in March 2015 and the spot on the corner of West 116th Street and Broadway has remained empty ever since.

The hamburger fast-food restaurant Shake Shack said in January it would open a location there later this year, but Ms. Brandwein said she was

disappointed that the new occupant would be a chain business. "I'd like to see more diverse use of Broadway spaces," she said.

In a January press release announcing the new location, Shake Shack said it would donate 5% of sales for one of its frozen custard Concretes, a blend of custard and mix-ins selected by customers, to the Fresh Air Fund, a not-for-profit that provides summer programs for low-income New York City children.

Ms. Brandwein, 58 years old, who has lived in the Morningside Heights neighbor-

hood since 1993, was one of several dozen volunteers inventorying vacant storefronts along Broadway on Sunday. The event, organized by Manhattan Borough President Gale Brewer's office, was intended to give the city better data on commercial vacancies.

Manhattan's retail vacancy rate was 3.8% in the first quarter, above the citywide vacancy rate of 3.4%, according to an analysis by Marcus & Millichap Research Services and CoStar Group Inc. The study found that the Bronx had the city's highest vacancy rate, at 4.6%, followed by Staten Island, 4.2%.

Manhattan has by far the highest average asking rent of New York's five boroughs, about \$107 a square foot, according to the analysis. Ms. Brewer said high rent costs, competition from online retail and pressure from Manhattan's commercial-rent tax are squeezing out small businesses. The tax applies only in Manhattan, to any commercial tenant below 96th Street that pays \$250,000 or more in yearly rent, at an effective rate of 3.9%.

A proposal pending before New York City Council would exempt certain grocery stores from the commercial-rent tax.

3.8%

Retail vacancy rate in Manhattan in the first quarter

"We get complaints often about all these vacant stores," Ms. Brewer said. "A vacant store, it can gather litter, vagrants. It is not good for the economic health of the other stores on the block."

Manhattan's retail vacancy rate was 3.8% in the first quarter, above the citywide vacancy rate of 3.4%, according to an analysis by Marcus & Millichap Research Services and CoStar Group Inc. The study found that the Bronx had the city's highest vacancy rate, at 4.6%, followed by Staten Island, 4.2%.

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NEW JERSEY

Industrial Vacancy Rate Lowest in Years

New Jersey's industrial market continued to show strong growth in the first quarter, as its vacancy rate reached its lowest level in nearly 17 years, according to a report from real-estate services firm Transwestern.

As e-commerce sales continue to rise, New Jersey's industrial market benefited from the shift in consumer shopping behavior. The state's vacancy rate was 5.1%, compared with 5.5% in the fourth quarter and 6.5% in the previous year, the report said.

Roughly 10.3 million square feet of industrial space is under construction, and more than half of it is pre-leased, the report said. Rental rates hit \$6.98 a square foot, up 14% from the same period a year earlier.

Leasing was strong, fueling absorption of more than 10 million square feet in the past 12 months, a level that hadn't been reached since 2003, the report said.

Ten leases larger than 150,000 square feet were signed during the first quarter. Eight of the top 10 deals signed were located in central New Jersey.

The retail and wholesale sector and the transportation and logistics sector continued to drive demand, "while the manufacturing industry is gaining steam," the report said.

FLATIRON DISTRICT

Kohler Will Open Enhanced Showroom

Kohler Co. is rolling out the first of its enhanced showrooms

in Manhattan's Flatiron District, where customers will be able to try out shower heads and other new bathroom technology.

The Wisconsin-based company, which makes a range of items from faucets to cabinets and tile, is kicking its showroom format up a notch with a larger store designed to give its customers a more immersive and interactive experience, the company said.

The 10,000-square-foot New York store will debut Tuesday evening for a private opening event at 6 W. 22nd St. and be the first of nine Kohler Experience Centers to open in the coming year in cities that include London, Los Angeles, Hong Kong and Shanghai. The store will open to the public Wednesday.

The Flatiron store sits in an area where design and furnishing companies have traditionally gravitated. The Manhattan location also is important because it is at the epicenter of many of the world's most prominent architectural firms, said David Kohler, Kohler's chief executive.

"With the amount of projects being developed there and around the world and the density and affluence of consumers, who are remodeling homes in the city and the surrounding area, it is ground zero for a tremendous amount of work," Mr. Kohler said.

The Kohler Experience Center is designed to show the company's breadth of products, colors and assortments and will also feature its international products for designers and architects working on projects abroad, Mr. Kohler said.

—Keiko Morris



Families Connect to Invest in Tech

By KEIKO MORRIS

As the real-estate technology sector expands, some major New York real-estate families on the hunt for promising investments have decided to take their networking to a higher level.

Several investment firms, most connected to multigenerational real-

PROPERTY estate families such as the LeFraks, Rudins and Wilpons, have formed an informal collective to hunt for new opportunities.

For the past year or so, the group has been holding events, sharing research and insights, and bringing in promising companies to pitch to members.

Their goals: to make the investing process more efficient and turbocharge the selected real-estate tech companies with access to the families' industry relationships, customer bases and diverse portfolios of retail, office, residential and industrial properties.

"We have generational assets and generational experience, and we can leverage that," said Jeffrey Berman, vice president of real-estate company Berman Enterprises LP and director of Camber Creek, the venture arm of Berman.

The real-estate industry, especially the commercial sector, has been slow to

More Money Flows To Tech Companies

Financing for real-estate tech companies across the world reached nearly \$2.7 billion in 2016, up from \$451 million in 2013, according to research firm CB Insights.

In the New York metro area, such funding rose to \$227.8 million in 2016 from

\$73.9 million three years earlier, according to Dow Jones VentureSource.

Real-estate services giant CBRE Group Inc., apartment giant Equity Residential, office developer Hines and Rudin Ventures, the investment arm of the Rudin family, have invested in a \$212 million fund targeting real estate, construction and hospitality startups.

—Keiko Morris

adopt new technologies. Their management cultures tend to be conservative, and the pool of innovators in the field has been small, real-estate executives said, and mostly limited to the residential sector.

But in recent years, investors have been viewing the industry's antiquated systems as ripe for new technologies.

In addition, more real-estate tech entrepreneurs have jumped into the field.

"Silicon Valley is running out of verticals to attack, and real estate is a big one," said Bill Field, managing director of LeFrak Investment Holdings, which manages the LeFrak family's general investment portfolio and affiliates.

In addition to Camber Creek and the LeFrak family, the investor group includes Sterling VC, a venture arm of the Wilpon and Katz families' sports, media and real-estate businesses; Corigin Ventures,

which is backed by the developer, owner and operator Corigin Real Estate Group; Rudin Ventures; Expansion Venture Capital LLC, started by brothers from the family real-estate firm Expansion Group Inc.; and private-equity firm Third Prime Capital.

The group came together after a majority of them invested in Latch, a startup that offers a smart-lock system of hardware and software products allowing access to properties through methods such as a smartphone, a smart card or a passcode. Latch, which has raised \$26 million, has been able to develop its product with insights from its real-estate investors, said Luke Schoenfelder, co-founder and CEO of Latch. A number of divisions of the family companies are considering Latch for their apartment buildings.

Corigin Real Estate has installed Latch in several of its

buildings with plans to roll out the technology in the entire portfolio.

At the end of April, several members of the group invested in a round of funding led by Camber Creek for a tech-driven appraisal startup called Bowery Valuation. Using cloud-based software and a mobile application, Bowery streamlines the appraisal process and can deliver an accurate appraisal report in a matter of days instead of weeks, it says.

The investors were able to test out the company by comparing its estimate on a Corigin building that had been recently appraised. Bowery's took days to deliver an accurate report compared to three weeks for the traditional appraisal, according to Bowery executives. That information was shared among the group.

"We were able to leverage our own physical assets and have them run a test on it, so we could pressure-test the process, the time it takes, the cost and accuracy," said David Goldberg, a general partner at Corigin Ventures.

The relationships are just as important, many members noted.

"We went into the deal together knowing we have relationships with large banks and mortgage brokers," said Joseph Melohn, president of Expansion Venture Capital. "That's the advantage that we all have together."

GREATER NEW YORK WATCH

NEW YORK

Cuomo Seeks Trump's Help on Penn Station

Gov. Andrew Cuomo on Sunday urged President Donald Trump to provide help for Penn Station, saying the impact of the state of disrepair is at "a tipping point."

Mr. Cuomo's letter to Mr. Trump included a reference to his New York roots. "As a New Yorker, I think you know the severity of the situation," he wrote.

The governor, a Democrat,

wants the federal government to help figure out and fund transportation alternatives while repair work is undertaken at Penn Station after a series of problems including two derailments.

—Associated Press

CONNECTICUT

Homeless Count Falls For Third Year in Row

A new report shows homelessness in Connecticut has declined for the third straight year.

Volunteers participating in the

annual Point-in-Time Count on Jan. 24 counted 3,387 homeless people, a 13% decline from last year. The numbers are down 24% since 2007, when the first statewide census was conducted.

The count showed chronic homelessness in the state has declined sharply, dropping 60% since 2014 and 11% since 2016.

Connecticut Coalition to End Homelessness Executive Director Lisa Tepper Bates credits efforts by Gov. Dannel P. Malloy and local communities to end homelessness, "not just managing it."

—Associated Press

By KEIKO MORRIS

A stately former courthouse in the South Bronx is getting a new identity as a high school.

The charter school network Success Academy said it will transform the historic building at 878 Brook Ave., known to many as the Old Bronx Borough Courthouse, into its first high school in the borough.

The school, to be called Success Academy High School of the Liberal Arts—Bronx, will serve about 1,200 students with the intention of providing a pipeline to college, according to the charter network. It is expected to open in August 2018.

"Forty years ago, this building housed prisoners waiting for trial," said Success Academy Chief Executive Eva Moskowitz in a written statement. "That space will be transformed into beautiful modern classrooms and a historic house of learning."

The Bronx has been underserved in terms of "high-quality educational opportunities," said a Success Academy spokeswoman.

Significant funding for the project was provided by hedge-fund manager John Paulson and his wife, Jenny, and the Paulson Family Foundation, Success said.

The structure, built in the early 20th century in the beaux-arts style, once housed several courtrooms and a jail, but fell into decline after many of the services were relocated to a larger facility, according to Success Academy.

Since the late 1970s, the building has been mostly va-

cant. It was placed on the National Register of Historic Places in 1982.

Liberty Square Realty Corp. purchased the building for \$300,000 at an auction in the late 1990s, said Henry Weinstein, president of Liberty Square.

Since then, he and partner Benjamin Klein have invested \$10 million to clean up and repair the building, Mr. Weinstein said. Though the company had to demolish much of the interior, he saved a lot of the architectural de-

tail so that the building could be redecorated using some of the pieces. The lease with Success is for 20 years, Mr. Weinstein said.

Over the years, the building has housed a temporary art exhibit and served as a backdrop for television shows, films and fashion shoots.

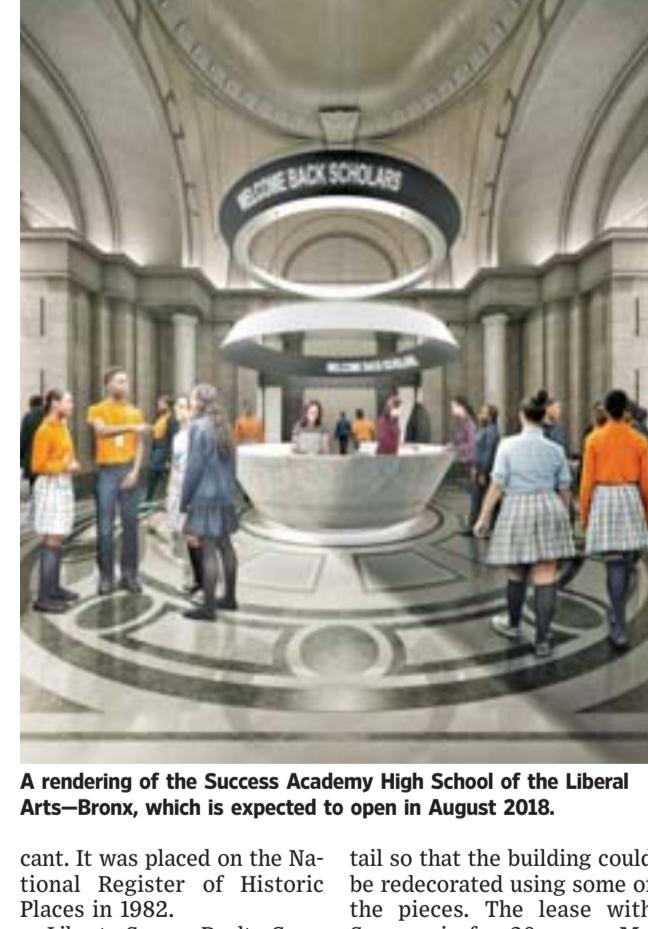
"It's the most amazing, beautiful building I've ever owned," Mr. Weinstein said. "I've sucked wind for 19 years of owning it, but it's one of my proudest possessions."

New Defenses in Place in Times Square



SECURITY BOLSTERED: Concrete barriers, such as these at Seventh Avenue and 47th Street on Sunday, have been placed around Times Square following a fatal incident Thursday involving a car.

Courthouse Is Groomed for School



A rendering of the Success Academy High School of the Liberal Arts-Bronx, which is expected to open in August 2018.

LIFE & ARTS

FITNESS

Five Secrets of Steady Exercisers

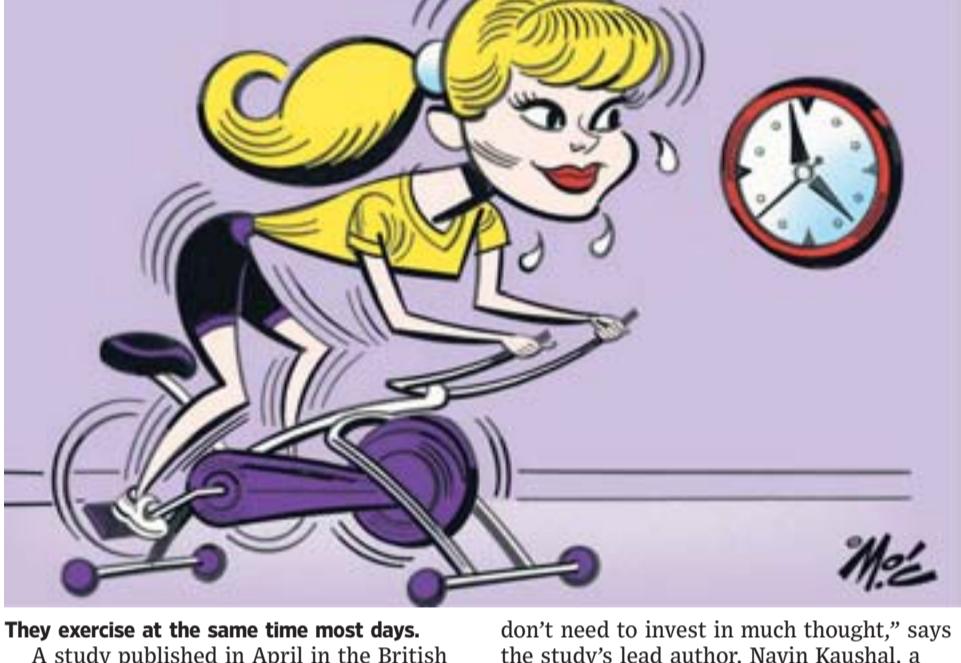
You don't need a life makeover to fit in physical activity—adopting some of these approaches can help

BY RACHEL BACHMAN

MANY OF US VOW to get to the gym—then life intervenes. But 21% of U.S. adults do manage to get enough exercise, and these people have some common traits and

habits. They are consistent but not rigid. They have open minds about what defines "exercise." And they have different motivations than the weary conscripts who enroll at the gym on New Year's Day.

Here are habits of those who exercise frequently that just might help the rest of us:



They exercise at the same time most days.

A study published in April in the British Journal of Health Psychology examined 181 people who exercised an average of five hours a week.

Most of those people picked a regular time to work out and stuck with it.

"When things become predictable you

don't need to invest in much thought," says the study's lead author, Navin Kaushal, a postdoctoral fellow in preventive medicine at the Montreal Heart Institute, University of Montreal.

Being in a certain environment at a certain time of day "brings up a mental script of the behaviors and you go into autopilot."

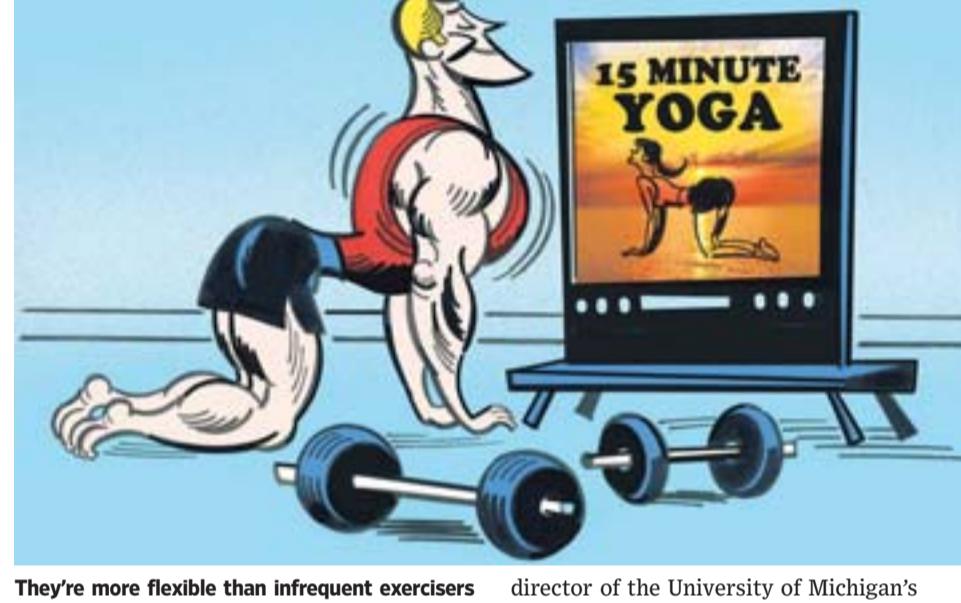


They have a streamlined pre-exercise routine with visual cues.

In another study published in 2017 and led by Dr. Kaushal, new gym members were asked to create cues to prompt them to exercise. A cue might be running clothes, shoes and headphones laid out on a dresser.

The plan is that when a runner wakes up, he sees the cues, dresses and dashes out the door.

After eight weeks, members of the study's experimental group were 1.7 times more likely to meet physical-activity guidelines than those in a control group.



They're more flexible than infrequent exercisers about how long or vigorously they exercise.

Active people are less likely to have all-or-nothing definitions of physical activity, according to a study soon to be published in BMC Public Health. The study looked at 40 women, 11 of whom said they exercised at least three times or two hours a week.

"The old-school belief was, you set a goal, it's a bull's-eye. You hit it or you miss it," says the study's lead author, Michelle Segar,

director of the University of Michigan's Sport, Health, and Activity Research and Policy Center. "But life is messy. When you're more flexible, you're able to shift your position, your stance, do something less. It removes the psychological punishment of 'Oh, I failed.'"

If a frequent exerciser's workday spills into her hourlong spin class, for instance, she might still hit the gym to pedal 20 minutes on her own.

They're more likely to exercise for pleasure than for weight loss or other long-term health goals.

In a study published in 2016 in the Journal of Consumer Research, 61 gymgoers in a weight room were sorted randomly into two groups and given six exercise options, like biceps curls or dead lifts.

People in one group were told to choose the exercise they most enjoyed. People in the other group were told to choose the exercise most useful for their health goals. Both groups were instructed to do as many sets of their selected exercise as they could.

People who chose an exercise for enjoyment completed an average of 29 reps, compared with 19 reps for those who chose the exercise they thought would help them with health goals. The two groups

chose similar exercises with similar amounts of weight.

"If I really care about having a healthy heart, that's what gets me to the gym," says Kaitlin Woolley, the study's lead author and a Ph.D. candidate at the Booth School of Business at the University of Chicago. "But that's not what keeps me there."



ILLUSTRATIONS BY MITCH O'CONNELL

An increasing number of active people are widening their definition of exercise.

Many people think exercise has to last at least 30 minutes and make you sweaty and exhausted. Dr. Segar's ongoing research suggests that frequent exercisers increasingly view things like family bike rides as things that "count" as exercise.

Steve Rabinowitz, a 41-year-old government analyst in Greenbelt, Md., has been working out about five days a week since he turned 40. He mostly does high-intensity in-

terval training workouts using a free site called Fitness Blender, but recently tried Pilates and ballet-inspired barre workouts and enjoys them. "I push myself when I feel like I can, but when I can't, that's OK too," he says. "I really try to listen to my body."

During a recent work training he attended, Mr. Rabinowitz climbed five floors of stairs to a meeting room eight times over two days—sometimes sprinting, sometimes walking. He says he enjoys exercise more since he's expanded his options.

son to person, each owner's bacterial signature can be transferred onto the bill and feast on residual oils from sticky fingers.

A recent study found more than 3,000 types of bacteria on bills in circulation, though the epidemiologist says most of what was found is part of our world's bacterial ecosystem. "We carry so much bacteria, we are used to fighting them," Dr. Martin says.

Problems arise, she says, "when bacteria get into places they shouldn't."

Tiny Little Buggers

Among the critters found are the germs that cause acne. Typically

the skin cells a person sheds onto inanimate objects are laced with bugs, but with little nutritional value in a dollar bill, they can only

survive a couple of days on deposited skin scales and oil, Dr. Martin says.

A Pathway for Pathogens

American paper money is made from a blend of linen and cotton, which makes notes porous, with

"lots of nooks and crannies for things to get stuck in," says Dr.

Martin. As dollars move from per-

"The bacteria you'll find on a bill is more reflective of the last person who touched it than every one who ever touched it," she says. One slightly concerning bug found on dollar bills is *Acinetobacter baumannii*, which can lead to pneumonia or meningitis, but it's mostly a cause for concern in hospital settings.

"Typically the numbers of bacteria found on a bill aren't large enough to cause infection, and these aren't necessarily the same strains that are resistant to antibiotics anyway," Dr. Martin says.

Plus, "our skin is an excellent barrier." Healthy people shouldn't worry about their dirty money causing disease, she says, unless the skin is broken.

'Don't Lick the Bill'

People whose immune systems are

compromised due to chemotherapy or other illnesses should take

some precautions when thumbing a stack of worn \$20 bills.

"You shouldn't touch anything that's handled often and then touch an open wound or put your hand in your mouth," Dr. Martin says. Washing hands frequently with soap and water should get rid of any residual germs—or other substances, like cocaine, which has been found on money in many studies—that may hitchhike on bills.

Dr. Martin runs a lab and is surrounded by germs all day. She doesn't give a second thought to who is riding the coattails of Abe, Andrew or Benjamin. "I'd worry more about what flu virus is being sneezed in your direction," she says.

Still, she cautions, money doesn't belong everywhere.

"Please don't lick the bill or put it up your nose," which is a breeding ground of microbes, she says.



An epidemiologist explains what is on the paper money we handle.

LIFE & ARTS

ART REVIEW

Played Well With Others

The first Rauschenberg retrospective in two decades emphasizes his influence and passion for collaboration

BY PETER PLAGENS

New York

THE MUSEUM of Modern Art's massive and necessary Robert Rauschenberg retrospective (the first since the Guggenheim's 20 years ago) arrives from the Tate Modern in London, and goes to the San Francisco Museum of Modern Art after it closes. Rechristened "Robert Rauschenberg: Among Friends," it comprises more than 250 works out of a lifetime output of over 6,000. MoMA curator Leah Dickerman has conceived it as an "open monograph," emphasizing Rauschenberg's passion for collaboration. Throughout his career he worked enthusiastically with other artists, avant-garde dancers, poets, and engineers, and Ms. Dickerman includes relevant work by some of those colleagues, such as Abstract Expressionist Cy Twombly. The exhibition also features a plenitude of film and video, including documentation of Rauschenberg's participation in "9 Evenings," a group of technology-based performances at New York's 69th Regiment Armory in 1966. It's essentially memorabilia that make you think "you had to be there," but the friendly radicalism of Rauschenberg's endeavors comes across.

Rauschenberg (1925-2008) was born in Port Arthur, Texas, and given the nerdy first name Milton. He changed it to "Bob" upon enrolling at the Kansas City Art Institute in 1947, then the next year traveled to Paris to study at the Académie Julian, where he met another artist, Susan Weil. She got him to go with her to Black Mountain Col-



FROM TOP: DAN BUDNIK; 2017 ROBERT RAUSCHENBERG FOUNDATION (2)

lege in North Carolina, where he studied and worked with the likes of Bauhaus color master Josef Albers, composer John Cage and choreographer Merce Cunningham. Rauschenberg's aesthetic would be transformed by the emphasis on chance and improvisation of the last two. Rauschenberg's place as

one of the two most influential American artists of the 20th century (the other being Andy Warhol) comes from his originality, passion, industry and collaborative spirit. Rauschenberg's "combines" (paintings with found objects attached) and his "transfer drawings" (made by squirting lighter fluid on newspaper photographs and

then rubbing them onto paper) are, if not outrightly original, inventive adaptations. The combines, for example, can be seen as scaled-up versions of the paper collages pioneered by Picasso and Braque.

Rauschenberg's penchant for mixing handmade artiness with mechanical photo-based images from the urban real world might be traceable to a "Rosebud"-like moment and a first acquisition by a museum. Growing up, he wore clothes his fundamentalist Christian mother made from bits of leftover cloth. And Edward Steichen purchased two of his black-and-white photographs for the Museum of Modern Art in 1952, an early success that may have convinced Rauschenberg to include the medium in almost everything he made.

The combines are the core of "Among Friends." "Charlene" (1954)—a large painting into which are insinuated an umbrella, some comic strips and a flashing light—is ostensibly the first, but "Bed" (a framed quilt and pillow with smeared paint) makes the big turn into ambivalent objecthood: A little thicker and on the floor, and it might function for sleep. "Monogram" (1955-59)—a stuffed goat girdled by a tire, standing with paint on its nose on a Kurt-Schwitters-like platform—is, with its somewhat brute sexual connotation, the most memorable.

The best, and perhaps the most emblematic of Rauschenberg's entire oeuvre, is "Canyon" (1959). Mostly a 6-foot-square painting that brings together miniature Franz-Kline paint strokes, photog-

Rauschenberg in his studio in New York, March 1958, with 'Charlene' (1954), 'Untitled' (c. 1954), and a partial rear view of the second state of 'Monogram' (1955-59, second state 1956-58).



raphy and flotsam, it's embellished with a taxidermied eagle and, at just the right balance point on the bottom edge, a small pillow hanging from a rope.

When first shown, it struck many as deserving of that initial label for Rauschenberg's seemingly chaotic art, "Neo-Dada." A few years later, to a young artist like myself, it seemed the Romantic epitome of what new beauty painting could possess if it opened

up to the bumptious real world while holding on to principles of balance, composition and touch. Nowadays, with the eagle regressing as practically a tomb sculpture and the canvas darkened with age, "Canyon" amounts to a very recent old master.

There are still those who think that—to quote one critic—"Rauschenberg's career is the fool's errand of twentieth-century American art," seeing it as the precursor to the preening faux-populism of Jeff Koons and the woodsy eclecticism of Matthew Day Jackson. True, Rauschenberg's devotion to making art by continuously trying things out led to some tedious works that, in a less didactically inclusive exhibition, could have been left out.

But in a time when young artists tend to think that such pull-out-the-stops installation kingpins as Sterling Ruby and Paul McCarthy are their most important predecessors, this Rauschenberg exhibition is an impressive reminder that there's more to artistic significance than mere wretched excess.

Robert Rauschenberg: Among Friends
Museum of Modern Art, through Sept. 17

Mr. Plagens is an artist and writer in New York.



Robert Rauschenberg's 'Canyon' (1959), above, and 'Retroactive I' (1964), above right

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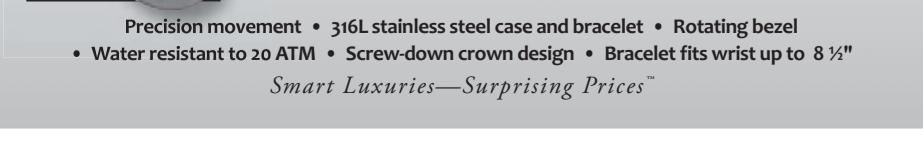
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LIFE & ARTS

WHAT'S YOUR WORKOUT? | By Jen Murphy

When He Flies His Kite, He Soars, Too



Professional kiteboarder Jesse Richman gets some air time at Baby Beach in Maui, above. His extensive training includes jumping onto boxes and a BOSU ball, top right, and solving puzzles and math equations while balancing on an Indo Board, bottom right.

GROWING UP IN Maui, Jesse Richman learned to fly a kite in the ocean. At age 9 he was harnessing the wind to pull him across waves while strapped to a board. He won his first world kiteboarding title at 16. Now 24, Mr. Richman is pushing the boundaries of the sport. "My focus is bigger waves and bigger air," he says.

Mr. Richman performs wakeboard-like tricks 50 feet in the air and uses his kite to ride a surfboard on Pe'ahi, or Jaws, a wave on Maui renowned for its 30-plus-foot faces. His daring stunts earned him first place at the Red Bull King of the Air competition in Cape Town in 2013. The next year at the same contest, he broke a leg and tore some knee ligaments, which took eight months to heal. A concussion sustained while tow surfing—a sport when the surfer is pulled by a watercraft—sidelined Mr. Richman from the most recent King of the Air contest, in January.

Injuries, however, may be what keep Mr. Richman at the top of his game. "I never went to the gym until I had to do physical therapy," he says. "I liked that I could track my

improvement and realized getting hurt comes with the territory, so I might as well do preventive training."

In 2015, Mr. Richman started training full time with his physical therapist Samantha Campbell. "I'm training to figure out how to ride better, not just stay fit," he says. "You start by thinking how radical can I get and reach a consequence level where you need to also be thinking, how do I survive in a situation. I'm toying with paragliding and skydiving scenarios with my kite and you can't be scared of injury."

The Workout
In Maui, Mr. Richman works out six days a week for 60 to 90 minutes either at the beach or at Deep Relief Peak Performance Athletic Training Center. He starts with muscle activation and stretching, then does a one-hour workout, stretches, and has a protein shake and an ice bath.

The body absorbs a lot of force through the back, hips and ankles when landing big air maneuvers. Mr. Richman does lateral box jumps to prepare his body for the impact. "I go out in strong winds and the kite pulls you

one way and your body is going another, so you need to be able to land awkwardly."

He does drills to improve his sense of his body's position in space. This might include catching balls of different colors and sizes while balancing on one leg on an unstable surface, like a Dyna Disc or SurfBall, a surfboard-like base that balances atop a BOSU ball.

Ms. Campbell puts Mr. Richman through a circuit to tire him out, then makes him complete mental tasks. For example, he might do an intense 500-meter row, then climb a rope only using his upper body, then balance on a stability ball while Ms. Campbell calls out math problems for him to solve. "If he makes a mistake, he learns to let go and completely focus on the next task," she says.

The Diet
Mr. Richman embraces a high-protein, low-carb diet and eats five small meals a day. He starts the morning with eggs and coffee. Two hours later he eats granola and yogurt. Lunch is often a wrap or a burrito followed by a late-afternoon smoothie. Dinner is lean pro-

tein and vegetables. His New Year's resolution was to stop eating processed meats.

When he travels, he adjusts his diet to the local culture. "I don't want to impose my routine on people," he says. "In Argentina, they eat dinner at 11 p.m., so I'll have a snack at 9 p.m." Almonds, oat bars and kale chips are his go-to plane snacks.

The Cost & Gear

Mr. Richman estimates that he owns 70 boards and 50 kites.

"I form relationships with my gear," he says. "Different kites have different attitudes. I have a board for every condition."

Mr. Richman is sponsored by Naish and Ride Engine and tests new gear for the

board-sports companies. He uses his TriggerPoint Grid X foam roller, which retails for \$50, twice a day for 15 minutes, even on the road.

The Playlist

"I enjoy getting lost to a two-hour-long deep house track. The weird flowering beats and layers of the music pull me through a workout."



Richman's Flights of Fancy Around the World

Most kiteboarders use a kite to harness the wind to pull them on a board across water. Some do wakeboard-like tricks and get a bit of air. But Maui-based kiteboarder Jesse Richman has dreamed up new maneuvers and stunts that have pushed the boundaries of the sport. Here are his most impressive feats to date:

July 2013: Gets towed behind a boat on Oregon's Columbia River, allowing his kite to reach 790 feet before he releases the rope

and kites back down safely.

August 2015: Sets the team long-distance record with six others, kiting 736 miles in eight days along Australia's Great Barrier Reef.

December 2015: Becomes the first kite-surfer to get barreled at Maui's infamous big wave, Pe'ahi, also known as Jaws.

March 2016: Soars his kite an estimated 195 feet over a rock point in Cuesta Del Viento Reservoir, near San Juan, Argentina.

April 2016: Snowkites off a Norwegian mountain, descending over 1,000 feet in five minutes for a documentary that follows extreme athletes around the world.



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OPINION

The Market's Tough Love Delivers

By Andy Kessler

Foot Locker's stock imploded on Friday, crashing down \$12, or 17%. It happens all the time, one of the great features of the stock market. A week earlier, Snap, which went public two months ago, saw a chunk of value disappear. It dropped almost 25% overnight after the social-media firm revealed that sales were up only 5% and the number of users was a little light—oh, and that it had lost \$2.2 billion. That's billion with a "b." Even if you take out one-time costs, the company lost \$200 million on \$150 million in sales. Impressive.

Did I mention CEO Evan Spiegel got a \$750 million bonus for taking the company public? Investors who bought the stock didn't want to ruin the party, figuring it was going to turn into the next Facebook. Snap's stock was selling at 44 times future sales, on the expectation that growth and profits were coming. Or not. After lousy earnings, investors basically shouted, "Enough!"

No one sits around and says, "we need to teach Snap a lesson." Rather, it's the collective selling that sends the message. That same day, CEO Travis Kalanick of Uber, another company with gargantuan losses and personnel issues, tweeted and then deleted, "Thank God we're not public." But Uber should

be public. If only for the discipline of the public markets that its board of directors refused to impose.

Many people think the stock market is a cesspool of Wall Street greed. I look at it differently. To me, the stock market is the greatest enforcer ever invented. No person controls the market. Investors separately make

If only government had the discipline traders collectively impose on companies.

decisions every day to buy and sell. But collectively they enforce discipline on corporations. Buy and sell orders have more sway over CEOs than corporate boards, Congress or any White House.

United Airlines stock fell 6.3% before the market even opened after it "reaccommodated" a passenger, in the wording of its CEO. Twitter's stock is down almost 75% from its 2014 peak and has been in penalty box since early last year after revelations of lame user growth.

Yelp was pummeled by a 28% drop a few weeks back and is now exploring markets beyond reviews. The stock market gets the job done.

Going public also provides CEOs the cheapest form of capital: You issue pieces of

paper giving claim to a share of future profits. You can use that capital to do anything and don't ever have to pay it back. But if you want more, you'd better get yourself on a path to growth and profits. It's that simple.

But the Faustian bargain is that you live by the rules of the enforcer: Feed success, starve incompetence. That's it. Markets provide cheap capital to those that can grow productively and profitably, and make funds expensive for the rest. This is how capital is allocated efficiently. The more human hands touch the process, the worse the outcome (see Chrysler, Solyndra).

No one likes layoffs. No one looks forward to closing divisions or firing CEOs. Instead, the stock market does the dirty work, mimicking Col. Jessup—Jack Nicholson's character in "A Few Good Men"—who says, "You don't want the truth because deep down in places you don't talk about at parties, you want me on that wall. You need me on that wall."

As Amazon stock hits all-time highs 20 years after its initial public offering, retailers are getting whacked. You'd think they'd have seen it coming, but the stock market sent the wake-up call. Sears peaked in 2007 and has since been starved of capital. Macy's peaked in July of 2015. J.C. Penney halved in the past six months. Both Target and Dick's Sporting Goods were

down last week, and both are scrambling to upgrade stores and increase digital sales.

The enforcer shakes up politicians, too. On Sept. 29, 2008, the Dow Jones Industrial Average fell 777.68 points on news that Congress had rejected the bank-bailout bill. Message sent. The Troubled Asset Relief Program was signed into law Oct. 3. That's action. The Brazil stock market dropped 10% last Thursday with troubles surrounding the country's president. In the U.S. the Trump bump hasn't let up, but investors got queasy on news of a simple prosecutor.

We used to have the same enforcer in the debt market, the so-called bond vigilantes. When federal deficits got too large, the vigilantes would squawk, driving interest rates up and forcing some budget discipline on Washington. Those days are long gone, aren't they? The Ben Bernanke-Janet Yellen regime at the Federal Reserve maintained interest rates at virtual zero. As Phil Gramm and Thomas Sargent pointed out on these pages last week, the Fed bought over half of Obama-era Treasury debt. With no discipline, Congress spent like a Snapchatting teen with a stolen credit card. We need the enforcer back on that wall, giving Congress the Foot Locker treatment.

Mr. Kessler writes on technology and markets for the Journal.

Cuba's Proxy War in Venezuela



AMERICAS
By Mary Anastasia O'Grady

Venezuelan strongman Nicolás Maduro is responding to mass demonstrations by selectively killing civilians. If, as a result, some branch of the military breaks with the regime, the country will descend into civil war. But until then it's a one-sided slaughter.

It's also a Cuban proxy war. More than a dozen high-ranking Cuban officers are said to be in Venezuela, along with thousands of Cuban intelligence agents. Their job is to keep Venezuelan army officers under constant surveillance to prevent the feared military uprising to restore democracy. If the international community wants to head off disaster, a good place to start would be in Havana.

On Thursday Miami's El Nuevo Herald reported it has a recording of Venezuelan generals—at a meeting in Barquisimeto three weeks ago—"giving orders to use snipers to control demonstrators." According to the Herald they did so "with the argument that they find themselves on the threshold of a civil war."

Maybe the generals know something not yet acknowledged publicly—that the commitment to Mr. Maduro among the nation's soldiers and police is breaking down.

It happened once before, in

April 2002, when snipers backing the regime picked off protesters during a demonstration in Caracas. When some members of the army refused to help then-President Hugo Chávez crack down on the crowd, he was forced to step aside, albeit temporarily.

Once back in power, Chávez accelerated the recruitment and arming of paramilitaries.

Thousands now show up at antigovernment protests,

firing weapons into crowds and using their motorcycles to run down demonstrators.

If the Cubans remain the power behind the throne, there will be no one to stop these trained killers from slitting the throats of the opposition.

The possibility of a break inside the armed forces seems to be on the rise. As the Journal's Anatoly Kurmanov reported on Wednesday, National Guard riot police are worn down from taking on

thousands of street protesters almost daily since the beginning of April. Rank-and-file soldiers also are not immune to the hardship and hunger caused by Mr. Maduro's senseless economic policies. They say they too are underpaid and underfed.

The dictatorship is clearly worried about this and recognizes it will lose a war of attrition. One source in Caracas who marched in the streets Thursday observed a noted increase in regime repression.

In recent weeks government

enforcers also have launched

attacks on lower middle-class

neighborhoods where Maduro critics live. They break down gates and doors, rampage through apartment complexes, fire tear-gas canisters through windows and loot homes.

On May 7 the Venezuelan newspaper El Nacional reported that between April 4 and May 5 the National Guard, together with National Bolivarian Police and *chavista* militia, invaded 11

The commitment to Maduro among soldiers and police is breaking down.

different residential areas in Caracas. One family of four in the El Paraíso district, requesting anonymity, told of how they cowered together in a bathroom for eight hours to keep from being asphyxiated by the tear gas that had inundated the rest of their apartment.

It wasn't the first blitz on the building complex known as Terrazas del Paraíso. On April 19 pro-government thugs smashed an iron grille to get in and rob one of the neighbors.

On April 26 civilian-clothed militia entered the complex and fired rubber bullets, injuring some residents.

"But it was to

frighten us, because they didn't

steal anything," one of the victims told the newspaper.

On May 11 El Nacional reported that since this most

recent wave of protests began, state security forces and

paramilitary have engaged in similar violence and theft against 13 condominiums in six cities including Maracay, Valencia, Barquisimeto and Mérida. Forty-seven people have been killed in the violence perpetrated by the anti-riot squads and paramilitary madmen since early April.

This is state terrorism. But it may not have its intended effect. Most of the country is solidly against the government, and this includes low-income Venezuelans, once the base for *chavismo*. Paradoxically the repression seems to be strengthening opposition resolve. Perhaps Venezuelans have reached a tipping point. They will get new elections and freedom for political prisoners, or are ready to die trying.

The brutality also may be eroding the confidence of the men and women in uniform. Many seem not to have the stomach for the cruelty their Cuban handlers expect from their South American protégés.

On May 5 opposition leader Henrique Capriles said 85 members of the armed forces, including some young captains and sergeants, had been detained by the regime for criticizing the repression.

On May 19 a member of the

National Guard was arrested in

Táchira for having crossed over to defend protesters.

The international community has the power, through sanctions, to rein in Cuba. If it fails to do so, the Venezuelan opposition will be massacred.

Write to O'Grady@wsj.com.

Israelis and Palestinians as Co-Workers

By Oded Revivi

President Trump has described the conflict between the Israelis and the Palestinians in terms of a business negotiation. Days after taking office he told The Wall Street Journal that Middle East peace would be "the ultimate deal."

Mr. Trump might be onto something. Conventional wisdom for almost a century has dictated that for peace to prevail, Israelis and Palestinians must be physically separated. But separation is one of the main reasons the conflict drags on interminably. Peace is fostered over generations, through personal bonds and even business relationships.

Most Israelis and Palestinians don't interact with someone from the other side on a daily basis. The exceptions are the 450,000 Israelis and more than one million Palestinians who live side by side in Judea and Samaria, or what many call the West Bank. The tens of

thousands who work together every day in the area's 14 industrial zones have built the closest bonds.

During his visit to Israel this week, Mr. Trump should drop in on a business like Lipski Plastics in the Barkan Industrial Park, some 15 miles east of Tel Aviv. Half the company's

workers are Palestinian and half are Israeli. They eat, laugh and solve problems together. The Palestinians at Lipski make four times the average wage in the autonomous Palestinian areas. Many are in senior management, with dozens of Israeli employees beneath them. Muslim, Christian or Jew, these people return home each day with a sense of accomplishment knowing that they can provide for their families with dignity and pride.

Opportunity, not separation, is the key to peace.

Islands of peace like Barkan show what could be achieved on a massive scale by a leader with true vision. Sadly, for decades these examples have been largely ignored or boycotted because of the flawed notion that any Israeli presence in Judea and Samaria is an impediment to peace.

Prime Minister Benjamin Netanyahu has proposed to restart negotiations with the Palestinian Authority and offered the possibility of further investment in industrial zones bordering Palestinian towns and villages. Businesses like Lipski Plastics may not be as glamorous as an international peace summit, but they are far likelier to yield serious dividends in the long run.

The new White House has already brought a fresh perspective to the Middle East. Mr. Trump's special envoy, Jason Greenblatt, broke with decades of failed State Department policy by meeting in March with a delegation of Israeli residents of Judea and

Samaria. He also met with young Palestinians and Israelis from across the political, religious and socioeconomic spectrum. These meetings demonstrated a genuine attempt to understand the reality on the ground, something that has been lacking in international diplomatic efforts for decades. This is how peace will be built.

Millions of Americans voted for Mr. Trump because they were tired of business as usual. They saw him as a blue-collar billionaire who empathized with them and could get them back to work. If Mr. Trump really wants to broker peace between the Israelis and the Palestinians, he will need a lot of patience. Like the skyscrapers that bear his name, this deal will have to be built from the ground up, one brick at a time.

Mr. Revivi is chief foreign envoy of the Yesha Council, which represents the 450,000 Israeli residents of Judea and Samaria.

BOOKSHELF | By Carol Tavris

Talking the Same Language

You're the Only One I Can Tell

By Deborah Tannen

(Ballantine, 276 pages, \$27)

Deborah Tannen, a professor of linguistics at Georgetown University, has spent decades studying "conversational styles," the unspoken rules we learn from family, culture, region and status that shape how we talk to one another. Take something as deceptively simple as turn-taking: How does a listener know the speaker is finished? How does a speaker know if an interruption means "keep going" or is a grab to take the floor? If one party gets it wrong, the other will be annoyed or hurt. We're talking everyday conversation here, not workplace power imbalances, where men often interrupt women precisely because the men aren't listening and have no intention of hearing what the women have to say (unless the woman is Facebook COO Sheryl Sandberg).

In her charming 1990 best seller *You Just Don't Understand: Women and Men in Conversation*, Ms. Tannen described the different language worlds that women and men inhabit. On average, she argued, the sexes attribute different meanings to interruptions, often talk at cross purposes without realizing why, and differ in their preferences for "rapport talk" (conversation as emotional validation and connection) versus "report talk" ("here's what happened today, honey"). That book was great fun and provided many "aha!" moments for couples, though some critics felt that it was a little too Mars-and-Venusy, implying that these differences between men and women were created more by nature than by status, power, culture and context. In Ms. Tannen's new book, she shows that some of the gender differences she discussed in her earlier classic also apply to women talking with other women.

In *You're the Only One I Can Tell*—a phrase that, right away, every woman will understand—Ms. Tannen looks "inside the language of women's friendships." Her field is "interactional sociolinguistics," which she describes as using "a case-study method that allows for in-depth analysis of real-life examples." She interviewed girls and women ages 9 to 97, of different ethnic, geographic, economic, and religious backgrounds, but this variety is only meant to ensure a "broad range of experience, not to characterize or compare groups of people." Even so, she provides a wealth of cultural insight: For example, in Korean, age hierarchies constrain the language of friendship. Even the word "friend" applies only to friends of the same age; someone younger than you must use a different word to connote respect.

If a friend is someone you can share your 'true self' with, how is friendship affected by the fragmenting of 'true' selves on social media?

"I do not doubt that some of what I write might also be true of friendships between women and men, and among men," Ms. Tannen notes in her introduction. "But friendships play a particularly large role, and a particularly complex one, in women's lives. Men are often surprised by the depth of women's friendships, the depth of their distress when those friendships go awry, and the sheer amount of time that women spend talking to—and about—their friends." That's one reason men will enjoy and profit from this book as much as women will.

And what a rich diversity of stories Ms. Tannen tells. The eight chapters cover the waterfront (and sofa, and coffee room, wherever women gather) in showing how women talk to one another, how they negotiate the delicate dance of connection and competition. The chapter titled "Too Close for Comfort: Cutoffs, Poaching, Drama!" will resonate with every teenage girl, former teenage girl, and adult woman whose inner teenager occasionally surfaces. Ms. Tannen dissects the appeal and instability of friendship groups: from trios, with their shifting alliances between any two of the three, to social packs and their ability to include or shun. Fear of missing out (FOMO) afflicts almost everyone in this hyper-connected age, but Ms. Tannen discusses a more wrenching experience, FOBLO, fear of being left out. FOBLO is "a universal human frailty," she writes, but it is readily inflamed by social media. When a girl or woman can see immediately on Facebook or Instagram (or any of a dozen other platforms) that she wasn't invited to the party, there's no escaping the hurt that ensues—not only on the part of the girl left out but also on the part of her friends who were invited and worry about hurting her feelings.

Ms. Tannen's last chapter, "My Friend, My Sister, My Self: What It Means to Be Close," evokes the eternal verities of women's friendships as well as the specific challenges to friendship today. If a friend is "someone with whom you can be your true self," someone who is "the only one" you can tell, how is friendship affected by the fragmenting of our "true" selves on social media? What should we make of Finstagram—an Instagram spinoff in which people post photos to only a select group? The "F" means it is a fake Instagram and claims to let users "present truer versions of themselves" (in a superficial way, of course). Thus Finstagram is another of what Ms. Tannen calls "the real fake things" that permeate our lives. She is much more patient than I am with the Alice-in-Wonderland rabbit holes that pockmark the landscape of modern relationships. Sociolinguist to the core, she pays as much thoughtful attention to emojis, the difference between 'hi' and 'hiiii,' exclamation points, abbreviations and other forms of text-based communication between women friends as to old-fashioned words in face-to-face conversations.

Ms. Tannen eloquently describes her own close friendship with a gay man she met when they were 15. "Karl is like family," she writes, "because of how I feel when I'm around him: completely and unself-consciously myself." That's the moral of these stories: The need for friendship is forever, no matter what forms it takes. Friends come and go, but those who allow us to be unself-consciously ourselves? Hamlet understood. We grapple them to our souls with hoops of steel.

Ms. Tavris, a social psychologist, is the author, with Elliot Aronson, of *Mistakes Were Made (But Not by Me)*.

OPINION

REVIEW & OUTLOOK

Trump's Middle East Reset

President Trump visited Saudi Arabia on his first trip abroad this weekend even as Iran re-elected Hassan Rouhani in a sham presidential vote. The timing may have been coincidental but the symbolism is potent. Mr. Trump is reviving the traditional U.S. alliance with the Sunni Arab states even as Tehran reaffirms its intentions to dominate the Middle East.

The timing comes full circle from the start of Barack Obama's eight-year tilt toward Iran. That tilt began with Mr. Obama's silence as Iranian leaders stole the 2009 presidential election while arresting and killing democratic protesters. He then spent two terms courting Iran in pursuit of his nuclear deal while downgrading relations with the Gulf Arabs, Israel and Egypt. Mr. Trump's weekend meetings and Sunday speech show he is reversing that tilt as he tries to revive U.S. alliances and credibility in the Middle East.

Friday's vote in Iran was more coronation than re-election. The unelected Guardian Council of mullahs disqualified more than 1,600 candidates. The remaining six represented the narrow ideological spectrum approved by Supreme Leader Ali Khamenei and the Revolutionary Guards. That includes Mr. Rouhani, who is often called a moderate in the West but has presided over continuing domestic repression and regional aggression.

Mr. Rouhani will probably honor the broad terms of the 2015 nuclear deal, not least because it has provided the mullahs a much-needed financial reprieve from sanctions. The regime is likely to exploit the accord at the margins, however, including ballistic-missile launches and technical progress in secret that could allow a nuclear breakout when most of the accord's major restrictions sunset in eight to 13 years.

Contrary to Mr. Obama's hopes, there is no evidence that the nuclear deal has changed Iran's hostility to the U.S. or its designs for regional dominance. The Revolutionary Guards continue to support Bashar Assad's marauding in Syria, Shiite militias in Iraq, the Lebanese terror group Hezbollah, and Houthis in Yemen. Tehran sees the Gulf states as a collection of illegitimate Sunni potentates who must bow before Shiite-Persian power—and the U.S. as the only power that can stop its ambitions.

This is the strategic backdrop for Mr. Trump's visit to Riyadh, which was remarkable for the public display of support for the U.S. alliance. The Saudis have long preferred to cooperate with

His visit revives the U.S.-Saudi alliance and sends a message to Iran.

the U.S. in more low-key fashion. But they laid on a summit of regional Arab leaders, announced substantial (\$110 billion) new arms purchases and investment in the U.S., and offered Mr. Trump the chance to deliver his first speech as President on U.S. relations with the Muslim world.

The two countries also issued a public "joint strategic vision declaration" that called for "a robust, integrated regional security architecture." The test of this vision will come in places like Syria and Yemen, but one early sign was the weekend launch of Saudi Arabia's new Global Center for Combating Extremist Ideology. This is a welcome development in the heart of Wahabi Islam that nurtured Osama bin Laden and other jihadists.

Mr. Trump's speech on Sunday was notable for its conciliatory tone, calling for a "partnership" with moderate Muslim states. The arch rhetoric of his campaign was gone as he invoked the shared desire of Muslims, Christians and Jews to live without fear of religiously motivated violence.

He was also blunt in addressing Iran as "a government that speaks openly of mass murder, vowing the destruction of Israel, death to America, and ruin for many leaders and nations in this room." Until Iran's regime "is willing to be a partner for peace," he added, "all nations of conscience must work together to isolate Iran, deny it funding for terrorism, and pray for the day when the Iranian people have the just and righteous government they deserve."

* * *

All of this will reassure the Gulf Arabs and other U.S. allies who questioned America's commitment during the Obama years of retreat. The Saudis are imperfect allies, but they are linchpins of the U.S.-led order in the Middle East, and their assistance is essential to defeating Islamic State in Syria.

In 31-year-old Deputy Crown Prince Mohammad bin Salman, Saudi Arabia also finally has a serious modernizer who wants to diversify the economy from oil, expand the public space of women and ease other cultural strictures. The U.S. has a stake in his success and in particular should help him prevail as soon as possible against the Houthis in Yemen.

The eight-year decline of U.S. credibility in the Middle East can't be reversed in a single summit, but Mr. Trump's weekend in Riyadh is a promising start that will be noticed from Tehran to Damascus to Moscow.

Los Angeles Charter Uprising

One reason public schools in big cities are so lousy is union control of local school boards. This has long been true in Los Angeles, but last week charter-school advocates dealt a major blow to the failing status quo by winning a majority on the district's Board of Education.

The Los Angeles Unified School District has some of the country's lowest-performing public schools. In 2015 only one in five fourth-graders rated proficient on the National Assessment of Educational Progress. While Los Angeles boasts more charter schools than any district in the country, they still account for merely 16% of enrollment. Two years ago the Great Public Schools Now initiative, which is backed by the Eli and Edythe Broad Foundation, set a goal of enrolling 50% of the district's students in charters. The unions naturally went nuts.

As union schools lose students (and thus taxpayer funds) to charters, the school board has become even more reactionary. Last month the board voted to support three bills before the state legislature in Sacramento that aim to limit autonomy for charter schools. One would prevent charters from appealing rejections by local

Voters elect a pro-reform majority on the local school board.

school boards to county and state boards. The appeals process is one reason charters in Los Angeles have been able to expand despite school-board resistance.

Anti-charter board members have tried to convince parents that rising graduation rates show that traditional public schools are improving. But the real explanation is that the board dumbed down graduation requirements and allowed students to pass courses with a D grade. Half of last year's graduating seniors were ineligible for state public universities, according to the education nonprofit The 74.

School board president Steve Zimmer, who was ousted last week, declared that "teachers are not failing. Students are not failing. Schools are not failing." Parents who voted in the local elections believe otherwise.

Unions tried to vilify pro-charter candidates Nick Melvoin and Kelly Gomez by portraying them as tools of Donald Trump, though both were endorsed by President Obama's Education Secretary Arne Duncan and the state's progressive former Senator Barbara Boxer. There's nothing progressive about failing low-income minority kids.

Britain's Manifesto Destiny

Britain's main political parties released their official platforms last week ahead of the June 8 parliamentary election. Pardon beleaguered voters for wondering why their leaders bothered pulling them out to the polls.

The biggest disappointment comes from the Tories, who have been leading in the polls. In her better moments, Prime Minister Theresa May is tackling some vexing entitlement problems. She pledges to end the "triple lock" on pensions, which guaranteed that state old-age benefits increase each year by the highest of consumer-price inflation, wage inflation or 2.5%. This is a huge drain on the fisc, a political burden that the previous Tory government of David Cameron saddled Mrs. May with undoing.

Mrs. May's plan to means-test government benefits for in-home care for the elderly is another broadly good idea. If the Tories could explain this better, younger voters might notice that their taxes would no longer be diverted to support the aged who can afford their own care. Mrs. May will need youth support for this plan since it will sink like a stone among older voters worried about having to sacrifice home equity to fund their old-age needs.

The problem is everything else. Mrs. May is ditching Mr. Cameron's promise not to increase personal-income tax rates, national insurance

The Tories may win a majority with a mandate for little.

taxes or the consumption tax. She also promises to boost the cost to employers of hiring foreign workers, in another attempt to meet the Tories' dubious pledge to reduce net immigration to less than 100,000 per year.

Missing from anyone contesting this election is the bold thinking Britain needs to thrive after it leaves the European Union. Mrs. May's reforms are important but don't shrink the state or liberalize the economy enough to transform Britain into an Anglo-Saxon tiger.

Labour and the Liberal-Democrats are worse, with various tax-hike pledges, industrial renationalizations and other notions out of the 1930s. At least the Liberal-Democrats are honest enough to admit that it's not worth leaving the EU if this is the best Westminster can do: They promise a second Brexit referendum in the hope that this time voters will choose to Remain.

Policy debates will shift rapidly during Brexit negotiations, so Britain will have more reform openings. But the wasted election opportunity would be to emerge with a large Tory majority but a mandate for doing little. Then again, the polls have begun to close notably in recent days as voters seem unenthralled with Mrs. May's tepid Tory manifesto. Imagine the shock if by playing it safe Mrs. May has given the Jeremy Corbyn Labourites a chance.

LETTERS TO THE EDITOR

Shooting Up Arguments in the Opioid Crisis

Regarding Josh Bloom and Alex Berezow's "Trump and Christie's First Steps to Solving the Opioid Crisis" (op-ed, May 16): I was in my 60s when I fell and broke three ribs while traveling for business several years ago. I was given a limited supply of OxyContin. I took one pill in the morning, went to work, returned to the hotel, took a second pill so I could sleep, then repeated this the next day. Four days later I returned home with three pills I didn't use in my briefcase. I carried those pills for almost a year. When I suffered a pinched nerve in my back, again traveling for work, I used two of them to get to the airport, wait for a flight, get back to my car and drive home. I couldn't get any more OxyContin pills for my back pain after I got home because I was told I would get addicted.

As a consequence I suffered for about five weeks, living in a recliner, crawling to the bathroom, having a friend half-carry me to two doctors and therapy, until finally the problem resolved itself (just before planned surgery). I was self-employed and couldn't work for about three months.

I needed the pain relief I knew I could get from OxyContin, but the two doctors I was seeing wouldn't give me any. What they offered was a joke and did nothing for my pain. Something's wrong with this process.

Tom GETZ
Rochester Hills, Mich.

There are chronic-pain patients who aren't faking it. For many, it's a sentence worse than death. We didn't ask or want to be in this situation but we are—at the cost of our careers and personal lives. No doctor wants to touch severe chronic-pain patients because of the risk, as uncontrolled chronic pain can cause suicide. The current opioid media panic has caused doctors to pull back on prescribing opioids to all patients, causing those in trouble to be under-treated.

Don't make people like me political pawns by sacrificing us for headline gains. We can only take so much.

Doug KESSLER
Kildeer, Ill.

The authors suggest "long-term use of opioids is unlikely to result in addiction." As a long-term manager of acute and chronic pain in the practice of orthopedic surgery, I can say such an approach to chronic, noncancerous pain is less than responsible and likely too often to guarantee that such pain will last indefinitely, owing to the neurochemical changes pro-

duced in the brain by opioids, whether prescribed or otherwise obtained.

Chronic pain by definition is more lasting than acute pain but isn't necessarily permanent and is best treated by nonaddicting methods. Serious mistakes have been made by my profession in this regard in recent years, and now society is reaping the whirlwind.

PAUL S. McCULLOUGH, M.D.
Bremerton, Wash.

In calling for more nonaddictive painkillers to solve the opioid crisis, Messrs. Bloom and Berezow are remiss to overlook medical marijuana.

There exists compelling scientific evidence that chronic-pain patients find marijuana to be a safer, more effective alternative to opioids and other more dangerous prescription drugs. Recent National Institute on Drug Abuse studies have found that states with legal access to medical marijuana have significant reductions in opioid overdose deaths, lower levels of opioid prescribing and lower nonmedical opioid abuse. Other studies have estimated that medical cannabis could save over \$1 billion in Medicaid and \$165 million in Medicare costs. Marijuana appears to be particularly useful for chronic neuropathic pain like that caused by back injuries, a type of pain for which opioids are notably ineffectual but widely overprescribed.

Given the current opioid crisis, the fact that marijuana remains on the Schedule I list of federally banned substances is a prime example of an obsolescent, dysfunctional government regulation that this administration would do well to repeal.

DALE GIERINGER, PH.D.
Director, California NORML
San Francisco

The "war on drugs" hasn't failed miserably. It is somewhat misdirected, but every drug dealer who is incarcerated will not service a certain number of addicts while he is in jail. The war on drugs should focus on bankrupting the illicit drug industry, not on asset forfeiture that enriches local police departments. We should identify the largest drug enterprises, which the DEA does now, and then identify and, in conjunction with foreign countries, remove the assets that provide the capability of mass producing fentanyl and heroin. The DEA doesn't do this now.

STEVEN MARTIN, CPA/CFF, CFE
Richardson, Texas

Mr. Martin is a retired DEA supervisory special agent.

U.S. Shouldn't Fund the Santos FARC Sellout

Mary Anastasia O'Grady's "A Colombian Shakedown in Washington" (Americas, May 15) accurately reflects the incoherence of U.S. lawmakers regarding Colombia's so-called peace deal with the Revolutionary Armed Forces of Colombia (FARC). Like Sen. Marco Rubio, many members of Congress endorse funding the implementation of the deal while at the same time claiming to reject its content and the undemocratic way in which it was passed. This nonsensical position could be a result of the narrative being spun about the deal in Washington by Colombian President Juan Manuel Santos's surrogates in U.S. think tanks.

Before meeting President Trump in Washington last week, Mr. Santos attended an Atlantic Council-sponsored dinner with the Colombia Peace and Prosperity Task Force. The task force, chaired by Sens. Roy

Overprotecting Kids Hurts Your and Their Generation

Lenore Skenazy makes raising a kid sound like so much fun. And it can be if you don't spend all your time trying to obviate every potential risk, no matter how remote ("Sorry, Gramps, You're No Expert," op-ed, May 18). The current pseudo-research-oriented approach that sets off warning signals for any possible threat, real or imagined, makes child rearing an anxiety-ridden chore that often translates into anxious adulthood. Safe spaces anyone? Researchers, buried in their data and competing for grants and publications, often cannot see the forest for the trees when it comes to living life in the real world. Advice for new parents: Hang swings from the boughs of those trees, and give your kid a push.

THOMAS O'HARE, PH.D.
Boston College School of Social Work
Boston

Blunt and Ben Cardin, was launched by the Atlantic Council and includes Michael Shifter, president of the Inter-American Dialogue. At the event, the task force unveiled a report touted as being a "road map" for U.S.-Colombia cooperation for the next decade.

It's troubling that the Atlantic Council fellow who crafted the narrative about Colombia's peace deal is Miguel Silva, who simultaneously served as *ad honorem* communications adviser to Mr. Santos. Mr. Silva's role as Mr. Santos's volunteer public-relations strategist isn't disclosed in Atlantic Council materials—an omission that clearly violates the spirit of the Foreign Agent Registration Act.

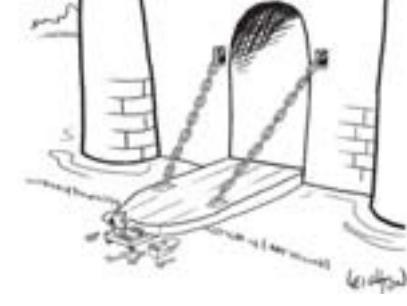
Equally troubling is Mr. Shifter's presence on the task force. The Colombian members of the dialogue's Leadership Council happen to be top donors to both the dialogue and Santos's campaigns. Mr. Santos himself is a longtime member of the dialogue, though his membership is technically on temporary hiatus.

With his lobbyists and propagandists setting the narrative, it's no surprise Mr. Santos is confident of scoring \$450 million in U.S. tax dollars. But money for the Santos government is money for the implementation of the FARC's agenda.

LIA FOWLER
West Linn, Ore.

Pepper ... And Salt

THE WALL STREET JOURNAL



"Okay, try 'er again."

Letters intended for publication should be addressed to: The Editor, 1211 Avenue of the Americas, New York, NY 10036, or emailed to wsj.ltrs@wsj.com. Please include your city and state. All letters are subject to editing, and unpublished letters can be neither acknowledged nor returned.

OPINION

A Heretic at Duke Divinity School

By Peter Berkowitz

The campaign against free speech on American campuses rolls on, steadily decreasing the domain of permissible ideas. But the case of Paul Griffiths, a professor at Duke Divinity School, is something new. The defense of liberty of thought and discussion itself has been transformed into a career-ending transgression.

The case was brought to light in late April when Rod Dreher of the American Conservative published a series of email exchanges. It started Feb. 6, when Anathea Portier-Young, another Divinity School professor, distributed a facultywide email. "On behalf of the Faculty Diversity and Inclusion Standing Committee," she wrote, "I strongly urge you to participate in the Racial Equity Institute Phase I Training planned for March 4 and 5." Ms. Portier-Young promised colleagues that the weekend program would be "transformative, powerful, and life-changing."

The dean brings charges of 'unprofessional conduct' for a vigorous defense of free inquiry.

Ms. Portier-Young, an Old Testament scholar with expertise in "constructions of identity, gender, and ethnicity, and traditions of violence and nonviolence," approvingly quoted the Racial Equity Institute's guiding ideas: "Racism is a fierce, ever-present, challenging force, one which has structured the thinking, behavior, and actions of individuals and institutions since the beginning of U.S. history." She also included

the institute's call to political action: "To understand racism and effectively begin dismantling it requires an equally fierce, consistent, and committed effort."

Late in the afternoon of the same day, Mr. Griffiths replied in a facultywide email. Noting that Ms. Portier-Young had "made her ideological commitments clear," he stated that he would "do the same, in the interests of free exchange."

Mr. Griffiths, a professor of Catholic theology, was good to his word. "I exhort you not to attend this training," he wrote. "There'll be bromides, clichés, and amen-corner rah-rah in plenty," he continued, and it would reflect "illiberal roots and totalitarian tendencies" and be "definitively anti-intellectual." He noted that "(re)trainings of intellectuals by bureaucrats and apparatchiks have a long and ignoble history."

He then entreated the faculty to rededicate themselves to their scholarly and pedagogical mission: "Each of us should be tense with the effort of it, thrumming like a tautly triple-woven steel thread with the work of it, consumed by the fire of it, ever eager for more of it."

That evening, Dean Elaine Heath entered the fray. Announcing in her own facultywide email that she was "looking forward to participating in the REI training" and that she was "proud that we are hosting it at Duke Divinity School," Ms. Heath—also a professor of missional and pastoral theology—expressed confidence that



DAVID GOTTHARD

the sessions would improve the school's "intellectual strength, spiritual vitality, and moral authority."

Having sided firmly with Ms. Portier-Young, the dean proceeded to outline rules of acceptable discourse in facultywide email exchanges. "It is inappropriate and unprofessional to use mass emails to make disparaging statements—including arguments ad hominem—in order to humiliate or undermine individual colleagues or groups of colleagues with whom we disagree. The use of mass emails to express racism, sexism, and other forms of bigotry is offensive and unacceptable, especially in a Christian institution."

Yet Mr. Griffiths's three-paragraph, 228-word email made no disparaging statement about any individual, much less expressed bigotry of any sort. Unless—in accordance with the illiberal spirit that has taken root on our campuses—one equates unsparing criticism of ideas with attacks on a

person and redefines "bigotry" to mean deviation from the progressive party line.

Ms. Heath instigated a disciplinary procedure against Mr. Griffiths for "unprofessional conduct," and Ms. Portier-Young filed a complaint for "harassment" with the University's Office for Institutional Equity. Last week Mr. Griffiths announced he was quitting effective at the end of next academic year.

"Harsh and direct disagreement places thought under pressure," Mr. Griffiths

wrote last week in an love letter to the university and the life of the mind in Commonweal. "Pressure can be intellectually productive. . . . But pressure also causes pain and fear; and when those under pressure find these things difficult to bear, they'll sometimes use any means possible to make the pressure and the pain go away. They feel unsafe, threatened, put upon, and so they react by deploying the soft violence of the law or the harder violence of the aggressive and speech-denying protest. Both moves are common enough in our élite universities now, as is their support by the powers that be. Tolerance for intellectual pain is less than it was. So is tolerance for argument."

At Duke Divinity School, the defense of liberal learning and teaching itself is now beyond toleration.

Mr. Berkowitz is a senior fellow at the Hoover Institution, Stanford University.

Anti-Trump Democrats Invite Chaos

By Ted Van Dyk

"A jackass can kick down a barn," said the legendary Speaker Sam Rayburn. "But it takes a carpenter to build one."

Democrats should reflect on that wisdom as they consider the special counsel now appointed to investigate President Trump's alleged ties to Russia. In the short term, the inquiry will probably hurt Mr. Trump and feed attempts to drive him from office. But in the end the president's attackers will pay a price.

The political and media hysteria surrounding the Trump administration lies somewhere on the repulsiveness scale between the Jacobin excesses of the French Revolution and the McCarthy era. Thus far the public knows of no presidential action that would justify impeachment. Never mind, the crowd cries, let us have the verdict now. We can do the trial later.

If they succeed in bouncing the president from office, they may find that what comes next is even worse.

What about discussions between Trump campaign advisers and Russian or other foreign leaders? Don't they count as high crimes and misdemeanors? No, such conversations take place all the time in national campaigns.

What about the firing of FBI Director James Comey? Wasn't that suspicious? No, Mr. Comey disregarded the Justice Department chain of command and the normal proprieties of his office. He made public statements about ongoing investigations. He allowed it to leak that the president had suggested leniency for Mike Flynn, the former White House adviser now under investigation. A presidential suggestion of that nature would be neither illegal nor unprecedented.

What about Mr. Trump's disclosure of classified information during a meeting with Russian leaders? It's a tempest in a teapot. The president has the authority to classify or declassify information as he wishes. I have witnessed other presidents doing it.

What about Mr. Trump's executive order declaring a short-term pause on immigration from countries with active terrorist movements? It may have been poorly handled, but other presidents have done similar things.

What about all Mr. Trump's flip-flopping? Shouldn't a president be trustworthy and reliable? Yes, but when Mr. Trump has reversed his campaign pledges it has been mostly for the good.

If Mr. Trump were a conventional president, these missteps would be shrugged off as growing pains or considered worthy of only mild reproof. President Trump, it is true, lacks the knowledge, experience and temperament for the office. His crude narcissism is grating. He has carelessly contributed to his problems with heedless public statements. He nonetheless was duly elected and should be given the leeway that new presidents are traditionally afforded.

Critics, moreover, misread the temper of the American people. Most voters don't much like Mr. Trump. But they like chaos less.

I spoke recently to a Democratic group consisting mainly of Bernie Sanders supporters. Many were searching for a constructive response to the Trump presidency. They were people, as the saying goes, seeking to light a candle rather than curse the darkness.

I suggested that they concentrate on developing alternatives to Mr. Trump's proposals—on health care, taxes, the budget. "You mean we should help Trump?" someone asked. "No," I answered, "you should help your country." I was surprised by the outburst of applause that followed.

Democrats, in their all-out opposition to Mr. Trump, are missing real opportunities to influence policy. The tax-reform debate is a prime example. If Democrats were shrewd, they would try to negotiate a grand compromise, in which loopholes are scrubbed from the code and Social Security and Medicare put on sounder long-term footing. But to get there, purposeful polarization must give way to constructive engagement.

Trump haters disregard an old rule of politics and history: In the end, voters always choose order over disorder. Kicking Mr. Trump to the curb wouldn't return the country to the pre-Trump status quo. It would likely bring forth new law-and-order leadership more disciplined and conservative than Mr. Trump's.

Mr. Van Dyk was active for more than 40 years in Democratic administrations and campaigns, including as Vice President Humphrey's assistant in the White House.

The Trump-GOP Bargain May Be Unraveling

By Alan S. Blinder

R epublicans in Congress appear to have struck a Faustian bargain with President Trump: They turn a blind eye to his antics, ethical lapses, possible Russian ties and sheer incompetence. In return, he supports their hard-right agenda to shred the social safety net and cut taxes on the rich.

But now—after the clumsy firing of FBI Director James Comey, the alleged obstruction of justice, the unconscionable revelation of sensitive intelligence to Russia, assorted other Trump misdeeds and gaffes, and the appointment of Robert Mueller as special counsel—the bargain may be unraveling. Thank heaven.

The pact's last best hope may be the American Health Care Act, a truly cruel piece of legislation already passed by the House. Getting the bill or something similar through the Senate would fulfill Republicans' pledge to "repeal and replace ObamaCare"—though not with "something great," as President Trump promised.

Rather, the AHCA would be something horrible for tens of millions of Americans who would lose their health insurance or have their Medicaid coverage eviscerated. Only the richest would get "something great": hundreds of billions in tax cuts.

Fortunately, the AHCA now looks like a long shot. Republican senators say they will not accept the House bill but will write their own from scratch, and several major provisions of the House version are anathema to GOP moderates. Further, the Senate has notoriously narrow bandwidth and relatively few legislative days to deal with what's already, or soon will be, on its plate.

Such as the budget. In March the White House released its "skinny budget," so named because it covers only appropriated funds (a minority of spending) and is extremely light on details. For example, it calls for slashing State Department funding by 28% but doesn't say how. Presumably

the answers will come in the real budget, due out Tuesday.

Will the president's budget, or any budget, pass? Bet against it. Remember, for years Congress has been too tied up in knots to pass a budget. Besides, another foolish

How, amid the chaos, will the House and especially the Senate find time to agree on legislation?

confrontation over the debt ceiling looms this fall. Lawmakers will somehow have to squeeze these and other matters into schedules crowded with investigations, maybe even impeachment proceedings.

The debate over the president's budget will be highly partisan. The proposal is expected to include sharp cuts in social spending, just as a succession of budgets suggested by now-Speaker Paul Ryan have done for years. Why? Well, there's plain mean-spiritedness. But Republicans also want the cuts to pay a fraction of the cost for what Mr. Trump has called "the biggest tax cut in the history of our country"—though it would also be the most regressive tax cut in our history.

The one-page tax reform "plan" the administration released last month was mostly empty space. If you omit the hortatory language at the top and bottom of the page, it included exactly 107 substantive words about tax reform. (I counted!) Example: Under "Business Reform," the administration says it will "eliminate tax breaks for special interests." Oh? Which ones?

Experts cannot estimate the effects, such as how much tax revenue would fall, since the plan is mostly blank space. But heroic guesstimates based on Mr. Trump's campaign proposals suggest tax revenue would fall by \$5 trillion to \$6 trillion over 10 years—and a lot more thereafter. Republicans will doubtless try to

cover up this huge cost with trumped-up growth forecasts and legislative chicanery.

Then there's the crowded congressional calendar again. Big tax proposals are hugely contentious and require enormous congressional time and energy. How, amid the Trumpian chaos, the health-care debate and more, will the House and especially the Senate find time to agree on a tax bill? A month ago, I was convinced Republicans would find a way to pass tax cuts, though not tax reform. Now, even that is in doubt.

Finally, the parts of the GOP's ambitious deregulatory agenda that require legislation may also fall by the wayside. One important victim, I hope, is the 591-page Choice Act, the "repeal and replace" of the Dodd-Frank financial reforms. The legislation passed the House Financial Services Committee on a

straight party-line vote May 4, but that may be as far as it gets. The big "choice" the bill makes is to allow Wall Street to return to the Wild West atmosphere that existed before the financial crisis. It would exempt big banks from many regulations if they hold 10% capital; it imagines that a bankruptcy court could handle a gigantic financial failure like Lehman Brothers; it would cripple the Consumer Financial Protection Bureau; and it would push the Federal Reserve to follow a mechanical rule for monetary policy. And more.

The Choice Act never would be missed. Neither would the rest of the Faustian bargain.

Mr. Blinder is a professor of economics and public affairs at Princeton University and a visiting fellow at the Brookings Institution. He was formerly vice chairman of the Federal Reserve.

The U.S. Can Get Assange

By Seth Lipsky

J ulian Assange is all smiles after Sweden dropped its rape charge against him. He may be hoping to make it to Ecuador, which is unlikely to extradite him to America. Then again, we could always seize him and spirit him here to face justice. We wouldn't have to resort to the extradition process. The Supreme Court might even prefer it that way.

Take it from the late Chief Justice William Rehnquist, who wrote the opinion in *U.S. v. Alvarez-Machain* (1992). It suggests that if America has a hand in kidnapping a culprit from foreign shores to bring him to justice here, the Supreme Court is not going to be too particular.

I've written about this over the years, including in 2009, when Scotland freed Abdelbaset Ali al-Megrahi to go home to Libya. He'd been convicted for his role in bringing down Pan Am 103 in 1988. It struck me that America ought to capture Megrahi and bring him before an American court. President Obama could have acted under the precedent in the case of Humberto Alvarez-Machain, a Mexican physician.

The doctor was indicted for his alleged role in the murder of a Drug Enforcement Administration agent, Enrique Camarena Salazar. He was accused, as Rehnquist put it, of "prolonging agent Camarena's life so that others could further torture and interrogate him." On April 2, 1990, the doctor was, as Rehnquist put it, "forcibly kidnapped from his medical office in Guadalajara, Mexico, to be flown by private plane to El Paso, Texas, where he was arrested by DEA agents."

A U.S. district court concluded that the DEA was responsible, even though its agents were not personally involved. Dr. Alvarez claimed his abduction, in Rehnquist's paraphrase, "constituted outrageous governmental conduct." A dainty district court

and the Ninth Circuit appeals bench were prepared to free Dr. Alvarez.

The Supreme Court was made of sterner stuff. It did cite a precedent, *U.S. v. Rauscher*, which blocked the prosecution of a defendant brought to America from England for a crime not covered in the extradition treaty between the two countries. The court took the view that once the U.S. proceeded under an extradition treaty, it was bound by its terms.

But the court also cited *Ker v. Illinois* (1886), which involved a thief, Frederick Ker, who'd been convicted in Illinois but fled to Peru, only to be brought back to court by a Pinkerton agent. Rehnquist wrote that Ker's "presence before the court was procured by means of forcible abduction from Peru." But because he wasn't brought back via extradition, the court rejected his claims to rights under extradition law.

Which brings us to Mr. Assange. If his plan is to slink to Ecuador and if the U.S. really wants him, it might do better by avoiding extradition and turning to our secret services to air-lift him to stand trial in America.

Even if America kidnaps him, that might not be the end of the story. Witness the denouement of the saga of Dr. Alvarez-Machain, who was put on trial in the same district court that shrank from trying him originally. The judge acquitted him before the case went to the jury. Dr. Alvarez-Machain then sued America and the Mexicans who'd kidnapped him in league with the DEA. That case, too, went to the Supreme Court, where in 2004 Dr. Alvarez-Machain lost unanimously.

It's not clear the U.S. wants to put Mr. Assange on trial. If it does, though, the moral of *Alvarez-Machain* is that it doesn't have to be squeamish about how it gets him here, even if he's hiding south of the border.

Mr. Lipsky is editor of the New York Sun.

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THE WALL STREET JOURNAL.

Monday, May 22, 2017 | B1

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Online Lenders Regain Footing

By PETER RUDGEAR

The initial appeal of upstart online lenders was that they would disrupt traditional loan markets. But after big setbacks last year, the firms are adjusting to be a little more Wall Street and a little less Silicon Valley.

Changes include holding on to the risk of some loans they make, securitizing their loans—or selling them in packages—theirself rather than through third parties, and naming veterans of banks and investment firms to executive roles.

Investors in bonds backed by the loans these online platforms helped broker welcomed the moves. Last year, as skepticism mounted about their offerings, these investors pulled back from purchasing their loans. But since the start

of April, more than \$2 billion in securities backed by loans made by **LendingClub** Corp., **Prosper Marketplace** Inc. and their peers have either been sold or are being prepared for an imminent sale, according to credit-rating firms and people familiar with the matter. That is already more than was issued in the entire second quarter of 2016, according to data tracker PeerIQ.

Deals are also getting done at more favorable prices: The extra yield, or spread, investors demanded on recent deals from **Social Finance** Inc. and **Avant** Inc., above that of safe government debt, was much lower than on similar deals each lender brought last year.

The most recent activity comes on top of \$3 billion in bonds backed by online loans that were issued in the first

quarter of 2017, double the amount from the same period a year earlier, according to PeerIQ.

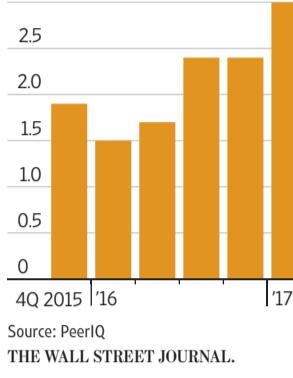
Early last year, confidence in these lenders was rocked by an upsurge in defaults, warnings from bond-rating firms and a scandal that forced out the CEO of industry leader LendingClub. Money managers responded by slowing their purchases of debt issued by these lenders and asked for higher yields.

Since then, online lenders have scrambled to make their credits more attractive to investors. They overhauled their lending criteria, cut off weaker consumers, shortened loan terms and started charging customers more to borrow in an attempt to boost yields.

"It was really important to see there was some kind of a consumer lending back-

Back in Demand

New issuance of bonds backed by loans from online lenders



Source: PeerIQ

THE WALL STREET JOURNAL

online lenders' debt offerings for their relative value compared with other debt, the better quality of underlying loans and moves they made to more closely resemble established finance firms rather than technology-driven startups.

One factor working in lenders' favor: falling yields in other categories of debt, notably high-yield bonds. While yields on U.S. government debt rose following last November's election in anticipation of stronger economic growth, rates on high-yield debt fell due to expectations companies would fare better under the new administration. That made the lenders' loan packages more attractive on a comparative basis.

The spread demanded by money managers to hold

Please see LOANS page B2

Ford Weighs Executive Shake-Up

Ford Motor Co. is considering significant changes to the auto maker's senior leadership team amid tension among top

By Christina Rogers,
Joann S. Lublin
and John D. Stoll

executives, dissatisfaction with the stock price and a drive to clarify the company's strategy, according to people familiar with the situation.

The moves could include a shuffling of executives who were hired or rose to prominence during the tenure of Alan Mulally, the company's chief executive for eight years ending in 2014. The current management team has been retooling the company to better prepare for shifts in the global auto industry.

A Ford spokesman declined to comment on management changes. The company is "staying focused on our plan for creating value and profitable growth," according to a statement.

Bill Ford, Ford's executive chairman, and the board are taking an influential role in the discussions, these people said. Mr. Ford served as CEO until Mr. Mulally's hiring. Chief Executive Mark Fields has proposed certain personnel changes as part of the process.

Mr. Fields has overseen a profitable three-year period at Ford as consumers have flocked to the pickup trucks and SUVs that the auto maker has long been known for. The lifetime Ford executive has routinely said he wants to transform the company's business model to better combat the threat presented by Silicon Valley tech firms, including Alphabet Inc., Apple Inc., Tesla Inc. and Uber Technologies Inc.

Mr. Fields's top lieutenants include Joe Hinrichs, the head of North American operations; and Jim Farley, who is credited with accelerating Ford's performance in Europe at a time when General Motors Co. is abandoning that region.

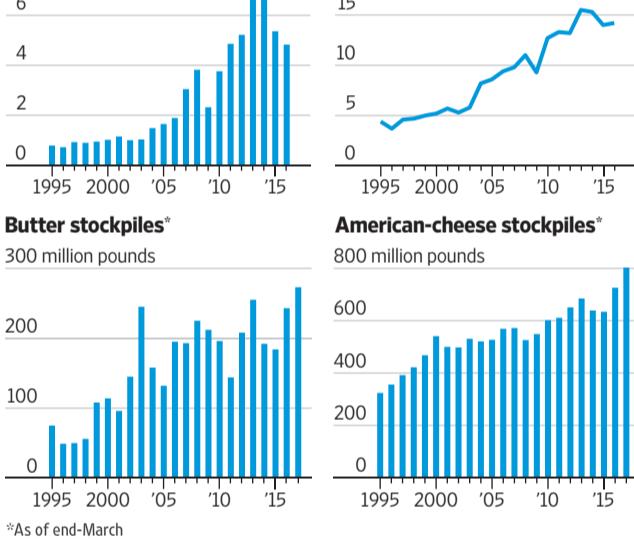
Last week, Ford granted retention bonuses to four senior executives including Mr. Farley, product chief Raj Nair and Hau Thai-Tang, head of purchasing. Messrs. Hinrichs and Fields weren't included in that series of grants.

Got Milk? Way Too Much, Say Farmers

Many bulked up their U.S. herds when prices were high, but then trouble in the global market hit

Creamed

U.S. dairy exports have declined amid growing product stockpiles.



*As of end-March

Sources: Agriculture Department; U.S. Dairy Export Council



The U.S. dairy industry is taking a hit from weaker-than-expected demand and abundant supplies.

By HEATHER HADDON

U.S. dairy farmers' big bet on global demand for milk is souring.

The industry was in trouble long before a trade squabble with Canada last month that reduced demand for ultrafiltered milk, a cheese ingredient. Dairy farmers fear a spat that has jeopardized roughly \$150 million in sales for Wisconsin, New York and

Minnesota producers is just a prelude to disruptions to come if President Donald Trump renegotiates the North American Free Trade Agreement as promised.

"There was a perfect storm," said Jaime Castaneda, senior vice president of trade policy at the National Milk Producers Federation.

Dairy farmers aggressively ex-

panded their herds three years ago when milk prices were driven up by growing demand from middle-class consumers in North America, Asia and other markets. By March, there were 9.4 million commercial dairy cows in the U.S., a 20-year high, according to the Agriculture Department.

But China, Russia, Venezuela and other importers scaled back their dairy purchasing in recent years due

to domestic troubles. The European Union, meanwhile, greatly increased its dairy production after lifting 30-year-old quotas in 2015. Then came a world-wide surge in agricultural production that has pushed down prices for grains and meat as well as for dairy.

The dollar has also been on a multiyear climb, making U.S. exports less

Please see DAIRY page B2



IT staffer Marty Norris, right, and program director Nathan Roland are seen at radio station WKSX.

KEYWORDS | By Christopher Mims

All IT Jobs Are Security Jobs Now



In the Appalachian mountain town of West Jefferson, N.C., on an otherwise typical Monday afternoon in September 2014, country radio station WKSX was kicked off the air by international hackers.

Just as the station rolled into its afternoon news broadcast, a staple for locals in this hamlet of about 1,300, a warning message popped up on the

screen of the program director's Windows PC. His computer was locked and its files—including much of the music and advertisements the station aired—were being encrypted.

The attackers demanded \$600 in ransom. If station officials waited, the price would double.

The station's part-time IT person, Marty Norris, was cruising in his truck when he got the call that something was amiss. He rushed to the

station. "I immediately pulled the plug on his computer," says Mr. Norris.

In a quick huddle, the possibility of paying the ransom was raised, but the idea didn't get far. "We're a little bit stubborn in the mountains," says General Manager Jan Caddell. "It's kind of like being held up. We thought if we paid, they'd just ask for more."

Security experts believe this particular strain of ransomware has netted criminals

Please see MIMS page B4

The Fed Took a Road It Has Trouble Exiting

By KATY BURNE

Federal Reserve officials grappling with the legacy of expansive stimulus would find it difficult to return to the central bank's precrisis role on the sidelines of financial markets, analysts and central-bank watchers say.

A long list of programs adopted to help foster economic growth, along with changes in money markets and bank regulation, have vastly expanded the Fed's balance sheet and its involvement in markets. The Fed's assets now total \$4.5 trillion, up from less than \$1 trillion a decade ago. Since 2013, the central bank has become one of the largest traders with U.S. taxable money-market funds, according to Crane Data.

Many analysts and investors worry that significantly rolling back the Fed's expansion, a course advocated by some in conservative circles, risks disrupting markets and the economy at a time when growth remains tepid. It would also reduce the connections the institution has built with a diverse set of Wall Street firms, beyond the group of banks it dealt with before the crisis.

The Fed has become "like an octopus," said Jeffrey Cleveland, chief economist at

Payden & Rygel, a Los Angeles money manager. "Once you get the power and you are influencing all these markets, do you really want to retreat from all that?"

Investors are already assessing how stocks and bonds might react when the central bank begins the latest stage of its yearslong retreat from stimulus—likely later this year—by ending the practice of reinvesting the proceeds of maturing bonds into new bonds. The Fed is scheduled to publish Wednesday the minutes of its latest policy meeting, at which officials may have continued their debate over the mix of policy tools they plan to use in the future.

Some Fed officials say they are attracted to maintaining parts of their current approach. Minutes of their November meeting also showed officials discussing the advantages of keeping something similar to the existing system in place, in part because it is simpler to operate than the precrisis one.

The Fed hasn't decided the issue, but its choices will be closely watched because its leadership is in transition. President Donald Trump is preparing to fill three vacancies on the Fed's seven-member board. Republican lawmak-

Please see FED page B2

INSIDE



LAWYERS FACE ADDICTION IN THEIR RANKS

LAW, B2



'ALIEN' BEATS 'GUARDIANS' BY A NOSE

BOX OFFICE, B3

INDEX TO BUSINESSES

These indexes cite notable references to most parent companies and businesspeople in today's edition. Articles on regional page inserts aren't cited in these indexes.

A
Akzo Nobel.....A2,B3
Alibaba Group Holding.....A10
Alphabet.....B9
Amber Kinetics.....R5
Anadarko Petroleum.....R4
Anheuser-Busch InBev.....R3
Apple.....B8,R3
Arabian Oil (Saudi Arabia).....R2
Arconic.....A1
Avant.....B1
B
Baidu.....B4
Bayerische Motoren Werke.....R6
BlackRock.....R1
Blackstone Group.....B8
Boeing.....A5
BP.....R1,R4
C
Cairn Energy.....R4
Chevron.....R1,R4
China Bridge Capital.....B3
Clariant.....A1
D
DocuSign.....B4
E
Eagle Crest Energy.....R5
Elliott Management.....A1,B3
Energy Future Holdings.....A2,A8
ENI.....R4
Exxon Mobil.....R1,R4
F
Facebook.....B8,R3
Ford Motor.....B1
G
Galp Energia SGPS.....R4

H
General Electric.....A10
General Motors.....R3
Great Wall Motors.....R3
Green Mountain Power.....R5
I
HFR.....A10
Hogan Lovells.....B2
Huntsman.....A1
Hydrostor.....R5
K
Ikea International.....R3
iQIYI.com.....B4
L
LendingClub.....B1
Leshi Internet.....B1
Information & Technology.....B3
Linde.....A2
Lockheed Martin.....A5
M
Marks & Spencer.....R4
Metro-Goldwyn-Mayer.....B3
Microsoft.....A1,R5
Models International.....A10
MOL Group.....R4
N
Netflix.....B4
News Corp.....B3
Norton Rose Fulbright.....B2
O
Occidental Petroleum.....R1
Odebrecht.....A8
P
Paramount Pictures.....B4

INDEX TO PEOPLE

A
Agachi, Alexandru.....A10
Alderson, Mathew.....B4
al-Sada, Mohammed.....R2
Amen, Saeed.....A10
B
Barkindo, Mohammad R2
Batista, Joesley.....A8
Büchner, Ton.....B3
Bellairs, Chris.....B2
Bourke, Nick.....B8
Bratt, Peder.....R4
Byers, William.....A10
C
Castaneda, Jaime.....B1
Castonguay, Josh.....R5
Cohen, Steven A.....A10
Cunningham, Debbie.....B2
Curry, Thomas.....B8
D - E
Delpy, Benjamin.....B3
De Prado, Marcos Lopez.....A10
Erhardt, Mark.....B8
F - G
Favaloro, George.....R3
Ford, Bill.....B1
Gardiner, Matthew.....B4
Gilbert, Adam.....B2
Gormley, Joseph.....B8
Granade, Matthew.....A10
H
Grant, Hugh.....B3
Guinet, Adrien.....B3
I
Haddad, Gilbert.....A10
Heizmann, Jochem.....R3
Henderson, Tracey.....R4
Higgins, Joe.....R3
Huntsman, Peter.....A1
J
Inglis, Andrew.....R4
K
Kapitany, Istvan.....R4
Kelley, Diana.....B4
Klarman, Seth.....B9
Kottmann, Harolf.....A1
L
Laine, Ben.....B2
Latham, Andrew.....R4
Lawler, Anthony.....A1
M - N
McGarry, Michael.....B3
McGuinness, Dorie.....R4
Gilbert, Adam.....B2
Gormley, Joseph.....B8
Granade, Matthew.....A10
O
Nobis, Ken.....B2
Noreika, Keith.....B8
P
Ogunlesi, Adebayo.....B8
Poyarkov, Alexey.....A1
R
Ratatics, Peter.....R4
S
Silversteyn, Dmitry.....B3
Singleton, Matt.....R3
Srinivasan, Venkat.....R5
Stephenson, Mark.....B2
T
Thai-Tang, Hau.....B1
Thorp, Ed.....A10
Touati, Hervé.....R3
Turkowitz, Neil.....B4
U
Kim, Jong Un.....A9
V
Villani, Dario.....A10
W - Y - Z
Wang, Nelson.....R3
Wærness, Eirik.....R2
Yan, Wang.....B4
Yong, Wang.....R6
Zhang, Yale.....R3
Zhu, Robin.....R3

BUSINESS NEWS

LeEco Founder to Exit Post at Video Unit

BY ALYSSA ABKOWITZ

BEIJING—The billionaire founder of Chinese technology and entertainment company LeEco Holdings is stepping down as chief executive of its listed video unit after an investor had called for stronger corporate governance.

Jia Yueteng will remain chairman of Leshi Internet Information & Technology Corp., according to a Shenzhen Stock Exchange filing. In addition to video, LeEco has businesses in cloud computing and filmmaking, and it is pushing to build an electric-car business.

Representatives for LeEco didn't immediately respond to requests for comment.

The move comes after investment firm China Bridge Capital, which was Leshi's second-biggest shareholder last year, called for Mr. Jia to slow down LeEco's expansion and allow new management to bring focus back to the firm.

Over the past year, LeEco has been dealing with a cash crunch and a share-trade halt that has forced the company to rethink its business. The company began as a YouTube-like video-streaming site and quickly expanded in multiple directions. LeEco in July last year announced a deal to buy Vizio Inc. of the U.S. for \$2 billion, but it pulled out of the deal in April.

Former Lenovo executive Liang Jun, who is currently president of Leshi, will become chief executive. The filing says Mr. Jia will focus on corporate governance, strategic planning and core production innovation. It was unclear from the filing if there was any change in Mr. Jia's position at LeEco.

Low-Key PPG Chief Makes Noise in Akzo Hunt

After third rejection by Dutch rival, paint giant considers taking pitch directly to target's shareholders

BY ANDREW TANGEL

Michael McGarry gets excited about paint drying. After all, that is his job as the leader of a paint-and-coatings giant that prizes staying under the radar.

"We don't need to see ourselves in the newspaper," said the chief executive and chairman of PPG Industries Inc. in a recent interview. "This is not our style."

Now, though, Mr. McGarry is at the center of what could be one of the biggest and riskiest corporate takeover battles in recent memory—a cross-border pursuit of

Dutch rival Akzo Nobel NV.

In the past two months, he has made three separate offers, ultimately valuing the Dutch company at up to approximately \$27 billion, only to be rejected publicly each time.

After the last brushoff two weeks ago, Mr. McGarry said he was considering whether to go around the company's board and management, including Akzo Chief Executive Ton Büchner, and take his pitch directly to shareholders.

The generally quiet paint industry is an unlikely source of high-stakes corporate drama. And Mr. McGarry, a 59-year-old described by one colleague as a Southern gentleman, might seem an unlikely figure to lead what could be a bruising fight. But the ingredients have been long in the making as the industry undergoes consolidation. PPG rival Sherwin-Williams Co. is in the final stages of a \$9 billion acquisition of Valspar Corp.

A deal involving Akzo brings with it unique challenges. Dutch laws make a hostile takeover difficult and



Michael McGarry is an unlikely figure to be at the center of a takeover fight. He argues the deal would trim \$750 million in costs.

some observers view the potential bid as a long shot.

Antitrust regulators may force the combined company to sell off businesses. Even if Mr. McGarry is victorious, combining the companies would be risky. The latest offer by Pittsburgh-based PPG for Akzo—\$27 billion, approximately equal to PPG's own market capitalization—could carry expectations to cut costs that the combined company would struggle to meet, said Dmitry Silversteyn, an analyst at Longbow Research in Cleveland.

A court hearing scheduled for Monday, in an activist investor's bid to force Akzo to hold a special shareholder meeting, could influence PPG's decision on whether to pursue a hostile takeover. If Mr. McGarry decides to pursue such a bid, he would have to do so by a June 1

regulatory deadline or wait at least six months under Dutch rules.

Mr. McGarry argues joining forces would help save the combined companies \$750 million in costs, strengthen their global footprint and boost organic growth amid sluggish demand in some markets and rising materials costs, a position supported by some analysts who back the deal.

He said he is approaching the Akzo deal like other acquisitions he helped orchestrate, despite its far greater size. He was a behind-the-scenes point person in PPG's 2008 acquisition of Dutch coatings maker SigmaKalon Group for \$3 billion, still the largest ever for the company. In 2014, the company paid \$2.3 billion for Mexican paint company Consorcio Comex SA. PPG bought

Akzo's North American paint business that year for \$1 billion.

"We're always going to be measured in the way we do it," he said, referring to acquisitions. "We're not going to be radical."

Early in his career, Mr. McGarry became interested in running businesses and understanding how things worked. He worked as a mechanic at a bowling alley while he was growing up in New Orleans. After studying mechanical engineering at the University of Texas at Austin, his first job in 1981 was at a PPG plant in Lake Charles, La. He has been at the company ever since.

Still a regular league bowler in Pittsburgh, Mr. McGarry maintains what colleagues describe as a common touch. He is known for getting to know customers,

from house painters to auto-industry executives. Colleagues describe Mr. McGarry as a methodical manager who carefully studies decisions and their potential outcomes. "He's a smart risk taker—he's not reckless,"

said Hugh Grant, PPG's lead director. "He's much more calculated than that."

In the Akzo battle, Mr. McGarry also has help from U.S. activist investor Elliott Management Corp., which wants to strong-arm Akzo into sale talks with PPG. Elliott was the party asking the Dutch court to force Akzo to hold a special shareholder meeting, which also seeks to remove the supervisory board chairman. Akzo has defended itself and questioned how dismissing the company's supervisory chairman would benefit stakeholders.

'Alien' Beats Out 'Wimpy Kid'

BY ERICH SCHWARTZEL

Ridley Scott's "Alien" series came down to Earth at the box office this weekend, with the latest installment opening to a so-so \$36 million, according to preliminary estimates.

That was enough for "Alien: Covenant" to eke out a first-place finish, though it is about 29% lower than the debut of "Prometheus," the series' 2012 installment, which opened to \$51 million. The new release barely bested Walt Disney Co. holdover "Guardians of the Galaxy," which added \$35.1 million for a three-week total of \$301.8 million.

"Everything, Everything," an inexpensive young-adult romance from Time Warner Inc.'s Warner Bros. and Metro-Goldwyn-Mayer Studios, opened to a fine \$12 million in third place. The weekend's other new wide release, the children's comedy "Diary of a Wimpy Kid: The Long Haul," limped into fifth place with a weak \$7.2 million.

This latest "Alien" continues an effort to revitalize a franchise first made famous by



'Alien: Covenant' follows a band of space travelers targeted by bloodthirsty extraterrestrials.

Mr. Scott in 1979, when Ellen Ripley (Sigourney Weaver) led the Nostromo crew into space—where, as its tagline famously warned, "no one can hear you scream."

James Cameron's critically

acclaimed sequel "Aliens" followed in 1986, and various resurrections of the property have appeared throughout the decades. The prequel "Prometheus" rebooted the franchise five years ago, ultimately col-

lecting \$403 million at the global box office.

"Alien: Covenant" follows a new band of unlucky space travelers, who are trying to colonize a far-flung planet but find themselves targeted by blood-

thirsty extraterrestrials when they arrive.

The movie's lower opening was offset in part by its budget of \$97 million, which was about 27% less than what "Prometheus" cost to produce, said Chris Aronson, president of domestic distribution at Twentieth Century Fox, which released the film.

That cost efficiency should "enable [Mr. Scott] to keep going with this franchise," he said.

"Diary of a Wimpy Kid"

was also released by Fox. The studio's parent company, 21st Century Fox, and News Corp., owner of The Wall Street Journal,

share common ownership.

Overseas returns for "Alien" have brought its world-wide box office to \$117.8 million. "Alien" has been approved for release in China, the world's second-largest box-office market behind the U.S., on June 16. Some of the R-rated movie's most violent scenes were cut for approval by Chinese state censors.

Of all the new releases, audiences liked "Everything, Everything" the best, giving it an "A" grade, according to the CinemaScore market research firm. "Alien" and "Diary of a Wimpy Kid" each received a "B."

For Victims of Wannacry, A Tool Holds Slender Hope

BY ROBERT MCMILLAN

Victims of this month's global cyberattack might have a sliver of hope in trying to unlock the data lost on their computers.

The ransomware, WannaCry, has infected hundreds of thousands of computers since it appeared May 12. Last week, French computer-security researcher Adrien Guinet found a way to unscramble files without paying a \$300 ransom.

WannaCry scrambles about 30 types of files on infected computers, demanding payment for the secret encryption key that will unlock the files. A fragment of the key gets stored in the computer's memory every time it infects a system. In certain rare conditions, this fragment can be plucked out of the memory and used to retrieve the scrambled files.

By Friday, a second French computer-security researcher, Benjamin Delpy, built a tool called Wannakiwi that does the heavy lifting of unscrambling the encrypted files. Europol, the European Union's police

A security researcher suggested victims should consider the tool a last resort.

agency, said Friday its cyber-crime center had tested the tool and succeeded in recovering data in some circumstances.

Because the Wannakiwi tool works by grabbing data from the computer's memory, it only will work for a small number of fortunate users.

If a PC was turned off or rebooted after being infected by WannaCry, the tool won't work since the machine's memory would be wiped, security experts said. Also, if the PC overwrote the key fragment during the normal course of its operations, that would render the tool useless.

In an interview, Mr. Delpy said he had heard of some infected companies "where they were able to decrypt very, very few computers" using the tool. He suggested, though, victims should consider it an option of last resort.

Vikram Thakur, technical director at computer-security company Symantec Corp., agreed. "People that would be able to successfully use the tool to restore some files from their computers is very low," he said.

—David Gauthier-Villars contributed to this article.

Estimated Box-Office Figures, Through Sunday

SALES, IN MILLIONS

FILM	DISTRIBUTOR	WEEKEND*	CUMULATIVE	% CHANGE
1. <i>Alien: Covenant</i>	Twentieth Century Fox	\$36	\$36	--
2. <i>Guardians of the Galaxy Vol. 2</i>	Disney	\$35.1	\$301.8	-46%
3. <i>Everything, Everything</i>	Warner Bros.	\$12	\$12	--
4. <i>Snatched</i>	Twentieth Century Fox	\$7.6	\$32.8	-61%
5. <i>Diary of a Wimpy Kid: The Long Haul</i>	Twentieth Century Fox	\$7.2	\$7.2	--

*Friday, Saturday and Sunday Source: comScore

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NATIONAL AVERAGE: National Average APYs are based on specific product types of top 50 U.S. banks (ranked by total deposits) provided by Informa Research Services, Inc. as of 5/1/17. CD Rates: Average APYs are based on certificate of deposit accounts of \$25,000. Although the information provided by Informa Research Services, Inc. has been obtained from the various institutions, accuracy cannot be guaranteed.

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TECHNOLOGY

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An About-Face for Baidu

Chinese search firm aggressively seeks to protect intellectual property it buys, creates

By WAYNE MA

BEIJING—Chinese search giant **Baidu** Inc. was once a scourge of Hollywood and the U.S. music industry, which accused it of being a pipeline for pirated content.

Today when Baidu is involved in a copyright infringement case, chances are it is the one casting the blame.

Baidu's about-face in the copyright fight reflects its emergence as a creator and buyer of content, a transition that continued recently when the company struck a deal to license original shows from **Netflix** Inc. Other Chinese media companies are undergoing similar transformations, upending how entertainment is protected in the world's second-largest economy, legal analysts say.

"One of the old rationales for copyright protection...is that it provides an incentive to invest. We are seeing that in play here in China," said Mathew Alderson, a partner and entertainment lawyer at Harris Bricken in Beijing. "Copyright is no longer something imposed on China by the U.S. It is now a tool in Chinese hands."

One way to measure the change is by the escalating flood of lawsuits aimed at protecting intellectual property.

Nearly 87,000 copyright-related cases were filed in China last year, according to data compiled by China's Supreme People's Court, a 15-fold increase from 2006. These cases include claims of illegal distribution, or unauthorized reproduction, of written content, videogames, movies and TV shows.

One of the companies filing suits is **iQiyi.com** Inc., the video-streaming service owned by Baidu that struck the April 25 deal with Netflix to bring shows such as the paranormal coming-of-age drama "Stranger Things" and the science-fiction series "Black Mirror" to the mainland.

Last year, iQiyi was the plaintiff in at least 133 copyright cases, up from 80 a year earlier, according to data provider IPHouse.

In addition to lawsuits, iQiyi sent takedown notices to

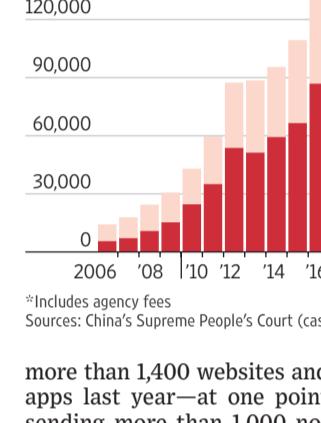


Baidu reached a deal with Netflix to air 'Stranger Things,' a scene from which is shown above.

China Gets Copyright Religion

China has seen an uptick in copyright cases in recent years, as Chinese firms defend the content and intellectual property they buy from others or create on their own.

Intellectual property cases received by Chinese courts



*Includes agency fees

Sources: China's Supreme People's Court (cases); the companies; IPHouse (lawsuits)

more than 1,400 websites and apps last year—at one point sending more than 1,000 notices in a single day—to defend the licensed and original content it owns, according to Wang Yan, senior director of legal affairs at iQiyi.

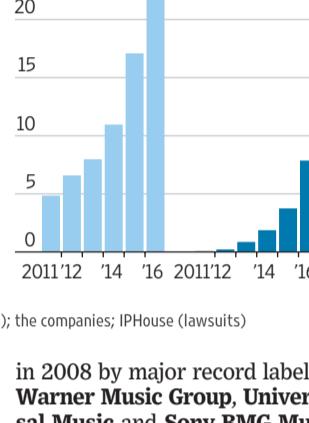
Not that long ago, Baidu itself was the target of lawsuits by the music industry and Hollywood film studios for using content without permission.

"Baidu almost single-handedly eroded the value of music [in China]," said Neil Turkewitz, former vice president of international at the Recording Industry Association of America.

Baidu in 2011 announced it had struck a licensing deal with all three, effectively ending the lawsuit. That year, Baidu recorded its first line item for content costs: \$9 million.

In 2013, Baidu was sued for violating video copyrights, this time by a group of Chinese entertainment companies supported by the Motion Picture Association and major Hollywood studios, which sought \$43

Spending in content, in billions of yuan



*Includes agency fees

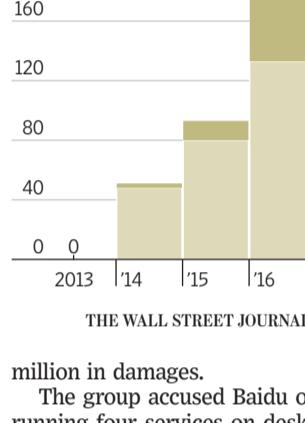
Sources: China's Supreme People's Court (cases); the companies; IPHouse (lawsuits)

in 2008 by major record labels **Warner Music Group**, **Universal Music** and **Sony BMG Music Entertainment** for violating music copyrights. At the time, the International Federation of Phonographic Industry estimated that record companies were receiving less than 5% of the estimated \$700 million in potential annual revenue in China's mobile music space.

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Number of lawsuits by Baidu's streaming service iQiyi



million in damages.

The group accused Baidu of running four services on desktop computers and smartphones that they said allow users access to Western and Chinese TV shows and movies licensed to other companies. The plaintiffs added that in some instances, Baidu linked to sites that hosted pirated content.

Baidu lost some of those lawsuits but ended up paying modest penalties.

A spokeswoman for Baidu declined to discuss how it has gone from being a defendant to a plaintiff in copyright cases.

Through its iQiyi streaming service, Baidu has become one of Hollywood's best customers, striking licensing deals with major studios such as **21st Century Fox**, **Warner Bros.** and **Paramount Pictures**.

The fund is looking to acquire minority and majority interests in private and public

SoftBank, Saudis Launch High-Tech Investment Fund

Japan's **SoftBank Group** and Saudi Arabia's sovereign-wealth fund on Saturday launched the world's largest technology fund, a nearly \$100 billion vehicle that will steer capital to cutting-edge technologies in U.S. startups and other global firms.

By Margherita Stancati
in Riyadh,
Mayumi Negishi in Tokyo
and Nicolas Parasie
in Dubai

In a statement, SoftBank said the fund secured \$93 billion of committed capital. The SoftBank Vision Fund is targeting a total of \$100 billion within six months. The fund's creation coincides with U.S. President Donald Trump's two-day visit to Saudi Arabia, where he attempted to cement ties with a key counterterrorism ally and drum up business for American firms.

SoftBank Chief Executive Masayoshi Son has previously promised Mr. Trump that he would invest \$50 billion of the fund in U.S. startups and create 50,000 jobs. Mr. Trump cited this as evidence of his presidency bringing jobs back home.

SoftBank said it would invest \$28 billion in the fund, including \$8.2 billion worth of its stake in chip architecture firm ARM Holdings Inc. SoftBank's announcement didn't specify the investment of its main partner, Saudi Arabia's **Public Investment Fund**. Earlier the PIF said it would invest as much as \$45 billion in the fund.

The fund marks the entry of a mammoth player in a field of investment traditionally dominated by Western bankers and private-equity groups. The sheer scale of the fund could decide winners and losers in capital-intensive areas, such as in autonomous driving or in biotechnology.

It also follows months of negotiation and delay as SoftBank and Saudi Arabia's PIF wrangled over who would control investment decisions. Mr. Son announced the fund in October with a launch as early as December in mind. It took a further five months for the fund to come together.

\$93B

Capital committed to SoftBank Vision Fund

telligence, smart devices and semiconductors. "We already have lots in the pipeline," he said. "We are investing into genome sequencing. We are investing in virtual-reality simulations, the games, and so on."

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Mr. Son is rushing to invest in key technologies ahead of what he predicts will be a robotic revolution and a rush of investment into areas such as deep learning and robotics. The fund enables SoftBank to invest in emerging technologies as artificial intelligence surpasses human capabilities.

The fund is looking to acquire minority and majority interests in private and public

MIMS

Continued from page B1

at least \$325 million in extorted payments so far, but the real figure could easily be twice that.

The global "WannaCry" ransomware attack that peaked last week, and has affected at least 200,000 computers in 150 countries, as well as the growing threat of Adylkuzz, another new piece of malware, illustrate a basic problem that will only become more pressing as ever more of our systems become connected: The internet wasn't designed with security in mind, and dealing with that reality isn't cheap or easy.

Despite all the money spent —Gartner estimates \$81.6 billion on cybersecurity in 2016—things are, on the whole, getting worse, says Chris Bronk, associate director of the Center for Information Security Research and Education at the University of Houston. "Some individual companies are doing better," adds Dr. Bronk. "But as an entire society, we're not doing better yet."

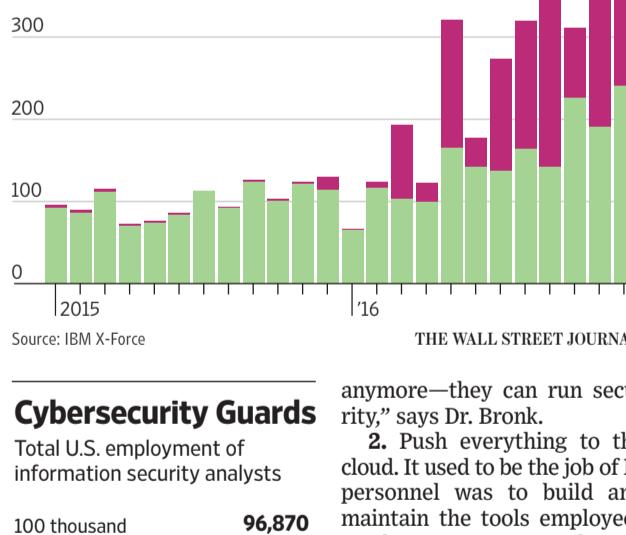
Ever greater profits from cyberattacks mean cybercriminals have professionalized to the point that they are effectively criminal corporations, says Matthew Gardiner, a cybersecurity strategist for Mimecast, which manages businesses' email in the cloud. Instead of hackers fumbling their way through complicated financial transactions or money wizards fumbling their way through malware design, there is true malice of labor. As in any other industry, specialization begets efficiency.

Large (legitimate) corporations have the resources to hire talent to protect their digital assets, but for small- and medium-size businesses, it is harder. There is no shortage of good advice on how to perform basic security hygiene, but who is there to implement it? The solution is resource management.

Don't Open That Attachment

The past year has seen a meteoric increase in emails around the globe containing malware, according to a recent IBM Security study.

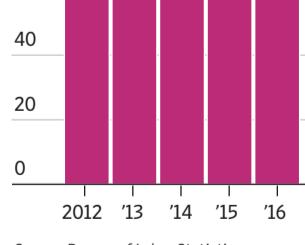
Change in amount and type of spam email, 1Q 2015 = 100



Source: IBM X-Force

Cybersecurity Guards

Total U.S. employment of information security analysts



Source: Bureau of Labor Statistics

THE WALL STREET JOURNAL.

to prioritize and improve them. "Security can be like that, too," she adds. "We can think about it upfront and weave it into the process in a much more effective way."

The cloud isn't perfect, of course. A hack of electronic-signature company **Docusign**, disclosed last week, exposed customer email addresses, allowing attackers to target them with convincing emails that included a malware attachment disguised as a Microsoft Word doc. And then there is the fact that massive denial-of-service attacks like Mirai can make the cloud inaccessible at critical times.

WannaCry is a good example of how increasing cybersecurity can be relatively simple—thwarting it was as simple as keeping Windows up to date. On the other hand, it used a sophisticated exploit lifted from a hack of National Security Agency tools that allowed it to spread directly from one computer to another, infecting systems in companies that might have been prepared for other kinds of attacks.

These kinds of systemic weaknesses employed by or stolen from governments have led Microsoft to plead for a "Geneva Convention" on cybersecurity weapons.

As for West Jefferson's own WKS, the station was lucky: Mr. Norris, its IT consultant, had backed up the computers. He was able to wipe the slate clean and get everyone back on the air in a few hours. It is a good illustration of how prioritizing even the most basic cybersecurity practices can be a life-saver.

Since then, he has implemented offline backups of the station's computers, just in case. He also has become a keen student of the kind of attacks, such as WannaCry, that can affect small organizations. As soon as he read that it could hit older systems, he rushed to protect them at his day job—as the IT person for the local school district.

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Chapter 11

Case No. 16-10992

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Dates for Filing Proofs of Claim, Appointing Form

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in the above-captioned case.

A copy of the Third Bar Date Order can be

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[https://cases.primeclerk.com/sunedison/EPOC-Index](http://cases.primeclerk.com/sunedison/EPOC-Index)

If FILED ELECTRONICALLY: If BY

FAX: SunEdison, Inc. Claims Processing Center,

c/o Prime Clerk, LLC, 830 3rd Avenue, 3rd Floor, New York, NY 10022;

If DELIVERED BY HAND: United States Bankruptcy Court, Southern District of New York, One Bowling Green, Room 534, New York,

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Retirement System*

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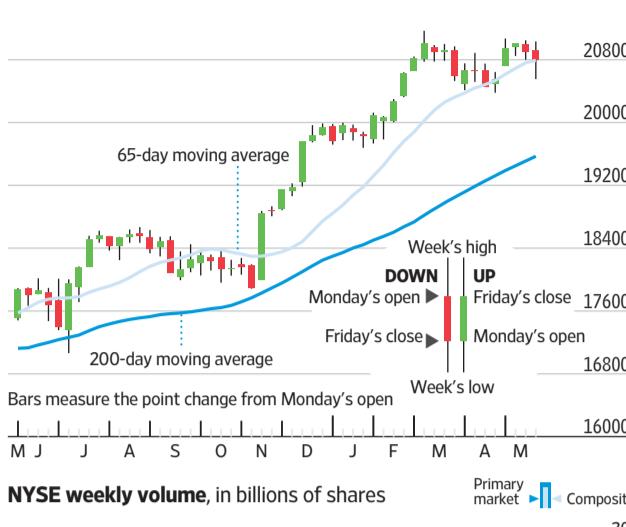
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Monday's open ▶ DOWN Friday's close 17600
Friday's close ▶ UP Monday's open
200-day moving average
Week's low 16800

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NYSE weekly volume, in billions of shares Primary market Composite



Weekly P/E data based on as-reported earnings from Birlin Associates Inc.

Major U.S. Stock-Market Indexes

	Dow Jones		Latest Week		52-Week		% chg		YTD % chg	3-yr. ann.
	High	Low	Close	Net chg	Low	Close (●)	High	% chg		
Industrial Average	21033.53	20553.45	20804.84	-91.77	-0.44	17140.24	21115.55	18.9	5.3	8.0
Transportation Avg	9098.97	8744.36	8879.19	-121.95	-1.35	7093.40	9593.95	15.7	-1.8	3.9
Utility Average	704.49	694.69	703.27	2.98	0.43	625.44	720.45	8.2	6.6	9.9
Total Stock Market	24912.21	24373.84	24648.95	-99.84	-0.40	20583.16	24878.35	16.7	5.9	7.8
Barron's 400	642.22	622.67	630.39	-6.37	-1.00	491.89	643.82	23.1	4.8	7.4

Nasdaq Stock Market

Nasdaq Composite	6170.16	5996.81	6083.70	-37.53	-0.61	4594.44	6169.87	27.6	13.0	13.8
Nasdaq 100	5724.71	5568.47	5651.56	-35.25	-0.62	4201.05	5724.44	29.5	16.2	16.1

Standard & Poor's

500 Index	2405.77	2352.72	2381.73	-9.17	-0.38	2000.54	2402.32	16.1	6.4	8.1
MidCap 400	1737.02	1683.72	1712.08	-7.25	-0.42	1416.66	1758.27	18.1	3.1	8.0
SmallCap 600	848.04	819.37	828.12	-10.42	-1.24	670.90	863.08	21.6	-1.2	8.7

Other Indexes

Russell 2000	1398.99	1351.01	1367.33	-15.44	-1.12	1089.65	1419.43	22.9	0.8	7.1
NYSE Composite	11642.85	11374.64	11542.69	-4.37	-0.04	9973.54	11661.22	12.6	4.4	2.8
Value Line	523.48	507.19	514.46	-4.03	-0.78	435.06	529.13	14.8	1.6	2.2
NYSE Arca Biotech	3691.58	3588.44	3609.02	-12.41	-0.34	2818.70	3690	18.4	17.4	12.2
NYSE Arca Pharma	524.91	515.39	518.59	-1.35	-0.26	463.78	554.66	2.4	7.7	0.9
KBW Bank	92.76	88.38	90.02	-1.44	-1.58	60.27	99.33	30.8	-1.9	10.1
PHLX Gold/Silver	88.01	83.58	85.16	0.19	0.22	73.03	112.86	-0.3	8.0	-1.5
PHLX Oil Service	153.23	145.53	152.45	4.99	3.39	146.14	192.66	-5.6	-17.1	-18.8
PHLX Semiconductor	1077.05	1027.37	1060.77	15.52	1.49	648.32	1076.85	59.5	17.0	22.1
CBOE Volatility	16.30	10.18	12.04	1.64	15.77	9.77	25.76	-20.8	-14.2	-1.0

\$Philadelphia Stock Exchange

S&P 500 Index

2381.73 ▼9.17, or 0.38% last week
High, low, open and close for each of the past 52 weeks

Trailing P/E ratio 23.44 23.49
P/E estimate * 18.41 17.51
Dividend yield 1.98 2.20
All-time high: 2402.32, 05/15/17

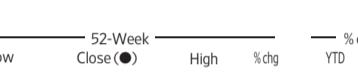


Bars measure the point change from Monday's open

Week's high 18400
Monday's open ▶ DOWN Friday's close 17600
Friday's close ▶ UP Monday's open
200-day moving average
Week's low 16800

M J J A S O N D J F M A M

NYSE weekly volume, in billions of shares Primary market Composite



Weekly P/E data based on as-reported earnings from Birlin Associates Inc.

Major U.S. Stock-Market Indexes

	High	Low	Latest Week Close	Net chg	% chg	Low	Close (●)	High	% chg	YTD % chg	3-yr. ann.
Dow Jones	21033.53	20553.45	20804.84	-91.77	-0.44	17140.24	21115.55	18.9	5.3	8.0	
Industrial Average	9098.97	8744.36	8879.19	-121.95	-1.35	7093.40	9593.95	15.7	-1.8	3.9	
Transportation Avg	704.49	694.69	703.27	2.98	0.43	625.44	720.45	8.2	6.6	9.9	
Utility Average	24912.21	24373.84	24648.95	-99.84	-0.40	20583.16	24878.35	16.7	5.9	7.8	
Barron's 400	642.22	622.67	630.39	-6.37	-1.00	491.89	643.82	23.1	4.8	7.4	

Nasdaq Stock Market

Nasdaq Composite	6170.16	5996.81	6083.70	-37.53	-0.61	4594.44	6169.87	27.6	13.0	13.8
Nasdaq 100	5724.71	5568.47	5651.56	-35.25	-0.62	4201.05	5724.44	29.5	16.2	16.1

Standard & Poor's

500 Index	2405.77	2352.72	2381.73	-9.17	-0.38	2000.54	2402.32	16.1	6.4	8.1
MidCap 400	1737.02	1683.72	1712.08	-7.25	-0.42	1416.66	1758.27	18.1	3.1	8.0
Small										

BANKING & FINANCE

Saudis Bet \$20 Billion On U.S. Public Works With Blackstone Deal

By RYAN DEZEMBER

Saudi Arabia joined the parade of investors into U.S. public works by pledging a record investment with Blackstone Group LP.

The country's Public Investment Fund agreed to commit \$20 billion to Blackstone's new infrastructure fund in the latest push around the world by large investors to buy up airports, pipelines and other public projects, particularly in the U.S.

Blackstone said Saturday the kingdom's money would seed an investment fund that the New York private-equity giant hopes will reach \$40 billion and have spending power of as much as \$100 billion once debt is added to the mix.

The commitment shows how Blackstone continues to distance itself from Wall Street rivals by raising ever larger sums from investors such as sovereign-wealth funds, public pensions and rich families. With assets of \$368.2 billion as of March 31, it manages nearly twice as much as its closest competitor, Apollo Global Management LLC, and each of Blackstone's four platforms—real estate, private-equity, hedge funds and credit—are among the largest investing businesses of their kind.

Saudi Arabia's planned \$20 billion investment alone would be about 25% larger than the biggest infrastructure fund ever raised, a \$15.8 billion pool Global Infrastructure Partners completed earlier this year, according to data from industry tracker Preqin. Global Infrastructure Partners, or GIP, is also based in New York, and its chief executive, Adebayo Ogunlesi—like Blackstone Chief Execu-

tive Stephen Schwarzman—is one of the business leaders U.S. President Donald Trump has named to a presidential advisory group.

Last year, investors committed a record of about \$56 billion to private infrastructure funds, and fund managers collected a further \$29 billion during the first quarter of this year, according to Preqin.

The data provider has said managers of more than 150 other private infrastructure funds are soliciting investors for an additional \$100 billion or so.

Carlyle Group LP and BlackRock Inc. are among other big investment firms

Investors are pushing to buy airports, pipelines and other public projects.

that moved recently to beef up their infrastructure investing businesses.

The Blackstone fund will have a broad mandate to find investments, according to a person familiar with the firm's plans, with the ability to invest in things such as hospitals as well as assets that are more typically considered infrastructure, such as pipelines, roads and utilities.

Also, unlike most of the private funds the New York firm manages, which lock up investors' cash for 10 years or so, the infrastructure fund will have no expiration date. That structure gives the firm more time to find investments and reduces the pressure to sell them on a deadline.

744%

The percentage Facebook's stock climbed from its record low in September 2012 through Friday

Facebook's Happy Fifth

Facebook Inc.'s stock turned five years old last week, its latest milestone as it grows into one of the world's largest companies.

Since the firm priced its initial public offering at \$38 a share, the stock has climbed 290% to \$148.06, nearly quadrupled

siderably. In fact, if the stock had done its IPO at its record low share price, the stock would be up 744%.

The catalyst: Surging mobile-ad revenue.

In the second quarter of 2013, Facebook's mobile-ad business rose 75% from the prior three months to \$656 million in sales. That accounted for 41% of its overall advertising sales, and the share has kept on growing. Mobile accounted for 85% of ad revenue during the first quarter.

The post-IPO stock performance still lags behind others. Among the five biggest tech companies, only Apple Inc. had a worse performance in its first five years as a public company. That firm's stock actually fell 9% over that period.

—Ben Eisen

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MARKETS

THE DAILY SHOT | By Lev Borodovsky, Alison Sider and Chris Dieterich

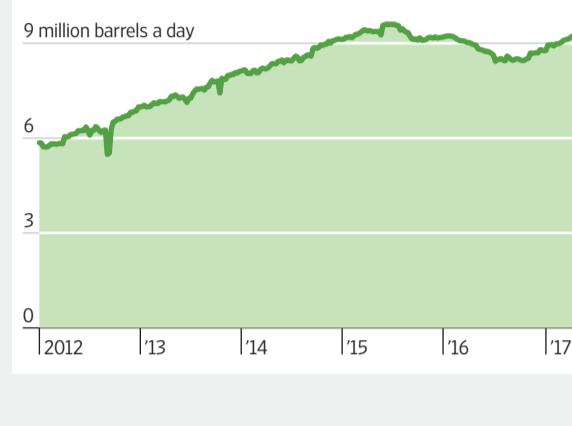
Why OPEC's Promises Aren't Enough to Please the Oil Gods

Major oil producers Saudi Arabia and Russia signaled last week they would support extending into next year production cutbacks at the Organization for the Petroleum Exporting Countries, the latest attempt to bring the market back into balance after three years of

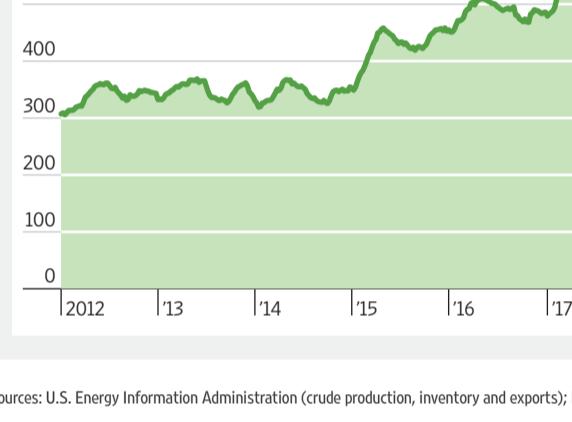
oversupply. Yet even after Friday's rally took prices above \$50 a barrel, Nymex crude is down 6% for 2017 and few traders believe the oil market is on the verge of a breakout. Below, a look at the factors conspiring to cloud the outlook for the sector.

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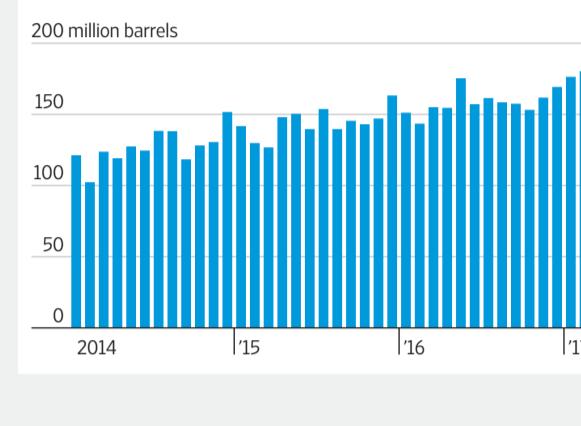
U.S. oil production has been rising, thanks to falling shale costs...



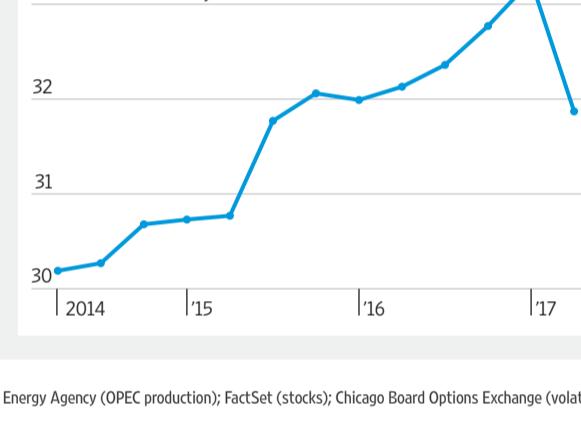
...which is helping to keep crude inventories high.



U.S. exports are on the rise...



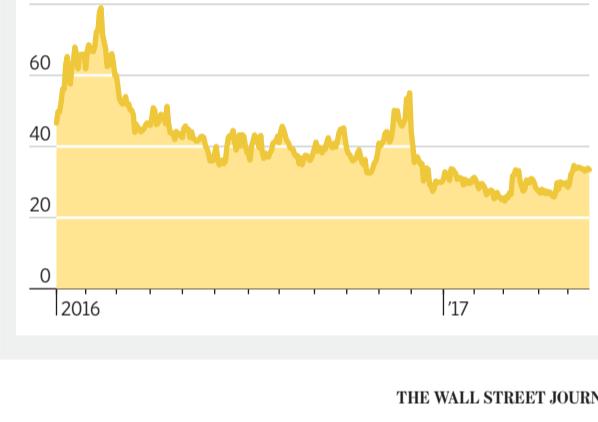
...while OPEC cut production after an earlier output boom.



Energy stocks have recovered from an early 2016 swoon...



...but trading has been choppy, reflecting ongoing uncertainty.



Sources: U.S. Energy Information Administration (crude production, inventory and exports); International Energy Agency (OPEC production); FactSet (stocks); Chicago Board Options Exchange (volatility)

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FINANCIAL ANALYSIS & COMMENTARY

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Big Tech's Not-So-Easy Money

There are some things even half a trillion dollars can't buy.

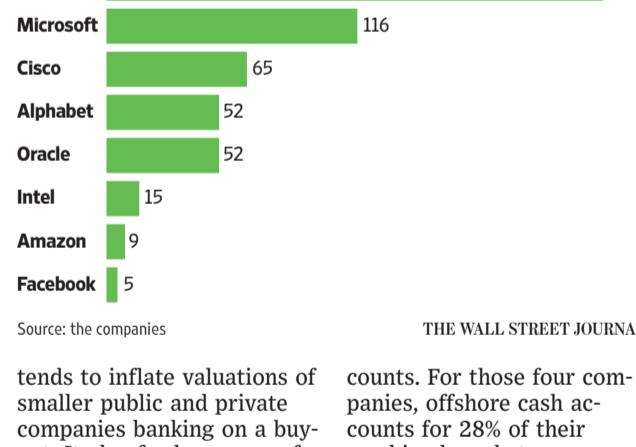
One of those is freedom from Washington politics. Tax-overhaul promises from the Trump administration had lit up tech investors eyeing a rather large purse. The 10 largest tech companies by market cap are now sitting on a total of \$545 billion in offshore cash—money seemingly just waiting for U.S. politicians to agree on a plan that would allow those funds to be repatriated for something significantly less than the current 35% tax rate.

The dim prospects for such a deal now had a noticeable effect in the sell-off last week, which handed the Nasdaq Composite its worst day in nearly a year. Apple was among the hardest hit, falling 3.4% that day. It is no coincidence that Apple has \$230 billion sitting offshore—by far the largest overseas stockpile in tech.

That should at least curb some of the speculation about a deal-making boom that could be fueled with that money. Such chatter

Offshore Stash

Cash and equivalents held by foreign subsidiaries, in billions



Source: the companies

tends to inflate valuations of smaller public and private companies banking on a buyout. It also feeds rumors of fantasy matchups, like Apple buying Netflix or Disney.

But cash stranded offshore still has some uses at home. In the case of Apple, it has backed a growing debt load that finances the company's dividend and share buybacks. Microsoft, Oracle and Cisco Systems also have made use of debt backed by their overseas bank ac-

counts. For those four companies, offshore cash accounts for 28% of their combined market cap.

Cash also helps moderate high valuations of big tech companies. Apple's current multiple of nearly 16 times forward earnings is a five-year high, but that drops to 12.7 times excluding the company's net cash. Google parent Alphabet's and Microsoft's forward earnings multiples get discounted by 14% and 9%, respectively, ex-

cluding their net cash.

It is also worth remembering that bulging bank accounts aren't the only good reason to buy into big tech right now: Google, Microsoft, Amazon.com and Facebook in particular have capitalized effectively on their scale and continue to widen the lead over smaller rivals. Apple seems on the cusp of returning its iPhone business to growth and further expanding its services offerings.

And while repatriated cash could boost deal making, large-scale M&A hasn't been a major factor in big tech's resurgence. Microsoft is still in the early days of building on its \$26 billion purchase of LinkedIn last year, and that deal isn't part of the company's growing Commercial Cloud operations. Google and Amazon have largely been avoiding big deals of late.

That doesn't mean an actual repatriation tax break won't be welcome. But the biggest tech companies right now are in the advantageous position of not having to bank on it. —Dan Gallagher

OVERHEARD

You can learn more about investing at the racetrack than most people think.

That lesson was reinforced over the weekend when long-shot thoroughbred Cloud Computing was the surprise winner at the Preakness Stakes. Cloud Computing is co-owned by Baupost Group founder and value investor Seth Klarman.

Investors can still learn from the finance theme of the names Mr. Klarman chooses for his horses. The rise to prominence of cloud computing, for instance, is arguably one of the most important investing developments in recent history. Past names for his horses include Pricedtoperfection, Takeover Target, Balance the Books, and Sum of the Parts, according to America's Best Racing.

Perhaps the most important lesson investors can take: There are no shortcuts to investing success. Read the Footnotes, a reference to nuggets of information buried deep in financial statements, placed seventh at the 2004 Kentucky Derby.

U.S., Europe Swap Places In Risk View

The turmoil in the U.S. surrounding President Donald Trump pushed global bond yields lower last week. But under the surface, the narrowing spread between U.S. and German bond yields is a key indicator of how markets are reflecting changing political fortunes.

The gap between 10-year U.S. Treasury and German bund yields ballooned at the end of 2016 to 2.3 percentage points, reaching a level not seen since 1989. German yields failed to keep up as political risk appeared high in Europe.

But the eurozone hasn't delivered the political shocks feared, while hopes for a U.S. growth boost haven't been fulfilled. The spread between U.S. and German bond yields has narrowed to just under 1.9 percentage points. Political risk is alive and well in 2017 but it isn't showing up where investors thought it would. The U.S. and Brazil, not the eurozone, are top of the list of worries.

Indeed, the perception of the eurozone has steadily improved. The European Central Bank, while staying cautious, still looks like it is on a gradual path to exiting from ultraloose monetary policy. Despite continued eurozone growth and the fading of deflation risks, 10-year German yields are still remarkably low at 0.36%. The Treasury-bund spread is still some 0.2 percentage point wider than it was on Nov. 8.

German yields couldn't escape the downdraft from U.S. Treasury yields last week, and the White House seems set to remain in the spotlight. But continued resilience in the eurozone could narrow the gap between the U.S. and Europe even more. —Richard Barley

Why a Rebound in U.S. Lending Isn't Easing Anxieties

Despite a slight rebound in loan growth, political and economic uncertainty still seems to be holding back lending by U.S. banks.

Weekly data from the Federal Reserve show that total loans and leases by commercial banks rose nearly 1% over the first six weeks of the second quarter. That increase, which was versus the end of the first quarter, is encouraging because lending was basically flat in the beginning of 2017.

However, compared with the level of loans a year earlier, that still looks anemic. Total loans and leases as of the week ended May 10 in-

Not Encouraging

Total U.S. commercial and industrial loans, change from year earlier



Note: Data are seasonally adjusted

creased just 3.8% from a year before. That compares to 6.4% growth for all of 2016 and 7.6% year-over-year growth seen in late October. Commercial and industrial

loans rose just 2.0% from a year earlier in the latest data.

Historically, C&I lending is tightly correlated with economic growth, said Credit Suisse analyst Susan Katzke. Because it was running much faster than gross domestic product growth, at an average rate of 9% over the past five years, she argued some slowdown was inevitable.

However, the sharpness of the slowdown and its timing, beginning around the time of the presidential election, have unnerved many analysts and suggested that political uncertainty is playing a role.

The two explanations

don't necessarily conflict. Lending may have been due for a slowdown to bring it more in line with underlying economic growth, but if lenders and borrowers alike are unsure of what economic policies are coming, they can't gauge the likely pace of growth going forward.

While reporting their first-quarter earnings, many bankers said publicly that their clients were holding back on borrowing for big projects until they were more certain about the policy outlook.

Last week, Terrance Dolan, the chief financial officer of large regional lender

U.S. Bancorp, reiterated that message. Loan growth in April has been "a little bit stronger" than its 0.2% pace in the first quarter, he said at a conference in London.

Corporate and industrial clients, he said, are optimistic about tax reform, infrastructure spending and other potential policies. But he added that these clients are still waiting to see what actually happens.

Last week's eruption of political turmoil won't soothe borrowers' nerves. Banks may not start lending at full force again until Washington gets its act together.

—Aaron Back

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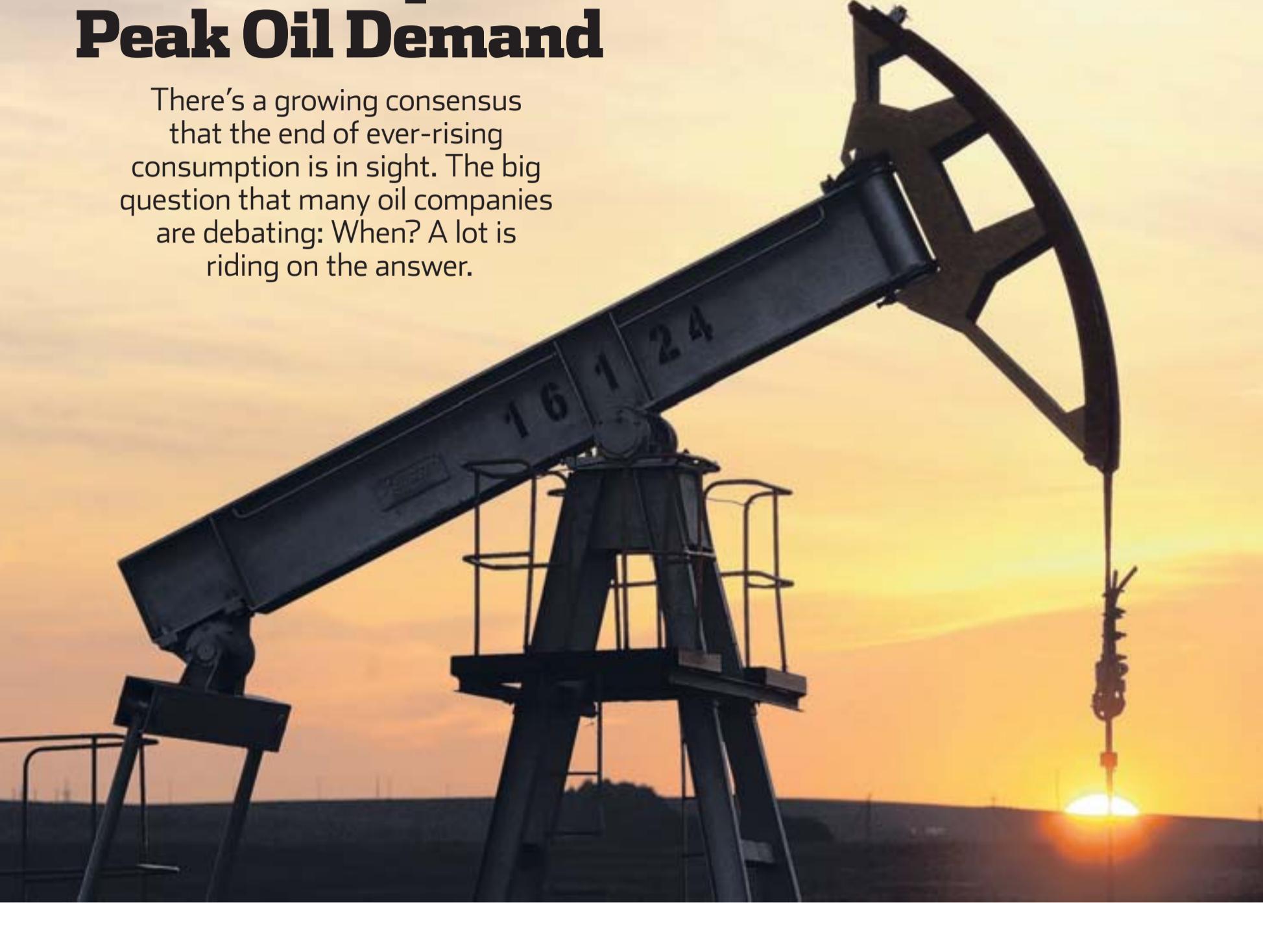
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Get Ready for Peak Oil Demand

There's a growing consensus that the end of ever-rising consumption is in sight. The big question that many oil companies are debating: When? A lot is riding on the answer.



ANDREY RUDAKOV/BLOOMBERG NEWS

T

BY LYNN COOK
AND ELENA CHERNEY

HE WORLD'S LARGEST OIL companies are girding for the biggest shift in energy consumption since the Industrial Revolution: After decades of growth, global demand for oil is poised to peak and fall in the coming years.

New technologies that improve fuel efficiency are starting to push down the amount of gasoline and diesel that's needed for transportation, and a consensus is growing that fuel demand for passenger cars could fall as carbon rules go into effect, electric vehicles gain traction and the internal combustion engine gets re-engineered to be

dramatically more efficient. Western countries' growth used to move in lockstep with their energy consumption, but that phenomenon is starting to decouple in advanced economies.

While most big oil companies foresee a day when the world will need less crude, timing when that peak in oil demand will materialize is one of the hottest flashpoints for controversy within the industry. It's tough to predict because changes to oil demand will hinge on future disruptive technologies, such as batteries in electric cars that will allow drivers to travel for hundreds of miles on a single charge.

Hitting such a plateau would mark the first time that demand has declined even when economies are growing since Col. Edwin Drake jury-rigged a pipe to drill for oil in Pennsylvania in the late 1850s. Yet, for many companies and investors, the question isn't whether this immense turning point will happen—it's when.

Getting that timing right will separate the winners from the losers, and it has become a major preoccupation for energy economists and a flashpoint for controversy within the industry.

Much to consider

Forecasts for peak oil demand diverge by decades. The Paris-based International Energy Agency argues that demand will grow, albeit slowly, past 2040. And the two biggest U.S. oil companies, Exxon Mobil Corp. and Chevron Corp., say peak demand isn't in sight.

But some big European producers predict that a peak could emerge as soon as 2025 or 2030, and they are overhauling their long-term investment plans to diversify away from crude oil. Royal Dutch Shell PLC

and Norway's Statoil SA are placing bigger bets on natural gas and renewables, including wind and solar.

"Nobody knows" when demand will peak, says Spencer Dale, group chief economist for BP PLC, which issues a widely watched annual outlook. The company's base case calls for a peak in the mid-2040s—with the caveat that it could come sooner or later. "There are huge bands of uncertainty around that," Mr. Dale says.

The uncertainty stems from a host of variables, including the pace of technological changes that will make renewables and electric vehicles more cost-competitive; the toughness of new regulations aimed at curbing greenhouse-gas emissions and climate change; and the rate of economic growth in developing countries, which is currently driving the increase in oil demand.

Some oil companies are changing their investment plans to prepare for peak demand.

Those factors are making it much harder to predict long-term demand than in the past, according to many energy-industry executives and economists.

Calling it accurately is high stakes for an industry sitting on trillions of dollars of crude-oil reserves. Whenever it finally does happen, the tipping point from oil-demand growth to decline will reverberate through the energy world, knocking down oil prices and some companies' shareholders.

The idea that electric vehicles and alternative forms of energy will increasingly displace crude oil is one that big-name investors are starting to ask about.

"We have lots of clients in the financial sector asking about peak demand," says Linda Giesecke, research director at Wood Mackenzie, an energy consulting firm. "It's because you have this threat of disruptive technology" such as electric vehicles, she says. "If it is disruptive, it will come fast. That's why it's so hard to forecast."

Case in point: Shareholders of Occidental Petroleum Corp. voted this month to ask the company to assess long-term impacts of climate change on its business. It

was the first time such a proposal passed at a major U.S. oil-and-gas company. BlackRock Inc., the world's largest asset manager, supported the resolution, marking the first time it went against management wishes to support such a climate resolution.

Historically, producing crude oil has been a growth industry, if a cyclical one, with energy demand moving in step with economic output. Since 1965, global oil consumption has increased from 30 million barrels a day to nearly 95 million.

During those decades, companies built strategic plans around the assumption that they would always need to find more oil, and analysts obsessed over whether there would be enough crude in the ground to fuel growth. When oil hit its high over \$147 a barrel in the summer of 2008, some of the run-up was fueled by concern about hitting maximum output, or so-called peak oil, the point at which normal declines in output from producing oil fields outpace the industry's ability to develop new supply.

New perspective

Now, peak-oil theory has been turned on its head, and forecasting peak demand has taken center stage.

Some companies, particularly European energy outfits, see the tipping point coming soon enough that they are talking about it publicly and overhauling their long-term investment plans to accommodate a greater emphasis on natural gas and renewables. Shell and Statoil say peak oil demand could come as soon as the mid-2020s, though around 2030 is more likely; the chief executive officer of France's Total SA says he wouldn't be surprised if it happens by 2040.

But the American companies are betting on a more bullish future. Exxon Mobil, the largest U.S. oil com-

Please turn to the next page

Sources: IEA and the companies
THE WALL STREET JOURNAL

International Energy Agency
After 2040

BP
In the 2040s

Chevron
Doesn't foresee a peak

Exxon Mobil
Doesn't foresee a peak

Royal Dutch Shell
2025-30

Statoil
2030

Total
As soon as 2040

Beyond Batteries
A look at alternative technologies to capture and store power

R5

Home Batteries Aren't Broadly Economical—Yet

Homeowners can now power their homes with batteries, but the benefits are minimal

R6

AT WSJ.COM/ENERGYREPORT

The Way Forward for Carbon Capture

Instead of storing it, companies are finding uses for carbon

INSIDE

Can OPEC's Grand Coalition Hold?

An accord with countries outside the cartel faces a big test

R2

Why It's Mainly Big Companies Buying Green Power

It's complicated. But there are signs of change.

R3

Gas Guzzlers Rule in China

The government's push for electric vehicles is running up against consumers' desire for SUVs

R3



In Search of New Crude

Kosmos Energy is a survivor in a business that has been pounded

R4

The Gas Stations of Tomorrow

Possible features include mobile apps for fast fill-ups, and lots of alternative fuels

R4

The Race to Build a Better Big Battery

Long-term, large-scale power storage would turn solar and wind into on-demand sources

R5



Beyond Batteries

A look at alternative technologies to capture and store power

R5

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Homeowners can now power their homes with batteries, but the benefits are minimal

R6

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JOURNAL REPORT | INNOVATIONS IN ENERGY

Can OPEC's Grand Coalition Hold?

An agreement with countries outside the cartel is about to be put to the test. There are plenty of skeptics.

BY BENOIT FAUCON

A FEW MINUTES after OPEC declared last November that it would cut production to jolt petroleum prices higher, the oil cartel's president, Mohammed al-Sada of Qatar, faced reporters in Vienna and made a startling admission.

"We wouldn't have an agreement," he said, without the help of 11 countries from outside the cartel that said they, too, would cut their output.

Such is the predicament of the Organization of the Petroleum Exporting Countries in the age of the oil glut. Once able to bring the industrialized world to its knees by turning off its oil flows, the cartel now is less able to affect global oil markets on its own. OPEC officials openly acknowledge they must enlist help from oil-producing countries outside of OPEC to have an impact on

global supply and prices.

The grand coalition that OPEC brought together late last year is the cartel's future in a world in which oil traders are more focused on the power of U.S. shale producers and enormous stockpiles of crude.

"What we did is history," says Mohammad Barkindo, OPEC's secretary-general, in an interview. "It's a complete turnaround, a new chapter. Bringing a broad coalition of global producers to agree on supply adjustments...that's the way forward," he says.

Mr. Barkindo launched this new strategy almost immediately after taking office last summer. He and other top OPEC leaders, such as Saudi energy minister Khalid al-Falih, engaged in an unusual level of shuttle diplomacy with heads of state to make the November agreement happen. The six-month deal signed in Vienna, which expires this month, suc-



AKOS STILLER/BLOOMBERG NEWS

OPEC's president, Mohammed al-Sada, has acknowledged the vital role played by nonmembers.

cessfully tightened global oil supplies and led to a 20% rise in oil global oil prices.

Still, oil analysts say the strategy is riddled with potential pitfalls and points to an uncertain future for the 57-year-old cartel.

OPEC's ability to sway the market is largely based on its credibility. The group's Arab members made the world take notice in 1973 when its embargo against the West over support for Israel sent oil prices soaring and resulted in gasoline rationing in the U.S. But over time, the group's reputation as a potent force has

suffered as members repeatedly failed to comply with agreements to hold back production. The rise of powerful new oil producers that aren't in OPEC, such as Russia, also has weakened the cartel's credibility as a central authority.

Non-OPEC producers "don't have a history or habit of even pretending to cooperate," says Robert McNally, president of energy consultancy Rapidan Group in Washington, D.C.

Such fissures may become newly apparent at a May 25 meeting in Vienna at which OPEC and non-OPEC producers are expected to discuss a pos-

sible extension of the November agreement. Whether an extension can be achieved, and for how long, could depend in part on the degree to which each nation has lived up to the production cuts pledged in the original deal. OPEC members were producing 33 million barrels of oil a day before the cuts; non-OPEC nations party to the deal were pumping about 18 million barrels a day.

Despite its members' shared interest in a stable, healthy oil market, OPEC isn't a group that can make decisions quickly. Its members span three continents and have strong differences in

culture and economies. It took almost a year to reach the November accord. When more countries are added to negotiations, it can slow things down, analysts say.

Meanwhile, there are concerns that the non-OPEC participants aren't living up to their pledges. According to the International Energy Agency, about 95% of the total cut agreed to by all participants in the six-month deal had been achieved in March, but the non-OPEC producers have hit only 64% of their target. (Some OPEC members had committed to larger proportional cuts than the nonmembers, and some members cut more than they promised to.)

Representatives of both groups, OPEC and non-OPEC, have met each month since November to assess how each country has performed. But while OPEC members use a unified set of independent experts to measure their outputs, making it easier to compare reductions, non-OPEC producers tend to measure output using a mix of their own numbers and external data, making it harder for outsiders to assess their efforts. Estimates of Russian output for March, for example, vary by as much as 300,000 barrels a day—an amount equal to the daily cuts that Russia agreed to in November.

OPEC officials say they have little choice but to try to persuade the non-OPEC countries to continue with their agreements. And despite broad skepticism from analysts,

Please see OPEC page R5

Peak Oil Demand

Continued from the prior page

pany, sees no end to the world's need for more crude. In its forecast through 2040, Exxon predicts that oil will remain the dominant fuel source, as demand for both plastics and transportation grows, mostly because of increasing incomes across Asia. It does expect to see huge strides made in fuel efficiency, with the vehicle fleet improving to 50 miles a gallon from the current 30 mpg, but thinks the growth in other areas will have a bigger influence on oil use.

Chevron's outlook is similar: It expects roughly half the world's energy needs will be met by oil and natural gas combined by 2040. Saudi Arabia's national oil company, **Saudi Arabian Oil Co.**, says demand is unlikely to peak before 2050.

"The peak-demand discussion is only at most a couple of years old," says energy scholar Daniel Yergin, vice chairman of energy research at IHS Markit Ltd. But as peak demand has started to gain acceptance, "there has been a backlash against the idea," especially by American companies.

For the industry and many analysts, the concept of peak demand turns all their long-held assumptions about the energy world on their ear, Mr. Yergin says. Until recently, many were betting on strong demand growth from emerging markets as more people joined the middle class, he says. "There was just this assumption that all those people were going to keep buying cars and driving more miles."

Peak oil demand was one of the most hotly debated topics at the recent CERAWeek energy conference sponsored by IHS Markit in Houston. The CEOs of Shell and Statoil shared their predictions of a peak within 15 years. Weeks later, at an event at Columbia University, the president and chief executive of Saudi Aramco, Amin Nasser, disputed that view. "Our belief is peak demand isn't in sight," he told the audience.

The electric question

To predict how demand is likely to grow—or, eventually, shrink—companies are paying close attention to what most view as the momentum around the world behind regulations to limit greenhouse-gas emissions and combat rising temperatures.

Those measures include the adoption of higher prices on carbon in more-developed and developing countries. Experts see changes coming even in the U.S., where the Trump administration has already rolled back many Obama-era climate initiatives and hasn't come out in support of the global climate-change accord struck in Paris in 2015. Efficiency gains and technological advances are seen as likely to further limit growth in cars' demand for gasoline.

Inside energy companies, strategists are building scenarios to consider questions that they can't yet answer: Will cars drive themselves? Will governments tax carbon emissions

at high enough rates to discourage fossil-fuel use? What kind of transit will a middle-class resident of Mumbai favor in the year 2035? And what kind of battery-technology breakthroughs could affect that choice between now and then?

Outside of efficiency gains, which even peak-demand naysayers acknowledge are coming, the biggest "X" factor is how widespread electric-vehicle adoption will be. Transport fuel accounts for about 50% of the demand for crude oil, with cars accounting for half of that; that means 25% of total oil demand hinges on autos.

For decades, Americans' love of the open road, which made the country the largest oil user in the world, helped to drive global oil demand. But U.S. cars have gotten more efficient, due in part to government policies that mandate better mileage for every gallon of gasoline and diesel burned. That has slowed demand growth, and played into the oil-price rout of the past couple of years.

Electric vehicles, self-driving cars and ride-sharing stand to further erode gasoline demand. The question is, how fast? That depends on batteries, many say. Battery technology is still too rudimentary, and too expensive, for electric vehicles to take hold en masse. If engineers can't crack the lighter, cheaper, denser battery challenge, then the peak-demand scenario slows.

But if a breakthrough in battery technology puts electric vehicles suddenly on a par with the cost of internal-combustion vehicles, or if carbon taxes in more countries are high enough to weigh on drivers, adoption rates could rise more quickly. That could shave millions more barrels a day off global oil demand.

Varying predictions for electric-vehicle adoption drive a lot of the differences in forecasts. The IEA's main scenario shows oil demand from cars in 2040 remaining close to the 24 million barrels a day that is now consumed. That estimate, says executive director Fatih Birol, is a big reason for the agency's prediction that crude-oil demand is likely to keep growing at least past 2040.

Mr. Birol says that even if EVs gain more traction—and he's doubtful they will until batteries can last for several hundred miles—there's still a lot of transportation with no electric alternative. Half of oil demand for transportation is driven not by passenger cars, but by jets and heavy-duty trucks.

"Asian trucks alone, today, are responsible for one-third of global demand growth," Mr. Birol says. "There's barely any substitute. So even though the automotive sector may go through a transformation, we will still see oil demand grow."

Mr. Birol also says that as oil-demand growth from transportation wanes, the demand for oil in the petrochemical sector—to be used as a feedstock to generate more plastic items, from diapers to lightweight, fuel-efficient car parts—is still expected to increase.

BP, meanwhile, expects the number of electric cars to skyrocket to 100 million by 2035 from one million today—but thinks even that rise will likely shave only one million to 1.5 million barrels a day off oil demand.

"EVs aren't a game changer," says Mr. Dale, the BP group chief economist. (The company's CEO, Bob Dudley, also says the company is gearing its investments toward a lower-carbon future, in part by shifting toward natural gas.)

Wood Mackenzie expects roughly 2% of global oil demand—or two million barrels a day—to be lost to electric vehicles by 2035. Wood Mackenzie doesn't expect oil demand to peak by 2035, but the firm does expect the world's fuel mix to significantly change by 2050, with greater reliance on natural gas and renewables.

But others see electric vehicles making significant inroads into oil demand. Statoil Chief Economist Eirik Wærness says expectations of higher electric-vehicle adoption are the main reason his company's peak-demand forecast of 2030 is earlier than BP's. Statoil has shifted its long-term investment portfolio to reflect its forecast of demand peaking around 2030. The company plans to increase investment in renewables to between 15% and 20% of total investments, CEO Eldar Sætre said recently.

The developing world

Another crucial variable to consider is the developing world. Any leveling of driver demand for gasoline in rich countries could be offset by growing demand among new middle-class drivers in developing nations.

Part of BP's forecast of a mid-2040s peak rides on continued growth in developing nations. As China, India and other nations get wealthier over the next two decades, another two billion people—about a quarter of the world's population—will move from low to middle incomes.

"When that happens, your demand for oil increases," says BP's Mr. Dale. "You stop riding on overcrowded buses and trains, and you buy your first motorbike. And then you buy a car." (See article on page R3.)

To come up with Statoil's 2030 peak-demand forecast, Mr. Wærness, the company's chief economist, says he thinks a lot about what life will be like 20 years from now for much of the world's population—especially in India, which will emerge to lead global energy-demand growth in the 2020s, taking the mantle from China.

"I'm not talking about people in New York and San Francisco but kids of the current poor people in Calcutta, Chennai and Mumbai," Mr. Wærness says. "They will become global middle-class consumers by 2040."

Consider this jet-fuel math: Seven times as many Chinese are flying now as in 2000, and six times as many Indians, he says. "When they get rich, they'll want to travel to exciting places."

Why, then, does Statoil expect an early peak? The company sees increased demand balanced out by efforts in some developing countries to reduce greenhouse-gas emissions and limit climate change. In China, for instance, the government is subsidizing electric vehicles, and in cities, only EVs are allowed on the road on days when air quality is bad.

Such policies around the world stand to have a major impact on the fuel mix. Globally, carbon intensity and energy intensity have already peaked and will trend down through 2035, according to a Wood Mackenzie analysis. But many analysts say the Paris Agreement to limit global warming is just the beginning. And some companies are starting to plan accordingly.

"To us, it's real," says Statoil's Mr. Sætre. "The future has to be low carbon."

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Oil Change

Exxon Mobil and Chevron, the two biggest U.S.-based oil companies, say they don't think oil demand will peak anytime soon. But several other big oil companies and the International Energy Agency are looking at the possibility of a peak in the next few decades. Here are five outlooks.

INTERNATIONAL ENERGY AGENCY

Most likely scenario: Oil demand peaks beyond 2040; demand rises to 103 million barrels per day (bpd) in 2040.

Key assumption: This widely watched long-term outlook assumes that countries don't strengthen carbon-emission limits enough to keep global temperatures from rising more than 2 degrees Celsius, a common benchmark.

Alternative scenarios: The agency's so-called 450 scenario, assuming tougher regulation to keep the global temperature rise to less than 2 degrees, puts oil's peak in 2020.

BP

Forecast: Oil demand will peak in the 2040s (though it could be sooner or later).

Key assumptions: Electric cars will increase by 100 million, but that only reduces oil demand by 1.2 million bpd.

Alternative scenarios: Two paths map more rapid transitions away from fossil fuels, a "fast" scenario and a "faster" one.

How peak demand is shaping plans: BP is shifting more investment to lower-carbon natural gas.

ROYAL DUTCH SHELL

Central forecast: Oil demand will peak in 2025-30.

Key assumptions: "Management of [greenhouse-gas] emissions will become increasingly important as concerns over climate change lead to tighter environmental regulations," the company says.

Alternative scenarios: Two scenarios set out in 2013 both fail to keep temperatures from rising more than 2 degrees Celsius. A new scenario, "Goldilocks," combines the most "optimistic" elements to show what steps would be required to meet the 2-degree target.

How peak demand is shaping plans: Shell assumes a cost of \$40 per metric ton of CO₂ when evaluating new investments, and like BP, it is shifting its portfolio toward natural gas.

STATOIL

Central forecast: Oil demand will peak in 2030.

Key assumptions: The central case is based on the commitments made to reduce emissions by countries that signed the 2015 Paris Accord.

Alternative scenarios: Statoil has three scenarios, and oil demand in 2040 varies from 78 million bpd to 116 million bpd at the high end.

How peak demand is shaping plans: Statoil is committing to invest 15% to 20% of capital spending in renewables by 2030.

TOTAL

Central forecast: Peak demand could happen by 2040.

Key assumptions: Uses the IEA's 450 scenario, with countries taking steps to keep the global temperature rise to less than 2 degrees Celsius.

Alternative scenarios: Total relies on the IEA scenarios.

How peak demand is shaping plans: Applies internal carbon price of \$30 to \$40 per metric ton.

Sources: International Energy Agency and the companies

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Why It's Mainly Big Companies Buying Green Power

Blame it on economies of scale and complex regulations. But there are signs it's starting to change.

BY BRIAN BASKIN

CALL IT THE green-energy gap: While giant corporations like **IKEA** and **General Motors** Co. are installing thousands of rooftop solar panels and investing millions of dollars in wind energy, outside the Fortune 100, renewables have a spottier record.

Mostly, it's a matter of scale and heft. Huge, long-term projects geared toward the biggest energy users tend to secure the cheapest renewable power. **Anheuser-Busch InBev** SA agreed in March to buy enough wind energy to power all of its breweries in Mexico. **Wal-Mart Stores** Inc. and **Target** Corp. have topped hundreds of stores and warehouses with solar panels. **Apple** Inc., meanwhile, generates so much solar power that it created a subsidiary to sell its excess electricity.

But smaller companies—not just mom-and-pop operations, but multibillion-dollar brands as well—are finding it isn't so easy to tap into solar or wind power. It can require armies of lawyers, accountants and clean-energy experts to hammer out contracts with power producers and navigate a thicket of regulations that vary widely from state to state.

Leveling off

Industry experts say these hurdles are one reason why growth in renewables for businesses is leveling off. Publicly announced agreements to develop solar and wind power fell sharply last year after a record 2015, according to the Rocky Mountain Institute, a clean-energy think tank. Small businesses' use of rooftop solar panels is stagnating "primarily due to the difficulty in obtaining financing," even though installation costs are down 62% since 2012, the Solar Energy Industries Association said in a report.

But some organizations are



A Prologis distribution center in Torrance, Calif., with rooftop solar panels. The world's biggest warehouse operator, Prologis

struggles to match solar projects and their long contracts with tenants and their shorter leases.

taking steps to lower the barriers for smaller companies.

Last year, environmental nonprofits launched the Renewable Energy Buyers Alliance, an organization in which Wal-Mart, Facebook Inc., GM and dozens of other big green-power buyers share expertise with companies new to the process. The Rocky Mountain Institute, for its part, has released a guide to standard language used in renewable deals, part of a wider effort to make Byzantine-sounding power-contract language less intimidating.

Smaller power buyers can also team up to gain more clout in the market. The Massachusetts Institute of Technology joined a nearby hospital and a real-estate firm in October to buy power from a new 650-acre solar farm in North Carolina. Their combined power needs—60 megawatts—were enough to attract 41 proposals from developers.

That helped the university negotiate a price about 20% lower than it could have on its own, says Joe Higgins, MIT's director of infrastructure business operations.

Such joint ventures are rare. Mr. Higgins knew of just one other in the U.S., led by George Washington University in 2014. But MIT is talking to local governments, educational institutions and hospitals about setting up similar arrangements. Mr. Higgins says about a dozen Boston-area firms are in talks to do deals like MIT's.

"We saw it as an opportunity where we could set an example by which many thousands of organizations around the country...could capture the same economies of scale [formerly] reserved for the likes of utilities, Google, Facebook and Amazon," Mr. Higgins says.

Aggregation makes it easier to buy power from faraway grids, a barrier for many com-

panies located in places where local options for renewables are limited. The solar farm that MIT and its partners buy power from is four times the size of the university's campus—too big for densely populated New England.

Falling costs are also helping. **REI** Inc. last year installed more than 6,000 solar panels on the roof of a new distribution center outside Phoenix. The retailer expects the array to pay for itself five years into its 25-year lifespan, says Bill Best, divisional vice president of supply-chain operations at the Kent, Wash.-based seller of outdoor clothing and gear.

"That's 20 years of free power," he says. "We weren't willing to throw money at something without a return. There is absolutely a strong business case."

REI is a small company to take on such a large solar project. Its \$2.6 billion in an-

nual revenue is roughly what Wal-Mart pulls in over a weekend. The company is privately held, and its environmentally friendly distribution center is a selling point with its customer base.

Tough sell

But for other small and mid-size firms, making a business case to buy thousands of solar panels can be tricky. Buying solar or wind power from an independent producer brings its own challenges, including long-term commitments. Contract lengths are getting shorter as the cost of building solar and wind farms falls, but still routinely run 10 to 20 years.

At "some organizations, there's nothing they buy on a 20-year time horizon," says George Favalaro, a managing director in PricewaterhouseCoopers LLP's sustainability services practice.

Prologis Inc., the world's

biggest warehouse operator, has been installing solar panels on some of its roofs since 2007, but still finds lining up the right tenants a challenge, says Matt Singleton, vice president for global energy and development. Warehouse leases typically run three to five years, and the next occupant might have its own arrangement with a local utility.

"We're regularly struggling with how do we connect lease term and tenant consumption with our role trying to further these projects," he says.

Prologis tends to install panels only in states and countries that allow them to sell power back into the grid, a practice known as "net metering." Those regulations are also constantly in flux. In 2016, utilities, regulators or legislators took steps to expand or limit net metering in 28 states, according to the North Carolina Clean Energy Technology Center.

To deal with these complexities, many big companies have energy specialists in senior roles. Many also hire lawyers and accountants with backgrounds in renewable power.

Smaller firms rely more on outside experts. REI has a sustainability department, but also consulted with the Rocky Mountain Institute before embarking on the Arizona solar project. MIT relied on numerous outside experts, with the partnership helping defray the cost, Mr. Higgins says.

Newcomers to renewable power will be on average one-fifth the size of the giant corporations leading the way today, says Hervé Touati, a managing director at the Rocky Mountain Institute. "We need to be a bit more imaginative in how we parcel knowledge so that they can understand."

Mr. Baskin is a reporter for The Wall Street Journal in New York. Email him at brian.baskin@wsj.com.



SUVs outside a Great Wall Motors plant in Baoding, China. The company makes nothing else.

Gas Guzzlers Rule in China

The government's efforts to replace gas-powered cars with electric vehicles are running up against consumers' desire for SUVs

BY TREFOR MOSS
AND BRIAN SPEGELE

THE CHINESE government's plan to replace gasoline-powered cars with a new generation of electric vehicles has hit an unexpected bump: Chinese consumers' love affair with gas-guzzling sport-utility vehicles.

In a country where 700 people are killed in road accidents every day, according to the World Health Organization, and where most drivers are inexperienced, hefty SUVs have grown wildly popular because they provide a sense of security, says Yale Zhang, managing director of research company Automotive Forecast.

A shortage of charging stations also is helping to persuade many Chinese buyers to choose SUVs over electric alternatives.

Electric push

Official targets call for 40% of cars bought in China in 2030 to be pure electric vehicles or plug-in hybrids. The country already is the world's largest electric-vehicle market. Roughly half the 700,000 elec-

tric cars sold world-wide last year were sold in China.

In all, China will have 30 million electric cars on the road, 9% of the country's total passenger-car fleet, by 2025, Bernstein Research forecasts. While that's likely to eclipse the number of electric cars operating in any other country, China's appetite for electric cars still looks modest alongside the craze for SUVs.

From four million SUVs in 2010, China will have 150 million—45% of its entire passenger-car fleet—by 2025, Bernstein estimates. The sedan has long been king in China, but SUVs will start outselling sedans next year, says Bernstein auto analyst Robin Zhu, and by 2023 SUVs will outnumber sedans nationwide.

SUVs are so popular that one of China's biggest auto firms, **Great Wall Motors** Co., makes nothing else. Foreign car makers are also joining the frenzy. In April, **Volkswagen**'s China chief executive, Jochem Heizmann, said his company was launching an "SUV offensive," with several new models being readied for the China market.

China's newfound taste for outsize cars that gulp gasoline

may mark a temporary reprieve for a domestic petroleum industry that has struggled with the decline in crude-oil prices in recent years. Surging SUV demand will help propel oil consumption in China upward for at least the next decade, according to energy experts and estimates from state-owned China National Petroleum Corp., more than offsetting the impact of the rise of electric vehicles and hybrids.

No jolt

"We don't think [electric cars] will be any risk to the gasoline demand in the next five to 10 years," says Nelson Wang, a China oil analyst at Hong Kong-based investment firm CLSA.

The popularity of inefficient cars helps account for China's recent growth in oil imports. In March the country imported a record average of 9.2 million barrels of crude a day. Imports for the first quarter were up 15% from a year earlier, and that trend looks set to continue.

Transportation in China required 2.5 million barrels of gasoline a day last year, and

Please see CHINA page R6

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JOURNAL REPORT | INNOVATIONS IN ENERGY

In Search of New Crude

Kosmos Energy is a survivor in a business that has seen a major retrenchment since the price of oil plummeted

BY NEANDA SALVATERRA

ABOUT 30 MILES from the tropical West African island nation of São Tomé and Príncipe, a research vessel called the Oceanic Endeavour is mapping a deep swath of the Atlantic Ocean floor on an increasingly rare mission: to make the next big oil discovery.

With oil prices stuck in the third year of a historic funk, many energy companies have retreated from finding new sources of crude. After prices came crashing down in mid-2014, exploration projects that were planned when crude was still fetching \$100 per barrel no longer made sense when the price was closer to \$50. In the retrenching that followed, many smaller exploration firms sank under the weight of debt amassed when the market was thriving.

One firm that has survived is **Kosmos Energy Ltd.**, a mid-size firm based in Dallas that was founded in 2003 and is now financing the survey under way aboard the Oceanic Endeavour. Kosmos has managed to discover and develop several large new fossil-fuel resources on a shoestring budget in tough frontier environments such as off Africa's west coast—one of the last regions where major hydrocarbon finds can be retrieved. Its latest coup: On May 8 it announced a discovery of an estimated 15 trillion cubic feet of natural gas off the coast of Senegal, where it is part of a joint venture for production with **BP PLC**.

"We've kept clarity through the years on what we are good at," says Chief Executive Andrew Inglis.

Indeed, while some other companies were taking on debt, Kosmos has kept costs down in part by drilling in areas that some of its rivals thought of as hydrocarbon dead zones—the waters off Ghana, Mauritania and Senegal, and now São Tomé. Such

an approach helps it avoid competition that leads other companies to pay high signing bonuses to governments looking to lease assets to the highest bidder. Since its launch, the firm also has always targeted a break-even price of \$50 a barrel or lower, even as oil prices soared.

Company Watch, a London-based research firm, estimates that some 85 U.K.-based oil-and-gas companies have gone bust since the downturn began, while in the U.S. around

Kosmos often goes to areas that its rivals shy away from.

41 publicly listed oil- and gas-related firms filed for bankruptcy, although a little more than half later emerged with new financing.

The future of oil exploration is "a leaner and much more efficient industry," says Andrew Latham, vice president of exploration research at Scottish energy consultants Wood Mackenzie. "Also a smaller industry."

Oil discoveries in 2016 declined to their lowest levels on record as major oil companies such as BP, **Royal Dutch Shell PLC** and others shrank their exploration programs, according to the International Energy Agency, an adviser to governments across the world. "The appetite from the majors for exploration isn't as strong as it was a few years ago," says Fatih Birol, the executive director of the IEA.

Research by Wood Mackenzie confirms that assessment. The firm estimates that big oil companies, including BP, **Chevron Corp.**, Shell, **Exxon Mobil Corp.**, Eni SpA and France's **Total SA**, have slashed exploration spending by more than half, to \$11.7 billion last year from \$25.2 billion in 2014.

And the "biggest hit" came in offshore exploration projects, which generally are the biggest, most technologically challenging and most expensive, Mr. Birol says. Last year only 13% of all exploration was offshore, down from an average of about 40% for the past 15 years, according to the IEA.

For new sources of supply now, most companies are building out already-established positions in U.S. shale, finding ways to pump more from currently producing fields or buying stakes in other companies' assets.

The current state of exploration has some observers in the industry worried. The world could face an oil shortage as soon as 2020 if companies don't start exploring again, according to a bombshell IEA report released in April.

For those that haven't stopped, meanwhile, past success is no guarantee of future results. But having fewer competitors does have its advantages. "We are seeing opportunities that were not there for us a few years ago," says Tracey Henderson, a Kosmos vice president and geophysicist who helps decide where the company goes prospecting for oil and gas.

Indeed, its current undertaking, crisscrossing a section of the Atlantic slightly larger than Connecticut off the coast of Africa's smallest country, is one of the biggest offshore oil-exploration efforts of its kind in the region. The company makes a habit of conducting large-scale surveys like this one, in an area where other companies have tried but failed to find major crude reservoirs since the 1950s. The company expects the current survey to be complete by August.

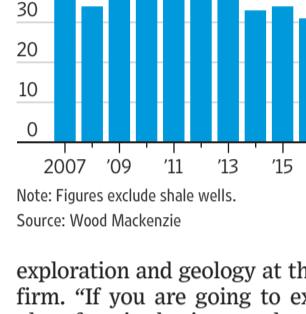
"People go into exploring frontier areas and focus on a little postage-stamp spot, and it might not work and then they are done," says Dorie McGuinness, a vice president of



Kosmos, which has made several big finds, has the Oceanic Endeavour exploring off West Africa. CCG

Coming Up Dry

The global success rate for exploration wells

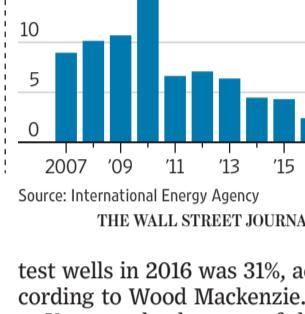


Note: Figures exclude shale wells.

Source: Wood Mackenzie

Fewer Finds

Global oil discoveries, by year, have been declining



Source: International Energy Agency

THE WALL STREET JOURNAL.

and, more recently, the massive Zohr gas field off Egypt's coast in 2015.

In addition, a few of Kosmos's midsize peers, such as **Cairn Energy PLC** and **Tullow Oil**, also have had success. Tullow has been drilling onshore in northern Kenya since 2012 and estimates it has found 750 million barrels of crude in the region so far, though the exploration work is continuing.

To help with the availability of capital, meanwhile, as more of the bigger players in oil and gas have departed for safer territories, private-equity funds are seeing more opportunities to invest in exploration.

"We think there is an opportunity in exploration today," says Peder Bratt, a managing director at the private-equity fund **Warburg Pincus**, which invests in oil-and-gas exploration and production companies and has a stake in Kosmos. "But future success is going to have to look different than past success," Mr. Bratt says. "Business models are going to have to adjust."

Industry experts recognize that deep-water exploration is still going to happen, alongside efforts to exploit known reserves, says Ms. Henderson, the Kosmos executive. But "the best projects" in both places, she says, will feature "the most cost-competitive barrels you can get out of the ground."

Ms. Salvaterra is a reporter for The Wall Street Journal in London. Email her at neanda.salvaterra@wsj.com.

A Look at the Gas Stations of Tomorrow

Among possible features: mobile apps to fill up more quickly, and lots of alternative fuels



A concept Shell station has a restaurant and collection spot for online shoppers (left), deli (right), solar panels to help power the station, blue-topped chargers and fueling points for electric and hydrogen vehicles—and, yes, gas pumps at back right.

BY SARAH KENT

THE GAS STATION is in for a major overhaul.

The world's big oil companies have all sorts of potential changes on the drawing board, including new fuel options, restaurants and shops, and package-delivery services.

Some are experimenting with mobile apps to speed the refueling process, or testing services that bypass the gas station altogether and deliver fuel directly to consumers, or looking at ways that a shift by consumers to car sharing or autonomous vehicles could create opportunities for oil companies to operate car fleets.

It's all part of oil companies' efforts to adapt to changing consumer habits and new technologies that threaten to upend the business of selling gas. According to a report published last year

by the consulting firm Wood Mackenzie, electric cars are likely to reduce gasoline demand in the U.S. by 5%—and possibly by as much as 20%—by 2035. Improved fuel efficiency is expected to have an even greater impact. Automated vehicles and the spread of car sharing could also fundamentally change the market in the long term.

Fuel options

Most large oil companies have been skeptical of the impact electric cars will have on fuel consumption. But some are already experimenting with catering to both electric and gas-fueled vehicles in certain markets, as well as providing other fuels. They're also seeing an opportunity to differentiate themselves by offering services beyond refueling or recharging.

Over the next 12 to 18 months, **Royal Dutch Shell**

PLC will run a series of experiments around the world to help determine the best way to adapt its fuel stations. One area of focus is on the possibilities for providing access to alternative fuels like hydrogen, liquefied natural gas and electric chargers at refueling stations. Shell has opened five LNG fueling stations for trucks along the U.S. interstate highway system and four in the Netherlands. It is about to start offering fast-charging service for electric cars at gas stations in the U.K. and the Netherlands.

Others have similar efforts under way. **BP PLC** has 50 sites globally with electric charging. France's **Total SA** is planning to install 300 charging stations across Europe and 400 hydrogen fueling points throughout Germany by 2023. Over the next five years it plans to build 350 natural-gas stations in Europe. Earlier this

month, it acquired Europe's third-largest provider of natural gas for vehicle fuel, adding 100 natural-gas fueling stations to its portfolio.

Exxon Mobil Corp., which has largely reverted to a licensing model for its network of fuel stations, is looking at developing a new type of gasoline for the more fuel-efficient cars that are expected to hit the market in the years ahead because of tougher regulatory standards around the world. It has engineers in New Jersey working on a turbocharger fuel that can give fuel-efficient engines the same acceleration as a gas-guzzling SUV.

More stations, more stuff

Though many major oil companies reduced their ownership of retail stations in recent years, squeezed by weak margins and tough competition, their refining and gasoline retail divisions proved

their worth when oil prices slumped in 2014, helping to provide a cushion against the financial drag felt in the exploration and production businesses.

So, some big oil companies are now opening new stations and upgrading existing sites, eyeing opportunities in emerging markets where fuel demand is rising and scrambling to differentiate themselves in an increasingly competitive environment.

BP is planning to open 200 retail stations in Mexico this year and has secured a license to open as many as 3,500 in India. The company is in the midst of a \$1.3 billion deal to acquire supermarket chain **Woolworths** Ltd.'s fuels business in Australia. That would add 527 gas stations, already paired with Woolworths markets, to BP's business there. BP has had success elsewhere in joining with well-established retail brands. In the U.K., for instance, many BP stations have **Marks & Spencer** food outlets.

Just some food

"Fifteen years ago it was just fuel," says Alex Jensen, vice president for BP's retail arm in Europe. Now, in the U.K., half of BP's customers don't even fill up when they visit a station, but just come in to buy food, she says.

BP also is experimenting with a mobile payment app to make stopping for gas quicker and easier. The app allows users to select a gas station to stop at, which fuel they want and how much of it they need. The app tells users when a pump is ready for them, set to their specifications, so all a user has to do is put the hose in the gas tank. After the car is refueled, payment is made with a credit or debit card users have entered into the app.

Shell also is considering a mobile payment app, as well

as lockers at gas stations where customers could pick up items they ordered online. It is also looking to experiment with restaurants, but currently just offers convenience food like Costa Coffee in the U.K. and bubble tea in Asia. Others are pursuing similar models and looking at even bigger changes in the long term.

In Hungary, oil company **MOL Group** is considering ways to integrate its retail offering with the development of autonomous cars and the expansion of ride sharing. MOL's retail chief, Peter Ratatics, envisions the company one day running a fleet of vehicles and providing services around that. In 10 or 15 years' time, customers could even decide while they're at work what they want for dinner and have an MOL car pick them up with the groceries already loaded in the back, he says.

This spring, Shell will start testing a fuel-delivery service in the Netherlands. Using an app designed in-house, customers can request that Shell come refill their cars while they shop, eat or sleep. The company is even considering adding coffee delivery to the service.

Pilots for the initiative showed it wasn't without some teething problems, not least overly helpful passersby shutting fuel doors that the consumers had left open for Shell to fill the tank—but before Shell had actually arrived. But if these kinks can be worked out, the company will look at options to provide the service on a wider scale.

"We try to disrupt ourselves," says Shell's head of retail, Istvan Kapitany. "Whatever is good for the consumers should be good for us."

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JOURNAL REPORT | INNOVATIONS IN ENERGY

The Race to Build a Better Big Battery

Long-term, large-scale power storage would turn solar and wind into on-demand sources

BY KEN WELLS

THERE'S THE BATTERY in your watch. There's the battery in your mobile phone. And then there's the battery at **Green Mountain Power's** Stafford Hills solar farm in Rutland, Vt.

The lithium-ion gargantuan is housed in two trailer-truck-size green metal containers. It sits atop a 10-acre former landfill and captures electricity from 7,722 nearby solar panels—enough to power 2,000 homes on a sunny day. What's revolutionary about this system isn't the solar farm; it's the size and purpose of the battery, which offers 3.4 megawatt-hours of storage, enough to supply backup power to about 170 homes for a day, if needed.

The rap on solar and wind is intermittence—they don't produce power when the sun isn't shining or the wind isn't blowing, making them unreliable as the primary source for power grids. But if vast amounts of renewable energy—say, enough to power entire cities—could be captured and stored in giant batteries and deployed when needed, that downside would fade away.

Missing piece'

This has been the "missing piece" in the renewable-energy revolution, says Venkat Srinivasan, director of the Energy Department's Argonne Collaborative Center for Energy Storage Science. But it's starting to come into view, thanks to the scale and progress of current research and real-world applications such as Green Mountain Power's.

Green Mountain's project puts it in the vanguard of power companies that are

showing that utility-scale battery storage can be technologically and economically viable—depending on the scale and how it is used.

Like all utilities, Green Mountain faces issues meeting "peak demand," the high-use period, typically in the early evening, when people return from work and school and crank up air conditioners and energy-hungry appliances.

Many U.S. utilities fire up natural-gas-powered generators to help their baseload plants meet peaks, often imposing hefty surcharges on customers to offset the extra generating costs. Green Mountain instead stores energy from its solar-and-battery combination to meet peaks—shaving as much as \$200,000 an hour off demand charges for its 265,000 residential customers, according to the utility. Green Mountain, which says it invested \$12.5 million in the project and received a \$285,000 government grant, benefits in that it doesn't have to build additional plants to meet peak demand and gets a public-relations boost among its green-leaning customer base.

"It's green energy, not fossil fuels," says Josh Castonguay, the utility's vice president of innovation.

The Stafford Hills facility, which opened in 2015, is one of almost 200 utility-scale systems or utility-scale experimental projects operating in the U.S., according to the Energy Department. Some are providing backup power capabilities to military installations, government agencies and universities that have renewables in their energy mix. Others are being deployed by businesses seeking to go green while paring electricity costs



Green Mountain Power's industrial-size battery stores enough electricity from solar panels that it can provide backup power to 170 homes for an entire day.

and providing an uninterrupted power supply. Electric-car maker **Tesla Inc.** has gotten into the act, supplying heavy-duty lithium-ion units that come in large white modules or "battery blocks" that can be linked together, depending on the desired capacity.

Still, although lithium-ion batteries are useful for short-term storage and as a fill-in during short-term power outages, they are too expensive per kilowatt-hour to store energy for longer periods. So the push for cheaper technologies continues.

High-profile research centers such as Argonne, Harvard University and the Massachusetts Institute of Technology are engaged in what Mr. Srinivasan says is the equivalent of a "moonshot project" to invent more powerful and cheaper batteries, not only for utility-scale storage, but for electric vehicles, cellphones and laptops, too. Indeed, Argonne's stated goal is to come up with commercially reproducible batteries that are five times as powerful as today's batteries, at one-fifth the cost.

The implications of that, energy experts say, are enormous. Utilities, for example, could economically capture and store an entire season's worth of renewable energy during low-demand periods and discharge it months later when demand is high. In the transportation sector, electric cars could run for 400 to 500 miles on a single charge instead of the 100 or so miles they get today.

"It won't be tomorrow," but it isn't decades away, either, Mr. Srinivasan says.

Little wonder, then, that big-name companies such as **Microsoft Corp.** are testing the waters. The software and cloud-storage giant is in the midst of a three-year research deal with the Texas Sustainable Energy Research Institute at the University of Texas-San Antonio to determine how utility-scale battery technology might help it better and more cleanly manage the power needs of its 100 or so data centers around the world.

This summer, Microsoft plans to test a number of battery technologies at its \$1 bil-

lion Boydton, Va., data center. The idea is to "see what chemistries work best" and to determine how best to integrate them into the local electrical grid, says Brian Janous, Microsoft's director of energy strategy.

What's alluring, he says, is that renewables anchored by large-scale batteries eventually could give their owners not just the ability to generate some portion of their own power needs, but to produce and save surplus power that can be sold back to the grid. Indeed, a corporate utility-scale battery system might in itself become a "grid asset" if integrated, say, into a utility's emergency backup power plan to cope with outages, Mr. Janous says.

Go with the flow

While many current projects employ familiar lithium-ion—the battery of cellphones, laptops and electric vehicles—others are testing more esoteric chemistries and technologies. Prominent among these are liquid electrochemical systems known as flow batteries

that are constructed in large tanks and have the theoretical advantage of being unlimited in size and capacity. To add battery capacity, you increase the size of the tank or link a series of tanks together.

Flow batteries are made by taking electrolytes—a brew of metallic salts such as those that can be rendered from common metals—and pumping them through an electrochemical cell. The cell consists of a positive and negative electrode, separated by a membrane. Electricity is generated by the exchange of ions between the cathode and anode. The electrolyte flowing one way charges the battery; to discharge it you reverse the flow.

To understand the scale of these things, consider that a flow battery installed in 2014 on an almond farm in Turlock, Ca., is housed in four cylindrical, three-story-high, beige metal tanks. The battery serves the farm's solar-powered irrigation system.

For long-duration storage, flow batteries are the most likely candidates among all current technologies because they can be easily scaled to gargantuan size, and they have few moving parts and a long working life, says Mr. Srinivasan. What's holding them back is cost: Most flow batteries use the element vanadium as an electrolyte, but it is very expensive. "We need dirt-cheap materials," he says.

Both Harvard and MIT are working on materials research, and Argonne is using sophisticated computer technology to invent synthetic compounds that can replace expensive natural ones like vanadium. "We've made tremendous progress with batteries in the past four years alone. With batteries it's all about finding the magic materials," he says.

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OPEC

Continued from page R2

OPEC's Mr. Barkindo says there is widespread compliance with the current accord.

Meanwhile, if the world's oversupply of oil doesn't fall back into balance with demand by next year, Mr. McNally, the Washington consultant, says he expects OPEC's grand alliance with non-OPEC countries "will fall apart."

Back in 1960, when the cartel was founded by Iraq, Saudi Arabia, Venezuela, Iran and Kuwait, those members alone controlled more than half of the world's crude-oil production. Now, even with 13 members, the group controls only about a third of global oil production, including crude and natural-gas liquids, and "has made it clear it would not be able to restore stability on its own," Mr. Barkindo says.

The key cause in this slippage: technological advances that have given energy companies the ability to extract more oil from the ground and get it to market faster. Until recently, most oil production—in and out of OPEC—came from big projects that produced about the same amount of oil over a long period, often three or four decades if not more.

The spectacular rise of hydraulic fracturing and horizontal drilling—the technology that unlocked the American shale-oil boom—upended that dynamic. Shale wells produce their most oil shortly after being drilled, before heading into a decline. Fracking companies can more easily turn their production on and off, which is why it is often called "short-cycle" production.

When oil prices soared, first to over \$140 a barrel in 2008, and then steadily remained over \$100 a barrel from 2011 to 2014, U.S. shale producers ramped up output. Production also came flooding in from regions that were once seen as too complicated and expensive to produce oil, such as Canada's oil sands. The global glut and crash in oil prices that ensued convinced OPEC of the wisdom in keeping a closer watch on production outside the cartel.

"OPEC's attempt to regain power via a super-OPEC may be a smart strategic move," says Jamie Webster, an energy analyst fellow at the Center for Global Energy Policy at New York's Columbia University. But, he adds, "it's hardly the recipe for a strong organization that can effectively exert itself through market downs and ups."

BY CASSANDRA SWEET

Unlike oil, which can be stored in tanks, and natural gas, which can be kept in underground caverns, electricity has been a challenge to bottle. But that is starting to change.

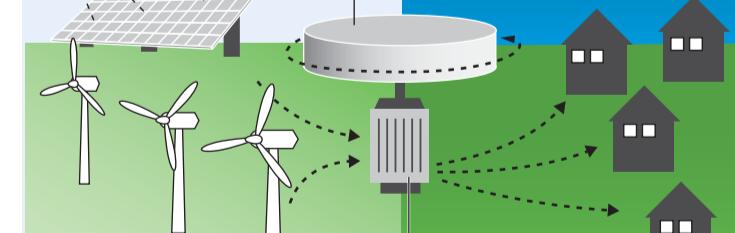
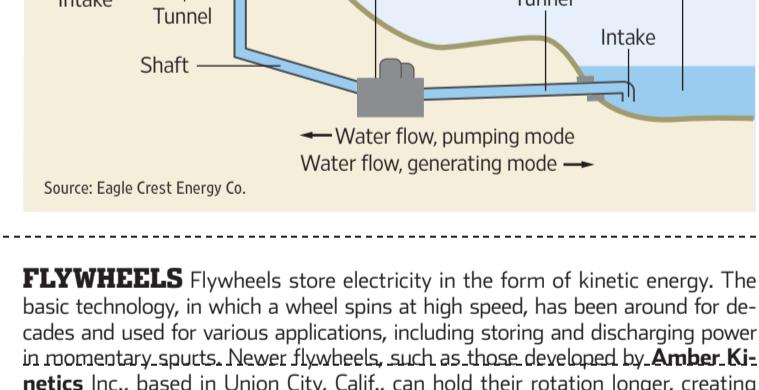
PUMPED HYDROPOWER Pumped hydropower is a century-old technology that is getting a fresh look, as developers turn old mines into holding tanks for water. During periods when electricity is cheap and abundant, pumps are used to push large volumes of water uphill, where it is stored in giant basins. When extra power is needed on the grid, the water is released and gravity pulls it downhill and through generators that produce electricity.

Eagle Crest Energy Co. plans to build a \$2 billion pumped-hydropower facility at an abandoned iron mine east of Palm Springs, Calif. The plant would have a capacity of 1,300 megawatts, enough to power nearly one million homes, and would be able to generate power for about 10 hours at a time. The plant could soak up excess power overnight, when demand is slack, and during the day, when California's solar farms are churning out electricity, and then return the juice in the evening, after the sun sets and power use rises in cities and towns. Several similar projects are awaiting government permits.

These days, companies including Elon Musk's Tesla Inc. are selling lithium-ion batteries, similar to those that power electric cars, to utilities, businesses and homeowners, who use them to store electricity, mostly for short periods.

But now, some nonbattery technologies are gain-

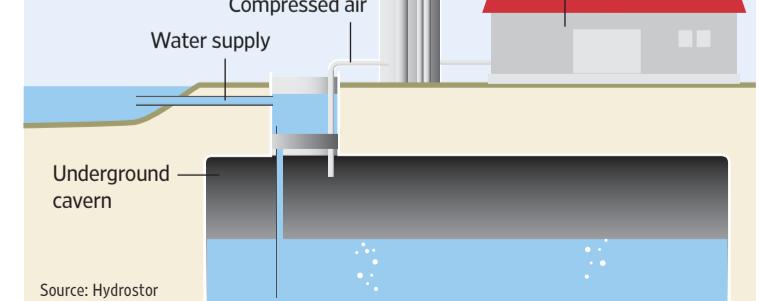
ing traction as utilities continue to look for economical ways to capture and store power. These alternatives have a longer lifetime than chemical batteries, which generally need to be switched out after about 10 years, and some can store and discharge more electricity. Here's a look at three of the technologies.



FLYWHEELS Flywheels store electricity in the form of kinetic energy. The basic technology, in which a wheel spins at high speed, has been around for decades and used for various applications, including storing and discharging power in room-temperature sputters. Newer flywheels, such as those developed by **Amber Kinetics Inc.**, based in Union City, Calif., can hold their rotation longer, creating electricity that can be discharged over four hours.

With Amber Kinetics' technology, an electric motor turns a 5,000-pound steel rotor until it is spinning at thousands of rotations a minute, a process that takes a few hours. The rotor is housed inside a vacuum chamber—the air is sucked out to remove friction. An electromagnet overhead lifts the steel rotor off its bearings, which allows it to spin quickly without requiring a lot of electricity. Indeed, the company says the steel disks, which resemble giant hockey pucks, can maintain their rotation with the same amount of electricity as it takes to power a 75-watt lightbulb.

The flywheel stores the energy in its continuous motion. When power is needed on the grid, the flywheel connects to a generator, and its momentum turns the generator's shaft to produce electricity.



COMPRESSED AIR Machines that use compressed air have been around for more than 100 years. Various attempts to use compressed air to store electricity have been tried over the past few decades, but high costs and technical challenges kept the technology from advancing, until now, according to Toronto-based **Hydrostor**, which is building next-generation compressed-air energy-storage facilities in Canada and Aruba, and says it is in talks with two utilities for additional projects.

Hydrostor uses electricity when it is cheap and abundant to run an air compressor, purchased off the shelf from General Electric Co. or Siemens. The compressor squeezes air into a pipeline and down into a hole the length and width of a football field and up to four stories tall, that the company digs deep underground and fills with water. When the pressurized air is piped into the underground cavern, it displaces the water up a shaft and into an adjacent pond. Then the pipeline valve is shut. When electricity is needed, the valve of the air pipe is opened and the air rushes up.

When air is compressed, it becomes hot. To be stored, the air needs to be cooled, but to be reused to generate electricity, it needs to be hot. In the old days, the heat from the compressed air would be vented, and later the air would be reheated using a natural-gas-fired motor. Hydrostor, however, removes the heat from the compressed air and stores it in a tank filled with waxes and salts, then pushed through a turbine, where it generates electricity.

Ms. Sweet is a writer in San Francisco. She can be reached at reports@wsj.com.

JOURNAL REPORT | INNOVATIONS IN ENERGY

Home Batteries Aren't Broadly Economical—Yet

Homeowners can now power their homes with batteries, but the benefits are minimal



IAN THOMAS JANSEN-LONQUIST/BLOOMBERG NEWS

Residential installations of Tesla Powerwall batteries began last year.

BY ROBIN SIDEL

THE PROMISE OF a battery that powers your home is that you can sock away energy for a rainy day as easily as putting money in a savings account.

Around the world, more homeowners are experimenting with residential batteries, which grab energy when it is generated and store it for later use. The excess power can be tapped if the grid goes down—in a storm, say—or during high-demand periods when electricity is more expensive.

Thanks to a big push by solar vendors and battery providers such as **Tesla Inc.**, **Samsung Electronics Co.**, and **Sunverge Energy Inc.**, homeowners in the U.S. now have a choice of off-the-shelf home batteries, or they can get them through pilot programs hosted by local utilities and companies that install solar systems. The batteries are getting increased attention as solar power becomes more affordable and common in the U.S.

Today, however, the financial benefits for most Americans are still as meager as the interest generated on that savings account. Batteries typically cost thousands of dollars, and one may not be large enough to power an entire home. Tesla, for example, sells its Powerwall residential battery on its website for \$5,500, plus \$700 for hardware. Installation costs can add up to another \$2,000. The 14 kilowatt-hour battery can provide one day of backup power to lights, sockets and a refrigerator in a three-bedroom home, according to Tesla's website.

While it's difficult to make a direct price comparison due to fuel costs and power limits, household generators are typically cheaper than their battery counterparts. A 16-kilowatt generator that can run on natural gas or liquid propane sells for less than \$4,000 at Home Depot. And a generator theoretically can run indefinitely as long as it is supplied with fuel.

In the U.S., traditional electricity is plentiful, cheap and usually reliable. U.S. homeowners paid an average of 12.82 cents a kilowatt-hour in February, or about \$110 a month, according to the Energy Information Administration. That compares with household prices of 29.7 cents a kilowatt-hour in Germany, 24.1 cents in Italy and 19.5 cents in the U.K., according to 2016 data from the European Union.

"Across much of the U.S., residential storage doesn't make economic sense," says Brett Simon, an energy-storage analyst at GTM Research in Boston. As a result, many Americans are dabbling with batteries for "emotional rather than economic reasons," he says.

Off the grid

Much of the nascent demand for batteries in the U.S. comes from energy-conscious homeowners who want to get off the grid and from those who live in states like Hawaii where electricity is expensive and local regulators have set restrictions on the sale of so-

lar power back to the grid. That means homeowners who have solar power have to either consume it or store it.

"Even though you have the added expense of the battery, it is still less expensive to go this direction than stay on the grid and pay regular rates," says Tim Johnston, owner of Hawaii Energy Smart, which sold 14 batteries in a five-week period earlier this year. Hawaiians pay more than double the average U.S. rate for electricity.

But even homes that don't have solar systems can store power from the local utility in a battery and use it instead of a generator during blackouts.

Jay Furr doesn't have solar panels yet on his three-bedroom home in Richmond, Vt., but he has a Tesla Powerwall battery in his garage that kicked on four or five times this winter when the power went out. He got the unit as part of a program offered by Green Mountain Power, his local utility.

"I don't know if the Powerwall is saving us money, but it's a great load off our minds to know that if the power goes out, we are fine," says the 49-year-old computer programmer who plans to install solar in his home this summer. He pays \$40 a month for the battery and receives a \$30 monthly credit for allowing the utility to store excess power for use in the neighborhood during periods of high demand.

Falling costs

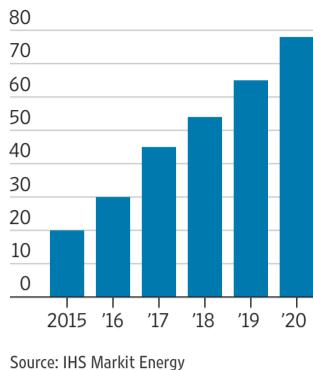
More than one million U.S. homes have solar power systems, and the country now has enough solar installed to power 8.3 million homes, a study released in March by GTM Research and the Solar Energy Industries Association showed. Last year alone, U.S. homeowners installed 2,583 megawatts of solar power.

IHS Markit estimates that U.S. homeowners installed 30 megawatts of battery storage capacity in 2016. It expects demand to rise to 78 megawatts by 2020 and grow significantly after that.

In coming years, battery prices are expected to drop

Charging Up

Megawatts of U.S. residential battery storage capacity



Source: IHS Markit Energy Storage Intelligence Service

THE WALL STREET JOURNAL.

China

Continued from page R3
that will keep rising until it hits 3.6 million in 2024, according to Bernstein.

For petroleum companies, that may be as good as it's going to get. Electric cars are getting steadily cheaper, and by the early 2020s they are expected by many auto analysts to reach a tipping point where they will become more economical than traditional cars. Meanwhile, gasoline cars will grow more efficient, and many journeys in China will get shorter, thanks to new roads.

For now, the fossil-fuel industry will look to Chinese drivers like Shanghai resident Wang Yong for breathing room. The 45-year-old, who runs a company trading in consumer goods, says he didn't think much about fuel costs or emissions when he went shopping for a new car at the end of 2016.

Mr. Wang says he considered an electric car from **Tesla Inc.**—the only electric-car brand he says he would ever consider purchasing—but worried about the availability of charging stations in Shanghai. In the end, he chose an SUV, a **BMW X5**.

"It's tall, big, spacious and comfortable," says Mr. Wang.

The SUV goes about half as far on a gallon of gas as the Volkswagen Jetta, one of the best-selling sedans in China last year. But fuel efficiency doesn't make his list of features he wants in a car. "In terms of design, power, connectivity and high technology, most electric cars can't satisfy my needs," he says.

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