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Under the *Macro*scope

Policymakers and businesses confront reality: Adapt or die

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Executive summary

Persistent economic sluggishness and stubbornly low inflation rates have called into question the efficacy of monetary policy. Meanwhile, regulatory changes affecting money-market funds could impede the transmission of monetary stimulus to credit expansion, capital spending and pricing power. Regulations also may be contributing to subpar levels of capital spending just as the "fourth industrial revolution" gains traction. Technologies emerging now and their advancing applications will generate lots of investment opportunities in new companies and industries, as well as in established companies doing things differently.

Key takeaways

- The effectiveness of monetary policy is being questioned by many public- and private-sector analysts, government officials and even the media.
- Some Fed officials now believe that the Fed's actions not only seem to fall short of their targets, the targets themselves may be wrong. In that context, the Fed is contemplating revisions to its policy implementation framework.
- Adjustments in spreads and reshaping of the yield curve hint that credit conditions may have tightened inadvertently.
- New SEC rules for money-market funds promise to provide orderliness in crisis, but also create new financial risks.
- The cost of regulatory compliance exacerbates a long list of reasons why business borrowers remain reluctant to invest in fixed capital.
- Non-traditional capex driven by advanced technologies leads to the development of tech centers, not widespread industrial dispersion.
- The "fourth industrial revolution" will increasingly force businesses to "adapt or die." Fusing of technologies will open vast new investment opportunities as new companies emerge in new industries, and established companies in established industries innovate, modernize and replace outdated business models.

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Does monetary policy work anymore?

Ever since the global financial crisis and the Great Recession, the US Federal Reserve (Fed) has focused on elevating real economic growth and the inflation rate by expanding the level of reserves in the banking system and maintaining policy interest rates close to a 0% lower bound. This operating procedure anticipates that economic growth and price stability will move reliably toward targeted levels through six channels of monetary transmission, much as they did during previous episodes of strong monetary and credit easing. (See Exhibit 1.)

Unfortunately, the financial channels (wealth, portfolio balance and private non-financial balance sheet) have worked far more powerfully than the economic channels (bank lending, interest rates and exchange rates). As a result, stock and bond valuations have soared, while real economic growth has remained dull and inflation has stayed muted.

Not surprisingly, then, the effectiveness of monetary policy is being questioned by many public- and private-sector analysts, government officials and even the media. Some commentators assert that each incremental monetary policy action has become less effective than the one before. Sarcastically, quantitative easing (QE) has taken on the label "quantitative exhaustion," casting aspersions upon the QE that the Fed expected to accomplish. (See Exhibit 2.)

With the efficacy of monetary policy being questioned, calls for infrastructure spending and tax reform, especially, have given fiscal policy uncommon rhetorical prominence lately. Ironically, though, if the US Congress and the White House broaden the scope of accommodative economic policies, they will loosely follow the game plan enacted in December 2012 by Japanese Prime Minister Shinzo Abe that, until now, has not fulfilled its mission.

"Abenomics" and its "three arrows" set out to bolster Japan's real economic growth, raise the inflation rate to 2%, strengthen Japan's competitiveness internationally, reform labor markets and cement trade relationships. To accomplish this, Abe's broad economic plan calls for "dramatic monetary easing, robust fiscal policy," and structural reforms, or "policies for growth to spur private investment."[1]

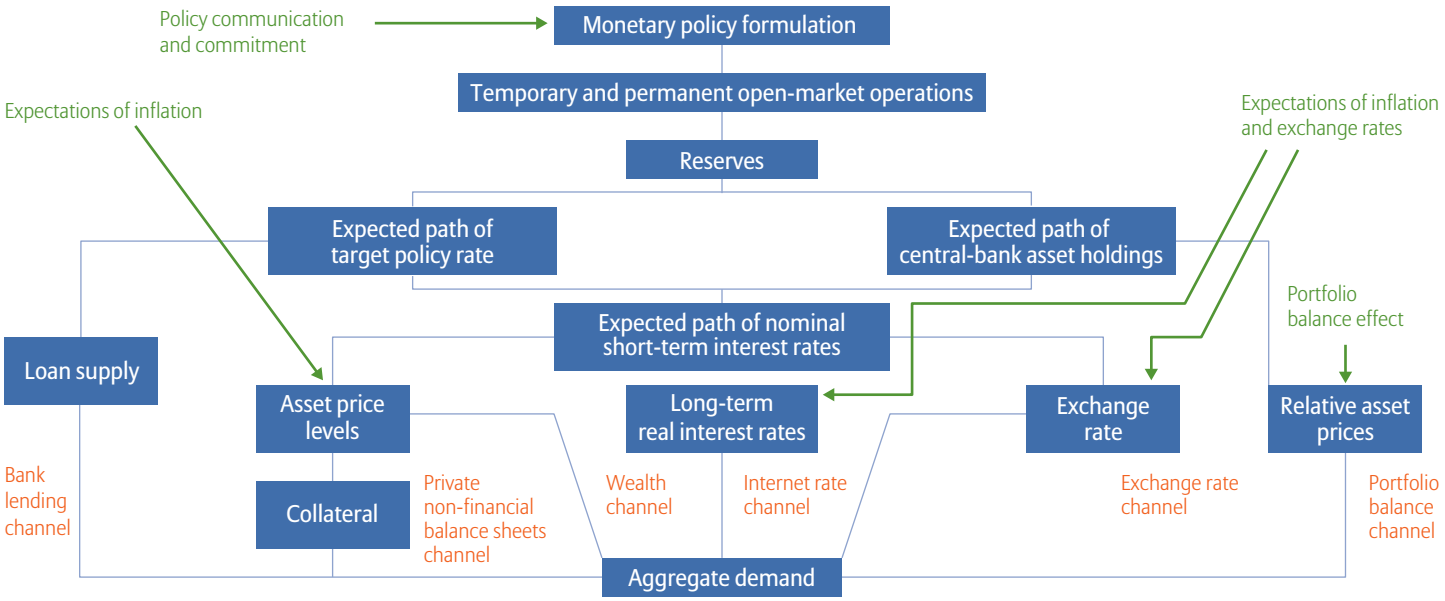
Yet actions taken under each "arrow" are guided by different targets and instruments, constraints and expectations, objectives and political influences, and models and forecasts, and they function on different timetables. Monetary policy implementation, for example, can be adjusted every day; it takes a long time to alter the fiscal stance and even longer to generate structural reforms.

In this context, the International Monetary Fund (IMF), among other official international organizations, calls for coordination of monetary, fiscal and structural policies within and among individual countries and regions. According to the IMF, increased policy coordination would promote economic and financial stability, greater currency market orderliness, and more predictable capital flows. (See Exhibit 3.)

The IMF observes the following:

- Since the financial crisis, accommodative monetary policies have strengthened the capacity of governments to finance their debts while also lowering the cost of debt service. Monetary authorities also helped to create stable inflation expectations that promoted macroeconomic stability and reduced the inflation risk premium contained in bond yields
- Discretionary fiscal policy, on the other hand, accelerates long-term structural changes in public finances while also ameliorating exceptional

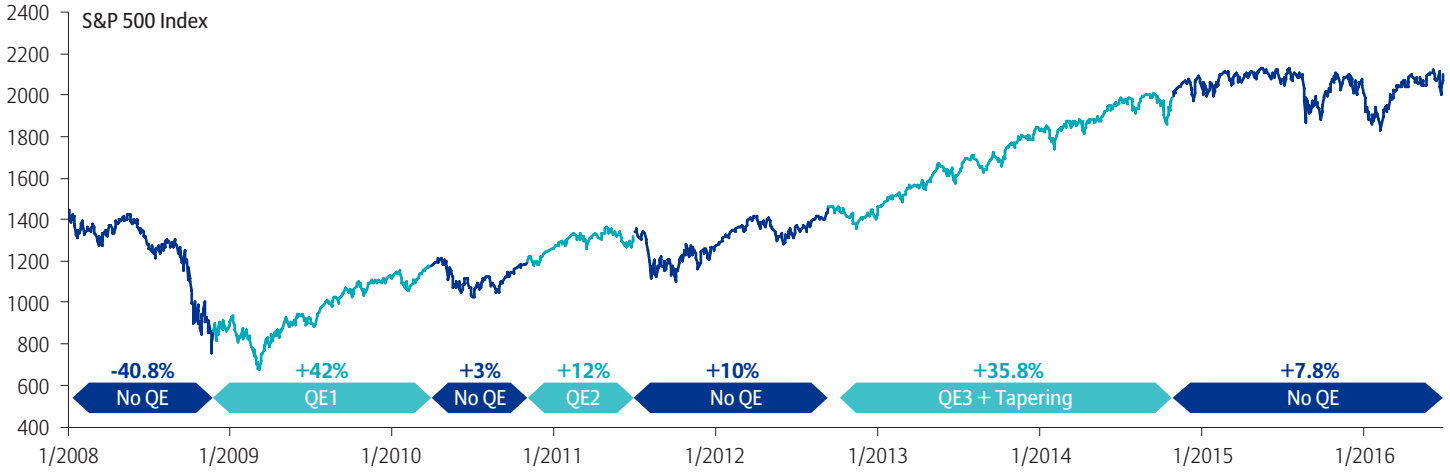
Exhibit 1: Monetary policy influences output, employment and prices through a complex transmission mechanism



Source: Federal Reserve Bank of New York, Allianz Global Investors.

1. Tofugu, August 25, 2016.

Exhibit 2: Weakened effects of accommodative policy on the stock market



Source: Federal Reserve Bank of New York, FactSet, Allianz Global Investors as of 6/30/2016.

circumstances, particularly when the economy experiences extraordinary shocks. However, the financing needs of government and its funding strategy impinge upon the operational independence of the monetary authority. Public debt management can affect the demand for money in a number of ways via wealth effects, changing inflation expectations and the demand for money substitutes

- Structural reforms help to set conditions conducive to the achievement of macroeconomic goals by making it easier for monetary and fiscal policies to work. Spending on infrastructure, especially, and targeted tax relief can generate increased spending over the near term while also helping to set conditions conducive to increased business profitability and employment gains.

Alternatively, however, a weak stance under any one of the three policy arrows can work against one, or both, of the other arrows and may be unsustainable in the long run.

Exhibit 3: Multiplier effects of selected fiscal stimulus proposals

Type of Activity	Multiplier–High Estimate	Multiplier–Low Estimate
Purchases of goods and services by federal government	2.5	1.0
Transfer payments to state and local governments for infrastructure	2.5	1.0
Transfer payments to state and local governments for other purposes	1.9	0.7
Transfer payments to individuals	2.2	0.8
Two-year tax cuts for lower- and middle-income people	1.7	0.5
One-year tax cut for higher-income people	0.1	0.6
Extension of first-time homebuyer tax credit	0.5	0.1
Tax loss carryback	0.4	0.0

Note: Multiplier effects indicate how many dollars of national income can be added, potentially, per dollar spent on each type of activity. The Congressional Budget Office calculates a range of multiplier estimates for each activity.

Source: US Congressional Budget Office, Allianz Global Investors as of 12/31/2013.

Fed considers new ways to formulate and implement policy

Even within the Fed, some analysts and policymakers, including Fed Vice Chairman Stanley Fischer, now conclude that "monetary policy is not well equipped to address long-term issues like the slowdown in productivity growth. Rather, the key to boosting productivity growth, and the long-run potential of the economy, is more likely to be found in effective fiscal and regulatory policies."[2] Fischer's policy prescription is a combination of infrastructure spending, education spending, private investment and better regulation. (See Exhibits 4 and 5.)

Others within the Fed go further than Fischer. In fact, "Designing Resilient Monetary Policy Frameworks for the Future" was the theme of the annual economic policy symposium hosted by the Federal Reserve Bank of Kansas City in Jackson Hole, Wyoming, in August 2016.

In addressing policy "frameworks" from different angles, John Williams and James Bullard, presidents of the Federal Reserve Banks of San Francisco and St. Louis, respectively, concluded in separate white papers that dramatic restructuring of markets has made long-standing relationships and expected economic, financial and policy-related outcomes largely obsolete.[3]

Consequently, the Fed's actions not only seem to fall short of their targets, the targets themselves may be wrong.

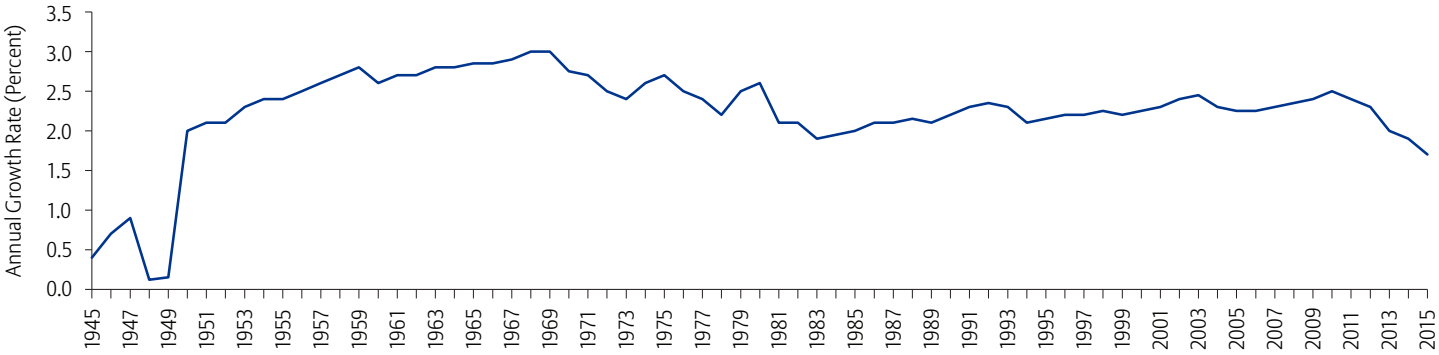
Accordingly, Williams and Bullard imply that failure to drastically modify the philosophies and processes driving monetary policy since at least 1984 could risk intensifying currency and financial market distortions and further imbed US economic sluggishness.

The minutes of the July 26-27, 2016, Federal Open Market Committee (FOMC) meeting also acknowledge the need for the Fed to monitor

2. Stanley Fischer, August 21, 2016.

3. James Bullard, June 30, 2016, and John C. Williams, August 15, 2016.

Exhibit 4: Growth in state and local spending on infrastructure: A 30-year low



Source: US Bureau of Economic Analysis, Center on Budget and Policy Priorities, Allianz Global Investors as of 12/31/2015.

"some important considerations that are still evolving, including financial regulations and market participants' responses to them."[4] Apparently, Fed officials acknowledge that even the best-designed and implemented monetary policies cannot reach their goals if regulatory policies form a financial framework that distorts asset allocations and pricing, redirects the lending and investment activities of banks, and causes liquidity to dry up.

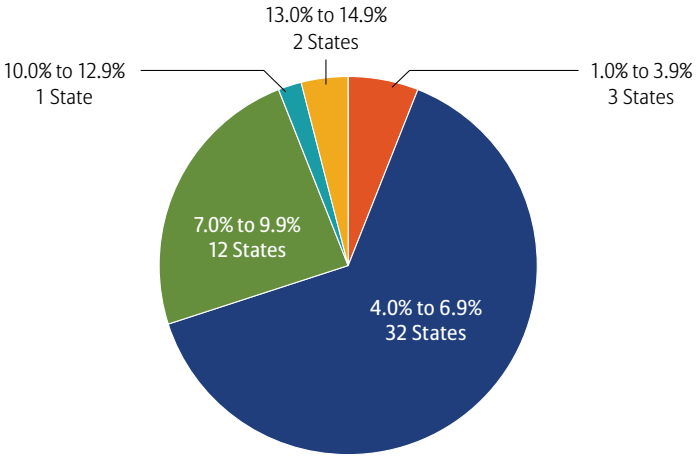
In that context, the Fed is contemplating revisions to its policy implementation framework to "enhance the stability of the financial system" and "stimulate credit expansion without putting the safety and soundness of the financial system and individual institutions under undue risk."[5] Under review will be adjustments to US and international capital, solvency and leverage ratios, as well as other regulatory requirements enacted legislatively.

The following are specific post-financial crisis conditions that underpin the Fed's concerns:

- Regulatory reforms in response to the global financial crisis redirected the focus of banks toward deposit-taking and lending once again at the expense of scaled-back capital-markets activities. However, if banks reverse course and turn away deposits again, savers and investors may be compelled to buy the next-best risk-free investment. Given the shortage of definitive US Treasury securities, savers and investors can be expected to increase their holdings of money-market funds (MMFs) that own Treasuries, repurchase agreements collateralized by Treasuries and short-term credit instruments, such as commercial paper.
- Current regulations and risk-capital charges make it tougher for banks to maintain proprietary trading positions and hold significant inventories of securities to support market-making activities. Market makers must now hold more capital and liquid assets to cushion against potential losses from trading and lending, creating an opportunity cost that dampens profits.
- Investment firms have become more discriminating about the markets they make and clients they serve. Market makers in equities, bonds, currencies and commodities have a tougher time buying and selling assets cheaply and quickly without moving the prices. Trading desks that still match buyers and sellers now are reluctant to purchase securities before lining up a client.
- Historically, banks have played an important role both in introducing new securities to the market and warehousing securities they intend to sell later. However, banks, especially, now keep much smaller inventories of securities, even relatively low-risk Treasury securities. This reduces their willingness and capacity to buy and hold securities should other market participants decide to sell, increasing the susceptibility of markets to liquidity shortfalls.
- If future market volatility—and, thereby, capital losses—increases, banks will be less effective in acting as shock absorbers due to the tougher capital and liquidity rules. In this environment, small interest-rate movements can generate big changes in fixed-income securities prices.

Despite intense inquiry into the ramifications of these developments, major changes intended to better align monetary policy and regulatory practices do not appear imminent. Though some regulation and rule

Exhibit 5: 2013 capital spending as a share of total state spending



Source: US Bureau of Economic Analysis, Center on Budget and Policy Priorities, Allianz Global Investors as of 2013.

4. US Federal Reserve Board of Governors, July 26-27, 2016.

5. US Federal Reserve Board of Governors, July 26-27, 2016.

modification does seem likely, particularly as congressional oversight increases, a major overhaul likely will not occur until the membership of the Federal Reserve Board of Governors changes and markets become less susceptible to disruption in the event of a regime change.

New MMF rules generate unintended consequences

Even with banking and financial regulatory frameworks under greater scrutiny, a major regulatory change lurks immediately ahead—but it will not come from the Fed. Instead, in 2015, the US Securities and Exchange Commission (SEC) adopted amendments to the rules governing MMFs, effective October 17, 2016.[6] These rules require a floating net asset value (NAV) for institutional prime MMFs, allowing their daily share prices to fluctuate with changes in the market value of fund assets. These MMFs no longer will be allowed to use the special pricing and valuation conventions that currently permit them to maintain a constant $1.00 share price. With the addition of liquidity fees and redemption gates, MMF boards will be able to impose fees and erect gates to halt runs during periods of stress.

Distress among MMFs threatened the orderly functioning of money markets during the financial crisis in 2007 and 2008. Banks and large corporations that issue short-term debt securities, such as commercial paper, rely on loans from MMFs to meet their day-to-day expenses. Without that funding, their operations halt, creating a chain-reaction that could lead to a liquidity crisis.

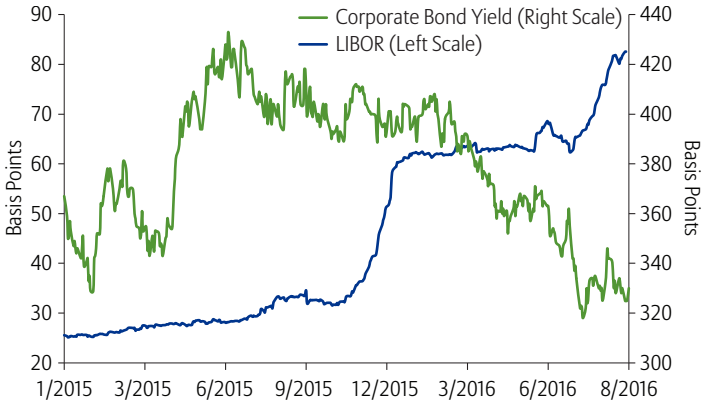
So when the Reserve Primary Fund "broke the buck" on September 16, 2008, meaning its NAV dropped below $1.00 per share (to $.97 per share), concern rippled through the money markets and the regulatory community. Prime MMFs experienced enormous redemptions, putting them under severe stress and leading the US Treasury to create a temporary guarantee program for them.

To avoid such an occurrence in the future, the SEC issued its first set of new rules for MMFs in 2010, tightening restrictions on portfolio holdings, enhancing liquidity and credit quality requirements, and promoting greater transparency. However, these enhancements failed to address issues exposed by the highly volatile behavior of institutional investors at the peak of the crisis. During the crisis period, institutional flows largely went one way, with redemptions far exceeding purchases, putting added stress on the markets. Retail investor activity, by comparison, was more balanced, with purchases and redemptions largely offsetting each other.

With the newest set of rules just weeks away, potentially disruptive reactions by money market participants have yielded unintended consequences:

- Some investors are shifting funds from the riskier prime MMFs that will be forced to abide by the rules to safer, exempt government funds. These flows are putting downward pressure on Treasury yields, particularly on the long end of the yield curve.
- The London interbank offered rate (LIBOR) is rising more rapidly than central-bank policy rates. For example, as of this writing, the three-month LIBOR, tied to the US dollar, is about 80 basis points (and rising) compared with 30 basis points a year ago, even though the Fed raised its policy rate by only 25 basis points (in December 2015). According to one estimate cited by Cumberland Advisors, debt and derivative exposure worldwide tied to the LIBOR and related rates may be as large as $28 trillion. Based on this estimate, each one-basis point increase in the LIBOR "translates to $2.8 billion in additional annual interest cost imposed on the collective worldwide dollar debt…."[7] (See Exhibit 6.)
- Rates tied to the LIBOR are rising. Now at 40 basis points, the spread between the LIBOR and the overnight index swap (OIS) rate was 20 basis points as recently as in June. This increase in the LIBOR and the LIBOR-OIS spread seems to be risk-related. Institutions not holding high-quality liquid assets to meet their required liquidity ratios must now pay a higher rate because of the risk that they could "break the buck." (See Exhibit 7.)

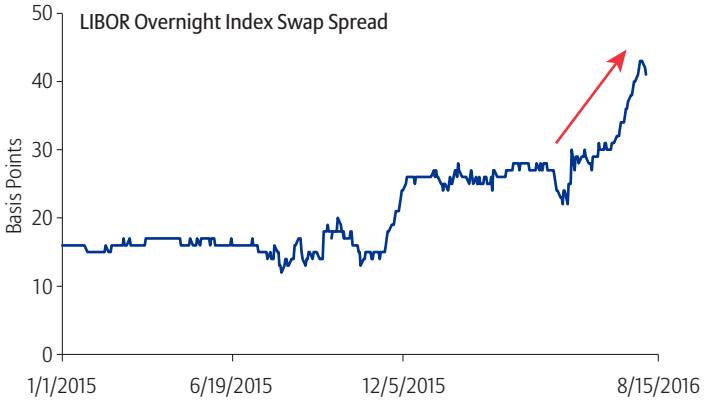
Exhibit 6: Unintended Fed tightening



Note: The 3-month LIBOR rate is based on the US dollar. The 10-year AAA corporate bond yield was compiled by Moody's.

Source: Federal Reserve Bank of St. Louis, FactSet, Allianz Global Investors as of 8/25/2016.

Exhibit 7: More evidence of unintended tightening



Source: FactSet, Allianz Global Investors as of 8/25/2016.

6. US Securities and Exchange Commission, January 27, 2010, and July 23, 2014.

7. David Kotok, August 16, 2016.

- Potential lenders have little appetite to lend in the swaps market as they protect against possible liquidity squeezes, thereby widening the LIBOR-OIS spread to historically high levels. Ironically, by doing that, the potential lenders create precisely the liquidity squeezes they fear.

With money flowing out of prime MMFs, more corporations will be forced to find other, more expensive, ways to fund daily expenses, such as their payrolls. This scramble for liquidity can lead to a slowdown in economic activity and, potentially, unmet obligations, confounding the Fed's attempts to stoke real economic growth and inflation. If that's the case, macroprudential policy will be working at cross-purposes with monetary policy.

Foreign banks that depend on prime unsecured financing to meet their dollar obligations are even worse off, particularly those without US customers depositing cash with them. Without the ready supply of dollars available to US banks, foreign banks that customarily access unsecured credit markets to make international transactions could soon face a serious liquidity shortfall. Japanese banks in the US, for example, already face an estimated $100 billion unsecured funding shortage.

Shortfalls in dollar funding also show up in the exchange-rate movements. By one estimate, dollar hoarding has resulted in an $8 trillion to $11 trillion contraction in funding dollars for US dollar carry trade.[8] If the US dollar appreciates from August 2016 exchange rates due to a prime money-market squeeze, carry trade could unwind, forcing the dollar even higher and exacerbating dollar supply shortfalls.

Regulation tightens monetary conditions, technology shrinks capex

Money-market reactions to the impending MMF rule changes remind us that a stricter regulatory framework can tighten monetary conditions inadvertently by impeding the transmission of monetary stimulus to credit expansion, capital spending and pricing power. At the very least, the cost of regulatory compliance has made potential business borrowers more reluctant to invest in fixed capital.

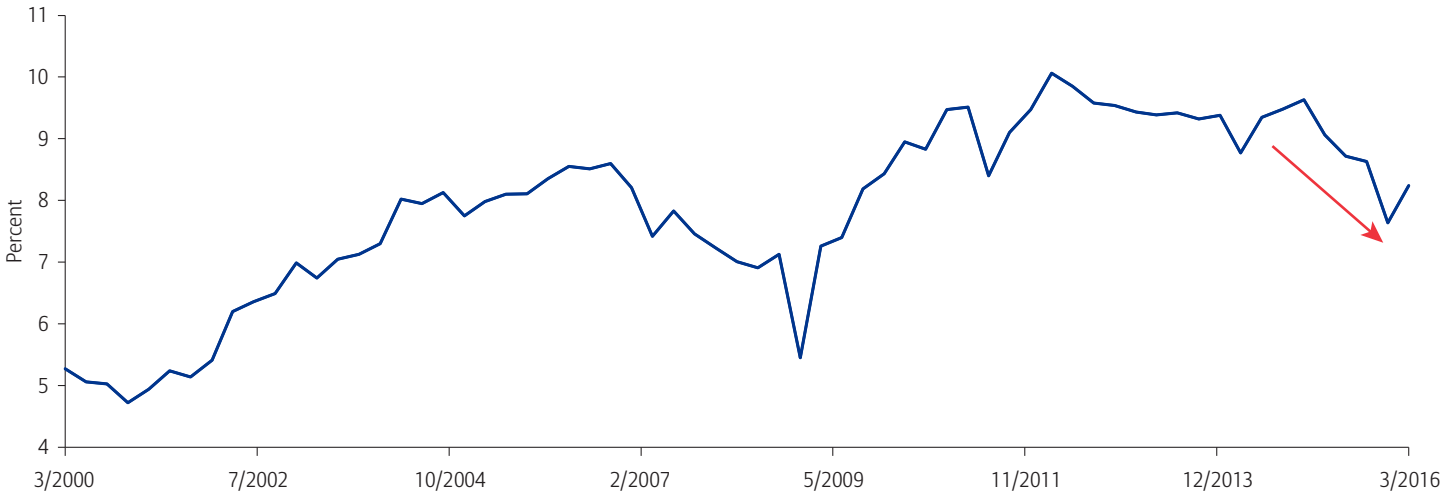
Admittedly, the US economy may now be entering a phase when many cash-rich companies look to capital investment to offset higher unit labor costs and protect their longer-run margins. Higher wages, in turn, can lead to more consumption and an income shift from savers to spenders, reducing excess capacity and increasing demand for capital spending yet again. (See Exhibit 8.)

As investor confidence improves, so, too, does their willingness to take risks and invest with leverage to offset narrowing margins. Investments in traditional productive capital tend to have a broadly predictable outcome, so the main stumbling block for investors involves raising sufficient capital to fund their expenditure. The predictability of the outcome means that more debt can be used to reduce funding costs and increase returns to risk-takers.[9]

By comparison, developing an app (like Uber) to use existing assets more efficiently does not require as much capital, but the outcome of such investment cannot be assured. Technology has a far wider standard deviation of outcome than traditional capital expenditure (capex), reducing the effective use of debt and raising the need for risk-pooling. This tends to concentrate success, as previous winners have the equity and understanding to invest again—while responsible parties with fiduciary responsibilities may be limited by regulation or caution. As a consequence, the inexorable revolution in information technology (IT) constrains capex and will require substantial new laws and regulations to govern business arrangements.

These impediments, however, will not stop the development, marketing and implementation of the information technologies already changing the organization and location of businesses, the infrastructure needs of entire communities and, perhaps, the country at large, the supply of and demand for labor, the physical structure of work places, and the demand for resources.

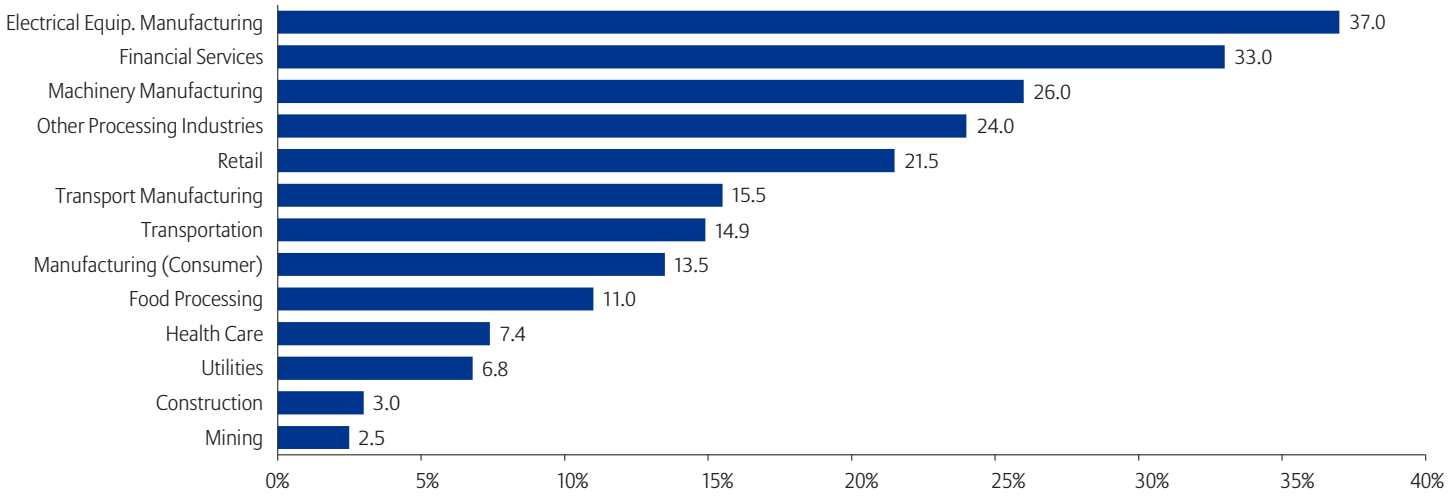
Exhibit 8: Corporate profits are falling as a share of GDP



Source: US Bureau of Economic Analysis, Allianz Global Investors as of 3/31/2016.

8. David Kotok, August 16, 2016.
9. Michael Drury, August 20, 2016.

Exhibit 9: Software share of US fixed capital formation



Source: US Bureau of Economic Analysis, Goldman Sachs, Allianz Global Investors as of 5/2013.

Cloud adoption, for example, is accelerating across all sectors, driven by its relatively low costs, flexibility and fast implementation, all of which result in higher returns on investment. The cloud makes possible big data, mobile applications and social media, encouraging enterprise IT to move from a platform, or infrastructure, scope to an applications and services scope. It is a boon to small businesses, especially, that do not have the wherewithal to purchase and use big-box computers.

IT spending is redirecting upfront outlays on software licenses, associated services and hardware to a more "pay-as-you-go" approach. Eventually, software-as-a-service (SaaS) will become bigger than the traditional application market, given its higher utilization rate and its expanded role in development, deployment and delivery of software.

Regulations exacerbate other factors constraining capex

From a macroeconomic perspective, a critical consequence of these developments is that capex appears more likely to remain "lower for longer" across most regions and sectors. According to Goldman Sachs, businesses in half of all sectors, on average, expect to invest at levels close to, or below, depreciation, particularly in the resources complex.[10] Meanwhile, currency gyrations and resulting shifts in competitiveness have added to the uncertainty about the return outlook for fixed capital in internationally exposed businesses.

Businesses, of course, will continue to invest in traditional plant and equipment when the expected discounted rate of return from doing so exceeds the hurdle rate it set based on the cost of the investment itself, financing costs, opportunity costs of invested capital (such as expected returns to financial assets), and the expected return of all alternative investments.

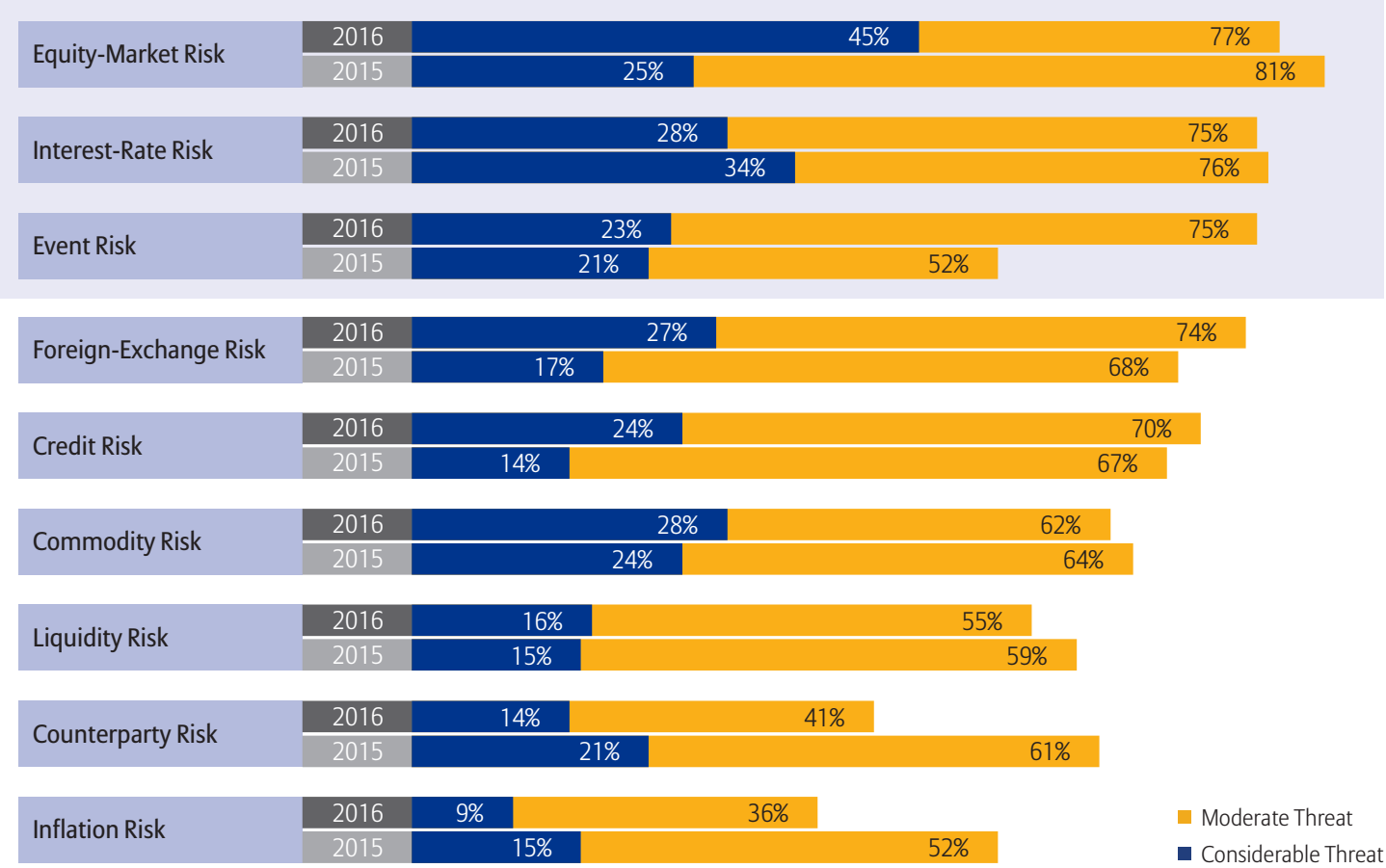
Regulatory considerations likely will continue to constrain capex, albeit modestly. Instead, regulatory considerations tend to exacerbate other factors cited frequently by business managers for currently diminished capex compared with previous cyclical expansions. Here are seven of them:

- **Demand weakness.** Challenging demographics and high total debt levels in many parts of the developed world have slowed the growth of customer demand and create a disincentive to increase productive capacity. As China weans itself off fixed-asset investment, the global relationship between fixed-asset investment and global nominal GDP growth will soften further
- **Business confidence is being undermined** by stop-start economic growth and the political cycle, with its emergence of unconventional political parties and candidates. This environment creates a preference for more short-life assets and fewer long-life assets. In addition, with business competitiveness often dependent upon depreciation of the US dollar, the confidence to write a check for a hefty long-term capital investment erodes further. Disincentives to invest that are built into the level and scope of taxes also constrain some forms of business investment, particularly by small- and medium-size businesses.[11]
- **Capacity additions by new and existing businesses in an industry weaken the pricing power** of individual businesses, especially where barriers to entry are low. Businesses, then, squeeze life out of existing fixed assets while newer technologies enable assets to be used more efficiently and have their lives extended
- **New technologies diminish and sometimes eliminate the need for a certain equipment and systems**, enabling businesses to do more work with fewer fixed productive resources. In today's cars, for example, one- or two-touch screens provide all of the information that previously required separate widgets—speed, fuel, navigation, etc. If the same applies to robots or machines in factories, the need for the number of devices should decline, along with the factories to produce them. (See Exhibit 9.)
- By allowing supply to become more elastic, **technology improves the resolution of supply and demand imbalances.** Under certain

10. Goldman Sachs, May 6, 2015.

11. Allianz Global Investors, July 11, 2016.

Exhibit 10: Investors perceive a wide range of financial risks



Source: Allianz Global Investors as of 7/11/2016.

circumstances, some productive assets no longer need to be built to match peak demand levels.[12] Further, technology allows businesses to direct operating expenses toward software instead of more costly capex-intensive functions the way cloud-based services are replacing investment in hardware

- **Some businesses are increasingly outsourcing operations and production to outside the US.** Typically, these businesses keep their core businesses at domestic sites and push capital-intensity onto their supply chain. Through analytics and data, technology companies, especially, tend to concentrate on selling non-capital consuming services and/or subscriptions rooted in digital scale, instead of physical scale and digital services. In the process, however, their need for capital equipment falls and, if the outsourcing is to a foreign country, aggregate US capex goes down
- **Institutional investors globally identify equity markets, interest rates and event risks as the greatest threats** to their portfolios. However, with economic and political uncertainty still pervasive, businesses continue to shy away from direct investments in plant and equipment that otherwise may be feasible. (See Exhibit 10.)

Tech booms in China, India and Salt Lake City follow different paths

Perhaps some lessons can be learned from experience in China and India, two places that have experienced a capital-spending boom in the 21st century.

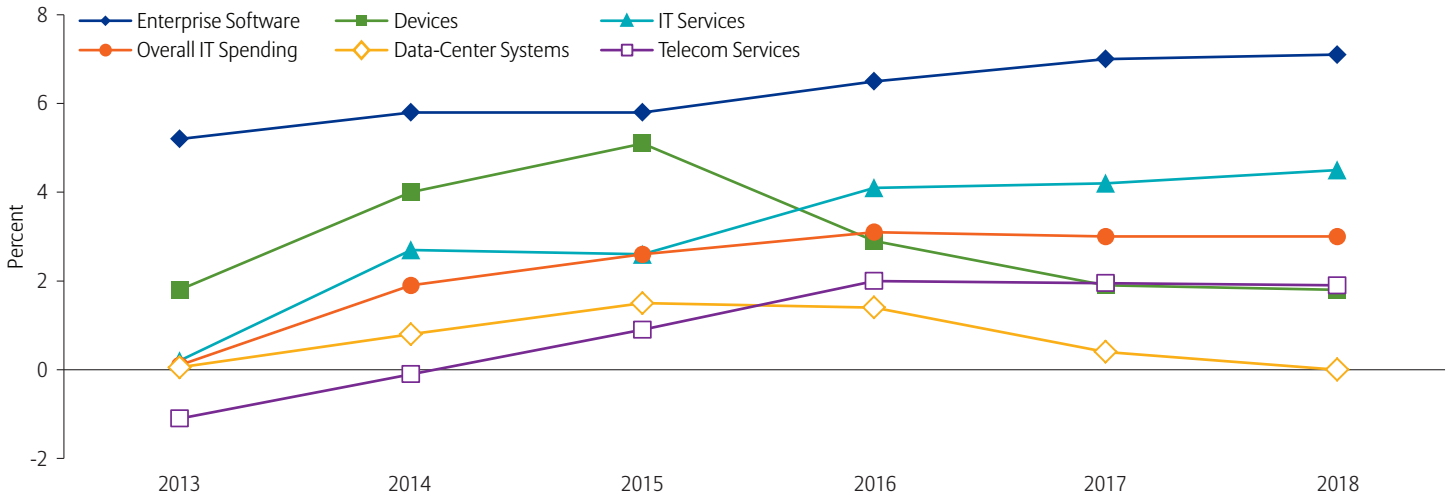
For China, the rise to become the world's factory floor generated a massive infrastructure building boom, which in turn created a global boom in commodities demand and a soaring economy for the emerging markets. According to McVean Trading & Investments, "rebuilding of the developed economies' productive capacity in China lifted hundreds of millions of Asians, Latins and Africans out of poverty while also exporting deflation globally and increasing the buying power of all consumers."[13] However, the relocation of productive capacity to China also helped technology hollow out the US, European and Japanese middle classes.

For India, it was the threat of the Y2K computer bug that massively increased the need for programmers and created an open door for offshoring lower-level technology tasks to India's well-educated, English-speaking and populous elite. Yet the technology boom that

12. For example, Airbnb was an official accommodation provider for the Rio 2016 Olympics where it provided 20,000 rooms, or the equivalent of about 60 hotels. Consequently, Brazil had to build fewer hotels and less related infrastructure that would have created oversupply after the Olympics ended.

13. Michael Drury, August 20, 2016.

Exhibit 11: Software spending will triple the growth in overall IT spending



Source: Goldman Sachs, Allianz Global Investors as of 5/2013.

has made India No. 3 (behind only the US and UK) in startups spread relatively little of the wealth to the masses in India, and had virtually no ripple effect on the global economy. Bangalore, Mumbai, Delhi, Hyderabad and Pune are effectively islands of success in a sea of raised expectations. Connecting these Indian cities to each other and to the developed world via high-speed Internet required relatively little physical investment.

Where will investment take place in the US? Unlike industrial expansion—where governments compete with lower taxes and lax regulation to gain employment for their underutilized, often lower skilled, labor—access to highly skilled labor comes first for technology companies. No sector faces lower barriers to entry than technology, where location and infrastructure are far less important than innovation. (See Exhibit 11.)

Fresh technology investment gravitates to regions that have already made a significant long-term investment in education, which typically means they were already enjoying some degree of success. Since a generation is needed to significantly improve education, regions without such investment can only compete by gathering their best and brightest in a single location—typically college towns and other places where tech-savvy young adults tend to congregate. Thus, the footprint for technology investment is narrow and is likely to remain so. This exacerbates the inequality of income and wealth issues.

Adapting to the fourth industrial revolution

At the annual World Economic Forum in Davos-Klosters, Switzerland, this past winter, economists, policymakers and investment strategists from around the world discussed the fourth industrial revolution, a term that refers to the enormous technological, environmental, demographic and industrial changes that will continue to unfold over the next decade or longer. Perhaps the key takeaway from the forum was, to quote a famous line from *Moneyball*, the Michael Lewis book about value investing in baseball, "adapt or die."

For businesses, failure to rethink and redirect business strategy, investment, governance and organization will result in lost competitiveness and missed opportunities to enhance profits.

For governments and central banks, failure to adjust economic policies and regulations will further weaken real economic growth and productivity over the long run. Inertia by government and central-bank officials would encourage a further shift of output and incomes to emerging market countries and the most forward-looking, developed countries.

For investors, as the fourth industrial revolution proceeds, substantial new opportunities will open up in companies that will become the industrial leaders of the next generation.

So take a look at some of the great companies of the last quarter-century. Those that continue to innovate and drive the fourth industrial revolution will remain leaders over the years ahead. Those that do not, will disappear. As the head of the investment committee of an internationally known, California-based technology giant told Allianz Global Investors last year, "We are always one innovation by a startup company away from being knocked out of business."

Regime changes in governments and central banks, Brexit, elections in individual European countries, upheaval in many emerging-market countries and the political campaigns in the US send strong signals that future success will hinge on more than marginal changes. In that context, elected and unelected official bodies will be forced to respond more vigorously to populist demands than at any time in decades.

In the US, regardless of who wins the presidential election, meaningful adjustments to policy formulation, policy implementation and the policies themselves appear to be inevitable. Here are just a few adjustments to federal spending and taxation to look for:

- Increased spending on infrastructure and national defense procurement.

- New energy policies that encourage traditional and sustainable production of fuels and power.
- Tax reforms that ease levies on the lowest-income taxpayers (perhaps through enlarged earned-income tax credits) and raise them for the most affluent taxpayers (perhaps by narrowing tax brackets, adjusting marginal tax rates on the highest brackets, and increasing the alternative minimum tax).
- Business-tax reform that encourages small-business formation while maintaining, or even increasing, taxes on the most profitable corporations.

On the other hand, at the Fed, some changes likely to be under consideration could include the following:

- **Adjustments in regulations to make them more procyclical.** In this regard, look for the Fed to encourage banks to maintain higher levels of capital, deleverage and meet higher solvency standards when the economy and financial system are strong. These steps would enable banks to take the opposite position in the event of an economic or financial crisis and emerge without stress in their balance sheet.
- **In the formulation of monetary policy, targeting nominal GDP instead of core inflation rates and labor-market strength.** Steps by the Fed to better control growth in the money supply, combined with supervisory policies and improved communications that influence inflation and interest-rate expectations, will be considered in order to boost the ratio of nominal GDP to the money supply (so-called "money velocity"). (See Exhibit 12.)
- **A historically lower neutral federal funds rate (referred to as r*) than has ever existed in an economic expansion to help determine the course of eventual policy-rate increases.** Consequently, the path of interest rates over the next two years considered appropriate by each member of the FOMC (the so-called "dot-plot") will be lower than even a year ago. Continued repression of interest rates at low levels will persist indefinitely.
- **Barring a change of leadership at the Fed, a lower likelihood of coordination of policies with the White House.** Unlike the central banks of other prominent developed economies, the Fed favors regaining its independence within government. As required by the 1978 Humphrey-Hawkins Full Employment Act and the 2010 Dodd-Frank Act, Fed and government policymakers will consult with one another regularly, but the Fed will formulate policies with renewed independence.

Legislative initiatives, regulations, technological changes and political challenges will lead to evermore changes in the structure and functions of banks, financial-services firms and non-financial businesses. Technologies and their interfaces will be fused across physical, digital and biological domains. Major advances loom ahead in:

- smart and connected machines and systems;
- quasi-artificial intelligence;
- quantum computing;
- system robots;
- gene splicing and genomics;
- nanotechnologies;
- virtual reality; and
- machine learning.

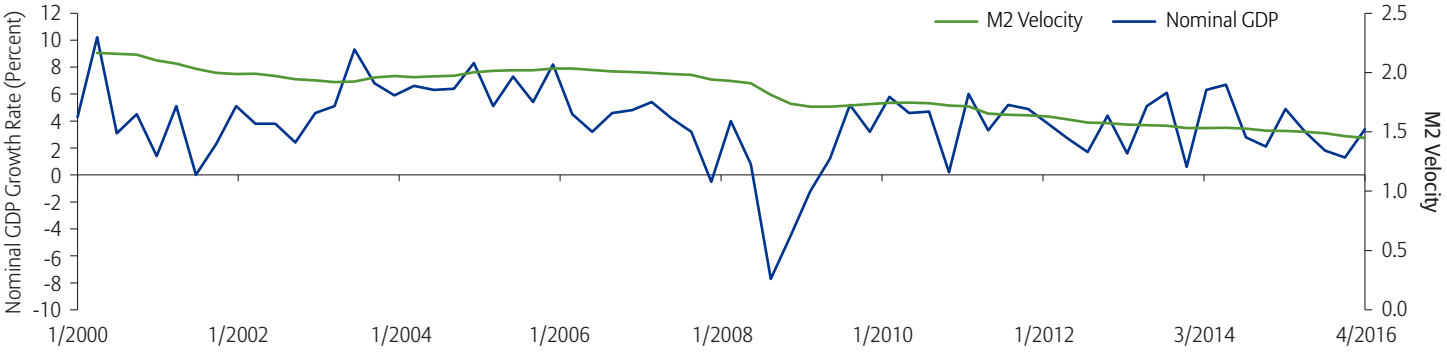
Over the decade ahead, breakthroughs in these areas (and others) will open the door to even more advanced technologies, much as the digital television and the VCR led, eventually, to video disks and, later, modern, integrated home-entertainment centers.

Cloud computing and data storage will grow in prominence, enabling the disruption of traditional banking and money systems, retailing and marketing, space travel and medicine. Proliferation of new companies in new fields will open outstanding growth-investment opportunities.

Existing companies will be forced to change their business model, just as traditional car companies have adapted to autonomous vehicles and brick-and-mortar retailers have turned cellphones into shopping carts.

Fusion of technologies also will help lead to environmental and infrastructure solutions. For example, water systems will become more efficient as collection, conservation, recycling, desalination and distribution benefit from entirely new systems, equipment, sensors and demands from farmers and other large users. "Blue" companies at the center of the movement to improve the efficiency and quality of the water supply will increasingly become household names and investment opportunities.

Exhibit 12: Weak money velocity results in weak GDP



Note: M2 velocity is the ratio of nominal GDP to the M2 money supply. It represents the number of dollars of national income or output per dollar of money supply.
Source: Federal Bank of St. Louis, Allianz Global Investors as of 4/2016.

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Mr. Malin is an investment strategist and a director with Allianz Global Investors, which he joined in 2013. As a member of the US Capital Markets Research & Strategy team, he is responsible for making weekly US and global asset-allocation recommendations. Mr. Malin's responsibilities also include analyzing global economic, financial, political and regulatory developments; and briefing institutional, retail and retirement clients. He has 25 years of financial-markets, central-bank and investment-industry experience. Before joining the firm, he was the director of research at Wealthstream Advisors, a private wealth management firm; and an advisor to Aronson Johnson & Ortiz, a quant-based institutional equity manager. Earlier, Mr. Malin was a senior portfolio manager at AllianceBernstein, serving institutional, sub-advisory, Taft-Hartley and private clients throughout North America. He also worked at the Federal Reserve Bank of New York for more than 16 years, and during this time he was an officer who held several senior positions, including senior economist, media relations officer, vice president in the communications group and corporate secretary. Before that, Mr. Malin was the senior economist, founder and director of the regional economics center at The Conference Board. He also taught graduate and undergraduate macroeconomics and risk-management courses at Barnard College-Columbia University and the City University of New York. Mr. Malin has a B.A. in economics from Queens College and a Ph.D. in economics from the Graduate Center of the City University of New York.

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