



Q3 2018 OUTLOOK & REVIEW

QMA's Global Multi-Asset Solutions Group

KEY POINTS

Economic Outlook

- The most recent data suggest the globally synchronized growth story of earlier this year is being supplanted by a decoupling caused by US strength and signs of weakness in other major economies.
- Although the rate of positive economic surprise in the US has slowed, US GDP growth is still expected to accelerate to 4% in Q2.
- Our base case remains that US strength should be enough to help the global economy through this current rough patch and head off a recession for at least another year. However, two risks highlighted at the start of the year (trade and Italy) and a newly emerging (markets) one bear close watching.
- Despite the mounting trade rhetoric, the direct economic impact of the recently announced tariffs should be limited — assuming that US levies against China don't lead to a tit-for-tat escalation cycle.
- It remains to be seen whether an easing of EU breakup fears arising from the Italian situation can withstand the collision course being set up with Brussels over the newly elected populist government's forthcoming fiscal policies.
- In emerging markets (EM), currency turmoil which began in Turkey and Argentina and then Brazil has led to more generalized financial market stress across a wider range of countries. If sustained, this would create additional headwinds for growth.

Investment Outlook

- In the face of rising rates and roiling trade disputes, we believe risk assets in the US are still more likely to outperform safe assets and the majority of overseas assets over the next three to six months.
- While headline inflation in the US has increased from 1.9% a year ago to 2.8%, our analysis suggests it remains in the goldilocks zone for US equities. Equity valuations are improved, and US corporate earnings growth continues to be impressive, especially compared to EAFE and Japan.
- Within US equities, we continue to see room for small cap outperformance, which we first identified in March as the natural byproduct of trade tensions pushing more flows into domestically oriented firms. We remain neutral on value versus growth — divided between the deep discounts available in value and the increasing dominance of some of the markets' most growth-oriented names.
- Our underweights in EM extend to bonds as well as equities. While we have generally been reducing our fixed income risk asset exposure, we favor US high yield over EM debt, believing it to be the more attractive risk-reward payoff given the continued growth of the US economy.
- Additional evidence of our “bearly bullish” outlook: We remain underweight safe assets such as US Treasuries, but we have been tilting our bond exposure toward TIPS as a protection against rising inflation — even as we keep a close eye on investor sentiment toward risk and trade tensions.

For Professional Investors Only.

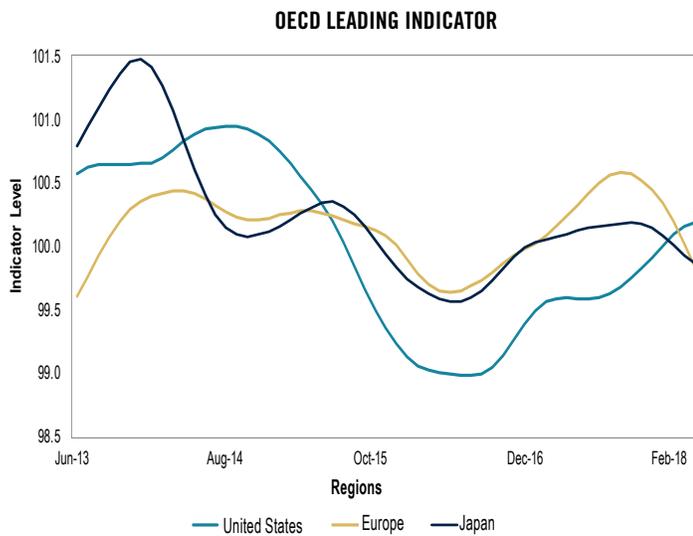
Investing involves risk and the value of investments can fall as well as rise.

Economic Outlook: Re-Decoupling

Earlier this year, global economic growth appeared to be coasting at a healthy pace, with all major economies growing in unison for the first time since 2010. More recent data, however, appear to signal that we have passed the point of maximum growth momentum, and there are signs that the globally synchronized growth story of late last year and early this year is fraying at the seams.

Due mainly to Washington's fiscal stimulus, the United States is now separating from the other major economies, with its growth beginning to accelerate as other major economies appear to be slowing, at least in the near term. Figure 1 shows that US leading economic indicators continue on an upward path while those for Europe and Japan have dipped down.

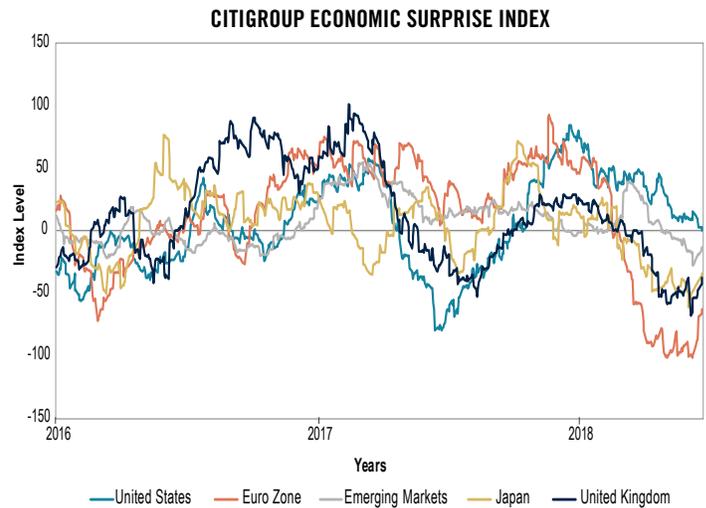
1/ Signs of Economic Divergence



As of 4/30/2018.
Source: QMA, Thomson Reuters Datastream, OECD.

The Citigroup Economic Surprise Indexes, which gauge how economic data are progressing relative to the consensus forecasts, show that conditions have shifted from strong positive economic surprise at the turn of the year to negative territory more recently (Figure 2). The US index remains in positive territory, although the rate of positive surprise has declined.

2/ Economic Surprise Turns Down



As of 6/27/2018.
Source: QMA, Thomson Reuters Datastream, Citigroup. An investment cannot be made directly in an index.

Will global growth stay firm in the second half of this year and continue into next year? Or will a variety of risks converge to damage growth and cause a sharp slowdown? Our base case remains that the global economic expansion still has room to run, and that major non-US economies are experiencing normal growth slowdowns from which they will rebound amid stronger investment spending and at least a modest pickup in productivity (see “Productivity: Still a Wild Card,” page 6). Further, we see few signs of economic excess across developed and emerging markets that would be likely to trigger recessions in the next 18 months.

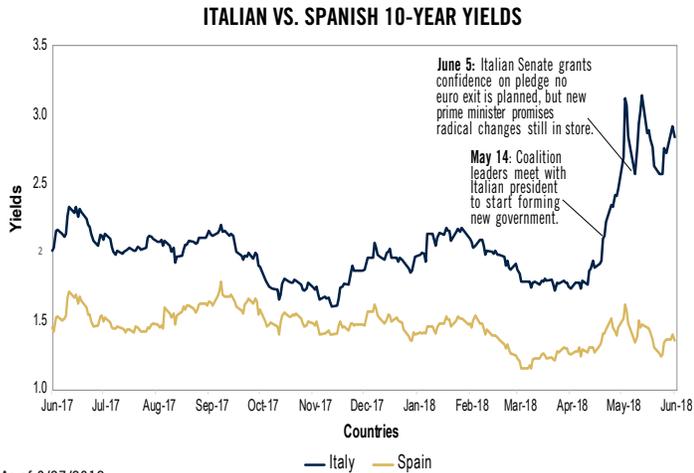
However, many of the economic and geopolitical/political risks that we identified as threats to global growth at the start of the year have not disappeared. In fact, some of them have intensified and new ones have emerged. Below we discuss three risks that concern us most¹: escalating trade tension, Italian politics and pockets of EM turmoil.

Tradewinds Fears of a global trade war emerged in March, eased in May, but intensified again in June on the heels of an unusual level of acrimony at the G7 summit and the Trump administration's threat to impose another round of tariffs on Chinese goods. Most economists still believe that even assuming implementation of all announced tariff measures, the direct economic impact will be relatively limited. However, if the Trump administration does go forward with another round of tariffs and China retaliates, it could also signal the beginning of a tit-for-tat escalation cycle that would be much more destructive for global growth.

¹Another geopolitical risk highlighted at the start of the year was Iran/Saudi tensions prompting a surge in the price of oil. Oil has climbed sharply this year, though mostly on the back of OPEC production cuts, new Iranian sanctions and Venezuelan dysfunction. Despite rising US production, the price remains elevated, recently reaching a four-year high, putting upward pressure on input costs, damaging corporate profitability and reducing consumer expenditures on other goods. Having said that, we don't believe the price is high enough to derail global expansion, or to move it into our top three.

Quitaly The aftermath of Italy's election, which has resulted in a coalition government of two populist anti-establishment parties, has put eurozone breakup fears back on investors' radar screens. Markets reacted with revulsion in late May at the coalition's apparent collapse and calls for new elections after Italian President Sergio Mattarella rejected the coalition's request for an openly anti-euro finance minister (Figure 3). The situation stabilized after a government was finally formed, but tensions could arise anew as the government rolls out fiscal plans likely to collide with the EU's Growth and Stability Pact rules and set up a showdown with Brussels.

3/ Bond Market Vigilantes Show up in Italy



As of 6/27/2018.

Source: QMA, Thomson Reuters Datastream.

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

Talking Turkey With pockets of vulnerability appearing across the emerging world, rising US interest rates, a stronger dollar and escalating trade tensions are all adding pressure to EM. As some of the economies in these regions are very dependent on global trade, an acceleration of trade conflict would hurt these markets the most. The problems began in Turkey and Argentina, two countries with significant economic imbalances and limited reserves. Both countries' currencies came under fire, prompting their central banks to offer support with a hike in interest rates. Then market turmoil spread to Brazil, driven by mass strikes and related political uncertainty, which also forced its central bank to intervene to bolster its currency. Now we are seeing more generalized financial market turmoil across the EM complex. One possible moderating influence: At least most of the other large economies look relatively stable in terms of their external financing situations.

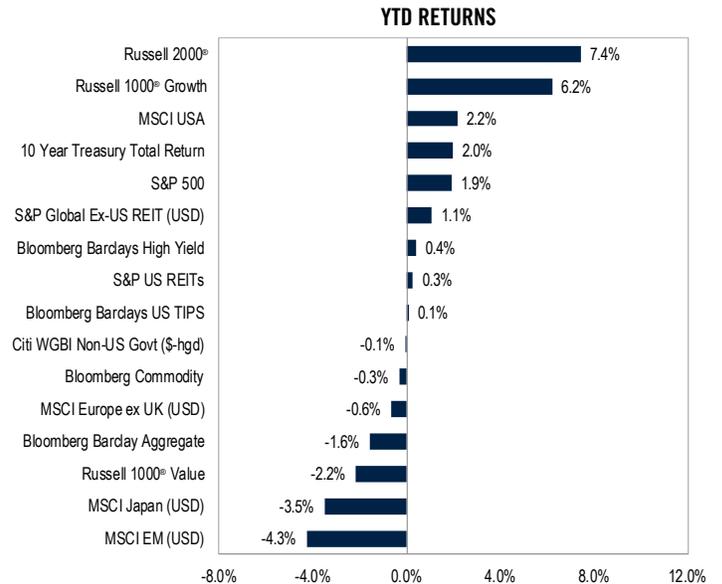
Investment Outlook: Bearly Bullish

Over the past several months, US equity markets have been mostly range bound, with the S&P 500 Index still below levels reached back in January despite a favorable economic backdrop and the stimulus provided by the December 2017 Republican tax bill. Arguably, extraordinary earnings per share growth on the back of the corporate tax cuts (26% year-over-year in Q1 2018) was widely expected and already in the price by the time the earnings "surprises" came in. As a result, equities have kept moving sideways as investors assess the trio of burgeoning risks discussed above.

Geopolitical concerns still dominate market sentiment all over the world, and the recent trade rhetoric and actions are undeniably alarming. However, we believe it is too early to panic as the fundamental and macro backdrop should keep the US market resilient enough to prevent the global economy from sliding into recession.

We currently prefer US equities to those in Europe and Japan. We have been reducing our overweight to EAFE equities since April and keeping our US exposure steady — a trade that reflects our fundamental belief that US markets are poised for more strength, especially compared to other developed markets.

4/ The View at Mid-Year



As of 6/27/2018.

Source: QMA, FactSet, MSCI, Frank Russell Company, Bloomberg, Standard & Poor's, Citigroup. The Russell® Indices are trademarks/service marks of the Frank Russell Company. Russell® is a trademark of the Frank Russell Company. MSCI has not approved, reviewed or produced this report, makes no express or implied warranties or representations and is not liable whatsoever for any data in the report. You may not redistribute the MSCI data or use it as basis for other indices or investment products. An investment cannot be made directly in an index.

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

With Q2 US GDP expected to come in at close to 4%, growth acceleration in the US is now the world's lone bright spot. This singular strength makes US equities something of a "TINA" (There Is No Alternative) trade, catalyzing inflows and pushing up the US dollar.

One potential side effect of robust economic growth so late in the business cycle is a pronounced pickup in inflation. The headline Consumer Price Index (CPI) has already increased from 1.9% a year ago to 2.8% as of May (even as the core personal consumption expenditures index has risen to just a tick above the US Federal Reserve's 2% target). While we have not seen such growth in prices for some time, inflation is still in a goldilocks zone with regard to risk asset prices and seems unlikely to derail equity performance. Our analysis suggests that when inflation is in the 1.5 to 3% range, US equities beat Treasuries 70% of the time over the next three months. Equities also fare well in the early stages of the rate hiking cycle, as higher rates are accompanied by economic expansion that bolsters the returns of all risky assets.

In addition, the outstanding Q1 earnings season coupled with the market pullback earlier in the year have translated to a notable decline in the valuation of US equities, with the average trailing price-to-earnings ratio coming down from 24 to 21.5. This level is not far above the long-term average, and valuations are no longer the hurdle to future gains they once were. Q2, with earnings expected to grow at about 16%, also projects to be impressive, especially considering that the immediate effects of the tax cut are now behind us.

Vigorous earnings growth is not the only manifestation of the new tax regime and massive cash repatriation: dividend payouts, buybacks and capex have also been on the rise, offering additional support to US equities compared to their overseas counterparts.

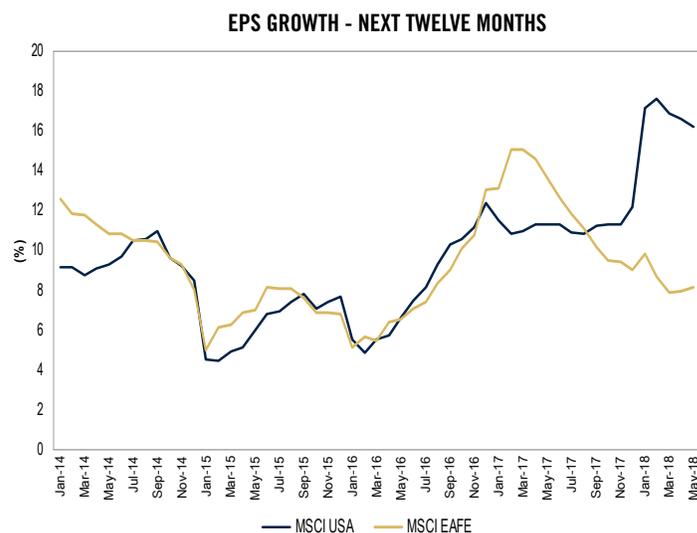
Within the US, investors have sought further refuge in small caps, the segment most insulated from the escalating global trade tensions. US small cap is the best performing asset class year to date, up 7.4% through June. We started adding to our US small cap position back in March and expect the asset class to continue to outperform on the back of attractive valuations, strong earnings growth and the safer harbor it may provide from trade-related market turbulence.²

While we have a clear preference for small versus large cap in the US, we are neutral in our allocation to growth versus value. Value is extraordinarily cheap, which would ordinarily make it attractive. Yet, growth stocks are supported by a new bout of high tech exuberance, a déjà vu of the roaring 1990s. The difference is that this time, in contrast to the dotcom era, a majority of the highest-flying technology companies (e.g., Amazon and Netflix) are

profitable and increasingly dominating their more traditional competitors (e.g., Target and Disney). Sales of growth stocks are expected to expand at 8% over the next year compared to 4% for value stocks.

Turning to EAFE, corporate earnings growth expectations are decoupling as much as economic growth and inflation. Over the next 12 months, earnings in EAFE are expected to grow at 8%, roughly half the pace in the US (Figure 5).

5/ In EAFE, Not so Great Expectations



As of 5/31/2018.

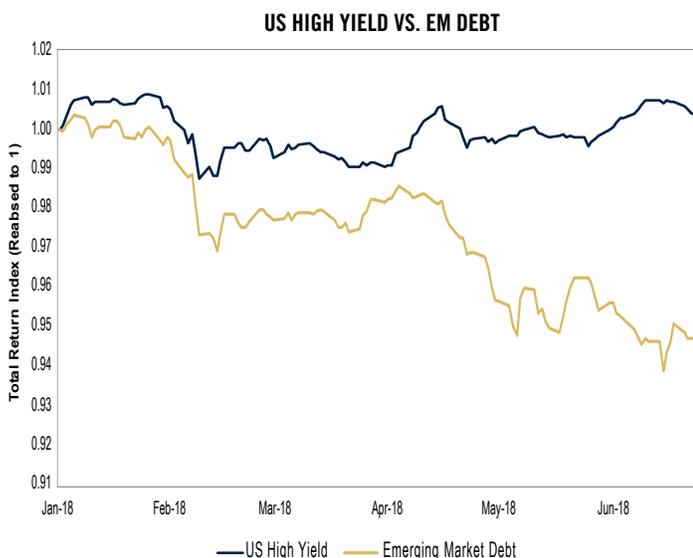
Source: QMA, FactSet. An investment cannot be made directly in an index.

In EM, meanwhile, the strengthening dollar, the brewing trade war between the US and China and the increase in US rates are factors clearly stacked against many markets. Worse yet, slowdown in demand due to the stronger dollar and softening global growth may have a further adverse effect on the asset prices of those whose fortunes are more tied to commodities.

As a result, we are underweight EM equities. While we have been reducing exposure to fixed income risk assets more generally, we have also maintained a preference for US high yield over EM debt (Figure 6, next page). We are staying with this allocation, counting on the continued growth of the US economy to offer the more attractive risk/return tradeoff.

² QMA Market Pulse: Small Caps' Turn, Irene Tunkel and Edward L. Campbell, 6/2018. There is no guarantee this expectation will be achieved.

6/ In Riskier Credit, a Preference for US High Yield



As of 6/28/2018.

Source: QMA, FactSet, Bloomberg. An investment cannot be made directly in an index.

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

But in another reflection of our “bearly bullish” outlook, we are underweight safe assets such as US Treasuries, which don’t fare as well in a rising rates environment. Furthermore, as US and global growth diverge, Treasuries will be leading yields higher, further widening spreads and hurting US bond prices. Also because of rising rates, we prefer cash to longer-duration Treasuries and investment grade bonds. Within the government bond space, we have been adding exposure to TIPS as a potent protection from rising inflation.

In sum, we believe that in the cross-currents of rising rates and flight to safety from roiling trade disputes, risk assets in the US are still more likely to outperform safe assets and most overseas assets over the next three to six months. We will maintain our overweight to US risky assets throughout the quarter but will be acutely attuned to investor sentiment towards risk and trade tensions.

7/ QMA's Asset Class Views

Asset Class	-	Neutral		+
Stocks	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fixed Income	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Real Estate	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Commodities	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cash	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Stocks				
US	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
EAFE	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Emerging Markets	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fixed Income				
US Core	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
TIPS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
High Yield	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Non-US Dev. Sov. Bonds	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EMD	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cash	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

■ July 2018

As of 6/30/2018.

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

Productivity: Still the Wild Card

Among the reasons we have turned just “bearly bullish” are a handful of downside risks that, as noted above, have begun looming larger than when we first highlighted them at the start of the year. But back then, we also highlighted an upside risk — that long-dormant productivity would finally enter an acceleration phase, potentially unleashing a virtuous cycle of business investment, increased demand and low inflation, providing a second wind for the global economic expansion. Somewhat paradoxically, that “risk,” too, has been ascendant of late. The question now is, will productivity show up in time to save the day?

The Stakes

If anything, the stakes are even higher than they were a several months ago. According to estimates by the US Federal Reserve (Fed), the level of US GDP surpassed its potential sometime in the third quarter of 2017. This historically marks the end of a cycle, as slack disappears, prompting economic participants to pay higher prices for labor and capital inputs, which leads to inflation spiraling upwards, only to be harshly brought back down to earth by an aggressive Fed hiking campaign. Since 1950, the amount of time the US economy has remained above potential before entering a recession has averaged just shy of nine quarters. This would imply the recession doomsday clock will strike midnight sometime around Q3 of 2019.

But a rise in productivity growth would change everything. Higher productivity would raise the level of potential GDP, giving us room to breathe. Unit labor costs would remain contained, and central bankers would have little incentive to turn hawkish in the absence of inflation pressures.

The Capex Factor

On the surface, it might seem we haven't a chance. Since we first noted an encouraging 3% jump in US productivity in Q3 of last year, the headline figure has barely budged. However, we have found in previous research that changes in business investment correlate significantly with forward changes in productivity. We believe that the tax bill passed in 2017 could be a key catalyst, at least in the US. Lower tax rates, and the ability for companies to expense investments at an accelerated pace, should, all else equal, encourage greater capital investment by American firms on their home soil.

And, indeed, if you look hard enough the green shoots of future productivity growth would appear to be everywhere. A faster pace of capex has already been felt in the US manufacturing sector, with industrial production, orders of durable goods, and forward-looking manufacturing surveys all having seen noticeable pickups in activity over the past year. In addition, investment in information technology has taken off, with the sector experiencing record profits and margins this year and now accounting for a full quarter of the market cap of the S&P 500. Furthermore, data from the US Bureau of Economic Analysis has shown that the pace of investment by businesses in

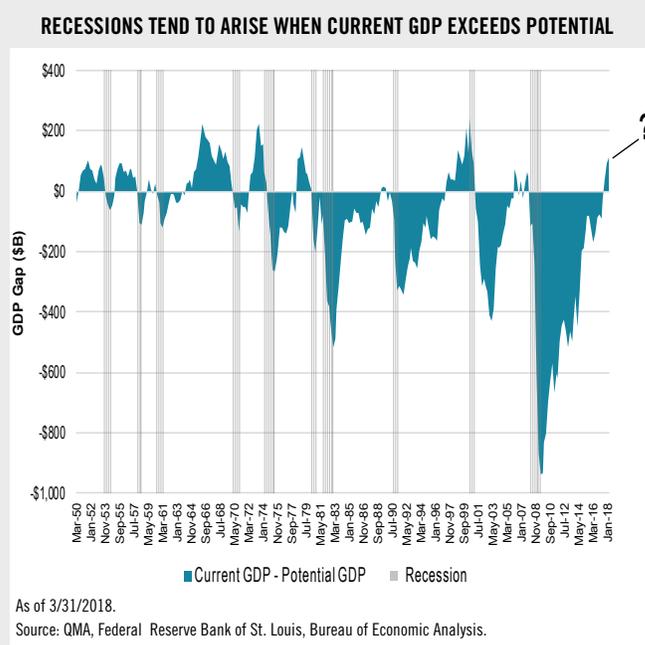
equipment reached multi-year highs in 2017, peaking at an annualized rate of over 10% in Q4. Despite the absence of a tax windfall, the latest IMF data show similar (if more modest) patterns forming in the non-US developed economies.

Race to the Finish

The problem, as Nancy Lazar of Cornerstone Macro has pointed out, is that it can typically take around three years for such capex booms to filter through to actual productivity growth strong enough to bend the potential GDP and inflation curves.³ Three years from the start of the current surge takes us just about to the end of 2019.

It should be an interesting year ahead.

7/ Will Productivity Growth Arrive in Time?



³ Nancy Lazar and Aneta Markowska, “This Time is Different: Productivity Growth Improvement to Extend the Cycle,” Cornerstone Macro, June 15, 2018.



AUTHOR

Edward L. Campbell, CFA, Managing Director and Senior Portfolio Manager
Irene Tunkel, CFA, Principal, Senior Researcher and Portfolio Manager
Peter Vaiciunas, CFA, Portfolio Manager
QMA's Multi-Asset Solutions Team

FOR MORE INFORMATION

To learn more about QMA's capabilities, please contact
Stephen Brundage, CFA, Managing Director and Client Portfolio Manager,
at stephen.brundage@qma.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 \$127.6 billion* in assets for a wide range of global clients.

*As of 3/31/2018.

NOTES TO DISCLOSURE

Sources: QMA, Thomson Reuters Datastream, FactSet, Bloomberg, OECD, Federal Reserve Bank of St. Louis, IMF, Bureau of Economic Analysis, Cornerstone Macro.

This is intended for Professional Investors only. Investing involves risk and the value of investments can fall as well as rise. Past performance is not a guarantee or a reliable indicator of future results.

These materials represent the views, opinions and recommendations of the author(s) regarding economic conditions, asset classes, and strategies. Distribution of this information to any person other than the person to whom it was originally delivered is unauthorized, and 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. 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 that such information will not be changed. 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. 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 views expressed herein, including for proprietary accounts of QMA or its affiliates.

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.

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.

The opinions expressed herein do not take into account individual client circumstances, objectives, or needs and are therefore are not intended to serve as investment recommendations. No determination has been made regarding the suitability of particular strategies to particular clients or prospects. The financial indices referenced herein is provided for informational purposes only. You cannot invest directly in an index. The statistical data regarding such indices has been obtained from sources believed to be reliable but has not been independently verified.

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.

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.