T. Rowe Price

REPORT

INSIGHTS ON INVESTING AND FINANCIAL TOPICS

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QUARTERLY PERFORMANCE UPDATE

U.S. Large-Cap Growth and Value Managers Confront Slower Growth

Is the long U.S. economic expansion near the end of its cycle? With different strategies, how two managers are investing.

After a record expansion lasting a decade, the U.S. economy, along with certain other developed economies, is shifting to a lower gear. From the differing perspectives of their investing strategies, Joe Fath, manager of the Growth Stock Fund, and Mark Finn, manager of the Value Fund, discuss the implications for investing in large-cap stocks as well as their strategies and market outlook.

Q. How is the U.S. economic slowdown affecting large-cap stocks?

Mr. Fath: The U.S. economy is showing steady, though slow, growth. The slowdown has not yet affected companies significantly in terms of their profit-and-loss statements, particularly the disruptive secular growers, such as the Googles and Amazons, as well as some software-as-a-service stocks like Salesforce.com, ServiceNow, and Workday. Also, we should be mindful that year-over-year comparisons will reflect the fact that the tax cuts of 2018 have begun to roll off.

The biggest weakness has been among cyclicals, but even the technology, health-care, and consumer discretionary sectors—in which we have relatively higher exposures—have mostly done well. Such defensive sectors as consumer staples, utilities, and real estate investment trusts [REITs] and yield plays like the cellphone tower companies also have performed relatively well recently, due to fears that we are in the later innings of the economic cycle along with a flattening or inverted interest rate yield curve.

Mr. Finn: About half of the Russell 1000 Value Index is composed of companies with some level of cyclicality, including financials, energy, industrials, and materials. So, an economic slowdown poses challenges for stock selection in those sectors in particular. What's unique about this 10-year bull market is that each time it appeared that we were on the precipice of a recession, the central banks maintained their accommodative policies. So you should be cautious about getting too defensive even if you think we are near the end of the cycle. In the United States, a lot of the leading indicators are slowing, but employment has held up well. Outside the United States, developed market economies are notably more sluggish.

Q. What's the impact of rising trade tensions between the United States and China?

Mr. Fath: For the most part, companies have been able to mitigate the tariff impact. They either adjusted their business models or sought concessions from suppliers. The multinational industrials have been hit the hardest along with consumer companies like Dollar Tree and other retailers that import a lot from China. But I think more companies will

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aim to de-risk by moving production away from China. With the United States expanding its tariffs to Chinese consumer goods, many companies will be forced to pass along those extra costs to consumers. It's too early to tell the long-term ramifications for markets. But the longer these additional costs are imposed, the more they will impact market conditions. In China, internet companies Alibaba and Tencent have solid business models. But trade tensions are a headwind to consumer sentiment and demand, and not just for these successful platforms.

Mr. Finn: I agree that many U.S. companies have shifted supply lines to avoid tariffs. But you can't totally reinvent your business model and just go unplug China and plug in 10 other countries. The longer the trade war goes on, the more risk there is because companies will be forced to reduce orders and relocate manufacturing away from China, and this will be costly to their businesses and to the economy.

Q. How are you investing in this environment?

Mr. Finn: My bias is to quality and to be modestly defensive. Normally, at the end of a long expansion you would be tilting toward less cyclical exposure, including utilities, consumer staples, and REITs. The challenge is that the market has moved that way already. The higher-quality defensive stocks are expensive, and those with more cyclical exposure are relatively cheap. The Federal Reserve may do its best to avoid a natural slowdown or a recession. So I've tried to invest in cyclical stocks that offer a compelling investment case and reasonable valuation.

I am underweight financials because we are late in the credit cycle, and low interest rates are likely to compress margins. I'm underweight energy due to abundant supplies. Among cyclicals, I'm meaningfully overweight technology, where I see opportunities among semiconductors and semiconductor

Joe Fath

Mark Finn

equipment manufacturers. Among materials, I've focused on some of the industrial gases that are tethered to the chemical and oil infrastructure.

Mr. Fath: In the first half of this year, the defensive sectors and the high-growth sectors performed well, and the cyclicals had not really participated. So the market is generally telling you that investors are worried that we may be in the last innings of this economic expansion. But the late cyclicals are probably a really attractive hunting ground now. To Mr. Finn's point, I also favor some of the industrial gas companies, as they tend to do well late in the cycle. There also is opportunity, in my opinion, in the industrial semiconductor industry, such as with Texas Instruments.

Overall, my strategy looks like an upside-down pyramid. The top sleeve is composed of secular growth names that represent 50% to 60% of the portfolio. The cyclical sleeve represents 15% to 25%. That's where we have been doing more hunting lately. The bottom part of the pyramid, with a range of 15% to 25%, consists of special situations, particularly companies exposed to industry structural change or companies pivoting from value to growth.

I favor companies that have more control over their destiny, are positioned to benefit from powerful secular trends, and are using innovation to disrupt less efficient business models and create new ones. I believe that firms effective at leveraging innovation will be able to sustain robust growth in earnings and revenues as they

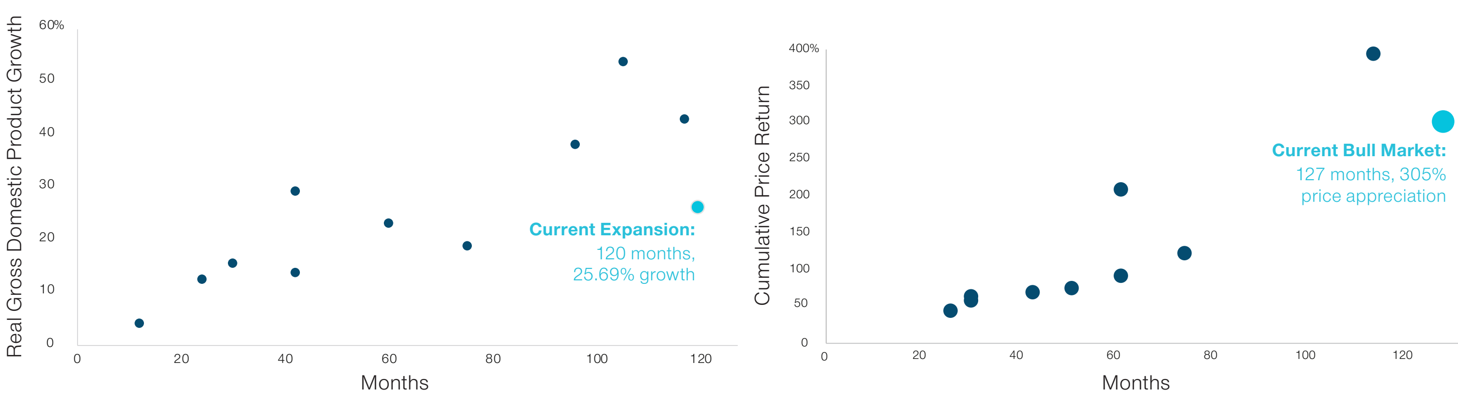
Figure 1 Can the Very Long and Favorable U.S. Growth and Stock Market Cycles Persist?

U.S. Economic Expansions

From Fourth Quarter 1949 Through Third Quarter 2019

S&P 500 Index Bull Markets

January 1958 Through September 2019



Past performance is not a reliable indicator of future performance. Sources: T. Rowe Price analysis using data from FactSet Research Systems Inc., all rights reserved; Bureau of Economic Analysis/Haver Analytics; and Standard & Poor's. **Additional disclosures on page 24.**

exploit new markets and seize share in existing ones. McDonald's, for example, is undergoing a significant digital transformation that enhances the customer experience. In technology, I favor the platform business models and am underweight hardware-driven technology enterprises that tend to be more cyclical.

Q. Is increased government scrutiny of the platform companies a concern?

Mr. Fath: We are closely monitoring the regulatory scrutiny the large platform companies face. This is a unique situation given that these big tech firms have been largely viewed as a force for good, with the consumer as the primary beneficiary. However, the potential for stepped-up regulation of Amazon.com, Facebook, and Alphabet (Google) increases volatility risk and the potential to pressure these firms' valuation multiples. We take a balanced view, and investors should not lose sight of their competitive advantages and stellar long-term growth prospects.

Q. What about the politics swirling around the health-care sector?

Mr. Finn: The health-care sector is facing political headwinds such as potential limits on drug pricing and single-payer health-care initiatives, but the sector should benefit longer term from secular tailwinds, including an aging population, new technology applications, and improved treatment options.

Mr. Fath: Our allocation to health care is most leveraged to select therapeutics and medical device companies, such as Intuitive Surgical and Stryker, that are utilizing technology and that we believe have limited exposure to potential regulatory pressures. I've avoided material exposure to pharmaceuticals and biotechnology. The pace of innovation and growth in biotechnology has slowed quite a bit, and big pharma is in the bull's-eye of efforts to lower drug care costs. We've also reduced our exposure to managed care due to elevated headline risk through next year's election as several "Medicare for All" proposals would drive existential risk to these for-profit businesses.

> **"We haven't seen the excesses that were evident in the last financial crisis, so if we have a recession it should be more of a relatively normal recession...**

Q. What is your outlook for the U.S. economy and corporate earnings?

Mr. Fath: We haven't seen the excesses that were evident in the last financial crisis, so if we have a recession it should be more of a relatively normal recession, in which gross domestic product declines by 1% to 2% over a few quarters. We're already seeing weakening data in certain pockets, particularly transportation and manufacturing. But job growth and housing continue to look pretty good. I think we'll see overall growth slow, but the risks of a significant U.S. or global economic downturn still appear limited.

In a slower-growth environment, selectivity is key. Overall, there is a high degree of certainty that the rate of earnings growth will slow to some degree. The question is: How much it affects the market's valuation multiples? Does the market look past that, or is it a sign of more to come and multiples compress? The wild card is the 2020 presidential election. The rhetoric leading up to it could certainly affect sentiment and spur volatility.

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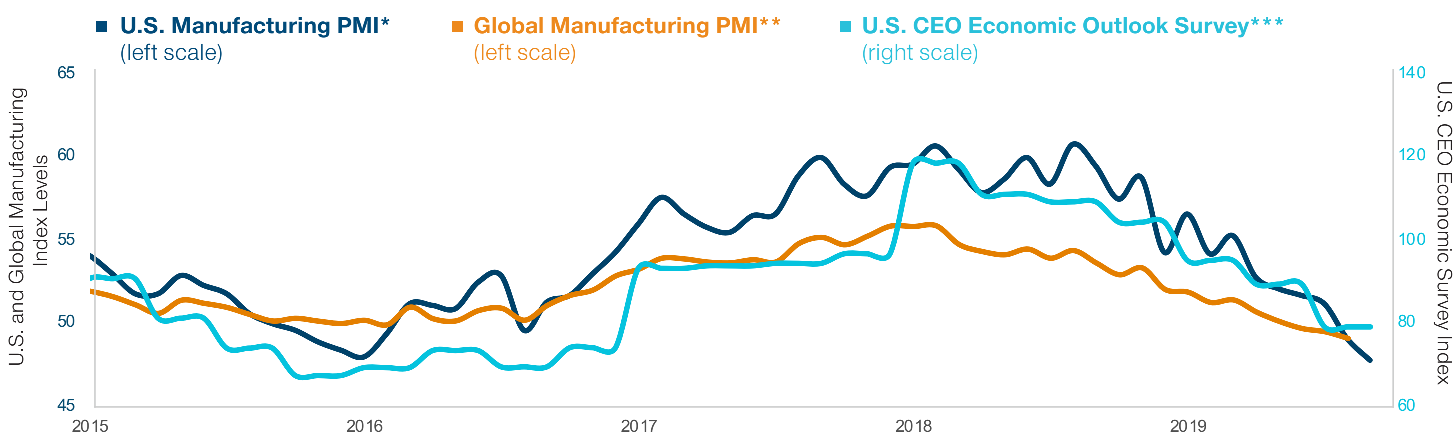
Figure 2 U.S. and Global Growth Deteriorating

January 2015 Through September 2019



*Purchasing managers' index (PMI): Based on a survey of purchasing managers at more than 300 manufacturing firms by the Institute for Supply Management, the index monitors changes in production levels from month to month. **Global PMI includes the U.S. PMI (only through August). ***The quarterly U.S. CEO Economic Outlook Index is based on a survey of Business Roundtable members. Sources: Haver Analytics/JP Morgan/IHS Markit and Business Roundtable.

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Mr. Finn: I also expect earnings growth to be more challenging, especially with the protracted trade negotiations. The U.S. economy is not going gangbusters, but it's doing fine. The strong labor market and rising wages should continue to strengthen consumers' balance sheets. However, the expansion may have difficulty maintaining its recent pace. A recession is definitely on the horizon, but we just don't know how far off that is. When the labor market weakens and consumer credit suffers, that will tell you that the horizon could be very near. That's why you need to balance your strategy between defensive and procyclical positioning.

Q. What should investors be mindful of in today's climate?

Mr. Finn: Low interest rates continue to support equities and those seeking to earn a reasonable return over time. I would not advocate that investors concerned about the end of the economic cycle sell their equity shares. You just need to be reasonably balanced in your overall investment strategy and perhaps be somewhat defensively positioned. In our strategy, we are ever-diligent about the risks that companies face and how disruption is impacting companies more generally. That is really important for value investors, because half the battle in value investing is avoiding value traps.

Mr. Fath: As growth investors, we remain cautiously positive about U.S. equities. However, valuations are less forgiving today than at the start of 2019. And the key risks—escalating trade disputes, the slowing economy, and political uncertainty—could trigger renewed volatility and impede market performance. As active managers, we need to be very selective and make sure we invest in companies that are well positioned and have a very good management team that can navigate through choppier waters and execute well.

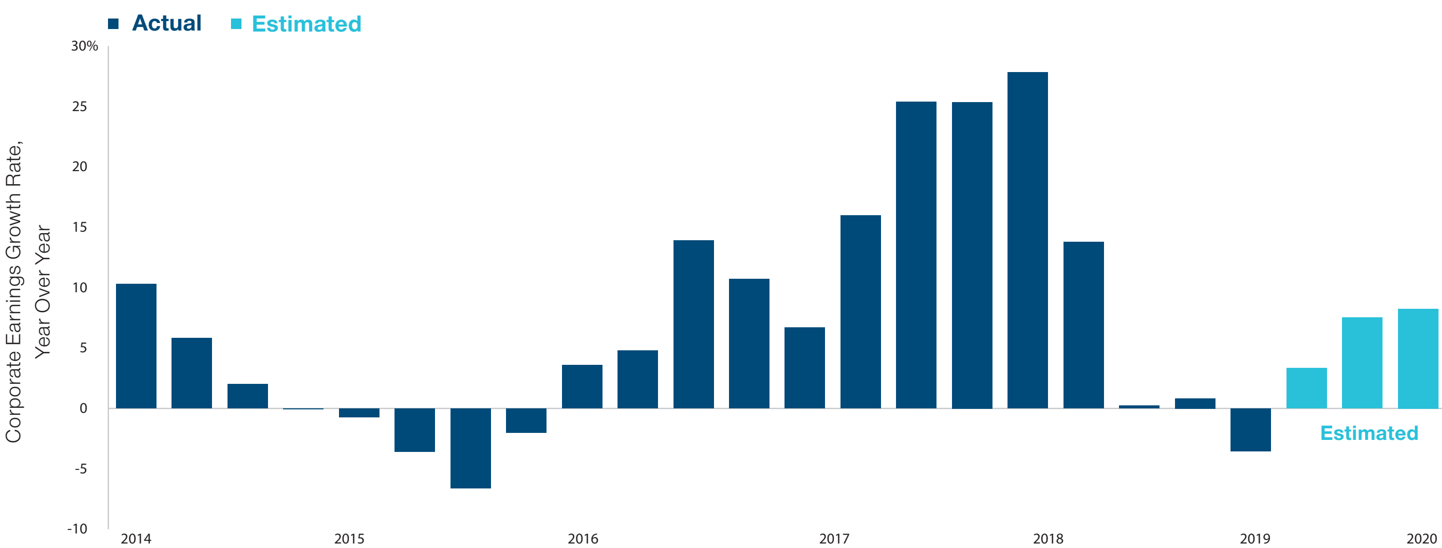
"I would not advocate that investors concerned about the end of the economic cycle sell their equity shares.

As of September 30, 2019, among stocks mentioned in this article, Amazon.com made up 0.2% of the the Growth Stock Fund; Alphabet (Google), 0.3%; ServiceNow, 0.6%; Salesforce.com, 1.5%; Workday, 0.8%; Dollar Tree, 1.0%; Alibaba, 2.7%; Tencent, 2.0%; McDonald's, 0.5%; Facebook, 5.5%; Intuitive Surgical, 1.5%; and Stryker, 1.8%. Among the stocks mentioned, Dollar Tree made up 2.2% of the Value Fund; Texas Instruments, 0.7%; McDonald's, 1.0%; and Stryker, 0.7%. The specific securities identified and described do not represent all of the securities purchased, sold, or recommended, and no assumptions should be made that investments in the securities identified and discussed were or will be profitable.

***Past performance cannot guarantee future results.** All investments are subject to market risk, including the possible loss of principal. The value approach to investing carries the risk that the market will not recognize a security's intrinsic value for a long time or that a stock judged to be undervalued may actually be appropriately priced. Growth stocks have historically been more volatile than cyclical stocks.*

Figure 3 U.S. Corporate Earnings Are Deteriorating

S&P 500 Index Earnings, Year-Over-Year Growth, From September 2014 Through September 2019



Past performance is not a reliable indicator of future performance. Source: T. Rowe Price analysis using data from FactSet Research Systems Inc. **Additional disclosures on page 24.**

GLOBAL ECONOMY

Independent Central Banks: A Relatively New Idea That May Come to an End

More scrutiny of central banks due to low growth, falling inflation, and low rates.

BY **NIKOLAJ SCHMIDT**
T. ROWE PRICE CHIEF INTERNATIONAL ECONOMIST

After a decade of extraordinary monetary policy stimulus, it was almost too predictable that, at the first sign of a monetary headwind to growth, President Donald Trump would take aim at the Federal Reserve.

"Germany sells 30-year bonds offering negative yields," Trump tweeted in August. "Germany competes with the USA. Our Federal Reserve does not allow us to do what we must do. They put us at a disadvantage against our competition." Also, he had previously accused Fed Chairman Jerome Powell of being "clueless" and displaying a "horrendous lack of vision."

The president's comments sparked fears that the Fed's status as an independent central bank is threatened. However, it is true that, despite the trillions of dollars of monetary stimulus, the Fed has failed to hit its objective of 2% inflation.

Central banks in other parts of the world also have failed to deliver on their mandates, and similarly find themselves under pressure from frustrated politicians. So, is the era of the independent central bank coming to an end?

New idea

The idea that modern economies require independent central banks is relatively new. It grew in the 1970s and 1980s out of the work of economists advocating "rational expectations." They believed that if monetary policy is left to politicians, it will become a hostage to the electoral cycle because incumbent administrations will always seek to stimulate economic activity to get reelected. As a side effect, inflation will rise.

Most modern "independent" central banks are prohibited from financing their governments directly. Theoretically at least, this creates a clear dividing line between fiscal and monetary policy. The central bank can impose fiscal discipline upon the government precisely because it does not fund it.

Typically, the central bank will be given a narrow tangible mandate, such as an inflation target, against which it will be held accountable to the public. Independence is further cemented by giving central bank governors fixed terms that cannot be terminated by the government.

Even so, there is a clear difference between a central bank influenced by government policy and one controlled by politicians.

Populist threat

It remains to be seen how long the politicians can be kept at arm's-length.

A world of low growth, falling inflation, and chronically low interest rates has helped to fuel the rise of populism, which in turn has placed the role of central banks under renewed scrutiny.

The challenge is not just from right-wing populists such as President Trump; the progressive left also harbors ideas about central banking that do not leave much room for truly independent central banks. Modern monetary theory, supported by many left-leaning populists, argues that the institutional constraints preventing central banks from directly financing government are not useful and should be dismantled.

The challenge is not just from right-wing populists such as President Trump; the progressive left also harbors ideas about central banking that do not leave much room for truly independent central banks.

This combination of job security, accountability to the public, and a clearly defined mandate is intended to ensure that the governors can make decisions that serve the central bank's mandate even when they are not popular with the administration. At least, that's the theory.

In reality, central banks' independence is sometimes exaggerated.

In the United States, the president appoints governors to the Federal Reserve Board, and Congress sets laws that affect the powers of the central bank. In Europe, the European Central Bank (ECB) became heavily involved in the eurozone crisis, as ECB President Mario Draghi admitted in 2012 when he said that the ECB would do "whatever it takes" to preserve the euro.

In the United States, the Fed's independence is currently protected by institutional rigidity. It will take time for any president to convince Congress to change the central bank's mandate. However, institutional rigidity wears down under years of attrition. At the current juncture, it seems likely that the administration that occupies the White House after the 2020 elections, left or right, will have an economic agenda that, on the face of it, will benefit from an agreeable central bank.

Vulnerable

Central banks are not well positioned to withstand these attacks for three main reasons. First, their monetary policies

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helped facilitate the imbalances that gave rise to the global financial crisis. Second, central banks have failed to deliver on their inflation mandates. Third, events over the past decade have challenged the notion that the monetization of public deficits leads to rampant inflation.

In short, central banks have lost credibility with political decision-makers and the public at large. In addition, central banks are victims of their own success: The painful lessons from the days of rampant inflation have been long forgotten by most.

It is worth asking: How important is central bank independence? In my view, respect for the broad lines of central bank independence is very important for the performance of the economy and asset markets, but minor infringements on their independence are probably less important.

Why it matters

The Republic of Turkey is a good example of what can happen when central bank independence deteriorates. In theory, the Central Bank of Turkey is independent to set monetary policy to hit its 5% inflation target. In practice, however, the Turkish administration prioritizes growth over inflation and will direct the central bank to follow the party line.

Consequently, inflation in Turkey rose from an average rate of 7.5% in 2010–2011 to an average of 17.1% in 2018–2019. (See Figure 1.) In parallel, the Central Bank of Turkey had to hike its policy rate from around 5.75% in 2012 to 24% in 2019.

A major infringement on the independence of the Central Bank of Turkey caused the Turkish administration to face ever-rising interest rates—exactly the opposite of what the administration wanted. The dismissal of the governor of the Central Bank of Turkey in July 2019 is testament to the bank's nonindependence.

> **A world of reduced central bank independence is one of higher inflation and a more volatile business cycle...**

By contrast, Russia is an example of an emerging market country that has taken decisive shifts toward greater central bank independence. Historically, the Central Bank of Russia has had a dual mandate of managing inflation and the exchange rate. Following the global financial crisis, the bank's mandate was simplified, and it adopted a single inflation target of about 4%.

Since then, the independence of the bank to pursue this mandate has increased. As a result, to address excessively high inflation, its monetary policy stance has been tightened. The real policy rate in Russia today is around 3%, one of the highest among emerging economies. Prior to the global financial crisis, the policy rate in Russia was most often deeply negative.

Over time, the anchoring of inflation and inflation expectations will permit the Central Bank of Russia to implement a very substantial reduction of the policy rate.

Stagflation trades

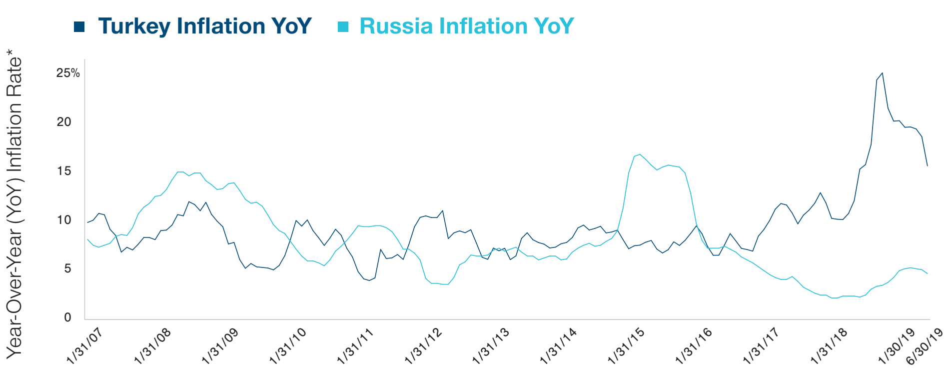
A world of reduced central bank independence is one of higher inflation and a more volatile business cycle as uncurbed economic booms during election years turn into busts.

This could create a more pronounced presidential cycle: Equity markets rally into elections, as the economy is primed for the incumbent to be reelected, only to retrench after the election as the monetary stimulus starts to fade.

The similarities with the economic conditions of the 1970s suggest that stagflation trades could be effective: Politically motivated central banks could keep policy rates too low, which, in combination with rising inflation, could lead to a steepening of the yield curve. And across the cycle, greater volatility of the real economy and rising inflation could cause equity markets to struggle to keep up with an ever-rising rate of inflation.

Figure 1 The Impact of Limiting Central Bank Independence

Turkey's Inflation Has Risen, Russia's Has Fallen



*Headline inflation rate is a measure of the total inflation within an economy, including commodities such as food and energy prices (e.g., oil and gas), which tend to be much more volatile and prone to inflationary spikes. Sources: Turkish Statistical Institute and Russian Federal Service of State Statistics.

U.S. SMALL- AND MID-CAPS

Smaller Companies Can Add to Returns, Diversification, Value

Despite large-caps' recent outperformance, the time may be right for small- and mid-caps.

BY **CURT ORGANT**, T. ROWE PRICE U.S. SMALL-CAP MANAGER

KEY INSIGHTS

- **U.S. small- and mid-cap companies have lagged their larger counterparts over the past year. However, despite some early signs of rotation out of the smaller-capitalization companies, the fundamental picture remains supportive, in our view.**
- **Moreover, there are compelling reasons for maintaining a long-term, strategic allocation to the smaller-company sectors.**
- **The United States offers a particularly supportive, pro-business environment in which entrepreneurship is venerated and small business success stories are championed, encouraging others to follow suit.**

While the S&P 500 Index of large-cap U.S. stocks was scaling all-time highs at one point earlier this year, U.S. small- and mid-cap companies have lagged their larger counterparts over the past year. This has prompted some investors to question the outlook for smaller companies, as well as their continuing exposure to the asset classes.

However, not only does the near-term fundamental environment remain supportive, in our view, there also are compelling reasons for maintaining a strategic, long-term allocation to small- and mid-cap companies.

So, what's been weighing on the smaller-company market? Some believe that the combination of slowing global economic trends and the U.S.-China trade war represent a particularly risky landscape for U.S. smaller companies. Indeed, smaller companies tend to hold higher levels of debt relative to cash and revenues, so they are generally more sensitive to the health of the broader economy.

However, while there is inevitably some flow through from a weaker global economy, the U.S. economy has continued to expand. Small- and mid-cap companies tend to be more domestically focused, with a relatively lower international exposure, so they are more insulated from global economic trends than their larger counterparts.

Nevertheless, it's true that smaller companies are not immune to the impact of the China trade war. Given that these businesses import and export both materials and components, any disruption here is likely to result in volatility in their stock prices. However, it is arguable that the trade war also could potentially provide a boost for some smaller U.S. companies as new, domestic suppliers are sought to fill some of the gaps previously met by Chinese companies.

Late-cycle concerns

Concerns about the late stage of the current economic cycle have led some investors to reduce their small- and mid-cap exposure. Already more than 10 years into the current expansionary phase—one of the longest growth periods in history—we likely are getting closer to the end of the cycle.

While part of the appeal of smaller companies is that their size makes them more responsive to changes and opportunities, it also means that they tend to be more vulnerable during periods of slowdown. Accordingly, as we move deeper into the current cycle, some investors have started to pivot out of smaller companies in favor of larger, more established companies offering stable earnings, lower debt, and more substantial cash buffers.

Despite the late stage of the economic cycle, however, we believe several factors remain supportive of smaller companies.

Small- and mid-cap companies tend to be more domestically focused, with a relatively lower international exposure, so they are more insulated from global economic trends than their larger counterparts.

First, consensus expectations for the next six to 12 months are for U.S. smaller companies to deliver earnings growth superior to their larger counterparts. Plus, small- and mid-cap valuations are more reasonable than those of large-caps. While we do not know if this anticipated growth will be achieved, the consensus view is of a generally supportive landscape—given such general factors as these companies' greater insulation from the global environment.

In addition, mergers and acquisitions (M&A) activity also continues to positively underpin the case for smaller companies. A combination of tax reform; reduced regulation; and, importantly, larger companies' ongoing search to acquire smaller companies' innovations should continue to stimulate M&A activity. Finally, the Trump administration and the Federal Reserve have made clear commitments to do whatever is necessary to arrest further slowdowns in the economy.

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Long-term allocation

Moreover, there is a range of compelling reasons for maintaining a long-term, strategic allocation to small- and mid-caps. Principally, these include the potential to exceed large-cap performance over the long term, increasing portfolio diversification, and the opportunities afforded through a well-researched selection of a greater dispersion of stocks. Consider these factors:

- Higher returns: U.S. smaller companies have the potential to achieve higher returns over the long term. While it is true that smaller companies tend to be more volatile, they have historically outperformed their larger-company counterparts. (See Figure 1, left side.) That makes sense as many of these companies are in the early stages of their development, offer potentially rapid growth, and are still small enough to deliver growth that is meaningful. (See Figure 1, right side.)

- Lower correlations: Historically, returns of U.S. smaller companies have been less correlated with the large-cap segments of investors' portfolios. At the total portfolio level, adding exposure to U.S. smaller companies, which have had historically high returns and lower correlations to other portfolio holdings, could improve the risk-adjusted returns of a balanced portfolio. That is counterintuitive to the way many investors think about these asset classes.

- Greater potential value: There is far greater dispersion within smaller companies, which historically has provided active investment managers with more opportunities to add value. When identifying mispriced stocks, such as uniquely advantaged companies or businesses that are undervalued relative to their assets, small- and mid-caps historically have offered the potential for greater rewards, as the potential dispersion of returns is greater than with large-cap equities.

  At the same time, smaller companies are less covered by traditional Wall Street analysts. If an investment team has the resources to independently meet with these under-followed companies and assess their prospects for success, there are tremendous opportunities to add value.

We believe there are compelling reasons for maintaining a long-term, strategic allocation to U.S. smaller companies. While it does come with risks and the prospect of higher volatility, consistent exposure to smaller companies as part of a balanced portfolio can add value over the long term.

With attractive growth potential, adding exposure to smaller companies also could provide diversification as the drivers of performance tend to be different from those of larger companies. They tend to have simpler business models, with less sensitivity to macro issues or industry developments; and they are typically more dependent on company-specific news and developments.

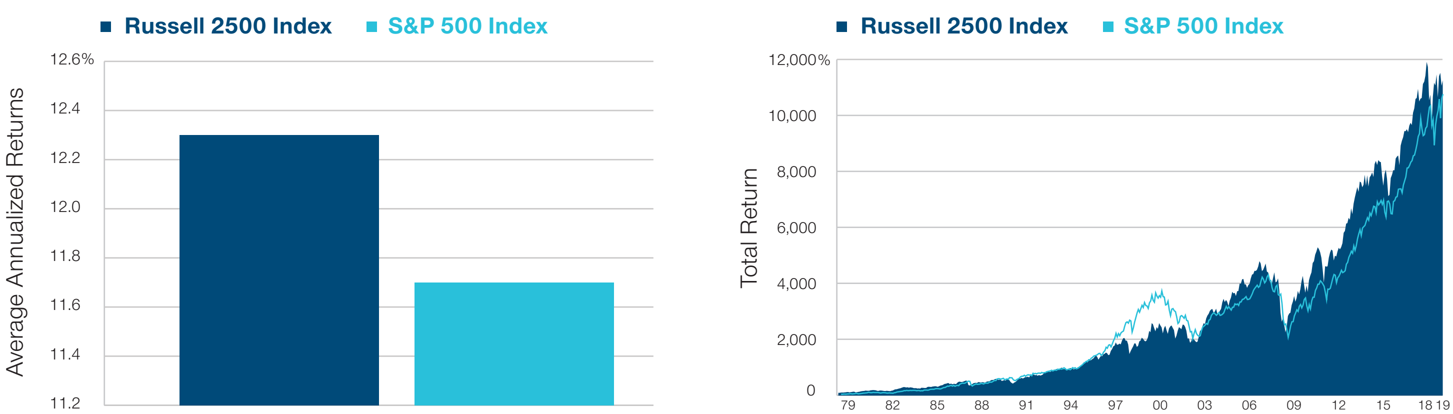
Finally, the U.S. market is a hugely important arena for smaller companies to grow. The size of the domestic economy gives companies plenty of room to scale up and grow into. The United States offers a particularly supportive, pro-business environment where entrepreneurship is venerated, and smaller business success stories are championed, encouraging others to follow suit. ■

All investments are subject to market risk, including the possible loss of principal. Small- and mid-cap stocks have generally been more volatile in price than large-cap stocks.

Figure 1 The Long-Term Outperformance of U.S. Small- and Mid-Cap Stocks Versus Large-Caps

Returns, January 1979 Through September 2019

Growth, January 1979 Through September 2019



Past performance is not a reliable indicator of future results. Sources: Standard & Poor's and Frank Russell Company; T. Rowe Price analysis. **Additional disclosures on page 24.**

TECHNOLOGY STOCKS

"Linchpins" Meeting Innovation Demands for Semiconductors

The cloud, artificial intelligence, and emerging technologies are driving chip needs.

BY **ALAN TU**, MANAGER OF THE GLOBAL TECHNOLOGY FUND; **DOM RIZZO**, INVESTMENT ANALYST, EUROPE; **TONY WANG**, INVESTMENT ANALYST, U.S.; AND **ALISON YIP**, INVESTMENT ANALYST, ASIA

What keeps technology moving forward? And why do we take for granted that the smartphones, computers, and other devices that we rely on will be better in five years?

Of course, many factors are at work, but the remarkable improvement in semiconductors has been central to the digital revolution over the past several decades. Further progress in chip technology will be necessary to support artificial intelligence (AI), 5G mobile communications, autonomous driving, and other technologies.

Nevertheless, investors often overlook the crucial role of chipmakers, as well as the challenges that semiconductor firms face as integrated circuits grow smaller and more complex. In the Global Technology Fund, we focus on a handful of "linchpin" semiconductor companies involved in the most crucial steps of chip production.

We believe a small number of industry leaders offer unique investment opportunities because of the vital role they play in moving technology forward. We also have select exposure to several of their customers—companies that design and sell chips targeted at especially promising markets.

Complex ecosystem

The semiconductor industry is a large, global, and complex ecosystem, in which no firm functions independently. The production of an integrated circuit requires the technologies of separate firms specializing in design, intellectual property, software, equipment, materials, and manufacturing.

A small number of companies serve as linchpins in the design and production process, however. One prominent set is the three companies that stand alone in being able to manufacture leading-edge semiconductors: Intel, South Korea's Samsung Electronics, and Taiwan Semiconductor Manufacturing Corporation (TSMC).

Intel first developed the microprocessor five decades ago and remains the world's dominant manufacturer of central processing units (CPUs), the electronic nerve center of a computer, while also being a leader in the design of many other types of chips. The company is the largest and most self-sufficient in the industry, but challenges to both its design and manufacturing dominance have emerged.

We see more promising opportunities in TSMC, which recently became the first company to cross an important manufacturing threshold. In 2017, TSMC began producing chips at the 7-nanometer (nm) process node—a measure of how finely transistors can be etched onto silicon, and thus how many transistors can fit on a chip of a given size.

Having beaten Intel in the race to the latest-generation manufacturing process, TSMC is seeing very strong demand for its new generation of 7nm chips, especially for use in smartphones and high-performance PCs. Most prominently, TSMC uses its 7nm process to manufacture Apple's new A12 Bionic chips.

Designing the latest generation of chips requires advanced software tools. Silicon Valley's Synopsys is another linchpin company, as the leading maker of electronic design automation (EDA) software, which helps chip designers analyze how the billions of components on a chip will work together. As semiconductors become more complex and shrinking transistors becomes more difficult, EDA software and intellectual property are increasingly important.

> **We believe a small number of industry leaders offer unique investment opportunities because of the vital role they play in moving technology forward.**

Moore's law

Perhaps the largest challenge chipmakers have faced in recent years has come from the slowdown in their ability to shrink chips and increase in processor speed.

According to Moore's law, named after Intel cofounder Gordon Moore, chipmakers could be expected to double the number of transistors on a given area of a chip roughly every two years. For about four decades, the pattern held true.

The exponential effect was extraordinary: According to the company, Intel's 4004 processor contained 2,300 transisters in 1971; by 2010, an Intel core processor held 560 million. Apple's latest A12 Bionic chip has 6.9 billion transistors. (See Figure 1.)

This remarkable progress relied in large part on the development of ultraviolet lithography, which essentially allowed circuits to be "printed" onto silicon wafers. In the past few years, however, the latest generation of lithography technology, deep ultraviolet (DUV) lithography, has reached the physical limits of how finely it can lay down circuitry—akin to trying to use a fat-tipped marker to fill out a small form.

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DUV lithography's limits partially contributed to Intel's missing the two-year doubling cycle predicted by Moore's law. Intel's latest-generation 10nm fabrication process (roughly equivalent to TSMC's 7nm process, but with a different naming convention) is just being introduced this year. This is three years later than originally predicted and Intel's first shrink since 2014—a delay that has caused some to declare the end of Moore's law.

EUV lithography

In our view, Moore's law is not dead. It has just slowed, perhaps only temporarily.

Another linchpin company, semiconductor equipment maker ASML Holding, has developed a solution—extreme ultraviolet (EUV) lithography. Using laser-produced plasma fired in a vacuum to lay down chip designs at extremely high resolutions, ASML's machines are poised to come online in significant numbers in 2020.

This innovation will allow semiconductor makers to produce the latest-generation chips at volume, marking an inflection point.

EUV lithography technology also should allow Intel, TSMC, Samsung, and others to make the requisite leaps to the next few generations of chips. Given the 10 years and €10 billion it took to bring EUV lithography technology to market, ASML likely will remain the industry leader over the next decade.

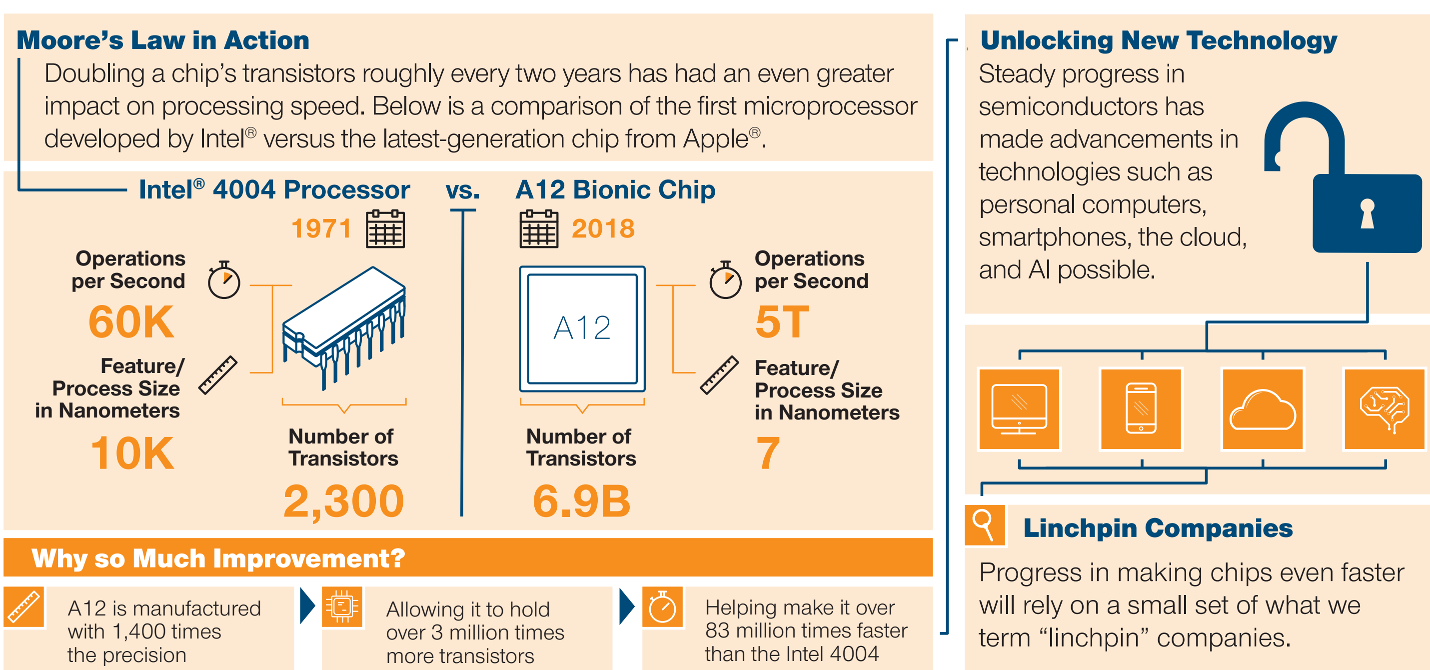
A second part of our investment thesis focuses on the firms that design and market the high-performance chips made possible by the linchpin production companies. In short, we want to own the companies that have the best product portfolio and are in the right place for the next horizons in technology.

New markets

A second part of our investment thesis focuses on the firms that design and market the high-performance chips made possible by the linchpin production companies. In short, we want to own the companies that have the best product portfolio and are in the right place for the next horizons in technology. Our holdings provide the chips necessary to power AI, 5G, and the so-called internet

Figure 1 Smaller, Better, Faster

The Progress in Semiconductors Over the Past Half-Century Has Been Astonishing



Sources: Intel, Apple, History of Computing Project, and T. Rowe Price estimates.

of things (IoT), or the proliferation of internet connectivity into everyday devices.

NXP Semiconductors is a world leader in the design and manufacturing of mixed-signal semiconductors, which enable the conversion of analog signals, such as temperature and light, into digital ones. This technology is particularly important in the automotive market, where sensor-driven chips have proliferated rapidly.

NXP also recently announced a new "ultrawide band" chip for automotive, IoT, and smart home applications. The chip will enable devices to sense the location of nearby objects, allowing doors to open as a trusted car or person approaches, for example.

Microchip Technology is a leader in microcontrollers—essentially, computers shrunk down to a single chip—as well as other types of devices used for specialized purposes. Demand for these chips should balloon as computers find their way into a growing range of devices, from toys to appliances.

As computing processes and data continue to migrate to the cloud, demand is rapidly growing for high-grade memory chips. The explosion of "big data" and the tremendous computing needs of AI are fueling almost insatiable demand.

For this reason, we are willing to wait out the periodic downcycles in the global memory market and focus on the long-term trends that should drive growth. Samsung and Micron Technology have recently been our two favored holdings. The two are the largest and third-largest suppliers, respectively, of dynamic random-access memory, the fastest-growing market segment.

Uncertainties

To be sure, many uncertainties hang over the semiconductor industry.

The slowing global economy has weighed on industrial demand, particularly in the automotive sector. The PC market has generally been shrinking over the past decade as consumers turn to smartphones to access the internet and as cloud-based computing makes regular upgrades less necessary. Demand for mobile chips continues to grow, but at a slower pace. These factors have made us more selective, and we ended September 2019 with an underweight in the sector relative to our benchmark, the MSCI All Country World Index Information Technology Net.

The trade conflict between the United States and China and the specter of a technological "cold war" add another layer of opacity. A ban on U.S. semiconductor firms doing business with major Chinese buyers—as the Trump administration has partially imposed on sales to telecommunications giant Huawei—clearly would disrupt the industry.

For their part, Chinese officials have made developing a homegrown supply of advanced chips a key part of their Made in China 2025 plan, with the aim of producing 70% of the chips it uses domestically, up from roughly 16% currently. Signs are that China's move away from U.S.-based suppliers has already started. Crucially, however, China cannot succeed in building its own high-performance chips without equipment and services provided by the global linchpins.

> **The trade conflict between the United States and China and the specter of a technological "cold war" add another layer of opacity. A ban on U.S. semiconductor firms doing business with major Chinese buyers...clearly would disrupt the industry.**

As some companies fall victim to China's fading demand, others are likely to lose ground to new application-specific designs.

Nvidia has seen rapid growth in recent years, for example, thanks to the use of its graphic-processing units (GPUs), which were originally developed for video gaming but have proved especially adept at handling the algorithms used in machine learning.

However, companies are trying to get around NVIDIA's lock on machine learning technology. For example, Alphabet, Google's parent company, is currently developing tensor processing units (TPUs), a type of application-specific integrated circuit, to power the advanced neural networks that enable machine learning and artificial intelligence.

Such uncertainties are yet another reason to focus on the industry's linchpins, in our view, regardless of whether CPUs, GPUs, or TPUs dominate the future, and whether they are sold by companies in China, the United States, or Europe, we are confident that this small group of global companies will remain vital to their production. ■

As of September 30, 2019, stocks of the following companies mentioned in this article were held by the Global Technology Fund: Samsung Electronics, which made up 3.8% of the fund; Taiwan Semiconductor, 1.4%; Synopsys, 1.6%; ASML Holding, 4.6%; NXP Semiconductors, 2.1%; Microchip Technology, 2.9%; and Micron Technology, 1.1%.

Investing in technology stocks entails specific risks, including the potential for wide variations in performance and unusually wide price swings, both up and down. Technology companies can be affected by, among other things, intense competition, government regulation, earnings disappointments, dependency on patent protection, and rapid obsolescence of products and services due to technological innovations or changing consumer preferences. International investments can be riskier than U.S. investments due to currency exchange rates, differences in market structure and liquidity, as well as specific country, regional, and economic developments.

U.S. EQUITIES

Legacy Firms Alter Strategies to Counter Pervasive Disruption From Tech Changes

Disney, Walmart, and GM are notable incumbents shifting their strategies.

Disruption is increasingly a harsh reality for many once-dominant incumbent, or legacy, companies. Netflix and other streaming content services have upended cable TV. Amazon and other online vendors have challenged brick-and-mortar retailers. Tesla has pushed automakers to innovate with its electric vehicles and the promise of self-driving ones.

But these days, "some of the legacy companies have recognized how this is playing out and are fighting back aggressively," says Rob Sharps, T. Rowe Price head of investments.

Varied efforts to counter disruption abound across a wide range of endeavors. For example, Marriott has launched an Airbnb-type property rental service called Homes & Villas. And Prudential is buying online life insurance startup Assurance IQ.

"Incumbents are going about this in many ways: by developing their own capabilities, acquiring or partnering with innovators, or some combination," says Jason Nogueira, manager of the Global Consumer Fund. "Some are just trying to stem losses to upstarts. A lot of the outcomes are yet to be determined."

That said, three large U.S. incumbents are well into sharp shifts.

Disney streaming

Traditional cable and broadcast TV are dying—and, along with it, the business models of Disney and other incumbent creators of movies and television shows.

TV viewing is down with all age groups, except those age 65 years and older; it's fallen more than 60% for viewers ages 12 to 24 since 2010. As ratings fall, so does ad revenue. And cord cutting means the cable subscriber fees paid to content creators are shrinking.

Disney—and other content creators like Warner Brothers, CBS, and Viacom—traditionally sold their products to such distributors as Comcast or Dish in what's termed the "linear television ecosystem." This provided content companies with great leverage, according to Paul Greene, Communications & Technology Fund manager, as content creators didn't have to build relations with individual consumers and could stuff some channels with syndicated reruns.

"Some are just trying to stem losses to upstarts. A lot of the outcomes are yet to be determined.

But then came Netflix, offering high-quality content globally, with no ads, on demand, and at an affordable price—demonstrating that "TV's future is direct to consumer," Mr. Greene says. With about 150 million global subscribers, Netflix can invest huge sums in creating content—it came out with more than 50 new shows in August 2019 alone.

To counter, Disney has taken the radical step of pulling back its content from distributors and launching an online, direct-to-consumer service, Disney+. It also will offer a separate bundle that includes Disney's majority-owned Hulu and a spin-off of its ESPN subsidiary, ESPN+.

From now on, Star Wars, Marvel, Pixar, and other Disney movie franchises—which collectively accounted for about half of this summer's U.S. box-office receipts—will go to theaters first and then right to Disney+, skipping premium cable channels and DVD sales, Mr. Greene says.

"By offering a limited number of blockbuster movies every year, Disney+ will be more event-driven and likely function well alongside the ongoing vast selection offered by Netflix," he says. "It's a really smart move."

Disney of course is not alone. Many other content creators are taking similar steps, Mr. Greene says, but few—save perhaps Amazon—have the brand and resources to compete with Netflix for general entertainment.

"It's hard to find legacy media companies that are going to be successful at this," he says. "This is a great narrative right now, but let's check back in five years. I believe Netflix is going to keep winning and others will stumble—except for Disney because of its unique intellectual property."

Walmart "click and collect"

Every day brings new evidence of the "retail apocalypse," the devastation of brick-and-mortar stores wrought by Amazon's rocketing growth. But long-dominant Walmart, itself once a disrupter, is fighting back by rapidly developing its online channels.

In turn, even as Walmart's profits have fallen because of its mounting online investments, its stock price—once trading at a low multiple of earnings—has soared. (See Figure 1.) "The market's been willing to pay a higher multiple because it's now giving Walmart credit that it's going to be around and perhaps doing well for a long time," Mr. Nogueira says.

For example, on August 15 of this year, Walmart's stock jumped 6.1% after its second-quarter earnings report showed same-store sales up year over year by about 2.8%, with e-commerce sales jumping 37% over the same period.

Walmart's transition began with the purchase of Jet, an online retailer, and Flipkart, an Indian online vendor—plus heavy investments in its digital capabilities. "In the beginning, the market didn't give Walmart the benefit of the doubt," Mr. Nogueira says. "But now it's demonstrated that it can win, at least in certain segments, such as groceries."

For now, the key to Walmart's grocery gains has been no-cost "click and collect." Customers order groceries online and pick them up at a designated time, with the orders brought to their cars—somewhat like a drive-through lane at a fast-food outlet. Recently, it launched an unlimited grocery home delivery service for $98 a year.

Ultimately, Mr. Nogueira says, "click and collect" is a hybrid solution. The endgame, he says, will be free home delivery of groceries within hours of ordering. "The question is who will get there first," he says.

In this, Walmart faces many competitors, not least Amazon; Target; Costco; and Kroger, the nation's largest supermarket chain, now partnering with British logistics firm Ocado to master delivery.

"Hiring someone to go around a Walmart and pick up grocery items is not cost-effective in the long run, versus having dedicated, fully automated warehouses to fill orders," Mr. Nogueira says. "Beyond that, Amazon, with its much greater density of delivery routes, may have a long-term advantage as well."

General Motors's EVs

In the future, cars will be electric-powered, self-driving, and perhaps available on demand rather than individually owned. But no one knows when that future will arrive. Tesla, while not profitable, is hurtling forward and pushing General Motors (GM), more than 110 years old, to undergo a historic transition faster than once anticipated.

GM has announced that over the next few years it will introduce about 20 new electric vehicles (EVs). "GM has decided that, in the next 10 to 15 years, it's all about electric vehicles," says Joel Grant, a T. Rowe Price auto analyst.

After more than a century of gas-powered engines, this profound change means all car components—save for the chassis and interior—are changing too, Mr. Grant says. GM and other original equipment manufacturers (OEMs) "are rethinking cars from the ground up," he says.

While GM's pickup and SUV franchises remain strong, Mr. Grant says, "it essentially decided EVs are going to be cheaper, better cars, and we must embrace this and be really good at it. This is risky because no company is making money on EVs, and most consumers are unwilling to pay the EVs' premium. But that premium is expected to fall rapidly with greater production scale—to where the costs are relatively the same as combustion vehicles."

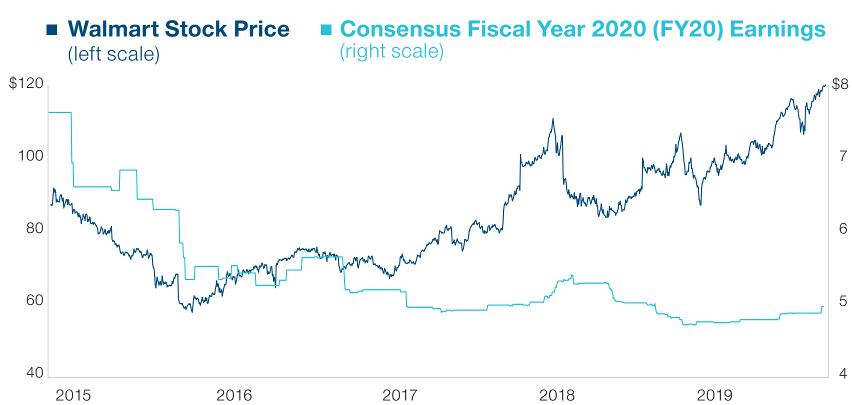
Beyond EVs, GM also has jumped into developing self-driving cars by buying a startup, now called GM Cruise LLC, as a separate entity to attract talent and outside capital. In the meantime, GM separately has come out with new technology on certain Cadillacs, called "Super Cruise," which GM says is "the first true hands-free driving assistance feature" for certain types of highways, but which Mr. Grant says is like Tesla's autopilot feature.

As with Disney and Walmart, GM is not alone in responding to disruption. Volkswagen and Daimler similarly are embracing EVs, for example. "There's still skepticism about EVs' profitability." Mr. Grant says. "So the question over the next couple years is how much profits from trucks and SUVs can sustain manufacturers transitioning to EVs." ■

All investments are subject to market risk, including the possible loss of principal. A fund's concentration in stocks within certain sectors may make its share price more volatile than that of more diversified funds. Among the stocks mentioned in this article, as of September 30, 2019, Amazon.com made up 13.1% of the Communications & Technology Fund; Netflix, 3.5%; Walt Disney Co., 0.3%; and Comcast, 4.3%. As of the same date, Amazon.com made up 9.7% of the Global Consumer Fund; Netflix, 0.3%; and Kroger, 0.5%.

Figure 1 Walmart's Future Earnings Estimates Fall, Stock Price Rises

January 2015 Through September 2019



Past performance cannot guarantee future results. Source: FactSet. Copyright 2019 FactSet. All Rights Reserved. factset.com

FIXED INCOME

Going Global Potentially Can Help High-Income Bond Investors Diversify

Global high yield bonds may provide improved returns with less risk.

BY **MARK VASELKIV**, CO-MANAGER, GLOBAL HIGH YIELD FUND; **MICHAEL DELLA VEDOVA**, CO-PORTFOLIO MANAGER, GLOBAL HIGH YIELD FUND; **MICHAEL CONNELLY**, ASSOCIATE PORTFOLIO MANAGER, GLOBAL HIGH INCOME STRATEGIES; AND **SAMY MUADDI**, PORTFOLIO MANAGER, EMERGING MARKETS CORPORATE BOND FUND

Fixed income investors may want to focus on higher-yielding, sub-investment-grade strategies as global central banks shift back into monetary easing, pushing yields on high-quality investment-grade bonds to very low—or negative—levels.

In this environment, the diversification benefits of a high yield portfolio that invests across a truly global opportunity set may prove especially important.

A global high yield strategy should seek to take advantage of unsynchronized credit cycles, relative value disparities, and geopolitical events that create pricing dislocations. Also, the diversification benefits of this type of portfolio may deliver results with less risk than a more traditional, U.S.-focused high yield strategy.

Risk and return data for the five years ended June 30, 2019, support this claim. Over that five-year period, the ICE BofA Merrill Lynch Global High Yield Index (USD Hedged) (BAML Global HY)—the primary benchmark for T. Rowe Price's global high income strategies and a suitable proxy for the global high yield opportunity set—outperformed the more traditional ICE BofA Merrill Lynch U.S. High Yield Index (BAML U.S. HY) with lower volatility as measured by the standard deviation of returns.*

In addition, a global high yield allocation, represented by the BAML Global HY, has held up meaningfully better in high yield market sell-offs while sometimes outperforming the U.S. high yield market in up markets. In the 10 years ended in June 2019, the BAML Global HY outperformed in negative markets and also performed slightly better in positive environments for high yield.**

International flavor

A decade ago, the high yield market consisted primarily of North American issuers. Today it is much broader, with an increasingly international flavor coming from European and emerging markets (EM).

This is largely due to an increase in issuance outside the United States, while the U.S. high yield market has modestly shrunk—trends we expect to continue. The European high yield market has more than quadrupled in size since 2008 and is now almost one-third the size of the U.S. high yield market. The European market also has much less exposure to energy-related sectors, which can be an advantage when commodity prices are falling.

Like European high yield, the EM high yield corporate segment has experienced tremendous growth and now stands close to $1 trillion. Companies in emerging markets have primarily used the corporate bond market to refinance existing loans at more favorable terms. The balance sheets of EM corporations are often sturdier than those of their developed market peers, with lower leverage and higher cash-to-debt ratios.

Both the European and EM high yield markets are less mature and less followed by investors than the U.S. market, making them more inefficient and more volatile and presenting more opportunities for skilled active managers to take advantage of pricing dislocations and attractive relative value.

Because macroeconomic and political developments, along with environmental, social, and governance (ESG) concerns, can have a large impact on the performance of international bonds, we supplement our fundamental credit analysis with top-down insights from our team of sovereign and ESG analysts.

Their input is essential for developing regional allocations and can help sidestep country-specific issues, such as the turbulence in Turkey in the first half of 2018.

European opportunities

In our view, Altice is a compelling European high yield credit story that illustrates the benefits of detailed credit analysis and a flexible approach to portfolio construction. The multinational cable and telecommunication services company is one of the largest issuers of below investment-grade debt through various entities in Europe.

Weak earnings from Altice's French operations in late 2017 weighed on its bonds and convinced the company's founder, Patrick Drahi, to step in as CEO of the company's French entity. At that time, we sold out of positions in Altice's French complex and bought secured notes of Altice's other operating company (Altice Internatonal), where we saw better value.

As Altice progressed with selling assets in 2018, we moved back into obligations of its French entity based on the potential for consolidation in European telecom markets. These positions have performed well, demonstrating the benefits of applying fundamental credit analysis with a long-term perspective.

EM opportunities

The idiosyncratic nature of the global high yield opportunity set can provide fertile opportunities to generate returns above market benchmarks.

For example, we have a favorable view of Minerva, a Brazilian beef producer with operations throughout South America. The company's bonds rallied in 2018 after it acquired competitor National Beef, making Minerva the second-largest beef producer in the world.

Minerva deleveraged later in 2018 by spinning off parts of its South American operations and using the proceeds to pay down debt. We expect global beef demand to continue to rise, which, combined with the company's low leverage and attractive yield, supports our positive outlook on Minerva's debt.

So far, a global approach to high yield investing has resulted in higher returns with lower risk, measured in terms of standard deviation. However, as with all high yield investing, it is not for the faint of heart. Due to the opportunity set's exposure to EMs with less developed political and economic systems, geopolitical developments and ESG concerns warrant caution.

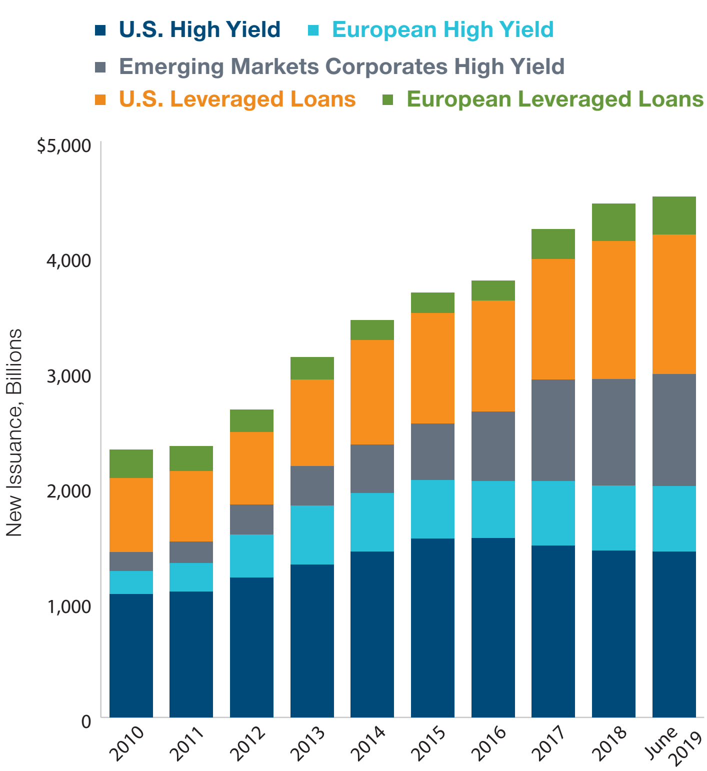
In addition, market liquidity can be particularly challenging in EM debt, though liquidity has improved as the market has grown. Volatility and economic uncertainty also can create rewarding investment opportunities. Overall, we believe that the enhanced diversification of a global high yield strategy can help overcome periodic bouts of changing market sentiment toward particular countries or regions.

Bank loans

Bank loans are another segment of the global high yield market that potentially can be a useful source of diversification from U.S. high yield bonds.

Figure 1 Global High Income Market Growth

Issuance of Bonds, 2010—June 2019



Sources: All data from Credit Suisse except for emerging market corporates high yield bond issuance, sourced from J.P. Morgan Chase. **Additional disclosures on page 24.**

Loans can potentially present opportunities to take advantage of valuation differences in an issuer's capital structure or to gain exposure to attractive loan-only issuers. Loans often are senior to bonds in the capital structure, giving them repayment priority in the event of issuer bankruptcy.

However, given deteriorating loan underwriting standards, solid fundamental analysis is just as important for bank loans as it is for high yield bonds.

Core allocation

As the world's credit markets continue to evolve, we believe that a global high yield portfolio should be a core allocation so that investors can take full advantage of the entire sub-investment-grade universe.

An actively managed global high income portfolio can benefit from exposure to divergent credit cycles, relative value disparities, and performance variations between regions, while not necessarily taking on more risk than a U.S.-centric high yield strategy.

There also is potential to profit from valuation dislocations driven by the ever-present economic and political uncertainties across the global landscape. And it's important to note that our global high income strategy hedges any non-U.S. dollar holdings back to dollars, allowing our credit selection to be the main driver of returns. ■

As of September 30, 2019, Altice made up 3.0% of the Global High Income Fund and Minerva made up 0.9%. At the same time, Minerva made up 0.9% of the Emerging Markets Corporate Bond Fund.

From July 2015 through June 2019, the ICE BofA Merrill Lynch Global High Yield Index (USD Hedged) had an annual average return of 5.13% with a standard deviation of 5.18%—versus the ICE BofA Merrill Lynch U.S. High Yield Index, which returned less (an annual average of 4.7%) with more volatility (a standard deviation of 5.6%).* ***Additional disclosures on page 24.*

From July 2009 through June 2019, the ICE BofA Merrill Lynch Global High Yield Index (USD Hedged) had 95.0% of the ICE BofA Merrill Lynch U.S. High Yield Index's losses in down markets and 101.7% of its return in up markets.* ***Additional disclosures on page 24.

Fixed income securities are subject to credit risk, liquidity risk, call risk, and interest rate risk. As interest rates rise, bond prices generally fall. Investments in high yield bonds involve greater risk of price volatility, illiquidity, and default than higher-rated debt. International investments can be riskier than U.S. investments due to the adverse effects of currency exchange rates, differences in market structure and liquidity, as well as specific country, regional, and economic developments. These risks are generally greater for investments in emerging markets.

LAST WORD

Women Significantly Lag Male Peers When It Comes to Retirement Savings

Survey finds domino effect with lower earnings contributing to less savings.

Women—in both the baby boomer and millennial generations—report much lower savings balances in their workplace 401(k) retirement accounts, a T. Rowe Price national survey has found.

The survey found that baby boomer women have a median 401(k) savings balance of less than half that of men, $59,000 versus $138,000 for baby boomer men. Millennial women reported a median 401(k) balance that is $30,000 less than their male counterparts.

At the root of women's struggle to save for retirement is a significant income gap: Women's median annual incomes are almost $27,000 less than that of men, the survey found.

"The gender income gap is contributing to a domino effect on women's finances, with lower earnings influencing current financial decisions that ultimately impact their retirement savings and their financial future," says Judith Ward, CFP®, a T. Rowe Price senior financial planner.

Other survey findings:

- Women tend to defer income to their 401(k) accounts at a lower rate than men.
- More women than men report they are not contributing as much as financial experts recommend (which generally is 15% of their salaries, including their employer's matching contribution) because they already are saving as much as they can afford.
- Women also are less likely than men to be saving for retirement using other vehicles.

Retirement

As a result, women said in the survey that they are more likely than men to believe they will have to reduce their standard of living in retirement, with 46% of them reporting that sentiment versus 37% of men. And almost half of men said they believe they will live well or better in retirement, compared with only one-third of women.

An additional factor impacting women's financial well-being in retirement is that significantly more women than men are divorced or widowed in retirement.

Within the first five to 10 years of retirement, 33% of women reported being widowed or divorced versus 17% of men. After 11 years of retirement, a greater percentage of women were widowed or divorced (45%), while the percentage of men barely changed to 18%.

The survey's results underscore that, "As women, we need to be proactive when it comes to money and saving," Ms. Ward says, "and we need to seek guidance and education to put ourselves on the path to successful financial futures."

Judith Ward

The findings of this survey are based on a national study of 3,005 adults age 21 and older who have never retired and are currently contributing to a 401(k) plan or are eligible to contribute and have an account balance of at least $1,000, and of 1,005 current retirees who have a Rollover IRA or left-in-plan 401(k) balance. NMG Consulting conducted the online survey for T. Rowe Price from July 24, 2018, to August 14, 2018.

> **As women, we need to be proactive when it comes to money and saving, and we need to seek guidance and education to put ourselves on the path to successful financial futures.**

Figure 1 Working Women Often Report More Difficulty Saving

Survey Responses Among Those Saving Less Than Recommended

66%

Of the women say "I am contributing all I can afford" to retirement savings versus 50% of comparable men.

31%

Of the women say "I'm paying back debt other than student loans" versus 22% of comparable men.

10%

Of the women say, "I'm saving for retirement through other vehicles" than their workplace savings plan versus 32% of comparable men.

Source: Online survey conducted for T. Rowe Price from July 24, 2018, to August 14, 2018.

Central Banks Respond to Slowing Growth, Trade Uncertainty

September 30, 2019

KEY POINTS

- **Federal Reserve reduced rates twice; European Central Bank cut rates and restarted monthly bond purchases.**
- **Government bond yields tumbled in August as U.S.-China trade tensions weighed on world equity markets.**
- **Quarter ended with optimism about trade negotiations resuming in October.**

EQUITY REVIEW

Non-U.S. Markets Decline; Large-Caps in U.S. Outperform

In the U.S., higher-yielding real estate and utilities stocks did best. Consumer staples stocks also posted strong returns. Health care stocks declined, but energy shares fared worst despite a mid-September attack on Saudi oil facilities that led to a short-lived oil price spike.

Developed European stock markets were mixed, with German shares falling 4% amid recession fears. UK shares and the British pound struggled amid continued Brexit uncertainty. Most developed Asian markets fell, especially Hong Kong, where shares plunged 12%—even though the city's chief executive withdrew a controversial extradition bill—as demonstrators continued to demand other changes from the government. Japanese shares rose slightly more than 3%.

In emerging Asia, most markets declined, but shares in Taiwan gained about 6%. Central European markets sagged, but Turkish shares soared close to 12%, helped by declining inflation and deep interest rate cuts. Latin American markets were broadly negative, especially Argentina.

Figure 1 U.S. and International Stock Market Performance

Total Returns for Periods Ended September 30, 2019

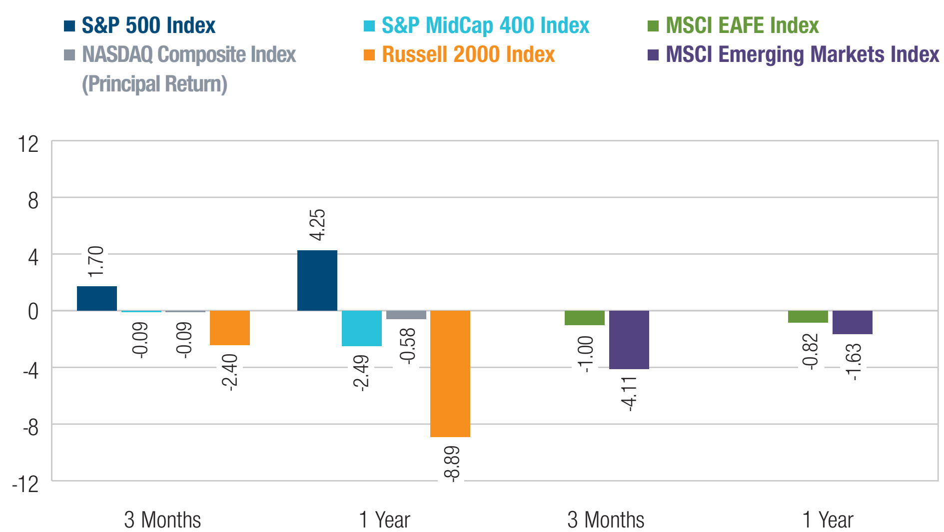
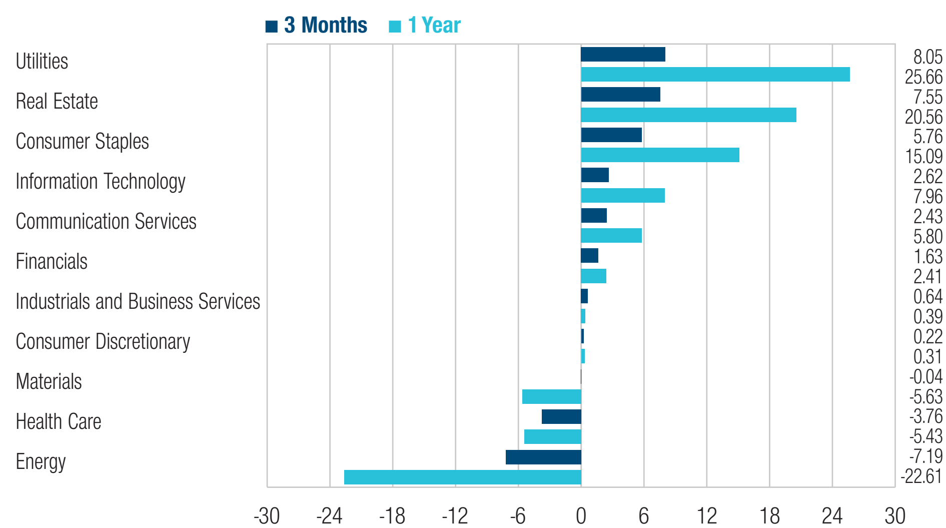


Figure 2 Performance of Wilshire 5000 Series

Total Returns for Periods Ended September 30, 2019



Ranked by highest to lowest quarterly returns.

FIXED INCOME REVIEW

Treasuries Rally; Stronger U.S. Dollar Limits Overseas Bond Returns

The Federal Reserve reduced short-term interest rates twice. Treasury yields fell across all maturities, but longer-term rates generally fell more than shorter-term yields, resulting in a partially inverted Treasury yield curve at times. In the investment-grade universe, long-term Treasuries did best, but corporate bonds also posted good returns. Mortgage- and asset-backed securities lagged. Municipal bonds rose but underperformed taxable bonds. High yield bonds posted decent returns but lagged higher-quality issues.

Bonds in developed non-U.S. countries produced modest negative returns in U.S. dollar terms. Longer-term interest rates in many countries declined, which lifted bond prices, but major currencies fell versus the dollar, reducing returns to U.S. investors. In September, the European Central Bank (ECB) reduced its key short-term interest rate and relaunched its quantitative easing program, saying it would purchase €20 billion of securities every month beginning November 1. In Japan, the central bank kept short-term interest rates at -0.1%.

Emerging markets bonds were mixed, with local currency bonds underperforming amid broad dollar strength. Most developing market currencies fell during the quarter, but the Turkish lira rose more than 2% versus the dollar.

Figure 3 U.S. and International Bond Market Performance

Total Returns for Periods Ended September 30, 2019

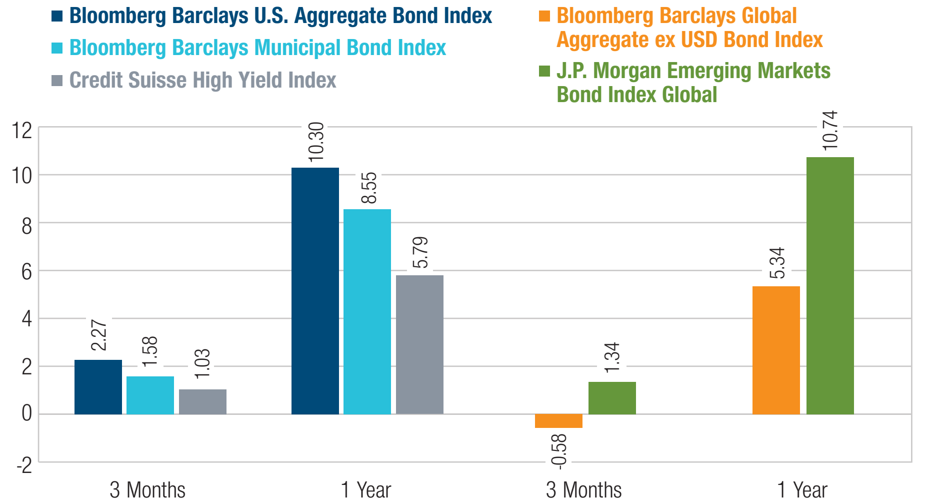
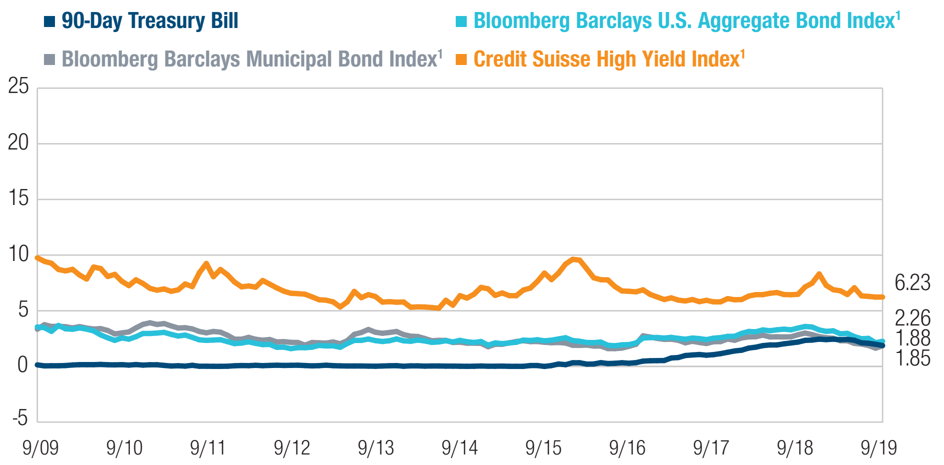


Figure 4 Trends in Interest Rates

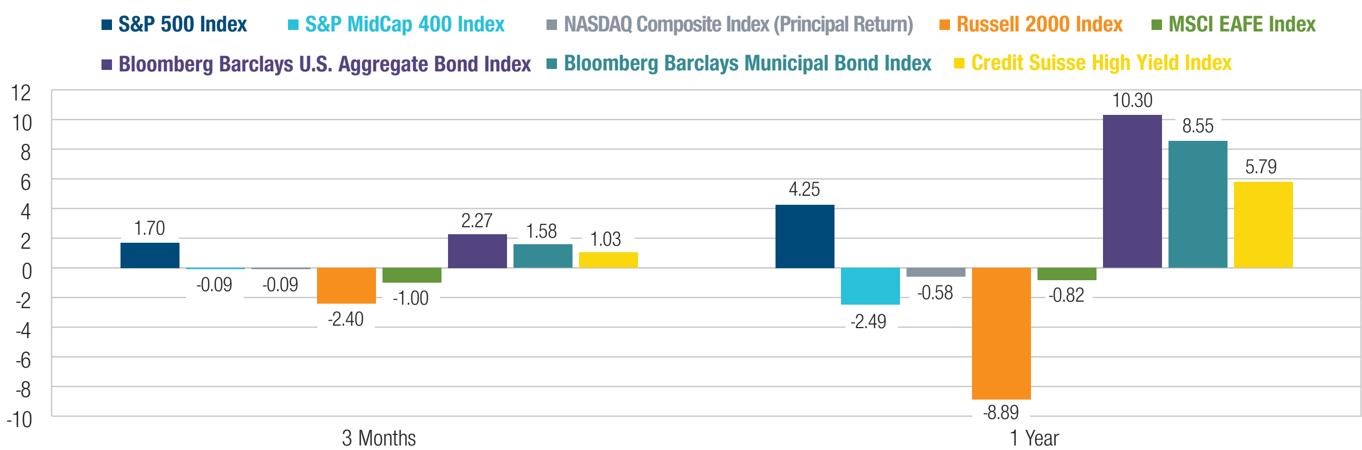
As of September 30, 2019



[1]Yield-to-worst

Figure 5 Stock and Bond Market Performance

Total Returns for Periods Ended September 30, 2019



Unlike stocks, U.S. government bonds are guaranteed as to the timely payment of interest and principal.

The performance information presented here includes changes in principal value, reinvested dividends, and capital gain distributions. *Current performance may be higher or lower than the quoted past performance, which cannot guarantee future results. Share price, principal value, yield, and return will vary, and you may have a gain or loss when you sell your shares. To obtain the most recent month-end performance, call us at 1-800-225-5132 or visit our website. Call 1-800-225-5132 to request a prospectus or summary prospectus; each includes investment objectives, risks, fees, expenses, and other information that you should read and consider carefully before investing.* Funds are placed in alphabetical order in each category. To learn more about each fund's objective and risk/reward potential, visit **troweprice.com/mutualfunds**.

Figure 6 Stock Funds

Domestic	Ticker symbol	3 months	1 year	3 years	5 years	10 years or since inception[1]	Inception date	Expense ratio	Expense ratio as of date
Blue Chip Growth	TRBCX	-1.64%	1.97%	18.16%	14.15%	15.79%	6/30/93	**0.70%**	12/31/2018
Capital Appreciation[2]	PRWCX	0.58	10.64	11.14	10.39	11.78	6/30/86	**0.72**	12/31/2018
Communications & Technology[3]	PRMTX	-1.94	7.00	15.80	14.25	16.96	10/13/93	**0.78**	12/31/2018
Diversified Mid-Cap Growth	PRDMX	-0.66	8.72	15.76	12.47	14.29	12/31/03	**0.83**	12/31/2018
Dividend Growth	PRDGX	2.45	11.56	14.01	12.01	13.18	12/30/92	**0.64**	12/31/2018
Equity Income	PRFDX	2.24	3.74	10.20	7.42	10.58	10/31/85	**0.64**	12/31/2018
Equity Index 500	PREIX	1.63	4.04	13.15	10.58	12.96	3/30/90	**0.20**	12/31/2018
Extended Equity Market Index	PEXMX	-1.40	-3.77	9.84	8.40	12.36	1/30/98	**0.35**	12/31/2018
Financial Services	PRISX	3.79	5.70	14.54	10.14	10.84	9/30/96	**0.87**	12/31/2018
Growth & Income	PRGIX	1.22	6.63	12.31	10.86	12.51	12/21/82	**0.65**	12/31/2018
Growth Stock	PRGFX	-1.18	2.06	16.31	13.01	14.94	4/11/50	**0.66**	12/31/2018
Health Sciences	PRHSX	-7.66	-8.64	10.19	9.62	17.79	12/29/95	**0.77**	12/31/2018
Mid-Cap Growth[2]	RPMGX	-0.73	7.14	14.88	13.17	14.87	6/30/92	**0.75**	12/31/2018
Mid-Cap Value[2]	TRMCX	-1.13	-5.20	5.86	6.61	10.42	6/28/96	**0.78**	12/31/2018
New America Growth	PRWAX	0.08	4.46	18.39	13.88	14.75	9/30/85	**0.79**	12/31/2018
New Era	PRNEX	-4.86	-12.48	0.97	-2.40	2.20	1/20/69	**0.69**	12/31/2018
New Horizons[2]	PRNHX	-3.13	4.83	19.71	15.81	18.37	6/3/60	**0.77**	12/31/2018
QM U.S. Small-Cap Growth Equity	PRDSX	-1.04	-1.41	12.98	11.07	14.94	6/30/97	**0.80**	12/31/2018
QM U.S. Small & Mid-Cap Core Equity	TQSMX	0.13	-0.55	10.25	–	13.26	2/26/16	**1.22**	12/31/2018
QM U.S. Value Equity	TQMVX	1.53	-1.31	8.95	–	11.33	2/26/16	**1.95**	12/31/2018
Real Assets	PRAFX	-1.39	1.00	2.85	1.85	3.23	7/28/10	**0.81**	12/31/2018
Real Estate	TRREX	5.56	11.79	4.57	8.13	11.91	10/31/97	**0.78**	12/31/2018
Science & Technology	PRSCX	2.28	10.10	16.90	15.82	15.61	9/30/87	**0.79**	12/31/2018
Small-Cap Stock[2]	OTCFX	0.10	4.21	14.21	11.69	14.41	6/1/56	**0.89**	12/31/2018
Small-Cap Value	PRSVX	0.30	-4.10	10.17	9.27	11.56	6/30/88	**0.85**	12/31/2018
Tax-Efficient Equity[4]	PREFX						12/29/00	**0.81**	2/28/2019
Returns before taxes		-0.81	5.99	16.83	13.13	14.40			
Returns after taxes on distributions		–	5.67	16.41	12.63	14.07			
Returns after taxes on distributions and sale of fund shares		–	3.71	13.19	10.40	12.10			
Total Equity Market Index	POMIX	1.06	2.86	12.56	10.24	12.89	1/30/98	**0.30**	12/31/2018
U.S. Equity Research[5]	PRCOX	1.49	4.48	13.80	11.19	13.04	11/30/94	**0.54**	6/1/2019
U.S. Large-Cap Core	TRULX	1.26	6.53	12.18	11.23	13.10	6/26/09	**0.76**	12/31/2018
Value	TRVLX	2.64	8.15	10.73	8.23	12.12	9/30/94	**0.79**	12/31/2018

The expense ratios shown are the gross expense ratios as of the most recent prospectus. Please see the prospectus for additional information.

[1] If a fund has less than 10 years of performance history, its since-inception return is shown.

[2] Closed to new investors except for a direct rollover from a retirement plan into a T. Rowe Price IRA invested in this fund.

[3] Formerly the T. Rowe Price Media & Telecommunications Fund.

[4] The returns presented reflect the return before taxes; the return after taxes on dividends and capital gain distributions; and the return after taxes on dividends, capital gain distributions, and gains (or losses) from redemptions of shares held for 1-, 5-, and 10-year periods, as applicable. After-tax returns reflect the highest federal income tax rate but exclude state and local taxes. The after-tax returns reflect the rates applicable to ordinary and qualified dividends and capital gains effective in 2003. During periods when a fund incurs a loss, the post-liquidation after-tax return may exceed the fund's other returns because the loss generates a tax benefit that is factored into the result. An investor's actual after-tax return will likely differ from those shown and depend on his or her tax situation. Past before- and after-tax returns do not necessarily indicate future performance.

[5] Formerly the T. Rowe Price Capital Opportunity Fund.

Figure 7 Benchmarks

Domestic Stock	3 months	1 year	3 years	5 years	10 years
S&P 500 Index	1.70%	4.25%	13.39%	10.84%	13.24%
S&P MidCap 400 Index	-0.09	-2.49	9.38	8.88	12.56
NASDAQ Composite Index (Principal Return)	-0.09	-0.58	14.62	12.23	14.19
Russell 2000 Index	-2.40	-8.89	8.23	8.19	11.19
Lipper Indexes					
Large-Cap Core Funds	1.17	2.80	12.28	9.56	11.82
Equity Income Funds	2.58	5.87	10.66	8.26	11.10
Small-Cap Core Funds	-0.99	-6.21	8.70	8.12	11.03

Figure 8 Stock Funds

International/Global	Ticker symbol	3 months	1 year	3 years	5 years	10 years or since inception[1]	Inception date	Expense ratio	Expense ratio as of date
Africa & Middle East	TRAMX	-8.45%	-1.74%	5.80%	-1.89%	3.97%	9/4/07	**1.52%**	10/31/2018
Asia Opportunities	TRAOX	-0.68	5.97	9.32	8.15	8.31	5/21/14	**1.32**	10/31/2018
Emerging Europe	TREMX	-4.24	5.44	7.37	0.15	0.59	8/31/00	**1.62**	10/31/2018
Emerging Markets Discovery Stock[6]	PRIJX	-8.03	-1.16	7.56	–	8.62	9/14/15	**1.90**	10/31/2018
Emerging Markets Stock[2]	PRMSX	-2.70	5.05	7.91	5.37	4.92	3/31/95	**1.22**	10/31/2018
European Stock	PRESX	-1.55	1.66	6.29	2.79	5.99	2/28/90	**0.97**	10/31/2018
Global Consumer	PGLOX	-0.47	1.59	7.90	–	9.31	6/27/16	**2.37**	12/31/2018
Global Growth Stock	RPGEX	-1.41	5.64	13.00	9.60	10.22	10/27/08	**0.92**	3/1/2019
Global Industrials	RPGIX	-1.34	0.67	9.76	7.80	6.71	10/24/13	**1.99**	12/31/2018
Global Real Estate	TRGRX	3.80	11.22	4.05	5.80	8.57	10/27/08	**1.12**	12/31/2018
Global Stock	PRGSX	-0.96	3.29	14.49	11.98	11.67	12/29/95	**0.82**	10/31/2018
Global Technology[2]	PRGTX	-3.02	8.65	15.25	16.54	18.60	9/29/00	**0.91**	12/31/2018
International Disciplined Equity[7]	PRCNX	1.28	2.04	5.89	4.24	3.28	8/22/14	**1.22**	10/31/2018
International Discovery[2]	PRIDX	-2.61	-5.02	7.07	7.24	9.08	12/30/88	**1.20**	10/31/2018
International Equity Index	PIEQX	-1.18	-2.39	6.01	3.13	4.72	11/30/00	**0.46**	10/31/2018
International Stock	PRITX	-1.03	1.38	6.89	4.97	6.28	5/9/80	**0.81**	10/31/2018
International Value Equity[8]	TRIGX	-1.05	-5.66	1.75	0.13	3.58	12/21/98	**0.81**	10/31/2018
Japan	PRJPX	1.94	-6.32	8.39	9.93	8.74	12/30/91	**0.96**	10/31/2018
Latin America	PRLAX	-5.40	16.52	7.55	1.55	0.13	12/29/93	**1.32**	10/31/2018
New Asia	PRASX	-0.34	5.54	7.77	5.35	7.27	9/28/90	**0.93**	10/31/2018
Overseas Stock	TROSX	0.00	-3.29	6.26	3.28	5.49	12/29/06	**0.81**	10/31/2018
QM Global Equity	TQGEX	0.08	3.01	9.76	–	9.95	4/15/16	**2.24**	12/31/2018

Figure 9 Benchmarks

International/Global Stock	3 months	1 year	3 years	5 years	10 years
MSCI EAFE Index	-1.00%	-0.82%	7.01%	3.77%	5.39%
Lipper Averages					
Emerging Markets Funds	-3.47	0.57	5.27	1.84	3.51
International Large-Cap Core Funds	-1.43	-2.83	5.24	1.42	3.82
International Large-Cap Growth Funds	-1.33	1.25	6.86	4.01	5.19
International Small/Mid-Cap Growth Funds	-1.96	-6.09	5.54	4.86	7.81

[6] Formerly the T. Rowe Price Emerging Markets Value Stock Fund.

[7] Formerly the T. Rowe Price International Concentrated Equity Fund.

[8] Formerly the T. Rowe Price International Growth & Income Fund.

All mutual funds are subject to market risk, including possible loss of principal. Funds that invest overseas generally carry more risk than funds that invest strictly in U.S. assets due to factors such as currency risk, geographic risk, and emerging markets risk. Funds that invest in fixed income securities are subject to credit risk and liquidity risk, with high yield securities having a greater risk of default than higher-quality securities. Such funds are also subject to the risk that a rise in interest rates will cause the price of a fixed rate debt security to fall. During periods of extremely low or negative interest rates, some funds may not be able to maintain a positive yield.

MSCI index returns are shown with gross dividends reinvested.

Figure 10 Bond Funds

Domestic Tax-Free[9]	Ticker symbol	3 months	1 year	3 years	5 years	10 years or since inception[1]	Inception date	Expense ratio	Expense ratio as of date
California Tax-Free Bond	PRXCX	1.77%	8.04%	2.79%	3.67%	4.54%	9/15/86	**0.54%**	2/28/2019
Georgia Tax-Free Bond	GTFBX	1.68	7.90	2.56	3.29	3.90	3/31/93	**0.59**	2/28/2019
Intermediate Tax-Free High Yield	PRIHX	1.48	7.09	3.23	3.87	3.98	7/24/14	**1.08**	7/1/2019
Maryland Short-Term Tax-Free Bond	PRMDX	0.33	3.11	1.02	0.89	0.91	1/29/93	**0.65**	2/28/2019
Maryland Tax-Free Bond	MDXBX	1.62	7.73	2.94	3.51	4.14	3/31/87	**0.48**	2/28/2019
New Jersey Tax-Free Bond	NJTFX	1.52	7.63	2.96	3.61	4.20	4/30/91	**0.58**	2/28/2019
New York Tax-Free Bond	PRNYX	1.66	7.54	2.68	3.46	4.07	8/28/86	**0.54**	2/28/2019
Summit Municipal Income	PRINX	1.79	8.36	3.10	3.82	4.65	10/29/93	**0.53**	3/1/2019
Summit Municipal Intermediate	PRSMX	1.19	7.48	2.50	2.92	3.51	10/29/93	**0.52**	3/1/2019
Tax-Free High Yield	PRFHX	2.12	8.51	3.80	4.77	5.86	3/1/85	**0.72**	7/1/2019
Tax-Free Income	PRTAX	1.70	7.88	2.92	3.49	4.19	10/26/76	**0.54**	2/28/2019
Tax-Free Short-Intermediate	PRFSX	0.41	4.22	1.41	1.38	1.84	12/23/83	**0.52**	2/28/2019
Virginia Tax-Free Bond	PRVAX	1.69	7.48	2.77	3.42	3.96	4/30/91	**0.51**	2/28/2019

Figure 11 Bond Funds

Domestic Taxable	Ticker symbol	3 months	1 year	3 years	5 years	10 years or since inception[1]	Inception date	Expense ratio	Expense ratio as of date
Corporate Income	PRPIX	3.55%	13.03%	3.97%	4.32%	5.65%	10/31/95	**0.61%**	5/31/2019
Credit Opportunities	PRCPX	1.75	7.42	6.47	3.91	3.26	4/29/14	**1.28**	5/31/2019
Floating Rate	PRFRX	1.23	3.63	3.88	3.75	3.81	7/29/11	**0.76**	5/31/2019
GNMA[10]	PRGMX	1.30	6.32	1.79	2.07	2.82	11/26/85	**0.59**	5/31/2019
High Yield[2]	PRHYX	1.81	7.43	5.89	4.89	7.52	12/31/84	**0.72**	5/31/2019
Inflation Protected Bond	PRIPX	1.46	7.48	2.05	2.19	3.13	10/31/02	**0.57**	5/31/2019
Limited Duration Inflation Focused Bond	TRBFX	0.21	3.78	1.44	1.02	1.17	9/29/06	**0.48**	5/31/2019
New Income	PRCIX	2.08	9.83	2.88	3.18	3.81	8/31/73	**0.54**	5/31/2019
Short-Term Bond	PRWBX	0.63	4.36	1.98	1.69	1.77	3/2/84	**0.44**	5/31/2019
Total Return	PTTFX	2.41	10.62	–	–	4.81	11/15/16	**1.20**	5/31/2019
Ultra Short-Term Bond	TRBUX	0.67	3.31	2.33	1.81	1.41	12/3/12	**0.42**	10/1/2019
U.S. Bond Enhanced Index	PBDIX	2.34	10.40	2.95	3.38	3.72	11/30/00	**0.30**	10/31/2018
U.S. High Yield[11]	TUHYX	2.22	6.16	–	–	5.03	5/19/17	**0.93**	5/31/2019
U.S. Treasury Intermediate[10]	PRTIX	1.66	10.36	1.80	2.55	3.00	9/29/89	**0.50**	10/1/2019
U.S. Treasury Long-Term[10]	PRULX	7.93	24.33	3.71	6.18	6.29	9/29/89	**0.44**	5/31/2019

Figure 12 Benchmarks

Bond	3 months	1 year	3 years	5 years	10 years
Bloomberg Barclays U.S. Aggregate Bond Index	2.27%	10.30%	2.92%	3.38%	3.75%
Bloomberg Barclays Municipal Bond Index	1.58	8.55	3.19	3.66	4.16
Credit Suisse High Yield Index	1.03	5.79	5.96	5.17	7.74
Lipper Averages					
Short Investment Grade Debt Funds	0.72	4.26	2.11	1.75	2.14
Core Bond Funds	2.08	9.49	2.80	3.06	3.87
GNMA Funds	1.30	6.90	1.65	1.95	2.72
High Yield Funds	1.17	5.50	5.25	4.29	6.82
Short Municipal Debt Funds	0.41	2.90	1.29	1.04	1.17
Intermediate Municipal Debt Funds	1.22	7.05	2.34	2.68	3.24
General & Insured Municipal Debt Funds	1.72	8.20	3.00	3.48	4.09

[9] Some income from the tax-free funds may be subject to state and local taxes and the federal alternative minimum tax.

[10] The market value of shares is not guaranteed by the U.S. government.

[11] The T. Rowe Price U.S. High Yield Fund (Fund) commenced operations on May 19, 2017. At that time, the Fund received all of the assets and liabilities of the Henderson High Yield Opportunities Fund (the Predecessor Fund) and adopted its performance and accounting history. The Fund and the Predecessor Fund have substantially similar investment objectives and strategies. The Predecessor Fund was managed by the same portfolio manager as the Fund.

Figure 13 Bond Funds

International/Global	Ticker symbol	3 months	1 year	3 years	5 years	10 years or since inception[1]	Inception date	Expense ratio	Expense ratio as of date
Dynamic Credit	RPIDX	0.90%	–	–	–	4.58%	1/10/19	**1.92%**	1/10/2019
Dynamic Global Bond[12]	RPIEX	-2.39	-0.79%	-0.69%	–	1.15	1/22/15	**0.66**	5/1/2019
Emerging Markets Bond	PREMX	-2.42	5.64	2.18	4.23%	5.61	12/30/94	**0.91**	12/31/2018
Emerging Markets Corporate Bond	TRECX	1.79	10.63	5.27	5.11	5.60	5/24/12	**1.40**	12/31/2018
Emerging Markets Local Currency Bond	PRELX	-1.28	9.75	2.83	0.22	-0.21	5/26/11	**0.95**	12/31/2018
Global High Income Bond	RPIHX	1.89	8.53	6.39	–	6.80	1/22/15	**1.05**	12/31/2018
Global Multi-Sector Bond	PRSNX	1.94	10.30	4.72	4.29	5.19	12/15/08	**0.71**	10/1/2019
International Bond	RPIBX	-0.49	6.12	0.58	1.02	1.35	9/10/86	**0.67**	12/31/2018
International Bond (USD Hedged)	TNIBX	2.49	11.21	–	–	5.91	9/12/17	**0.67**	12/31/2018

Figure 14 Benchmarks

International/Global Bond	3 months	1 year	3 years	5 years	10 years
Bloomberg Barclays Global Aggregate ex USD Bond Index	-0.58%	5.34%	0.43%	0.87%	1.27%
J.P. Morgan Emerging Markets Bond Index Global	1.34	10.74	3.84	5.10	6.51
Lipper Averages					
Emerging Market Hard Currency Debt Funds	-0.09	8.79	3.71	3.38	5.02
International Income Funds	-0.35	5.77	1.85	1.14	2.58

Figure 15 Money Market Funds

Tax-Free[9]	Ticker symbol	7-day yield	7-day unsubsidized yield[13]	3 months	1 year	3 years	5 years	10 years or since inception[1]	Inception date	Expense ratio	Expense ratio as of date
California Tax-Free Money◊	PCTXX	0.79%	0.54%	0.19%	0.88%	0.57%	0.35%	0.18%	9/15/86	**0.96%**	2/28/2019
Maryland Tax-Free Money◊	TMDXX	1.15	0.89	0.26	1.19	0.73	0.44	0.22	3/30/01	**0.83**	2/28/2019
New York Tax-Free Money◊	NYTXX	0.95	0.72	0.21	1.00	0.64	0.39	0.20	8/28/86	**0.91**	2/28/2019
Summit Municipal Money Market◊	TRSXX	1.02	1.01	0.25	1.17	0.79	0.48	0.25	10/29/93	**0.45**	10/31/2018
Tax-Exempt Money◊	PTEXX	1.07	1.04	0.26	1.19	0.80	0.49	0.25	4/8/81	**0.55**	2/28/2019
Taxable											
Cash Reserves◊[14]	TSCXX	1.76%	1.76%	0.49%	2.08%	1.34%	0.81%	0.41%	10/29/93	**0.45%**	10/31/2018
Government Money‡[15]	PRRXX	1.66	1.66	0.48	2.01	1.17	0.70	0.36	1/26/76	**0.42**	5/31/2019
U.S. Treasury Money‡	PRTXX	1.71	1.71	0.48	2.00	1.16	0.70	0.35	6/28/82	**0.43**	5/31/2019

[12] Formerly the T. Rowe Price Global Unconstrained Bond Fund.

[13] In an effort to maintain a zero or positive net yield for the fund, T. Rowe Price may voluntarily waive all or a portion of the management fee it is entitled to receive from the fund. This voluntary waiver would be in addition to any contractual expense ratio limitation in effect for the fund and may be amended or terminated at any time without prior notice. This fee waiver would have the effect of increasing the fund's 7-day yield. Please see the prospectus for more details.

[14] Formerly the T. Rowe Price Summit Cash Reserves Fund.

[15] Formerly the T. Rowe Price Prime Reserve Fund.

Money Market Funds:

◊Retail Funds: You could lose money by investing in the Fund. Although the Fund seeks to preserve the value of your investment at $1.00 per share, it cannot guarantee it will do so. Beginning October 14, 2016, the Fund may impose a fee upon the sale of your shares or may temporarily suspend your ability to sell shares if the Fund's liquidity falls below required minimums because of market conditions or other factors. An investment in the Fund is not insured or guaranteed by the Federal Deposit Insurance Corporation or any other government agency. The Fund's sponsor has no legal obligation to provide financial support to the Fund, and you should not expect that the sponsor will provide financial support to the Fund at any time.

‡Government Funds: You could lose money by investing in the Fund. Although the Fund seeks to preserve the value of your investment at $1.00 per share, it cannot guarantee it will do so. An investment in the Fund is not insured or guaranteed by the Federal Deposit Insurance Corporation or any other government agency. The Fund's sponsor has no legal obligation to provide financial support to the Fund, and you should not expect that the sponsor will provide financial support to the Fund at any time.

Figure 16 Asset Allocation Funds

Asset Allocation	Ticker symbol	3 months	1 year	3 years	5 years	10 years or since inception[1]	Inception date	Expense ratio	Expense ratio as of date
Balanced	RPBAX	1.13%	5.26%	8.68%	6.86%	8.80%	12/31/39	**0.61%**	12/31/2018
Global Allocation	RPGAX	0.31	4.10	7.06	5.68	6.07	5/28/13	**1.09**	10/31/2018
Multi-Strategy Total Return	TMSRX	0.72	2.09	–	–	0.67	2/23/18	**1.93**	10/31/2018
Personal Strategy Balanced	TRPBX	0.68	5.43	8.36	6.71	8.76	7/29/94	**0.87**	5/31/2019
Personal Strategy Growth	TRSGX	0.49	4.45	10.04	7.72	10.16	7/29/94	**0.89**	5/31/2019
Personal Strategy Income	PRSIX	0.71	5.82	6.45	5.45	7.04	7/29/94	**0.79**	5/31/2019
Retirement 2005	TRRFX	0.96	5.85	5.60	4.87	6.52	2/27/04	**0.53**	5/31/2019
Retirement 2010	TRRAX	0.89	5.64	6.04	5.19	7.08	9/30/02	**0.53**	5/31/2019
Retirement 2015	TRRGX	0.83	5.37	6.73	5.68	7.83	2/27/04	**0.56**	5/31/2019
Retirement 2020	TRRBX	0.73	5.06	7.59	6.27	8.56	9/30/02	**0.59**	5/31/2019
Retirement 2025	TRRHX	0.63	4.74	8.28	6.74	9.14	2/27/04	**0.63**	5/31/2019
Retirement 2030	TRRCX	0.51	4.38	8.93	7.16	9.67	9/30/02	**0.66**	5/31/2019
Retirement 2035	TRRJX	0.37	4.01	9.38	7.44	9.99	2/27/04	**0.68**	5/31/2019
Retirement 2040	TRRDX	0.30	3.74	9.79	7.66	10.21	9/30/02	**0.70**	5/31/2019
Retirement 2045	TRRKX	0.22	3.53	9.90	7.73	10.25	5/31/05	**0.71**	5/31/2019
Retirement 2050	TRRMX	0.20	3.49	9.91	7.73	10.25	12/29/06	**0.71**	5/31/2019
Retirement 2055	TRRNX	0.19	3.47	9.88	7.72	10.24	12/29/06	**0.72**	5/31/2019
Retirement 2060	TRRLX	0.16	3.44	9.87	7.72	6.96	6/23/14	**0.72**	5/31/2019
Retirement Balanced	TRRIX	0.66	5.06	5.55	4.65	6.00	9/30/02	**0.51**	5/31/2019
Retirement Income 2020	TRLAX	0.75	4.90	–	–	6.13	5/25/17	**1.23**	12/31/2018
Spectrum Growth	PRSGX	-0.38	1.65	10.71	8.28	10.84	6/29/90	**0.77**	12/31/2018
Spectrum Income	RPSIX	1.40	7.74	4.01	3.86	5.22	6/29/90	**0.62**	12/31/2018
Spectrum International	PSILX	-1.12	-0.56	5.71	3.63	5.74	12/31/96	**0.90**	12/31/2018
Target 2005	TRARX	0.95	5.99	5.31	4.65	5.24	8/20/13	**1.04**	10/1/2019
Target 2010	TRROX	0.95	5.90	5.47	4.75	5.41	8/20/13	**0.77**	10/1/2019
Target 2015	TRRTX	0.84	5.78	5.82	4.96	5.70	8/20/13	**0.58**	10/1/2019
Target 2020	TRRUX	0.74	5.39	6.38	5.34	6.19	8/20/13	**0.60**	10/1/2019
Target 2025	TRRVX	0.64	5.01	6.96	5.76	6.73	8/20/13	**0.65**	10/1/2019
Target 2030	TRRWX	0.55	4.84	7.63	6.28	7.35	8/20/13	**0.70**	10/1/2019
Target 2035	RPGRX	0.54	4.74	8.23	6.72	7.88	8/20/13	**0.79**	10/1/2019
Target 2040	TRHRX	0.45	4.47	8.77	7.06	8.27	8/20/13	**0.84**	10/1/2019
Target 2045	RPTFX	0.37	4.27	9.16	7.31	8.56	8/20/13	**0.90**	10/1/2019
Target 2050	TRFOX	0.29	3.87	9.52	7.49	8.80	8/20/13	**0.98**	10/1/2019
Target 2055	TRFFX	0.29	3.71	9.78	7.64	8.95	8/20/13	**1.17**	10/1/2019
Target 2060	TRTFX	0.17	3.48	9.80	7.67	6.91	6/23/14	**2.04**	10/1/2019

Indexes included in this update track the following: S&P 500–500 large-company U.S. stocks; S&P MidCap 400–stocks of 400 mid-size U.S. companies; NASDAQ Composite (principal only)–U.S. stocks traded in the over-the-counter market; Russell 2000–stocks of 2,000 small U.S. companies; MSCI EAFE–stocks of about 1,000 companies in Europe, Australasia, and the Far East; MSCI Emerging Markets–more than 850 stocks traded in over 20 emerging markets; Bloomberg Barclays U.S. Aggregate Bond–investment-grade corporate and government bonds; Bloomberg Barclays Municipal Bond–tax-free investment-grade U.S. bonds; Credit Suisse High Yield–noninvestment-grade corporate U.S. bonds; Bloomberg Barclays Global Aggregate ex USD Bond–investment-grade government, corporate, agency, and mortgage-related bonds in markets outside the U.S.; J.P. Morgan Emerging Markets Bond–Global–U.S. dollar-denominated Brady Bonds, Eurobonds, traded loans, and local market debt instruments issued by sovereign and quasi-sovereign entities; Lipper averages–all funds in each investment objective category; and Lipper indexes–equally weighted indexes of typically the 30 largest mutual funds within their respective investment objective categories. It is not possible to invest directly in an index.

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