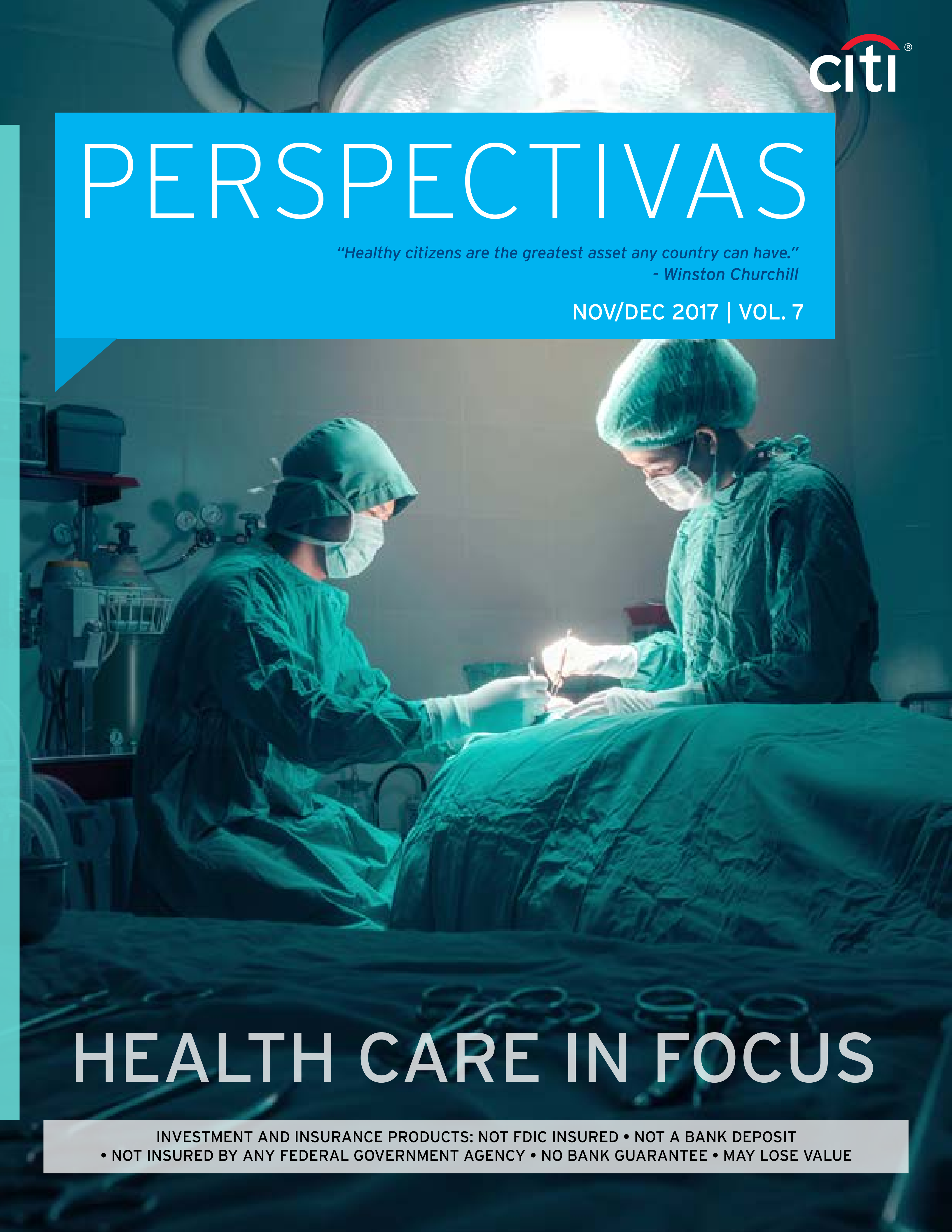

PERSPECTIVAS

"Healthy citizens are the greatest asset any country can have."
- Winston Churchill

NOV/DEC 2017 | VOL. 7

HEALTH CARE IN FOCUS

IN THIS ISSUE

Juan Fernando Pereira
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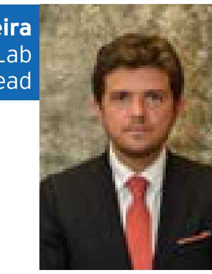

A WAR STORY
THE HISTORY OF U.S. HEALTH CARE

LATE 1800s

The earliest health care records in America date back to the end of the 19th century. The industrial revolution brought steel mill jobs to cities across the U.S., but the dangerous nature of the work led to more and more workplace injuries. As these manufacturing jobs became more important, their unions grew stronger. And, in order to shield their members, unions began to offer various forms of "sickness protections."

> "No country could be strong whose people are sick and poor."
>
> Theodore Roosevelt, U.S. President (1901-1909)

1930S THE GREAT DEPRESSION

1914-1918

WORLD WAR I

The War Risk Insurance Act covered military servicemen in the event of death or injury during WWI. The program essentially ended with the conclusion of the war in 1918, though benefits continued to be paid to survivors and their families.

Post WWI, with healthcare costs on the rise, a group of teachers created the precursor to Blue Cross where members agreed to pre-pay for future medical services.

1941

ATTACK ON PEARL HARBOR

During WWII, the **Stabilization Act of 1942** was enacted in order to fight inflation by limiting wage increases.

Since U.S. businesses were prohibited from offering higher salaries, they began to look for other ways to recruit new employees as well as incentivizing existing ones to stay. Their solution was **the foundation of employer-sponsored health insurance as we know it today.**

EARLY 1950s

KOREAN WAR

During this time:

- Penicillin opened people's eyes to the benefits of medical advancements and discoveries.
- In 1952, an effective Polio vaccine was created.
- In 1954 the first organ transplant was performed.

Of course, with such leaps in medical advancement, came additional costs. During this decade, the price of hospital care doubled.

1960s

By 1960, National Health Expenditures (NHE) accounted for 5% of Gross Domestic Product (GDP). In 1965, President Lyndon B. Johnson enacted **Medicare** and **Medicaid**.

LEARNING BOX

Medicare: A federal program providing health coverage for the elderly and disabled. **There are about 58 million people—some 17% of the U.S. population—enrolled in Medicare.**

Medicaid: A state and federal program providing health coverage for low income individuals. **There are about 72 million people – or 1 in 5 people – currently enrolled in Medicaid.**

1980s

NHE accounted for 8.9% of GDP.

1990s

NHE accounted for 12.1% percent of GDP. President Clinton proposed the Health Security Act of 1993 though it died in Congress.

In the meantime, employers were trying to find ways to cut back on healthcare costs—leading to the increased adoption of Health Maintenance Organization (HMOs). HMOs feature cost saving measures, such as narrow networks and require members to see a primary care physician (PCP) before a specialist. This resulted in slower healthcare cost growth than previous decades.

2000s

NHE accounted for 13.3% of GDP. President George W. Bush updated Medicare to include prescription drug coverage. In 2010, President Obama signed the Patient Protection and Affordable Care Act (ACA), which pushed through the first major expansion in health insurance since the 1960s. The law required all Americans to carry health insurance and promoted the concept of open **marketplaces**. It wasn't universal or single-payer coverage, but it used the existing private insurance industry model to extend coverage to millions of Americans.

LEARNING BOX

In the United States, **marketplaces,** are organizations in each state through which people can purchase a range of government-regulated and standardized health care plans offered by the insurers participating in the exchange.

2010s & THE FUTURE

President Trump campaigned on "repealing and replacing" the ACA though as of time of publication, efforts to do so have stalled.

As NHE reaches 18% of GDP, many questions remain unanswered:

- Will the U.S. revert to its former system?
- Will proposals for universal health care gain traction? or
- Is there some other way forward?

Sources: pbs.org, slate.com, CNN, WSJ

Charts and images are for illustrative purpose only. Refer to the Glossary and Important Information at the end of this publication.

Sources: pbs.org, slate.com, CNN, WSJ

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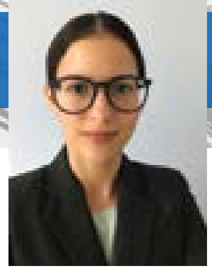
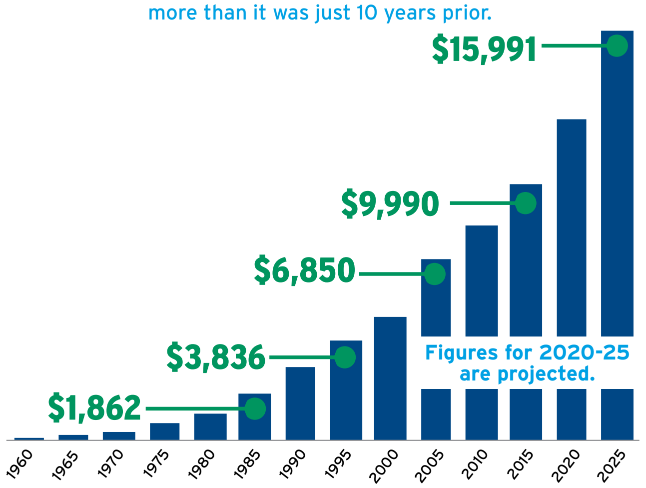


THE ECONOMIC IMPACT OF U.S. HEALTH CARE

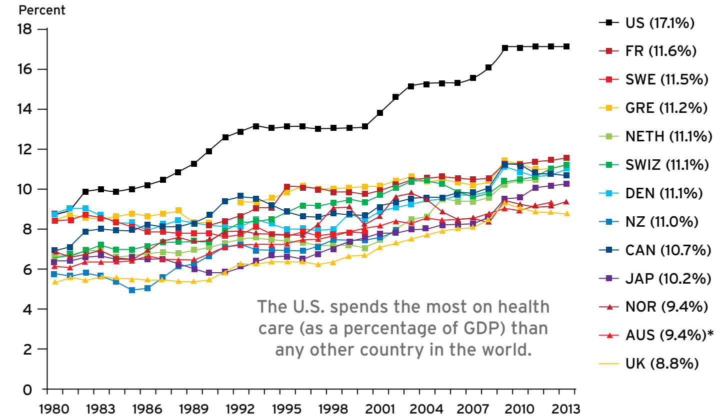
FIGURE 1. AVERAGE HEALTH CARE SPENDING PER PERSON

Fast forward to 2025 and the increase is projected to be 60% more than it was just 10 years prior.



Source: U.S. CMS, U.S. Census Bureau

FIGURE 2. A CLEAR OUTLIER AMONG PEERS U.S. HEALTH CARE EXPENDITURES AS A % OF GDP



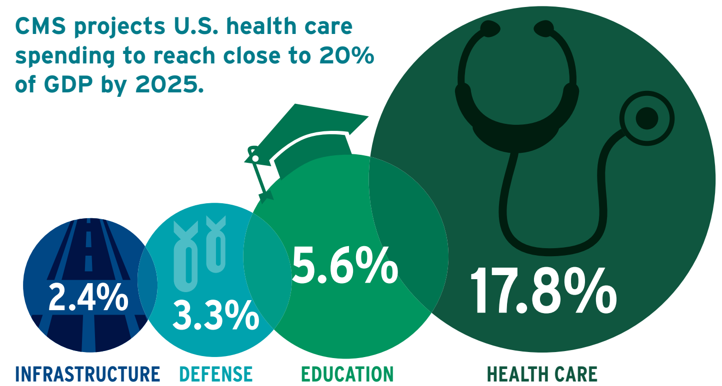
Source: OECD Health Data 2015

From 1960 to 2015, annual U.S. health care spending per person has gone from $146 to $9,990 (**Figure 1**), representing an average annual increase of over 8%. The increase has, in fact, outpaced annual income growth during the same time by 2.4%.

From the 1980s alone, U.S. health care spending has almost doubled as a percentage of GDP. Today, health care accounts for over 17% of all GDP spending (**Figure 3**)—larger than any other industry. This considerable burden makes the U.S. a clear outlier among peers (**Figure 2**). At this rate, the U.S. Centers for Medicare and Medicaid Services (CMS) projects national health care spending to outpace GDP growth by 1.2% by 2025.

FIGURE 3. U.S. EXPENDITURES AS A % OF GDP*

CMS projects U.S. health care spending to reach close to 20% of GDP by 2025.



WHY HAVE COSTS RISEN?

AGING POPULATION

As baby boomers continue to enroll in Medicare services, and the medical needs of those already enrolled increases, the government's burden grows. Medicare costs for patients during their last year of life is six times more than the average. Costs for these patients makes up 25% of the Medicare budget.

INCREASE IN CHRONIC ILLNESSES

Expensive and challenging to treat, diabetes and heart disease alone are responsible for 85% of U.S. health care costs. Almost half of all Americans suffer from one of the two and the numbers are on the rise due to poor nutrition and an obesity epidemic.

DID YOU KNOW?

People can have dual enrollment in Medicare and Medicaid. Depending on a person's income level and needs, the eligibility could be for either full-benefit or partial-benefit of the two programs.

From 2006 to 2015, the number of dual enrollees increased by 35%, from 8 to 11 million. Most of the growth, however, is attributable to partial benefit Medicare-Medicaid enrollees; which have grown 79% over the same ten years—from 1.8 to 3.2 million.

*Figures for 2015, Education figures as of 2012.

Sources: The World Bank, cms.gov, The Advisory Board, beckershospitalreview.com, the balance, medicareinteractive.org

Refer to the Glossary and Important Information at the end of this publication.

HIGHER DEMAND

With the expansion of health insurance options, the demand for health care services rose, along with prices. Home health care rose along with hospital visits. Expensive emergency room visits make up one third of all health care costs in the U.S. today as one in five adults will make use of the service each year.

HIDDEN COSTS

How do you shop around for the cheapest x-rays? Truth is, you can't. A 2014 report found that "90% of states do not provide sufficient healthcare pricing information to consumers."[1] The lack of price transparency also lends itself for a facility to charge five or ten times more, for the same service offered at any other facility, for no good reason at all. Also, because people insured often pay only a small fee for doctor visits, called a co-payment, there is no incentive for patients to shop around for the best price—which ultimately results in insurance companies footing the rest of the large bills.

PROBLEM

MEDICAL DEBT

37% of households with 4 or more members experienced medical bill problems in 2012.

38% of covered workers in group health plans faced an annual deductible of $1,000 per person or more. In 2016, only 10% faced deductibles this high.

62% of personal bankruptcies in 2007 were caused by medical bills.

Rampant health care costs force people into credit card debt and is responsible for 62% of the 2 million bankruptcies filed each year. It is more than the amount of bankruptcies for mortgage defaults. The worst part is that many people have health insurance but they either have high deductibles or the coverage is not enough to insure all their needs.

DID YOU KNOW?

Health care costs are the **#1 cost of bankruptcy** in the U.S.

> "The Congressional Budget Office projects that over the next decade, if current laws remained generally unchanged, budget deficits would eventually follow an upward trajectory—the result of strong growth in spending for retirement and **health care programs** targeted to older people and rising interest payments on the government's debt, accompanied by only modest growth in revenue collections. The deficits would drive debt held by the public from its already high level up to its highest percentage of GDP since after WWII."

SOLUTIONS BEING PROPOSED

Making health insurance more accessible to all would translate to increased profits for insurance companies and lower insurance premiums for patients. It would also lead to fewer bankruptcies and improved credit scores, both of which would allow people to spend more—boosting economic growth. But how that is achieved can take on many forms:

- Cultivate universal health care
- Develop a true free market with competition
- Increase price transparency
- Lower regulations
- Encourage personal ownership

DID YOU KNOW?

Health care is one of the most over-regulated industries in the U.S. The regulations imposed are often really detailed, and sometimes arbitrary, and can tilt the playing field to favor some competitors over others. Because many of the guidelines are intended to block any disruptions from the long-standing business models, the result is a system that is often outdated, inefficient, and unnecessarily costly.

[1] March 2014 report from the nonprofits Health Care Incentives Improvement Institute and Catalyst for Payment Reform.

Sources: the balance, ClearPointCCS.org, The Congressional Budget Office, solutions.heritage.org

Refer to the Glossary and Important Information at the end of this publication.

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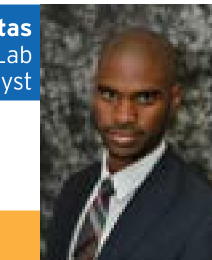
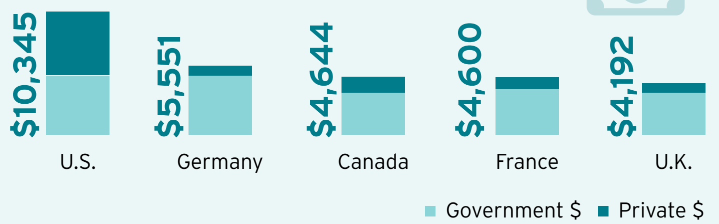


RELATIVELY UNHEALTHY

The United States is the country that spends the most on its HealthCare system...

2016 Health spending per person

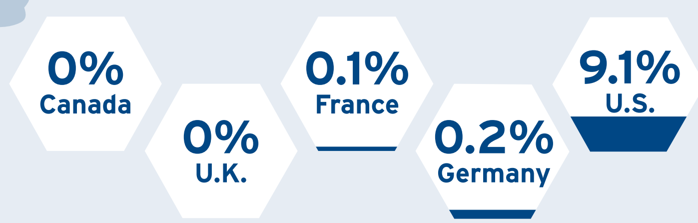


100 million people globally were **pushed into poverty** because of direct out-of-pocket health payments.

Some people are forced to pay up to **16X** more for their medicines in the private sector because of a scarcity of medicines in the public sector.

But still, many Americans remain without medical insurance...

Population without medical insurance



Insuring young adults is key because they tend to be healthier and typically pay more in premiums than insurers in expenses. As of 2013, the number of uninsured young adults in the U.S. dropped due to legislation that allowed them to remain on their parent's plan until age 26. Still, the number of uninsured for the U.S. remains much higher than other developed countries.

DID YOU KNOW?
59% of U.S. physicians believe that they are unable to prescribe their drugs of choice and deliver high-quality care because patients are either uninsured or have coverage restrictions.

And offered services in the U.S. are not superior to those of other developed countries...

Hospital beds per 1,000 people

1 billion people globally cannot obtain the health services they need, because those services are either inaccessible, unavailable, unaffordable or of poor quality.

Number of Primary care doctors per 1,000 people

The World Health Organization estimates that **4 million health workers** are missing globally today.

U.S. Bureau of Labor Statistics (BLS) projects that **2.3 million** Healthcare jobs will be added in the U.S. between 2014 and 2024.

Sources: World Health Organization, Forbes, Financial Times, Statista.com, OECD, CNN, Positivemed, Bain.com, Statista, MarketWatch.com, pbs.org

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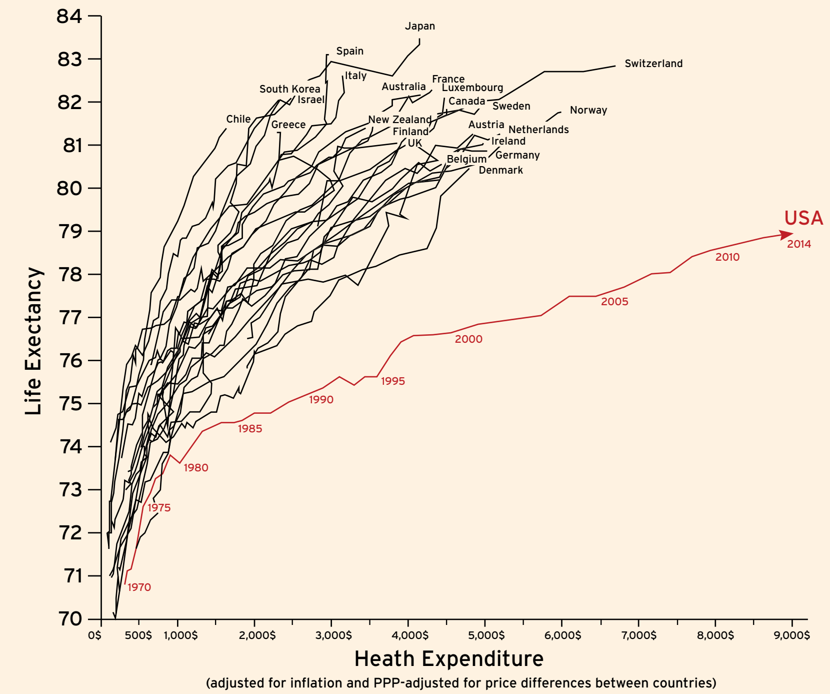
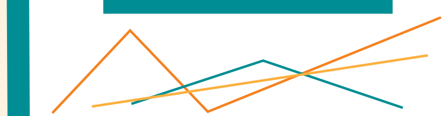
And, U.S. life expectancy is not one of the highest...

Life Expectancy versus Health Expenditures from 1970 to 2014



Source: OECD and World Bank



Between 2000 and 2050, the number of people over 60 is expected to **double**.

Japan with 83.7 years and **Switzerland** with 83.4 years have the longest life expectancies. **The U.S. ranks 31.**

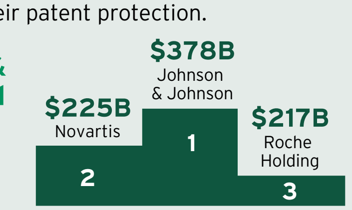
Yet, the U.S. leads in production and consumption of pharmaceutical drugs...

The revenue of the worldwide pharmaceutical market in 2017 is **$1072B**. North America is the largest submarket: **49%**. Projected market for 2021 is $1,470B.

As many patents will expire in the next 5 years, the market of generics is expected to grow by **51%** by 2021, representing $50B in drug expenses savings.

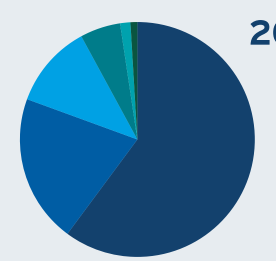
DID YOU KNOW?
Generics are cheaper copies of originally branded drugs which lost their patent protection.

Top 3 Biotech & Pharmaceutical companies



But there's hope that increased spending in Research & Development (R&D), will help reverse the trend of health conditions worsening...

2016 U.S. Medical and Health R&D Expenditures: $171.8B



- **60%** Biopharmaceutical
- **20%** National Institutes of Health
- **11%** Medical Technology
- **6%** Other Services
- **1%** Department of Defense
- **1%** Medicare & Medicaid Services

In the US, the investment in medical and health R&D is a small fraction of total Health spending with **4.93%** in 2016. However, the healthcare R&D spending is on the rise with a **21%** increase from 2013 to 2016.

Sources: World Health Organization, Worldbank, OECD, bain.com

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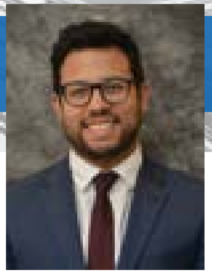


THE STORY CONTINUES

US INVESTMENT GRADE (IG)

Despite the recent volatility in Treasury yields, IG credit was resilient—with the segment slightly underperforming for the period.

Low interest rates combined with strong demands for yield, has granted issuers the opportunity to raise large amounts of funding at historically low borrowing costs.

Citi remains overweight in U.S. IG credit and forecasts spreads to remain at tight levels in the last quarter. Nevertheless, the segment still offers an attractive pick-up over Treasuries.

US HIGH YIELD (HY)

A robust earnings season has led to improving fundamentals and a decrease in default rates (**Figure 4**) —both of which, are positive for U.S. HY credit.

The segment has also been supported by an oil rally that has seen the price of crude increase by 18% since the June lows. These factors have driven HY valuations to near historical highs, reducing the overall attractiveness of the segment.

Despite all of this, Citi maintains the overweight view on HY, as the segment offers the highest absolute yield in comparison to other global alternatives in fixed income.

EMERGING MARKET (EM)

Latin America: LatAm sovereign debt in both USD and local currency continue to be two of the best performing segments in global fixed income. Supported by a rebound in economic growth, Brazil is one of Citi's highest conviction markets.

Asia-Pacific: The region's economies have proven to be more resilient to external shocks. Due to this underlying strength, Asia-Pacific fixed income tends to be of higher quality, thus translating to lower yields. Flows into the segment continue its strength, despite the less attractive valuations.

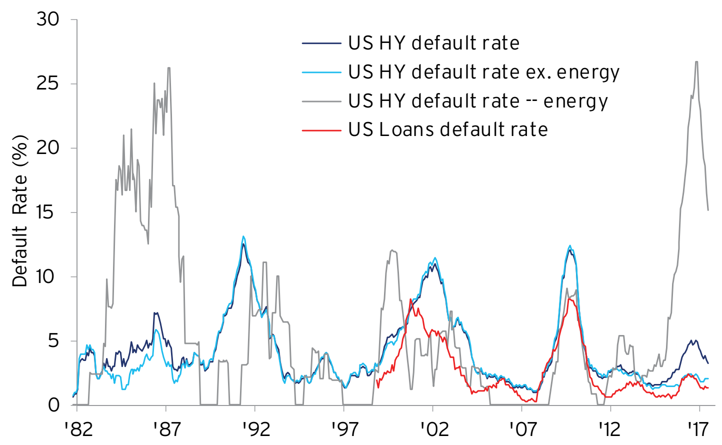
Citi remains overweight on EM credit.

DID YOU KNOW?

Fed's Dot Plots: Graph indicating where the Federal Open Market Committee expects the fed funds rate to be in the future. The dots on **Figure 5**, on aggregate, suggest a relatively hawkish guidance going forward.

YEAR TO DATE THE IG MARKET HAS SEEN OVER $1.1 TRILLION USD IN NEW ISSUANCE, WELL OVER THE AVERAGE.

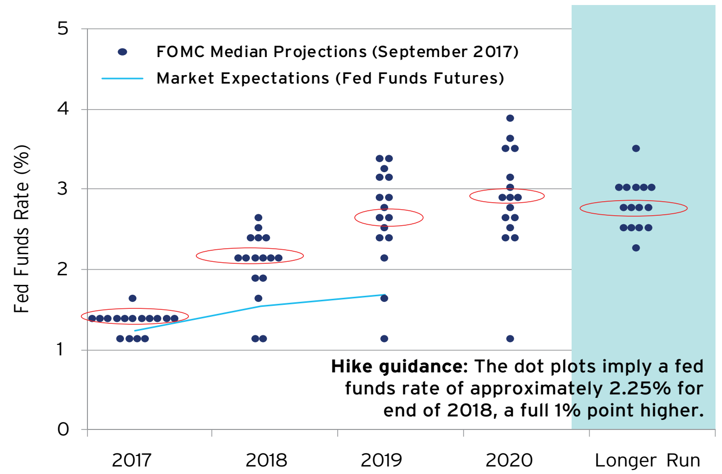
FIGURE 4. U.S. HY DEFAULT RATES



Source: Citi - Bloomberg Barclays Indices, S&P as of 6 Oct 2017

Defaults: Due to improving fundamentals U.S. HY default rates are down to 3.3%. The energy sector still carries the highest default rate.

FIGURE 5. FED'S DOT PLOTS



Source: FactSet, Citi Research, Federal Reserve and Bloomberg as of October 2017.

DEBT-DRIVEN GROWTH

According to a 2014 drug development study conducted by the Tufts Center:

"DEVELOPING A NEW PRESCRIPTION MEDICINE THAT GAINS MARKETING APPROVAL, [..] IS ESTIMATED TO COST $2,558 MILLION."

This figure refers to the expenses associated with the pre-clinical and clinical stages of molecule development that ultimately culminate in the Food & Drug Administration (FDA) review and approval. This process requires enormous amounts of human and monetary capital that can span well over a decade, with a majority of drugs never making it past **Phase I approval**.

After the passage of the **Hatch-Waxman Act of 1984**, the guidelines for the approval and commercialization of generic drugs was instituted, streamlining the authorization process. This led to an increase in the development of generics by pharmaceutical firms, with according to the FDA, accounts for more than 80% of prescription drugs in the U.S.

LEARNING BOX

FDA Approval Process: The FDA has an approval process that new drugs must undergo before they can be sold in the market. The process starts with the clinical stage, where new molecules are developed and animal-tested. If the drug passes clinical trials, it then goes through three phases, where the safety, effectiveness, dosage and side-effects of the drug are tested. The FDA can block the drug and kill its development during any phase of the process.

Hatch-Waxman Act of 1984: Officially known as the Drug Price Competition and Patent Term Restoration Act, this is a U.S. law that encourages the manufacture of generic drugs as well as establishing a regulation framework for generic drugs.

R&D

Relative to their earnings, the health care sector is the second largest investor in research and development (R&D), surpassed only by information technology. In aggregate terms, the sector puts 81% of net income back into R&D as shown in **Table 1**.

TABLE 1. MEDIAN R&D EXPENSE RELATIVE TO NET INCOME (2016, USD IN MILLIONS)

Sector	R&D Expense	Net Income	R&D as a % of Net Income
Technology	881	966	91%
Health Care	632	779	81%
Discretionary	367	519	71%
Industrials	487	1,133	43%
Energy	101	297	34%

Source: Capital IQ
The technology sector is the biggest investor in R&D, followed by Healthcare.

M&A

Pharmaceuticals also have the option to pursue growth opportunities through mergers and acquisitions (M&A). A company looking to increase their product line may well chose to purchase the portfolio from another firm with the expertise in the area of focus, instead of developing it themselves.

Although M&A generally doesn't lead to development of new treatments, it allows pharmaceuticals to balance out their mix between capital intensive patented drugs and a generally more stable drug portfolio of generics.

DID YOU KNOW?

Patent laws generally grant pharmaceutical firms up to 20 years of patent protection after developing a new drug. This puts pharmaceutical companies against an ever running clock.

Developed drugs will eventually run out of patent protection and become available for other companies to market. This is when generics are released.

THE DISSIMILARITY

The differences between the technology and the health care industries are stark, however. Pharmaceutical patents have an expiration date while proprietary software does not. Furthermore, tech firms don't have to run their pipeline through a government agency that can "pass or fail" their product development plans. Ultimately, this allows tech firms the general advantage of having the learner structure of a start-up geared towards R&D, while pharma will naturally have larger overheads to tackle the operational and legal aspects of drug development.

HOW IS THIS RELATED TO FIXED INCOME?

These major differences lead pharmaceuticals to tap the debt markets in order to cover the gap between their income generation and the massive amounts of capital to pursue an effective strategy, either via drug development and commercialization or M&A.

Source: Citi, Washington Post, World Bank, Bloomberg, S&P Capital IQ, JP Morgan

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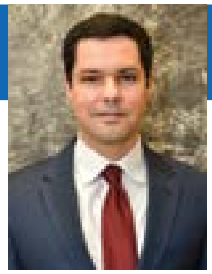


SHOCK TO THE SYSTEM

Investing in health care can take on different forms with varying levels of risks. For companies with significant exposure to the U.S. market, legislative reform efforts have and will continue to produce both winners and losers. The charts below illustrate how the different health care subsectors reacted to two opposing events – the passage of the Affordable Care Act (ACA) and the election of President Trump, who vowed to repeal it.

HEALTH CARE FACILITIES

Hospitals, clinics, psychiatric facilities, nursing homes, and medical laboratories.

More than any other subsector, health care facilities stocks reacted favorably to the passage of the ACA. In fact, those stocks rose more than 11% in days leading up to the law's signing (**Figure 6**). The rationale is straightforward: anyone showing up to an emergency room is guaranteed service, regardless of their ability to pay. By reducing the number of uninsured, the law reduced the amount of services hospitals were providing for free. Additionally, increasing insurance coverage reduced the number of people using costly emergency room services in place of routine preventative care.

It is no surprise then, that the election of Donald Trump, who campaigned on a platform of "repealing and replacing" the ACA produced the opposite reaction seen in **Figure 7**. Legislative efforts that reduce coverage may see similar market reactions.

MANAGED CARE

Health Maintenance Organizations (medical insurance groups), and other managed plans.

Perhaps counterintuitively, the stocks of insurers did not rise immediately with the signing of the ACA (**Figure 6**), despite the law essentially providing many new customers. In the seven years following the law's passage, however, managed care stocks returned 300% while the S&P 500 rose "only" 136%.The explanations behind this outperformance include insurers profiting off of expanded Medicaid coverage and diversifying into data management, outpatient clinics, and surgical services.

The main source of trouble for the subsector has come from the marketplaces established by the ACA. Policies sold on the exchanges to individuals have been losing money due to a relatively sicker client base, leading many companies to end their participation. Perhaps anticipating greater flexibility under a Trump administration, managed care companies rose more than any other subsector following the election (**Figure 7**).

BIOTECHNOLOGY

Producers of medicine based on genetic analysis/engineering.

Both candidates in the 2016 election pledged to bring down drug prices, but differed on the policies to do so. Hillary Clinton proposed new rules for the drug industry and suggested allowing imports of cheaper medicines from abroad. Trump, on the other hand, campaigned on a promise to deregulate the industry and streamline the Food & Drug Administration (FDA) approval process.

Given Trump's proposal to ease the standards imposed on drug makers, the 11% jump in the biotech sub-index (**Figure 7**) reflects the unexpected nature of his victory. Deregulation may incrementally help biotech companies' bottom-line, though it is hard to see how much else improves. The FDA already has a fast-track process in place for critical drugs. Additionally, only one in five thousand drugs ever makes it from the lab to approval for human use.

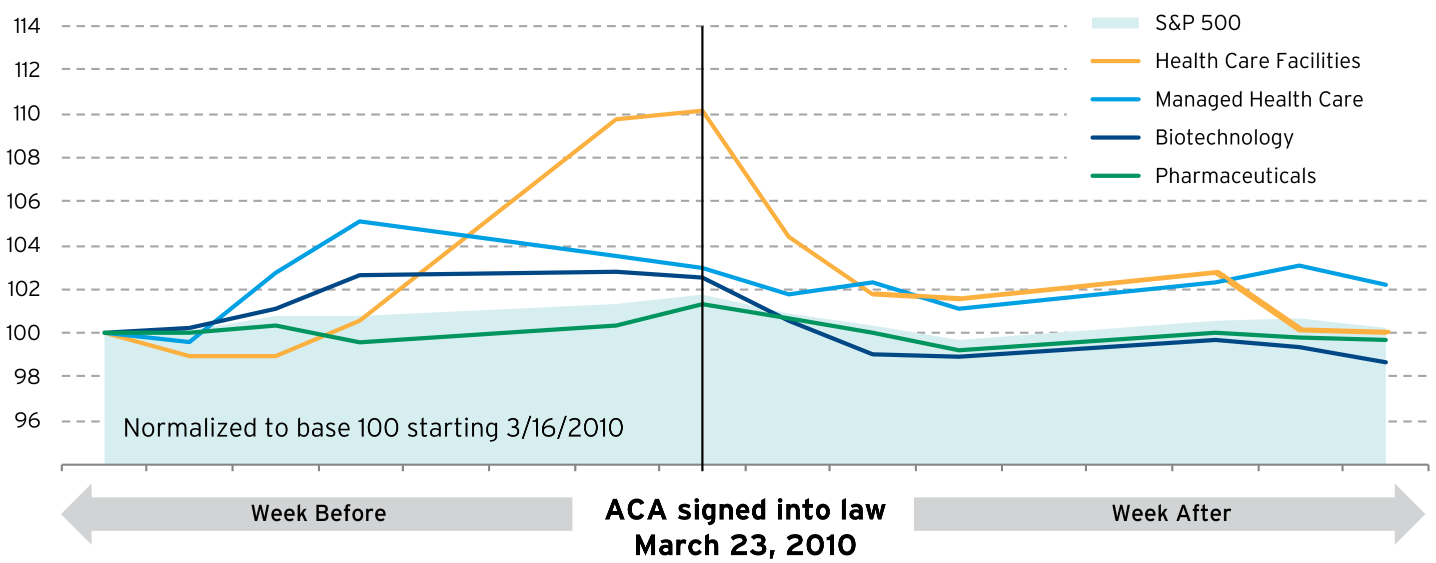
PHARMACEUTICALS

Producers of medicine with a chemical basis.

A 2003 law prohibits the federal government from negotiating lower drug prices for it's Medicare program and the ACA largely left pharma companies untouched. This came "in exchange for the industry's buy-in and financial support for getting the historic health reform bill enacted" (drug companies agreed to pay $90 billion to help fund the law's insurance expansion). Though Trump promised to leverage the government's buying power during the campaign, he abandoned the pledge shortly after being sworn into office, saying he now opposed "price-fixing by the biggest dog in the market, Medicare, which is what's happening."

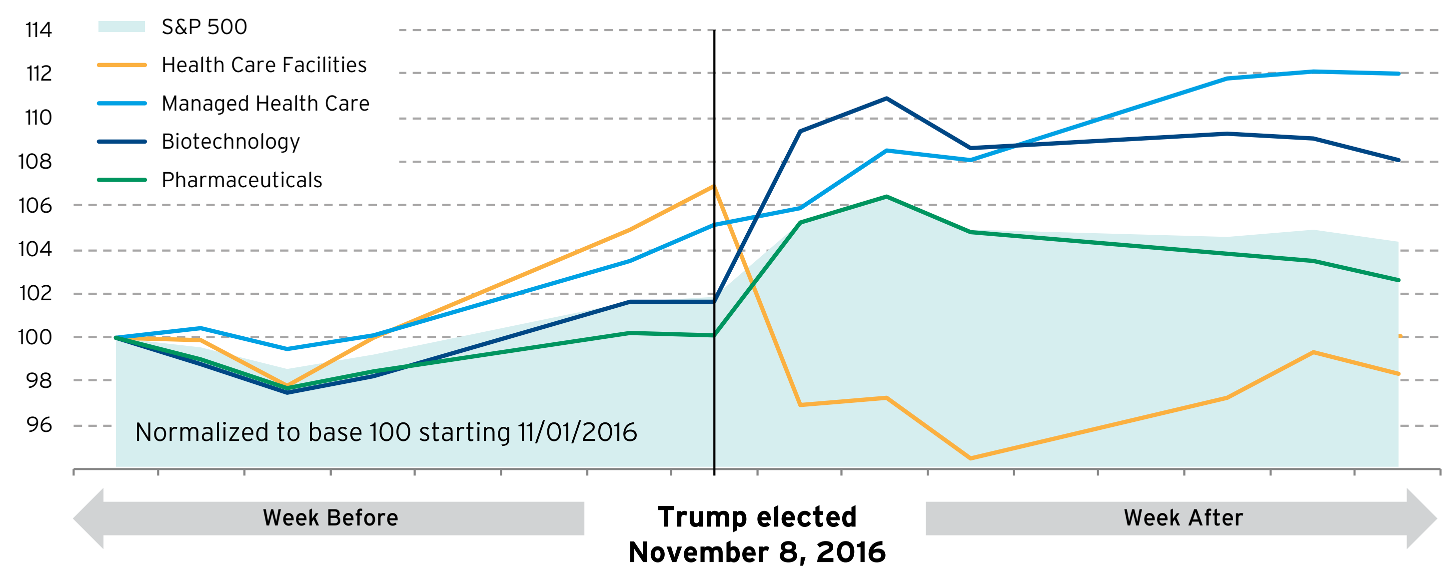
As pharmaceutical stocks slightly trialed the S&P 500 following the 2016 elections, and the relatively muted reaction could be attributed to this built-in legislative advantage.

FIGURE 6. PASSAGE OF THE AFFORDABLE CARE ACT AND ITS INDUSTRY-WIDE IMPACT



Source: Bloomberg as of 17 Oct 2017

FIGURE 7. 2016 U.S. PRESIDENTIAL ELECTION'S SHOCK TO THE HEALTH CARE INDUSTRY



Source: Bloomberg as of 17 Oct 2017

Sources: Bloomberg; NY Times 3/2017; Politico 7/2016; Vox 1/2017; CNBC 2/2017; CNN 3/2017; Investor's Business Daily 7/2017.

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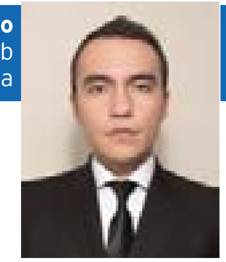
IPB U.S. Investment Lab
Colombia



SWEET SWEET WORLD

SUGAR

After months of seemingly ceaseless decrease in price of raw sugar, the last few weeks have finally brought positive news for sugar, much of which might prove sustainable into 2018/19.

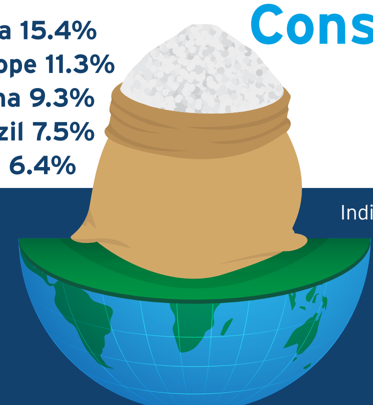
Recently, the Brazilian Government decided to implement a 20% import tariff on ethanol for two years, boosting local production and increasing demand for raw sugar. While a significant part of U.S. sugar refining and storage is located in Louisiana[1], next to the Gulf of Mexico, the disastrous hurricane season severely disrupted refining operations in the U.S. and raw production in the Caribbean. These two factors support Citi's view of rising sugar prices in the medium-term.

DID YOU KNOW?

Sugar remains one of the first foods to react to increases in personal income. With affluence on the rise, especially in emerging markets, sugar consumption will likely see a similar trend.

Consumption

India 15.4%
Europe 11.3%
China 9.3%
Brazil 7.5%
U.S. 6.4%

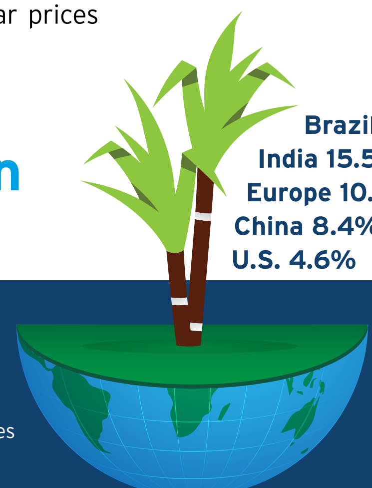


India, Europe, and China are the largest consumers of sugar worldwide.

Emerging markets, nonetheless, should see their share of consumption rise as incomes rise.

Production

Brazil 21.7%
India 15.5%
Europe 10.0%
China 8.4%
U.S. 4.6%



Close to 70% of all sugar production takes place in emerging markets. Europe accounts for about 20%, while North America produces the rest.

Source: Dow; BCC Research, USDA-FAS

DID YOU KNOW?

The average person consumes 70 grams of sugar every day. This is 300% more than the daily recommended amount.

The average American, similar to Britons, will consume almost 2 tonnes of sugar in their lifetime.

Food and drink labels use almost 60 different names for sugar—making it difficult to interpret.

OIL

Citi expects an increase in commodities' volatility for 2018. Since crude oil prices and other petroleum aggregates dominate the Bloomberg Commodity Index (with over 20% exposure) and the S&P Goldman Sachs Commodity Index (with over 50% allocation), oil prices will largely control the movement in the index's volatility.

The extension of production cuts until the end of 2018 from OPEC and non-OPEC members dominates the headlines as a positive move. Nonetheless, Citi forecasts lower oil prices for 2018 and 2019, placing greater emphasis on the pressure that will result from the battle between **shale** and OPEC output cuts.

GOLD

Since April, geopolitical tensions have been a key driver for gold prices. A steady stream of events such as French and German elections, North Korea's nuclear program, and the search for alternative assets within broadly overvalued equity and bond markets are prompting investors to seek portfolio hedges, taking gold near its year highs. We can expect gold prices to rise slightly in the short-term as uncertainty clouds the geopolitical situation and rates remain relatively low. In the medium-term, however, the prospects for tax reform and infrastructure in 2018 would point to a negative outlook for gold.

WHAT'S THE DIFFERENCE?

Shale oil is an unconventional oil that is trapped within layers of shale. Shale is an organic-rich fine-grained sedimentary rock whose kerogen, or organic matter, can be converted into synthetic oil and gas. The oil extracted can immediately be used as a fuel or processed further to meet refinery specifications by adding hydrogen and removing impurities, like sulfur and nitrogen. The refined product serves the same functionalities as crude oil. Both are technically same the product but differ by where they are found or extracted.

[1] USDA: Sugarcane for Sugar 2016 production by country: USA. Sources: Citi Research, Divine Eating Out, the balance, Wikipedia, quora

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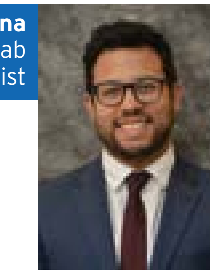


FUNDAMENTAL CHECK

EURO

Although Angela Merkel was able to secure another term, she has been unable to form a coalition with the other parties. Despite this, Citi believes a cyclical recovery of the European economy and **Quantitative Easing** tapering from the European Central Bank are positive factors for the currency in the long term.

Risks to the forecasts derive mostly from dollar strength that could arise from U.S. fiscal stimulus and the effective implementation of a U.S. repatriation bill.

JAPANESE YEN

The Yen remains heavily influenced by monetary policy. With the Bank of Japan holding its Quantitative Easing guidance steady, the Yen is likely to remain range-bound for the medium-term.

Risks to the Yen remain geopolitical, for example, the ongoing uncertainty derived off North Korea's foreign policy.

BRITISH POUND

Strong exports, low valuation and hawkish expectations from the Bank of England are positives for the sterling. Nevertheless, Brexit negotiations remain an overhang in the short to medium-term.

BRAZILIAN REAL

As the window to implement important labor and tax legislation closes, president Michel Temer will attempt to push a watered down version of pension reform. Although the Brazilian economy is poised to return to growth, the underlying fiscal imbalance will remain an issue for the next administration and the BRL's strength.

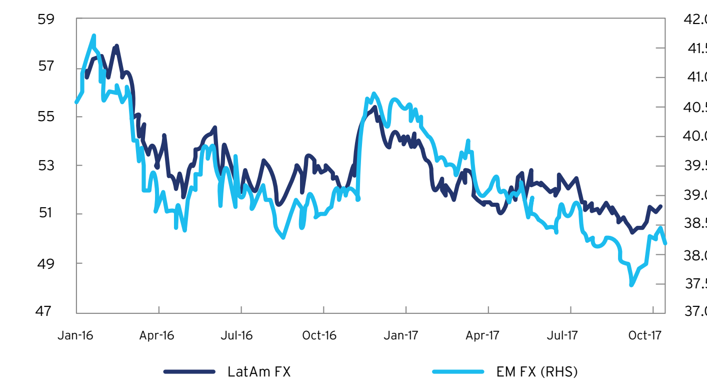
MEXICAN PESO

NAFTA negotiations remain an overhang on the valuation of the MXN in the short-term. As round five of negotiations conclude, Citi expects progress on the smaller issues but no major breakthrough, hinting at little impact on the peso.

COLOMBIAN PESO

The latest current account results suggest more widening in the fiscal deficit in the near-term. Furthermore, slower than expected growth will weigh in the valuation of the Peso. Indeed, fundamentals appear to be the least supportive among those in the region.

FIGURE 8. LATAM CURRENCIES UNDERPERFORMED BROADER EM



Source: Citi Foreign Exchange Forecasts (Oct 2017)

FIGURE 9. THE DOLLAR INDEX

Source: Bloomberg

Dollar Index: Dollar strength has retreated from the 2016 highs, letting other currencies appreciate against the dollar. Looking ahead, positive growth, tax reform and higher US rates should lead to USD appreciation.

LEARNING BOX

Quantitative Easing: A monetary policy tool in which a central bank purchases government debt or financial assets to stimulate the economy.

The Dollar Index: The index is a basket of six currencies weighted against the US dollar. Started by the Federal Reserve in 1973, the index was created to provide a trade weighted average value of the dollar as it freely floated against other currencies.

Source: Citi Foreign Exchange Forecasts (Oct 2017)

CENTRAL BANK POLICIES & CITI FORECASTS

MAJOR CENTRAL BANKS

Institution	Current Policy Rate	Next Meeting	Citi's Expectation
Fed	1.50%	Jan 31	Three rate hikes expected in 2018
ECB	0.00%	Jan 25	Net asset purchases of €30bn monthly will likely run until Sep. 2018
BOE	0.50%	Feb 8	With a cautious BOE, Citi's base case is one 0.25% hike in each of the next two years
BOJ	-0.10%	Jan 22	Current policy rates expected to be unchanged through 2018. Kuroda likely re-elected in Apr.

Source: Global Economic Outlook and Strategy (27 Nov 2017)

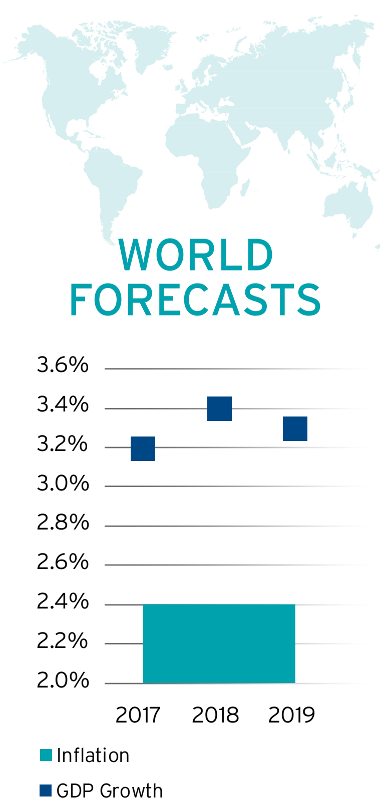
COMMODITY FORECASTS

	SPOT	2018*	2019*
ENERGY			
WTI Crude (USD/bbl)	58	48	44
Brent Crude (USD/bbl)	64	52	50
Natural Gas (USD/MMBtu)	3.1	3.0	2.9
METALS			
Iron Ore Spot (TSI) (USD/mt)	68	62	60
LME Copper (USD/mt)	6,942	7,000	7,000
Gold (USD/oz)	1,294	1,250	1,370
AGRICULTURE			
Corn (USD/bu)	336	365	400
Wheat (USD/bu)	411	505	525
Soybeans (USD/bu)	993	975	1025
Coffee (USD/lb)	127	130	NA
Cocoa (USD/mt)	1,487	2,175	NA
Sugar (USD/lb)	15	17	NA

*Forecast. Source: Citi Research, Global Economic Outlook and Strategy (27 Nov 2017). Spot rates as of 28 Nov 2017.

CITI'S ECONOMIC & MARKET FORECASTS

		Developed				Emerging			
		U.S.	Japan	Europe	U.K.	China	India	Brazil	Mexico
ECONOMIC OUTLOOK									
GPD Growth (%)	2017	2.3	1.5	2.3	1.5	6.8	7.0	0.8	2.1
	2018	2.7	1.5	2.4	1.5	6.5	7.6	2.4	2.4
	2019	2.4	1.1	2.0	1.3	6.4	8.1	2.5	2.7
Inflation[1] (%)	2017	1.7	0.4	1.5	2.7	1.6	3.3	3.5	6.0
	2018	1.8	0.8	1.4	2.7	2.1	4.3	3.8	4.4
	2019	2.0	0.9	1.5	2.2	2.1	4.1	4.1	3.9
Currency[2] vs. USD	Spot*	NA	112	1.19	1.34	6.61	64.4	3.21	18.5
	2018	NA	110	1.24	1.38	6.53	65.6	3.21	18.3
	2019	NA	108	1.26	1.40	6.07	66.2	3.25	16.9
MARKET OUTLOOK									
Equity Indices[3]	Spot*	2,627	1,772	387	7,461	90	33,619	74,140	47,229
	2018	2,675	1,885	460	8,200	NA	NA	NA	NA
Central Bank Rates	Current	1.25	-0.10	0.00	0.50	3.30	6.00	7.50	7.00
	2018	2.25	-0.10	0.00	0.75	3.70	6.00	7.50	7.00
	2019	2.75	-0.10	0.00	0.75	3.70	6.00	7.50	7.00
10-Year Yields[4]	Spot*	2.33	0.04	0.38	1.25	3.99	7.03	10.16	7.24
	2018	2.75	0.09	0.66	1.39	NA	6.45	7.63	7.59
	2019	2.90	0.20	1.02	1.65	NA	6.85	8.88	7.11



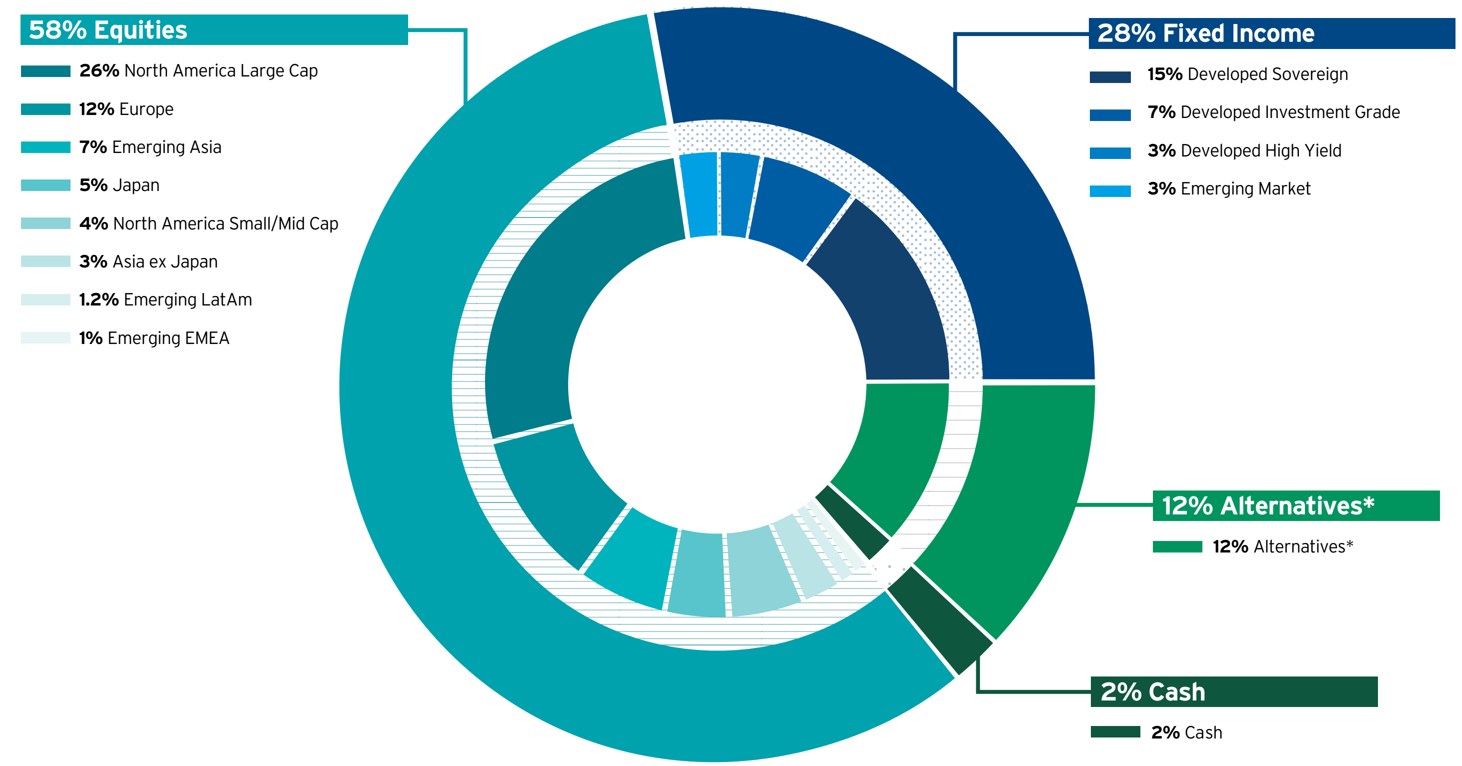
*Spot rates as of 28 Nov 2017. Source: Bloomberg
[1] Refers to CPI inflation. For the U.S., we use the PCE deflator. For China, we refer to 1d standing lending facility.
[2] For Japan, we refer to the Yen; for Europe the Euro; for the U.K. the British Pound; for China the Renminbi; for India the Rupee; for Brazil the Real; and for Mexico the Peso.
[3] Indice for the U.S. refers to the S&P 500; for Japan the Topix; for Europe the Stoxx 600; for the U.K. the FTSE 100; for China the MXCN; for India the Sensex; for Brazil the Bovespa; for Mexico the Bolsa.
[4] Data per USD except Euro Area and UK. For China we use 5Y bond yields. For Euro Area, yield is equivalent to the German Bund.
Citi Forecast
Sources: Citi Research's Global Economic Outlook and Strategy (27 Nov 2017), Foreign Exchange Forecasts (17 Nov 2017), Global Asset Allocation (27 Nov 2017)

All forecasts are expressions of opinion and are subject to change without notice and are not intended to be a guarantee of future events. The investor should not base its decision to enter into a trade solely on the basis of the forecasts. Charts are for illustrative purposes only. Refer to the Important Information at the end of this presentation. Indices are not managed, have no expenses and cannot be directly invested in.

TACTICAL ASSET ALLOCATION

IT IS IMPORTANT TO REMAIN DIVERSIFIED THROUGH A WIDE RANGE OF ASSET CLASSES

The tactical allocation illustrated below represents that of a moderate Level 3 portfolio.



	MOST CONSERVATIVE	CONSERVATIVE-MODERATE	MODERATE	MODERATE-AGGRESSIVE	MOST AGGRESSIVE
	Level 1	Level 2	Level 3	Level 4	Level 5
Cash	6%	4%	2%	0%	0%
Fixed Income	92%	58%	28%	10%	0%
Equities	2%	30%	58%	76%	86%
Alternatives*	0%	8%	12%	14%	14%
	For investors who seek capital preservation and relative safety over the potential for a return on investment.	For investors seeking income generations and capital preservation.	For investors with a blended objective who seek balance between investments that offer income and a potentially higher return.	For investors who seek long-term growth of capital with moderate risk and market value fluctuations.	For investors who seek maximum long-term growth of capital with greater risk and market value fluctuations.

*Alternative investments include hedge funds, private equity, and real estate among others.

This model portfolio allocation follows Citi Private Bank's Adaptive Valuations Strategy (AVS) methodology. The Global Investment Committee (GIC) provides underweight and overweight decisions that modify the annually rebalanced strategic allocation to arrive at the tactical allocations presented above.

Source: Global Strategy Quadrant (17 Nov 2017)

GLOSSARY

COMMODITIES

WTI Crude: West Texas Intermediate (WTI), also known as Texas Light Sweet, the majority of which is located in the Permian oil Field. It is a type of crude oil used as a benchmark in oil pricing and the underlying commodity of New York Mercantile Exchange's oil futures contracts.

Brent Crude: Is used to price two thirds of the world's internationally traded crude oil supplies. Brent Blend is a combination of crude oil from 15 different oil fields in the North Sea. It is less "light" and "sweet" than WTI, but still excellent for making gasoline. It is primarily refined in Northwest Europe, and is the major benchmark for other crude oils in Europe or Africa.

LME: London Metal Exchange

CURRENCIES

Currency Abbreviations: AUD: Australian Dollar; GBP: British Pound; EUR: Euro; CHF: Swiss Franc; JPY: Japanese Yen; BRL: Brazilian Real; MXN: Mexican Peso; CNY: Chinese Renminbi; INR: Indian Rupee; USD: U.S. Dollar

INDICES

MSCI AC World: The MSCI All Country World index is a market capitalization weighted index designed to provide a broad measure of equity-market performance throughout the world.

S&P 500: Index of 500 widely held common stocks that measures the general performance of the market.

Euro Stoxx 600: Dow Jones STOXX 600 Index represents large, mid and small capitalization companies across 18 countries of the European region. Free float market capitalization subject to 20% weighting cap.

FTSE 100: This is a share index of the 100 most highly capitalized UK companies listed on the London Stock Exchange.

Topix: Tokyo Stock Price Index is an important stock market index for the Tokyo Stock Exchange (TSE) in Japan, tracking all domestic companies of the exchange's First Section. It is calculated and published by the TSE.

MSCI EM: The MSCI Emerging Markets Index is a free float-adjusted market capitalization index that is designed to measure equity market performance in the global emerging markets. The MSCI Emerging Markets Index consists of the following 25 emerging market country indices: Argentina, Brazil, Chile, China, Colombia, Czech Republic, Egypt, Hungary, India, Indonesia, Israel, Jordan, Korea, Malaysia, Mexico, Morocco, Pakistan, Peru, Philippines, Poland, Russia, South Africa, Taiwan, Thailand, and Turkey.

MXCN: The MSCI China Index captures large and mid cap representation across China H shares, B shares, Red chips, P chips and foreign listings (e.g. ADRs). With 150 constituents, the index covers about 85% of this China equity universe.

Sensex: Is a value-weighted index composed of the 30 largest and most actively traded stocks in India, representative of various sectors, on the Bombay Stock Exchange.

Bovespa: The Bovespa Index is an index of about 50 stocks that are traded on the São Paulo Stock, Mercantile & Futures Exchange in Brazil.

Bolsa: The IPC index is Mexico's balanced weighted selection of shares that are representative of all the shares listed on the exchange from various sectors across the economy. Weight is determined by market capitalization.

FIXED INCOME

Investment Grade Bonds: A bond is considered investment grade, or IG, if its credit rating is BBB- or higher by Standard & Poor's or Baa3 or higher by Moody's. By Fitch, the rating must be BBB- or higher to be considered IG. Generally these are bonds that are judged by the rating agencies as likely enough to meet their payment obligations.

High Yield Bonds: A high-yield bond is a high paying bond with a lower credit rating than investment-grade bonds. Because of the higher risk of default, these bonds pay a higher yield than investment grade bonds. Based on the two main credit rating agencies, high-yield bonds carry a rating below "BBB" from S&P, and below "Baa" from Moody's. Credit ratings can be as low as "D" (currently in default), and most bonds with "C" ratings or lower carry a high risk of default; to compensate for this risk, yields will typically be very high.

Yield: The yield is the income return on an investment, such as the interest or dividends received from holding a particular security. The yield is usually expressed as an annual percentage rate based on the investment's cost, current market value or face value.

Yield Curve: A graph illustrating the term structure of interest rates by plotting the yields of all bonds of the same quality, with maturities ranging from the shortest to the longest available.

Emerging Market Bonds: Emerging market bonds are debt issues by countries with developing economies as well as by corporations within those nations. Bonds are issued from developing nations and corporations based in countries, such as Asia, Latin America, Eastern Europe, Africa and the Middle East. Typically offering higher returns, emerging market issues tend to carry higher risks than those associated with Treasuries and domestic corporate bonds. The risks of investing in emerging market bonds include the standard risks that accompany all debt issues, such as the variables of the issuer's economic or financial performance and the ability of the issuer to meet payment obligations. These risks are heightened due to the potential political and economic volatility of developing nations. Although emerging countries, overall, have taken great strides in limiting country risks, it is undeniable that the chance of socioeconomic instability is more considerable in these nations than in developed countries, particularly the U.S. When assessing the risks associated with each emerging nation, investment analysts often refer to that country's sovereign risk. Emerging markets also pose other cross-border risks, including exchange rate fluctuations and currency devaluations. If a bond is issued in local currency, the rate of the dollar versus that currency can positively or negatively affect your yield. If you do not want to participate in currency risk, it is possible to invest in bonds that are dollar-denominated, or issued only in U.S. dollars.

Risk Premia: Is the return that you receive above the return of a risk-free investment. In other words, it is the excess return the investor receives for taking on a higher level of risk.

Spread: A spread measures the difference between the yield earned on a Treasury bond and the yield of a corporate bond of similar maturity but lesser credit quality.

Maturity: The date on which a security may be presented to the issuer for payment of face value.

Basis Points (bps): One basis point is equal to one hundredth of 1% i.e. 130 basis points equals 1.30%. It is generally used to denote a percentage change.

CREDIT QUALITY AND RATINGS DEFINITIONS

Standard & Poor's:

Investment Grade: AAA obligator has extremely strong capacity to meet its financial commitments; AA obligator has very strong capacity to meet its financial commitments. It defers from the highest rated obligators only in small degree; A obligator has strong capacity to meet its financial commitments but is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions that obligators in higher-rated categories; BBB obligator has adequate capacity to meet its financial commitments but adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity to meet its financial commitments.

Non-Investment-Grade: BB obligator is less vulnerable in the near term than other lower-rated obligators. However, it faces major ongoing uncertainties and exposure to adverse business, financial, or economic conditions which could lead to the obligator's inadequate capacity to meet its financial commitments; B obligator is more vulnerable than the obligator rated BB but it currently has the capacity to meet its financial commitments. Adverse business, financial, or economic conditions will likely impair its capacity or willingness to meet its financial commitments; CCC obligator is currently vulnerable, and is dependent upon favorable business, financial, and economic conditions to meet its financial commitments; CC obligator is currently highly vulnerable; R obligator is under regulatory supervision owing to its financial condition. During the pendency of the regulatory supervision the regulators may have the power to favor one class of obligations over others or pay some obligations and not others; SD and D obligators has failed to pay one or more of its financial obligations when it came due. D is assigned when S&P believes that the default will be general and that the obligator will fail to pay all or substantially all of its obligations as they come due. SD rating is assigned when S&P believes that the obligator has selectively defaulted on a specific issue or class of obligations but it will continue to meet its payment obligations on other issues or classes of obligations in timely manner. Plus (+) or minus (-): ratings from AA to CCC may be modified by the addition of a plus or minus sign to show relative standing within the major rating categories.

Moody's:

Investment Grade: Aaa obligations are judged to be of the highest quality, with minimal risk; Aa obligations are judged to be of high quality and are subject to very low default risk; A obligations are considered upper-medium grade and are subject to low credit risk; Baa obligations are subject to moderate credit risk, they are considered medium-grade and as such may possess certain speculative characteristics.

Non-Investment-Grade: Ba obligations are judged to have speculative elements and are subject to substantial credit risk; B obligations are considered speculative and are subject to high credit risk; Caa obligations are judged to be of poor standing and are subject to very high credit risk; Ca obligations are highly speculative and are likely in, or very near, default, with some prospect of recovery of principal and interest; C obligations are the lowest rated class of bonds and are typically in default, with little prospect for recovery of principal or interest; WR Withdrawn. Moody's appended numerical modifiers 1, 2, and 3 to each generic rating classification from Aa through Caa. The modifier 1 indicates that the obligation ranks in the higher end of its generic rating category; the modifier 2indicates a mid-range ranking; and the modifier 3 indicates a ranking in the lower end of that generic rating category. When Moody's places a rating on watch, Bloomberg uses *+ for possible upgrade, *- for downgrade, and* for developing.

Fitch:

Investment Grade: AAA-ratings denote the lowest expectation of credit risk. They are assigned only in case of exceptionally strong capacity for timely payment of financial commitments. AA-denotes very high credit quality, as well as very low expectation of credit risk. Indicate very strong capacity for timely payment of financial commitments. This capacity is not significantly vulnerable to foreseeable events. A-denotes high credit quality and low expectation of credit risk. The capacity for timely payment of financial commitments is considered string. However, this capacity may be more vulnerable to changes in circumstances or in economic conditions than is the case for higher ratings. BBB denotes good credit quality. BBB ratings indicate that there is currently a low expectation of credit risk. The capacity for timely payment of financial commitments is considered adequate, but adverse changes in circumstances and in economic conditions are more likely to impair this capacity.

Non-Investment Grade: BB denotes speculative quality. BB ratings indicate that there is a possibility of credit risk developing, particularly as the result of adverse economic change over time. However, business or financial alternatives may be available to allow financial commitments to be met. B denotes highly speculative quality. B ratings indicate that significant credit risk is present, but a limited margin of safety remains. Financial commitments are currently being met; however, capacity for continued payment is contingent upon a sustained, favorable business and economic environment. CCC, CC, C denote high default risk. Capacity for meeting financial commitments is solely reliant upon sustained, favorable business or economic developments. CC rating indicated that default of some kind appears probable. C ratings signal imminent default. D ratings indicate an issuer that in Fitch Ratings opinion has entered into bankruptcy filings, administration, receivership, liquidation or other formal winding-up procedure, or which has otherwise ceased business.

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