

THE WALL STREET JOURNAL.

DOW JONES | News Corp.

MONDAY, MAY 15, 2017 ~ VOL. XXXV NO. 72

WSJ.com

EUROPE EDITION

DJIA 20896.61 ▼ 0.11% NASDAQ 6121.23 ▲ 0.09% NIKKEI 19883.90 ▼ 0.39% STOXX 600 395.63 ▲ 0.31% BRENT 50.84 ▲ 0.14% GOLD 1226.20 ▲ 0.29% EURO 1.0924 ▲ 0.56%

What's News

Business & Finance

Mutual funds that invested in Puerto Rico's bonds lost as much as \$5.4 billion over the last five years, an analysis found. **A1**

◆ **Bondholders** seeking compensation if Venezuela defaults would turn to Citgo, but the firm lacks enough assets to pay all creditors. **B1**

◆ **Amazon is making** a major push into furniture and appliances, building warehouses for bulky items. **B1**

◆ **Jet makers** are increasingly catering to discount airlines that once bought used planes, as evidenced by Boeing and Airbus orders. **B1**

◆ **Uber faces** the threat of a federal probe into its driverless-car program over the possibility that the company stole trade secrets. **B3**

◆ **Chinese banks** are gaining ground against Wall Street in the competition to underwrite overseas-bond sales for Chinese firms. **B10**

◆ **A new trade pact** between the U.S. and China shows that Trump is willing to accept a limited deal in a bid to win bigger deals later. **A3**

◆ **G-7 finance chiefs** sounded a note of cautious optimism on U.S. tax plans but avoided tackling Trump's trade policies. **A3**

◆ **Apple's employees** have begun testing its new headquarters, which cost some \$5 billion and highlights the tech-industry boom. **B1**

◆ **Some OPEC members** are pushing for broader efforts to reduce oil output in an effort to bolster prices. **B9**

World-Wide

◆ **Cybersecurity experts** are expecting a new wave of computer-system attacks on Monday that encrypt files and demand ransom to unlock them following the massive strikes unleashed Friday. **A1**

◆ **Macron took office** as France's president, launching his mission to overhaul the nation's economy and reinforce the EU. **A1**

◆ **North Korea launched** its 10th missile this year, in another sign of Kim's push to overhaul his country's weapons program. **A1**

◆ **China's Xi opened** a summit to promote infrastructure-building with a call for a new international security framework. **A3**

◆ **The Christian Democrats** beat the center-left Social Democrats in a German state election, providing a major boost to Merkel. **A4**

◆ **America's main ally** in Syria agreed to let Islamic State fighters escape from a key battle without conferring with the U.S. military. **A4**

◆ **Trump might not move** the U.S. embassy in Israel to Jerusalem if it could hurt Mideast peace efforts, Tillerson suggested. **A4**

◆ **More Americans** disapprove than approve of Comey's firing, but Trump's overall approval rating is unchanged, a poll found. **A7**

◆ **Trump sometimes taped** phone conversations when he worked as a businessman, ex-employees said. **A7**

CONTENTS	Life & Arts... A8-9,12
Crossword..... A12	Markets..... B10
Europe File..... A2	Opinion..... A10-11
Finance & Mkts.... B9	Technology..... B3
Heard on Street... B10	U.S. News..... A7
Journal Report... B4-7	Weather..... A12
Keywords..... B1	World News... A2-4

€320; CHF550; £200;
U.S. Military (Eur.) \$220



Emmanuel Macron, France's newly elected president, during a parade on the Champs-Élysées after his inauguration ceremony.

Macron Becomes President, Pledges to Bolster Europe

By MATTHEW DALTON

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

At the start of a ceremony at the Élysée Palace, Mr. Macron strode on a red carpet toward François Hollande, the departing president who brought Mr. Macron into gov-

ernment as a personal adviser and then elevated him to economy minister. The two headed inside for a meeting to discuss the most-sensitive matters of state.

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

In his first speech shortly after, Mr. Macron said France under his presidency would act as a bulwark for the international community.

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

Sunday's ceremony caps a remarkable rise for Mr. Macron that is remaking France's political order. A former in-

vestment banker who had never run for office, Mr. Macron swept into the presidency by sidestepping France's mainstream political parties, which for decades have groomed the country's leaders.

Instead, Mr. Macron decided to form his own party, République en Marche, 13

Please see FRANCE page A2

◆ **Europe File: Macron marches** into breach of EU overhaul... **A2**

KIM ACCELERATES PLANS TO AIM MISSILES AT U.S.

North Korea has forced the West to worry about its intentions more than ever

By ALASTAIR GALE AND JONATHAN CHENG

SEOUL—How serious are North Korea's nuclear ambitions? In the past three years, it has launched more major missiles than in the three previous decades combined.

That is one of the most dramatic signs of leader Kim Jong Un's push to overhaul the country's weapons program since he took power in late 2011. He has modernized production of nuclear and missile parts, upgraded the program within the military hierarchy and overtly pampered engineers, forcing Western leaders to worry more about Pyongyang's intentions than ever before.

On Sunday, North Korea launched its 10th missile so far this year. The weapon hasn't been identified, but Japan's defense minister said it might be a new type of ballistic missile. Initial projections from several experts suggested it would be able to reach U.S. military forces in Guam.

Even apparent failed missile launches, like one that blew up within minutes on April 28, are now seen by independent experts as signs of North Korea's progress. Learning from those failures would move the regime closer to its ultimate goal of mastering a long-range missile that could

Please see MISSILE page A6

INSIDE



REGIONAL
VOTE BOOSTS
MERKEL
WORLD NEWS, A4



APPLE'S NEW
HEADQUARTERS
SIGNALS BOOM
BUSINESS & FINANCE, B1



URBAN
AGRICULTURE
TAKES ROOT
JOURNAL REPORT, B4-7

Mutual Funds Lose Big on Puerto Rico

By HEATHER GILLERS
AND TOM MCGINTY

The losses for Puerto Rico's bondholders are coming into view. It is a brutal accounting.

The total red ink for mutual funds that invested in debt issued by the troubled island commonwealth is as much as \$5.4 billion over the last five years, according to a Wall Street Journal analysis of mu-

tual-fund holdings and municipal-bond trades.

Those losses, which are both actual and unrealized, accumulated largely because the weighted average price of mutual funds' uninsured Puerto Rico holdings has dropped to 59 cents, compared with 105 cents on the dollar in early 2012, the Journal found.

The damage done to mutual-fund bets is one reason

why a court-supervised restructuring of Puerto Rico's debt that starts this week with a hearing in San Juan is expected to become such a lengthy battle. A diverse group of creditors will be competing for a limited pot of money, and allocating Puerto Rico's re-

Please see LOSSES page A7

◆ **Citgo: Venezuela's last pool** of cash..... **B1**

'Ransom' Threats Remain, Some Say

Cybersecurity experts warn further trouble could occur Monday; virus update possible

By STU WOO

Cybersecurity experts are expecting a new wave of computer-system attacks on Monday that encrypt files and demand ransom to unlock them.

The massive so-called ransomware attacks unleashed Friday were slowed down over the weekend, computer experts said, after a 22-year-old British researcher found a kill switch hidden in the computer worm. But that researcher and other experts say they expect that hackers will release—or have already unleashed—an updated version of that worm without a kill switch.

The attacks, which so far have hit more than 200,000 victims in at least 150 countries, affect only computers running Microsoft Corp.'s Windows that haven't installed the security patch that the company released in March, or the emergency patch it released for older Windows systems over the weekend.

The problem is that it can take organizations, especially large ones, a long time to install these patches. "I think there's going to be a lot of infections Monday morning," said Ofer Israeli, chief executive of Illusive Networks, a cybersecurity firm based in Tel Aviv. "Time will tell how

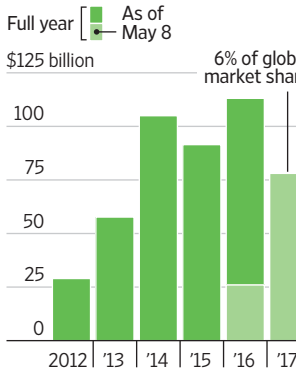
Please see HACK page A2

◆ **British researcher slows** cyberattack..... **B3**

Chinese Banks Take On Wall Street

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

Chinese dollar-denominated bond issuance

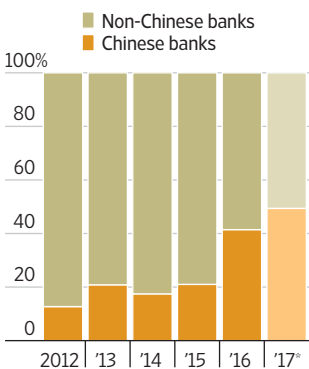


*As of May 8

Source: Dealogic

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

Chinese banks' share of volume handled by top 10 underwriters



THE WALL STREET JOURNAL.

BOND BATTLE: Competition has pushed the number of banks per deal to roughly triple the level in the U.S., U.K., or Germany. **B10**

Curses! Hawaii Can't Get Tourists To Stop Sending Back Lava

Belief in volcano curse prompts hundreds of people to return rocks each year

By IAN LOVETT

HAWAII VOLCANOES NATIONAL PARK—Steve Pariseau believes he can pinpoint the moment his life began falling apart: It was when he picked up a shimmering black lava rock while on vacation with his family in Hawaii.

Once he got home to California, one of his sons began having behavioral problems. His marriage fell apart. His mother died.

So when he heard about "Pele's curse"—a widespread belief that Pele, the volcano goddess of Hawaii's Big Island, will bring bad luck to those who take lava off the islands—he decided to bring the rock back. His family's fortunes, he said, improved right away.

Each year, hundreds of people mail, fly or hike pieces of lava back to the Big Island, hoping that by return-

ing rocks they snatched, they will break the curse, appease the goddess and end their bad luck.

Lava is shipped back from Germany, Japan and Australia. Some lava thieves return to Hawaii so they can place the lava as close as possible to where they found it.

"I'm not typically superstitious," said Mr. Pariseau, 52 years old. "But a lot had gone wrong. I thought, maybe this whole Pele thing is possible."

Like many myths, the origins of Pele's curse are murky. Hawaiian scholars agree it has little basis in native Hawaiian religion. One popular theory holds that park rangers in the 1940s, frustrated by tourists who kept making off with pieces of lava, invented the curse.

Lava has been flowing back toward the Big Island ever

Please see CURSE page A6

WORLD NEWS

Macron Marches Into Breach of EU Overhaul



The symbolism could hardly be clearer: Emmanuel Macron will spend his first full day as president of France in Berlin visiting German Chancellor Angela Merkel. The man who campaigned as an ardent pro-European, who greeted the crowds at his victory rally to the strains of the **European Union** anthem, and who pledged at his inauguration Sunday to “reform and relaunch the EU” is signaling that this work starts immediately. Yet Mr. Macron may find the challenge of reforming

the EU even more daunting than reforming France. His ambitions for the EU extend from defense to border control, to climate change to tackling so-called social dumping—the attempt to gain a competitive advantage through looser fiscal, environmental and labor-market policies. But the most eye-catching aspect of his European agenda is his proposal to create a eurozone budget overseen by a eurozone finance minister. There is broad agreement across the eurozone that something must be done to restore public confidence in the single currency following a series of shocks that have left much of the continent suffering from high unemployment and stagnating living standards. Berlin and Brussels also recognize that Mr. Macron’s election has created a political imperative to show a willingness to engage with the new president’s agenda.

But it won’t be easy. The European Commission was tasked by EU leaders two years ago to come up with proposals for deepening economic and monetary union, and the commission is due to publish its proposals at the end of this month. Two major ideas are under discussion, both broadly in line with ideas floated by Mr. Macron and his allies. The first is to use the eurozone’s bailout fund—European Stability Mechanism—to create so-called European Safe Bonds, securitized bonds that would be issued by the ESM and backed by a pool of eurozone government bonds. Initially, governments would remain responsible for their own liabilities, but ultimately ESB’s could be guaranteed by the ESM—and therefore jointly guaranteed by Eurozone governments—transforming them into genuine Eurobonds. The second proposal is to create a common European-wide unemployment insur-

ance fund, which would allow countries hit by an economic shock to reclaim part of the cost of higher unemployment benefits. Both ideas are problematic. It isn’t clear there will be any market for European safe bonds without an ESM guarantee which govern- *Can a eurozone budget overseen by a eurozone finance minister be achieved?* ments are in any case unwilling to allow. And with or without an ESM guarantee, there are growing concerns that the creation of a large pool of ESBs could trigger a collapse in demand for the non-pooled bonds of the eurozone’s weaker credits, leaving those countries facing higher rather than lower funding costs. The problem with the un-

employment insurance idea is it would require the politically challenging harmonization of the eurozone’s highly divergent labor-market rules and welfare systems. What both proposals show is that it is very hard to find a halfway house between the current eurozone setup, in which there is limited risk-sharing, and a full political union that would allow Brussels far greater oversight of national budgets and labor-market and welfare policies. This task is made harder by the need to avoid changes to the EU treaties which might trigger referendums in many countries, where public appetite is limited for the transfers of sovereignty needed to underpin deeper fiscal integration. That could limit the scope of reform to little more than German Finance Minister Wolfgang Schäuble’s current proposal to turn the ESM into a European Monetary Fund with increased powers to enforce

the eurozone’s existing rules. Would this be so bad? In economic terms, perhaps not. The contrasting fortunes of postcrisis Spain and Ireland with he sluggish recoveries of Italy and Portugal should caution against blaming the eurozone’s problems on a lack of fiscal transfers—as opposed to weak domestic policies. Evidence from the U.S. suggests the importance of fiscal transfers in stabilizing a currency union can be overstated: Private capital flows help smooth around two-thirds of shocks to regional output, compared with 13% by fiscal transfers, according to the European Central Bank. That suggests the eurozone’s priority should be strengthening its banking systems and delivering overhauls that would improve cross-border investment flows. Nonetheless, Mr. Macron’s political imperative remains, and the fate of the eurozone may now hinge on his success. No wonder he is beating a path to Berlin.

FRANCE

Continued from Page One months ago. Now he sits atop French politics, controlling a party that is fielding hundreds of candidates in coming legislative elections. Half of them are newcomers to politics and owe their political fortunes largely to Mr. Macron. Mr. Macron a week ago won the presidential election in a landslide against Marine Le Pen, a far-right nationalist who sought to pull France from the EU and close the country’s borders. He ran as a staunch defender of the bloc and a business-friendly centrist who would shake up France’s tightly regulated economy. Ms. Le Pen’s message, however, resonated with large portions of the electorate who are opposed to immigration and discontented with the country’s long-run-



Emmanuel Macron’s motorcade passed along the Champs-Élysées in Paris on Sunday.

ning economic slump. She won 34% of the vote, the best showing by a French far-right party in the postwar

era. Mr. Macron on Sunday characterized his presidency as a mission to reinvigorate the economy and address the

malaise that has fueled Ms. Le Pen’s rise. “Employment will be unblocked, businesses will be

supported, initiative will be encouraged,” Mr. Macron said. “French men and women who have been forgotten amid global upheavals must be better protected.” Mr. Macron’s first order of business will be tending to France’s relationship with Germany, the country’s most important ally. Mr. Macron is scheduled to fly to Berlin on Monday to meet with German Chancellor Angela Merkel. Mr. Macron has made changing the eurozone’s architecture a priority. His ideas include creating a shared budget for the common currency that could help member countries in economic distress. But for that he will need the approval of Ms. Merkel, who has resisted similar overtures from French politicians in the past. “The Europe that we need will be rebuilt, relaunched, because it protects us and allows us to bring our values to the world,” Mr. Macron said. Under high security in a

city repeatedly hit by terror attacks in recent years, Mr. Macron’s car left his apartment Sunday morning in the 7th arrondissement of Paris, headed across the Seine river and arrived at the Élysée. Mr. Macron’s team was due to receive France’s nuclear launch codes and briefings on the country’s counterterrorism arrangements. France remains in a state of emergency, declared shortly after the terror attacks of November 2015. The emergency regime allows security forces to consign people deemed to be security threats to house arrest, conduct searches without judicial approval and take other measures that are forbidden by the French constitution in normal circumstances. During the campaign in March, Mr. Macron said the state of emergency should be maintained unless new information comes to light that would justify lifting it.

HACK

Continued from Page One quickly people are going to patch their systems.” Why could the attacks worsen on Monday morning? Because of how the virus works. The virus contains two parts. One is the ransomware, which locks the computer files and displays a message saying the files will be inaccessible and destroyed unless the user sends payment over the internet to the hacker. The other part is known as the spreader. Once the virus makes its way onto one computer—perhaps when a user opens an infected email attachment—the spreader transmits itself to other computers on the network. Britain’s National Cyber Security Center, a government agency, said Sunday that existing infections from the malware could continue to spread within networks. “This means that as a new working week begins it is likely, in the U.K. and elsewhere, that further cases of ransomware may come to light, possibly at a significant scale,” the National Cyber Security Center said in a written statement. The British researcher, who wants to be identified only as MalwareTech, found a kill switch in the spreader. The

The Cyberattack: What Happened

WHAT IS IT? Attackers, using a tool allegedly stolen from the U.S. National Security Agency, took advantage of flaws in Microsoft Windows systems to spread malware around the world on Friday. The “ransomware” encrypts files, effectively hijacking computer systems, and demands money, in the form of bitcoin, in exchange for decrypting them. **Microsoft** Corp. had issued a fix, or patch, for the flaw on March 14.

HOW BIG IS IT? **Kaspersky Lab**, an antivirus

vendor, said it has tracked 45,000 instances of the attack, dubbed WannaCry, in 74 countries around the world, mostly in Russia. Computer-security experts say, however, that the virus’s spread has been contained by the actions of a private security researcher who found a kill switch inside the virus.

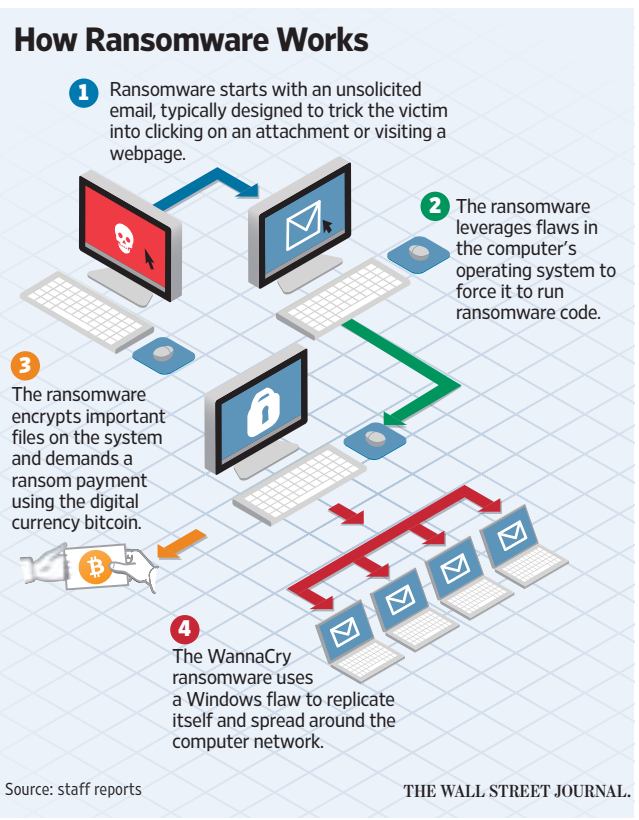
WHO HAS BEEN HIT? Victims include Britain’s National Health Service, **FedEx** Corp., car makers **Nissan Motor** Co. and **Renault** SA, Germany’s biggest train operator as well as Russian banks. China state media reported early Saturday that some gas stations and universities have been affected.

—WSJ Staff

spreader was designed to contact a web address to see whether it should further spread itself, but hackers hadn’t bought that web address. So MalwareTech did, and effectively stopped the virus’s spread. It meant that one computer in a network could be infected, but the worm wouldn’t spread to the rest of the network. Cybersecurity experts expect the latest versions of the worm to have no kill switch for the spreader. So when workers return to the office Monday morning and turn on their computers, they might

open an infected email attachment or connect an already-infected laptop to their organization’s non-security-patched network and spread the worm. Some computer viruses are designed to remain dormant until they are connected to a large network, Mr. Israeli said. In Asia, where many businesses were offline when the attack started to spread on Friday, governments urged caution. Indonesia issued a warning advising people to turn off their computers and disconnect them from the internet before backing up data in non-Windows formats and

updating their software to counter the malware. “Now that the weekend is over we can probably expect cases that were not discovered before,” said Matthieu Suiche, founder of Comae Technologies, a cybersecurity company based in the United Arab Emirates. China’s National Computer Network Emergency Response Technical Team said more than one million computer internet protocol addresses “inside and outside China” were targeted by the virus. The team, which works closely with the Chinese government but is technically independent, said the attacks posed “a serious security threat to China’s internet structure.” Customers at gas stations run by China National Petroleum Corp. were unable to use bank cards and other third-party payment systems, the state-owned energy company said on its official Twitter-like Weibo account Sunday. As of early Sunday afternoon, nearly 20% of the stations were still out of service, the company said. U.S. President Donald Trump ordered Tom Bossert, his homeland security and counterterrorism adviser, to hold an emergency meeting with cabinet members on the ransomware issue Friday night and another one Saturday morning, an administration official said Sunday. “This criminal act poses a very real threat to the lives and property of innocent people and countries around the world. This is inexcusable,” the official said. “The [Federal Bureau of Investigation], [National Security Agency], Homeland Security Department and others are working around the clock to stop the spread of this ransomware and bring the criminals behind this to justice.” The incident was perhaps the most high-profile computer-worm outbreak in nearly a decade, disrupting corporations, hospitals and government agencies, from French car manufacturer Renault SA and U.S. delivery company FedEx Corp. to the Russian Interior Ministry. The virus also knocked out

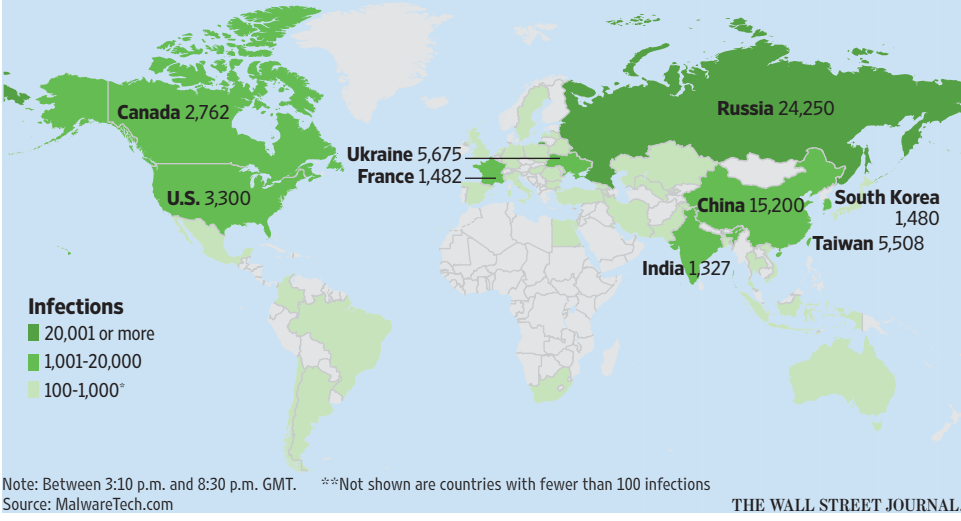


ATMs run by Bank of China and computers at China Telecom Corp. offices, according to social-media reports. Neither state-owned company could be reached to con-

firm those reports. —Jenny Gross in London and Liza Lin in Shanghai contributed to this article.

Global Assault

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



CORRECTIONS & AMPLIFICATIONS

Straight Path Communications Inc. will pay a penalty of 20% of the proceeds from its \$3.1 billion sale to Verizon Communications Inc. as part of an earlier settlement with federal regulators. A Business News article in the Friday-Sunday edition about telecom investor Howard Jonas incorrectly said the settlement also included \$85 million in fines.

The AmpRidge MightyMic S microphone records in mono. An Off Duty article in the Friday-Sunday edition about taking better smartphone videos incorrectly stated that the microphone records in stereo.

Readers can alert The Wall Street Journal to any errors in news articles by emailing wsjcontact@wsj.com.

THE WALL STREET JOURNAL.
Europe Edition ISSN 0921-99
The News Building, 1 London Bridge Street, London, SE1 9GF

Thorold Barker, Editor, Europe
Grainne McCarthy, Senior News Editor, Europe
Cicely K. Dwyer, News Editor, Europe
Darren Everson, International Editions Editor

Joseph C. Sternberg, Editorial Page Editor

Anna Foot, Advertising Sales
Jacky Lo, Circulation Sales
Andrew Robinson, Communications
Jonathan Wright, Commercial Partnerships

Katie Vannack-Smith, Global Managing Director & Publisher

Advertising through Dow Jones Advertising Sales: Hong Kong: 852-2831 2504; Singapore: 65-6415 4300; Tokyo: 81-3 6269-2701; Frankfurt: 49 69 29725390; London: 44 207 842 9600; Paris: 33 1 40 17 17 01; New York: 1-212-659-2176

Printers: France: POP La Courmeuve; Germany: Dugan Media Group/Hartnet A.S. Branch; Italy: Qualprinters s.r.l.; United Kingdom: Newsprinters (Brixton) Limited, Great Cambridge Road, Waltham Cross, EN8 8DY

Registered as a newspaper at the Post Office. Trademarks appearing herein are used under license from Dow Jones & Co.
©2017 Dow Jones & Company. All rights reserved.
Editor responsible: Thorold Barker M-17936-2003. Registered address: Avenue de Cortenberg 60/4F, 1040 Brussels, Belgium

NEED ASSISTANCE WITH YOUR SUBSCRIPTION?
By web: <http://services.wsj.com>
By email: subs.wsje@dowjones.com
By phone: +44(0)20 3426 1313

WORLD NEWS

Xi Casts China as Champion of New Order

President opens summit with call to ‘foster a new type of international relations’

By **CHUN HAN WONG**

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

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

Mr. Xi portrayed China as a committed free trader and pledged more than \$100 billion in new financing and assistance for projects and countries involved in an updated

revival of ancient Silk Road trading routes.

This Silk Road reboot, known as “One Belt, One Road,”—which envisions constructing networks of ports, railways, pipelines and industrial parks—is Mr. Xi’s grandest foreign-policy initiative. Mr. Xi said China has invested more than \$50 billion in Silk Road countries over the past three years, and Chinese officials have branded the venture as a new form of globalization, one that is more inclusive and fairer than previous tides of world commerce.

On hand to endorse Mr. Xi’s vision were the presidents of Russia, Turkey, the Philippines and Indonesia as well as leaders from Greece and Hungary to Chile and Argentina.

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

The U.S. sent a National Se-



President Xi toasts visitors at Beijing’s Great Hall of the People.

curity Council director—rather than a senior Cabinet-level official—who used brief remarks at the forum to urge China to uphold transparency and norms on international bidding. India, which has seen China ramp up projects in several neighboring countries, stayed away, citing Silk Road infrastructure projects in rival Pakistan that run through ar-

eas Delhi claims as its territory.

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

“We should foster a new

type of international relations featuring win-win cooperation, we should forge partnerships of dialogue with no confrontation and of friendship rather than alliance,” Mr. Xi said.

He called for each country to respect each other’s sovereignty, “social systems and each other’s core interests.”

Beijing has used those phrases to demand other countries acquiesce to China’s interests, in its territorial claims in the South China Sea, for example.

Some of that language is included in a communiqué that Mr. Xi is asking visiting leaders to sign onto when the forum ends on Monday.

U.S. President Donald Trump’s talk of protectionist trade tariffs and withdrawal from an Asia-Pacific trade group, plus the European Union’s grappling with Britain’s exit and other political strains, have created space for Beijing to portray itself as a champion of globalization.

China is filling the vacuum. Its two-year-old Asian Infra-

structure Investment Bank inducted seven new members this weekend, including Bahrain, Greece and Bolivia, bringing the total to 77.

On the sidelines of the forum, China signed a free-trade protocol with Georgia and a memorandum of understanding on transportation infrastructure with Malaysia. In his speech, Mr. Xi said China would set up 50 joint science and technology laboratories and offer 5,000 foreign scientists, engineers and managers research trips and training.

Putting Mr. Xi at the center of a major global initiative, with world leaders around him, was also intended to give him a boost at home. The Communist Party holds a pivotal congress this year to reapportion leadership positions, and although Mr. Xi is all but certain to receive another five-year term, party insiders say he is looking for leverage to maneuver allies into key posts.

—Josh Chin
contributed to this article.

Trade Plan a Step To Broader Pact

By **WILLIAM MAULDIN**

An initial trade framework between the U.S. and China shows that President Donald Trump is willing to put aside his tough rhetoric and accept a limited deal with Beijing in a bid for more substantial agreements down the road.

The pact, announced Thursday, is aimed at allowing U.S. beef exports to China, opening up credit-card payment systems there and potentially selling American liquefied natural gas to the energy-hungry country. It avoids the more divisive trade issues in the steel and aluminum industries.

Still, the agreement is significant in that it shows how the Trump administration is ready to emphasize cooperation and open markets, as opposed to imposing the across-the-board tariffs Mr. Trump talked about in his campaign.

While parts of the deal are the result of long-running talks originating in the Obama administration, officials characterized it as a down payment on potentially greater economic accomplishments with Beijing in the coming year.

“Both sides also identified other issues that will require significant effort to resolve and achieve progress on, still within the 100-day period,” Commerce Secretary Wilbur Ross said, referring to a plan Mr. Trump agreed to in April with Chinese

President Xi Jinping for achieving, within 100 days, a set of economic openings between the two countries.

Mr. Trump’s softer tone toward China in recent weeks is seen partly as an effort to gain cooperation over North Korea, but also part of an effort to give economic negotiations a chance to bear fruit, current and former officials say.

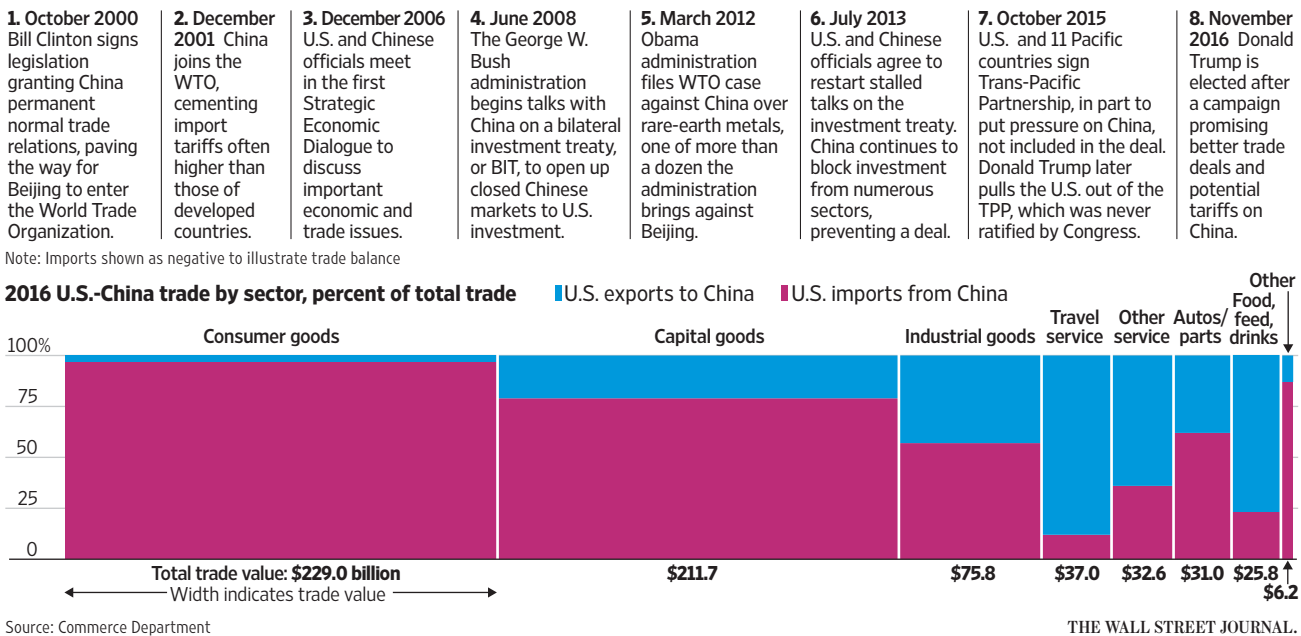
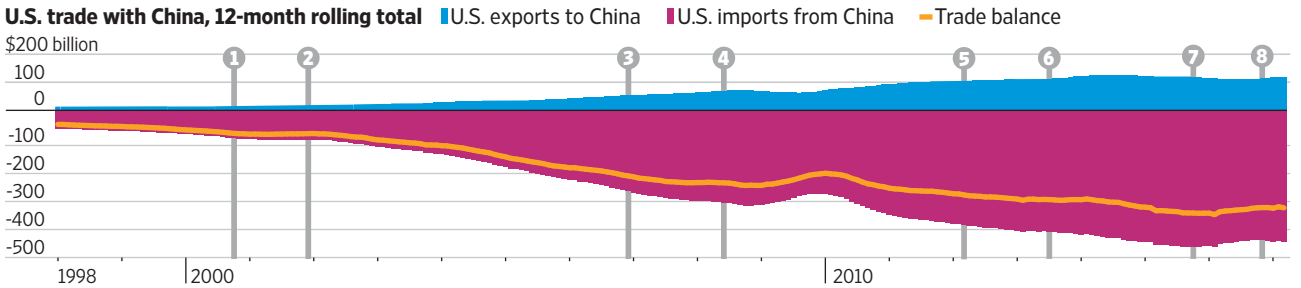
The kinds of tariffs Mr. Trump pledged in 2016 on the more than \$400 billion in goods China sends the U.S. annually would likely have buoyed some American manufacturers. But the tariffs—essentially a tax on goods crossing the border—would have raised the prices consumers pay for everything from cell-phones to clothing, and diminished commerce between the two countries, with the possible result of a trade war.

Since he became president, Mr. Trump has avoided threats of broad tariffs, which his aides have described as a strategy to win concessions from China and other countries.

The U.S.-China deal addresses a series of trade irritants, ranging from clearing a backlog in China’s slow approval of American genetically modified seeds to giving Beijing a deadline for resuming beef imports from the U.S. Still, the preliminary 10-point bilateral trade plan, released by both governments Thursday,

A Slow Opening

The trade framework the Trump administration announced Thursday with China is the latest in a series of deals that have so far succeeded in boosting trade but not in balancing U.S. imports and exports.



didn’t address larger issues for the industries involved; for example, the plan doesn’t include concrete changes to boost natural-gas trade.

The agreement the Trump administration worked out with Beijing, part of what the administration hopes will be a

bigger pattern of opening Chinese markets, appears to be just an understanding. One country could fail to honor it, or a political shift could undermine it—with no spelled-out repercussions. “None of these are enforceable in the same sense as a WTO type of case,”

said Chad Bown, a trade expert at the Peterson Institute for International Economics, which backs trade liberalization.

Still, Mr. Trump can now market the progress with China as an economic win and a welcome distraction from political headwinds back home. Hours

after it was announced, Mr. Trump touted the agreement Friday on Twitter as “REAL news,” distinct from the domestic political firestorm that captured public attention in recent days.

—Chuin-Wei Yap
contributed to this article.

Manila Challenges Big Firms’ Power

By **JAKE MAXWELL WATTS**

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

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

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

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

The new South Korean leader, Moon Jae-in, has pledged to curb the power of that country’s conglomerates, called chaebols. The Philippine effort to create a regulator of uncompetitive practices began

24 years ago and finally succeeded in the legislature last year.

In its first major case, the Philippine Competition Commission last year challenged a planned acquisition by the country’s two telecommunications companies, Philippine Long Distance Telephone and Globe Telecom, which is 30% owned by Ayala.

But the companies won a court injunction to prevent the commission from completing its review and issuing a judgment.

In April, the case moved to the Philippines’ Supreme Court, whose decision—which may take months—will define

the commission’s scope and influence. The two companies are set to complete their joint acquisition this month in defiance of the commission’s demands, complicating its potential undoing.

“The progress and eventual outcome of the case is being carefully followed,” said John Forbes, senior adviser at Philippine business-advocacy group Arangkada.

Philippine Long Distance Telephone declined to comment, citing the continuing legal dispute.

A Globe spokeswoman said “everything we are doing is actually within the interest of consumers,” adding that the

commission is “overstretching their mandate.”

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

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

Mobile and internet service is worse and the cost higher than in other countries, according to data from the International Telecommunication Union.

The Competition Commission came into force under the previous administration, but Philippine President Rodrigo Duterte has supported its goals.

The top 10 listed companies in the Philippines, including billionaire Henry Sy’s retail giant SM Investments Corp. and John Gokongwei’s beverage-to-airline conglomerate JG Summit Holdings Inc., had revenue valued at 11% of Philippine economic output in 2015, according to Wall Street Journal calculations from data supplied by New York-based S&P Global Market Intelligence.



Brian Chuahiock is dependent on a range of Ayala services.

U.S. Reassures Allies On Taxes, but Not Trade

By **IAN TALLEY**
AND **GIOVANNI LEGORANO**

BARI, Italy—Finance chiefs from the world’s largest industrialized economies sounded a note of cautious optimism this weekend on U.S. plans for a tax overhaul, and agreed to bolster the financial system against increasingly sophisticated cyberattacks.

But the finance ministers and central bankers from the Group of Seven nations avoided tackling one of the biggest worries among global policy makers: whether the Trump administration’s America-first trade policies are setting the world’s largest economy on a protectionist course.

Leaving controversial talks on trade until a G-7 leaders’ summit scheduled for later this month, officials instead pushed U.S. Treasury Secretary Steven Mnuchin for details on President Donald Trump’s tax package, unveiled late last month.

After two days of talks in a 12th-century Norman castle, many delegations expressed a measure of relief.

“The emphasis was initially on a border tax, which is taxation, but also trade policy,” said Italian Finance Minister Pier Carlo Padoan in an interview. “Now, the emphasis—

very clear about this—is about tax reform.”

Another official from the delegation said, “Each one of us is following developments in U.S. tax policy very closely. What they are considering now is a lot less worrying.”

Many G-7 countries had been particularly concerned about the U.S. rolling out a border tax that could choke exports to the country.

While the administration says it is still considering some version of a border-adjusted tax, it doesn’t plan to use the congressional proposal that spooked America’s trade competitors.

The Trump administration is trying to convince countries that its trade policies are designed to encourage other countries to drop their barriers to imports and rebalance the global trading system.

“People feel much more comfortable today now that they’ve had the opportunity to spend time with me and listen to the president and hear our economic message on what the Trump economic agenda is, and that’s about creating growth in the U.S.,” said Mr. Mnuchin. Yet, he added, “We don’t want to be protectionist, but we reserve our rights to be protectionist to the extent that we believe that trade is not free and fair.”

WORLD NEWS

State Win for Conservatives Boosts Merkel

By ANTON TROIANOVSKI

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

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

The result represented a major upset in German politics and underlined Ms. Merkel's political strength as she prepares to run for a fourth term. North Rhine-Westphalia—whose population of 18 million is more than one-fifth of Germany's total—has long been a stronghold of the Social Democrats, who have governed in the state for all but five of the last 50 years.

The upstart, anti-immigrant Alternative for Germany party took 7.4%, meaning it will now have seats in 13 of Germany's 16 state parliaments. But the party's hopes of soaring into the double digits in a region

with many working-class voters failed to materialize.

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

The campaign in the state turned in part on the record of the Social Democratic premier, Hannelore Kraft, who has governed in partnership with the environmentalist Greens since 2010. Armin Laschet, the Christian Democratic candidate, slammed her performance on the economy and in education. Security was also a major issue, in part because several suspected Islamist extremists, including the Berlin truck attacker Anis Amri, spent time in the state.

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



CDU regional leader Armin Laschet celebrates with party supporters after the first North Rhine-Westphalia poll projections came in.

fratest Dimap exit poll.

"I think it has become clear that we have big problems to solve—in North Rhine-Westphalia but also in Europe and internationally," Ms. Merkel's chief of staff, Peter Altmaier, said on ARD.

The vote delivered a blow to Ms. Merkel's challenger in the September election, Social Democrat Martin Schulz, who hails from the region. Both politicians campaigned in the state in recent days, and Mr.

Schulz said Sunday evening that the vote was "a resounding defeat" for his party.

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

The party's position in the polls surged to a near tie with the Christian Democrats after Mr. Schulz's designation, but it

has fallen back to 10 points behind the Christian Democrats—37% to 27%—in two national polls published in recent days. The result in North Rhine-Westphalia, the last state to vote ahead of the national election, places the Christian Democrats in "a nearly optimal" starting position as the campaign approaches, University of Mainz political scientist Jürgen Falter said.

"People continue to feel

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

For the Social Democrats, or SPD, the result represented a stunning setback in a state whose many blue-collar workers once formed a rock-solid base for the party. "It [hits] the SPD especially hard in its self-esteem and self-confidence," Mr. Falter said.

U.S., Syria Allies at Odds on Raqqa

By BEN KESLING

WASHINGTON—America's main military ally in Syria agreed to let Islamic State fighters escape from a key battle this week without conferring with its U.S. partners, who targeted the extremists as they tried to flee, Pentagon officials said Friday.

The unusual deal and U.S. response exposed a disconnect in the anti-Islamic State coalition on the eve of a pivotal offensive to retake Raqqa, the extremist group's biggest Syrian stronghold. It called into question whether the U.S. military will honor battlefield commitments made by its partners, and came as President Donald Trump this week signed off on plans to provide direct arms to Kurdish fighters leading the military coalition.

The U.S.-backed forces' deal with Islamic State helped end a monthslong battle for Tabqa Dam, a strategic site the extremist group has held since late 2013. The Syrian Democratic Forces allowed about 70 Islamic State fighters safe passage if they dismantled hidden bombs and gave up their heavy weapons, said Capt. Jeff Davis, a Pentagon spokesman.

The SDF made the deal to protect civilians and ensure that Islamic State didn't destroy the dam, which could have posed a risk to communities in the flood zone, Capt. Davis said. But the U.S. military didn't take part in the deal or agree to ensure safe passage for Islamic State fighters, Capt. Davis said, making them fair game. As the fighters left, the U.S. military tracked them and targeted those who could be killed



A member of the SDF removed an Islamic State flag in the town of Tabqa, Syria, in April.

without potential harm to civilians, he said.

"This was an agreement for them to leave the Tabqa Dam and to leave the remaining portions of the city they held, but it doesn't change the fact that when we see ISIS fighters on the battlefield and we have a clean shot at them, we will continue to take it," he said.

Capt. Davis declined to answer whether the U.S. is bound in any way when an ally like the SDF make an agreement on the battlefield.

"I think SDF let them have safe passage out of Tabqa, but once they continued on the battlefield, I don't know if that's something we're required to honor," he said.

Coalition forces have worked closely with Syrian partners in the fight for Tabqa Dam. In March, American forces ferried SDF fighters by helicopter and boat to Tabqa so they could kick off the assault.

Seizure of the dam removes a key roadblock for the SDF, which is preparing to launch a major assault on Raqqa, Islamic State's de facto capital in Syria.

Pentagon officials have said in the past that Islamic State fighters can surrender on the battlefield, but haven't provided details on how such negotiations might proceed, or who would take the lead on such matters since local forces

lead the fight in Syria and Iraq.

"The enemy is completely surrounded in west Mosul, and those who do not surrender to the Iraqi security forces will be killed there," Col. John Dorrian, spokesman for the U.S.-led coalition in Iraq and Syria said in February.

The U.S.-led coalition didn't respond to a request for comment or an explanation of policy.

Islamic State first took Tabqa Dam in 2013 and used it as a hideout for top-ranking militants and high-value prisoners with the confidence that the U.S. wouldn't bomb and possibly rupture the dam, which holds back Syria's largest reservoir, Lake Assad.

U.S. Wary of Moving Embassy in Israel

By DION NISSENBAUM

WASHINGTON—Secretary of State Rex Tillerson suggested that President Donald Trump might not move the U.S. embassy in Israel to Jerusalem if it could hurt efforts to jump-start the stagnant Middle East peace process.

In an interview broadcast Sunday on NBC News' "Meet the Press with Chuck Todd," Mr. Tillerson said the president "is being very careful to understand how such a decision would affect the peace process."

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

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

their embassies to Jerusalem.

While U.S. law requires Washington to move its embassy to Jerusalem, Democratic and Republican presidents have signed waivers blocking the move out of concern about the impact on Middle East peace.

Mr. Trump will meet Israeli and Palestinian leaders next week when he heads to the region on his first overseas trip. The president will also visit Saudi Arabia and Rome.

In the interview aired Sunday, Mr. Tillerson said the president's embassy decision would be based on talks with regional leaders, and he suggested that Israel might not see the move as a top priority.

"I think it'll be informed, again, by the parties that are involved in those talks," Mr. Tillerson said. "And most certainly Israel's view on whether Israel views it as being helpful to a peace initiative or perhaps a distraction."



A sign in January on a building in Jerusalem congratulated President Trump, who had vowed to move the U.S. embassy.

WORLD WATCH

ITALY

Coast Guard Rescues Hundreds of Migrants

Rescuers saved 484 migrants from boats in the Mediterranean and found the bodies of seven men who had died trying to get to Europe, Italy's coast guard said.

More than 45,000 people have reached Italy by boat from North Africa this year, a more than 40% increase from the same period of 2016, the International Organization for Migration says.

The new deaths add to a toll of 1,222 on the route as of May 10, compared with 966 by the same date last year, according to IOM calculations.

The migrants were rescued from four separate rubber boats by the Italian coast guard and

navy, an aid group and two private vessels, the coast guard said in a statement.

The coast guard gave no details of the migrants' origins, but most arriving in Italy are originally from Sub-Saharan Africa or Bangladesh, and pay Libya-based smugglers to organize their passage.

—Reuters

AUSTRIA

Foreign Minister to Propose Early Vote

Austrian Foreign Minister and new conservative leader Sebastian Kurz will meet Chancellor Christian Kern on Monday and suggest that they jointly propose a snap parliamentary election be held, Mr. Kurz said.

"I will meet Chancellor Christian Kern and President (Alexander) Van der Bellen tomorrow and make a suggestion," he told a news conference.

"From my point of view the

—Reuters



MAKING A SPLASH: Swimmers jump into the pool at Victoria Baths in Manchester for the first time in more than 20 years for a one-time event to raise funds for the historic facility's restoration.

first step must be that we reach a joint decision in favor of snap elections," he said, adding that he wanted the election to be held after the summer.

PORTUGAL

Little-Known Singer Wins Eurovision

Eurovision winner Salvador Sobral was greeted as a national hero upon his return home to Portugal on Sunday, a day after winning the song contest in Ukraine's capital.

The 27-year-old Mr. Sobral was a virtual unknown before his triumph in Kiev, but around 2,000 fans cheered his arrival at Lisbon's airport.

Mr. Sobral's gentle romantic ballad Amar Pelos Dois (Love For Both) conquered all in Saturday night's musical extravaganza, which was watched by millions of spectators around the world.

—Associated Press

PORTUGAL

Pope Canonizes Two Child Visionaries

Celebrating Mass in Fátima, Portugal, 100 years after three shepherd children reported seeing an apparition of the Virgin Mary there, Pope Francis canonized two of the visionaries as saints, saying Mary had given them a still-timely warning and message of hope.

The Mass began with a rite of canonization, with Bishop António Augusto dos Santos Marto of Leiria-Fátima petitioning the pope on behalf of Francisco and Jacinta Marto, the two visionaries who died in childhood, whom the pope then declared "honored among the saints."

—Francis X. Rocca



Export Food, Not Jobs

Main points from our Midwest job creation roundtable last week:



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



Sincerely,

A handwritten signature in black ink, which appears to read "Anthony Pratt". The signature is stylized and fluid.

Anthony Pratt
Executive Chairman, Pratt Industries

Pratt Industries, one of the largest corrugated box manufacturers in the United States, proudly supports the American food industry!

www.prattindustries.com

IN DEPTH

MISSILE

Continued from Page One
threaten the U.S. with nuclear attack.

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

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

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

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

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

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

Songs about machines

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

Photos from a return visit by Mr. Kim last August showed CNC machines with bright orange, robotic arms bearing the logo of Swiss engineering company ABB Ltd.

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

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



Crowds cheered in April as a missile was paraded in Pyongyang. On Sunday, South Koreans watched reports of the North’s latest launch.

“Basically, they can now produce anything [for missiles] that’s made of metal,” says Jeffrey Lewis, a missile specialist at the Middlebury Institute for International Studies in Monterey, Calif.

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

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

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

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

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

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

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

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

“So it’s clear, since we ex-



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

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

South Korea’s president condemned the launch as a ‘reckless provocation,’ a spokesman said.

“In contrast, Kim Jong Un owes nobody,” says Mr. Kim, who isn’t related to the ruling family.

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

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

The move put missile development on par with the army and air force—and a direct reporting line to Mr. Kim, according to state media. The command’s leader, Kim Rak Gyom, is a four-star general,

the same as other military-diplomacy chiefs.

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

The leader began assigning more people with technical skills to the missile program, rather than political appointees made by his predecessors, says Joseph Bermudez, an

American expert on North Korea’s military. Some of the newcomers might have picked up expertise while studying in India and other countries, according to recent U.N. reports.

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

Next to Kim Jong Un’s wife

The major general, who isn’t related to the North Korean leader, is often shown with him in state-media photos of missile tests. In February 2016, Kim Jong Sik sat next to Kim Jong Un’s wife at

a banquet celebrating a satellite launch.

Many missile and nuclear technicians were given apartments in swanky new high-rise buildings along the Taedong River, which runs through Pyongyang. State media showed dozens of visits in the past three years by the North Korean leader to three residential areas set aside for scientists. He offered advice on plastering and furniture.

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

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

Solid-fuel missiles can be readied to fire within a few minutes because they are stored with fuel inside. They are also easier to move around on transporters because they are safer and don’t require support vehicles for fueling.

In March 2016, North Korea tested a large solid-fuel engine for the first time, according to state media, which described it as a success. In February of this year, North Korea successfully tested a medium-range, solid-fuel missile that likely used the same engine, according to missile experts.

The new missile was carried and fired from a trans-

porter, which allows North Korea to deploy the weapons in remote areas that are harder for adversaries to spot. It also could help North Korea strike back if its main missile sites are destroyed early in a conflict.

Solid-fuel science

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

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

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

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

The technology is hard to master because the missile must be forced out of the water by high pressure—and then the engine must quickly ignite to initiate the missile’s flight. It has taken other countries about a decade’s work to successfully develop such missiles.

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

Many experts say North Korea last August had its first successful launch from a submarine of a missile with an estimated operational range of about 1,000 kilometers (620 miles). North Korea has just one old submarine capable of firing such missiles; satellite images show it is developing more.

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

10th missile launch

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

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

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

—Kersten Zhang contributed to this article.

CURSE

Continued from Page One
since, becoming an enduring headache for current rangers, who deal with almost daily shipments. In years past, the park maintained a display about the curse. Now, returned lava is added to a massive pile in a part of the park off-limits to the public. There are thousands of pieces—red and black, jagged and smooth, some tiny and others almost 3 feet long.

“Occasionally, you look at the postage and they paid \$100 to mail things back,” said Bobby Camara, a long-time ranger here who retired in 2013.

Rangers have tried to convince visitors the curse isn’t real and remind them that taking lava, or anything not sold in the gift shop, from the

park is illegal.

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

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

But huge quantities of lava keep arriving each year.

Even some lifelong Hawaii residents don’t mess with lava rocks.

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

The roommate left the bag on the dining-room table when she moved out. Ms. Eagle didn’t touch it—the lava sat there for months until a termite infestation drove her to move out as well.

“She thought maybe if she left it in Hawaii that she’d be fine,” Ms. Eagle, now 31, said. “But I wasn’t going to risk it.” Much of the lava shipped back ends up in the hands of Alton Uyetake, the officer in charge at the Hilo post office on the Big Island.

Sitting in his office on a recent Friday, Mr. Uyetake was surrounded by packages of lava. Though most had no return address, they often contained notes.

“My girlfriend went on vacation...and saw the big volcano,” one note said. “She brought me back a piece...I’m returning it because bad things have been happening.”

Another note said, simply,

“Please tell Pele we’re very sorry.”

And lava is only the beginning. People send black sand and green sand pilfered from beaches here. One box from Poland contained a dozen pieces of coral.

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

Then there are the store-bought items.

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

“Why would somebody send this? It’s not even lava,” Mr. Uyetake, a 54-year-old who grew up on the Big Is-

land, said as he picked up one of the necklaces. “This is a commercial thing. And the Buddha, man. Someone paid like 38 bucks for this thing.”

“To us it’s funny, but to them it’s real,” he added.

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

Paying respect to the world around you is an important part of the Hawaiian religion, said S. Nani Kaaialii, a lecturer in religion at the University of Hawaii.

Ms. Kaaialii, whose family has been on the Big Island for “many generations,” will chant before going into certain part of the forest, to ask permission; if she needs flowers to make a lei—a flower necklace—she will leave an offering, like another plant.

There is no trace of Pele’s curse in early Native Hawaiian books, Ms. Kaaialii said. “It’s offensive,” she said. “A curse is a concept that was given to us culturally. But it sounds more exotic if it’s coming from the natives.”

Still, she added, “I don’t believe in curses, but I believe the so-called curse works. People sort of stopped taking stuff.”

Many believe bringing lava back has helped.

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

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

“I feel kind of silly,” he said, when asked whether he believed in the curse. “But seeing is believing.”

U.S. NEWS

THE OUTLOOK | By Bob Davis

Trump's Scorn for TPP May Have Been Hasty

On his first workday in the Oval Office, President Donald Trump killed the Trans-Pacific Partnership. He will probably spend the rest of his term trying to revive parts of it.

The 12-nation trade pact among Pacific Rim countries, negotiated under President Barack Obama, became a punching bag in the presidential election. It was opposed by Mr. Trump, who called it “a horrible deal,” and by his opponent, Hillary Clinton.

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

These are all longstanding

goals of the U.S., which wants to beat back efforts to constrain U.S. cross-border dominance. TPP had critics on the left, who argued labor provisions would be weakly enforced, and on the right, who complained patent protection for pharmaceuticals should have been stronger. Critics across the political spectrum say TPP's investment protections would have encouraged U.S. companies to set up factories overseas at the expense of U.S. jobs.

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

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

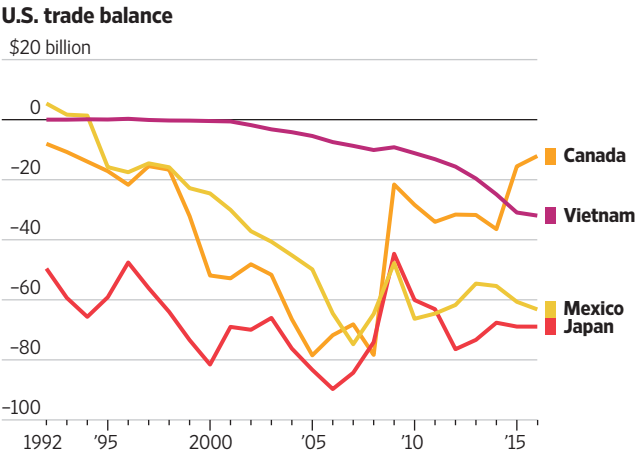
cials are starting to come to the same conclusion. “We should learn from and build on earlier negotiated trade agreements,” said U.S. Trade Representative nominee Robert Lighthizer in mid-March confirmation proceedings. “In a renegotiation of Nafta, we should consider incorporating those provisions [in TPP] as well as improving areas where we may be able to go beyond TPP.”

Two weeks later, the administration sent to Capitol Hill Nafta negotiating objectives that echoed TPP provisions on intellectual property, digital trade and services trade, state-owned enterprises and labor and environmental standards. The changes proposed were surprisingly mild, compared with Mr. Trump's campaign rhetoric. Congress had already mandated those TPP-style objectives in 2015 when it approved so-called fast-track legislation which the White House would need to pass any new trade deal.

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

To TPP, or Not to TPP

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



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

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

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

THE WALL STREET JOURNAL.

ful negotiation.”

On China, TPP offered Asian nations an alternative to depending solely on China. U.S. negotiators were pushing TPP provisions on

state-owned enterprises and digital commerce, among others, as global norms Beijing would be expected to eventually adopt.

Mr. Trump says he favors

Poll: More Disapprove of FBI Move

By Aaron Zitner

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

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

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

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

The new Journal/NBC News

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

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

Less than 40% said they viewed Mr. Trump in a positive light, while about half said they held a negative opinion, a slightly weaker showing for the president than in April.

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

As a whole, the public lacks a strong view of Mr. Comey himself, which may be a factor in how his firing reflected on Mr. Trump. More than half surveyed viewed the former FBI director neutrally or had no opinion. Among the rest,



AGENCE FRANCE-PRESSE/GETTY IMAGES

President Donald Trump

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

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

Asked wither the dismissal was due to “legitimate concerns” about how Mr. Comey had handled and released information about the FBI investigation into Hillary Clinton's use of a private email server, 38% agreed, while 43% disagreed. Respondents were able to cite both possibilities, or none, as reasons they believed Mr. Comey had been fired.

Mr. Trump has cited several reasons for dismissing Mr. Comey, saying that he had been a “showboat” and “was

not doing a good job.” Mr. Trump also said that when he decided to remove Mr. Comey, “I said to myself, I said, ‘You know, this Russia thing with Trump and Russia is a made-up story.’” Earlier, the White House had cited Justice Department criticism of Mr. Comey's handling of the investigation into Mrs. Clinton's email server during the time she was running for president. The survey also tested views of a Republican-backed overhaul of the Affordable Care Act that recently won approval in the House and is now in the hands of the Senate. Some 23% said the GOP legislation was a good idea, while 48% said it was a bad one.

The survey found a strong preference among people of all political affiliations for a special prosecutor or independent commission, rather than Congress, to take the lead in investigating Russia's involvement in the 2016 election. More than three-quarters of respondents said they favored an independent commission or prosecutor, while 15% favored an investigation led by Congress.

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

Trump Recorded Calls As a Businessman

By Alexandra Berzon

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

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

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

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

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

Michael Cohen, Mr. Trump's personal attorney, said, “In the decade that I worked for Mr. Trump, I have never seen a recording device attached to his phone, nor am I aware of any occasion where he taped a conversation.”

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

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

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

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

U.S. WATCH

WASHINGTON

Trump-Russia Probe To Get Treasury Data

A Treasury Department unit that specializes in combating money laundering will share financial records with a Senate probe into possible ties between Russia and President Donald Trump, said people familiar with the matter. The Senate Intelligence Committee requested the records from the Treasury's Financial Crimes Enforcement Network last month, these people said.

—Shane Harris and Carol E. Lee

JUSTICE DEPARTMENT

Sessions Seeks Tougher Sentences

Attorney General Jeff Sessions is scuttling an Obama administration policy to avoid charges carrying long, mandatory-minimum sentences for less serious, nonviolent drug offenders. Mr. Sessions's new guidelines revive a more aggressive policy created under President George W. Bush that tasked federal prosecutors with charging “the most serious readily provable offense.”

—Beth Reinhard

LOSSES

Continued from Page One sources will be complex because of the competing interests at stake.

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

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

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

Another six fund families potentially sustained ac-

tual and paper losses between \$100 million and \$200 million on their Puerto Rico holdings, according to the Journal's analysis. They are managed by Vanguard Group, Goldman Sachs Asset Management, Western Asset Management Co., Lord Abbett, AllianceBernstein Holding LP and Dreyfus Corp., which is part of BNY Mellon Investment Management.

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

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

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

For mutual funds, Puerto Rico's debt has long had a special appeal because the bonds



ALVIN BAEZ/REUTERS

The Capitol building in San Juan, Puerto Rico.

are tax exempt nationwide. Most municipal bonds exempt from state taxes only in the state they are issued. The commonwealth's ballooning debt load appealed to state-specific mutual funds in places where local government bonds were scarce or expensive.

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

When Puerto Rico last tapped the bond market in March 2014, offering 8% interest, underwriters were flooded with orders from hedge funds and mutual funds for the junk-rated debt. Twenty mutual-fund families bought a combined

\$263 million that quarter.

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

Many funds that had less than 15% of their assets invested in Puerto Rico debt in early 2013 also unperformed their benchmarks during the same period.

How much mutual funds

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

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

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

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

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

LIFE & ARTS



ART AND AUCTIONS

Trophies Go On the Block

A Brancusi, a Bacon and a Basquiat are among works hitting the market as owners sense collector confidence

BY KELLY CROW

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

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

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

Heavyweight asking prices are also creeping back. Christie's contemporary sale on Wednesday evening contains seven works with pricetags of \$20 million or more; only three works crossed that bar at its similar sale last May. Christie's plans to ask at least \$50 million for Francis Bacon's first portrait of his lover, 1962's "Three Studies for a Portrait of George Dyer," and \$35 million for Cy Twombly's 1962 homage to mythological bestiality, "Leda and the Swan." On Thursday, Phillips will ask at least \$25 million for Peter Doig's "Rosedale," a 1991 painting of a Toronto manor house in the snow. Mr. Doig's current record, set two years ago, is \$25.9 million for a 1990 painting of a white canoe, "Swamped."

Sotheby's plans seek at least \$60 million for Basquiat's untitled 1982 painting of a black skull surrounded by sky-blue patches at its



Thursday sale. Sotheby's said it's so sure that the Basquiat will break the artist's \$57 million auction record—set last May by an untitled image of a devil—that the house promised to give the skull's seller an undisclosed sum worth at least as much as the record if the skull sells for less.

All three houses built in plenty of financial arrangements to offset their risk in putting these behemoths on the market. Sotheby's told sellers of 39 works worth \$208 million combined that their pieces would sell no matter what, either to the house or to 19 outside investors who have pledged to buy works if no one else steps up in the sales. That means that Sotheby's has essentially presold roughly 43% of the value of its spring series ahead of time. Christie's made similar guarantees for \$302 million worth of art, or roughly 45% of the potential value of its sales this week.

"Some sellers wanted a little extra insurance," said Simon Shaw, world-wide co-head of Sotheby's impressionist and modern art department.

Other trends to track:

SELFIE ART

In recent seasons, collectors paid premiums for abstract art with universal wall power, like Mark



Clockwise from top: Among the works that will go up for auction in New York this week are Francis Bacon's 'Three Studies for a Portrait of George Dyer,' Egon Schiele's 'Danaë,' Kazimir Malevich's 'Suprematist Composition with Plane in Projection' and Jean-Michel Basquiat's untitled painting from 1982.

Rothko or Clyfford Still. But this week, figurative art could hold sway. Nude scenes and self-portraits are "all over these sales," said Sara Friedlander, head of Christie's post-war and contemporary art department. Expect feverish bidding for Philip Guston's 1979 "Painter at Night," which Christie's estimates will sell Wednesday for at least \$8 million, and Rudolf Stingel's 15-foot-tall self-portrait from 2006, "Untitled (After Sam)," which Christie's aims to sell for at least \$10 million in the same sale. On Tuesday, Sotheby's will ask \$30 million-plus for an early Egon Schiele nude from 1909, "Danaë."

FRESH TO MARKET

The death of a respected collector can be a lucky break for auctioneers because estate material that's been tucked away for decades in someone's home can become a bidding goldmine. This season, a host of estates head to market, which is why 60% of the pieces in Christie's Monday sale of impressionist and modern art haven't been to auction in at least a decade. Among them, Constantin Brancusi's bronze "Sleeping Head," which is esti-

mated to sell for at least \$25 million. Sotheby's has countered with its own auction first-timers like Kazimir Malevich's 1915 "Suprematist Composition with Plane in Projection," which Mr. Shaw calls "fantastically pure." He estimates it will sell for at least \$12 million Tuesday. There's also Edgar Degas's 1860 "Young Spartan Girls Provoking the Boys," which has been in the seller's family for 98 years. Estimate: \$4 million-plus.

TEST OF TIME

Several artists are also undergoing major tests of their price levels and global appeal this week, including wrinkly abstract painter Simon Hantai and feathery abstract painter Mark Grotjahn. Christie's is also betting on a market boost for Francis Picabia, the French avant-garde painter whose layered scenes were touted during his recent retrospective at the Museum of Modern Art in New York. On Monday, Christie's will ask least \$700,000 for Picabia's neo-classical collage from 1929, "Xanthe." Two days later, the house will ask \$1.5 million or more for the artist's 1941-42 double portrait, "Adam and Eve."

PLAYLIST | By Paul Theroux

A KENYAN SINGER'S INFLUENCE



Paul Theroux, 76, is a travel writer, author of 33 books, including "The Lower River" and "The Mosquito Coast." His latest novel is "Mother Land" (Eamon Dolan). He spoke with Marc Myers.

In 1965, I landed a job teaching English at Makerere University in Uganda. For the previous two years I had been in Malawi, in the Peace Corps. Though I spoke the major Malawi language, Swahili was the common language in Uganda, and I was determined to learn it. "Malaika" by Kenyan singer Fadhlil William captivated me, for its proper Swahili and its romance.

I first heard the song on a jukebox at City Bar in Kampala,

Uganda. I was there with friends having a beer. The record had been released a few years earlier, and it was hugely popular.

At the time, I was 24 and single. I had a good-paying job and a car. I was out and about all the time at clubs and bars—the things young, heedless guys do. The moment I heard the lyrical recording, I wanted to hear it over and over again.

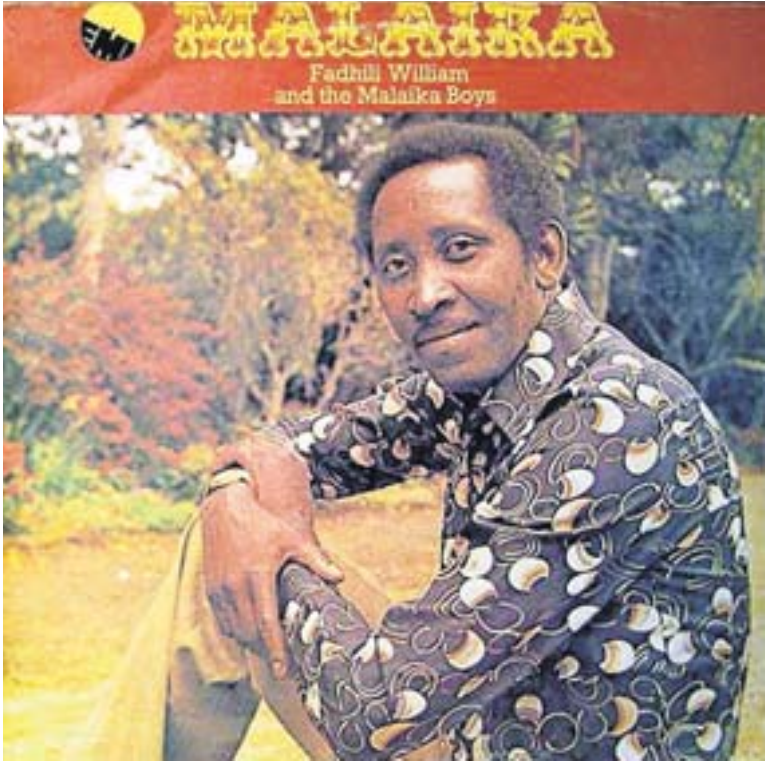
The record opens with an electric guitar playing a simple descending folk melody. Behind the guitar is a rhythm guitar and an electric bass played by William's backup combo. Each instrument creates its own rhythmic line, yet all three work together perfectly. When William begins to sing, his band provides the backup vocals.

The song is about a guy in love

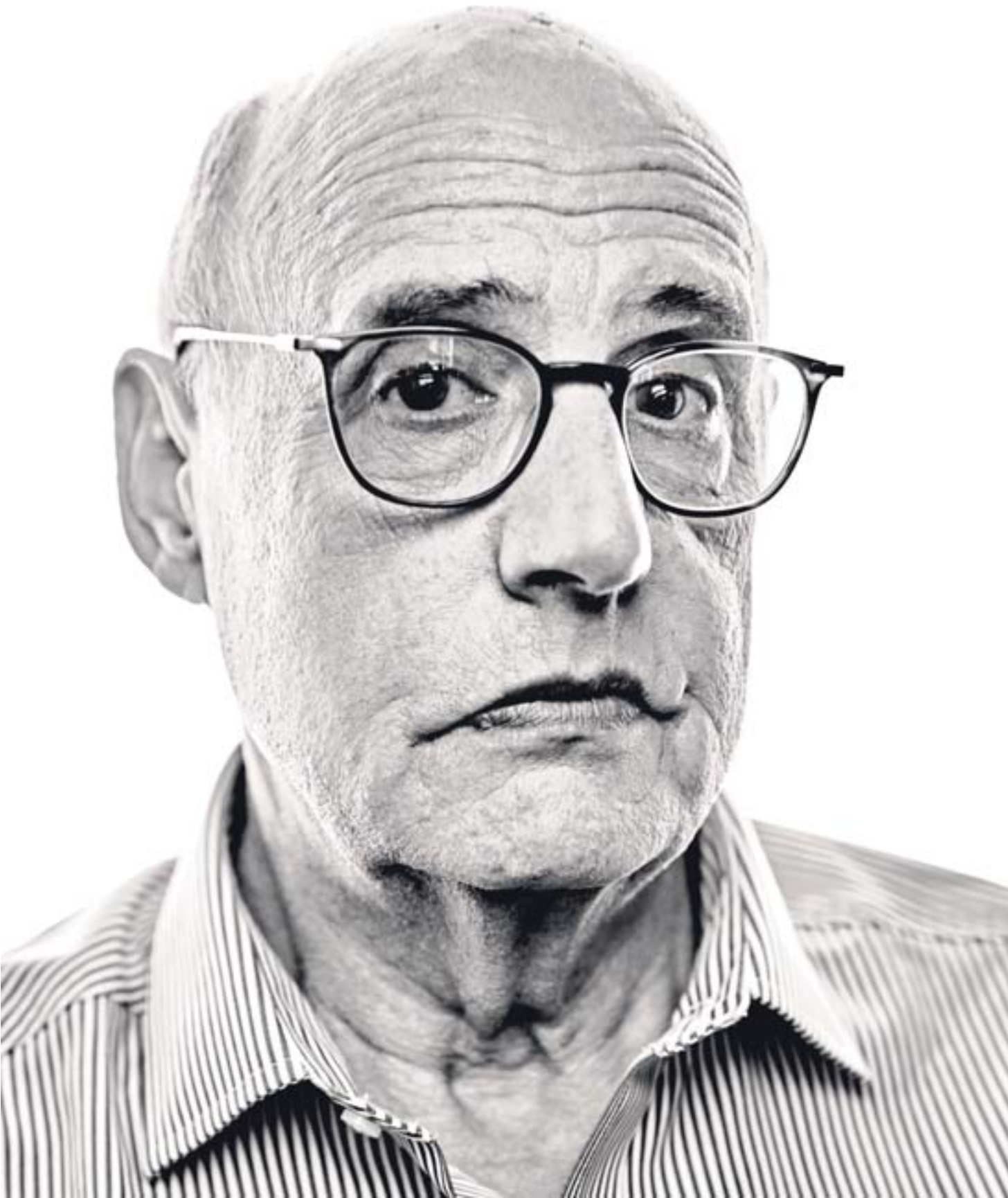
with a girl he wants to marry, but he doesn't have enough money for her dowry. He keeps telling her he loves her and calls her angel and then little bird: "Angel, I love you angel / And I, what should I do, your young friend / I am defeated by the dowry that I don't have."

Little by little, the song helped me acclimate to Swahili's cadence and phrasing. Songs are always useful when learning a language. What I was responding to emotionally was this song's rhythm, the lead guitar and the harmony.

I left Uganda for a job in Singapore in 1968. I never bought a copy of "Malaika." The song played so often on Ugandan radio and on jukeboxes that I never needed one. Besides, I had the song in my head. Just humming "Malaika" inspired me to write.



LIFE & ARTS



SHAYAN ASGHARIAN FOR THE WALL STREET JOURNAL

WEEKEND CONFIDENTIAL | By Alexandra Wolfe

Jeffrey Tambor

The late-blooming actor on his latest role as a transgender woman

IN HIS NEW memoir, “Are You Anybody?” the actor Jeffrey Tambor writes that people sometimes mistake him for Dr. Phil and thank him for all the good he’s doing. Other times, they think that he’s the comedian Larry David and thank him then, too.

Mr. Tambor’s career in film and television didn’t take off until relatively late in his career, but he’s increasingly likely to be recognized as himself these days—especially after his latest, Emmy-winning role, as a trans-

gender woman named Maura Pfefferman in Amazon’s “Transparent.” Mr. Tambor, 72, got his first big part in the 1990s, on “The Larry Sanders Show,” when he was in his 40s; he landed his second in his 50s on “Arrested Development.”

Mr. Tambor decided to write the book so that his five children—especially his four younger ones, ages 7 to 12—could understand what he does for a living. He travels to Los Angeles when he’s filming, but the

rest of the time, he lives with his family in New York’s Westchester County.

Raised in San Francisco in a fairly observant Jewish family, the son of a flooring contractor and a homemaker, Mr. Tambor didn’t have an easy childhood. His mother was an alcoholic, and he was overweight and had a lisp. He was enamored with show business even as a child and sometimes pretended to be a talk-show host in his basement. He would simultaneously play the guest and the audience, whose laugh-

ter, he writes in his book, “sounded a lot like a phlegmy cat hissing in its last stages.”

In high school, he made a conscious decision to be funny after an episode when he told off a teacher who liked to pick on him. She said something snarky to him in class one day, and he replied, “Oh, teacher made a funny!” The class laughed, the teacher looked disarmed, and he realized that humor could foil bullies.

After graduating from San Francisco State University, he earned a master’s degree in theater from Wayne State University in Detroit. He started out in repertory theater in Milwaukee before moving to New York. He spent the next two decades playing parts in theater and on TV shows and movies—including one-time and occasional roles on “Taxi,” “Hill Street Blues” and “The Golden Girls”—but he didn’t earn widespread attention.

That changed with “The Larry Sanders Show” (1992-98), in which he played the needy sidekick to Garry Shandling’s talk-show host. He received four Emmy nominations for the part. His next big role was as the patriarch of the dysfunctional Bluth family on the comedy “Arrested Development,” a cult hit that ran from 2003 to 2006 and then had a fourth season on Netflix in 2013. His character, George Bluth Sr., spends time in prison for taking money from his real-estate company, escapes and for a time hides out in the attic of a model home. Even today, Mr. Tambor says, teenagers see him and yell out one of his character’s most famous lines, told to his son: “There’s always money in the banana stand!”

As soon as he read the script for “Transparent,” he knew he wanted to play the part of Maura, formerly Mort, a retired college professor with three grown children who comes out to his family as a woman in the first season. Mr. Tambor is anxious to do justice to the part. “It’s the most antsy I’ve ever been,” he says.

To understand the trials his character would face, he sometimes goes out to lunch or to the grocery store as Maura. People often stare and whisper, he says. He once went to a diner for lunch dressed as Maura with a transgender woman who is a producer on the show. A man stared at them through the meal, Mr. Tambor recalled, then came up and said, “Have a good day, ladies,” as he was leaving.

Mr. Tambor will be starring again in the fourth season of “Transparent,” airing this fall. The second season of the show averaged 1.49 million viewers an episode, according to Symphony Advanced Media.

Off screen, he has taught acting classes for more than 40 years, since he was in graduate school, to aspiring thespians as well as to corporate clients and students. He says that one of the best pieces of life advice he got came from the acting teacher Milton Katselas: “Adore everything.”

Now that he has finished writing his first book, he is considering taking a literature class or learning to play the piano after watching his children take lessons. Mr. Tambor is also a co-owner of Skylight Books in Los Angeles, which opened in 1996.

He delights in the mundane aspects of life, he says. “If I have coffee with people, I say, ‘Tell me what your day is like.’ ” He asks what they have for breakfast and other quotidian details.

Mr. Tambor makes his own coffee at night and leaves it on his nightstand so that he can drink it when he wakes up. He acquired his taste for cold coffee in college, when he would make a pot at night and drink it for hours so that he could stay awake learning his lines for school productions.

He spends mornings at home taking his children to their activities. “If you have four children, you put on a cap that says, ‘Daddy Driver,’” he says with a laugh. The routine clears his head. “You can’t worry about anything else when you have to get that flute and that daughter to that class at 8:15 a.m.,” he says. “Isn’t that great?”

TELEVISION

WAUGH’S TIMELY SOCIAL SATIRE COMES TO TV

BY TOBIAS GREY

POST-BREXIT BRITAIN is on the Waugh path. The first television adaptation of Evelyn Waugh’s satirical debut novel “Decline and Fall” has been hailed by British critics for how its depiction of a deeply divided country resonates today.

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

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

“Decline and Fall” features Eva Longoria, a star of “Desperate Housewives,” in her first role in a British TV period piece. She plays a rich South American socialite with shady business dealings. In his novel, Waugh describes the character as having “two lizard-skin feet, silk legs, chinchilla body...and the high invariable voice that may be heard in any Ritz Hotel from New York to Budapest.” “Poirot” star David Suchet takes a rare comic turn, playing the obsequious headmaster of a rundown Welsh boarding school for boys.

The show’s naive hero, Paul Pennyfeather, played by rising British comedian Jack Whitehall, ends up teaching at the school after being expelled from Oxford University. Paul has to leave Oxford after falling victim to a prank by a group of debauched under-

graduates who are members of the Bollinger Club. Waugh allegedly based the society on Oxford’s elite Bullingdon Club, an all-male students’ dining group that still exists. Former Bullingdon members include conservative politicians such as David Cameron, Boris Johnson and George Osborne.

When Mr. Cameron was Prime Minister he arranged the referendum that led to Brexit. Mr. Johnson, the current Foreign Secretary, was one of the most vocal advocates for Britain to break away from the European Union. The show’s Spanish director, Guillem Morales, told the BBC that “Decline and Fall” “is about a generation ruining the next one.” The tale of a young man navigating a society that is “elitist, classist, xenophobic, racist, corrupt and amoral,” is relevant today, Mr. Morales said.

TV producers were reluctant to adapt “Decline and Fall” in part because of the racism of many characters in the novel, says Mr. Wood, who created the comic TV series “Rev.,” about a Church of England priest who leaves his parish in leafy Suffolk to become the vicar of an inner-city London church. While working on “Decline and Fall,” Mr. Wood recalls a film-director friend advising him to cut a scene where an African-American jazz musician named Chokey accompanies Ms. Longoria’s character to a school sports day and is ridiculed by the attending gentry.

Mr. Wood decided to keep the scene but not some of Waugh’s more scabrous dialogue. “So long as it’s the characters who are being racist, that’s fine, but without doubt there are some aspects of the book which are not right for a piece of prime-time entertainment,” he says.

He added a personal touch to the first episode by having a pig’s head tossed out a window of Scone College, where the Bol-



Jack Whitehall and Eva Longoria in the television adaptation of Evelyn Waugh’s ‘Decline and Fall.’

ACORN TV

linger Club is having a party. The scene is Mr. Wood’s nod to the so-called Piggate scandal of 2015, when an unauthorized biography of Mr. Cameron alleged that the former prime minister, while a student, put “a private part of his anatomy” into a dead pig’s mouth as part of an initiation ceremony. In response to the allegation, Mr. Cameron told reporters in 2015 that his representatives had issued “a very specific denial,” to which he had nothing to add.

Mr. Wood also wrote a scene for the second episode where a journalist disguised as

a sheikh infiltrates a dinner party to eavesdrop on political gossip. This echoes the working methods of real-life undercover journalist Mazher Mahmood, who unearthed numerous scoops for British tabloids over the past 20 years before being sentenced last year to 15 months in prison after being found guilty of conspiring to pervert the course of justice.

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

OPINION

REVIEW & OUTLOOK

A Week in Trump’s Washington

The Washington spectacle continues in the aftermath of President Trump’s firing of FBI Director James Comey, and unlike the Ringling Bros. it won’t be closing soon. As a service to readers, we thought we’d sort the fact from the suspicion, hyperventilation and bluster and sum up what we’ve learned from the latest tumultuous week in the Trump Presidency.

• *Whatever Mr. Trump’s calculations, Mr. Comey’s departure is good for the FBI, the Justice Department and the country.* The President and White House first said Tuesday that he had acted based on the recommendation of his top two Justice officials. On Thursday he told NBC News that he was going to fire Mr. Comey anyway, and that he had the FBI’s Russia-Trump probe on his mind.

The two aren’t mutually exclusive, but with Mr. Trump who knows? He often acts on one impulse then changes his explanation later. The main problem of his Presidency is that he treats his own statements as a form of public entertainment rather than acts of persuasion to build public trust. This is self-destructive, but it means everyone else has to discount what he says and focus even more than with most politicians on the substance of what he does.

Mr. Comey’s political calculations—most of them aimed at preserving his personal standing—had damaged the bureau. His dismissal sent a message that the FBI director is politically accountable through the Attorney General and Deputy AG.

• *Rod Rosenstein deserves better treatment—from Democrats and Mr. Trump.* The Deputy AG’s memo on Mr. Comey’s 2016 behavior is persuasive and a public service. It bears the hallmark of a straight shooter concerned with the accountability that is essential to a credible rule of law.

Democrats are now saying they don’t trust him, though a chunk of the memo quoted what Democratic legal veterans had written. They should be pleased to have someone of recognized integrity in such a crucial Justice role. So should Mr. Trump, whose initial public statements appeared to load the responsibility for Mr. Comey’s dismissal on Mr. Rosenstein.

The Washington Post report that Mr. Rosenstein threatened to resign has since been contradicted—it doesn’t sound like his M.O.—but Mr. Trump should still apologize to him.

• *The various Russia probes will continue with even more vigor.* Acting FBI director Andrew McCabe, a Comey loyalist, told Congress last week that he has seen no attempt to interfere with its investigation. He said the FBI has ample resources for the job and that he wasn’t aware of a request by Mr. Comey for more. This contradicted another media report.

If Mr. Trump hoped to cover something up, sacking the FBI director is exactly the wrong way to do it. Every G-man with a mediocre lead will leak if he thinks politicians are trying to sit on evidence. The next FBI director will be watched like

a Russian agent for any hint of political favoritism. The House and Senate intelligence committees have also been given new impetus for thorough investigations.

• *There still is no serious evidence of Trump-Russia collusion during the 2016 campaign.* The worst detail so far is Michael Flynn’s denial (he says he forgot) that he had met with the Russian ambassador. The various other names who’ve flashed as targets of media suspicion are small-timers (Carter Page) or Beltway bandits (Paul Manafort) who look more like mercenaries than conspirators.

Perhaps such evidence will emerge. If it does, Mr. Trump’s Presidency isn’t likely to survive. If it doesn’t, he could emerge politically stronger for having his denials vindicated.

• *Mr. Trump’s FBI nominee had better be someone independent and outside the Trump orbit.* Mr. Trump has rebounded from other mistakes with good hires—see H.R. McMaster as national security adviser after Mr. Flynn’s flameout. He needs to ace the FBI pick now to neutralize Democratic opposition and reassure bureau agents on the case. We’ve suggested former Treasury official Stuart Levey, but no political hacks allowed.

• *The Trump White House is a mess, but then we knew that.* The chaos and self-serving leaks after the Comey firing make the Bill Clinton White House look like a model of discipline and decorum. If Trump aides aren’t trashing each other, they’re trashing the boss, who doesn’t seem to mind humiliating them as he has spokesman Sean Spicer. Then there was last week’s leak—dumped to reporters favored by the Stephen Bannon team—that Mr. Trump is unhappy with General McMaster, who apparently suffers from being too capable.

The historical analogy isn’t Richard Nixon, whose advisers were effective in their abuses until they were finally discovered. This is more like Jimmy Carter—outsiders who arrived to drain the swamp and are swamped by incompetence. The blundering over the Comey decision and aftermath raises serious doubts that this White House has the focus and discipline to manage tax reform.

• *The main source of dysfunction is the man at the top.* The President is his own worst enemy—impulsive, thin-skinned, undisciplined, by now readers know the story. Every time his supporters think he might finally be appreciating the weight of the job, or the gravity of a President’s words, he goes on a Twitter rant.

Rather than focus on his agenda, he keeps the Russia pot boiling by railing against critics. Health care—what’s that? He faults his communications team for mistakes, but they are usually based on incomplete information or an attempt to clean up the boss’s effusions.

Mr. Trump has assembled many able advisers and officials who are trying to serve the country and steer the mercurial President from his own worst instincts. If Mr. Trump won’t heed their counsel, he really will turn into Jimmy Carter.

A Rare Show of Class

As if we needed another example of civility gone off the rails at America’s institutions of higher learning, the treatment given Education Secretary Betsy DeVos last week at Bethune-Cookman University deserves special mention. Edison O. Jackson, the president of Bethune-Cookman, a historically black institution of higher education, invited Mrs. DeVos to be the school’s commencement speaker. As the Secretary began, many students screamed at her and turned their backs to the

stage. So it went for nearly the whole speech. President Jackson, let it be noted, defended the Secretary at her side, and the school’s faculty stood on stage in solidarity with him.

The irony here is that Mrs. DeVos has dedicated her adult life to improving educational opportunities for inner-city black children, specifically so they can qualify for a higher education and the lifetime of benefits that brings. The U.S. is reaching the limits of political polarization when it turns this self-defeating.

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

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

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

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

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

Why James Comey Had to Be Fired



POTOMAC WATCH
By Kimberley A. Strassel

Testifying before the U.S. Senate Judiciary Committee earlier this month, James Comey recalled a moment that should have held more significance for him than it did. At the height of the presidential campaign, President Obama’s attorney general, Loretta Lynch, had chosen to meet with Bill Clinton on an airport tarmac. That, said the now-former FBI director, “was the capper for me.” Hillary Clinton’s emails were being probed, but Ms. Lynch was too conflicted to “credibly complete the investigation.” So Mr. Comey stepped in.

Donald Trump and senior Justice Department leaders might appreciate the impulse. According to Democrats and the media, Attorney General Jeff Sessions is too conflicted to recommend sacking Mr. Comey; the Trump administration is too conflicted to name a successor; the entire Justice Department and the Republican Congress are too conflicted to conduct true oversight.

Entirely missing from this narrative is the man who was perhaps the most conflicted of all: James Comey. The FBI head was so good at portraying himself as Washington’s last Boy Scout—the only person who ever did the right thing—that few noticed his repeated refusal to do the right thing. Mr. Comey might still have a job if, on any number of occasions, he’d acknowledged his own conflicts and stepped back.

Deputy Attorney General Rod Rosenstein’s memo to Mr. Sessions expertly excoriated Mr. Comey’s decision to “usurp” Ms. Lynch’s authority and his “gratuitously” fulsome July press conference. But Mr. Comey’s dereliction of duty preceded that—by his own admission. Remember, he testified that the Lynch-Clinton meeting was but the “capper.” Before that, he told lawmakers, “a number of things had gone on which I can’t talk about yet that made me worry the department leadership could not credibly complete the investigation.”

We don’t know what these things were, but it seems the head of the FBI had lost confidence—even before TarmacGate—that the Justice Department was playing it anywhere near straight in the Clinton probe. So what should an honor-bound FBI director do in such a conflicted situation? Call it out. Demand that Ms. Lynch recuse herself and insist on an appropriate process to ensure public confidence. Resign, if need be. Instead Mr. Comey waited until the situation had become a crisis, and then he ignored all protocol to make himself investigator, attorney, judge and jury.

By the end of that 15-minute July press conference, Mr. Comey had infuriated both Republicans and Democrats, who were now universally convinced he was playing politics. He’d undermined his and his agency’s integrity. No matter

his motives, an honor-bound director would have acknowledged that his decision jeopardized his ability to continue effectively leading the agency. He would have chosen in the following days—or at least after the election—to step down. Mr. Comey didn’t.

Which leads us to Mr. Comey’s most recent and obvious conflict of all—likely a primary reason he was fired: the leaks investigation (or rather, noninvestigation). So far the only crime that has come to light from this Russia probe is the rampant and felonious leaking of classified information to the press. Mr. Trump and the GOP rightly see this as a major risk to national security. While the National Security Agency has been cooperating with the House Intelligence Committee and allowing lawmakers to review documents that might show the source of the leaks, Mr. Comey’s FBI has resolutely refused to do the same.

The FBI head’s sense of perfect virtue led him to ignore his own enormous conflicts.

Why? The press reports that the FBI obtained a secret court order last summer to monitor Carter Page. It’s still unclear exactly under what circumstances the government was listening in on former Trump adviser Mike Flynn and the Russian ambassador, but the FBI was likely involved there, too. Meaning Mr. Comey’s agency is a prime possible source of the leaks.

At the Senate hearing earlier this month, Chairman Chuck Grassley pointed out the obvious: The entire top leadership of the FBI is suspect. “So how,” Mr. Grassley asked, “can the Justice Department guarantee the integrity of the investigations without designating an agency, other than the FBI, to gather the facts and eliminate senior FBI officials as suspects?” Mr. Comey didn’t provide much of an answer.

All this—the Russia probe, the unmasking, the leaks, the fraught question of whether the government was inappropriately monitoring campaigns, the allegations of interference in a presidential campaign—is wrapped together, with Mr. Comey at the center. The White House and House Republicans couldn’t have faith that the FBI would be an honest broker of the truth. Mr. Comey should have realized this, recused himself from the probes, and set up a process to restore trust. He didn’t. So the White House did it for him.

Colleagues describe Mr. Comey as an honorable man. The problem seems to be that his sense of perfect virtue made him blind to his own conflicts and the mess he had made. New leadership at the FBI is a chance for a fresh start.

Write to kim@wsj.com.

Watergate Lessons For President Trump

By Seth Lipsky

With all the calls for an independent prosecutor for President Trump after his firing of the FBI’s James Comey, why not move the investigation to the House Judiciary Committee? It could get right down to whether the president has done anything worthy of impeachment.

It’s not that I think the president is guilty. It’s just the only properly constitutional way to investigate this, or any, president. No one has adduced any evidence of wrongdoing by Mr. Trump. I’d like to see him cleared. But if he is to be investigated for crimes or misdemeanors, the House, with its impeachment authority, is the venue.

The Democrats are outraged at the thought that Mr. Trump, though he denies it, may have fired the director because the FBI boss was investigating the president. But if Mr. Comey was investigating the president, that would be grounds to take the investigation away from him (or simply to fire him). If the president is the target, the matter belongs to the House.

Like others in my generation, I came to this view through the experience of Watergate, when President Nixon fired special prosecutor Archibald Cox, and Whitewater, when President Clinton was pursued by independent counsel Kenneth Starr.

Cox was brought in after Attorney General Elliot Richardson—ignoring the separation of powers—made a deal with Congress to diminish the president’s authority. The deal was that Cox would be dismissed only for cause. Cox subpoenaed Nixon and refused a compromise. The president then ordered the attorney general to fire him. An insubordinate Richardson and his deputy refused. It took Solicitor General Robert Bork to do the constitutional deed.

Eventually, the Judiciary Committee hired staff and went after Nixon, voting out three articles of impeachment (obstruction, abuse of power and contempt of Congress). Before the House could decide whether to press the charges, Nixon quit.

The Ethics in Government Act of 1978 enabled the unleashing of a prosecutor almost completely beyond the reach of the executive branch. It was used to harry the Reagan administration. The Supreme Court, in *Morrison v. Olson* (1988), rejected a constitutional challenge. In a lone dissent, Justice Antonin Scalia warned that an independent prosecutor could affect the “boldness of the president.” While issues often come before the court “clad in sheep’s clothing,” he wrote, “this wolf comes as a wolf.”

Democrats finally recognized the wolf in the form of Mr. Starr, who was put up against President Clinton. He sent his findings to the Judiciary Committee, which recommended four counts of impeachment, of which the full House affirmed two (perjury and obstruction). Mr. Clinton was acquitted by a Republican Senate. The GOP would have needed help from the Democrats to reach the constitutionally required supermajority of 67 votes for guilty.

It was a bitter disappointment to those who’d fought for an investigation. The one salve was the almost universal bipartisan conclusion that independent counsels led to abuse. Within months, Congress allowed the independent-counsel law to expire.

The dangers Scalia warned about in 1988 have rarely loomed larger than today, when a new president confronts a global terrorist war. In the middle of this existential struggle, who would benefit were Mr. Trump to be “dragged from pillar to post”?

That’s a phrase Thomas Jefferson used when warning against subjecting presidents to the common courts, as Mr. Trump’s aides, cabinet officials, family and former business associates will be if the current calls for an “independent” investigation are heeded.

The right adjective for what is needed is “constitutional.” Moving the probe to the House Judiciary Committee certainly has risks. But no one could say it lacks the power to put this controversy to bed, one way or another, under the quilt of the Constitution.

Mr. Lipsky is the editor of the *New York Sun*.

OPINION

On Tax Reform, Paul Ryan Knows Better

By Laurence Kotlikoff

As Republicans push toward a major rewrite of the U.S. tax code, they must evaluate two competing proposals: the House GOP's "Better Way" plan and President Trump's framework, introduced last month. Either would greatly simplify personal and business taxation, but pro-growth reformers should hope that the final package looks more like the House's proposal.

Let's begin the analysis with personal taxes. Both plans eliminate the alternative minimum tax, deductions for state and local taxes, and the es-

The House proposal beats Trump's plan, which is more regressive and would induce huge tax avoidance.

tate tax. The House plan eliminates exemptions, while Mr. Trump's outline is unclear. Both raise the standard deduction, reduce the number of income-tax brackets, lower the top marginal tax rate and provide a big break to those with pass-through business income.

On this last point the Trump plan is particularly generous. It taxes pass-through income at 15%—far below its proposed top rate of 35% for regular income. The large gap between these rates would induce massive tax avoidance by the rich. The Better Way's proposed rates are much closer: 25% and 33%, respectively.

Another criterion to judge tax reform is its effect on the budget. Absent any economic response, the Better Way proposal would lower federal tax revenue by \$212 billion a year, according to a recent study I conducted with Alan Auerbach, an economist at Berkeley. But some economic response is likely. The House plan would cut the U.S. corporate-tax rate from one of the highest among developed countries to one of the lowest. Computer simulations—which will be included in a journal article I am writing with Seth Benzell and Guillermo Lagarda—suggest that increased dynamism could raise U.S. wages and output by up to 8%. Under this optimistic scenario, federal tax revenue would rise by \$38 billion a year.

We are in the process of simulating the Trump plan, and it is too early to say whether it produces less revenue. The plan's potential for tax avoidance, however, is a major red flag.

Which plan is more regressive? Both personal-tax reforms appear to help the rich. But the Better Way's business-tax reform actually appears highly progressive. Despite the popular perception that the corporate-income tax is paid by the rich, my research suggests it represents a hidden levy on workers. This causes American companies and capital to flee the country, reducing demand for U.S. workers, whose wages consequently shrink.

The Better Way plan transforms the corporate-income tax into something different: a business cash-flow tax with a border adjustment. Notwithstanding innumerable mischar-



The president and the speaker in the Rose Garden on May 4.

acterizations by the press, politicians and business leaders, the cash-flow tax implements a standard value-added tax, plus a subsidy to wages. Every developed country has a VAT, which is an indirect way to tax consumption. All of these levies have border adjustments, which ensure that domestic consumption by domestic residents is taxed whether the goods in question are produced at home or imported. Unlike the Better Way, Mr. Trump's plan doesn't include a border adjustment, which means it effectively taxes exports and subsidizes imports. This undermines his goal of reducing the U.S. trade deficit.

Where is the progressive element to the cash-flow tax? It's in the subsidy to wages, which insulates workers from the brunt of the VAT. They will pay VAT consumption taxes

when they spend their paychecks, but they also will have higher wages thanks to the subsidy. The folks who truly pay the cash-flow tax are the rich, because they pay the VAT when they spend wealth that was earned years or decades ago.

As my study with Mr. Auerbach shows, this quiet but large wealth tax makes the overall House plan almost as "fair" as the current system. Our analysis—in contrast with studies done by congressional agencies and Washington think tanks—assesses progressivity based on what people of given ages and economic means get to spend over the rest of their lives.

Consider the present value of remaining lifetime spending for 40-year-olds. The richest quintile of this cohort accounts for 51% of the group's spending, and the poorest

quintile for 6.3%. Under the House tax plan, those figures move only modestly, to 51.6% and 6.2%. And the Trump plan? Hard to say, given how easily the rich could transform otherwise high-tax wage income into low-taxed pass-through business income.

The Trump tax plan strikes out on all counts. Whoever knew tax reform could be this complicated? We specialists in public finance did. The bottom line is that the U.S. needs more revenue and less spending to close the long-term fiscal gap. The nation's true debt—the present value of all projected spending, including the cost of servicing the \$20 trillion in official debt, minus the present value of all current taxes—has been estimated by Alan Auerbach and Brookings's William Gale to be as high as \$206 trillion.

The Better Way plan moves in the right direction, but if the economy doesn't respond as hoped, there's a risk of larger deficits. One way to prevent that would be to eliminate the ceiling on earnings subject to the Social Security payroll tax. That could add \$300 billion to the Treasury each year, according to our calculations.

But even without that adjustment, the House plan seems far superior to both the current system and the Trump plan. The press, politicians and business leaders should get things straight, including this important point: The Better Way tax plan is indeed a better way.

Mr. Kotlikoff, an economist at Boston University, is director of the Fiscal Analysis Center.

A \$697,177 'Climate-Change Musical': You Call That Science?

By Henry I. Miller

Research is the lifeblood of technological innovation, which drives economic growth and keeps America competitive. Government-funded scientific research runs the gamut from studies of basic physical and biological processes to the development of applications to meet immediate needs.

Unfortunately, the definition of what constitutes "science" has gradually expanded to include sociology, economics and woo-woo "alternative medicine." Much of the spending on these disciplines by America's two major funders of nonmilitary research, the National Science Foundation and the National Institutes of Health, is systematically shortchanging taxpayers.

The NSF, whose mission is to ensure U.S. leadership in areas of science and technology that are essential to economic growth and national security, frequently funds politically correct but low-value research projects. A few doozies include the veiling-fashion industry in Turkey, Viking textiles in Iceland, the "social impacts" of tourism in the northern tip of Norway, and whether hunger causes couples to fight (using the number of pins stuck in voodoo dolls

as a measure of aggressive feelings). Research funding in the geosciences, including climate change, is certainly legitimate, but not when it goes to ludicrous boondoggles such as a climate-change musical that cost \$697,177 to produce.

The primary culprit is the NSF's Directorate for Social, Behavioral and Economic Sciences, known as SBE. Underlying its ability to disperse grants is the wrongheaded notion that social-science projects such as a study of animal depictions in National Geographic and a climate-change musical are as important as research to identify early markers for Alzheimer's disease or pancreatic cancer.

In January, President Obama signed the American Innovation and Competitiveness Act, which accomplished little with respect to setting funding priorities other than endorsing the only two criteria NSF had previously used to evaluate grant applications—the "intellectual merit" of the proposal and its "broader impacts" on society. The bill's lead proponent, House Science Committee Chairman Lamar Smith, had wanted to include a "national interest" criterion defined by several factors including improving economic competitiveness, health,

national security, the STEM workforce and scientific literacy.

In the end the national interest standard was retained, but only to provide examples of how grant applicants can satisfy NSF's "broader impacts" requirement. In other words, SBE will continue funding

Research is often a wise investment of tax dollars—but agencies also fund ridiculous boondoggles.

marginal research by social scientists—what a former NSF official characterized as "the inmates running the asylum."

As for the NIH, most of its budget—currently about \$32 billion, with another \$2 billion in the just-approved omnibus spending bill—goes to fund grant proposals from researchers all over the country. The proposals aren't judged by their merits across all disciplines, but are divided by categories of research—cancer, aging, eye, etc. But one institute that is the brainchild of politicians—the National Center for Complementary and Integrative

Health (formerly the National Center for Complementary and Alternative Medicine)—on average does far-less-significant work than the others, but receives a significant amount of grant funding.

NCCIH's stated mission is "to define, through rigorous scientific investigation, the usefulness and safety of complementary and integrative health interventions and their roles in improving health and health care." But "complementary and integrative" often means implausible and poorly designed, because peer review at this institute permits the funding of such projects.

One study supported by the center found that cranberry juice cocktail was no better than a placebo at preventing recurring urinary-tract infections. Other supported studies include "Long-Term Chamomile Therapy of Generalized Anxiety Disorder," "The Use of Narrative in Public Health Research and Practice" and "Restorative Yoga for Therapy of the Metabolic Syndrome."

The more credible studies in research fields funded by NCCIH could be administered more effectively by other NIH components, such as the National Institute of Neurological Diseases and Stroke or the National Institute of Mental Health, where

they would undergo more rigorous peer review.

In 2016, NIH could afford to fund fewer than 20% of the investigator-initiated research grant proposals it received. That NCCIH is still allowed to spend \$124 million annually is an affront to the NIH-funded researchers who are at the cutting edge of their disciplines and face increasing difficulty getting federal funding for studies that rank highly on scientific merit.

The Organization for Economic Cooperation and Development has projected that China will overtake the U.S. in research and development spending by around 2019. If the U.S. is to remain competitive in medical and scientific innovation, America must increase overall spending—and also be more discerning about the nation's research priorities. A good first step would be for the scientific community to demand that politicians forego political correctness and prioritize funding for research that is in America's best interest.

Dr. Miller, a physician and molecular biologist, is a fellow at Stanford University's Hoover Institution. He was founding director of the Food and Drug Administration's Office of Biotechnology.

The Russia Circus Will Drag On Without Comey



BUSINESS WORLD
By Holman W. Jenkins, Jr.

found a tax bill to lay against Paul Manafort related to decade-old payments from a Russian oligarch. And surely Carter Page jaywalked or double-parked or used an expired bus pass on his way to a meeting about some business deal that would have violated sanctions if it had any chance of coming to fruition.

Mr. Comey was an imperfect FBI chief. His political hypervisibility alone

made him a liability to the agency he loved. But as even President Trump seemed to recognize during his NBC interview on Thursday, Mr. Comey was also the president's best bet for bringing the Russia investigation to an expeditious end in a way that would relieve Mr. Trump of the main charge, supported by no evidence, that his campaign colluded with Russia.

This charge, let's remember, first entered the public domain in a big way from the mouth of Clinton campaign chief John Podesta, seeking to distract from his own crass error in letting his email be hacked.

Then Harry Reid tried to spring an October surprise by releasing a letter to the FBI that made reference to claims circulated by retired British agent Christopher Steele, author of a notorious opposition-research file on Mr. Trump.

A word on opposition research: It usually consists of public records, press accounts, documented personal history. When a researcher like Mr. Steele makes clear he wants only the most sensational, undocumented tall tales, it's not surprising that his so-called sources oblige him with tall tales.

As many Americans have come to understand, "wiretapping" nowadays means sifting through already-collected raw communications data stored in an NSA computer. Yet though the Steele file has been in government hands since last summer, no corroboration seems to have been forthcoming.

That Vladimir Putin disliked Hillary Clinton wasn't Mr. Trump's doing. That Russian agents likely played a role in stealing Democratic emails wasn't his doing either. And who benefited electorally is clear only through a generous helping of the hindsight fallacy. Hillary lost, so of course it helped Trump—this is the lazy reasoning. Yet there is simply no way of knowing how many votes the Trump-Putin miasma cost Mr. Trump.

Cowardice and denial now suffuse the Clinton camp, and sadly Mrs. Clinton herself. Don't kid yourself about this. An incompetent Democratic campaign, with an unattractive candidate, let the GOP steal back an election that Republicans had practi-

He was a flawed FBI chief but the best bet for quickly closing out the phony hunt for 'collusion.'

cally gifted to Democrats by nominating Mr. Trump. Nobody associated with this failure has a future if they can't rewrite the story as one of Russian collusion.

But the wish is also the father of the thought for conservative Never-Trumpers. David Frum starts his piece at TheAtlantic.com by saying: "Who can sincerely believe that President Trump fired FBI Director James Comey for any reason other than to thwart an investigation of serious crimes?"

Notable & Quotable: Animus

From "Academia's Poisonous Callout Culture" by Suzanna Danuta Walters for the Chronicle of Higher Education, May 5:

A young philosopher, Rebecca Tuvel, writes an article in which she considers claims to transracial and transgender identities. The result is a firestorm of condemnation. . . . By any measure, Tuvel is a committed feminist philosopher who repeatedly and clearly states her absolute

support of trans rights. She is not [Ann] Coulter or [Charles] Murray or even the predictably contrarian Camille Paglia. . . .

Academics should take a long, hard look at ourselves and ask whether we are truly committed to a culture that is generous of spirit, open to debate, and deliberative in its judgments. . . .

Let's focus our animus on the real enemies of feminist, queer, marginalized lives.

Uh huh. Equally consistent with logic, and a lot more consistent with the evidence, is that Mr. Trump fired Mr. Comey out of frustration with an investigation in which peripheral and incidental connections to Russia were being used to sustain a national conversation about treasonous collusion that never took place.

But then a problem with certain Never Trumpers was that, from early on, they were writing less about Trump than about an idealized version of themselves. Even before the campaign was over, they were issuing anticipatory elegies to themselves as lone, courageous voices on Trump flaws that were apparent to everyone.

Worse than self-referential, this emptied the world of interest. Mr. Trump is surely going to be, like every president, a mixed bag. But you have to throw out your whole understanding of the Trump phenomenon, you have to lose sight of the colossal, meaningful accident that landed him in the presidency, to prefer the story of a Kremlin conspiracy.

Mr. Trump is right if he thinks many root for his failure simply for the benefit of their own reputations. But he should have more confidence in the ability of the public to discount the circus.

His Comey miscalculation (so we believe it was) will be survivable if he wants to survive it. Mr. Trump still exudes a preternatural confidence that he's going to figure it all out eventually. That's not the worst trait in a president.

And give him credit: At least the Comey firing maintained his perch for bold action. Mr. Trump's job now is to put the FBI's Russia investigation visibly back on track so he can exhibit nonchalance about it and get on with promoting his tax plan.

LIFE & ARTS

WHAT'S YOUR WORKOUT? | By Jacqui Devaney

A Do-It-Yourself Skateboarding Routine

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

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

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

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

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

Skateboarding has come with victories and setbacks for Ms. Dutton. In 2014, she won the House of Vans all-women's competition, though she says she's not interested in competitions. "I just really wanted to skate that bowl...but yeah, I got first place," she says.

She has suffered injuries. When she broke the fifth metacarpal in her hand, a friend fashioned a makeshift splint out of a skateboarding magazine, a shoelace and Ms. Dutton's scarf. She got the injury while she was camping out in Puerto Rico with her friends, and decided to continue instead of seeing a doctor right away.

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

The Workout

Ms. Dutton typically skates between two and four hours during



Anna May Dutton gets her exercise at the Jackson Hole Skate Park in Jackson, Wyo., with a skateboard she built herself.

each session. She has also used her skateboard to deliver flowers.

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

"I always love super fast carve grinds," she says, explaining the move as popping the board onto a curve on the lip of the bowl and

using momentum to glide across the edge. One of her favorite tricks is the frontside disaster, a move where she rotates 180 degrees with the board and lands on the lip of the bowl, teetering between each set of wheels, and eventually drops back into the bowl. She is always evolving her style by watching other skaters work on new moves.

During the summer, Ms. Dutton skates every day. She prefers to ride her bike to the skate park with her board strapped to her



TAYLOR GLENN FOR THE WALL STREET JOURNAL (3)



crispy duck salad at a Jackson restaurant called Local.

The Cost & Gear

Ms. Dutton builds her skateboards herself. She uses a SHUT skateboard deck, typically preferring wider boards, around 8.5 inches across. She outfits the rest with Rockstar bearings and Jivaro wheels. In all, her board costs around \$150, but with her sponsors

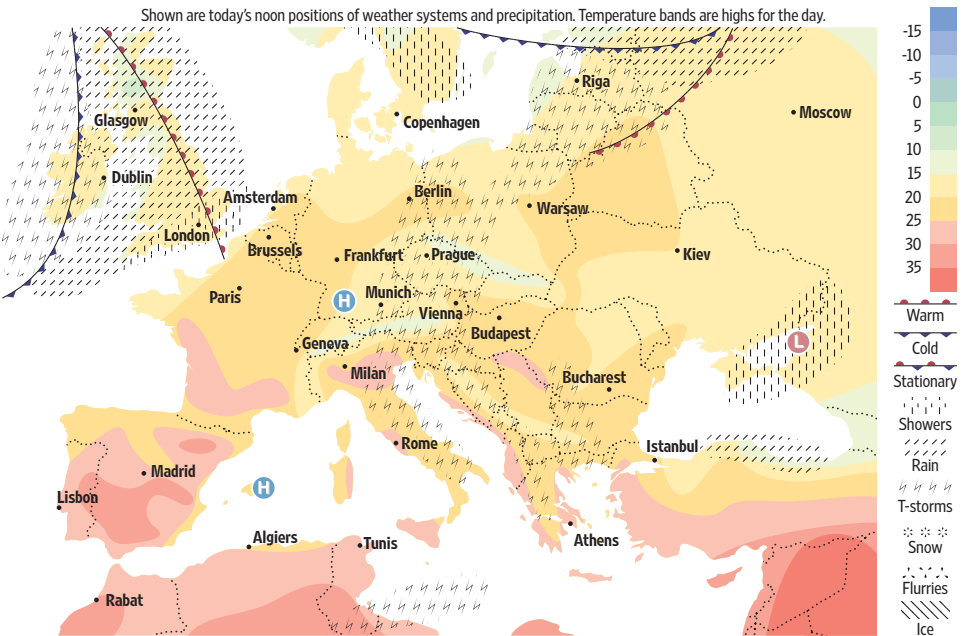
she pays around \$30 out of her own pocket.

Ms. Dutton wears \$65 high-top HUF sneakers when she's riding. The public skate park she goes to is free.

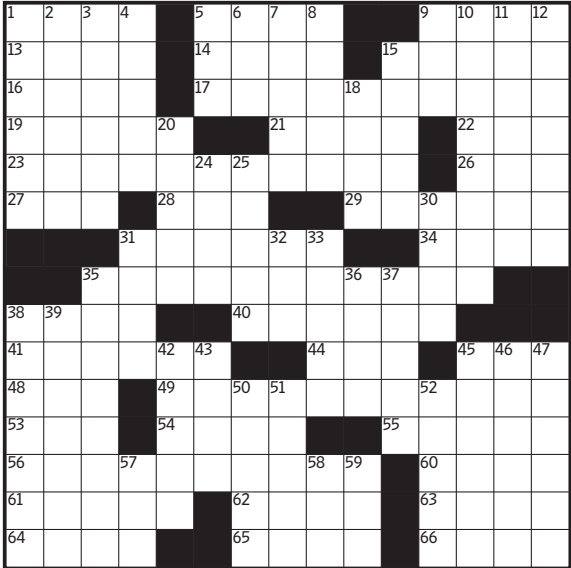
The Playlist

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

Weather



The WSJ Daily Crossword | Edited by Mike Shenk



SUPPORT GROUP | By Zhouqin Burnikel

- Across**
- 1 Prune source
 - 5 The Bruins' sch.
 - 9 Quid pro quo transaction
 - 13 "Summertime Sadness" singer
 - 14 Tibia's place
 - 15 Triangle or trapezoid
 - 16 Rifle range supply
 - 17 *Dark red fruit
 - 19 Takes to the skies
 - 21 Writer Wiesel
 - 22 It merged with the AFL in 1955
 - 23 *Score symbol
 - 26 Become inedible, in a way
 - 27 Noah's construction
 - 28 Deeply regret
 - 29 Complete
 - 31 Tempt, as customers
 - 34 "Lucky Jim" author
 - 35 *Sherlock Holmes prop
 - 38 Smart-alecky retort
 - 40 Capital north-northeast of Butte
 - 41 Most faithful
 - 44 Org. that operates a PreCheck program
 - 45 Soak (up)
 - 48 Compete in a marathon
 - 49 *Heirloom timepiece, perhaps
 - 53 ___ Khan
 - 54 "___ Old Cowhand (From the Rio Grande)"
 - 55 Ham it up
 - 56 *Where ideas come from
 - 60 McGregor of TV's "Fargo"
 - 61 Still kicking
 - 62 Color of unbleached 7-Down
 - 63 Boy, in Bolivia
 - 64 "Hidden Figures" org.
 - 65 Three-person card game
 - 66 Check, or what the starred answers all have

- Down**
- 1 Blood bank stock
 - 2 Western novelist Louis
 - 3 Expose, as a superhero
 - 4 People whose language is the source of "kiwi"
 - 5 PC connection type
 - 6 Greek's X
 - 7 Cloth woven from flax
 - 8 ___-Saxon
 - 9 Pronoun for a ship
 - 10 Geneva Convention violation
 - 11 Based on theoretical deduction
 - 12 Hallucinogens from cacti
 - 15 Glossy exterior
 - 18 Use as a source
 - 20 Get ready for surgery
 - 24 Mystical glow
 - 25 Parasite
 - 30 Taberna appetizer
 - 31 Get beaten
 - 32 Luge track surface
 - 33 Nick of "Hotel Rwanda"
 - 35 Destructive waves
 - 36 Mole or mouse
 - 37 Extremely impressed
 - 38 Michael of "Good Morning America"
 - 39 Pungent salad green
 - 42 Book title location
 - 43 Target of Lara Croft's raids
 - 45 "Shut up!"
 - 46 Word on a gas pump
 - 47 Hotshot rookie, informally
 - 50 Shows empathy
 - 51 Natural talent
 - 52 Responses from the congregation
 - 57 "Selma" director
 - 58 Tax-deferred plan, for short
 - 59 Pecan or pistachio

Previous Puzzle's Solution



The contest answer is DOUBLE-PARKING. Each of the four theme answers contains a make of car (LEXUS, FORD, OPEL, BMW) parallel to which runs another make of car (HONDA, AUDI, MINI, KIA), suggesting the contest answer.

WSJ
PODCASTS



Nurture Your Nest Egg

Protect your money and help it grow. Join Veronica Dagher for advice on money management, personal finance and how to plan in a Trump economy—it's WSJ's **Watching Your Wealth** podcast.

Listen now at WSJ.com/listenWatchingYourWealth

WSJ Podcasts are also available on iTunes, Amazon Echo, Spotify, iHeartRadio, Google Play Music and Stitcher

THE WALL STREET JOURNAL.
Read ambitiously

BUSINESS & FINANCE

© 2017 Dow Jones & Company. All Rights Reserved.

THE WALL STREET JOURNAL.

Monday, May 15, 2017 | B1

Euro vs. Dollar 1.0924 ▲ 0.56%

FTSE 100 7435.39 ▲ 0.66%

Gold 1226.20 ▲ 0.29%

WTI crude 47.84 ▲ 0.02%

German Bund yield 0.394%

10-Year Treasury yield 2.331%

Citgo: Caracas's Last Pool of Cash

By JULIE WERNAU

Bondholders looking for compensation if Venezuela defaults know that one big pot of money remains: the assets of state-owned oil refiner **Citgo Holdings Inc.**

But there is a problem. Dozens of companies are lining up with claims on those same funds.

Venezuela last year pledged all of Citgo's equity as collateral to bondholders and to state-owned Russian oil producer **Rosneft** in debt deals. In addition, at least 43 companies—including **ConocoPhillips Co.** and Canadian mining firm **Crystallex International Corp.**—are pursuing legal claims against the govern-



Venezuela's creditors are crowding around Citgo, a PdVSA unit.

ment, according to the World Bank's International Center for Settlement of Investment Disputes. These companies say they weren't paid when Vene-

zuela's government expropriated their assets there.

Now, with Wall Street judging that a default may only be a matter of time, it is

becoming clear that there isn't nearly enough of Citgo to go around.

"There are more hands out than there are assets to pay them," said Russ Dallen, a partner at investment bank Caracas Capital Markets, based in the Venezuelan capital.

A default would trigger rights enabling any of the claimants to attempt to seize Citgo, triggering cross-default clauses in Venezuelan sovereign bonds if they remain unpaid once a final court order is issued, according to Credit Suisse. Attorneys say that would send creditors into a frenzied legal battle for assets that could take years to resolve.

Citgo reported in bond-of-

fering documents that its 2015 equity value was \$8.3 billion. But many analysts believe the true figure is at least \$3 billion lower now, and possibly more as rising oil prices and growing stockpiles of fuel squeezed profits for refiners. It also reflects a multibillion-dollar dividend Citgo paid to its parent, **Petróleos de Venezuela SA**, or PdVSA, the state-owned oil company.

Meanwhile, claims on Citgo appear to be ballooning. Venezuela's total potential liabilities related to claims pending before the International Center for Settlement of Investment Disputes could reach around \$10 billion, Credit Suisse estimated in March. These

Please see CITGO page B2

Budget Airlines Crucial For Jet Makers

By DOUG CAMERON AND ROBERT WALL

When **Boeing Co.** was developing the latest iteration of its most popular jetliner, it devised a modified version with an extra emergency door that allowed it to add seven more seats.

The reason for the spinoff: to win an order from **Ryanair Holdings PLC** of Ireland.

The rollout of the 737 Max 8 jet, which Boeing aims to start delivering this month, shows how the aviation industry increasingly caters to the discount airlines that once relied heavily on second-hand planes.

The list of early buyers still includes stalwarts such as **American Airlines Group Inc.** and low-fares pioneer **Southwest Airlines Co.** But some less-familiar names such as **Lion Air** of Indonesia and **Norwegian Air Shuttle ASA** have placed huge orders for Boeing's 737 Max jet, a single-aisle plane that analysts expect to generate as much as half the aerospace company's profits over the next 25 years. The rival **Airbus SE A320neo** jet that started flying commercially last year is just as crucial to the European plane maker's profitability.

Boeing and Airbus have built up a record backlog of more than 11,000 orders for the workhorse short-haul jets over the past five years, and are sold out of most models through the end of the decade. With growing demand from discounters and established airlines seeking more efficient jets, plane makers say they are raising annual output of single-aisle jets from about 1,000 in 2016 to almost 1,300 by the end of the decade.

The manufacturers were initially dismissive of low-cost carriers but now embrace them, said Tony Fernandes, chief executive of budget carrier **AirAsia Bhd**, which has more than 400 Airbus jets on order. "We have seen a big difference from the manufacturers," he said.

The biggest new jet orders are now coming from budget carriers as their growth continues to outpace that of legacy carriers such as American. Budget airlines' share of the global fleet reached 25% last year, rising from just 7% two decades ago.

The industry transformation started by Southwest in 1971 has changed airline strategy world-wide. Carriers used to buy multiple types of jets so they could tailor them to different routes. Now, they focus on one or two types to simplify their business, packing them with as many seats as possible to lower costs.

Please see AIRLINES page B2

KEYWORDS

By Christopher Mims

Next Step For 3-D Printing: Your Shoes



This may be the year you get 3-D printed shoes. By the end of 2017, the transformation of manufacturing will hit a milestone: mass-produced printed parts. Until now, that concept was an oxymoron, since 3-D printing has been used mainly for prototyping and customized parts.

But the radical innovation of 3-D printing techniques means we are finally going to see some previously impossible designs creep into our consumer goods. In the long term, it also means new products that previously would have been impractical to produce, and a geographical shift of some manufacturing closer to customers.

I have two very different examples of this milestone, one plastic, the other steel. There is a running shoe from **Adidas AG**, with a 3-D printed latticed sole that looks almost organic, like the exposed roots of a plant.

Then there is a steel hinge, indistinguishable from any other metal part except for incredibly fine striations in its surface, as if it had been deposited like sandstone rather than forged. In a feat impossible with conventional manufacturing, all three moving pieces of the hinge were crafted together.

3-D printing is more than two decades old, but to date the process has been limited to making novelties, prototypes, bits of machines for factories, or expensive specialized parts, like fittings for prosthetic limbs or fuel nozzles in jet engines.

After years of searching for a 3-D printing tech that is up to the challenge of sneakers, Adidas came upon a startup called **Carbon Inc.**, which has raised \$222 million to date. Instead of the plodding process of depositing plastic one layer at a time from a nozzle, Carbon's "digital light synthesis" printers transform a liquid plastic into a solid using UV light and oxygen. This yields products comparable in quality to molded plastics at a competitive speed and cost, at least when making tens of thousands of a given object.

Because traditional manufacturing requires molds, casts and machining, it has high upfront costs. It is great if you want to make a million of something, but not so great if you want fewer. What the 3-D printing business has finally figured out is how to speed up the process dramatically while also using cheaper and stronger materials.

HP Inc. and **Desktop Metal**

Please see MIMS page B3

Amazon Steps Up Furniture Sales



Wayfair and Williams-Sonoma are the leading online sellers of furniture in the U.S. Above, a new Wayfair facility in Perris, Calif.

Furniture is one of the fastest-growing segments of online retail in the U.S.

By BRIAN BASKIN AND LAURA STEVENS

Amazon.com Inc. wants to furnish your home.

The online retail giant is making a major push into furniture and appliances, including building at least four massive warehouses focused on handling bulky items, according to people familiar with Amazon's plans.

With that move, the Seattle-based retailer is taking on two companies that dominate online furniture sales—**Wayfair Inc.** and Pottery Barn owner **Williams-Sonoma Inc.** Furniture is one of the fastest-growing segments of U.S. online retail, growing 18% in 2015,

second only to groceries, according to Barclays. About 15% of the \$70 billion U.S. furniture market has moved online, researcher IBISWorld says.

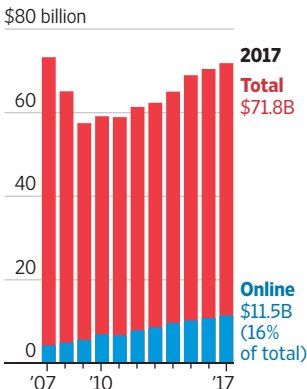
But even the biggest players in online furniture are struggling to get the market right. Unlike established categories such as books and music or even apparel, retailers are still hammering out basic concepts like how much variety to offer on their sites and the most efficient ways to deliver couches and dining sets to customers' homes.

While Amazon has been selling furniture for years, it has lately decided to tackle the sector more forcefully.

"Furniture is one of the fastest-growing retail categories here at Amazon," Veenu Taneja, furniture general manager at Amazon, said in a statement. He said the company is expanding its selection of products, with offerings in-

Rapid Growth

U.S. furniture sales and share of online sales



Note: 2016-'17 are estimates
Source: IBISWorld

THE WALL STREET JOURNAL.

cluding Ashley Furniture sofas and Jonathan Adler home décor, and is adding custom-furniture design services. Amazon is also speeding up delivery to

one or two days in some cities.

The retailer already has an approximately 17% market share in the broader home-furnishings category, according to Morgan Stanley, and it is continuing to gain. The segment includes smaller items, too, such as cookware and towels.

While Amazon has disrupted industries from publishing to fashion with free and fast shipping and app-based one-click buying, furniture can be a tough sector to crack. For one, it costs a company more to deliver a couch and other big items because they take up more space, meaning a driver makes fewer deliveries on his or her daily route. Also, furniture customers typically want "white glove" services, extras like bringing the piece into the home and removing trash.

Shoppers are still generally willing to pay for furniture delivery, but some retailers and

Please see AMAZON page B2

New Apple Headquarters Signals Tech's Boom

By TRIPP MICKLE AND ELIOT BROWN

Apple Inc. employees last month began testing the company's latest innovation: Apple Park, one of history's most expensive corporate campuses and the leading example of the tech industry's newfound love for splashy architecture.

The first of 12,000 Apple headquarters employees moved from several drab, stone buildings in Cupertino, Calif., to space across town in the 2.8-million-square-foot circular building that resembles a spaceship. It features a seamless, curved-glass exterior and a theater architects said was designed to look like a MacBook Air. The estimated \$5 billion project commanded years of attention from top Apple executives including Chief Design Officer Jony Ive, according to three of the more than 100 architects working on the campus.

Apple Park is the most lavish in a spate of glitzy new architectural projects by tech titans at a time when their businesses are booming and market valuations are soaring to new heights. **Facebook Inc.** and **Alphabet Inc.** have tapped



An aerial view last month of Apple's new headquarters, Apple Park, in Cupertino, Calif. The project cost an estimated \$5 billion.

top architects Frank Gehry and Bjarke Ingels for expansions, Amazon is building giant glass globes containing an indoor forest in Seattle, and business-software company Salesforce.com Inc. paid to put its name on a new, 61-story tower

that will be the tallest building in San Francisco.

"This is what rich, wealthy and powerful individuals have done since the Pharaohs built the pyramids—you build a building that projects power to the world," said Louise Mazingo, an urban-design professor at the University of California, Berkeley, who wrote a book on corporate campuses.

The trend marks a departure for the tech industry, which long eschewed the corporate palaces of banks and oil giants in favor of bland, low-slung office buildings like those on Apple's existing campus.

"There's always been this strain of practicality in Silicon Valley," said Randy Howder, principal at the San Francisco-based architecture firm Gensler.

The new buildings are designed to project companies' identities. Amazon, named after the rainforest, last week

Please see APPLE page B2

INSIDE



MALL OWNERS NARROW THEIR FOCUS

FINANCE & MARKETS, B9

CHINA BANKS GAIN IN GLOBAL BOND BATTLE

MARKETS, B10

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	Comae Technologies...A2	Lion Air.....B1
adidas.....B1,B6	Compagnie Financiere	LVMH.....B10
agrilution.....B6	Richemont.....B10	
AirAsia.....B1	ConocoPhillips.....B1	M
Airbus.....B1	Crystallex	Maersk Line.....B7
Akari Therapeutics...B10	International.....B1	Microsoft.....A1,A2,B3
Alphabet.....B1,B3		Morgan Stanley.....B10
Amazon.com.....B1	D	
American Airlines	Danone.....B6	N
Group.....B1	Desktop Metal.....B1	Nissan Motor.....A2
A.P. Moeller-Maersk...B7	Deutsche Bahn.....A2	Norwegian Air
Apple.....B1	Dream Holdings.....B4	Shuttle.....B1
Argo Genesis	F	O
Chemical.....B6	Facebook.....B1	Oechsler.....B3
	FarmedHere.....B6	P
B	FedEx.....A2,B3	Petróleos de
Banco Popula	Finnair Oyj.....B2	Venezuela.....B1
r Espanol.....B10	Ford Motor.....B6	Procter & Gamble.....B6
BASF.....B3	G	R
BetterLife Growers...B6	Goldman Sachs	Renault.....A2,B3
Biofilta.....B4	Group.....B10	Rosneft Oil.....B1
Boeing.....B1	H	Ryanair Holdings.....B1
	Hapag-Lloyd.....B7	S
C	HP.....B1	SoftBank Group.....B10
Carbon.....B1	HSBC Holdings.....B10	Southwest Airlines...B1
CBL & Associates	I	Summit Commodity
Properties.....B9	Illusive Networks.....A1	Brokerage.....B6
CBRE Global	J	Swatch Group.....B10
Investors.....B9	JBG Cos.....B9	U
China Cinda Asset	Jones Lang LaSalle...B7	Uber Technologies.....B3
Management.....B10	K - L	Urban Produce.....B4
China National	Kaspersky Lab.....A2	W
Petroleum.....A2	Kering.....B10	Wayfair.....B1
China Telecom.....A2		Williams-Sonoma.....B1
Citgo Holdings.....B1		
Citigroup.....B9		

INDEX TO PEOPLE

A	Griffith, Emma.....B7	Mozingo, Louise.....B1
Alsop, William.....B3	H	P
	Heinemann, Klaus.....B2	Pfizenmaier, Tomm...B6
B	I	R
Bertels, Paul.....B6	Ingels, Bjarke.....B1	Risch, Michael.....B3
Bhatia, Mickey.....B9	Israeli, Ofer.....A1	S
	Ive, Jony.....B1	Sinner, Robert.....B7
C	K	Solender, Dan.....A7
Carrier, Michael.....B3	Kemmsies, Walter.....B7	Storgaard, Michael.....B7
Cockerline, Keith.....B6	L	Suiche, Matthieu.....A2
	Lathrop, Carey.....B9	T
D	Levandowski,	Tan, H.J.....B7
Davies, Steve.....B6	Anthony.....B3	Tinseth, Randy.....B2
	M	W
F	Millstein, Jim.....A7	Weinrick, Kimberly....A7
Fernandes, Tony.....B1	Motter, John.....B6	Weisskopf, Matthias...B3
Fogel, Greg.....B6		
Friedmann, Peter.....B7		
G		
Gehry, Frank.....B1		

ADVERTISEMENT

Legal Notices

BANKRUPTCIES

WILLKIE FARR & GALLAGHER LLP
787 Seventh Avenue
New York, New York 10019
Tel: (212) 728-8000
Fax: (212) 728-8111
Paul V. Shalhoub
Todd G. Cosenza

ROLLIN BRASWELL FISHER LLC
8350 East Crescent Parkway, Suite 100
Greenwood Village, Colorado 80111
Tel: (303) 945-7415
Fax: (303) 974-7468
Michael A. Rollin
Maritza Dominguez Braswell (*pro hac vice*)

*Attorneys for Lehman Brothers Holdings Inc.
and Certain of Its Affiliates*

UNITED STATES BANKRUPTCY COURT SOUTHERN DISTRICT OF NEW YORK

In re
Lehman Brothers Holdings Inc., et al.,
Debtors.

Chapter 11 Case No.
08-13555 (SCC)
Jointly Administered

The complete 9019 Motion and related exhibits (the "Motion") associated with this Notice can be found for review and downloaded, free of charge, at (i) the website of the Debtors' Claims and Noticing Agent, Epiq Bankruptcy Solutions, LLC ("Epiq") available at <http://dm.epiq11.com/LBH> (the Motion is located within Docket No. 55232) or (ii) the website of the RMBS Trustees' Noticing Agent, The Garden City Group ("GCG") available at http://lbhirmbssettlement.com/pdf/Lehman_Brothers_Holdings_Inc_Motion.pdf.

You may also request a copy of the Motion, free of charge, by directly contacting (i) Epiq at (646) 282-2400 or email at Lehman@epiqsystems.com or (ii) GCG at (855) 907-3115 or email at Questions@lbhirmbssettlement.com.

NOTICE OF MOTION OF LEHMAN BROTHERS HOLDINGS INC. PURSUANT TO FED. R. BANKR. P. 9019 AND 11 U.S.C. § 105(A) FOR ENTRY OF ORDER (A) APPROVING RMBS SETTLEMENT AGREEMENT, (B) MAKING CERTAIN REQUIRED FINDINGS REGARDING DECISION OF RMBS TRUSTEES AND LBHI DEBTORS TO ENTER INTO RMBS SETTLEMENT AGREEMENT, (C) SCHEDULING ESTIMATION PROCEEDING TO DETERMINE RMBS CLAIMS AND APPROVING RELATED PROCEDURES REGARDING CONDUCT OF HEARING, AND (D) GRANTING RELATED RELIEF

PLEASE TAKE NOTICE that, on April 27, 2017 Lehman Brothers Holdings Inc. (the "Plan Administrator"), as Plan Administrator under the *Modified Third Amended Joint Chapter 11 Plan of Lehman Brothers Holdings Inc. and Its Affiliated Debtors*, on behalf of itself and the other affiliated debtors in the above-captioned cases (collectively, the "LBHI Debtors") filed the Motion of Lehman Brothers Holdings Inc. Pursuant To Fed. R. Bankr. P. 9019 And 11 U.S.C. § 105(a) For Entry Of Order (A) Approving RMBS Settlement Agreement, (B) Making Certain Required Findings Regarding Decision Of RMBS Trustees And LBHI Debtors To Enter Into RMBS Settlement Agreement, (C) Scheduling Estimation Proceeding To Determine RMBS Claims And Approving Related Procedures Regarding Conduct Of Hearing, And (D) Granting Related Relief (the "Motion"). Capitalized terms used but not defined herein shall have the meanings given to them in the Motion.

PLEASE TAKE FURTHER NOTICE that a hearing will be held on the Motion before the Honorable Shelley C. Chapman, United States Bankruptcy Judge, at the United States Bankruptcy Court for the Southern District of New York, Courtroom 623, One Bowling Green, New York, New York 10004 (the "Bankruptcy Court") on **July 6, 2017 at 10:00 a.m. (prevailing Eastern Time)**, or as soon thereafter as counsel may be heard.

PLEASE TAKE FURTHER NOTICE that objections, if any, to the Motion (including approval of the Trustee Findings and the Debtors' Findings) must be made in writing, state with particularity the grounds therefor, conform to the Federal Rules of Bankruptcy Procedure and the Local Bankruptcy Rules for the Southern District of New York, be filed electronically in text searchable portable document format (PDF) with the Court in accordance with General Order M-399 (General Order M-399 can be found at www.nysb.uscourts.gov, the official website for the Court), by registered users of the Court's case filing system and by all other parties in interest (with a hard copy delivered directly to the Judge's Chambers), and be served in accordance with General Order M-399, and upon (i) the chambers of the Honorable Shelley C. Chapman, One Bowling Green, New York, New York 10004, Courtroom 23; (ii) Willkie Farr & Gallagher LLP, 787 Seventh Avenue, New York, New York 10019 (Attn: Paul V. Shalhoub, Esq. and Todd G. Cosenza, Esq.) and Rollin Braswell Fisher LLC, 8350 East Crescent Parkway, Suite 100, Greenwood Village, Colorado 80111 (Attn: Michael A. Rollin, Esq. and Maritza D. Braswell, Esq.), attorneys for LBHI and certain of its affiliates; (iii) Gibbs & Bruns LLP, 1100 Louisiana, Suite 5300, Houston, Texas 77002 (Attn: Kathy Patrick, Esq. and Robert Madden, Esq.), attorneys for the Institutional Investors; (iv) Chapman

& Cutler LLP, 111 West Monroe Street, Chicago, Illinois 60603 (Attn: Franklin H. Top III, Esq. and Scott A. Lewis, Esq.), Morgan, Lewis & Bockius LLP, 101 Park Avenue, New York, New York 10178 (Attn: Michael S. Kraut, Esq.), Seward & Kissel LLP, 1 Battery Park Plaza, New York, New York 10004 (Attn: M. William Munno, Esq. and Daniel E. Guzman, Esq.), Alston & Bird LLP, 1201 West Peachtree Street, Suite 4900, Atlanta, Georgia 30309 (Attn: John C. Weitnauer, Esq.), Holwell Shuster & Goldberg LLP, 750 Seventh Avenue, 26th Floor, New York, New York 10019 (Attn: Michael S. Shuster, Esq.) and Nixon Peabody LLP, 437 Madison Avenue, New York, New York 10022 (Attn: Dennis Drebsky, Esq.), attorneys for the Trustees; and (v) the Office of the United States Trustee for the Southern District of New York, U.S. Federal Office Building, 201 Varick Street, Suite 1006, New York, New York 10014 (Attn: William K. Harrington, Esq., Susan D. Golden, Esq., and Andrea B. Schwartz, Esq.) so as to be actually filed and received by no later than **June 22, 2017 at 12:00 noon (EDT)** (the "Objection Deadline").

PLEASE TAKE FURTHER NOTICE that the relief requested in the Motion may be granted without a hearing if no objection is timely filed and served as set forth above and in accordance with the order, dated June 17, 2010, implementing certain notice and case management procedures in these cases (Docket No. 9635) (the "Case Management Order").

Dated: April 27, 2017
New York, New York

/s/ Paul V. Shalhoub
Paul V. Shalhoub
Todd G. Cosenza
WILLKIE FARR & GALLAGHER LLP
787 Seventh Avenue
New York, New York 10019
Tel: (212) 728-8000
Fax: (212) 728-8111

Michael A. Rollin
Maritza Dominguez Braswell (*pro hac vice*)
ROLLIN BRASWELL FISHER LLC
8350 East Crescent Parkway, Suite 100
Greenwood Village, Colorado 80111
Tel: (303) 945-7415
Fax: (303) 974-7468

Attorneys for Lehman Brothers Holdings Inc. and Certain of Its Affiliates

BUSINESS & FINANCE



ELAINE THOMPSON/ASSOCIATED PRESS

A Boeing 737 Max being assembled for Indonesia's Lion Air at Boeing's facility in Renton, Wash.

AIRLINES

Continued from the prior page

That has pushed aircraft makers to find a sweet spot for their new jets that satisfies airlines that are fixated on costs and less willing to split deals between more than one plane maker.

Building new jets requires billions of dollars in investment, and potential sales in-

creasingly have become winner-take-all battles for Airbus and Boeing, said Klaus Heinemann, a veteran aviation financier who backed a number of discount carriers and recently stepped down as chairman of Finnair Oyj, Finland's flag carrier. "It's a bigger gamble," said Mr. Heinemann. "If you get it wrong, you really get it wrong."

The discount airlines, for instance, took a central role in

the design of the 737 Max, as well as the Airbus A320neo family, both of which have new and more fuel-efficient engines that make them cheaper to operate.

The discount carriers also are gravitating to the largest version of the jet they have selected as markets mature and passenger numbers increase. One-third of the Boeing jets sold are configured with the maximum number of seats

permitted by regulators, said Randy Tinseth, vice president of marketing at Boeing Commercial Airplanes.

Airbus began delivering its A320neo jetliner to customers last year, and with a head start it has so far outsold the Boeing Max jet.

The competition has increased urgency at both companies to add more seats and cost-saving features.

Adding an extra emergency door allowed Boeing to boost the capacity of the 737 Max 8 jets offered to Ryanair to 197 seats from 189. Ryanair carried more than 100 million passengers last year, making it Europe's biggest airline by that measure.

Airbus has tinkered with the interior layout of its jets to fit more seats at the behest of the discounters, shrinking the size of bathrooms.

Kiran Rao, executive vice president for strategy and marketing at Airbus, said it also plans to introduce larger overhead bins. That would allow passengers to more easily fit carry-on bags.

Meanwhile, Boeing is in talks with airlines, including big budget carriers, about an even longer version of its 737, which would seat about 230 passengers.

CITGO

Continued from the prior page

companies are converging on Citgo because it is Venezuela's most accessible source of dollar-based assets, attorneys say.

Based in Houston, Citgo owns refineries in Lake Charles, La.; Corpus Christi, Texas; and Lemont, Ill. The company also owns valuable networks of pipelines and fuel-distribution terminals in the eastern U.S.

Earlier this month, Sens. Ben Cardin (D., Md.) and Marco Rubio (R., Fla.), along

with a number of other senators, proposed legislation calling for President Donald Trump to prevent Russian oil giant Rosneft from seizing the company. Foreign control of Citgo would pose a "significant risk" to U.S. energy and national security, the legislation said. Rosneft is currently under U.S. sanctions, which would prevent a takeover of U.S. assets.

"The prize here is Citgo and we are getting closer to it," said Robert L. Weigel, a lawyer for Crystallex, which won a \$1.4 billion arbitration award last year against Venezuela following the government's ex-

propriation of a gold mine in 2008.

Crystallex is suing PdVSA to recoup a \$2.2 billion dividend that Citgo transferred to its parent in 2015, according to a 2016 exchange offering circular, using the proceeds of a U.S. bond sale. That was after PdVSA abandoned plans in early 2015 to sell the subsidiary outright. As Venezuela's most significant asset in the U.S., Citgo it is a "natural target" for judgment creditors, Crystallex wrote.

ConocoPhillips is locked in litigation over U.S. oil rigs drilling in Venezuela that then-President Hugo Chávez

declared state property in 2007.

The company has asked a U.S. court to cancel the lien Rosneft has on Citgo's stock and declare the pledge a fraudulent transfer, intended to remove assets to Venezuela from the U.S. that could be seized by creditors.

PdVSA said in court filings that any move to cancel the lien is premature and would strip Venezuela of its immunity rights as a sovereign nation. An attorney for Rosneft didn't respond to requests for comment.

—Alison Sider
contributed to this article.



JOSEPH PHILLIPSON FOR THE WALL STREET JOURNAL

For Wayfair, delivery times can range from one or two days to just over two weeks.

AMAZON

Continued from the prior page

logistics companies say they are facing growing pressure to ship online orders faster. Wayfair offers free shipping on orders over \$49, but delivery times can range from one or two days to just over two weeks. Pottery Barn charges on a sliding scale based on price, with delivery costs running above \$100 for more expensive items. Furniture sold and shipped directly by Amazon is free for Prime members and on orders over \$25, while items sold by third-party sellers may cost extra.

To guarantee two-day shipping to 99% of consumers, a retailer or logistics company would need up to a dozen large warehouses spread around the country, plus around 110 smaller facilities to stage deliveries to customers' homes, said Troy Cooper, chief operating officer at XPO Logistics Inc., which manages distribution centers and fulfills online orders for large retailers like IKEA. By comparison, a re-

tailer can deliver furniture within a week to most customers simply by planting a large distribution center on each coast, similar to how they would manage inventory for brick-and-mortar stores, Mr. Cooper said.

Amazon is expected to rely on XPO and other third-party logistics providers to manage distribution centers and handle delivery of furniture and appliances for the near future, even as it brings more of its logistics in house in other parts of its business, people familiar with the company's plans say. Amazon declined to comment on its delivery plans. XPO declined to comment on its relationship with Amazon.

Rising sales may be helping reduce the cost burden for online furniture retailing. Costs go up for transportation companies as deliveries get more spread out and infrequent.

"Just in the last year, furniture has taken off," said Richard Phillips, Jr., chief executive at Pilot Freight Services, a Lima, Pa.-based trucking company that makes larger e-commerce deliveries. The company's No. 1 business-to-

consumer shipment has shifted to furniture, from TVs.

Pilot is one of many logistics companies building out nationwide networks to handle bulky items as retailers look for cheaper ways to ship furniture and appliances ordered online. XPO made 12 million home deliveries last year, up from 9 million in 2015. Estes Express Lines, one of the largest U.S. trucking companies, started a "final mile" service in December after noticing retailers were mixing in more home deliveries.

These companies are filling in part a void left by United Parcel Service Inc. and FedEx Corp., whose executives have complained about bulky items gumming up distribution centers designed to process millions of small packages at lightning speed.

Wayfair started building out its own delivery network about a year and a half ago, said Chief Executive Niraj Shah.

He said he isn't worried about Amazon. The giant retailer is hardly a new entrant to the space, and it is hard to get the customer-service side of the equation right, he said.

APPLE

Continued from the prior page

started planting trees in the glass spheres at the base of its new Seattle headquarters.

Apple's late CEO, Steve Jobs, helped initiate the boom. In 2009, he enlisted British architect Norman Foster, designer of the Hearst Tower in New York, to help bring a showcase corporate headquarters to Silicon Valley.

Apple, which recently set a

record by topping \$800 billion in market capitalization, says the new campus is designed to bring together disparate staff and foster collaboration to create new products.

Since unveiling plans in 2011, Apple's design team has sought to influence everything from sprinklers to door handles. It commanded so much time of architects that Foster + Partners, which is based in London, eventually opened an office in the Bay Area to better manage requests, two architects said.

Foster + Partners didn't re-

spond to requests for comment. Apple declined to comment.

Some observers see signs of hubris in the architectural bonanza. Ms. Mozingo, of UC Berkeley, believes Silicon Valley's current move to trade flexible, bland workplaces for corporate statements could backfire, tying companies to a place and hindering their ability to relocate or innovate in a dynamic market.

"Once you invest that much cash, you become a different kind of company," Ms. Mozingo said.

Researcher Found ‘Kill Switch’ to Fight Cyber Virus

By Stru Woo

LONDON—On Friday, a 22-year-old U.K.-based threat-intelligence researcher was enjoying the last day of a weeklong vacation by having a leisurely lunch with a friend. When he got home, Britain’s National Health Service’s computer systems were under assault. The cyberattack would soon spread around the world. He and dozens of other cybersecurity experts, from multiple government agencies and across the private sector, joined in a frenzied, online detective case that ultimately led to a way to slow the virus. Many of those experts, including European and British cybercrime authorities, credit the British researcher with stumbling onto a “kill switch” embedded in the code of the virus itself, which helped slow the computer worm’s spread. The researcher himself said the discovery was accidental. The kill switch was hard to identify but easy to activate. It involved registering a website name, which cost \$10.69. The discovery has slowed the spread of the attack but won’t help the tens of thousands of computers that had already been infected. So-called ransomware used in the attack encrypted files on affected computers, asking for money in exchange for decrypting them again. In addition

to the NHS, victims include auto makers Nissan Motor Co. and Renault SA, FedEx Corp., Germany’s biggest train operator and a swath of Russian banks. China state media reported gasoline stations and universities may have been affected. Cybersecurity experts warn that attackers may be able to use other strains of the ransomware to pick up the attack again. For now, the British researcher, who has so far declined to identify himself, is being hailed as a sort of cybercrime Batman for his role. He is a well-known expert in the field, having risen in stature among his colleagues last year after he created a program that tracked another worm, known as Mirai, that took over internet-connected cameras and other devices and used them to disable websites. Cybersecurity experts who know him say he works in the U.K. for a small cybersecurity consulting firm but honored his desire to remain anonymous. He has spoken twice to The Wall Street Journal in audio Skype conversations in the past two years. In Twitter messages Saturday, he confirmed basic life details but declined to give his name. “Mostly because no good will ever come from giving out my name,” he said, adding that he wanted to be known



Friday’s attack affected computer systems world-wide, including Britain’s National Health Service.

just by his Twitter and online persona, MalwareTech. The researcher operates the website MalwareTech.com, where on Saturday he posted an account of his Friday escapades. He said he helped solve the computer virus with the help of Proofpoint, a Silicon Valley cybersecurity firm that tries to detect hacking worldwide by putting sensors in the networks of major telecom companies and corporations. Proofpoint had been looking for signs of the tool used

in Friday’s attacks, called “Eternal Blue,” since April, when a hacking group calling itself “Shadow Brokers” published it. Shadow Brokers said it had stolen the tool from the National Security Agency, which has declined to comment on the authenticity of the Shadow Brokers’ documents. Besides some people experimenting with Eternal Blue, there were no signs of a widespread attack until about 1 p.m. London time, about 8

a.m. Eastern time, on Friday, said Ryan Kalember, Proofpoint’s senior vice president of cybersecurity strategy. Pop-up screens started appearing on infected computers, saying that their files would be encrypted and destroyed unless the computer users paid hackers some \$300 over the internet using bitcoin. About an hour later, a member of the switchboard staff at Wrightington, Wigan and Leigh NHS Trust, a state-funded hospital operator in

northwest England, alerted the IT department to an attack, according to the trust’s chief executive, Andrew Foster. Several more staff from around the trust, which runs three hospitals, did the same in close succession. The IT department quickly shut down the email system, at 2.02 p.m., preventing the attack from spreading to the all-important patient record system. By this time, a small circle of government and private-sector cybersleuths were on the case, many working independently but many also teaming up. The attack code targeted Microsoft Corp. Windows users, though Microsoft said a security patch it released in March fixed the problem. Cybersecurity experts said the infected computers hadn’t updated their systems, or used old Windows systems, such as XP, that Microsoft no longer supported. In an unusual move, Microsoft on Saturday released a security patch for older Windows systems it normally wouldn’t support. MalwareTech concluded his blog post with advice: “If you have anything to patch, patch it.” —Robert McMillan in San Francisco and Denise Roland in London contributed to this article.

MIMS

Continued from page B1 Inc. are leveraging actual ink-jet printer technology. HP’s Multi Jet Fusion printers, which start at \$130,000, literally draw with heat-absorbing ink on plastic powder, rapidly building layers one-10th of a millimeter at a time. Desktop Metal’s manufacturing-grade system, which starts at \$360,000, uses ink-jets to shoot a binding agent meant to hold tiny bits of metal together so they can be

fused in what is basically a big oven. These technologies are rapidly distancing themselves from the type of 3-D printing now popular with do-it-yourselfers, which more closely resembles a hot glue gun. Both HP and Desktop Metal are breaking with tradition in 3-D printing by throwing out the “razor and blades” model, where 3-D printing companies made money by selling specialized printing materials. HP is joining with BASF SE and more than 50 other companies, which will formulate their own powdered plastics

for HP’s 3-D printers. Desktop Metal’s process uses powdered metals, a commonly available material typically used in a process known as metal injection molding. You can expect a huge variety of the bits and bobs inside everyday objects to be 3-D printed in the next year, including plastic parts for automobiles, says Matthias Weisskopf, senior vice president of technologies at Oechsler AG. The company is building factories for Adidas and produces parts for German automobile makers.

Another big application will be replacement metal parts for construction equipment, says Don Jones, director of global aftermarket parts strategy at Caterpillar Inc. For both Caterpillar and Oechsler, moving to 3-D printing is also about bringing manufacturing closer to end consumers. Caterpillar’s problem is that servicing equipment means maintaining a costly, spread-out network of parts warehouses. It hopes to supplant these with print-on-demand parts. Adidas is building “Speedfactories” in Germany and the

U.S.—in Atlanta—where it can produce goods on demand. Adidas hasn’t said how much its 3-D printed shoes will cost, but it has said they would be priced as a “premium” product. It expects to have shipped about 5,000 pairs by the end of 2017 and more than 100,000 by the end of 2018. There are myriad barriers to 3-D printing becoming a mainstay of manufacturing, however. While the new technologies offer a markedly lower per-part cost than previous 3-D printing tech-

niques, the cost doesn’t remain competitive when quantities exceed 20,000 or so, says John Dulchinos, vice president of global automation at Jabil Circuit Inc. Meanwhile, I did some unscientific tests of my own, ones that, in my experience, no 3-D printed object would survive. I took the Adidas running shoes on a long, punishing run through city streets, sure that at any moment they’d fall to pieces. They didn’t. Then I took a hammer to the steel hinge. I’m no John Henry, but it survived.

Uber Faces Possible Inquiry On Self-Driving Car Program

By Jack Nicas
And Greg Bensinger

Uber Technologies Inc., already plagued by a string of scandals, now faces the threat of a federal criminal probe into its development of driverless cars, a crucial initiative for the highflying ride-hailing business. A new shadow of uncertainty was cast over the autonomous-vehicle program when a federal judge this week recommended the U.S. investigate the possibility that Uber and a top executive stole from Google parent Alphabet Inc.

heavyweights against each other in a fight that has drawn lots of public attention. A potential federal probe combined with Alphabet’s lawsuit from earlier this year could debilitate an autonomous-vehicle program that is critical to Uber’s future. Uber is racing to roll out driverless cars in part because it holds potential to bolster a business that is valued by investors at nearly \$70 billion but lost at least \$2.8 billion last year. The company and technologists believe autonomous vehicles can cut travel time and save lives by elimi-

regulators in sting operations, as well as claims from a former employee that its workplace ignores sexism and sexual harassment. Uber has said it is investigating the harassment claims and has declined to comment on the criminal probe into the software program known as “Greyball.” Lawyers and law professors said the order late Thursday by U.S. District Judge William Alsup in San Francisco suggests he believes there is strong evidence of trade-secret theft and that federal investigators may be able to uncover more evidence than Alphabet’s attorneys.

Attorneys for Uber and Mr. Levandowski, the former head of Google’s driverless-car program, have repeatedly fought efforts to turn over some documents.

Judge Alsup wrote in his order Thursday that the evidence thus far led him to refer the case to federal prosecutors. “The court takes no position on whether a prosecution is or is not warranted,” he wrote.

The legal analysts said Mr. Levandowski is most at risk of criminal charges because he allegedly downloaded the 14,000 files from Alphabet’s servers before he quit the company in January 2016, and then allegedly took them to Uber after the ride-hailing firm bought his startup for \$680 million in stock seven months later.

Uber—and potentially its executives—could also face criminal charges if there is evidence they knew of Mr. Levandowski’s alleged theft, the analysts said, but it is unlikely Uber would be charged if Mr. Levandowski isn’t.

“The person most likely to be charged is the person who actually took the information,” said Villanova University law professor Michael Risch.

Mr. Carrier said criminal charges would be tried under the Economic Espionage Act, which carries penalties for such cases of up to 10 years in prison for individuals. For companies, fines could be imposed up to three times the value of a stolen trade secret.



Pilot model of an Uber self-driving car in Pittsburgh last year.

14,000 files, many related to a laser-sensor technology used in driverless cars. The order, which legal analysts said is rare if not unprecedented in a civil trade-secrets case, could result in executives facing criminal prosecution, a startling turn of events for a project Uber has called “existential” to its future. Uber, which has called Alphabet’s claims unfounded, declined to comment on the referral to federal prosecutors. Alphabet and attorneys for the Uber executive at the center of the case, Anthony Levandowski, didn’t respond to requests for comment. The U.S. attorney’s office in San Francisco declined to comment. The high-stakes legal battle has pitted two Silicon Valley

INVEST IN THE FUTURE OF SECURITY

Disrupting the \$500 billion security market

K KNIGHTSCOPE

Knightscope is on a mission to keep the world safe with its fully autonomous security robots. For a limited time, invest in Knightscope’s Reg A+ “mini-IPO” by purchasing stock online through SeedInvest. All systems go. Ready for takeoff.

\$3.00 PER SHARE FOR A LIMITED TIME ONLY

Email us at invest@knightscope.com or visit knightscope.com

An offering statement regarding this offering has been filed with the U.S. SEC. The U.S. SEC has qualified that offering statement which only means that Knightscope may make sales of the securities described by that offering statement. It does not mean that the U.S. SEC has approved, passed upon the merits or passed upon the accuracy or completeness of the information in the offering statement. You may obtain a copy of the offering circular that is part of that offering statement here: www.seedinvest.com/knightscope. You should read the offering circular before making any investment.

AGRICULTURE

B4 | Monday, May 15, 2017

THE WALL STREET JOURNAL.

Introducing
The Journal
Report Podcast
[wsj.com/
JRpodcasts](http://wsj.com/JRpodcasts)

© 2017 The Wall Street Journal, Inc. All Rights Reserved.



A Farm Grows in the City

Startups are leading the way to a future in which more food is grown closer to where people live



BRYAN ANSELMI FOR THE WALL STREET JOURNAL (4)

BY BETSY MCKAY

BILLIONS OF PEOPLE around the world live far from where their food is grown.

It's one of the biggest disconnects in modern life. And it may be about to change.

The world's population is expected to reach 9.7 billion by 2050, 33% more people than are on the planet today, according to projections from the United Nations. About two-thirds of them are expected to live in cities, continuing a migration that has been under way around the world for years.

That's a lot of mouths to feed, particularly in urban areas. Getting food to people who live far from farms—sometimes hundreds or thousands of miles away—is costly and strains natural resources. And heavy rains, droughts and other extreme weather events can threaten supplies.

Now more startups and city authorities are finding ways to grow food closer to home. High-tech “vertical farms” are sprouting inside warehouses and shipping containers, where lettuce and other greens grow without soil, stacked in horizontal or vertical rows and fed by water and LED lights, which can be customized to control the size, texture or other characteristic of a plant.

Companies are also engineering new ways to grow vegetables in smaller spaces, such as walls, rooftops, balconies, abandoned lots—and kitchens. They're out to take advantage of a city's resources, composting food waste and capturing rainwater as it runs off buildings or parking lots.

“We're currently seeing the biggest movement of humans in the history of the planet,

with rural people moving into cities across the world,” says Brendan Condon, co-founder and director of **Biofilta Ltd.**, an Australian environmental-engineering company marketing a “closed-loop” gardening system that aims to use compost and rainwater runoff. “We've got rooftops, car parks, walls, balconies. If we can turn these city spaces into farms, then we're reducing food miles down to food meters.”

Moving beyond experiments

Urban farming isn't easy. It can require significant investment, and there are bureaucratic hurdles to overcome. Many companies have yet to turn a profit, experts say. A few companies have already failed, and urban-farming experts say many more will be weeded out in the coming years.

But commercial vertical farms are well beyond experimental. Companies such as **AeroFarms**, owned by **Dream Holdings Inc.**, and **Urban Produce LLC** have designed and operate commercial vertical farms that aim to deliver supplies of greens on a mass scale more cheaply and reliably to cities, by growing food locally indoors year round.

At its headquarters in Irvine, Calif., **Urban Produce** grows baby kale, wheatgrass and other organic greens in neat rows on shelves stacked 25 high that rotate constantly, as if on a conveyor belt, around the floor of a windowless warehouse. Computer programs determine how much water and LED light the plants receive. Sixteen acres of food grow on a floor measuring an eighth of an acre.

Its “high-density vertical growing system,” which **Urban Produce** patented, can lower fuel and shipping costs for produce, uses 80% less fertilizer than conventional growing methods, and generates its own filtered water for its produce from humidity in the air, says Edwin Horton Jr., the company's president and chief executive officer.

“Our ultimate goal is to be completely off the grid,” Mr. Horton says.

The company sells the greens to grocers, juice makers and food-service companies, and is in talks to license the growing system to groups in cities around the world, he says. “We want to build these in cities, and we want to employ local people,” he says.

AeroFarms has built a 70,000-square-foot vertical farm in a former steel plant in Newark, N.J., where it is growing leafy greens like arugula and kale aeroponically—a technique in which plant roots are suspended in the air and nourished by a nutrient mist and oxygen—in trays stacked 36 feet high.

The company, which supplies stores from Delaware to Connecticut, has more than \$50 million in investment from Prudential, Goldman Sachs and other investors, and aims to install its systems in other cities globally, says David Rosenberg, its chief executive officer. “We envision a farm in cities all over the world,” he says.

AeroFarms says it is offering project management and other services to urban organizations as a partner in the 100 Resilient Cities network of cities that are working on preparing themselves better for 21st century challenges such as food and water shortages.

The bottom line

Still, these farms can't supply a city's entire food demand. So far, vertical farms grow mostly leafy greens, because the crops can be turned over quickly, generating cash flow easily in a business that requires extensive capital investment, says Henry Gordon-Smith, managing director of **Blue Planet Consulting Services LLC**, a Brooklyn, N.Y., company that specializes in the design, implementation and operation of urban agricultural projects globally.

The greens can also be marketed as locally grown to consumers who are seeking fresh

produce. At **AeroFarms'** indoor vertical farm in Newark, N.J., greens grow on shelves 36 feet high (top) and receive light of a specific spectrum (above left); an employee inspects a tray of greens (center); and packaged greens await shipment (above right).

produce.

Other types of vegetables require more space. Growing fruits like avocados under LED light might not make sense economically, says Mr. Gordon-Smith.

“Light costs money, so growing an avocado under LED lights to only get the fruit to sell is a challenge,” he says.

And the farms aren't likely to grow wheat, rice or other commodities that provide much of a daily diet, because there is less of a need for them to be fresh, Mr. Gordon-Smith says. They can be stored and shipped efficiently, he says.

The farms are also costly to start and run. **AeroFarms** has yet to turn a profit, though Mr. Rosenberg says he expects the company to be-

Please turn to page B6

INSIDE & ONLINE

The Farm Crop in Your Reebooks
B6

Ocean Shipping Changes Worry Farmers
B7

At WSJ.com/LeadershipReport
A Shift in Venture Capital for Agriculture
Farmers Adapt to Volatile Weather
Ultrafiltered Milk Causes a Fuss



EXPORT FOOD, NOT JOBS

Pratt Industries is proud to support President Trump's vision to grow the American food production industry — already the nation's largest — and create millions of new jobs right here in the USA.

Let's continue our national conversation about how we can double annual food production sales to \$1.8 trillion.

Pratt Industries, one of the largest corrugated box manufacturers in the United States, proudly supports the American food industry!

www.prattindustries.com



JOURNAL REPORT | AGRICULTURE

Seat Cushions Made With Soybeans. Sneakers Made With Corn.

A glut of crops has farmers scrambling to find new uses for their products



Corn can be used in this Bioserie phone case and Serviceware cutlery (top), and the Rizieri shoe, helmet by Fashion Helmet and GroVia diaper (bottom). Ford's seat cushion is made with soybeans.

BY BENJAMIN PARKIN

FACING OVERSTUFFED silos and forecasts for another huge harvest this year, U.S. farmers are trying to find new uses for their corn and soybeans. Robust demand for processed foods, animal feed and biofuels isn't keeping up with a record glut of crops in the U.S. and around the world, after several years of bumper harvests and largely benevolent weather. To sell the surplus, farmers and trade groups are wooing new customers, from car makers to toy companies. In recent years, corn and soybeans have been added to the recipes for **Ford Motor** Co. seat cushions, **IKEA** mattresses, **Danone** SA's yogurt

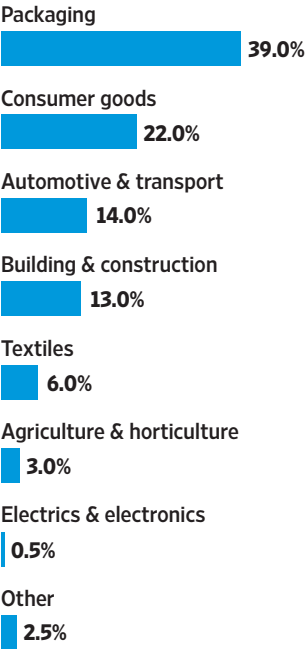
cups and **Procter & Gamble** Co.'s Olay moisturizers. **Adidas** AG's Reebok brand recently unveiled sneakers made with corn. Lego A/S earlier this year said it was toying with using grain-based materials to mold its famous bricks. Industry groups also are calling for more research into new ways that the crops could replace petroleum as a raw material in industrial and construction applications. **Growing stockpiles** "We're sitting on a pretty good surplus," says Paul Bertels, vice president of the **National Corn Growers Association**, which recently called for more research to put corn in more products. "We stepped back and said, 'We need to find new uses.'"

U.S. corn and soybean stockpiles swelled to a combined 10.35 billion bushels in the first quarter of 2017, a record. Soybean futures have fallen more than 10% at the Chicago Board of Trade since mid-January. Corn prices are also under pressure. Analysts expect big harvests in South America to increase the global glut, and the U.S. Department of Agriculture said in March that U.S. farmers also are expecting record acreage of soybeans this year. The hunt for alternative uses for grains and oilseeds isn't new. NatureWorks LLC, the world's first and largest maker of a bioplastic called PLA, started in 1989 as a Cargill research project. But the multiyear glut, which has pushed many farmers deeper

into debt and some out of business, is adding urgency to that work. **Argo Genesis Chemical** LLC of Illinois recently developed its own highly flexible, soy-made plastics for use in products like road-paving materials, cardboard and diapers adhesives. The company says such compounds can help shield manufacturers from volatile oil prices. "Long term, we see this being the way the plastics industry moves," says Steve Davies, spokesman for NatureWorks. "There's tremendous potential to grow." For consumers of these new products, the use of corn and soybeans could be a positive. Many consumers are willing to pay a premium for sustainability. Switching to raw materials that can be grown year after year allows companies to tout their "green" credentials, though researchers are divided over the overall environmental impact. Still, these new uses account for only a fraction of the output in an industry geared toward cranking out billions of bushels a year for animal feed, alcohol and food. Some 96% of global agricultural land is used to produce food, feed and pastures, according to trade association European Bioplastics. Crops for bioplastics took up just 0.01% in 2014; rubber and cotton plants along with crops for biofuel made up much of the remainder. "Those fringe uses of corn are so specialized that they're interesting, but really people are looking for uses that develop 5 billion bushels of demand," said Tomm Pfizenmaier, a founding partner at

Where You'd Least Expect It...

Bioplastics uses totaled 4.2 million metric tons in 2016. A breakdown of where they went by market segment:



Note: Bioplastics are bio-based, biodegradable or both.
Source: European Bioplastics, nova-Institute
THE WALL STREET JOURNAL.

Summit Commodity Brokerage in Des Moines, Iowa. "That's where the big swing could come." But boosters see room for rapid growth, and point to ethanol's trajectory in the U.S. as an example. Less than 1% of U.S. corn was used as ethanol in the 1980-81 crop year, according to the Agriculture Department. In 2015-16, 5.2 billion bushels, or 38%, of the U.S. crop be-

came biofuel. Some food-security groups say redirecting grain and soybeans toward factories takes away land that will be needed to feed a growing global population. Others say the added value from such alternative uses won't trickle down to the farmers themselves, since they aren't the ones processing the grains into these higher-priced products. **Only a fraction** "A lot of these folks are going to continue to be caught in the system where they're getting a tiny fraction of what the final product brings to the processors," says Greg Fogel, policy director at the National Sustainable Agriculture Coalition. "That's not going to solve the problems that currently exist with the rural farm economy." John Motter, an Ohio farmer and chairman of the United Soybean Board, says that for now U.S. farmers need all the buyers they can find. "Farmers are businessmen. We all take a longer view," he says, proudly pointing out that the seats in his 2013 Ford F-250 pickup truck are made from oilseed foam. That's the kind of business opportunity farmers want U.S. companies to see in their fields. "Ford isn't running soy in their seats because they think it's a neat thing to do," says Keith Cockerline, director of industrial uses at the United Soybean Board. "It's because they're making money at it."

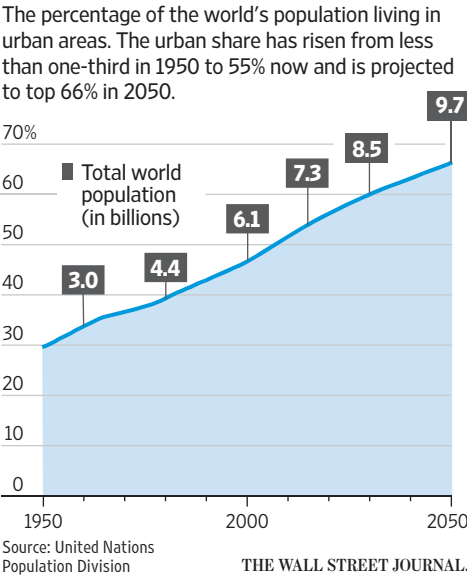
Mr. Parkin is a reporter for The Wall Street Journal in Chicago. Email him at benjamin.parkin@wsj.com.

A Farm Grows in the City

Continued from page B4
come profitable in a few months, as its new farm helps it reach a new scale of production. Urban Produce became profitable earlier this year partly by focusing on specialty crops such as microgreens—the first shoots of greens that come up from the seeds— that generally grow indoors in a very condensed space, says Mr. Horton, who started the company in 2014. One of the first commercial vertical-farming companies in the U.S., **FarmedHere** LLC, closed a 90,000 square-foot farm in a Chicago suburb and merged with another company late last year. "We've learned a lot of lessons," says co-founder Paul Hardej. Among them: Operating in cities is expensive. The company should have built its first farm in a suburb rather than a Chicago neighborhood, Mr. Hardej says. Real estate would have been cheaper. "We could have been 10 or 20 miles away and still be a local producer," Mr. Hardej says. The company also might have been able to work with a smaller local government to get permits and rework zoning and other regulations, because indoor farming was a new type of land use, Mr. Hardej says. While FarmedHere produced some crops profitably, it spent a lot on overhead for lawyers and accountants "to deal with the regulations," he says. Mr. Hardej is now co-founder and chief executive officer of Civic Farms LLC, a company that develops a "2.0" version of the vertical farm, he says—more efficient operations that take into account the lessons learned. Civic Farms is collaborating with the University of Arizona on a research and development center at Biosphere 2, the Earth science research facility in Oracle, Ariz., where it runs a vertical farm and develops new technologies.

Blossoming tech New technology will improve the economic viability of vertical farms, says Mr. Gordon-Smith. New cameras, sensors and smartphone apps help monitor plant growth. One company is even developing augmented-reality glasses that can show workers which plants to pick, Mr. Gordon-Smith says. "That is making the payback look a lot better," he says. "The future is bright for vertical farming, but if you're building a vertical farm today, be ready for a challenge." Some cities are trying to propagate more urban farms and ease the regulatory burden of setting them up. Atlanta Mayor Kasim Reed created the post of urban agriculture director in December 2015, with a goal of putting local healthy food within a half-mile of 75% of the city's residents by 2020. The job includes attracting urban-farming projects to Atlanta and helping projects obtain funding and permits, says Mario Cambardella, who holds the director title. "I want to be ahead of the curve; I don't want to be behind," he says. Many groups are taking more low-tech or smaller-scale approaches. A program called **BetterLife Growers** Inc. in Atlanta plans to break ground this fall on a series of greenhouses in an underserved area of the city, where it will grow lettuce and herbs in 2,900

Where the Mouths Are



Biofilta's Foodwall system of connected containers requires minimal watering.

"tower gardens," thick trunks that stand in large tubs. The plants will be propagated in rock wool, a growing medium consisting of cotton-candy-like fibers made of a melted combination of rock and sand, and then placed into pods in the columns, where they will be regularly watered with a nutrient solution pumped through the tower, says Ellen Macht, president of BetterLife Growers. The produce will be sold to local educational and medical institutions. "What we wanted to do was create jobs and come up with a product that institutions could use," she says. The \$12.5 million project is funded in part by a loan from the city of Atlanta, with Mr. Cambardella helping by educating grant managers on the growing system and its importance.



BetterLife Growers will use 'tower gardens' like these to grow lettuce and herbs in Atlanta.

Change at home Another company aims to bring vertical farming to the kitchen. **Agrilution** GmbH, based in Munich, Germany, plans to start selling a "plantCube" later this year that looks like a mini-refrigerator and grows greens using LED lights and an automatic watering system that can be controlled from a smartphone. "The idea is to really make it a commodity kitchen device," says Max Loessl, Agrilution's co-founder and chief executive officer, of the appliance, which will cost 2,000 euros—about \$2,200—initially. The goal is to sell enough to bring the price down, so that in five years the appliance is affordable enough for most people in the developed world, Mr. Loessl says. Biofilta, the company Mr. Condon co-founded, is marketing the Foodwall, a modular

system of connected containers, an approach that he calls "deliberately low tech" because it doesn't require electricity or computers to operate. The tubs are filled with a soil-based mix and a "wicking garden-bed technology" that stores and sucks water up from the bottom of the tub to nourish the plants without the need for pumps. The plants need to be watered just once a week in summer, or every three to four weeks in the winter, says Chief Executive Marc Noyce. The tubs can be connected vertically or horizontally on rooftops, balconies or backyards. "We've made this gardening for dummies," Mr. Noyce says. The Foodwall can use composted food waste and harvested rainwater, helping to turn cities into "closed-loop food-production powerhouses," Mr. Condon says. He and Mr. Noyce were motivated to design the Foodwall by a projection from local experts that only 18% of the food consumed in their home city of Melbourne, Australia, will be grown locally by 2050, compared with 41% today, Mr. Noyce says. "We were shocked," says Mr. Noyce. "We're going to be beholden to other states and other countries dictating our pricing for our own food." "Then we started to look at this trend around the world and found it was exactly the same," he says. Traditional, rural farming is far from being replaced by all of these new technologies, experts say. The need for food is simply too great. But urban projects can provide a steady supply of fresh produce, helping to improve diets and make a city's food supply more secure, they say. "While rural farmers will remain essential to feeding cities, cleverly designed urban farming can produce most of the vegetable requirements of a city," Mr. Condon says. *Ms. McKay is a senior writer in The Wall Street Journal's Atlanta bureau. She can be reached at betsy.mckay@wsj.com.*

Shipping Alliances Stir Fears Among U.S. Farmers

Growers, already hit by a strong dollar, worry that fewer vessels will be available for exports

BY MICHAEL A. POLLOCK

AS A STRONG dollar makes U.S. commodities more expensive globally, American farmers are finding it tougher to compete in export markets.

Now some worry that a recent restructuring of the ocean shipping industry will make it more difficult and costly just to deliver U.S. commodities abroad.

Since last year, 11 large container shipping companies, including Denmark's **Maersk Line** and Germany's **Hapag-Lloyd**, have entered three new cooperative operating arrangements, or alliances, affecting 90% of shipments on global trade routes. The pacts aim to cut costs and reduce overcapacity, and commodity producers expect they will result in

The biggest concern for farmers may be coping with logistical and economic mismatches.

fewer and larger vessels calling on a smaller number of U.S. ports.

That is a big concern to farmers who ship certain products—such as hay, cotton, lumber, almonds and frozen beef—in steel containers. U.S. freight rates so far haven't risen much, but they will be for longer, because of lessened competition, says Robert Sinner, a North Dakota soybean grower and exporter. "The bottom line is, we're going to have fewer choices" in making export shipments, he says.

Container firms say the changes will benefit customers. "In general, our view is that alliances enable container shipping lines to optimize networks and benefit from economies of scale," says Michael Storgaard, a spokesman for **A.P. Moeller-Maersk A/S**. "This potentially allows the individual partners to market more competitive and attractive services: more ports and direct services, better coverage and higher frequency."

Historically, U.S. law has given ocean carriers broader latitude than many industries, allowing them to cooperate in such things as reducing capacity, altering routes and even discussing freight rates, says Peter Friedmann, executive director of the Agriculture Transportation Coalition, a Washington, D.C., lobbying and trade group for farm interests.

But some in the U.S. government appear now to have a different view. Last November, in a letter to the Federal Maritime Commission, a senior Justice Department official cited concerns about "a significant increase in concentration in the industry" resulting from the new alliances. The department recently subpoenaed senior shipping-company executives, but has declined to comment on the investigation.

Rising capacity

Port calls have been falling since before the new alliances formed, though. Sailings to U.S. ports from Asia recently were running at a weekly rate of 57, down from 65 four years ago, according to Alphaliner, which tracks such activity. However, with larger vessels coming into use, overall capacity has risen 4% to the U.S. West Coast and 22% to the East Coast in that same period, the data show.

"There is no evidence to suggest that there is any shortage of vessel capacity to cater to U.S. agricultural exports," and the drop in the frequency of service hasn't severely limited choices for shippers, says H.J. Tan, a con-

sultant with Alphaliner.

Overall capacity isn't the biggest worry for farmers, as the dollar's strength continues to weigh on export sales of agricultural goods. It is more a matter of coping with logistical and economic mismatches, some say.

Container lines have a disincentive to serve farmers, because freight rates, which are based on cargo value, are typically much higher for imports of manufactured goods than for exported farm products, says Walter Kemmsies, a transportation and ports specialist at commercial real-estate firm **Jones Lang LaSalle**. Thus, shipping companies prefer to route vessels to ports near major consumer markets. That leaves fewer ships and fewer containers within reach of more sparsely populated areas where commodities are produced.

That disparity may worsen as companies adopt larger and larger ships. Of the 30 biggest U.S. ports, fewer than a third currently have harbor channels deep enough to accommodate the biggest new vessels.

'Cascading effect'

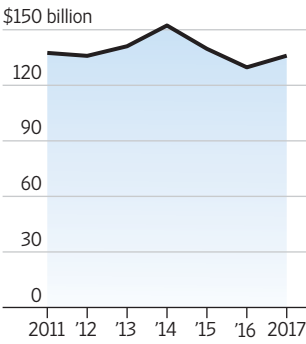
The shift to larger vessels has put a lot of stress on ports, says Emma Griffith, an analyst at Fitch Ratings. "The infrastructure isn't in place for handling one huge ship, and there is a cascading effect from backups in getting the ship unloaded and getting new cargo on board."

At the ports of Seattle and Tacoma, Wash., two terminals are being revamped to accommodate more of the largest vessels. The ports also expect to spend more than \$13 billion to improve rail and truck access.

From Casselton, N.D., Mr. Sinner's family business, Sinner Bros. & Bresnahan, sends food-grade soybeans to 15 countries, where they are pro-

Choppy Ride

U.S. agricultural exports by year. Exports have been buffeted by a strong dollar and weak foreign economies, and could face a new challenge from changes in the ocean-freight business.



Note: Figures are fiscal years ending Sept. 30; 2017 figure is projected.
Source: U.S. Agriculture Department
THE WALL STREET JOURNAL.

cessed into products such as tofu and soy milk. Using containers offers better assurance of food safety and makes it easier to trace shipments, which Mr. Sinner says are important issues to customers in Japan and Southeast Asia.

But getting empty containers can be a hassle, Mr. Sinner says. In the Upper Midwest, many container vessels end up in Chicago. Farmers must arrange, at additional cost, to have containers delivered to locations where they can be loaded.

Mr. Sinner says the advent of the new alliances has caused some disruptions. In April, a scheduled shipment for some 15 containers of soybeans from his farm was abruptly delayed by two weeks. That angered customers in Asia, where high temperatures and humidity make it impractical to store soybeans used in food processing.

"Hiccups like this create a lot of anxiety and frustration for everyone," Mr. Sinner says.

Mr. Pollock is a writer in Ridgewood, N.J. Email him at reports@wsj.com.



The port of Oakland, Calif., plans this year to begin construction on more warehouses and will raise the height of cranes to accommodate larger ships, which could reduce shipping volume—and farmers' options—at other ports.

The complexity of global currencies evolved 12-fold over the last decade.

The foreign exchange market is the largest and most liquid in the world – and also the most deeply intertwined. In fact, there are currently more than 1,300 potential currency pairings. That shared opportunity also presents shared risks. CME Group offers products designed to manage those risks across currencies. This is how individuals and institutions can navigate an increasingly interconnected and ever-changing global marketplace. This is how the world advances. Learn more at cmegroup.com/finance.





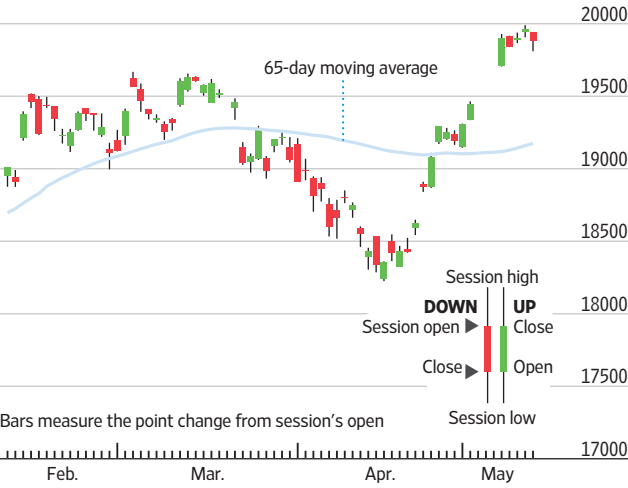
CME Group is a trademark of CME Group Inc. The Globe logo is a trademark of Chicago Mercantile Exchange Inc. All other trademarks are the property of their respective owners. Copyright © 2017 CME Group. All rights reserved.

MARKETS DIGEST

Data as of Friday, May 12, 2017

Nikkei 225 Index

19883.90 ▼77.65, or 0.39%
High, low, open and close for each trading day of the past three months.



STOXX 600 Index

395.63 ▲1.24, or 0.31%
High, low, open and close for each trading day of the past three months.



S&P 500 Index

2390.90 ▼3.54, or 0.15%
High, low, open and close for each trading day of the past three months.



International Stock Indexes

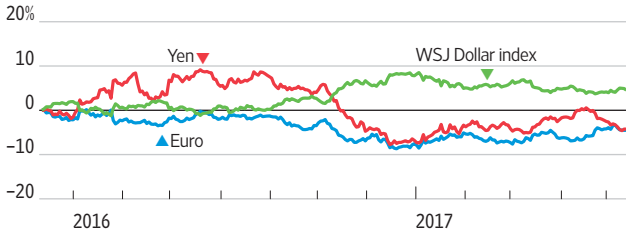
Region/Country		Index	Close	Latest NetChg	% chg	Low	52-Week Range	High	YTD % chg
World		The Global Dow	2745.02	2.91	▲0.11	2197.91		2754.32	8.4
		MSCI EAFE	1867.96	9.44	▲0.51	1520.94		1867.96	10.9
		MSCI EM USD	1002.37	2.02	▲0.20	781.84		1002.37	16.2
Americas		DJ Americas	574.86	-0.82	▼-0.14	480.83		577.52	6.4
		Brazil Sao Paulo Bovespa	68221.94	684.33	▲1.01	48471.71		69052.03	13.3
		Canada S&P/TSX Comp	15537.88	-12.67	▼-0.08	13689.79		15922.37	1.6
		Mexico IPC All-Share	49426.08	-104.45	▼-0.21	44282.03		49939.47	8.3
		Chile Santiago IPSA	3711.92	20.83	▲0.56	3054.30		3782.66	15.2
U.S.		DJIA	20896.61	-22.81	▼-0.11	17140.24		21115.55	5.7
		Nasdaq Composite	6121.23	5.27	▲0.09	4594.44		6129.14	13.7
		S&P 500	2390.90	-3.54	▼-0.15	2000.54		2399.63	6.8
		CBOE Volatility	10.40	-0.20	▼-1.89	9.77		25.76	-25.9
EMEA		Stoxx Europe 600	395.63	1.24	▲0.31	308.75		396.45	9.5
		Stoxx Europe 50	3270.89	19.74	▲0.61	2636.71		3270.89	8.6
	Austria	ATX	3082.11	5.74	▲0.19	1988.40		3086.20	17.7
		Belgium Bel-20	4008.34	4.17	▲0.10	3141.13		4041.03	11.1
	France	CAC 40	5405.42	22.00	▲0.41	3984.72		5432.40	11.2
	Germany	DAX	12770.41	59.35	▲0.47	9268.66		12770.41	11.2
	Greece	ATG	789.13	-8.03	▼-1.01	519.33		797.16	22.6
	Hungary	BUX	34435.53	576.65	▲1.70	25390.23		34435.53	7.6
	Israel	Tel Aviv	1422.53	...	Closed	1378.66		1478.96	-3.3
	Italy	FTSE MIB	21575.45	92.93	▲0.43	15103.58		21575.45	12.2
	Netherlands	AEX	534.71	0.47	▲0.09	411.62		536.26	10.7
	Poland	WIG	61595.38	-3.40	▼-0.01	43549.58		62336.39	19.0
	Russia	RTS Index	1099.75	-6.08	▼-0.55	879.55		1195.61	-4.6
	Spain	IBEX 35	10897.00	35.60	▲0.33	7645.50		11135.40	16.5
	Sweden	SX All Share	590.40	0.52	▲0.09	445.00		592.80	10.4
	Switzerland	Swiss Market	9123.41	58.53	▲0.65	7593.20		9123.41	11.0
Asia-Pacific		Johannesburg All Share	54063.34	-50.66	▼-0.09	48935.90		54474.09	6.7
		BIST 100	94996.35	-117.71	▼-0.12	71594.98		96194.20	21.6
		FTSE 100	7435.39	48.76	▲0.66	5923.53		7435.39	4.1
		FTSE 100	7435.39	48.76	▲0.66	5923.53		7435.39	4.1

Asia-Pacific	DJ Asia-Pacific TSM	1586.09	-1.15	-0.07%	1324.15	<div><div></div></div>	1587.24	11.5
Australia	S&P/ASX 200	5836.90	-41.40	-0.70%	5103.30	<div><div></div></div>	5956.50	3.0
China	Shanghai Composite	3083.51	22.01	0.72%	2806.91	<div><div></div></div>	3288.97	-0.6
Hong Kong	Hang Seng	25156.34	30.79	0.12%	19694.33	<div><div></div></div>	25156.34	14.3
India	S&P BSE Sensex	30188.15	-62.83	-0.21%	25230.36	<div><div></div></div>	30250.98	13.4
Japan	Nikkei Stock Avg	19883.90	-77.65	-0.39%	14952.02	<div><div></div></div>	19961.55	4.0
Singapore	Straits Times	3255.29	-15.82	-0.48%	2729.85	<div><div></div></div>	3271.11	13.0
South Korea	Kospi	2286.02	-10.35	-0.45%	1925.24	<div><div></div></div>	2296.37	12.8
Taiwan	Weighted	9986.82	-14.66	-0.15%	8053.69	<div><div></div></div>	10001.48	7.9

Source: SIX Financial Information;WSJ Market Data Group

Currencies

Yen, euro vs. dollar; dollar vs. major U.S. trading partners



Country/currency	Fri in US\$	Fri per US\$	YTD chg (%)
Americas			
	Argentina peso-a	0.0649 15.4155	-2.9
	Brazil real	0.3203 3.1217	-4.1
	Canada dollar	0.7292 1.3715	2.0
	Chile peso	0.001489 671.80	0.3
	Colombia peso	0.0003426 2918.51	-2.8
	Ecuador US dollar-f	1 1	unch
	Mexico peso-a	0.0533 18.7650	-9.5
	Peru sol	0.3050 3.2787	-2.2
	Uruguay peso-e	0.0357 27.980	-4.7
Asia-Pacific	Venezuela bolivar	0.099964 10.00	0.1
	Australia dollar	0.7394 1.3524	-2.6
	China yuan	0.1449 6.9025	-0.6
Europe			
	Hong Kong dollar	0.1283 7.7938	0.5
	India rupee	0.0156 64.1450	-5.6
	Indonesia rupiah	0.0000751 13319	-1.5
	Japan yen	0.008826 113.30	-3.2
	Kazakhstan tenge	0.003166 315.89	-5.3
	Macau pataca	0.1246 8.0278	1.4
	Malaysia ringgit-c	0.2304 4.3398	-3.3
	New Zealand dollar	0.6858 1.4582	1.0
	Pakistan rupee	0.0095 104.795	0.4
Middle East/Africa	Philippines peso	0.0201 49.707	0.2
	Singapore dollar	0.7119 1.4047	-2.9
	South Korea won	0.0008899 1123.68	-7.0
	Sri Lanka rupee	0.0065527 152.61	2.8
	Taiwan dollar	0.03316 30.155	-7.1
	Thailand baht	0.02885 34.660	-3.2
Stoxx 50			
	Y TakedaPharm	4502 5619.00	-0.07 16.22
	HK\$ TencentHoldings	0700 258.20	1.41 36.11
	Y TokaiMarineHldg	8766 4925.00	-0.93 2.69
	Y ToyotaMtr	7203 6047.00	-1.24 -12.08
	AUS Wesfarmers	WES 64.98	-0.34 4.37
	AUS WestpacBanking	WBC 32.57	-0.15 -0.09
	AUS Woolworths	WOW 26.94	-0.63 11.78
	CHF ABB	ABBN 24.71	...
	ASMLHolding	ASML 123.55	0.73 15.85

Key Rates

	Latest	52 wks ago
Libor		
	One month	0.99244% 0.43395%
	Three month	1.17956 0.62760
	Six month	1.43656 0.90690
Euro Libor		
	One month	1.76567 1.22890
	Three month	-0.40429% -0.35129%
	Six month	-0.36643 -0.27529
Euribor		
	One month	-0.27357 -0.16343
	Three month	-0.14400 -0.03300
	Six month	-0.37300% -0.34900%
Yen Libor		
	One month	-0.32900 -0.25700
	Three month	-0.25100 -0.14500
	Six month	-0.12700 -0.01200
Yen Libor		
	One month	-0.01821% -0.05357%
	Three month	-0.00593 -0.02993
	Six month	-0.00471 -0.00329
Eurodollars		
	One month	1.0000% 1.0000%
	Three month	1.2000 11000
	Six month	1.3500 12500
Prime rates		
	U.S.	4.00% 3.50%
	Canada	2.70 2.70
	Japan	1.475 1.475
Policy rates		
	ECB	0.00% 0.00%
	Britain	0.25 0.50
	Switzerland	0.50 0.50
	Australia	1.50 1.75
Overnight repurchase rates		
	U.S.	0.80% 0.45%
	Euro zone	n.a. n.a.

Sources: WSJ Market Data Group, SIX Financial Information, Tullett

Top Stock Listings

Cur Stock	Sym	Last	% Chg	YTD% Chg
Asia Titans				
HK\$ AIAGroup	1299	55.40	-0.81	26.63
Y AstellasPharma	4503	1403.50	-1.78	-13.55
AUS AustNZBK	ANZ	29.22	-0.27	-3.94
AUS BHP	BHP	23.75	0.64	-5.23
HK\$ BankofChina	3988	3.80	0.53	10.47
HK\$ CKHutchison	0001	101.60	-0.29	15.59
HK\$ CNOOC	0883	9.06	0.55	-6.60
AUS CSL	CSL	134.13	-0.19	33.58
Y Canon	7751	3809.00	-0.24	15.60
Y CentralJapanRwy	9022	1858.55	0.57	-3.35
HK\$ ChinaConstructBk	0939	6.37	0.16	6.70
HK\$ ChinaLifeInsurance	2628	24.55	0.82	21.53
HK\$ ChinaMobile	0941	85.10	-0.18	3.53
HK\$ ChinaPetro&Chem	0386	6.25	0.16	13.64
AUS CmwthBkAust	CBA	81.67	-0.49	-0.90
Y EastJapanRailway	9020	10380	1.07	2.77
Y Fancu	6954	2271.5	-0.76	14.64
Y Hitachi	6501	624.60	-1.12	-1.17
TW\$ Hon Hai Precisin	2317	102.50	-1.44	21.73
Y HondaMotor	7267	3199.00	-1.57	-6.33
KRW HyundaiMtr	005380	155000	-1.59	6.16
HK\$ Inds&Comm	1398	5.08	-0.39	9.25
Y JapanTobacco	9434	3932.00	1.05	2.29
Y KDDI	2913	3083.00	0.72	4.17
Y Mitsubishi	8058	2311.00	-1.22	-7.17
Y MitsubishiElectric	6503	1639.50	-0.58	0.61
Y MitsubishiUFJFin	8306	730.00	-1.27	1.36
Y Mitsui	8031	1560.00	-1.16	-2.92
Y Mizuho Fin	8411	209.00	-0.57	-0.38
Y NTTDoCoMo	9437	2719.50	0.09	2.12
AUS NatAustBnk	NAB	32.33	0.09	5.41
Y NipponTelegr	9432	5119.00	0.67	4.21
Y NissanMotor	7201	1107.50	-3.02	-5.78
Y Panasonic	6752	1349.00	-2.07	13.41
HK\$ PingAnInsfChina	2318	46.05	0.88	18.69
Y RelianceIndsGDR	RIGD	41.80
KRW SamsungElectronics	005930	229100	0.70	27.14
Y Sevens&Hlgs	3382	4820.00	-0.40	8.24
Y SoftBankGroup	9984	8657.00	-2.46	11.64
Y Sony	6758	4046.00	-0.66	23.54
Y Sumitomo Mitsui	8316	4205.00	-1.08	-5.72
HK\$ SunHngKaiPrp	0016	116.00	-0.51	18.37
TW\$ TaiwanSemiMfg	2330	206.00	-0.72	13.50

Cur	Stock	Sym	Last	% Chg	YTD% Chg
HK\$	TakedaPharm	4502	5619.00	-0.07	16.22
	TencentHoldings	0700	258.20	1.41	36.11
	TokioMarineHldg	8766	4925.00	-0.93	2.69
	ToyotaMtr	7203	6047.00	-1.24	-12.08
AUS	Wesfarmers	WES	64.98	-0.34	4.37
AUS	WestpacBanking	WBC	32.57	-0.15	-0.09
AUS	Woolworths	WOW	26.94	-0.63	11.78
Stoxx 50					
CHF	ABB	ABBN	24.71	...	15.85
	ASMLHolding	ASML	123.55	0.73	15.04
AXA	AXA	CS	24.23	-0.16	1.04
	AirLiquide	AI	114.30	0.84	8.19
Allianz	ALV	172.80	-0.29	10.06	
	ABInBev	ABI	109.35	0.28	8.75
Azena	AstraZenca	AZN	5176.00	9.03	16.64
	BASe	BAS	89.56	-0.61	14.24
BNP Paribas	BNP	66.56	0.23	9.93	
	BT Group	BT.A	305.95	2.72	-16.61
BancoBilvizAR	BBVA	7.39	0.03	21.50	
	BancoSantander	SAN	6.03	-0.53	21.34
Barclays	BARC	205.90	-0.31	-7.89	
	Bayer	BYAYN	116.75	1.43	17.77
BP	BP.	460.08	0.89	-9.73	
	BritishAmTob	BATS	5408.08	1.29	97.07
Daimler	DAI	69.07	0.48	-2.33	
	DeutscheTelekom	DTE	17.53	4.88	7.18
Diageo	DGE	2305.00	0.35	-2.94	
	ENI	ENI	14.89	-0.07	-3.75
GlaxoSmithKline	GSK	1665.00	2.30	5.55	
	HSBC Hldgs	HSBA	678.10	0.01	3.23
INGGroup	INGA	15.31	0.13	14.59	
	ImperialBrands	IMB	3717.00	0.80	49.94
IntesaSanpaolo	ISP	2.83	-0.14	16.52	
	LVHMHotSensuo	MC	231.50	-0.77	26.67
LloydsBankingGroup	LLOY	68.70	-1.38	9.90	
	L'oreal	OR	190.05	0.48	9.60
NationalGrid	NG.	1043.00	1.02	9.60	
	Nestle	NESN	81.40	0.80	11.43
Novartis	NOVN	80.90	0.47	9.18	
	NovoNordiskB	NOVO-B	274.90	-0.11	7.93
Prudential	PRU	1759.50	-0.06	8.13	
	RedclitBenckiser	RB.	7356.00	0.75	8.83
RioTinto	RIO	2970.00	-0.60	-5.92	
	RocheHdgfct	ROG	276.50	1.16	26.79

FINANCE & MARKETS



King of Prussia Mall in December 2014. The Pennsylvania mall is one of the largest in the U.S.

Mall Owners Sell Assets, Focus on Strong Properties

By ESTHER FUNG

Large shopping-center owners are shrinking their portfolios in hopes of owning smaller but stronger collections of assets as retail-industry headwinds intensify.

Retailers, feeling the strain from an overbuilding binge in recent decades and a pickup in online shopping, are also shrinking their store fleets, spurring landlords to cut loose weaker properties.

Chattanooga, Tenn.-based **CBL & Associates Properties Inc.** on Thursday said it sold two malls in Tennessee for a total of \$53.5 million, and plans to use sale proceeds to reduce its debt. The real-estate investment trust has been selling assets since 2014 as part of a multiyear plan to transform its portfolio, and has completed 20 transactions totaling nearly \$800 million since then. It now owns and manages 81 enclosed malls and open-air shopping centers.

“Through this program, we now have a portfolio of higher-quality, higher-growth assets that are positioned to

benefit from the ongoing retail evolution,” said Stephen Lebovitz, president and chief executive of CBL. He added that proceeds for such sales also help provide liquidity to redevelop and improve other properties it owns.

Private real-estate firm **JBG Cos.** recently sold the King of Prussia Town Center, a 263,423-square-foot open-air shopping center in King of Prussia, Pa., to a fund run by **CBRE Global Investors**. The shopping center changed hands for \$183 million, according to a person familiar with the matter. It is adjacent to one of the largest shopping malls in the U.S., King of Prussia Mall, and is 87% leased.

The sale was a strategic disposition, said a spokeswoman from the Chevy Chase, Md.-based company, declining to provide more details. According to JBG’s website, King of Prussia Town Center was its only shopping center in Pennsylvania. It has retail assets in the District of Columbia, Maryland and Virginia.

Analysts are crunching numbers to determine the extent of brick-and-mortar store

closures ahead as online shopping continues to grow.

Wells Fargo equity research analysts estimate that among 14 retail companies they examined and a survey of 1,000 consumers on their shopping preferences, the retailers would need to close about 16% of their stores, or more than 2,650 stores in total.

“Whereas physical real estate was once considered a valuable asset during the decades-long retail growth spurt, it now appears to be an albatross for most specialty retailers,” the report said.

With retail real-estate owners now scrutinizing their assets to cherry pick a smaller collection of properties they would prefer to spend more resources on, buyers are interested in picking up assets that are more defensive against competition from the online channels.

CBRE Global Investors, the buyer of the King of Prussia Town Center, said it is in a good location that serves a wealthy population and that it also attracts foot traffic with a Wegmans grocery store nearby.

OPEC Members Want Wider Cuts

By BENOIT FAUCON

LONDON—Six months after restricting their oil output in an effort to raise prices, some members of OPEC are pushing for a broader effort to reduce production, say people familiar with the matter.

Group members in recent weeks have suggested either making deeper production cuts or bringing new participants into the effort to cut oil exports, these people said.

Members of the Organization of the Petroleum Exporting Countries are widely expected to agree later this month to extend the deal they reached late last year to cut production, along with 11 other states including Russia,

by a total of 1.8 million barrels a day. Taking that oil off the world market helped to stabilize prices, but was offset by rising U.S. production.

To add credibility to its efforts to rebalance the market, OPEC is seeking cooperation from less significant producers, including Turkmenistan and Egypt, say people familiar with the matter.

The effort includes lobbying by Saudi Arabia, OPEC’s biggest producer. During a visit to Turkmenistan’s capital two weeks ago, Saudi Energy Minister Khalid al-Falih asked Turkmenistan President Gurbanguly Berdimuhamedov to send a representative to the May 25 meeting in Vienna, where OPEC will discuss ex-

tending production limits, OPEC officials said. Turkmenistan’s president agreed, they said.

Egypt has told OPEC that President Abdel Fattah Al Sisi instructed an envoy to attend the gathering, those people said. A spokesman for Turkmenistan’s London Embassy declined to comment. Egypt’s oil ministry declined to comment. Egypt and Turkmenistan pump a combined 700,000 barrels a day.

On Thursday, OPEC reported that production from North America is increasing faster than the group expected, undermining efforts to limit the amount of oil entering markets.

—Summer Said contributed to this article.

FINANCE WATCH

CITIGROUP

Leaders Selected for New Credit Group

Citigroup Inc. has named veterans Mickey Bhatia and Carey Lathrop as co-heads of a new group spanning credit trading and securitization, key cogs in its fixed-income business.

The moves were announced by the bank in an internal memo Friday that was reviewed by The Wall Street Journal.

Mr. Bhatia, who is currently head of global structured credit products, will, in part, take the role of Mark Tsasarsky, who earlier this month left Citigroup to join the hedge fund Millennium Management LLC.

Alongside Mr. Bhatia will be

Mr. Lathrop, currently Citigroup’s global head of credit markets.

The two will work together to further integrate the trading of bonds and other more complex credit products. The idea is to balance out swings in trading activity between the two areas. Bond activity tends to wind down during periods of low volatility, as is the case in today’s markets. The opposite is true of structured credit products.

—Telis Demos

REGULATION

White House Seeks To Fill CFTC Slot

The White House on Friday tapped Brian Quintenz, a former House aide and investment

manager, to fill a Republican vacancy on the **Commodity Futures Trading Commission**, the second time Mr. Quintenz has been nominated for the position.

Mr. Quintenz, who formerly headed a Washington investment firm, was proposed for the CFTC post about a year ago, and his nomination sailed easily through the Senate Agriculture Committee, which oversees the agency. But lawmakers didn’t act to confirm him on the Senate floor before the end of the last Congress in January.

Mr. Quintenz couldn’t be reached for comment.

The CFTC is currently operating with just two commissioners, three short of its full complement.

—Andrew Ackerman

Advertisement

INTERNATIONAL INVESTMENT FUNDS

[Search by company, category or country at europe.WSJ.com/funds]

MORNINGSTAR®

Data as shown is for information purposes only. No offer is being made by Morningstar, Ltd. or this publication. Funds shown aren't registered with the U.S. Securities and Exchange Commission and aren't available for sale to United States citizens and/or residents except as noted. Prices are in local currencies. All performance figures are calculated using the most recent prices available.

FUND NAME	GF	AT	LB	DATE	CR	NAV	—%RETURN—	YTD	12-MO	2-YR
■ Chartered Asset Management Pte Ltd - Tel No: 65-6835-8866										
Fax No: 65-6835 8865, Website: www.cam.com.sg , Email: cam@cam.com.sg										
CAM-GIF Limited										

For information about listing your funds, please contact: Freda Fung tel: +852 2831 2504; email: freda.fung@wsj.com

WSJ PRO
CYBERSECURITY
EXECUTIVE FORUM

THURSDAY, MAY 25, 2017 | LONDON

WSJ Pro’s Cybersecurity Executive Forum will bring together senior figures from industry and government to discuss how senior executives can best prepare for hacking threats, manage breaches and work with government cybersecurity authorities and regulators. The forum will offer insights, practical advice, case studies and workshops tailored to the needs of executives and managers.

SPEAKERS



ELIZABETH DENHAM

U.K. Information Commissioner
Information Commissioner’s Office



JOHN ‘FOUR’ FLYNN

Chief Information Security Officer
Uber



MIKKO HYPPONEN

Chief Research Officer
F-Secure



CHERI MCGUIRE

Group Chief Information Security Officer
Standard Chartered Bank



DAVID OMAND

Visiting Professor, Dept. of War Studies
King’s College, London



DAVID WOOD

Executive Director
BGS Ltd.

To request an invitation, go to CYBER.WSJ.com

MARKETS

A Battle Over Bonds

Chinese banks gain against Wall Street in helping local firms raise funds overseas

BY RACHEL ROSENTHAL AND JULIE STEINBERG

China's banks are pressing hard on Wall Street firms in one of the banking world's hottest markets: helping Chinese companies sell bonds overseas.

Dollar-denominated bond issuance from China has exploded in recent years, as the country's globally focused companies raise cash for expansion and investment abroad. Chinese borrowers have been the second-biggest seller of dollar-denominated debt this year and last year, after only those in the U.S.

Chinese investment banks in 2017 took five of the top 10 spots in league-table rankings for underwriting offshore Chinese debt deals, and they accounted for just under half of sales volume. That is up from one spot and 13% of associated volume in 2012.

Driving the gains is a battle for business by Chinese banks, which are willing to accept smaller profits than Western rivals, bankers say. The banks are bringing with them some nonstandard practices honed in China's bumpy home markets, some of which could lead to unruly trading in offshore markets as well, bankers say.

After a recent government crackdown on runaway debt in China sent bond yields climbing, Chinese banks have also been pursuing companies rushing to sell bonds overseas. China's overall debt is now estimated to be almost triple gross domestic product, a level many experts view as dangerous. Bond yields rise as prices fall.

Historically, Western firms with connections and financial heft, including **Morgan Stanley**, **Goldman Sachs Group Inc.**



Cinda Asset Management hired 23 banks for a 2016 bond sale.

and **HSBC Holdings PLC**, have had an advantage in helping Chinese companies tap global investors and financial markets.

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

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

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

Fees aren't distributed evenly among investment banks, as they tend to be in the U.S. or Europe, where orders go in a shared pool and other underwriters can see the names of investors in a bond issue and

the amount they are buying.

In mainland as well as offshore Chinese bond deals, Chinese issuers urge banks to compete for fees, awarding the biggest amounts to those that snag the most investor orders. One way of amassing that business is through anonymous orders, known as "x-account orders," that are credited to the bank that receives them.

The use of x-orders is now relatively rare in most other markets around the globe, bankers say, while in Chinese offshore deals, they can account for as much as 75% of orders.

One challenge is that investors sometimes place duplicate x-orders with multiple banks to make sure they can get all the bonds they want to buy, which can make demand seem larger than it really is, bankers say.

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

Cinda didn't respond to requests for comment.

Who Wants 100-Year Debt? Yields Are Key to Demand

BY JOSH ZUMBRUN

For the U.S. Treasury Department to issue 40-year, 50-year or 100-year bonds, or for investors to consider buying them, it sure would help to know the price.

Such ultralong bonds are under active consideration at Treasury, and so this month The Wall Street Journal's survey of economists asked respondents to estimate what the yields on those bonds would be, and whether they would be worth it.

The results: They believe the yield on the 40-year Treasury would be about 0.3 percentage point higher than on the 30-year bond, or about 3.34% today. A 50-year bond would price at 3.5%, they estimate, while the 100-year bond would yield 3.98%.

"Bond investors would likely demand higher yields on longer-maturity bonds to compensate for government debt and inflation risks," said Scott Anderson, chief economist of the Bank of the West. Therein lies one of the key challenges of such bonds. As yields rise, it will be harder for the Treasury to reap cost savings from the program.

That is one reason that the Treasury Borrowing Advisory Committee—made up of some of Wall Street's biggest investors and dealers—advised that such long bonds might not be worth pursuing.

Some economists share that assessment, such as John Silvia, chief economist of Wells Fargo, who said such bonds were "not a viable market" and would have "inconsistent issuance over business cycles." But just over 60% of survey respondents said strong and sustainable demand would develop for 40- and 50-year bonds.

Over 50% of respondents

said such bonds would be worth implementing.

"Endowments, pension funds and life insurers will love these options," said James Smith of Parsec Financial Management.

While a 3.5% yield is higher than most government debt now, such a yield certainly could prove to be a good deal over the course of the next half-century.

"Should have been doing this for the past eight years," said Joel Naroff, president of Naroff Economic Advisors. "It stabilizes the payments at a relatively low rate."

The 100-year bond, however, was far less popular in the survey. Over 60% said the bonds would lack demand and not be worth pursuing. Estimates of its yield were

nearly a full percentage point higher than for the 30-year.

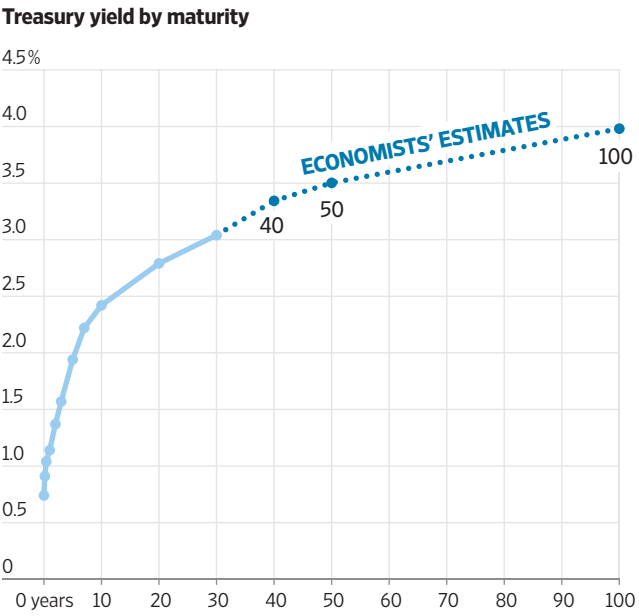
Pension funds and insurance companies do have some liabilities they can anticipate 50 years in the future and so might purchase 50-year bonds as a way to manage that.

But century bonds would be due in the 2100s, the time frame of intergalactic bloodshed in the "Alien" movies and the Martian moon battles of the "Doom" videogames, not the time frame of today's investors.

"The message of issuing ultralong Treasuries is that you plan to take on a lot of debt, and that should trigger some caution by investors," said Diane Swonk, founder of DS Economics, an economic consulting firm.

Century Yield Curve

Treasury securities with longer maturities currently have higher yields. Economists estimated what the yield would be on proposed 40-year, 50-year and 100-year bonds.



Notes: Yields as of May 10; forecasts based on estimated premium over 30-year Treasuries. Source: Treasury Department (yield); Wall Street Journal Survey of Economists (estimates)

THE WALL STREET JOURNAL.

HEARD ON THE STREET

FINANCIAL ANALYSIS & COMMENTARY

Email: heard@wsj.com

WSJ.com/Heard

Luxury Watchmakers' Bad Time

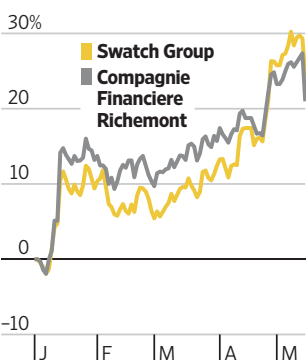
Out with English noblemen, in with techies and women. Sweeping board and management changes say more about the risks facing Cartier owner **Richemont** and other luxury groups than an underwhelming quarter for watch sales.

Richemont shares fell 5% Friday as investors digested lower-than-expected growth for the quarter through March. Stellar results from handbag makers **LVMH** and **Kering** had buoyed hopes of a rapid recovery from last year's woes. Richemont's less sparkling performance has also hit shares in its key peer, **Swatch**, and to a lesser extent those of **LVMH**, which also has a watch business.

Yet it isn't cause for long-term concern. Luxury handbag and clothes are increasingly sold through own-brand retail outlets, while watches are mainly sold through third-party retailers. This makes watch sales much more volatile, as swings in consumer confidence are amplified by inventory growth or cuts. Tell-

Downtick

Share-price performance

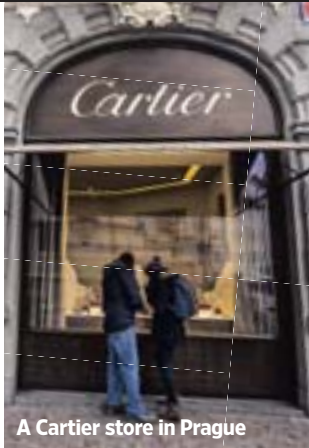


Sources: FactSet; Bloomberg News (photo)

ingly, Richemont's sales through its own shops rose 4% over the year through March, while sales to other retailers, who are dealing with an overhang of watches, fell 14%.

Investors would do better to pay attention to what the company's famously bearish chairman and controlling shareholder, Johann Rupert, is worrying about: new technology and new tastes.

This concern is also ap-



A Cartier store in Prague

THE WALL STREET JOURNAL.

parent in his nonexecutive appointments. The Duke of Wellington and Lord Renwick of Clifton won't be seeking re-election at this year's annual general meeting. Among the five new nonexecutives are two male technology executives (including Nikesh Arora, who left Japanese telecom and tech giant **SoftBank** last year under a cloud of controversy), a female financier and a female economics pro-

fessor from China. Mr. Rupert's son Anton, himself a techie, was added "to keep continuity between controlling shareholders and executives." Crucially, the average age of board members will plummet.

E-commerce is the obvious technology trend affecting luxury groups: Next month, LVMH will open a multibrand e-commerce portal to compete with **Yoox Net à Porter**, in which Richemont owns a 24% stake.

Yet Mr. Rupert seems just as focused on disruptive—and expensive—production techniques like 3-D printing and the scope they may eventually offer for customizing high-end jewelry and watches to splintering customer tastes.

Luxury groups are slowing their investments in new retail outlets, but spending on new technology may have to pick up.

Investors should probably worry less about sales and more about costs.

—Stephen Wilmot

OVERHEARD

Biotechnology is a field of limitless innovation. That can extend into novel ways for investors to lose money.

The newest may be a dispute between a biotech company and a stock research firm that published a report saying one of the company's drugs was as good as a blockbuster drug already on the market.

The company, **Akari Therapeutics**, instead of cheering, said the report contained inaccuracies and in a securities filing Thursday said it placed its chief executive on leave while the board investigates the situation.

Edison Investment Research withdrew the report, but on Friday said Akari had seen it before publication and had no problems with it. Edison still can't find anything wrong with the report.

Akari's shares tumbled 21% on Friday and are down about 45% since the report came out.

Biotech never ceases to find new ways for investors to lose money.

Why U.S. Consumers Don't Spend

What will it take for people to start spending more?

The U.S. Commerce Department reported April retail-sales figures on Friday, and the best way to characterize the data is "meh." The gains in overall sales fell short of estimates. The overall impression is that the state of the American consumer isn't as bad as indicated in the first-quarter report on gross domestic product, which showed spending rose at a 0.3% annual rate. But neither is it as good as one might hope with unemployment at a low 4.4%.

To understand why spending has been so underwhelming, it is helpful to consider what is happening with its three main drivers: wealth, borrowing and income.

As a group, Americans are certainly getting richer. But that wealth is distributed unevenly. Notwithstanding the pickup in some types of debt, such as auto loans, people aren't borrowing like before. U.S. household debt came to 102% of income in 2016, versus 107% in 2013 and 129% in 2007. Americans' propensity to fuel spending with borrowing remains diminished.

That leaves income. The news here is good: More people are drawing paychecks and wage growth is creeping higher. But with wealth and debt not contributing, income is the only driver of spending growth, and it can't drive that much. One headwind is higher gasoline prices.

A tight labor market means wage gains could start to accelerate. That is the best hope for retailers, assuming people decide to actually spend the money, rather than stuff it in the bank.

—Justin Lahart

Stopping the Fire in Banco Popular, Spain's Weakest Bank

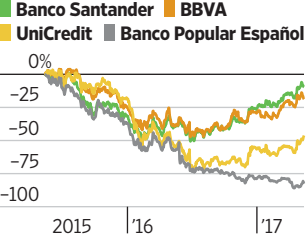
The most remarkable thing about the troubles of Spanish lender **Banco Popular Español** is how little they seem to matter to the country or the wider eurozone. Italian policy makers must be seething with envy.

Banco Popular is only the country's sixth largest, but with total assets of €147 billion (\$161 billion), it isn't tiny.

It has been called Spain's most Italian bank because it is still cleaning up a nearly €20 billion pile of bad loans left over from the 2008 crisis. It needs capital—analysts estimate €3 billion to €5 billion—and it has been fighting to keep deposits.

Pain in Spain

Relative stock-price performance



Source: FactSet

THE WALL STREET JOURNAL.

And yet even as Banco Popular's shares gyrate wildly, there has been no contagion to other lenders or to Spain's sovereign debt. Banco Popular's shares dropped more

than 35% in April when it suffered ratings downgrades, and the new chairman said it would need more capital. The stock has recovered some of that ground, but is down more than 80% over the past two years.

The performance of Spain's other banks underscores the renewed health of its financial sector. To be sure, there are still plenty of bad loans around, and Spain's systemwide bad-debt ratio of about 6% is worse than for the EU as a whole. But it is significantly better than Italy's 16%.

Banco Popular is helping itself by selling off bad debt and property seized in fore-

closures. Sales and other recoveries of almost €1 billion in the first quarter offset new bad loans of nearly €700 million, chipping away at its total stock.

But the bank must bring in more capital to help pay for a full cleanup, and it needs more than its current market value of just €3 billion, which means extreme dilution for existing shareholders if they are unwilling to put in more money following a €2.5 billion capital raising 12 months ago.

The bank is also exploring a full sale of itself to a rival, though it denied a report on Thursday that it has asked advisers to pursue an

urgent sale.

Banco Santander or BBVA, Spain's two largest lenders, are the most likely bidders, according to analysts at Berenberg, but any deal would only happen at a price some way below even today's weak value.

That seems like the most plausible outcome. There is value within the bank at the right price. The lack of contagion and the health of bigger rivals helps. It means politicians have no reason to meddle, unlike in Italy.

There is further pain ahead for Banco Popular's shareholders, but this time the fire should stop there.

—Paul J. Davies