QMA a PGIM company

Q2 2018 OUTLOOK & REVIEW

QMA's Global Multi-Asset Solutions Group

KEY POINTS

Economic Outlook

- Against a backdrop of continuing strength for the global economy, rising trade tensions have interjected a new element of caution into our bullish outlook for 2018.
- The key question is whether President Trump's recent protectionist moves are mostly symbolic and politically motivated with limited economic consequences, or a tipping point to a more mercantilist world. While the former seems more likely, we remain concerned as a full-blown trade war would throw a major wrench in the global expansion and have catastrophic implications for risky assets.
- Our top risks at the start of the year, inflation and interest rates, remain on our radar. Although building inflation pressures still seem contained, rates have moved up noticeably during the quarter and the US Federal Reserve (Fed) has signaled a more aggressive hiking path looking forward.
- The near-term outlook for the global economy remains reasonably bright even if growth might have peaked. Advanced economies are poised to expand by 2.5% for the year, while emerging markets appear to be leveling off at a healthy 4.5% clip. China, one of our chief risks three months ago, appears to be off to a strong start to the year.
- Following its recent pattern, US GDP growth looks to have been sluggish in the first quarter. Based on the strength in other key economic data and projected effects from last year's fiscal stimulus, we still expect GDP growth to increase from its post-crisis average of 2% to about 2.5-3% in 2018.
- We believe the risk of recession is very low this year, but the risk rises with time horizon. A recession is more likely than not by the end of 2020, in our view.

Investment Outlook

- In light of the increased risk of a trade war and a sharp rise in stock market volatility, we have made some adjustments to our investment outlook and positioning from the start of the year.
- In January, we suggested a number of possible scenarios, which implied a 10% probability-weighted return for the S&P 500 for 2018. In particular, we have downgraded the probability of our 20%+ "Euphoria Takes Hold" scenario; however, this has not had a big impact on our probability-weighted expected return, which is now 9%.
- Another breakout year for stocks was always dependent on a combination of significant upside surprise on earnings and a modest expansion of valuations. While earnings have revised up sharply since January 1st, valuation has fallen and now seems less likely to expand from 2017 levels given the increased uncertainty on the trade front.
- Increased trade protection should favor domestically-oriented firms over those with significant global exposure. The recent surge in the relative performance of small caps is indicative of that. Trade protection would also mean more inflation pressure through import prices. All else being equal, this should boost real assets over financial assets.
- In our multi-asset portfolios, we maintain our overweight to global stocks vs. bonds, but have scaled back modestly on its size. We have also continued to pare our exposure to high yield bonds, moving closer to neutral.
- With the proceeds from our modest retrenchments, we are holding more cash as dry powder and have bought some Treasuries and gold for diversification and insurance against potential adverse outcomes.

Economic Outlook: *Goldilocks Gone?*

At year-end, we outlined a positive outlook for the global economy and financial markets in 2018. While we highlighted some downside risks that could derail our positive base case scenario (with rising inflation pressure and interest rates risks at the top of our list), we also examined an alternative scenario where euphoria could take hold and stocks experience another explosive rally. Such a rally appeared to be developing during the first month of the year, but a long-overdue correction in global stock markets emerged to dampen animal spirits before they got out of control. At the same time, trade protection has moved up the ladder on our list of downside risks as President Trump has begun to follow through on some of his protectionist agenda.

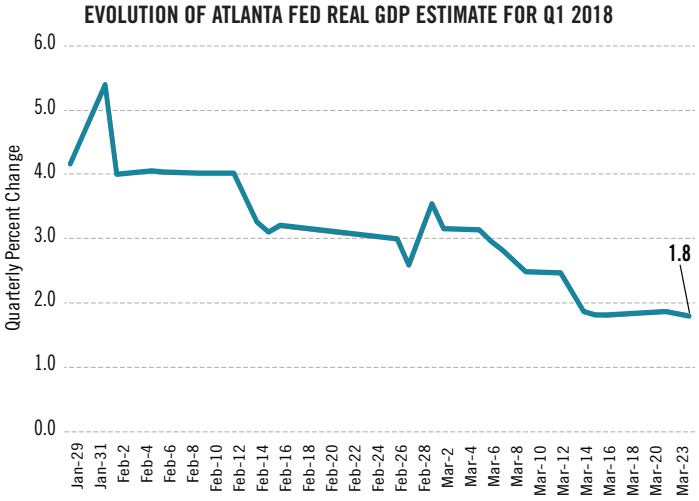
The key question for investors is the following: Are Trump's recent moves mostly symbolic with limited economic consequences, or a game changer signaling a turning point toward a much more mercantilist world that is likely to be far less conducive to risk assets? Before we answer, let us review what we think has, and has not, changed from three months ago.

The near-term outlook for the global economy remains reasonably bright even if growth has probably peaked. Advanced economies seem poised to expand by a decent 2.5%. Growth in the Eurozone appears to be stabilizing at a healthy pace. In Japan, the expansion has become a bit shakier, but should continue; in the UK, growth also shows signs of slowing, but the news that the country reached an agreement on a transition period after it formally leaves the EU reduces the risk of a Brexit-related downturn.

The recovery in emerging markets has cooled, albeit at a healthy level, around 4.5% growth year-over-year, according to Capital Economics.[1] Growth in China appears to be off to a strong start this year, after solid data on industrial value-added, fixed asset investment, and steel and electricity output.

We still believe that US growth will increase to 2.5-3% in 2018 from its post-crisis average of about 2%. Based on the Atlanta Fed's GDP Nowcast report, Q1 appears to be another weak start to the year, following the trend of recent years (Figure 1).

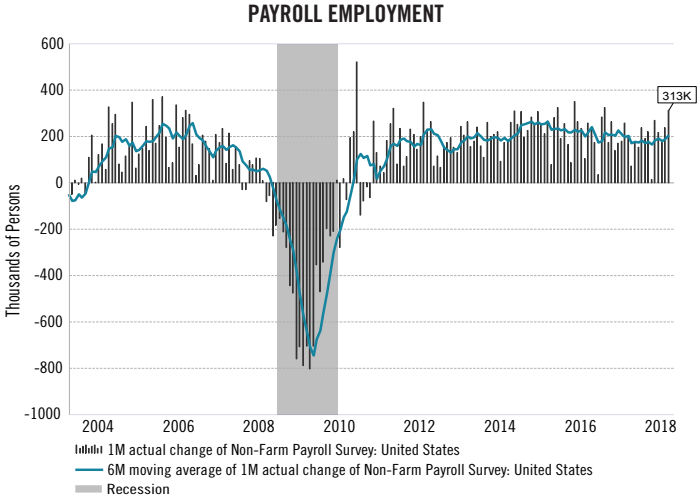
1/ Another Disappointing Q1?



As of 3/23/2018.
Source: QMA, Federal Reserve Bank of Atlanta.

However, we think a weak Q1 GDP number is more noise than indicative of the trend as other indicators, including payroll growth (Figure 2) and the Institute for Supply Management surveys, continue to signal strength. In addition, the maximum fiscal impulse (the point at which the change in the budget balance from a year ago reaches its apex) should arrive around mid-year, giving the US economy a boost in the midst of underlying strength.

2/ US Job Market Has Strengthened



As of 2/28/2018.
Source: QMA, Thomson Reuters Datastream.

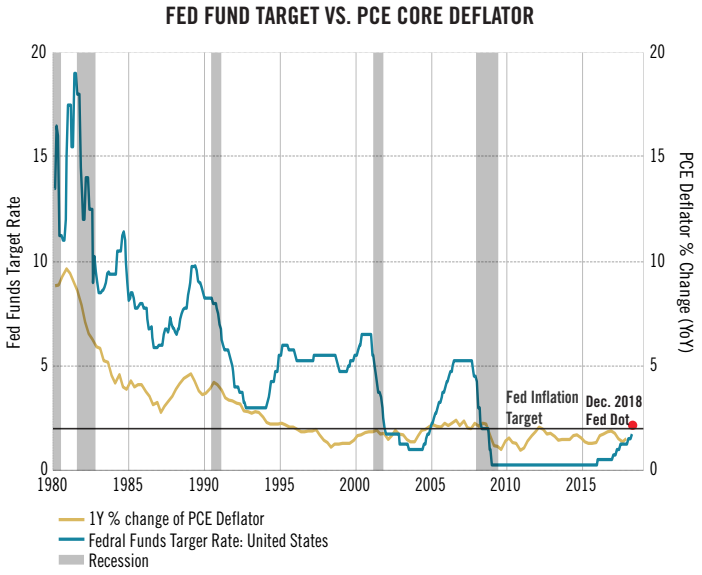
[1] Emerging Markets Chartbook, *Capital Economics*, 3/20/2018.

We still see the risk of a recession as low this year as the indicators on our recession dashboard continue blinking green.[2] However, we believe the probability of a recession increases with time horizon and a US recession looks likely by the end of 2020. Subjectively, we would put the odds of a recession at about 10% by year-end 2018, 40% by the end of 2019, and 65-70% percent by December 2020.

Inflation and interest rate risk were the key economic risks we highlighted three months ago and they remain firmly on our radar. While inflation pressure is building, it still seems contained to us, but interest rates moved up noticeably during the quarter, as the Fed has signaled a more aggressive rate-hiking path going forward, consistent with its confidence in the economy and its strong read on labor market conditions. The market's view of where the Fed fund's target rate will be at the end of 2018 has finally converged with the Fed governors' own projections, but a gap remains for 2019 and 2020, where market expectations are still more dovish. Fed policy is still far from restrictive. Figure 3 shows the real (i.e., inflation-adjusted) Fed funds rate has just reached positive territory and is likely to stay near zero through the end of this year, assuming the Fed hits its inflation target and is on track with its forecast for rate hikes.

Another risk to monitor is the rising debt burden in the corporate sector which leaves it vulnerable to rising interest rates. But we think this risk is likely to exacerbate the next downturn rather than spark it.

3/ Fed Policy Is Far from Restrictive



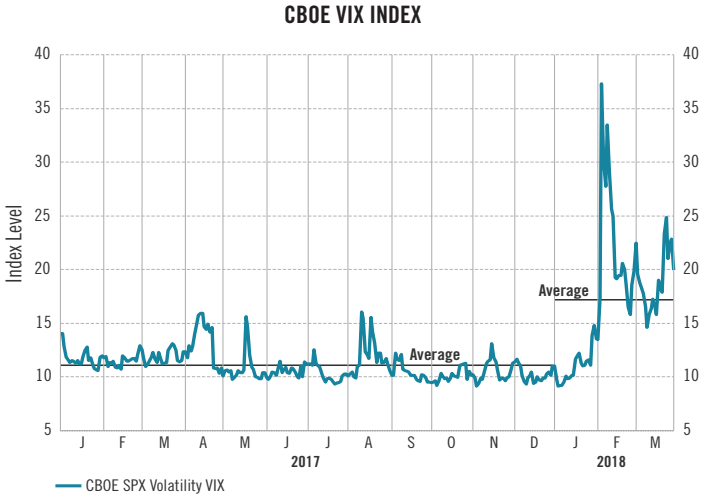
As of 2/28/2018.
Source: QMA, Thomson Reuters Datastream.

Meanwhile, trade protection has emerged as a concerning tail risk for the economy and financial markets. This is the dark side of the Trump agenda for investors, who have already seen the positive effects of tax cuts and deregulatory tailwinds, as well as the non-event of an infrastructure spending bill that seems unlikely to materialize. A full-blown trade war would throw a major wrench into the machine of the global economic expansion. It was a trade war, after all, that made the Great Depression great, when the infamous Smoot-Hawley Tariff Act raised tariffs on more than 20,000 classes of imports within months of the 1929 stock market crash. A significant lurch toward protectionism still appears to be more of a risk scenario at this point than a likely outcome, as we have a hard time believing policymakers would be that inured to the lessons of history, and there will be many chances to pull back from that brink. Still, the probability of a bad outcome is increasing.

Investment Outlook:
The Volatility Genie Is Back out of the Bottle

After a year where stock markets reached their lowest levels of realized volatility since 1964, stock market volatility is back (Figure 4). For the first time since the China-related growth scare in early 2016, equity markets experienced a 10% pullback when a rapid increase in interest rates triggered by continued strong growth data and a hot January wage growth number sparked a dramatic sell-off.

4/ Volatility Is Back



As of 3/26/2018.
Source: QMA, Thomson Reuters Datastream.

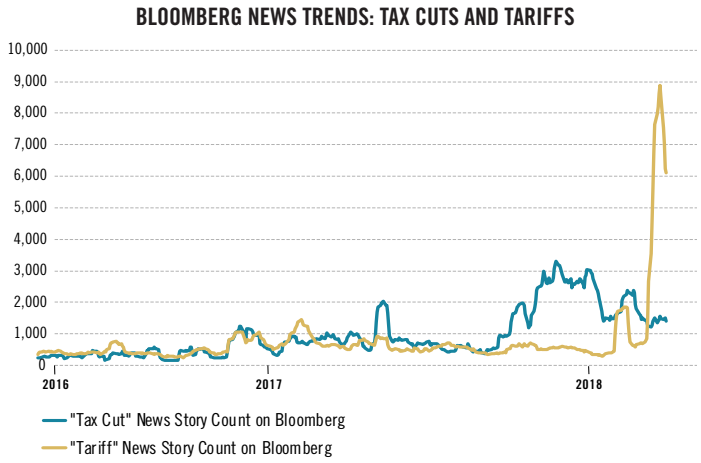
We bought the dip in February because our market sentiment indicator signaled that the downturn was too extreme and temporary (so a relief rally was likely imminent) and our view on fundamentals was still very positive.[3] A sharp rally did emerge until the significant rise in trade tensions in March drove the

[2] "Going for the Record," QMA Q4 2017 Outlook & Review, October 2017.

[3] "A Long-Term Quant's Perspective on the Recent Market Meltdown," QMA Market Pulse, February 2018.

market down again, as the Trump administration moved beyond threats toward implementing actual protectionist measures. Figure 5 shows that, despite the president's protectionist rhetoric dating back to his 2016 presidential campaign, the prospects of major trade tensions were generally not front of mind for investors until recently.

5/ Investors Were Relaxed about Trade Tension... Until Now



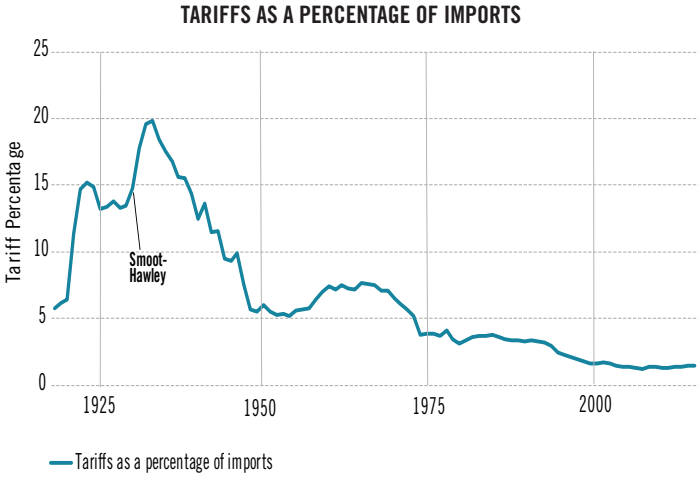
As of 3/22/2018.
Source: QMA, Cornerstone Macro, Bloomberg.

So, is it time to embrace a much more defensive portfolio strategy in anticipation of a global trade war? Our answer is *not yet*. But a more definitive answer to that question depends on whether the recent tariffs are mostly a symbolic move designed to shore up key constituents in the run up to the November mid-term election or a game changer that represents a tipping point in the dismantling of liberal economic world order that has generally governed trade relations since World War II. We still believe the former is much more likely than the later, but the probability of the latter is increasing and we cannot dismiss the scenario. Recent turmoil in key White House staff, including the ascension of hardliners in key foreign policy posts and the departure of Gary Cohn as Senior Economic Advisor, is also disconcerting.

While economists and historians still hotly debate the underlying causes of the Great Depression, there is consensus among scholars that the Smoot-Hawley Tariffs worsened the depth and duration of the crisis. It is difficult to believe today's policymakers would pursue such a self-destructive path, and there will be many chances for interested parties to stand down. It is not beyond the realm of possibility[4], however, and that in itself is troubling because a full-blown trade war would be catastrophic for risky assets.

The economic impact of the announced tariff measures (from both the United States and China) so far are negligible, but the risk is that things could escalate and potentially spiral out of control. We are of course nowhere near Smoot-Hawley territory yet (Figure 6), and other presidents over the past 80 years have imposed tariffs without sparking disaster. Further helping matters, market participants appear to be figuring out how to filter out the noise related to the president's political posturing and various negotiating tactics. On the other hand, the tit-for-tat nature of trade wars makes them notoriously difficult to predict. Negative market reactions in response to trade uncertainties can also amplify uncertainty, as tighter financials conditions cause additional harm to the real economy.

6/ The Long View on US Trade Barriers



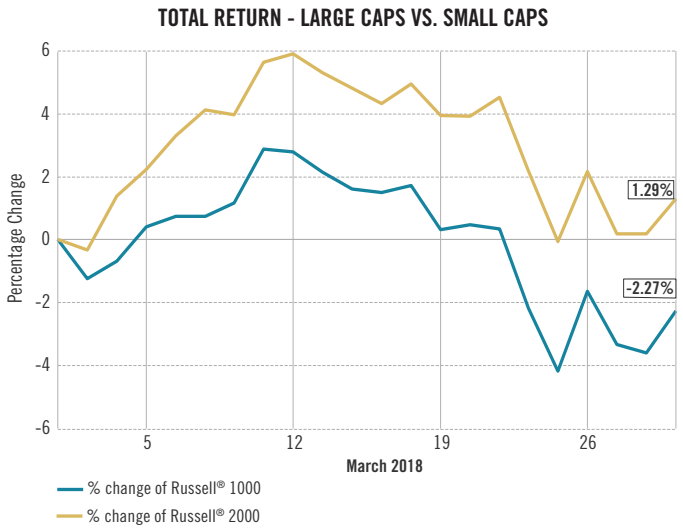
As of 12/31/2016.
Source: QMA, US International Trade Commission.

If we are now in a world where trade tensions and skirmishes are the new normal and the threat of a trade war looms, we should expect more volatility and higher risk premia in financial markets. This should fuel a higher average level for the VIX index and downward pressure on stock market price-to-earnings (P/E) ratios. Domestically-oriented firms should outperform those with significant global exposure. Indeed, small caps have significantly bested large caps so far in March (Figure 7). Trade protection would also mean more inflation pressure through import prices and a less optimal allocation of resources, which could hinder any nascent recent revival in productivity.[5] All other things held constant, this should boost real assets over financial assets.

[4] Many observers consider World War I to be an unintended war that was far from inevitable, and against the economic interest of the belligerents, but the disaster unfolded anyway.

[5] "All Eyes on Productivity," QMA Market Pulse, February 2018.

7/ Small Beats Large in March



As of 3/30/2018.
Source: QMA, Thomson Reuters Datastream.
The Russell® Indices are trademarks/service marks of the Frank Russell Company. Russell® is a trademark of the Frank Russell Company.

Past performance is not a guarantee or reliable indicator of future results.

The trade-weighted US dollar remains buffeted by the crosscurrents of positive cyclical forces (better relative growth momentum due to fiscal stimulus, and rising policy rate differentials) and negative structural forces (rising fiscal and current account deficits, and expensive valuation on a purchasing power parity basis). While it's difficult to know which factors investors will focus on over the balance of the year, rising US trade protection is also dollar positive as long as any retaliation is measured.

Given these points, we have revised how we now handicap the scenarios that we presented at year-end for 2018 S&P 500 Index returns (Figure 8).

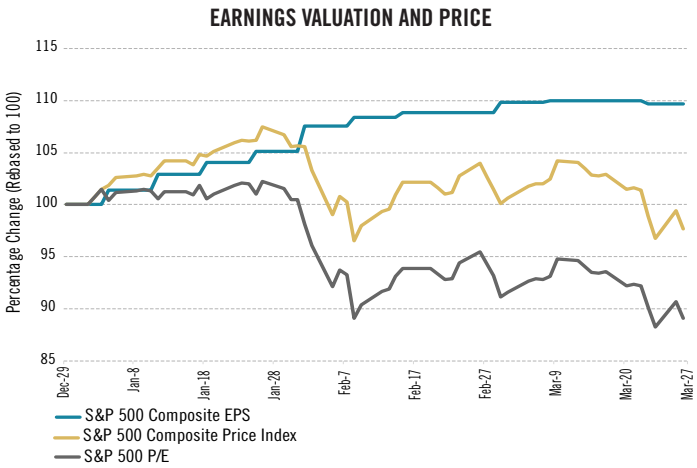
8/ S&P 500 Stock Melt-Up Scenario Seems Less Likely Under Threat of Trade War

SCENARIOS	S&P RETURN	12/31/2017 PROBABILITY	3/31/2018 PROBABILITY	SHIFT	12/31/2017 IMPACT	3/31/2018 IMPACT
Euphoria Takes Hold	25%	35%	25%	-10%	8.75%	6.25%
Tempered Optimism Reigns	10%	50%	65%	10%	5%	6.5%
Surprise End to the Cycle	-25%	15%	15%		-3.75%	-3.75%
Probability Weighted Return					10%	9%

Source: QMA. There is no guarantee this will be achieved. For illustrative purposes only.

Our "Euphoria Takes Hold" scenario would have required both significant upside surprise on earnings and a modest expansion of valuation. While the former appears set to deliver in spades, the latter now seems less likely given the increased conflict on the trade front. Figure 9 shows that earning expectations have been revised up 10% since January 1st, but valuation has fallen by more than 10%, leaving the market down slightly for the year. We note that the shifts in Figure 8 do not change the probability-weighted expected return in a major way.

9/ Shifting Market Dynamics



As of 3/30/2018.
Source: QMA, Thomson Reuters Datastream, Standard & Poor's.

Past performance is not a guarantee or reliable indicator of future results.

That said, we have made some adjustments, but not major changes, to our multi-asset portfolios. We maintain our overweight in global stocks, but we also have scaled back modestly on its size. We continue to pare our exposure to high yield bonds toward a neutral position relative to benchmarks. With the proceeds, we are holding more cash as dry powder and have bought some Treasuries and gold for diversification and insurance against potential adverse outcomes.

10/ QMA's Asset Class Views

Asset Class	–		Neutral		+
Stocks				■	
Fixed Income		■			
Real Estate		■			
Commodities			■		
Cash				■	
Stocks					
US			■		
EAFE			■		
Emerging Markets			■		
Fixed Income					
US Core			■		
TIPS				■	
High Yield				■	
Non-US Dev. Sov. Bonds	■				
EMD		■			
Cash				■	

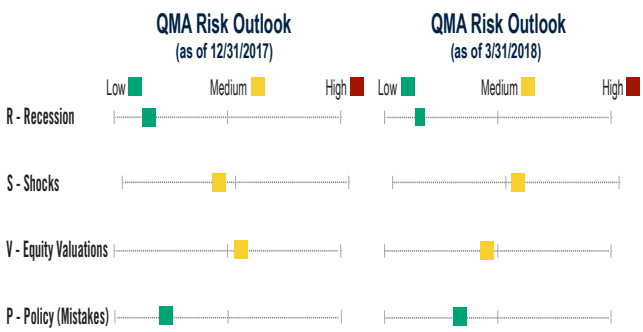
■ April 2018

As of 3/31/2018.
Source: QMA. There is no guarantee this will be achieved. For illustrative purposes only. Positioning subject to change.

The Master Perspective Dashboard

One of the hardest things for investors sometimes to do is to maintain perspective, especially when developments on one or two fronts, such as inflation and trade tensions, dominate headlines. As markets react to each new troubling or encouraging sign, it can be all too easy to overreact to the latest news or data point and lose sight of the big picture by failing to give appropriate weight to other factors at work (in this case, mostly encouraging ones) that ultimately have as much, if not more, impact on asset prices.

At QMA, we have a framework for helping us keep all the data, news, and outputs from our quantitative tools and investment discussions in perspective as we continually gauge the probability of the next major market downturn. We call it **RSVP**, an acronym for the four major factors– **R**ecession, **S**hocks, Equity **V**aluations and **P**olicy Mistakes—that history, our research and experience tell us typically trigger bear markets in US stocks.



Source: QMA. For illustrative purposes only. Positioning subject to change.

As shown above, our **RSVP** dashboard is indicating moderately higher levels of risk compared to this time a quarter ago:

Within the **R**ecession component, the slope of the yield curve has yet to invert, typically one of the first indications that the expansion may be at risk. Initial jobless claims are at historic lows. We've also seen no discernible spike in high yield spreads, and leading economic indicators are still signaling growth.

The probability of **S**hocks has definitely increased with President Trump's aggressive moves on trade policy. But while it's always hard to predict the next turn of events in this area, we still wouldn't consider the chances of a major trade war or any of the other most pressing geopolitical risks (military conflict with Russia or North Korea) as high.

One silver lining of the recent market pullbacks has been the moderating effect on equity **V**aluations. Although US equities are still above their long-term forward P/E average of 15, they are actually more reasonable now than three months ago.

So far pretty good on the **P**olicy front as well. Fiscal policy is supportive rather than restrictive. While this may cause problems down the road, it reduces the risk of a recession in the near term. The same is true for monetary policy. While we now have a new Fed Chairman and he has signaled more aggressive rate hikes in the future, the current stance of monetary policy is still very supportive of growth and is unlikely to turn restrictive in the near term.

AUTHOR

Edward L. Campbell, CFA
Managing Director and Senior Portfolio Manager

FOR MORE INFORMATION

To learn more about QMA's capabilities, please contact
Stephen Brundage, CFA, Managing Director and Product Specialist,
at stephen.brundage@qmallc.com or 973-367-4591.

ABOUT QMA

Serving investors since 1975, QMA targets superior risk-adjusted returns by combining research-driven quantitative investment processes built on economic and behavioral foundations with judgment from experienced market practitioners. Ultimately, each portfolio is constructed to meet the individual financial needs of the client. An independent boutique backed by the capabilities of one of the world's largest asset managers, QMA is the quantitative equity and global multi-asset solutions business of PGIM, the global investment management businesses of Prudential Financial, Inc. Today, we manage approximately $138 billion* in assets for a wide range of global clients.

*As of 12/31/2017.

NOTES TO DISCLOSURE

Sources: QMA, Thomson Reuters Datastream, Capital Economics, Federal Reserve Bank of Atlanta, Cornerstone Macro, Bloomberg, FactSet Research Systems, US International Trade Commission.

In Europe, certain regulated activities are carried out by representatives of PGIM Limited, which is authorized and regulated by the Financial Conduct Authority (Registration Number 193418), and duly passported in various jurisdictions in the European Economic Area. Quantitative Management Associates LLC, which is an affiliate to PGIM Limited, is an SEC-registered investment adviser, and a limited liability company. PGIM Limited's Registered Office, Grand Buildings, 1-3 Strand, Trafalgar Square, London WC2N 5HR. In Japan, investment management services are made available by PGIM Japan, Co. Ltd., ("PGIM Japan"), a registered Financial Instruments Business Operator with the Financial Services Agency of Japan. In Hong Kong, information is presented by representatives of PGIM (Hong Kong) Limited, a regulated entity with the Securities and Futures Commission in Hong Kong to professional investors as defined in Part 1 of Schedule 1 of the Securities and Futures Ordinance. In Singapore, information is issued by PGIM (Singapore) Pte. Ltd. ("PGIM Singapore"), a Singapore investment manager that is licensed as a capital markets service license holder by the Monetary Authority of Singapore and an exempt financial adviser. These materials are issued by PGIM Singapore for the general information of "institutional investors" pursuant to Section 304 of the Securities and Futures Act, Chapter 289 of Singapore (the "SFA") and "accredited investors" and other relevant persons in accordance with the conditions specified in Sections 305 of the SFA. In South Korea, information is issued by QMA, which is licensed to provide discretionary investment management services directly to South Korean qualified institutional investors.

QMA is a wholly-owned subsidiary of PGIM, Inc. the principal asset management business of PFI of the United States of America. PFI of the United States is not affiliated in any manner with Prudential plc, which is headquartered in the United Kingdom.

These materials represent the views, opinions and recommendations of the author(s) regarding the economic conditions, asset classes, securities, issuers or financial instruments referenced herein. Any reproduction of these materials, in whole or in part, or the divulgence of any of the contents hereof, without prior consent of Quantitative Management Associates LLC ("QMA") is prohibited. QMA is the primary business name of Quantitative Management Associates LLC. Certain information contained herein has been obtained from sources that QMA believes to be reliable as of the date presented; however, QMA cannot guarantee the accuracy of such information, assure its completeness, or warrant such information will not be changed. The information contained herein is current as of the date of issuance (or such earlier date as referenced herein) and is subject to change without notice. QMA has no obligation to update any or all of such information; nor do we make any express or implied warranties or representations as to the completeness or accuracy or accept responsibility for errors. These materials are not intended as an offer or solicitation with respect to the purchase or sale of any security or other financial instrument or any investment management services and should not be used as the basis for any investment decision. Past performance is not a guarantee or a reliable indicator of future results. No liability whatsoever is accepted for any loss (whether direct, indirect, or consequential) that may arise from any use of the information contained in or derived from this report. QMA and its affiliates may make investment decisions that are inconsistent with the recommendations or views expressed herein, including for proprietary accounts of QMA or its affiliates.

The opinions and recommendations herein do not take into account individual client circumstances, objectives, or needs and are not intended as recommendations of particular securities, financial instruments or strategies to particular clients or prospects. No determination has been made regarding the suitability of any securities, financial instruments or strategies for particular clients or prospects. For any securities or financial instruments mentioned herein, the recipient(s) of this report must make its own independent decisions.

Certain information contained herein may constitute "forward-looking statements," (including observations about markets and industry and regulatory trends as of the original date of this document). Due to various risks and uncertainties, actual events or results may differ materially from those reflected or contemplated in such forward-looking statements. As a result, you should not rely on such forward-looking statements in making any decisions. No representation or warranty is made as to future performance or such forward-looking statements.

QMA affiliates may develop and publish research that is independent of, and different than, the recommendations contained herein. QMA personnel other than the author(s), such as sales, marketing and trading personnel, may provide oral or written market commentary or ideas to QMA's clients or prospects or proprietary investment ideas that differ from the views expressed herein. Additional information regarding actual and potential conflicts of interest is available in QMA's Form ADV Part 2A.

These materials are not intended for distribution to, or use by, any person in any jurisdiction where such distribution would be contrary to local or international law or regulation. These materials are for informational or educational purposes only.

The information is not intended as investment advice and is not a recommendation about managing or investing assets. In providing these materials, QMA is not acting as your fiduciary as defined by the Department of Labor.

SPECIAL RISKS

Foreign investments may be volatile and involve additional expenses and special risks, including currency fluctuations, foreign taxes and political and economic uncertainties. Emerging and developing market investments may be especially volatile. Investments in securities of growth companies may be especially volatile. Due to the recent global economic crisis that caused financial difficulties for many European Union countries, Eurozone investments may be subject to volatility and liquidity issues. Value investing involves the risk that undervalued securities may not appreciate as anticipated. Small and mid-sized company stock is typically more volatile than that of larger, more established businesses, as these stocks tend to be more sensitive to changes in earnings expectations and tend to have lower trading volumes than large-cap securities, creating potential for more erratic price movements. It may take a substantial period of time to realize a gain on an investment in a small or mid-sized company, if any gain is realized at all. Diversification does not guarantee profit or protect against loss.

Emerging markets are countries that are beginning to emerge with increased consumer potential driven by rapid industrial expansion and economic growth. Investing in emerging markets is very risky due to the additional political, economic and currency risks associated with these underdeveloped geographic areas. Fixed-income investments are subject to interest rate risk, and their value will decline as interest rates rise. Unlike other investment vehicles, U.S. government securities and U.S. Treasury bills are backed by the full faith and credit of the U.S. government, are less volatile than equity investments, and provide a guaranteed return of principal at maturity. Treasury Inflation-Protected Securities (TIPS) are inflation-index bonds that may experience greater losses than other fixed income securities with similar durations and are more likely to cause fluctuations in a Portfolio's income distribution. Investing in real estate poses risks related to an individual property, credit risk and interest rate fluctuations. High yield bonds, commonly known as junk bonds, are subject to a high level of credit and market risks. Investing involves risks. Some investments are riskier than others. The investment return and principal value will fluctuate and when sold may be worth more or less than the original cost.