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Sound thinking

PRIORITIES FOR 2019

The start of the year is a good time to consider some of the likely key issues that investors may have to deal with over the next 12 months. Our CIO, Ian Toner, identifies eight topics that are likely to be important during 2019. He also outlines ways that investors might approach each of these topics, and identifies some of the ways they might impact portfolios over the year.

Topics of interest

BUILDING EFFECTIVE PRIVATE MARKET PORTFOLIOS

Institutional sponsors often invest in private asset classes to boost the return profile of their overall plan portfolios. Yet, many fall short of achieving the desired returns. We believe that effective portfolio construction is an important component of achieving attractive return targets in private markets. Drawing on our experience over the last 20 years, we highlight the key considerations for any investor seeking to build a private markets portfolio.

PRIVATE MARKETS COMMITMENT PACING AND CASH FLOW MODELING

Private markets investors are faced with the difficultly of estimating future exposures within their portfolios over a longer time horizon. An effective pacing model designed to manage investor target allocations is a key process for managing exposures accurately. We provide an overview to commitment strategies, maintaining allocations over the long-term and monitoring liquidity risk.

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4th quarter summary

THE ECONOMIC CLIMATE

— U.S. real GDP growth reached 3.0% in Q3, supported by fiscal stimulus which is more or less expected to fade in 2019. Growth is forecast to moderate in the U.S., in-line with the rest of the developed world. ***p. 9***

— The U.S. and China ended their most recent round of trade negotiations during the first week of January. China indicated willingness to purchase more American agricultural goods, energy, and other manufactured goods, but little progress is evident overall. ***p. 15***

PORTFOLIO IMPACTS

— The Federal Reserve raised the fed funds rate by 0.25% to a range of 2.25%-2.50%. Market expectations for future rate hikes changed dramatically in December. As of year-end, the fed funds futures market is pricing in zero hikes for 2019, and a rate cut for 2020. ***p. 19***

— Emerging markets were the top equity performer in Q4, as these markets (MSCI EM -7.5%) experienced much less pain than developed markets (S&P 500 -13.5%, MSCI EAFE -12.5%) during the equity sell-off. Currencies stabilized in Q4 (JPMorgan EM Currency Index +0.2%) and emerging market crises concerns faded from the news headlines. ***p. 34***

THE INVESTMENT CLIMATE

— The U.S. equity market experienced a fairly significant peak-to-trough drawdown in Q4 (S&P 500 -19.8%, Russell 1000 -20.1%), along with global equity markets. Equity corrections of this size have historically occurred roughly once per cycle. ***p. 29***

— After reaching a cyclical high of 3.2% in November, the 10-year U.S. Treasury yield fell sharply to end the year at 2.7%. Much of this drop was due to falling inflation expectations as energy prices trended down. ***p. 19***

— The House of Commons in British Parliament overwhelmingly rejected Theresa May's Brexit deal that had been approved by the European Union. The details surrounding the terms of Great Britain's exit remain uncertain ahead of the March 30th deadline. ***p. 17***

ASSET ALLOCATION ISSUES

— Diversification has been particularly painful in recent years as most asset classes failed to keep up with a domestic 60/40 portfolio. U.S. performance exceptionalism reversed in Q4 as U.S. equities underperformed. ***p. 6***

— Economic conditions around the world have weakened. This trend has been broad-based, from industrial production, to business sentiment, to corporate earnings expectations. ***p. 16***

Economic conditions displayed a weaker trend in Q4

A neutral risk stance may be appropriate in today's environment

What drove the market in Q4?

"Stocks continue to fall on global growth concerns"

GLOBAL MANUFACTURING PMI

Q3 17	Q4 17	Q1 18	Q2 18	Q3 18	Q4 18
53.2	54.5	53.3	53.0	52.2	51.5

Article Source: Yahoo Finance, December 14th, 2018

"Fed seen slowing, or even stopping, rate hikes next year"

YEAR-END 2020 MARKET IMPLIED FED FUNDS RATE

Jul	Aug	Sep	Oct	Nov	Dec
2.72%	2.62%	2.82%	2.86%	2.71%	2.38%

Article Source: Reuters, December 10th, 2018

"The great cheapening of 2018: global stock valuations now at five-year lows"

MSCI ACWI FORWARD P/E RATIO

Jul	Aug	Sep	Oct	Nov	Dec
14.9x	14.9x	14.8x	13.7x	13.9x	13.0x

Article Source: Wall Street Journal, December 10th, 2018

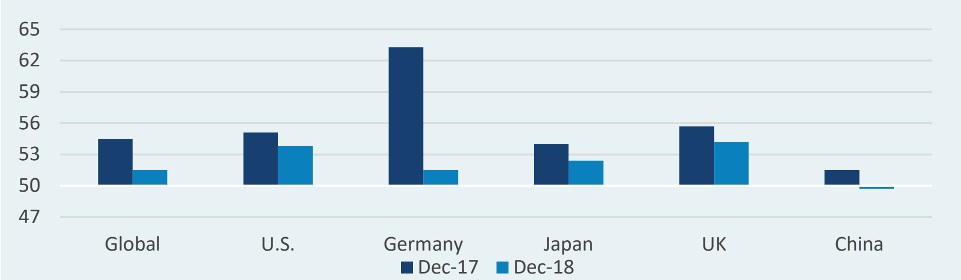
"Market volatility is surging"

DAILY AVERAGE OF S&P 500 INDEX IMPLIED VOLATILITY (VIX)

Jul	Aug	Sep	Oct	Nov	Dec
13.1	12.5	12.9	19.4	19.4	25.0

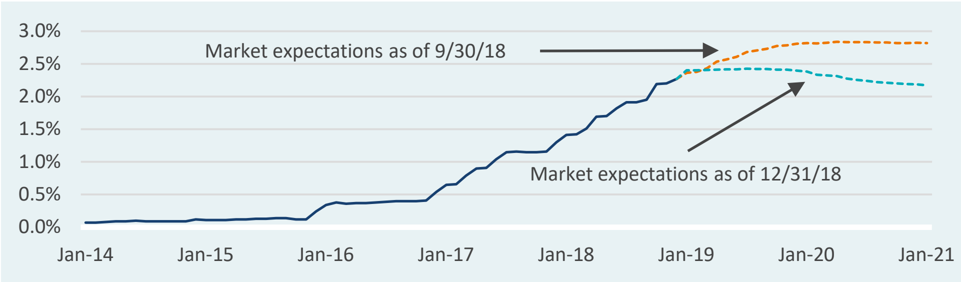
Article Source: Forbes, October 11th, 2018

GLOBAL MANUFACTURING PMIs



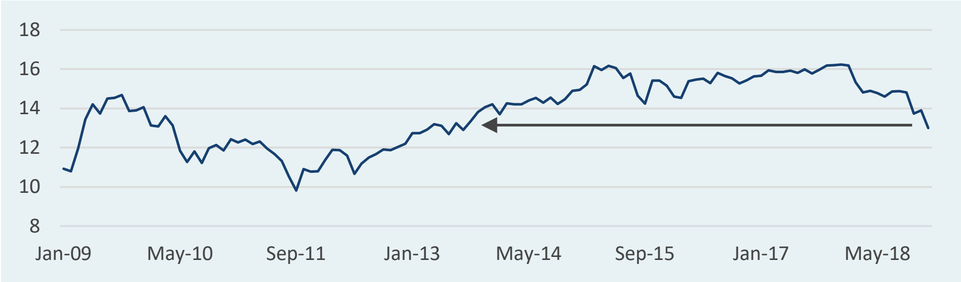
Source: Bloomberg, JPMorgan, Market, as of 12/31/18, 50 indicates a neutral level

MARKET PRICING OF FUTURE FED FUNDS RATE



Source: Bloomberg, as of 12/31/18

MSCI ACWI FORWARD P/E RATIO



Source: Bloomberg, as of 12/31/18, blended 12-month forward earnings

Tough years for diversification

Individual asset classes relative to a domestic 60/40

RELATIVE TO DOMESTIC 60/40	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
US Large	8.6	(7.8)	(8.0)	(12.1)	9.5	2.3	0.8	4.4	(0.5)	(14.0)	6.9	2.7	(2.4)	4.1	14.5	3.3	0.2	3.2	7.4	(1.9)
US Small	8.9	(1.7)	6.4	(10.5)	28.1	9.7	0.5	7.0	(7.6)	(10.8)	7.6	14.5	(8.7)	4.4	20.9	(5.5)	(5.6)	12.5	0.2	(8.5)
International Developed	14.6	(12.9)	(17.5)	(5.9)	19.4	11.6	9.4	14.9	5.2	(20.4)	12.2	(4.6)	(16.6)	5.4	4.9	(15.3)	(2.0)	(7.8)	10.6	(11.3)
Emerging Markets	(12.4)	1.3	1.3	3.8	36.6	17.0	29.9	20.7	33.4	(30.3)	58.9	6.5	(22.9)	6.3	(20.5)	(12.6)	(16.1)	2.4	22.9	(12.1)
US TIPS	(10.0)	14.5	11.8	26.6	(10.8)	(0.1)	(1.3)	(11.0)	5.6	20.6	(8.2)	(6.1)	9.1	(4.9)	(26.5)	(6.8)	(2.6)	(4.1)	(11.4)	1.2
US Treasury	(17.7)	16.0	10.7	24.5	(17.3)	(4.2)	(1.7)	(8.7)	4.2	41.0	(25.6)	(3.0)	11.1	(7.7)	(23.9)	(1.4)	0.4	(7.7)	(11.8)	3.4
Global Sovereign ex-US	(18.9)	(1.5)	-	31.9	(1.0)	3.5	(12.9)	(4.1)	4.9	32.4	(15.3)	(6.3)	0.7	(10.1)	(22.8)	(13.2)	(6.0)	(6.9)	(5.1)	1.6
Core Fixed Income	(13.2)	12.9	12.3	20.3	(15.1)	(4.3)	(1.7)	(7.1)	1.0	28.2	(13.7)	(5.9)	3.3	(7.7)	(19.9)	(4.4)	(0.7)	(6.2)	(10.9)	2.5
High Yield Corp. Credit	(10.0)	(4.6)	9.2	8.6	9.8	2.5	(1.4)	0.4	(4.1)	(3.2)	38.6	2.7	0.5	3.9	(10.5)	(7.9)	(5.7)	8.3	(6.9)	0.4
Bank Loans.	(12.4)	1.3	3.9	10.0	(19.2)	(3.4)	1.0	(4.7)	(3.9)	(6.1)	32.0	(2.3)	(3.0)	(2.2)	(12.6)	(8.8)	(1.9)	1.4	(10.3)	3.6
Global Credit	(12.4)	1.3	7.1	23.6	(2.8)	1.4	(6.1)	(3.1)	0.6	13.5	1.4	(5.7)	(0.1)	0.2	(16.8)	(8.0)	(4.6)	(3.4)	(5.2)	(0.8)
Emerging Market Debt (Hard)	7.2	14.0	13.6	23.7	3.0	3.0	6.1	(1.5)	0.2	11.0	10.2	(0.2)	2.8	5.5	(23.2)	(3.0)	-	1.4	(4.1)	(1.8)
Emerging Market Debt (Local)	(12.4)	1.3	3.9	10.0	(19.2)	(8.6)	2.2	3.8	12.1	17.8	2.4	3.3	(6.3)	4.9	(26.9)	(16.1)	(16.1)	1.1	0.8	(3.7)
Commodities	11.9	33.1	(15.6)	35.9	4.7	0.5	17.3	(9.3)	10.2	(12.6)	(0.7)	4.4	(17.8)	(13.0)	(27.4)	(27.4)	(25.9)	3.0	(12.7)	(8.8)
Hedge Fund	14.1	5.4	6.7	11.0	(7.6)	(1.7)	3.4	(1.0)	4.3	1.6	(8.1)	(6.7)	(10.2)	(7.1)	(8.9)	(7.0)	(1.5)	(8.3)	(6.6)	(1.0)
REITs	(15.0)	32.3	16.2	13.6	17.0	24.6	9.7	24.6	(23.6)	(16.2)	9.0	16.2	4.7	5.7	(16.0)	21.4	3.0	(1.6)	(10.2)	(2.3)
Risk Parity (HFR Vol 10)	(12.4)	1.3	3.9	10.0	(19.2)	9.1	11.4	(9.1)	4.7	6.6	(3.6)	5.7	4.7	1.1	(18.4)	(2.3)	(6.3)	1.2	(0.9)	6.4
Core Real Estate (NCREIF ODCE)	0.8	15.6	9.5	15.5	(9.9)	4.5	17.3	4.9	10.0	13.0	(49.4)	4.0	11.5	(1.0)	(4.0)	2.1	13.8	-	(6.8)	7.8
Domestic 60/40 (S&P 500, BC Universal)	12.4	(1.3)	(3.9)	(10.0)	19.2	8.6	4.1	11.4	6.0	(23.0)	19.6	12.4	4.5	11.9	17.9	10.4	1.2	8.8	14.4	(2.5)
% of Assets Outperforming Domestic 60/40	39%	72%	78%	83%	44%	67%	67%	44%	72%	56%	56%	50%	50%	56%	17%	17%	22%	50%	28%	44%

Performance as of 12/31/18, NCREIF Property Index performance data as of 9/30/18

Economic environment

U.S. economics summary

— Real GDP growth reached 3.0% YoY (3.4% quarterly annualized rate) in the third quarter, the fastest pace of growth in more than three years. Consumers drove growth after bouncing back from a spending slowdown in Q1.

— The U.S. and China ended the recent round of trade negotiations during the first week of January. The U.S. noted China's willingness to purchase more American agricultural goods, energy, and other manufactured goods, but little progress is evident overall.

— U.S. inflation remained near the Federal Reserve's 2.0% target. Headline U.S. inflation fell from 2.3% to 1.9% over the quarter, driven by lower oil prices. U.S. core CPI remained at 2.2%. Moderate inflation has likely contributed to the willingness of the Fed to keep on course with rate hikes.

— The labor market remained a bright spot in the U.S. economy. On average, nonfarm payrolls increased by 254,000 per month during the quarter, well above the expansion average of 201,000.

— The headline U-3 unemployment rate rose from 3.7% to 3.9%, in part due to an increase in labor force participation.

— Fiscal stimulus continued to support growth, although the impacts will likely subside in the first half of 2019. Stimulus may be masking a slowdown in the economy, which would be directionally in line with the rest of the developed world.

— The Federal Reserve hiked the target range for its benchmark interest rate by 25 basis points to a new range of 2.25% - 2.50%. Consistent with expectations for a "dovish hike", central bank officials re-rated hike expectations in 2019 from three to two.

	Most Recent	**12 Months Prior**
GDP *(YoY)*	3.0% *9/30/18*	2.3% *9/30/17*
Inflation *(CPI YoY, Core)*	2.2% *12/31/18*	1.8% *12/31/17*
Expected Inflation *(5yr-5yr forward)*	1.8% *12/31/18*	2.0% *12/31/17*
Fed Funds Target Range	2.25 – 2.50% *12/31/18*	1.25 – 1.50% *12/31/17*
10 Year Rate	2.7% *12/31/18*	2.4% *12/31/17*
U-3 Unemployment	3.9% *12/31/18*	4.1% *12/31/17*
U-6 Unemployment	7.6% *12/31/18*	8.1% *12/31/17*

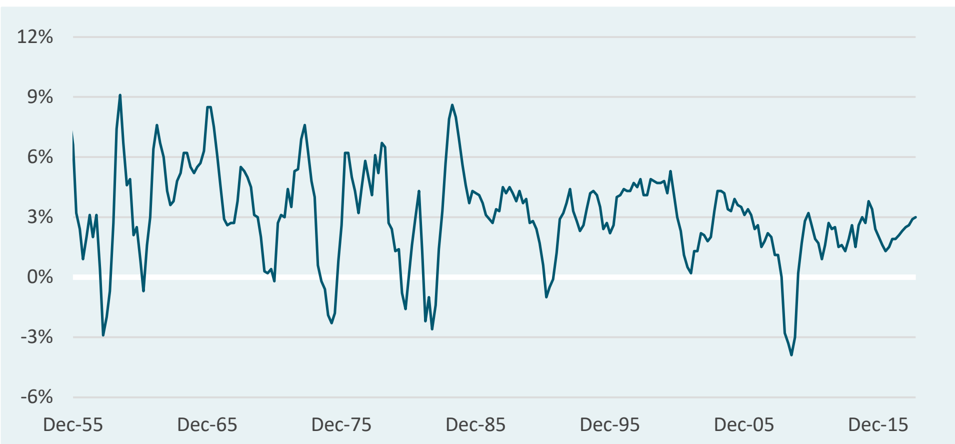
GDP growth

Real GDP growth reached 3.0% YoY (3.4% quarterly annualized rate) in the third quarter, the fastest pace in more than three years. Consumer spending was a core driver for the second straight quarter after bouncing back from a spending slowdown earlier in the year. A tight labor market, firming wage growth, and low inflation created a strong backdrop for spending, which added 2.4% to the quarterly growth rate. A build in inventories was the second biggest contributor to growth, which could be the result of pulling future growth into the current quarter as inventory builds are typically drawn down in subsequent quarters.

Fiscal stimulus continued to support growth, although its impact will likely subside in the first half of 2019. This support may be masking a slowdown in the U.S. economy, which has already started to appear in other parts of the world. More current metrics of the economy, such as PMIs, are indeed indicating that activity is slowing from recent high levels, but growth remains positive. However, fading fiscal stimulus and monetary tightening (that impacts the economy with a lag) present unique challenges to the economic outlook and increase the possibility of a more significant slowdown.

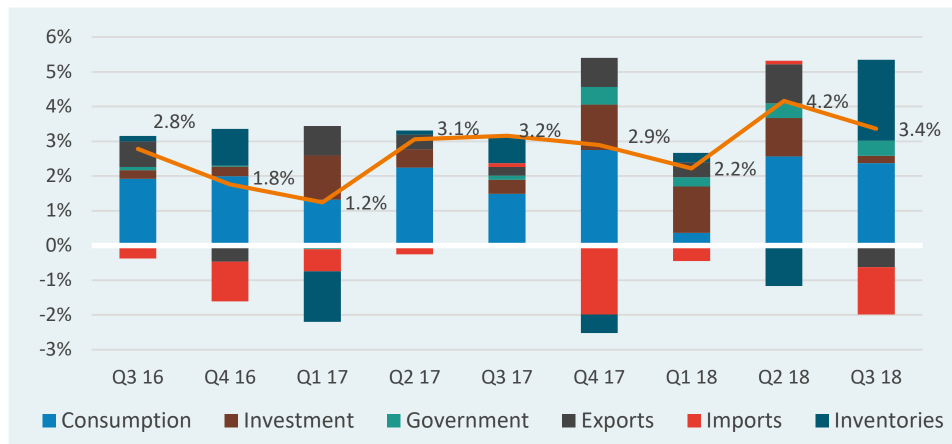
The economy appears to be slowing after a period of strong growth

U.S. REAL GDP GROWTH (YOY)



Source: Bloomberg, as of 9/30/18

U.S. GDP GROWTH ATTRIBUTION



Source: BEA, annualized quarterly rate, as of 9/30/18

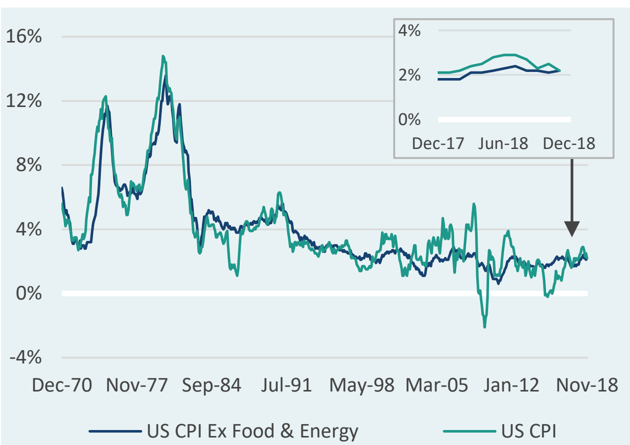
Inflation

U.S. inflation remained near the Federal Reserve's 2.0% target. Headline U.S. inflation fell from 2.3% to 1.9% over the quarter, driven by lower oil prices. U.S. core CPI remained at 2.2%. Moderate inflation has likely contributed to the willingness of the Fed to keep on course with rate hikes.

Inflation fears remained muted as indicated by consumer expectations and market pricing. Breakeven inflation rates implied by U.S. 10-year Treasury pricing fell by a net 0.4% to 1.7% in the fourth quarter alongside a significant drop in energy prices. Consumer inflation expectations moderated by a net 0.3% during that time, according to the University of Michigan consumer survey.

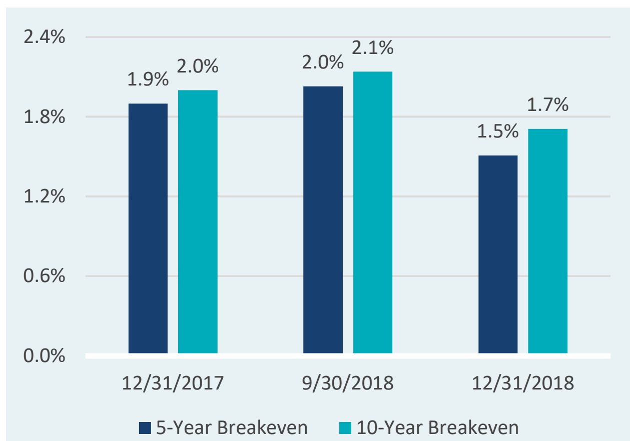
U.S.-China tariffs have recently been cited as a potential source of inflation risk. However, flow-through effects from import prices to consumer prices are complex, and the outcome may be more nuanced. We do not expect a material increase in inflation due to the tariffs that have been implemented.

U.S. CPI (YOY)



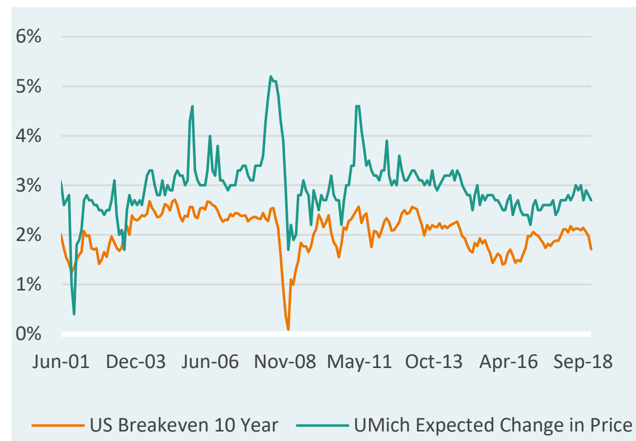
Source: Bloomberg, as of 12/31/18

BREAKEVEN INFLATION RATES



Source: FRED, as of 12/31/18

INFLATION EXPECTATIONS



Source: Bloomberg, as of 12/31/18

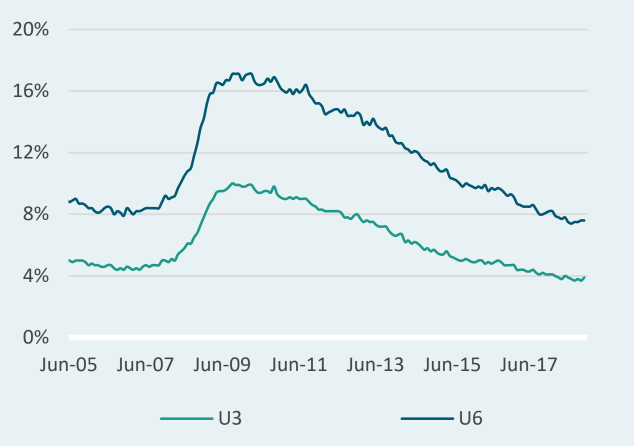
Labor market

The labor market remained a bright spot in the U.S. economy, although this strength may reflect where the economy has been rather than where it is headed. Labor market conditions tend to lag the broader economy.

On average, nonfarm payrolls increased by 254,000 per month during the quarter, well above the expansion average of 201,000. The headline U-3 unemployment rate ticked up from 3.7% to 3.9%, in part due to an increase in labor force participation. Rising wages and ease of obtaining employment may have played a role in enticing people to come back to work. Core age participation (ages 25-54) rose from 81.8% to 82.3% in the fourth quarter. This measure is up a net 1.7% (this increase roughly equates to 3.5 million more employed persons, all else equal) since hitting a secular low in late 2015.

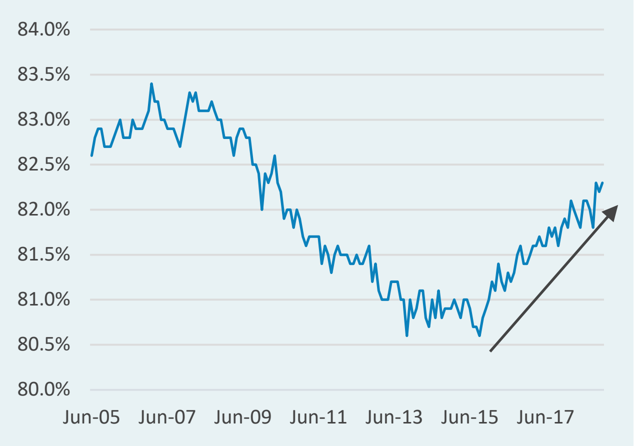
The tightness in the labor market appears to be translating to above average wage gains. In December, wage growth hit a cycle high of 3.3% from the previous year.

UNEMPLOYMENT RATE



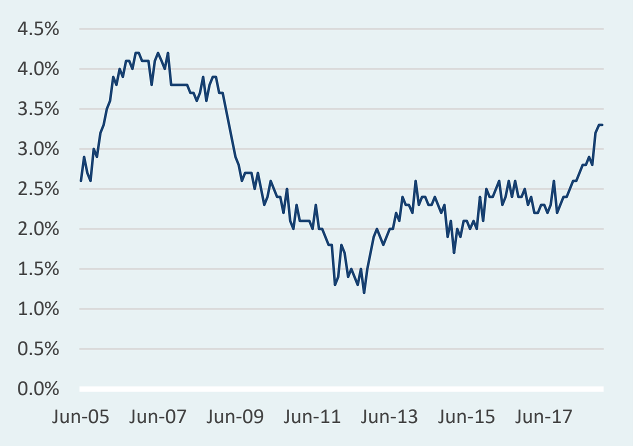
Source: FRED, as of 12/31/18

CORE AGE PARTICIPATION RATE



Source: Bloomberg, as 12/31/18

WAGE GROWTH (YOY)



Source: Bloomberg, as of 12/31/18

The consumer

Real consumer spending rose 2.8% year-over-year, and remains a core driver of recent economic growth.

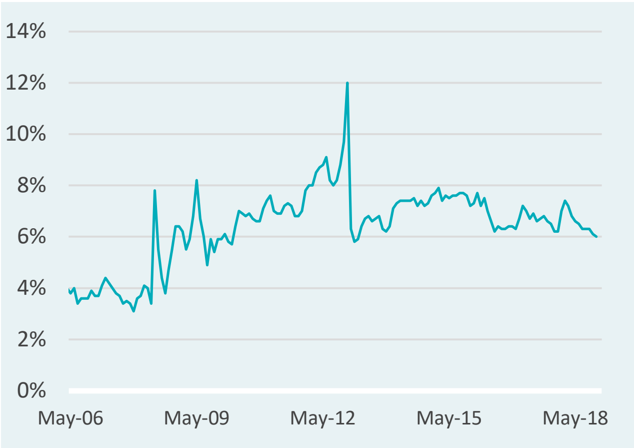
A strong job market, decent wage gains, and low interest rates have provided continued support to spending. Although conditions and sentiment are strong relative to history, U.S. consumers appear to be behaving conservatively. Overall, spending growth and debt usage has been more moderate than seen in recent expansions, perhaps partly due to memories of the 2008-2009 recession.

The 30-year fixed mortgage rate approached 5% towards the end of the year but tapered off as interest rates fell in December. Credit card interest rates have also risen materially. We believe further rate increases from this point will most likely be minimal, but that recent rate rises will act as a headwind to the consumer in many areas. For example, higher home values post-2009 were possible because low interest rates helped keep monthly payments within budgets. Now the reversal in interest rates, paired with additional home price appreciation, has squeezed the budget for new homeowners and contributed to a slowdown in the U.S. housing market.

REAL CONSUMER SPENDING (YOY)

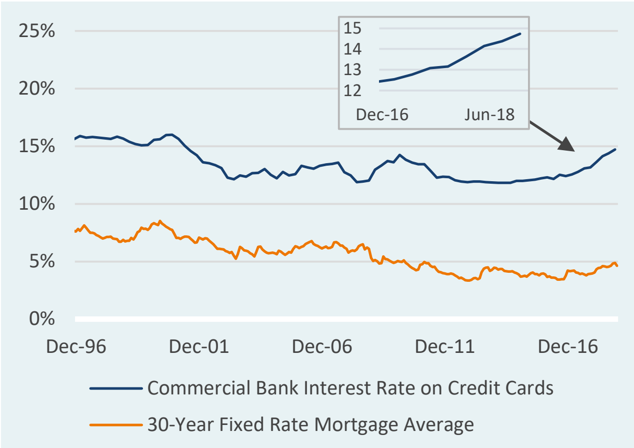
Source: Bloomberg, as of 11/30/18

PERSONAL SAVINGS RATE



Source: FRED, as of 11/30/18

CONSUMER INTEREST RATES



Source: FRED, as of 12/31/18

Sentiment

Both consumer and business sentiment indicators were resilient in the fourth quarter, holding at above average levels.

The University of Michigan Index of Consumer Sentiment fell modestly during the quarter from 100.1 to 98.3, but is still elevated relative to its own history (87th percentile since index inception in 1978). The recent plunge in stock prices was only reported by 12% of respondents as a primary economic concern. Consumers were instead focused on positive perceptions of employment and income prospects, according to the survey administrators.

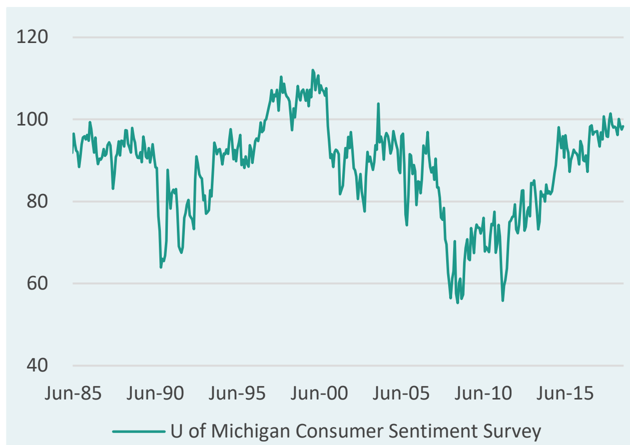
Small business sentiment drifted lower, but remained near record highs. At 104.4, the December reading for the NFIB Small Business Optimism Index was in the 92nd percentile of its own history going back to 1985.

Consumers and business are confident about the future

CONSUMER COMFORT INDEX

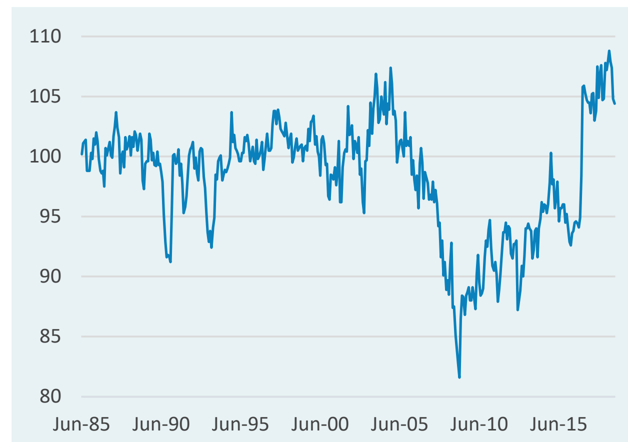
Source: Bloomberg, as of 12/31/18 (see Appendix)

CONSUMER SENTIMENT



Source: University of Michigan, as of 12/31/18 (see Appendix)

NFIB SMALL BUSINESS OPTIMISM INDEX



Source: NFIB, as of 12/31/18 (see Appendix)

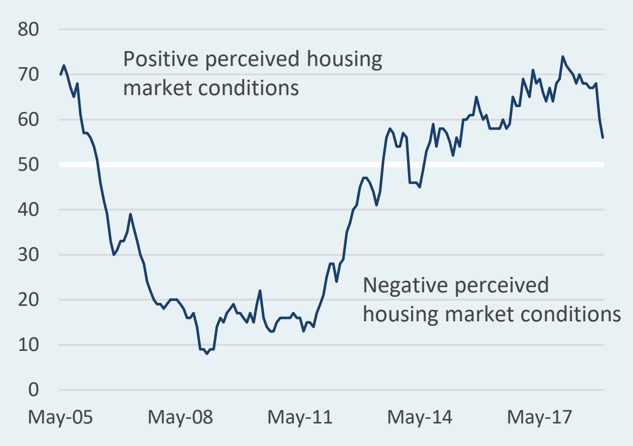
Housing

Housing market data that was released in the fourth quarter consistently came in below expectations. Monetary tightening has led to higher interest rates and likely begun to weigh on sales activity and home price appreciation. The National Association of Homebuilders (NAHB) Housing Market Index, based on a monthly survey of NAHB members designed to take the pulse of the single-family housing market, fell sharply from 67 to 56. However, the survey suggests conditions remain favorable overall, as 50 represents the neutral point for the index.

Less favorable buying conditions have flowed through to a slower pace of home sales despite a slowdown in price increases. Existing home sales, which make up the majority of national sales, fell to an annualized rate of 5.3 million in November, the slowest pace since early 2016. Home prices continue to march upward, but at a more moderate pace. In the most recent October print, the Case-Shiller National Home Price Index rose 5.5% year-over-year.

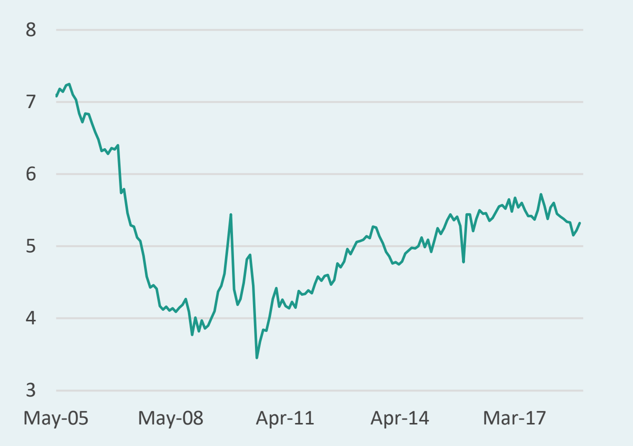
The U.S. housing market appears to be cooling off

NAHB HOUSING MARKET INDEX



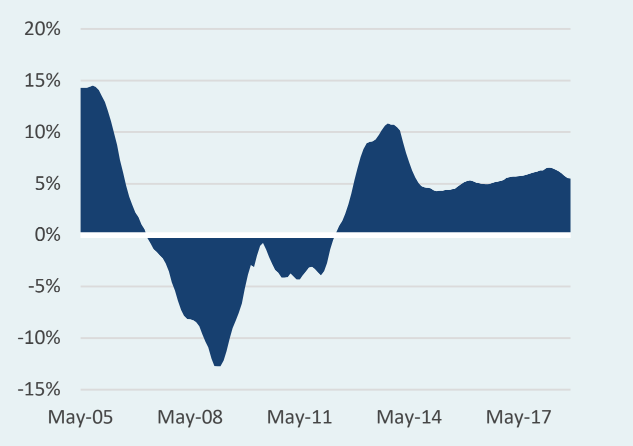
Source: Bloomberg, NAHB, as of 12/31/18 (see appendix)

EXISTING HOME SALES (MILLIONS)



Source: Bloomberg, SAAR, as of 11/30/18

NATIONAL HOME PRICE INDEX (YOY)



Source: Bloomberg, S&P/Case-Shiller, as of 10/31/18

International economics summary

— Outside of the U.S., economic growth has slowed in recent quarters, most notably in Europe and Japan. Developed real GDP growth is expected to slow from 2.2% in 2018 to 2.0% in 2019, according to the World Bank.

— The U.S. and China ended the recent round of trade negotiations during the first week of January. Officials continue to work towards an agreement, though little progress is been demonstrated thus far. On March 2nd, U.S. tariffs are scheduled to increase from 10% to 25% on $200 billion of Chinese imports.

— China's Purchasing Managers' Index (PMI) fell to 49.7 in December. An index reading of 50 indicates economic expansion while a reading below 50 indicates contraction. This reading is in line with a string of weak economic data coming out of China.

— The House of Commons in British Parliament overwhelmingly rejected Theresa May's Brexit deal that had been approved by the European Union. The details surrounding the terms of Great Britain's exit remain uncertain ahead of the March 30th deadline. Potential resolutions include renegotiating a deal with the EU, leaving without a deal, or delaying the exit deadline.

— The U.S. dollar appreciated by 1.9% during the quarter on a trade-weighted basis. A slowing U.S. economy would likely put downside pressure on the dollar, which has been boosted recently by U.S. economic exceptionalism.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	3.0% *9/30/18*	2.2% *11/30/18*	3.9% *12/31/18*
Eurozone	1.6% *9/30/18*	1.8% *11/30/18*	8.1% *10/31/18*
Japan	0.0% *9/30/18*	0.8% *11/30/18*	2.5% *11/30/18*
BRICS Nations	5.6% *9/30/18*	2.4% *12/31/18*	5.4% *9/30/18*
Brazil	1.3% *9/30/18*	4.1% *11/30/18*	11.7% *12/31/18*
Russia	1.5% *9/30/18*	4.3% *12/31/18*	4.8% *11/30/18*
India	7.1% *9/30/18*	2.3% *11/30/18*	8.8% *12/31/17*
China	6.5% *9/30/18*	2.2% *11/30/18*	3.8% *9/30/18*

International economics

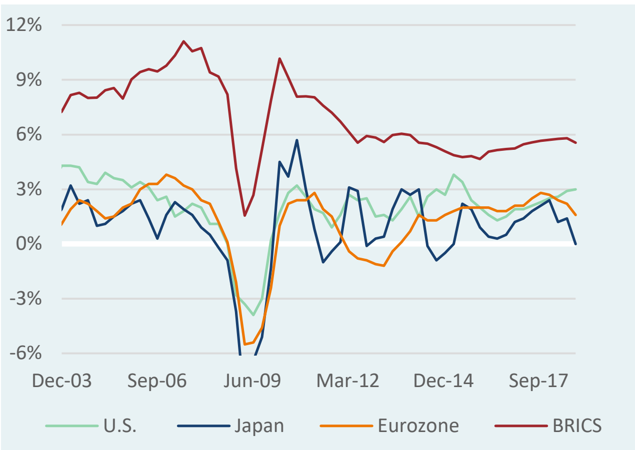
Outside of the U.S., economic growth slowed in recent quarters, most notably in Europe and Japan. Inflation turned lower in Q4 alongside falling energy prices. Low inflation provides greater flexibility for central banks to remain accommodative as needed.

In the Eurozone, real GDP decelerated to 1.6% YoY as many economies struggled with stagnation and social unrest. European Union rules restrict the ability of member nations to fully implement fiscal and monetary stimulus to their economies, which may have contributed to Europe's uneven economic recovery. It is possible that certain laggards of the Eurozone will eventually push for greater sovereign control of their economies if stagnation continues. This may result in standoffs such as seen recently between Italy and the EU.

The House of Commons in British Parliament overwhelmingly rejected Theresa May's Brexit deal that had been approved by the European Union. The details surrounding the terms of Great Britain's exit remain uncertain ahead of the March 30th deadline. Potential resolutions include renegotiating a deal with the EU, leaving without a deal, or delaying the exit deadline.

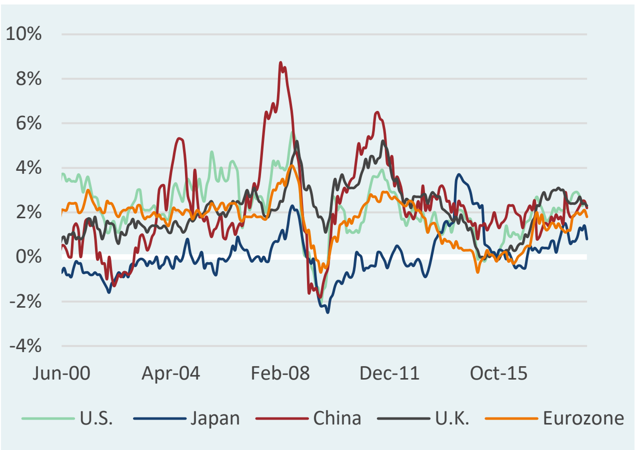
Global economic growth appears to be decelerating

REAL GDP GROWTH (YOY)



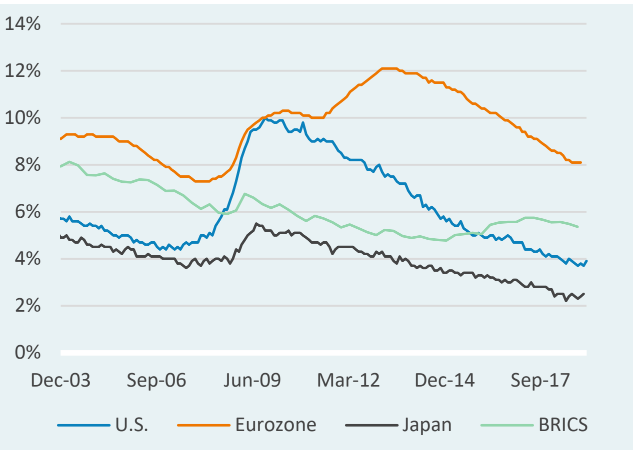
Source: Bloomberg, as of 9/30/18

INFLATION (CPI YOY)



Source: Bloomberg, as of 11/30/18

UNEMPLOYMENT RATE



Source: Bloomberg, as of 11/30/18 or most recent release

Brexit

The chaos surrounding Brexit negotiations has not yet had a large impact on markets (outside of higher volatility in the British pound), but it will likely become an increasing area of focus for global investors the closer we get to the March 2019 deadline. While most political and market commentators remain anti-Brexit, when we take a step back and think more dispassionately about the issue, a different picture emerges. Less immigration from Europe will likely be balanced by easier movement from other countries, including the U.S., India, Australia and others with historically strong links to the UK. Some businesses will likely shift to accommodate the UK being outside of the protectionist area of the EU, but for most UK firms, much of their business is either done domestically or with non-EU countries.

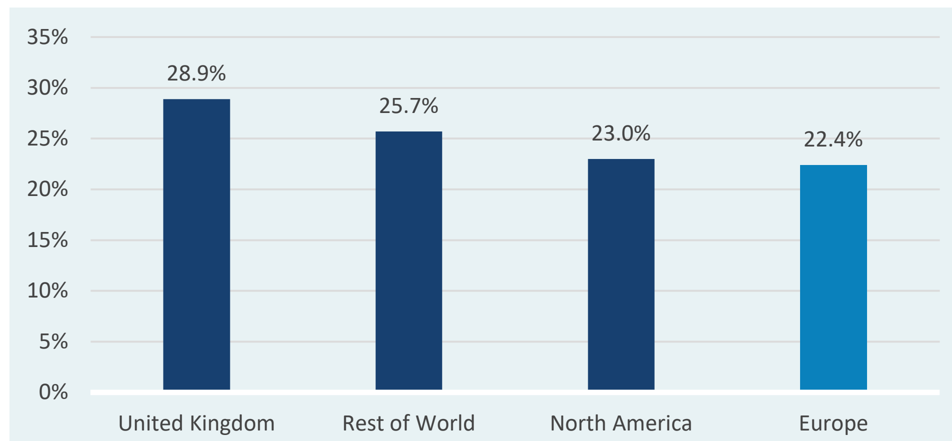
There will be both gains and losses from Brexit, and yet current market pricing behavior seems to be putting little focus on the good and exaggerating the bad, which may present investment opportunity, particularly for non-consensus active managers. In the short-term, however, investors should brace for higher volatility.

There will be both gains and losses from Brexit

3-MONTH IMPLIED VOLATILITY OF GBP/USD

Source: Bloomberg, as of 12/31/18

FTSE 100 COMPANY REVENUES BY REGION (2017)



Source: FTSE, 2017

Fixed income rates & credit

Interest rate environment

— The Federal Reserve raised the target for the fed funds rate by 0.25% in December, to a range of 2.25%-2.50%. Despite the hike, Fed officials indicated a more patient approach to future tightening, and lowered expectations for hikes in 2019 from three to two.

— The market's expectation for future rate hikes changed dramatically in December. As of year-end, the fed fund futures market is pricing zero hikes in 2019 and a rate cut priced in 2020.

— After reaching a cycle high of 3.2% in November, the 10-year Treasury yield fell sharply to end the year at 2.7%. Much of this drop was due to falling breakeven inflation as oil prices plunged. The 10-year breakeven inflation rate fell from 2.1% to 1.7% over the quarter.

— Although certain parts of the U.S. Treasury yield curve have inverted, there remains a 15 bps gap between the 10- and 2-year yields, which is the most widely cited measure of yield curve shape.

— Developed sovereign yields fell alongside U.S. Treasuries. The 10-year German bund yield was cut in half over the quarter to 0.24%.

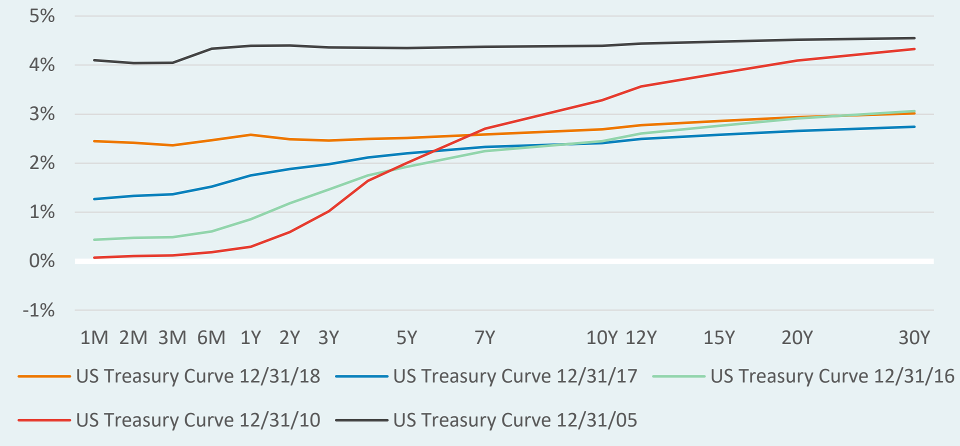
— As expected, the European Central Bank officially announced the end of its asset purchase program. Beginning in January of 2019, monthly purchases will fall from €30 billion to €0. Central bank officials have said that they will fully reinvest maturing securities for the foreseeable future and keep interest rates unchanged until at least the second half of 2019.

Area	Short Term (3M)	10-Year
United States	2.36%	2.69%
Germany	(0.77%)	0.24%
France	(0.86%)	0.71%
Spain	(0.42%)	1.42%
Italy	(0.06%)	2.74%
Greece	1.30%	4.40%
U.K.	0.73%	1.28%
Japan	(0.15%)	0.00%
Australia	2.01%	2.32%
China	2.83%	3.31%
Brazil	6.48%	9.24%
Russia	7.12%	8.78%

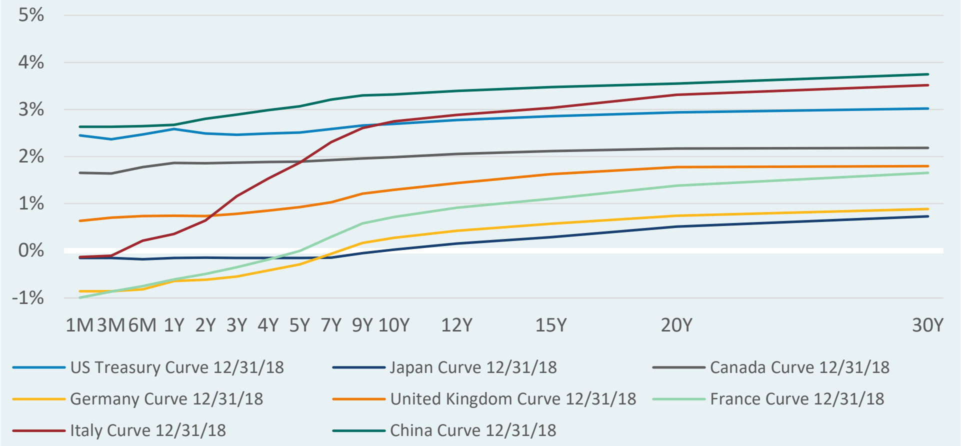
Source: Bloomberg, as of 12/31/18

Yield environment

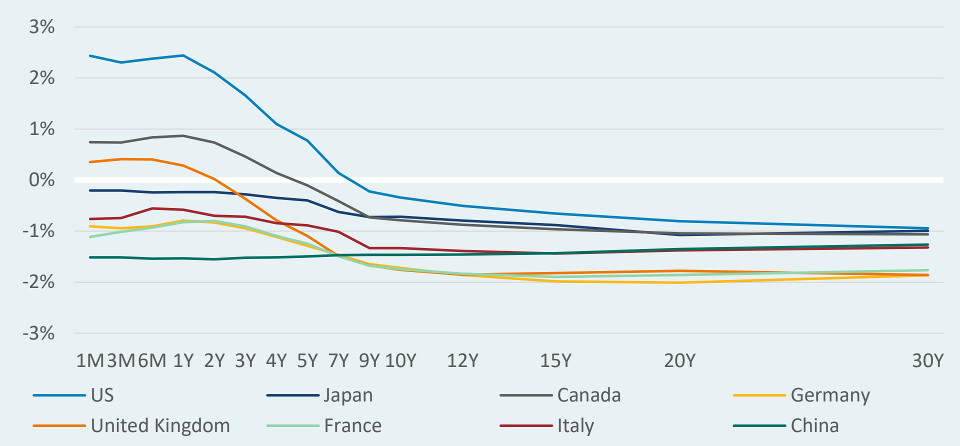
U.S. YIELD CURVE



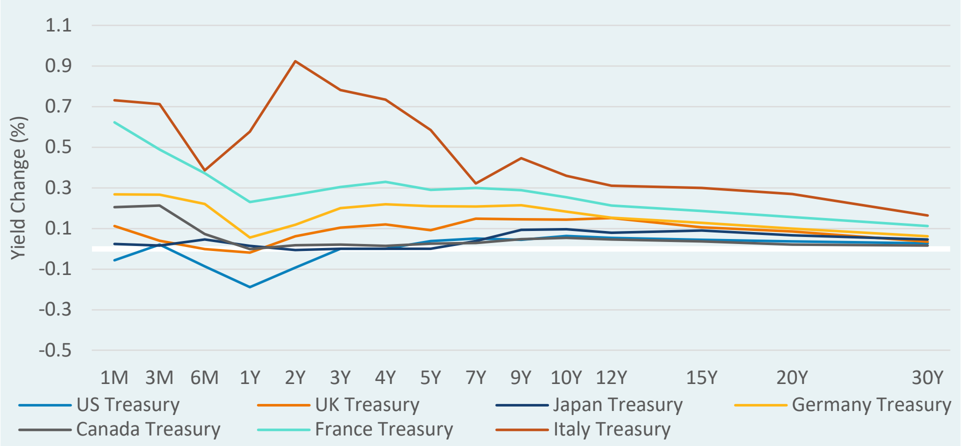
GLOBAL GOVERNMENT YIELD CURVES



YIELD CURVE CHANGES OVER LAST FIVE YEARS



IMPLIED CHANGES OVER NEXT YEAR



Source: Bloomberg, as of 12/31/18

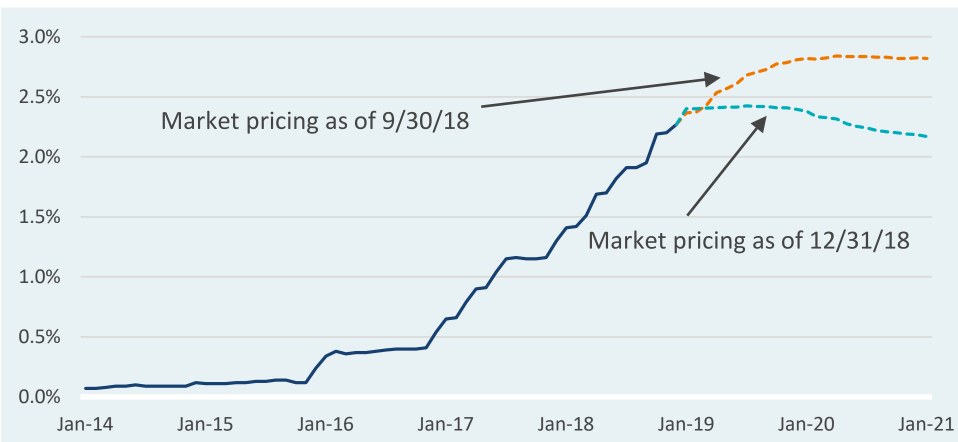
Fed pricing

The Fed raised rates by another 25 bps in December to a target range of 2.25% to 2.50% on the fed funds rate, the fourth such hike of 2018. More important than what the Fed did, however, is what Fed officials said, and how the market reacted and adjusted its expectations for future monetary tightening. Leading up to the December meeting, Fed officials began to take a more a dovish tone amid market volatility and economic data misses, and they stressed the importance of future policy being data dependent. The Fed then acknowledged these concerns by lowering expectations for rate hikes in 2019 from three to two. Meanwhile, market expectations for future rate hikes plummeted as equity markets sold off and volatility spiked. As of the end of the year, not only were markets priced for a Fed pause in 2019, but they were also priced for a rate cut in 2020. With such dovish market pricing, it is important to note that in order for the Fed to provide any stimulus at this point, it will likely need to cut rates or halt the balance sheet unwind.

As of December, the Fed balance sheet had been reduced by around $500 billion without any immediate issues. To this point, officials have been adamant that the balance sheet is not an active tool for tightening monetary policy, and that there are no plans to adjust the current rate of unwind.

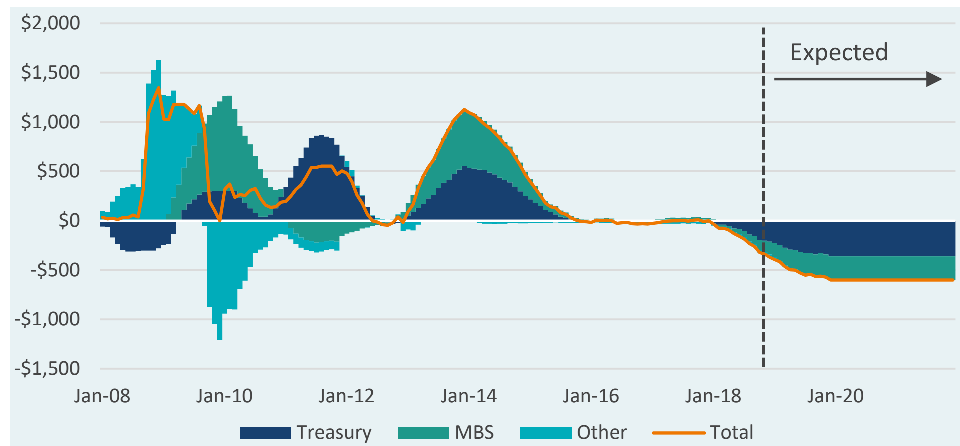
Market pricing of future Fed policy is extremely dovish

MARKET PRICING OF THE FED FUNDS RATE



Source: Bloomberg, as of 12/31/18, dotted lines are based on futures market pricing

NET CHANGE IN FED BALANCE SHEET (YOY, $BILLIONS)



Source: Bloomberg, Federal Reserve, as of 12/31/18

Credit environment

High yield and bank loans delivered losses during the quarter on slowing growth expectations, energy price volatility, investor outflows, and broad risk-off market sentiment (BbgBarc US Corp High Yield -4.5%, CS Leveraged Loans -3.1%).

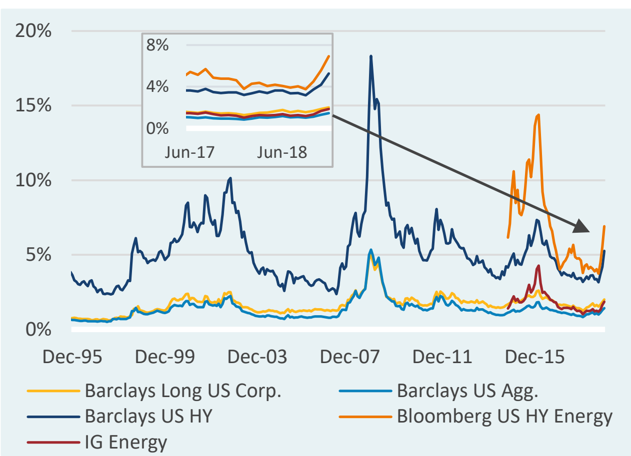
High yield bonds returned -2.1% for 2018, which is the second lowest annual return for the asset class in the last ten years after 2015. Yields and spreads in high yield credit are at their highest since 2016, increasing to 8.0% and 526 bps, respectively.

Loans were also under pressure in December as the asset class dealt with accelerated outflows and negative press – spreads on loans increased to 505 bps from 374 bps the prior quarter. The credit quality of bank loans has deteriorated throughout the cycle as covenant-lite loans dominated new issuance.

Based on the recent behavior and heightened volatility in credit, we do not believe investors are being adequately compensated for credit risk and believe an underweight to U.S. investment grade, high yield credit, and bank loans is warranted. Within credit, we have a bias toward owning higher quality and more liquid assets.

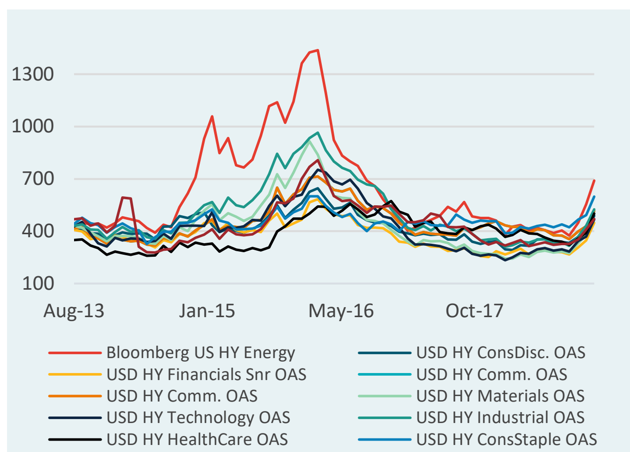
Credit spreads widened due to concerns over slowing global growth and broader risk-off behavior

SPREADS



Source: Barclays, Bloomberg, as of 12/31/18

HIGH YIELD SECTOR SPREADS (BPS)



Source: Bloomberg, as of 12/31/18

Market	Credit Spread (OAS 12/31/18)	Credit Spread (1 Year Ago)
Long US Corporate	2.0%	1.4%
US Aggregate	1.4%	0.9%
US High Yield	5.3%	3.4%
US Bank Loans*	5.1%	4.0%

Source: Barclays, Credit Suisse, Bloomberg, as of 12/31/18
**Discount margin 4-year life*

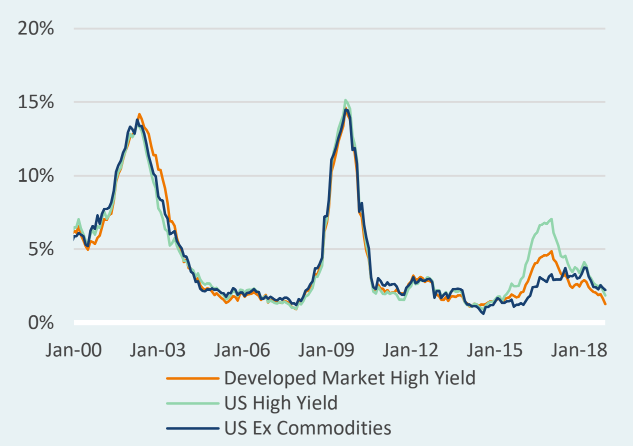
Issuance and default

Default activity has been low and stable in the U.S. credit market, despite wider spreads. The par-weighted default rate of 1.9% remains below its long-term average of 3.0-3.5%. There were 29 defaults in 2018, affecting $40.9 billion in bonds. iHeartRadio accounted for 40% of default volume ($16 billion). The loan par-weighted default rate finished the year at 1.6%.

Senior loan and high yield markets have essentially recovered from a wave of defaults seen in 2015-2016 that were generated from the energy and metals/mining sectors. Recovery rates for high yield bonds have vastly improved since that time.

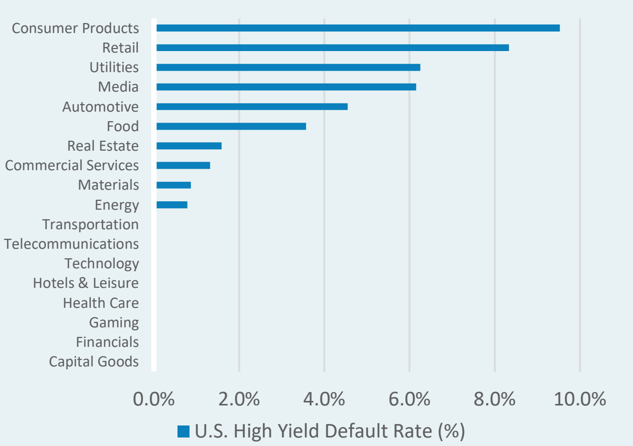
There were no high yield bonds issued in December due to market volatility – the first time this has happened since November 2008. Loan market issuance also slowed, with only $8 billion in institutional loan volume. Gross new high yield and loan issue activity totaled $187 billion and $704 billion for 2018, respectively.

HY DEFAULT RATE (ROLLING 1-YEAR)



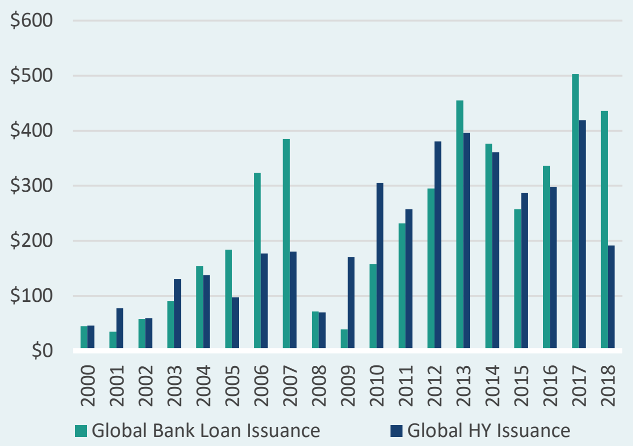
Source: BofA Merrill Lynch, as of 12/31/18

HY SECTOR DEFAULTS (LAST 12 MONTHS)



Source: BofA Merrill Lynch, as of 12/31/18 – par weighted

GLOBAL ISSUANCE ($ BILLIONS)



Source: Bloomberg, BofA Merrill Lynch, as of 12/31/18

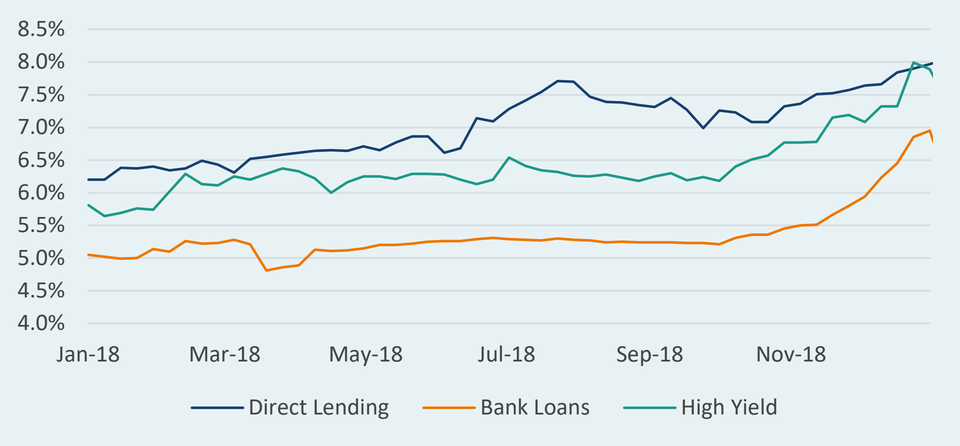
Private credit

Fundraising in Private Credit slowed in 2018. 163 funds closed on $110 billion in 2018, which was down from 189 funds and $129 billion in 2017. Direct lending, mezzanine and distressed debt were the most active strategies raising $45 billion, $31 billion, and $21 billion, respectively. Even with the slower fundraising, dry powder in private credit is at record levels. Private debt dry powder at the end of 2018 was $280 billion, which eclipsed the 2017 record of $246 billion.

Yields for loans made by direct lending funds finished the year above 8% (8.04%). While yields have been aided by higher LIBOR rates, which grew from 1.7% to 2.8% during 2018, spreads increased from 4.5% to 5.35% during the year.

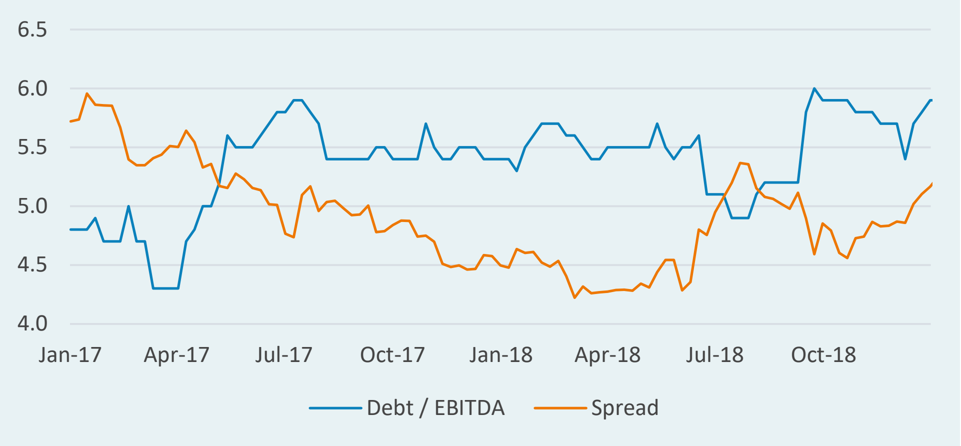
While credit spreads expanded in 2018, so too did the debt multiples for borrowers. Borrowers now average debt totaling 5.9x EBITDA, a 0.5x increase from January 2018-levels.

YIELDS FOR DIRECT LENDING, BANK LOANS AND HIGH YIELD



Source: The Lead Left, Middle Market, EBITDA < $50MM; S&P LSTA US Leveraged Loan Index; ICE BofAML US High Yield Master II, as of 12/31/18

DIRECT LENDING LEVERAGE MULTIPLES (DEBT / EBITDA) & SPREAD



Source: The Lead Left, Middle Market Credit Stats, as of 12/31/18

Equity

Equity environment

— U.S. equities experienced their worst quarter since 2008 – the S&P 500 Index returned -13.5%. The sell-off was due in part to concerns over a slowdown in global growth, and was exacerbated by low liquidity toward the end of the year.

— The drawdown from peak on the S&P 500 Index stopped just shy of 20% before equities rebounded during the last week of the year. Historically, equity drawdowns of more than 20% have been associated with an economic recession.

— Although absolute performance was also poor, international equities outperformed U.S. equities, particularly in emerging markets.

— Global equities saw a sharp drop in valuations as price declines overwhelmed small downward adjustments to earnings expectations. The 12-month forward P/E multiple for the MSCI ACWI fell by 12.1% during the quarter, falling from 14.8x to 13.0x.

— The risk-off environment hit small cap equities especially hard. The Russell 2000 Index posted a -20.2% return in the fourth quarter, compared to a decline of 13.8% on the Russell 1000 Index.

— Value equities outperformed growth equities over the quarter for the time since Q4 2016. The Russell 1000 Value Index and Russell 1000 Growth Index returned -11.7% and -15.9%, respectively.

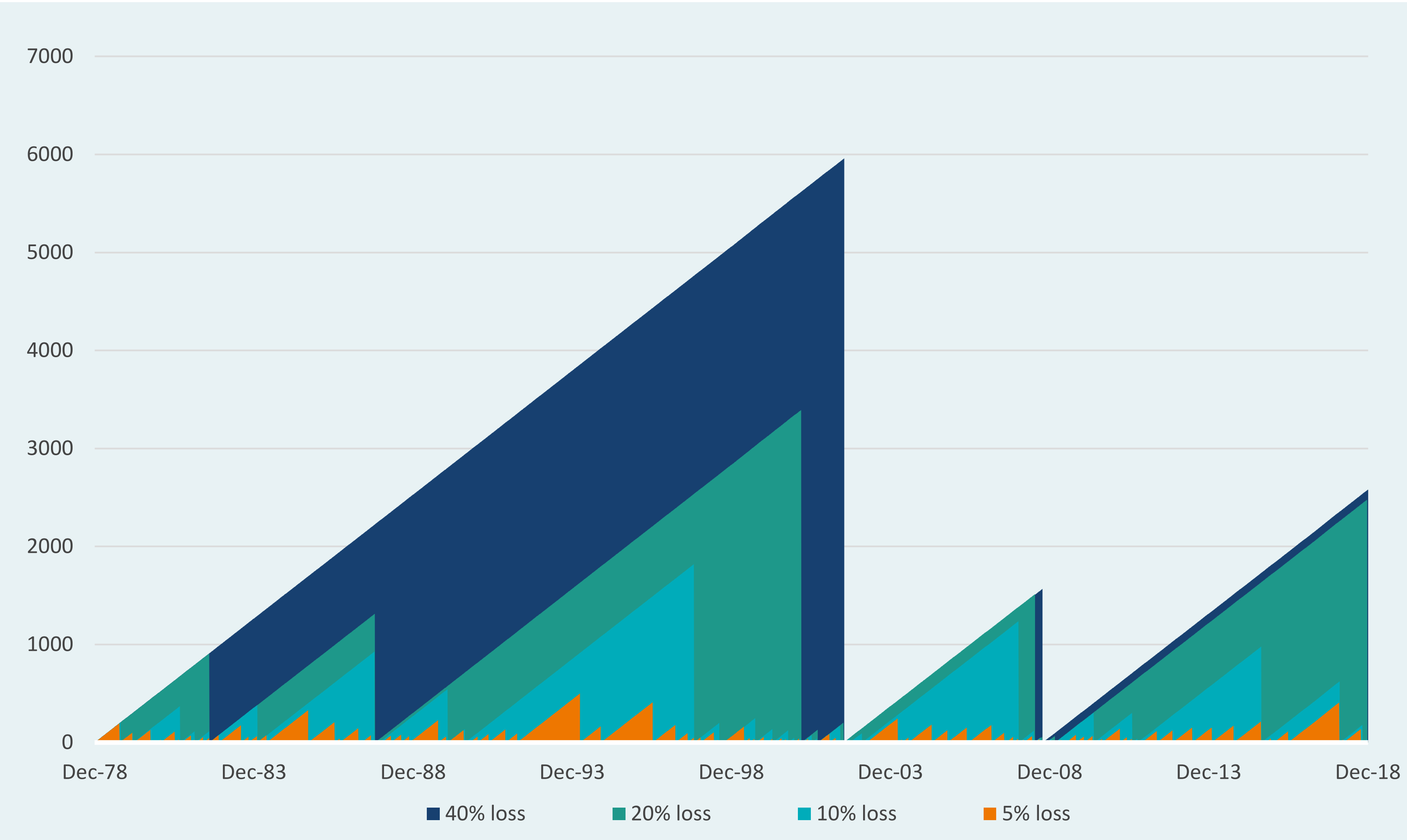
— Equity volatility surged in what may be the beginning of a transition to a higher volatility regime. The VIX Index averaged 21 in Q4, and hit a high of 36 on December 24th.

	QTD TOTAL RETURN		1 YEAR TOTAL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)
US Large Cap (Russell 1000)	(13.8%)		(4.8%)	
US Small Cap (Russell 2000)	(20.2%)		(11.0%)	
US Large Value (Russell 1000 Value)	(11.7%)		(8.3%)	
US Large Growth (Russell 1000 Growth)	(15.9%)		(1.5%)	
International Large (MSCI EAFE)	(12.5%)	(11.6%)	(13.8%)	(9.0%)
Eurozone (Euro Stoxx 50)	(14.1%)	(10.7%)	(16.2%)	(9.3%)
U.K. (FTSE 100)	(11.7%)	(9.1%)	(14.0%)	(7.3%)
Japan (NIKKEI 225)	(14.6%)	(16.6%)	(8.6%)	(9.6%)
Emerging Markets (MSCI Emerging Markets)	(7.5%)	(7.4%)	(14.6%)	(10.3%)

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 12/31/18

Corrections are normal

RUSSELL 1000 INDEX – CUMULATIVE TRADING DAYS SINCE LOSS OF GIVEN MAGNITUDE



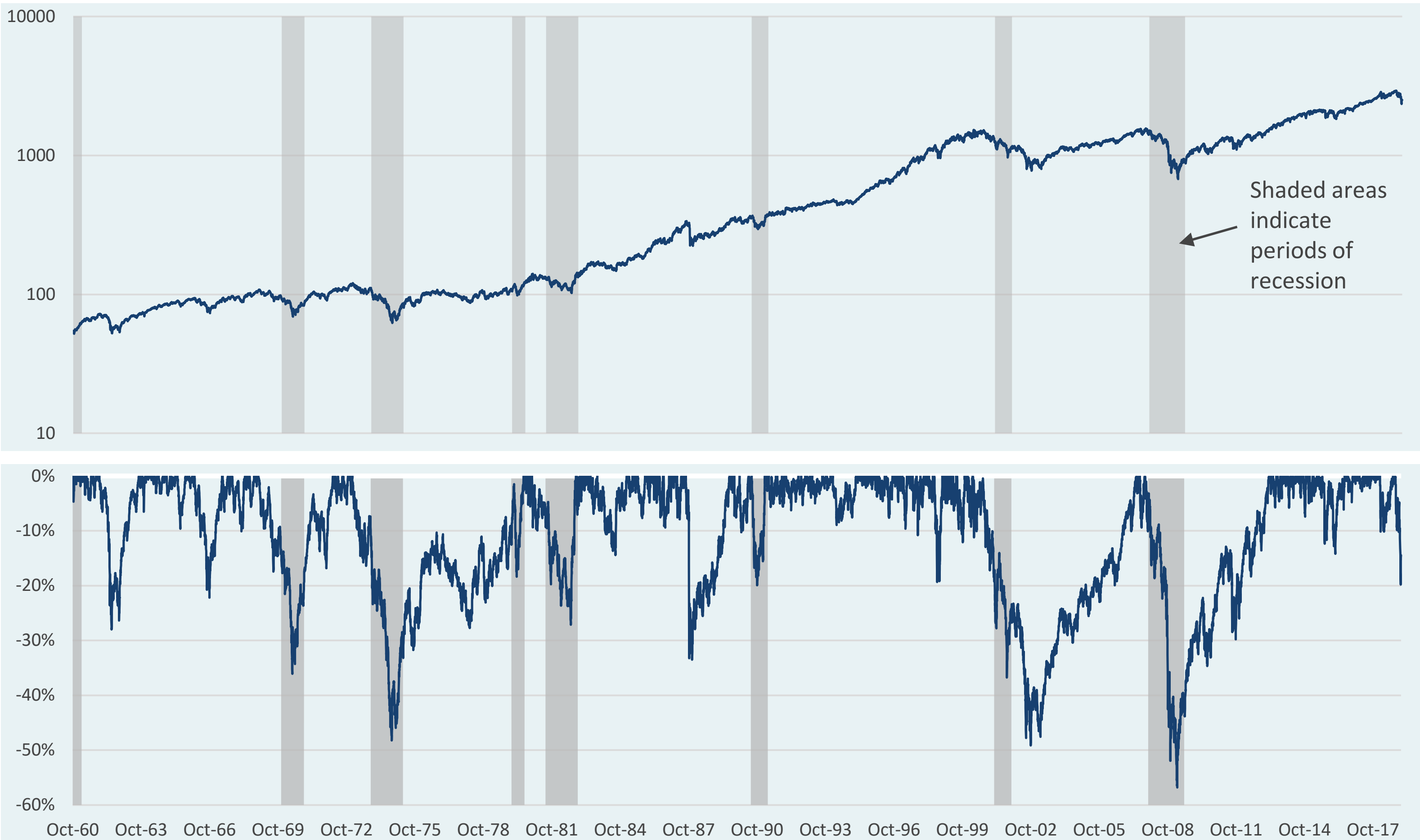
Source: Verus, FTSE Russell, as of 12/31/18

5% and 10% corrections occur regularly

The recent 20% drawdown is more notable, as equity drops of this size have happened once per cycle, on average

Drawdowns of greater than 20% occur less frequently

S&P 500 INDEX (UPPER PANEL) AND DRAWDOWN FROM PEAK (LOWER PANEL)



Source: Bloomberg, Verus, as of 12/31/18, recession start and end dates are from the NBER

Drawdowns of greater than 20% have typically been associated with economic recessions

The recent drawdown appears overdone based on economic conditions

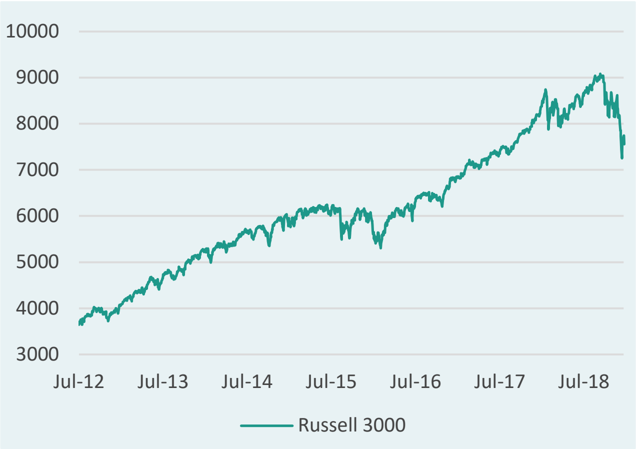
Domestic equity

U.S. equities experienced their worst quarter since 2008 as the S&P 500 Index returned -13.5%. For much of 2018, strong realized and expected earnings growth more than offset rising risk premiums (i.e. February sell-off) and discount rates as shown below in the middle chart. However, when cracks appeared in the growth story, influenced by poor economic data as well as profit warnings from companies, this support quickly vanished. The sharp drawdown, particularly in December, was also influenced by pockets of illiquidity in the market that exacerbated the move lower.

The question for investors now becomes whether the recent drawdown was a healthy reset of the pricing of earnings and risk premia, or whether it was a more urgent warning signal of a deterioration in the growth and profit cycle. We believe it to be more of the former rather than the latter, and that the market priced in an overly pessimistic view of macro conditions. However, we also recognize the growing headwinds to equities, including slowing global growth, further potential monetary tightening, and high debt levels. These conditions will likely result in sustained higher volatility, consistent with previous late cycle experiences.

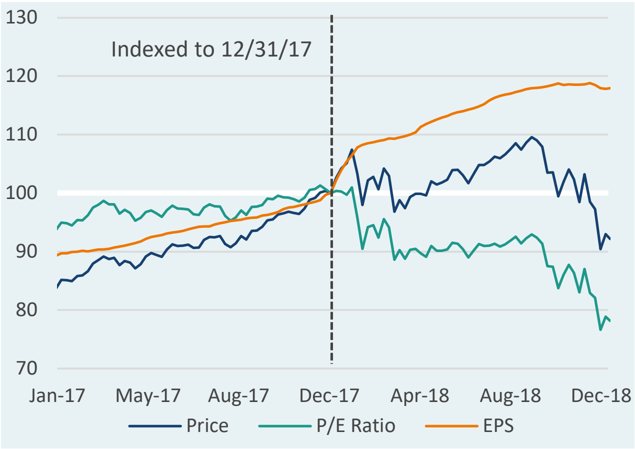
We maintain a neutral view on U.S. equities

U.S. EQUITIES



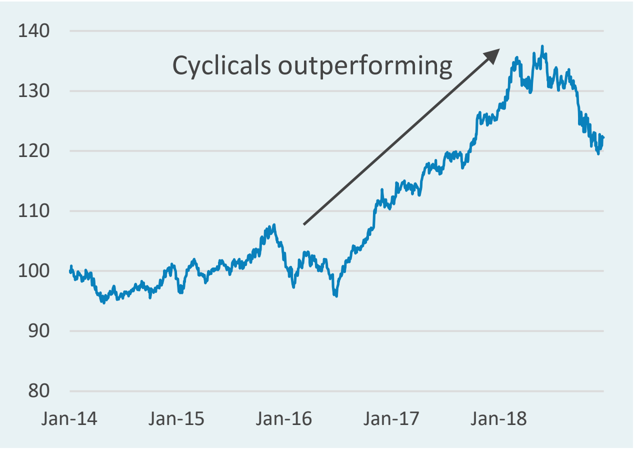
Source: Russell Investments, as of 12/31/18

S&P 500 PRICE MOVEMENT ATTRIBUTION



Source: Bloomberg, as of 12/31/18

CYCLICALS-DEFENSIVES RETURN SPREAD



Source: Bloomberg, MSCI, as of 12/31/18

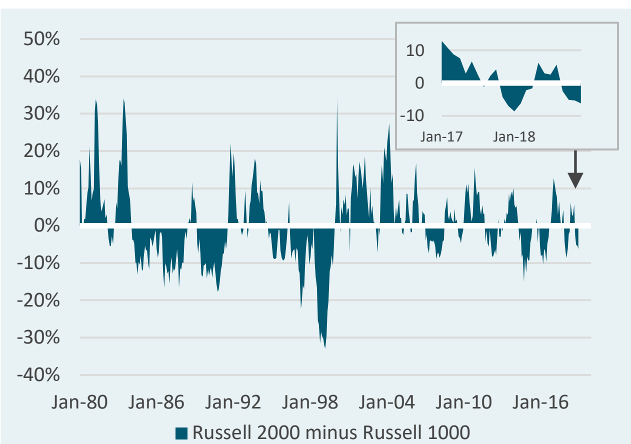
Domestic equity size & style

Large cap equities (Russell 1000 -13.8%) significantly outperformed small cap equities (Russell 2000 -20.2%) during the quarter. It may not be surprising that small cap equities underperformed, given the broad risk-off moves during this period. Growth stocks underperformed value stocks during the quarter (Russell 1000 Growth -15.9% vs. Russell 1000 Value -11.7%) for the first time since Q4 2016.

The sector weights in large-cap style benchmarks explain most of the recent value underperformance. Over the past year, Energy, Materials, and Financials returned -18.1%, -14.7%, and -13.0%, respectively. These sectors are heavily weighted with value stocks, which resulted in a large drag to value. Information technology was an outperforming sector with a return of -0.3% during the period.

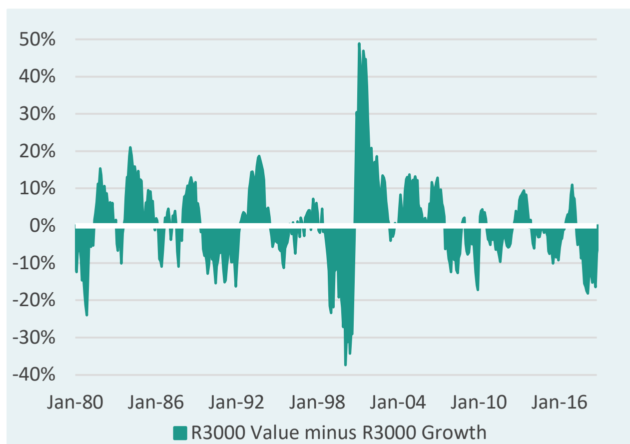
Long spans of style (size, value) underperformance is, and will always be, discouraging for investors. Similar to an investment in the broader equity market, we should expect to see rough patches of performance through time.

SMALL CAP VS LARGE CAP (YOY)



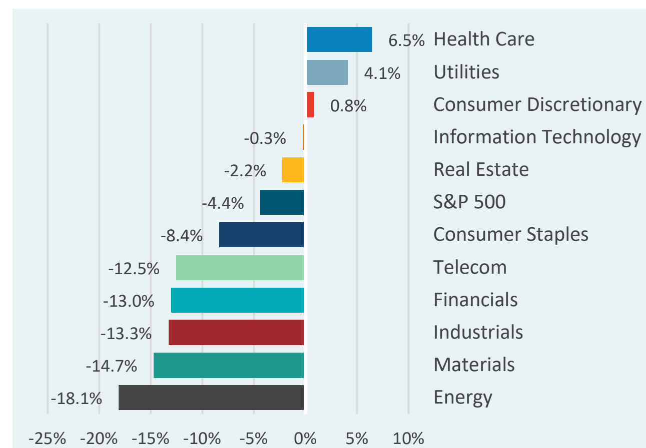
Source: FTSE, as of 12/31/18

VALUE VS GROWTH (YOY)



Source: FTSE, as of 12/31/18

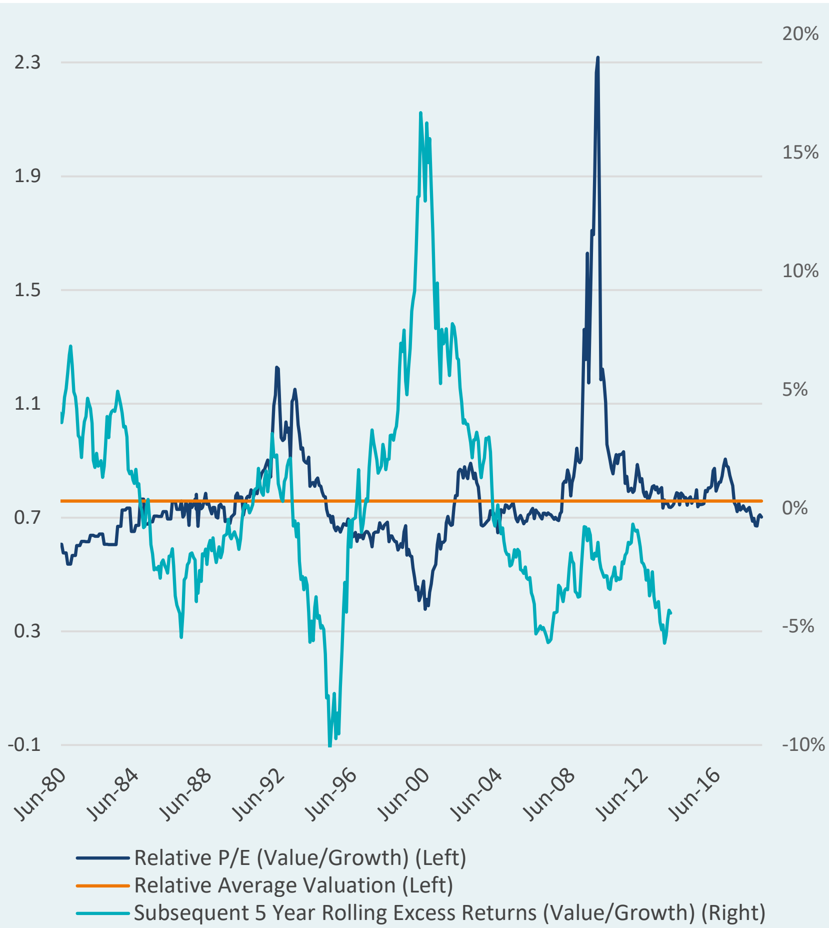
1-YEAR S&P 500 SECTOR RETURNS

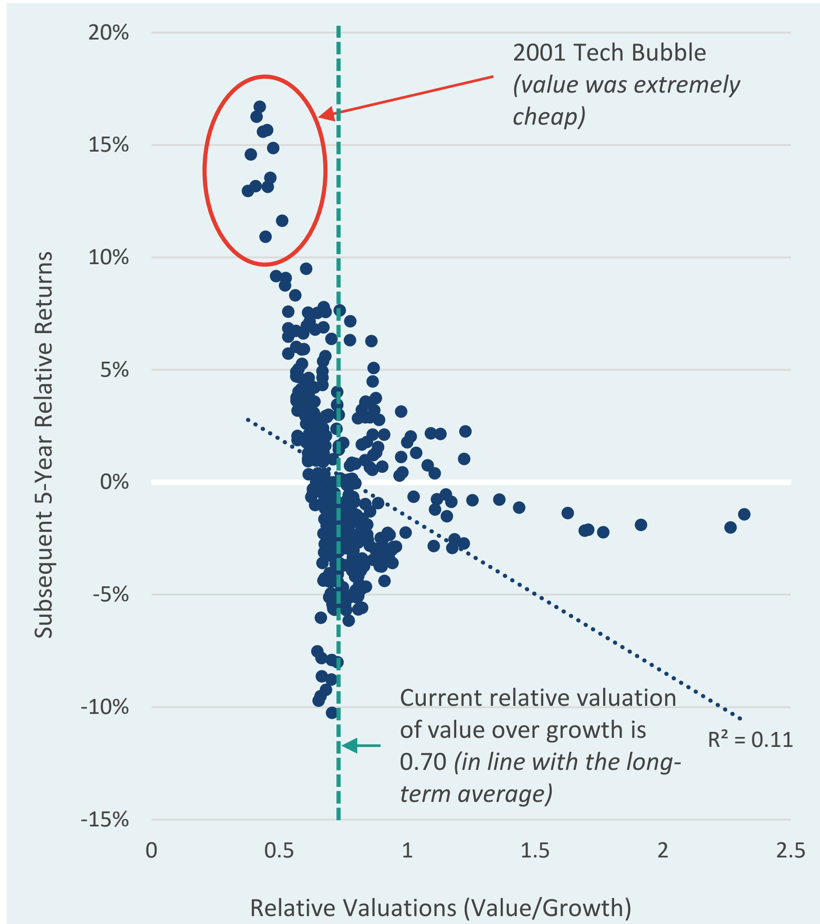


Source: Morningstar, as of 12/31/18

Value – extreme prices indicate opportunity

But the price of value stocks is in-line with the long-term average





Although value has delivered an extended period of poor performance, value stocks are not cheap

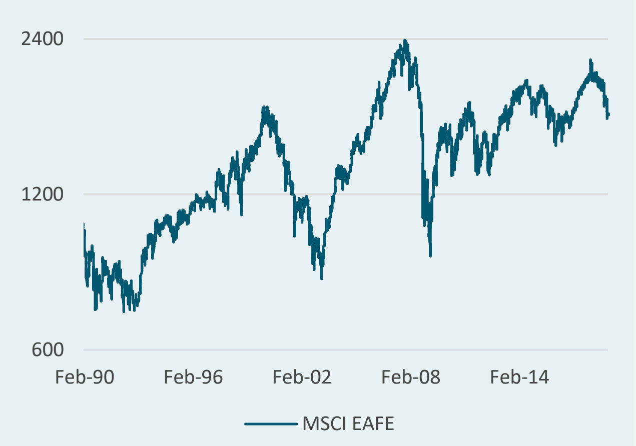
Source: Verus, FTSE Russell, as of 12/31/18

International developed equity

International developed equities sold off alongside U.S. equities. On an unhedged basis, the MSCI EAFE Index returned -12.5% in Q4 (-11.6% on a currency hedged basis). The three major equity markets in the EAFE Index – Japan, the Eurozone, and the UK – were all down more than 10%. The key factors that may have driven U.S. equities lower, most notably concerns over slowing global growth and central bank tightening, likely played an important role in non-U.S. developed markets. These concerns were particularly acute in the Eurozone where economic data routinely missed expectations, while the ECB officially announced the end to its asset purchase program in December.

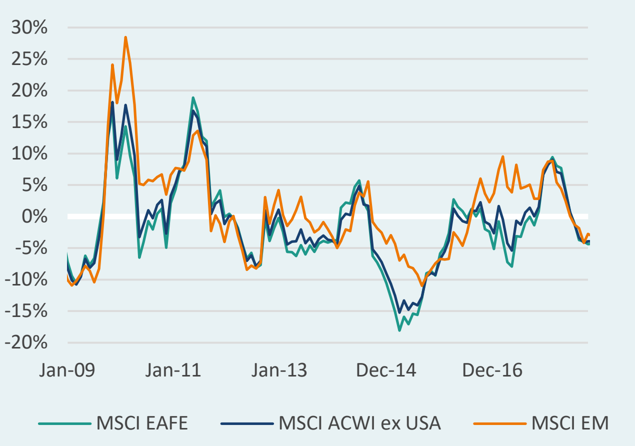
International developed equity markets are still cheap on both an absolute and relative basis at 11.9x forward earnings, but we believe there are good reasons for this pricing in certain markets. Within equity allocations, we are pessimistic on EAFE equities due to a negative view on the Eurozone. We believe slowing economic growth at the same time political risks are increasing and the ECB is unable to meaningfully ease policy present material headwinds to equity performance.

INTERNATIONAL DEVELOPED EQUITIES



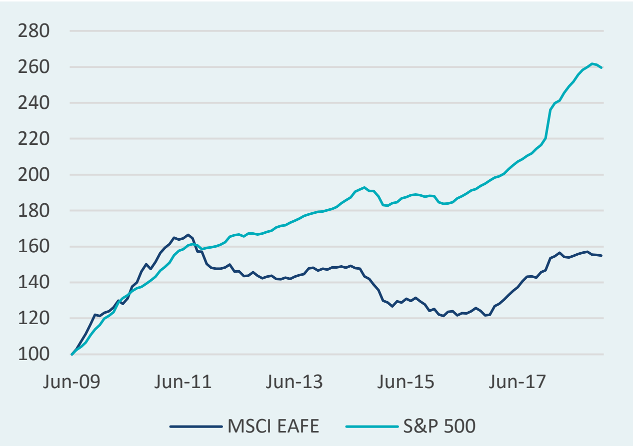
Source: MSCI, as of 12/31/18

EFFECT OF CURRENCY (1-YEAR ROLLING)



Source: MSCI, as of 12/31/18

EARNINGS PER SHARE

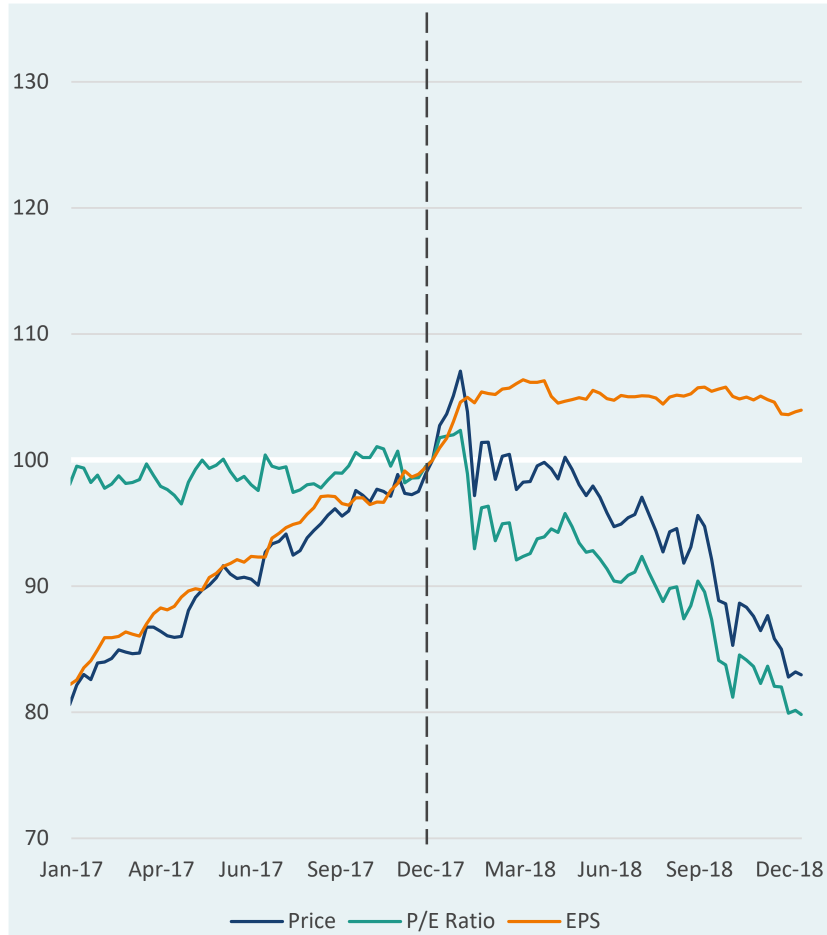


Source: Bloomberg, as of 12/31/18, indexed to earnings trough

Equity return behavior

U.S. (INDEXED TO START OF 2018)

EX U.S. (INDEXED TO START OF 2018)



U.S. and international equity prices failed to keep up with earnings growth during 2018

This has resulted in much cheaper equity valuations

Source: Bloomberg, as of 12/31/18, the U.S. and ex-U.S. equity markets are represented by the S&P 500 Index and MSCI ACWI ex U.S. Index, respectively

Emerging market equity

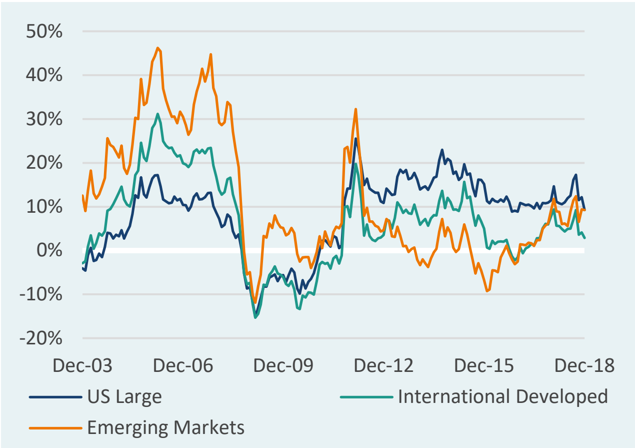
Emerging market equities were the top performer in Q4, as these markets (MSCI EM -7.5%) experienced much less pain than developed (S&P 500 -13.5%, MSCI EAFE -12.5%) during the equity sell-off. Currency depreciation stabilized in Q4 (JP Morgan EM Currency Index +0.2%) and emerging market crises concerns faded from the news headlines.

Valuations are near their long-term average, but remain much cheaper than developed market equities. Sentiment around emerging markets seems to be improving as the extreme negativity of 2018 dissipates, which creates possible upside surprise if investors decide these fears were overblown. Very depressed currencies may also provide a performance tailwind in the event of mean reversion. Overall, we maintain our preference for the asset class.

Decelerating global growth and rising probability of recession do present unique risks to emerging markets, however, as these market typically exhibit a higher beta during market downside and upside moves. We will be watching global developments closely and will update our emerging market views as appropriate.

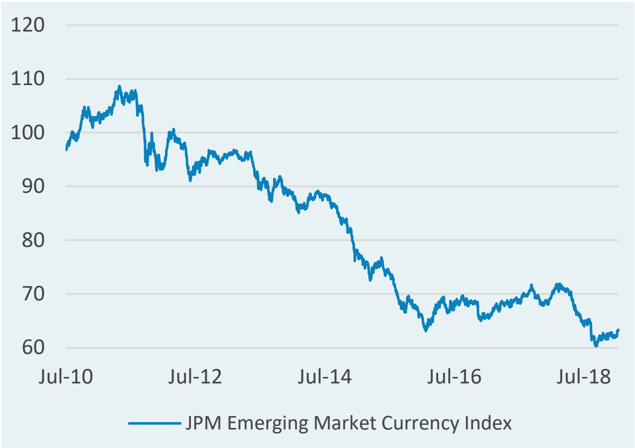
EM equities were the top performer in Q4

EQUITY PERFORMANCE (3-YR ROLLING)



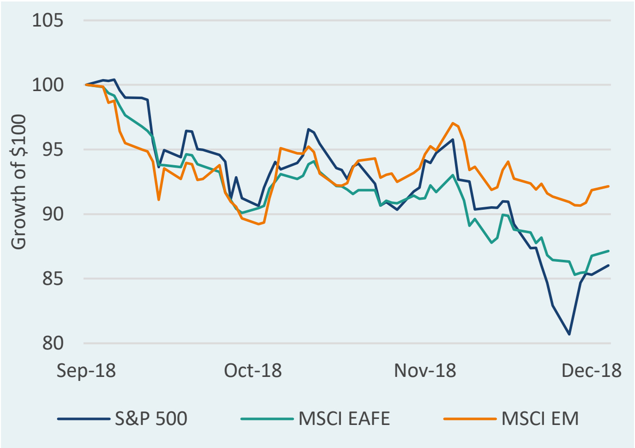
Source: Standard & Poor's, MSCI, as of 12/31/18

EMERGING MARKET CURRENCY MOVEMENT



Source: JP Morgan, as of 12/31/18

Q4 CUMULATIVE PERFORMANCE



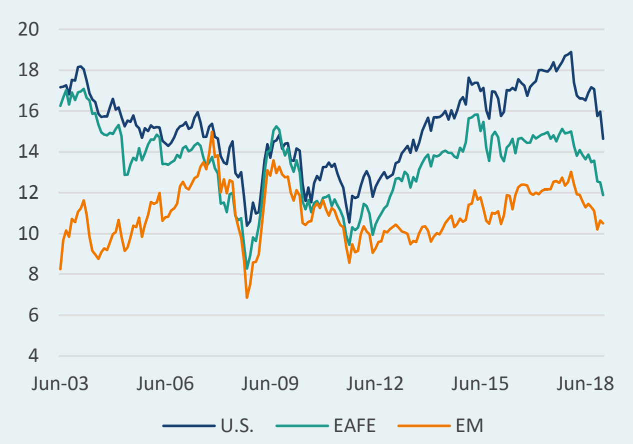
Source: Standard & Poor's, MSCI, as of 12/31/18

Equity valuations

The sharp drop in global equity prices overwhelmed small downward adjustments to earnings expectations, resulting in materially lower forward P/E multiples. In the U.S., EAFE, and EM regions, forward P/E ratios declined by 13.1%, 12.4%, and 5.5%, respectively in Q4. Depending on the period of analysis, many equity markets could now be considered fairly valued relative to their own history (U.S., EM) and others could be considered outright cheap (EAFE). In the U.S., the 12-month forward P/E ratio was 14.6x at the end of December, placing it below the median value of the past 15 years.

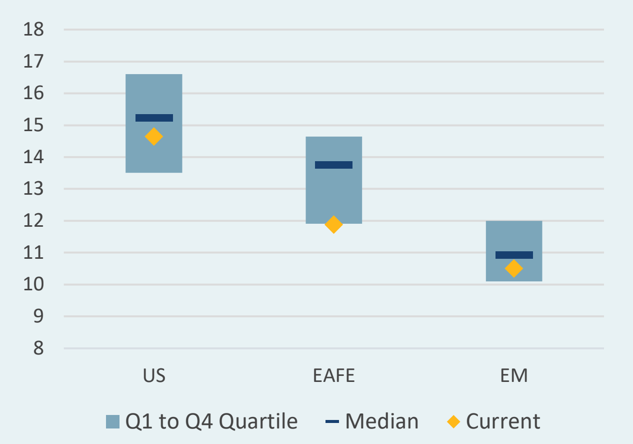
Assessing whether or not an equity market is cheap or expensive is not a straightforward exercise. For one, as we have noted in the past, the broader macro environment (namely real interest rates and inflation) can strongly influence value. Higher (lower) real interest rates and inflation demand (higher) lower equity valuations, all else equal. Further, conclusions on the cheapness/richness of equities at any point in time depend on this metric. For example, trailing earnings may suffer from being backward-looking, while forward earnings are subject to forecast error and analyst bias. Particularly when looking at the forward P/E ratio, we caution against naively extrapolating recent earnings growth into the future.

FORWARD P/E RATIOS



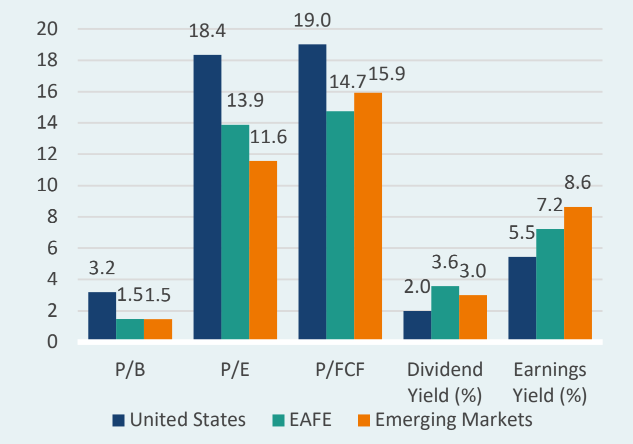
Source: MSCI, as of 12/31/18

FORWARD P/E RATIO DISTRIBUTION (15-YR)



Source: Verus, MSCI, as of 12/31/18

VALUATION METRICS (3-MONTH AVERAGE)



Source: Bloomberg, as of 12/31/18 - trailing P/E

Equity volatility

Equity volatility jumped in October, and remained elevated throughout the rest of the year. The VIX Index of implied volatility for the S&P 500 Index averaged 21 in the fourth quarter, above its long-term average of around 18, and hit a high of 36 on December 24th. Equities also experienced frequent large intra-day swings, particularly in December, that are not captured by daily volatility measures. Extremely low liquidity during the end of the year likely exacerbated market movements and augmented volatility. The increase in volatility was more acute in the U.S. than other equity markets – the trailing one-year volatility for the S&P 500 Index was higher than both the MSCI EAFE and EM Indices for the first time since 2008.

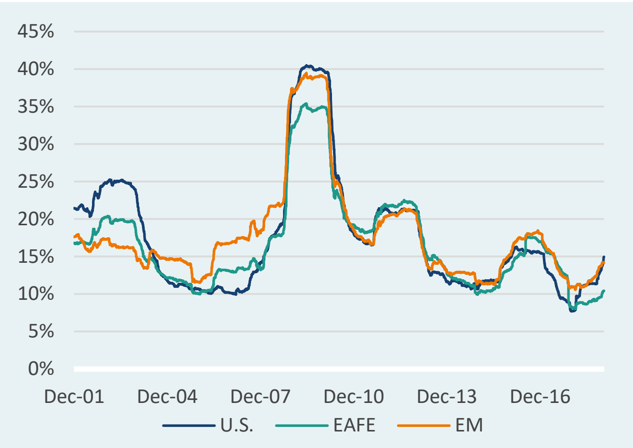
While volatility has certainly been extreme relative to the recent past, it has been much more normal when compared to a longer history. We believe investors should expect higher volatility moving forward as we continue to progress into the later stages of the cycle.

Equity volatility rose in Q4

U.S. IMPLIED VOLATILITY (VIX)

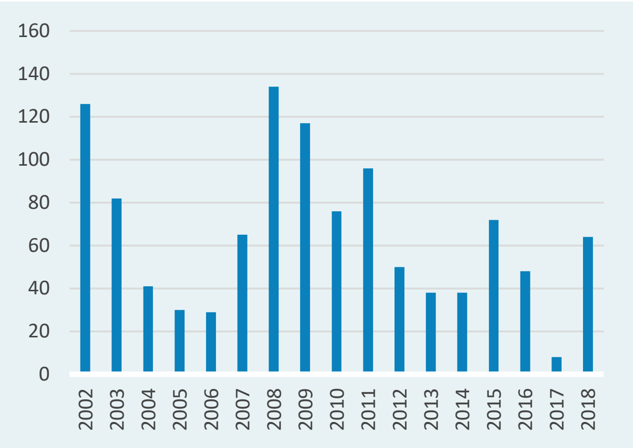
Source: CBOE, as of 12/31/18

REALIZED 1-YEAR ROLLING VOLATILITY



Source: Bloomberg, as of 12/31/18

S&P 500 – NUMBER OF >1% DAILY MOVES



Source: Bloomberg, as of 12/31/18, includes down and up moves

Private equity

Deals increased in buyouts and venture; multiples are steady; buyout fundraising has slowed

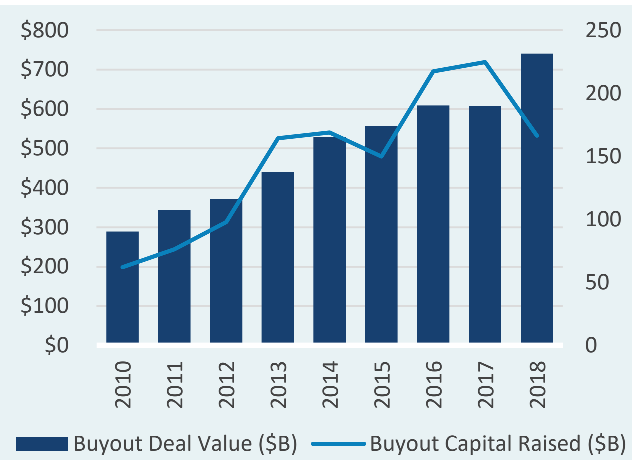
— Buyout activity has continued to increase in 2018. Through the fourth quarter buyouts are up 21.8% and 4.7% when measured by dollar value and number of transactions, respectively. The size of the average buyout, $155.43, has increased from 2017, $133.63. Unlike deal flow, fund capital raising has slowed from the peaks of 2017. Only 186 buyout funds representing $166 billion closed so far this year, down from 235 funds representing a record $225 billion in 2017.

— Buyout multiples slightly decreased from 2017. Average EV/EBITDA is 11.6x through December 31, 2018 (down from 11.9x in 2017) with debt multiples averaging 6.2x through the third quarter. Debt as a percentage of transaction value hovers around 54%.

— Venture capital fundraising and deal volumes continue to set records. $55 billion of venture capital has been raised in the U.S. in 2018, an increase of 63% over the same period last year. Similarly, the amount of venture deals are up 57.8%. In fact, 2018 venture deal volume ($131 billion) exceeds the record of $82 billion that was set in 2017.

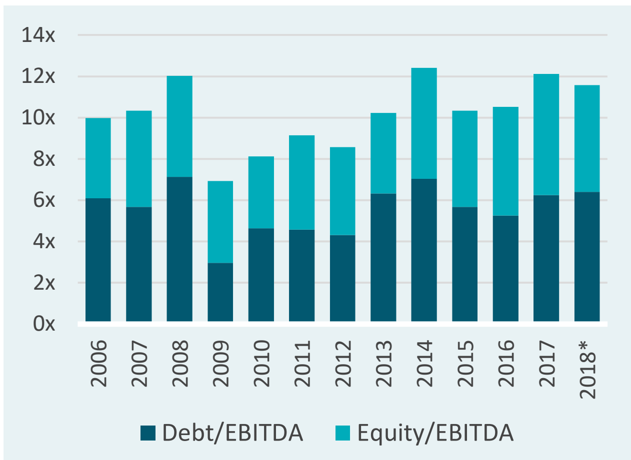
— Balancing high deal multiples and a growing number of deals against a slowdown in fundraising, we advocate selectivity in fund investments.

BUYOUTS DEAL VOLUME & CAPITAL RAISED



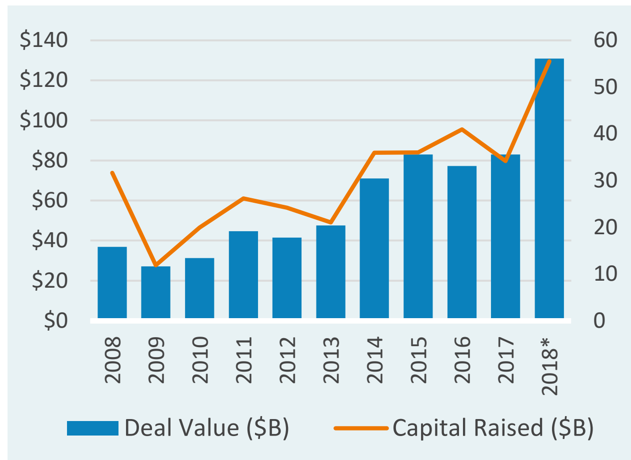
Source: PitchBook

TRANSACTION MULTIPLES



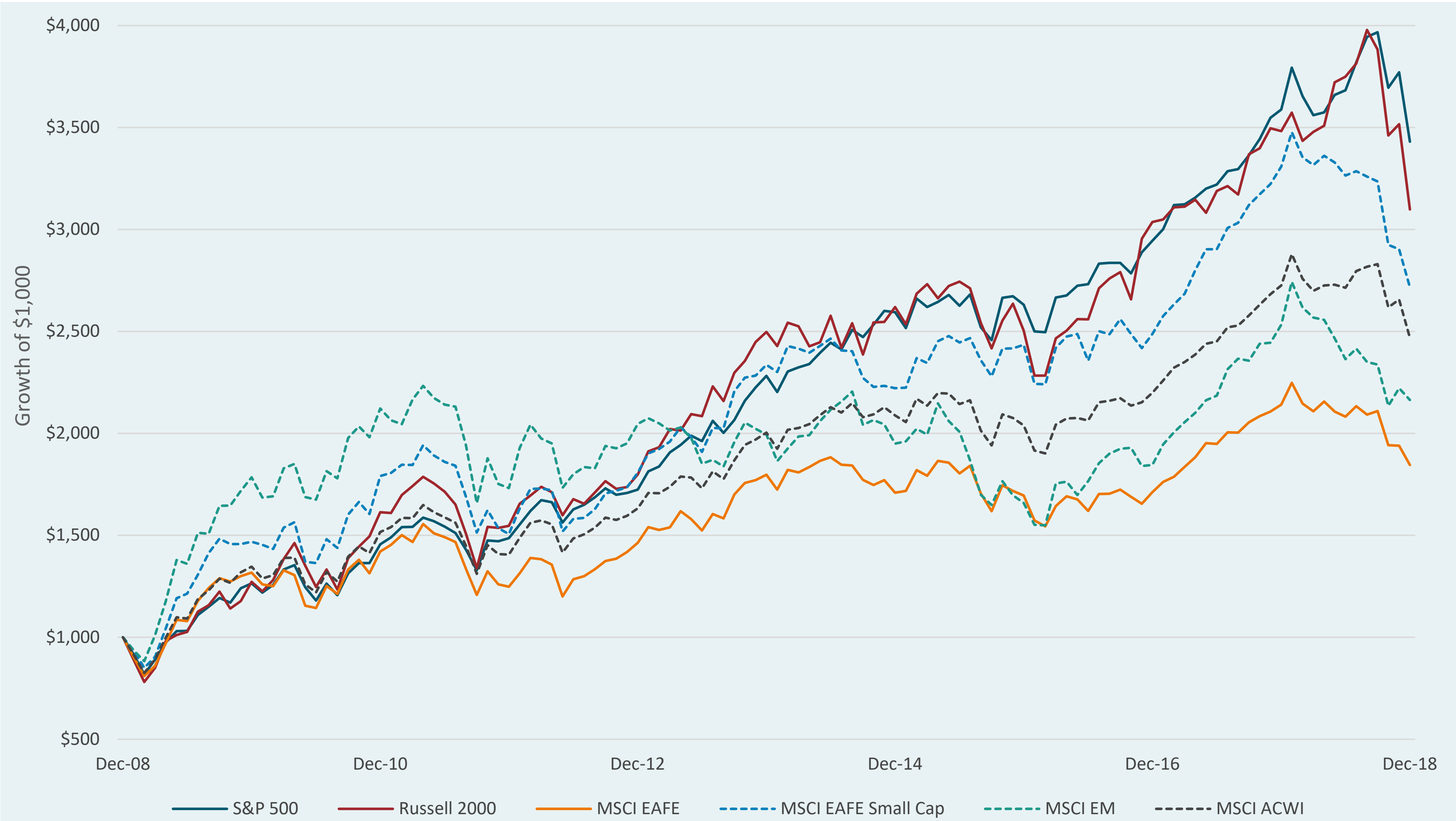
Source: PitchBook

VENTURE DEAL VOLUME & FUNDRAISING



Source: PitchBook

Long-term equity performance



Source: Morningstar, as of 12/31/18

Other assets

Currency

The U.S. dollar appreciated by 1.8% during the quarter, and 7.2% in 2018 based on the Broad Trade Weighted Dollar Index. The strong appreciation of the dollar last year was influenced by a number of factors, including stronger relative U.S. economic growth, higher relative interest rates, and weakness in other currencies such as the euro and British pound. The recent dollar strength in Q4 was due in part to safe haven demand amid equity market turbulence as these moves came despite the market pricing considerably less tightening from the Fed.

Emerging market currencies stabilized over the quarter, and recovered slightly from the recent drawdown in Q3. The JPMorgan Emerging Market Currency Index appreciated by 0.2% in Q4.

From a value perspective (based on purchasing power parity), the U.S. dollar remains expensive, particularly versus the euro, yen, and British pound.

The U.S. dollar appreciated to a cycle high

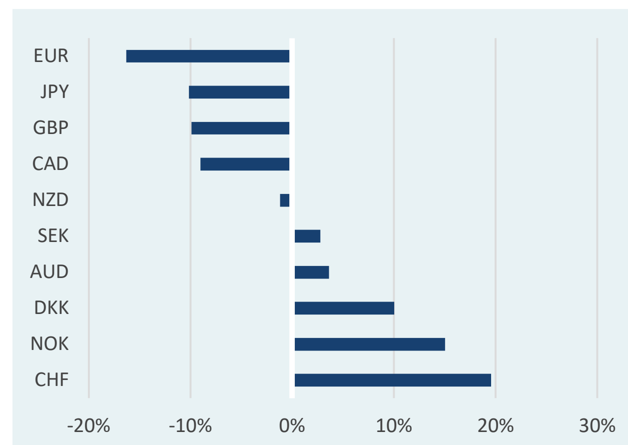
U.S. DOLLAR TRADE WEIGHTED INDEX

Source: Federal Reserve, as of 12/26/18

JPM EMERGING MARKET CURRENCY INDEX

Source: Bloomberg, JPMorgan, as of 12/31/18

U.S. DOLLAR VALUE (PPP)



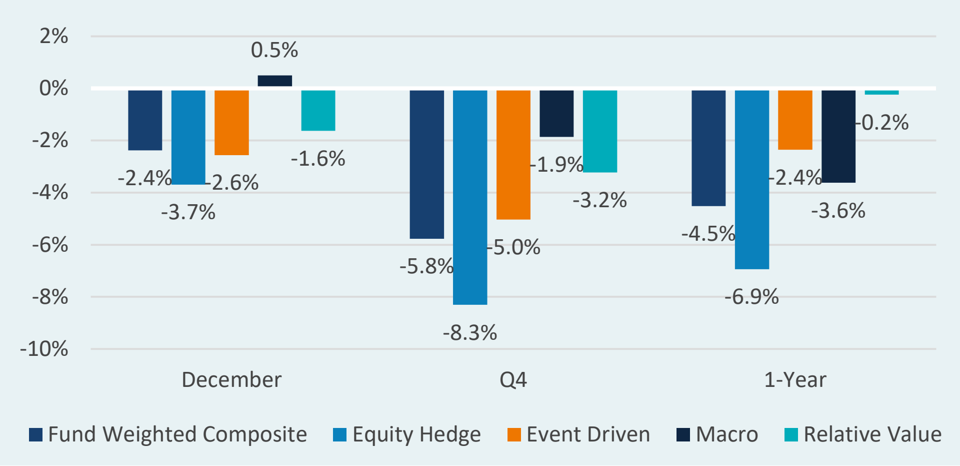
Source: Bloomberg, OECD, as of 12/31/18

Hedge funds

Hedge funds Q4 losses pushed full-year 2018 results into negative territory (HFRI Fund Weighted Composite -5.8% in Q4; -4.5% in 2018). Most hedge funds stumbled in October as equity markets experienced a painful reversal ranging from -5% to -10%. The industry fared relatively better in December with hedge funds down -2.4% while the S&P 500 Index lost -9.0%. The approximate 6.6% performance differential was the largest observed since February 2009. As a group, macro strategies performed best in December and for the quarter. Defensively oriented discretionary macro strategies and currency strategies stood out with strong relative performance. Equity hedge strategies lagged the universe, and products with higher beta and value exposures were hit the hardest as equity markets fell.

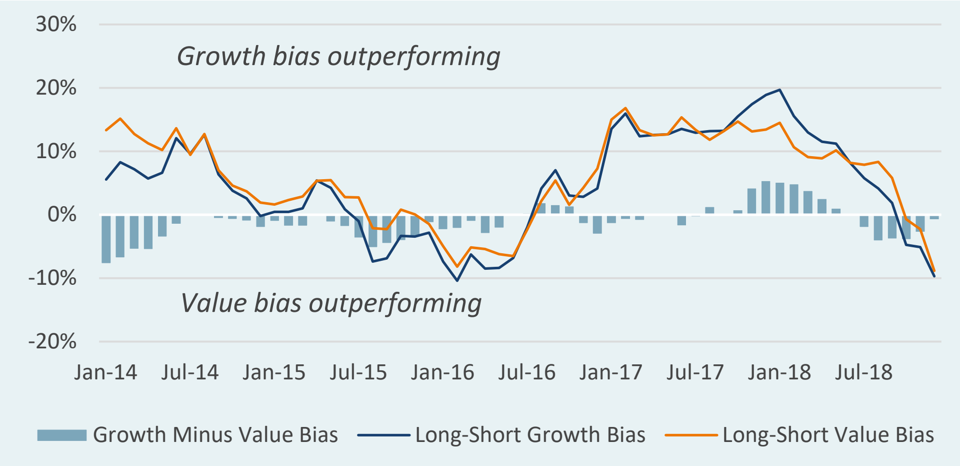
For managers trading fixed income securities, strategies focused on sovereign (-1.2%) and asset backed bonds (-1.7%) preserved capital relatively well during the market turbulence. Convertible arbitrage managers fared worse (-5.1%) due in part to greater relative sensitivity to equity market volatility.

HFRI HEDGE FUND STYLE PERFORMANCE



Source: HFRI, as of 12/31/18

GROWTH VS VALUE BIAS IN LONG-SHORT EQUITY MANAGERS (1-YR ROLLING PERFORMANCE)



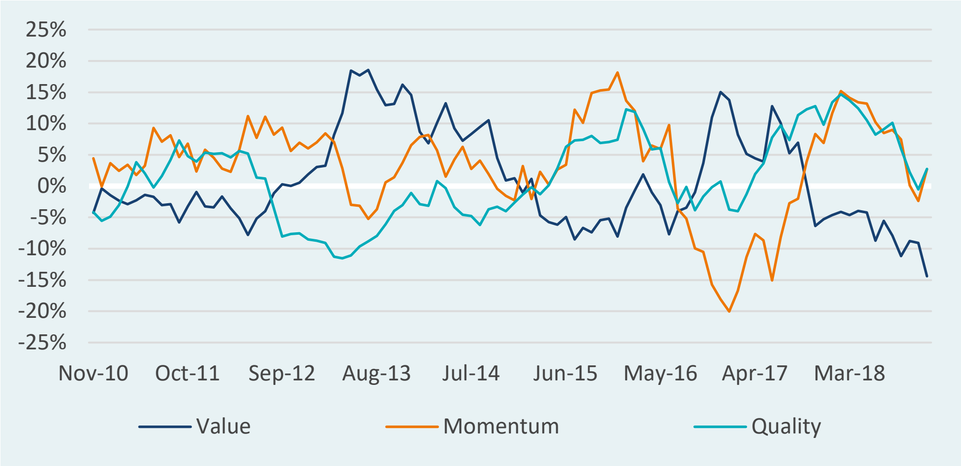
Source: HFRI, as of 12/31/2018

Alternative beta

Alternative beta strategy investors endured a difficult year, with many strategies performing one or two standard deviations below their historical average. While the median strategy we follow delivered negative returns during the fourth quarter, we noted dispersion across the space as a few products posted positive results. Factor exposures, particularly in the equity markets, continue to account for a meaningful portion of poor outcomes. While traditional value factors earned modestly positive results during the quarter, this performance was offset by losses in momentum and size-related factors.

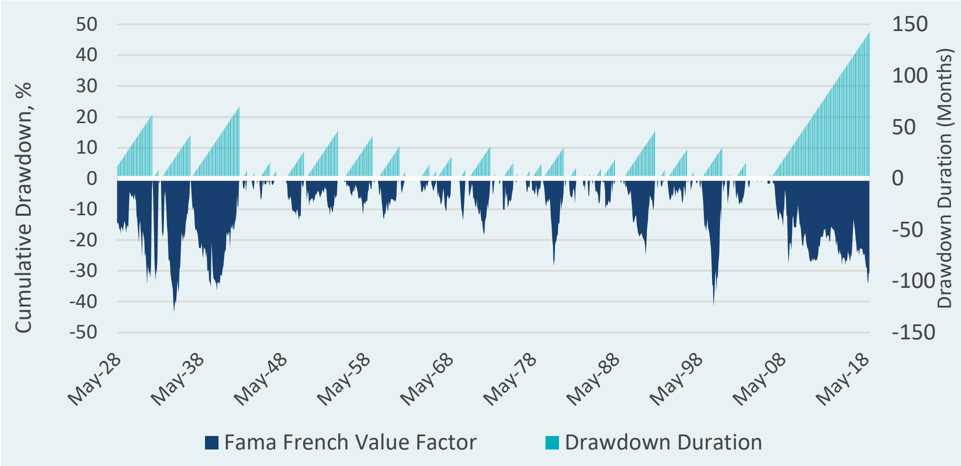
We continue to believe that alternative beta strategies are not "broken" per se, but instead have reflected extreme drawdowns in some factors and muted returns in others. We will continue to closely monitor these strategies and discuss the situation with managers in 2019.

U.S. MARKET NEUTRAL FACTOR PERFORMANCE (12-MONTH ROLLING)



Source: S&P Dow Jones, Thematic Market Neutral Indices, as of 12/31/18

VALUE FACTOR DRAWDOWN MAGNITUDE AND DURATION



Source: Kenneth French Data Library, as of 11/30/18

Verus

Appendix

Periodic table of returns

BEST ↑ … ↓ WORST

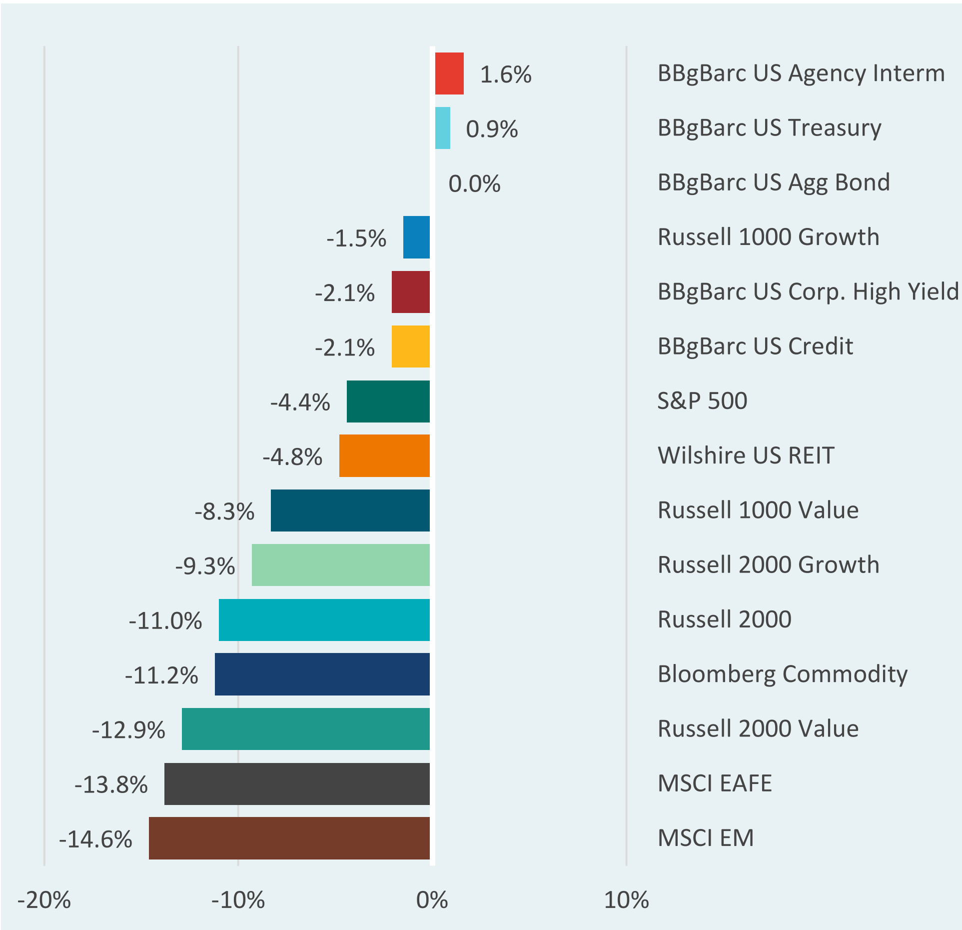
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	5-Year	10-Year
Real Estate	38.7	66.4	31.8	14.0	25.9	56.3	26.0	34.5	32.6	39.8	5.2	79.0	29.1	14.3	18.6	43.3	13.5	13.3	31.7	37.3	5.3	10.4	15.3
Cash	27.0	43.1	22.8	8.4	10.3	48.5	22.2	21.4	26.9	16.2	1.4	37.2	26.9	7.8	18.1	38.8	13.2	5.7	21.3	30.2	1.9	9.0	13.5
US Bonds	20.3	33.2	12.2	7.3	6.7	47.3	20.7	20.1	23.5	15.8	-6.5	34.5	24.5	2.6	17.9	34.5	13.0	0.9	17.3	25.0	0.0	8.2	13.3
Large Cap Growth	19.3	27.3	11.6	3.3	1.6	46.0	18.3	14.0	22.2	11.8	-21.4	32.5	19.2	1.5	17.5	33.5	11.8	0.6	12.1	22.2	-1.5	5.9	12.0
Hedge Funds of Funds	16.2	26.5	7.0	2.8	1.0	39.2	16.5	7.5	18.4	11.6	-25.9	28.4	16.8	0.4	16.4	33.1	6.0	0.0	11.8	21.7	-3.5	5.1	11.2
Large Cap Equity	15.6	24.3	6.0	2.5	-5.9	30.0	14.5	7.1	16.6	10.9	-28.9	27.2	16.7	0.1	16.3	32.5	5.6	-0.4	11.3	17.1	-4.8	4.4	10.4
60/40 Global Portfolio	8.7	21.3	4.1	-2.4	-6.0	29.9	14.3	6.3	15.5	10.3	-33.8	23.3	16.1	-2.1	15.3	23.3	4.9	-0.8	11.2	14.6	-6.0	3.6	8.0
Large Cap Value	4.9	20.9	-3.0	-5.6	-11.4	29.7	12.9	5.3	15.1	7.0	-35.6	20.6	15.5	-2.9	14.6	12.1	4.2	-1.4	8.0	13.7	-8.3	3.1	7.3
Small Cap Growth	1.2	13.2	-7.3	-9.1	-15.5	25.2	11.4	4.7	13.3	7.0	-36.8	19.7	13.1	-4.2	11.5	11.0	3.4	-2.5	7.1	7.8	-9.3	2.5	6.8
Small Cap Equity	-2.5	11.4	-7.8	-9.2	-15.7	23.9	9.1	4.6	10.4	5.8	-37.6	18.9	10.2	-5.5	10.5	9.0	2.8	-3.8	5.7	7.7	-11.0	1.6	6.3
Commodities	-5.1	7.3	-14.0	-12.4	-20.5	11.6	6.9	4.6	9.1	4.4	-38.4	11.5	8.2	-5.7	4.8	0.1	0.0	-4.4	2.6	7.0	-11.2	1.5	3.5
Small Cap Value	-6.5	4.8	-22.4	-19.5	-21.7	9.0	6.3	4.2	4.8	-0.2	-38.5	5.9	6.5	-11.7	4.2	-2.0	-1.8	-7.5	1.0	3.5	-12.9	0.6	3.2
International Equity	-25.3	-0.8	-22.4	-20.4	-27.9	4.1	4.3	3.2	4.3	-1.6	-43.1	0.2	5.7	-13.3	0.1	-2.3	-4.5	-14.9	0.5	1.7	-13.8	0.5	0.4
Emerging Markets Equity	-27.0	-1.5	-30.6	-21.2	-30.3	1.0	1.4	2.4	2.1	-9.8	-53.2	-16.9	0.1	-18.2	-1.1	-9.5	-17.0	-24.7	0.3	0.9	-14.6	-8.8	-3.8

Large Cap Equity
Large Cap Value
Large Cap Growth
Small Cap Equity
Small Cap Value
Small Cap Growth
International Equity
Emerging Markets Equity
US Bonds
Cash
Commodities
Real Estate
Hedge Funds of Funds
60% MSCI ACWI/40% BBgBarc Global Bond

Source Data: Morningstar, Inc., Hedge Fund Research, Inc. (HFR), National Council of Real Estate Investment Fiduciaries (NCREIF). Indices used: Russell 1000, Russell 1000 Value, Russell 1000 Growth, Russell 2000, Russell 2000 Value, Russell 2000 Growth, MSCI EAFE, MSCI EM, BBgBarc US Aggregate, T-Bill 90 Day, Bloomberg Commodity, NCREIF Property, HFRI FOF, MSCI ACWI, BBgBarc Global Bond. NCREIF Property Index performance data as of 9/30/18.

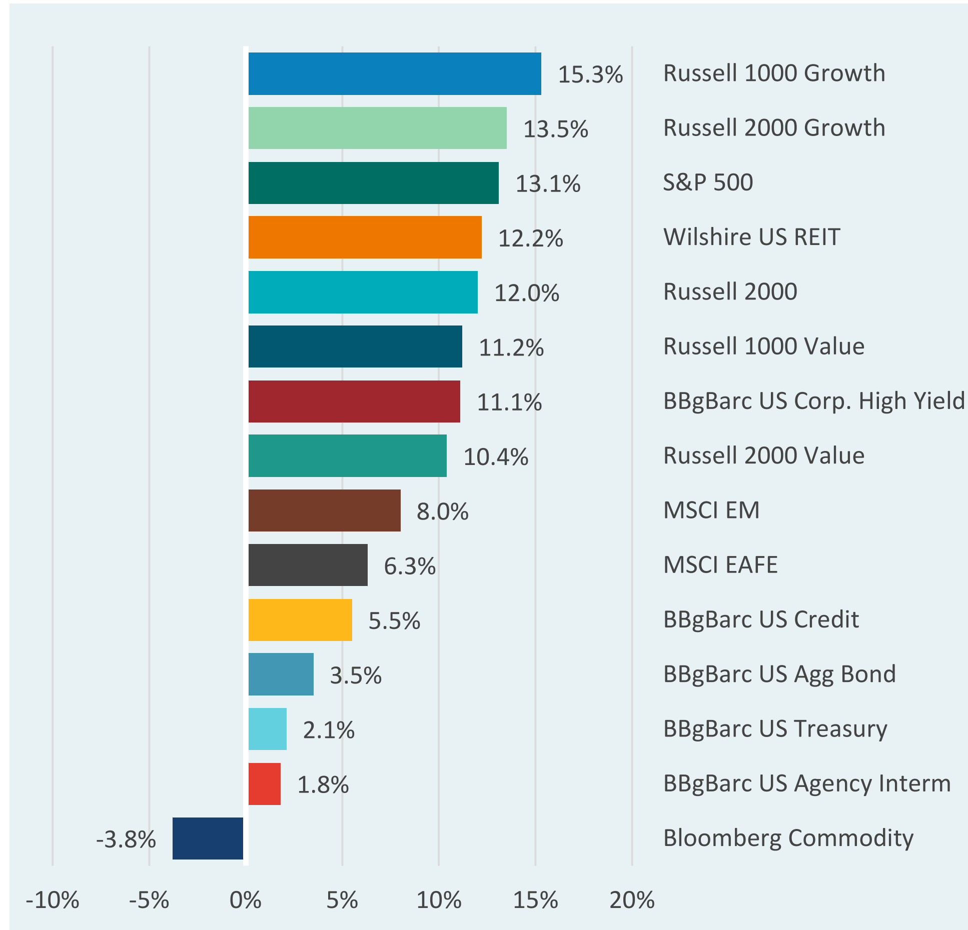
Major asset class returns

ONE YEAR ENDING DECEMBER



Source: Morningstar, as of 12/31/18

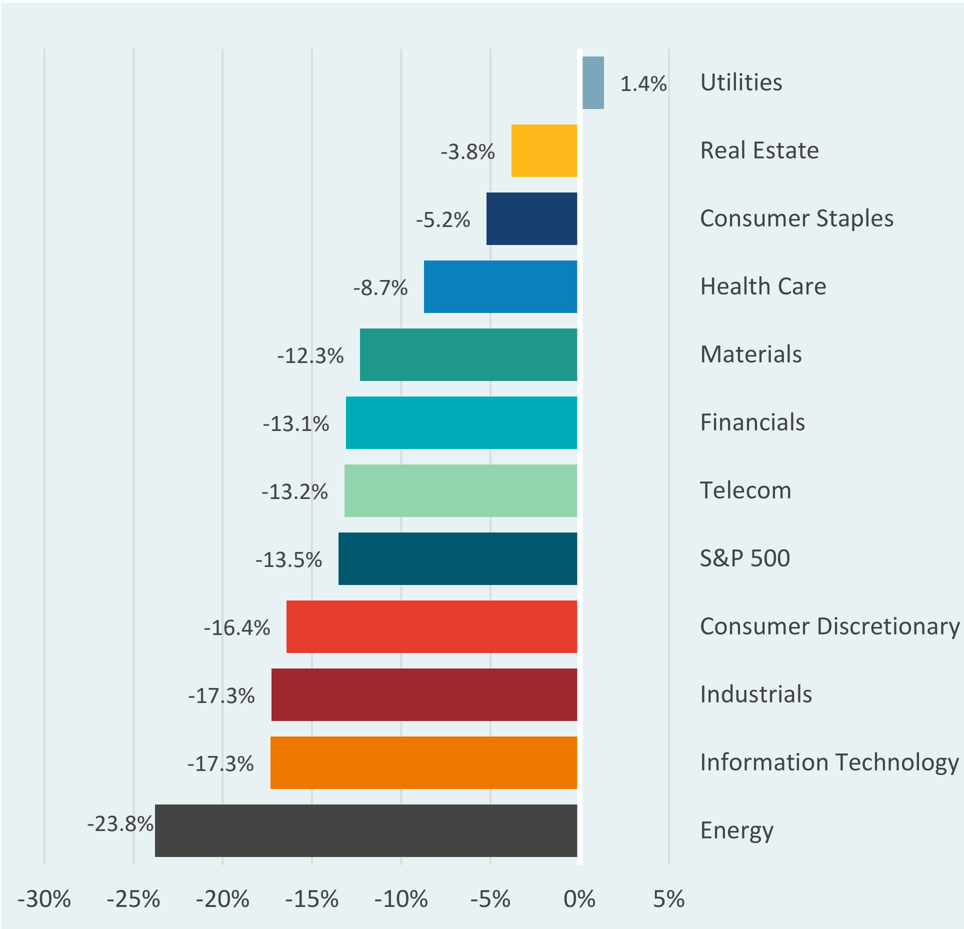
TEN YEARS ENDING DECEMBER



Source: Morningstar, as of 12/31/18

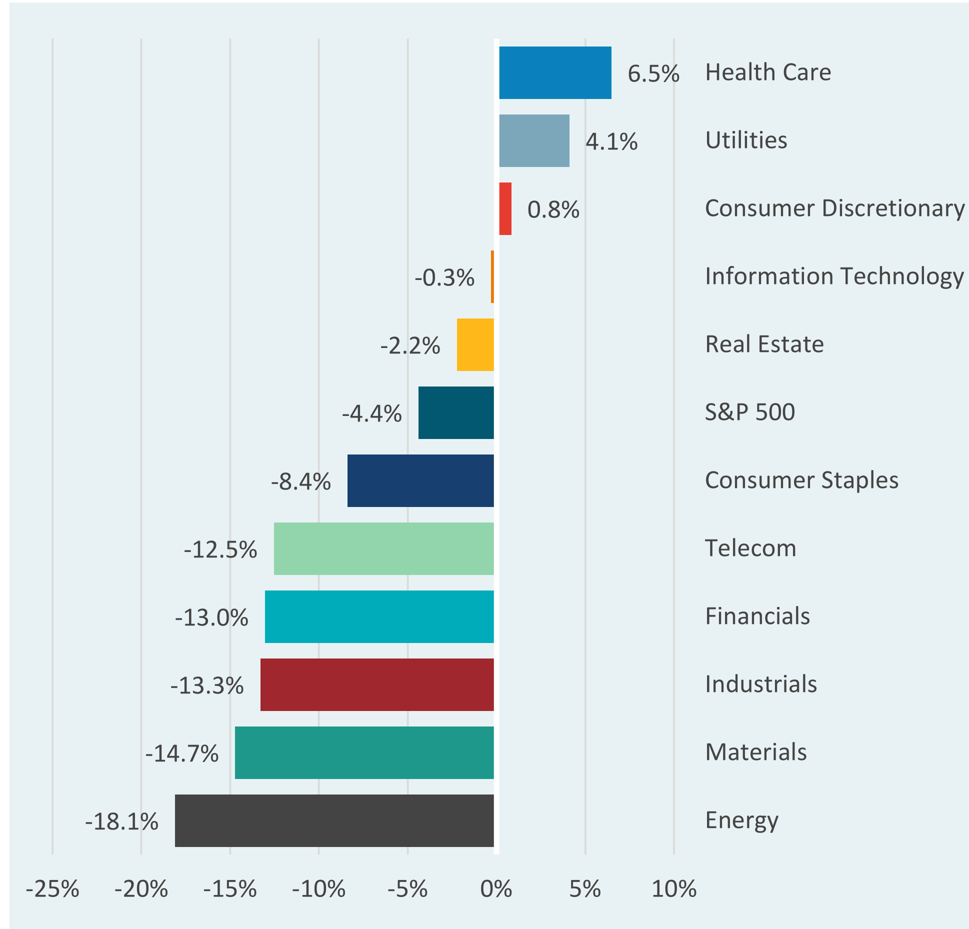
S&P 500 sector returns

Q4



Source: Morningstar, as of 12/31/18

ONE YEAR ENDING DECEMBER



Source: Morningstar, as of 12/31/18

Detailed index returns

DOMESTIC EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Core Index							
S&P 500	(9.0)	(13.5)	(4.4)	(4.4)	9.3	8.5	13.1
S&P 500 Equal Weighted	(9.7)	(13.9)	(7.6)	(7.6)	8.0	7.1	15.0
DJ Industrial Average	(8.6)	(11.3)	(3.5)	(3.5)	12.9	9.7	13.2
Russell Top 200	(8.8)	(13.2)	(3.1)	(3.1)	9.9	9.0	13.0
Russell 1000	(9.1)	(13.8)	(4.8)	(4.8)	9.1	8.2	13.3
Russell 2000	(11.9)	(20.2)	(11.0)	(11.0)	7.4	4.4	12.0
Russell 3000	(9.3)	(14.3)	(5.2)	(5.2)	9.0	7.9	13.2
Russell Mid Cap	(9.9)	(15.4)	(9.1)	(9.1)	7.0	6.3	14.0
Style Index							
Russell 1000 Growth	(8.6)	(15.9)	(1.5)	(1.5)	11.1	10.4	15.3
Russell 1000 Value	(9.6)	(11.7)	(8.3)	(8.3)	7.0	5.9	11.2
Russell 2000 Growth	(11.7)	(21.7)	(9.3)	(9.3)	7.2	5.1	13.5
Russell 2000 Value	(12.1)	(18.7)	(12.9)	(12.9)	7.4	3.6	10.4

FIXED INCOME

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
BBgBarc US TIPS	0.5	(0.4)	(1.3)	(1.3)	2.1	1.7	3.6
BBgBarc US Treasury Bills	0.2	0.6	1.9	1.9	1.0	0.6	0.4
BBgBarc US Agg Bond	1.8	1.6	0.0	0.0	2.1	2.5	3.5
Duration							
BBgBarc US Treasury 1-3 Yr	0.8	1.3	1.6	1.6	0.9	0.8	1.0
BBgBarc US Treasury Long	5.5	4.2	(1.8)	(1.8)	2.6	5.9	4.1
BBgBarc US Treasury	2.2	2.6	0.9	0.9	1.4	2.0	2.1
Issuer							
BBgBarc US MBS	1.8	2.1	1.0	1.0	1.7	2.5	3.1
BBgBarc US Corp. High Yield	(2.1)	(4.5)	(2.1)	(2.1)	7.2	3.8	11.1
BBgBarc US Agency Interm	1.0	1.6	1.6	1.6	1.3	1.4	1.8
BBgBarc US Credit	1.5	0.0	(2.1)	(2.1)	3.2	3.2	5.5

INTERNATIONAL EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
MSCI ACWI	(7.0)	(12.8)	(9.4)	(9.4)	6.6	4.3	9.5
MSCI ACWI ex US	(4.5)	(11.5)	(14.2)	(14.2)	4.5	0.7	6.6
MSCI EAFE	(4.9)	(12.5)	(13.8)	(13.8)	2.9	0.5	6.3
MSCI EM	(2.7)	(7.5)	(14.6)	(14.6)	9.2	1.6	8.0
MSCI EAFE Small Cap	(6.4)	(16.0)	(17.9)	(17.9)	3.7	3.1	10.5
Style Index							
MSCI EAFE Growth	(4.8)	(13.3)	(12.8)	(12.8)	2.9	1.6	7.1
MSCI EAFE Value	(4.9)	(11.7)	(14.8)	(14.8)	2.8	(0.6)	5.5
Regional Index							
MSCI UK	(3.8)	(11.8)	(14.2)	(14.2)	1.6	(1.7)	6.8
MSCI Japan	(6.7)	(14.2)	(12.9)	(12.9)	3.4	3.1	5.3
MSCI Euro	(4.8)	(13.2)	(16.4)	(16.4)	2.4	(0.9)	4.4
MSCI EM Asia	(3.2)	(9.3)	(15.5)	(15.5)	8.6	3.9	9.8
MSCI EM Latin American	(0.8)	0.4	(6.6)	(6.6)	14.9	(1.7)	5.0

OTHER

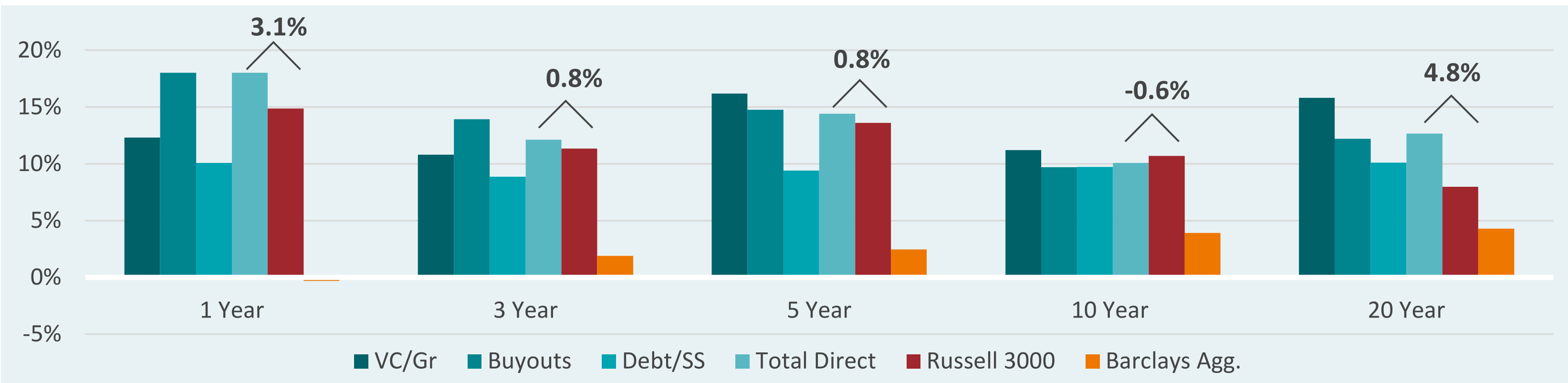
	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Index							
Bloomberg Commodity	(6.9)	(9.4)	(11.2)	(11.2)	0.3	(8.8)	(3.8)
Wilshire US REIT	(8.4)	(6.9)	(4.8)	(4.8)	2.1	7.9	12.2
CS Leveraged Loans	(2.3)	(3.1)	1.1	1.1	5.0	3.3	8.3
Alerian MLP	(8.3)	(16.3)	(11.9)	(11.9)	(1.6)	(6.9)	10.7
Regional Index							
JPM EMBI Global Div	1.3	(1.3)	(4.3)	(4.3)	5.2	4.8	8.2
JPM GBI-EM Global Div	1.3	2.1	(6.2)	(6.2)	5.9	(1.0)	3.5
Hedge Funds							
HFRI Composite	(2.0)	(5.4)	(4.1)	(4.1)	3.2	2.3	5.0
HFRI FOF Composite	(1.2)	(4.4)	(3.5)	(3.5)	1.5	1.5	3.2
Currency (Spot)							
Euro	1.0	(1.6)	(4.8)	(4.8)	1.7	(3.7)	(1.9)
Pound	(0.2)	(2.3)	(5.9)	(5.9)	(4.8)	(5.1)	(1.2)
Yen	3.5	3.5	2.7	2.7	3.1	(0.9)	(1.9)

Source: Morningstar, HFR, as of 12/31/18

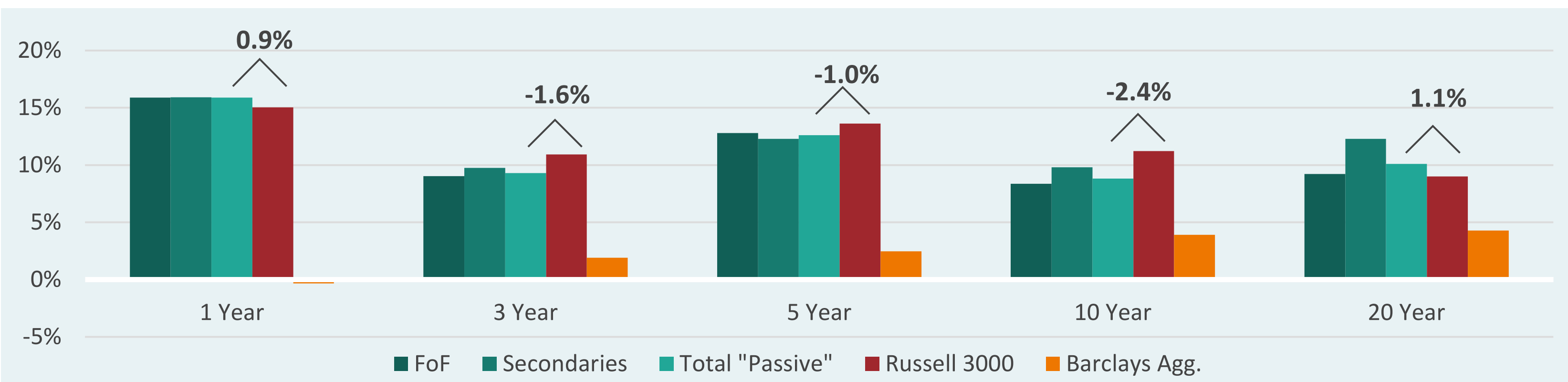
Private vs. public performance

As of 6/30/2018

DIRECT PRIVATE EQUITY FUND INVESTMENTS



"PASSIVE" STRATEGIES



Direct private equity outperformed public equites across most time periods

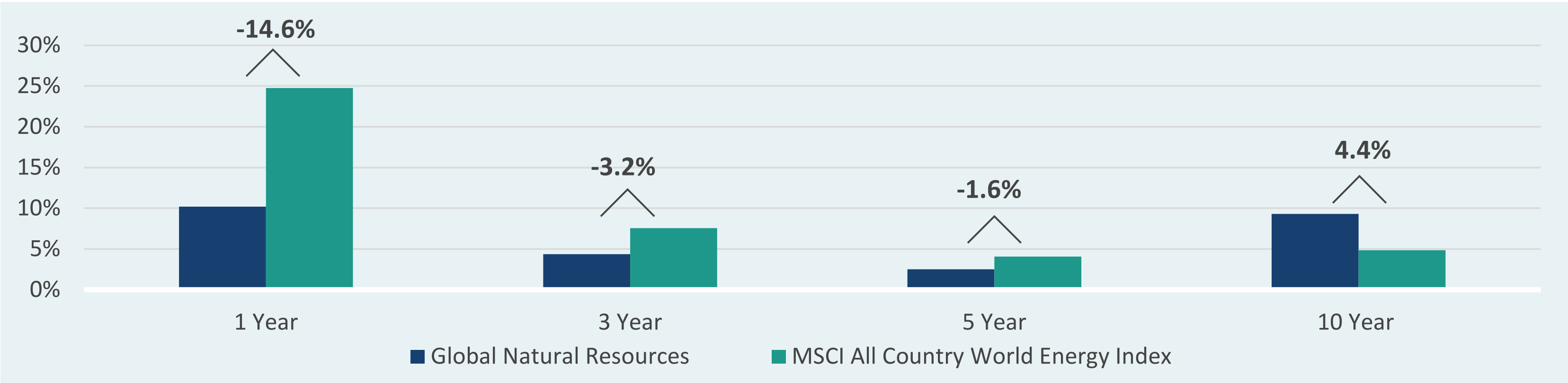
Fund-of-fund strategy performance relative to public equities has been mixed

Sources: Thomson Reuters Cambridge Universe's PME Module: U.S. Private Equity Funds sub asset classes as of June 30, 2018. Public Market Equivalent returns resulted from "Total Passive" and Total Direct's identical cash flows invested into and distributed from respective traditional asset comparable.

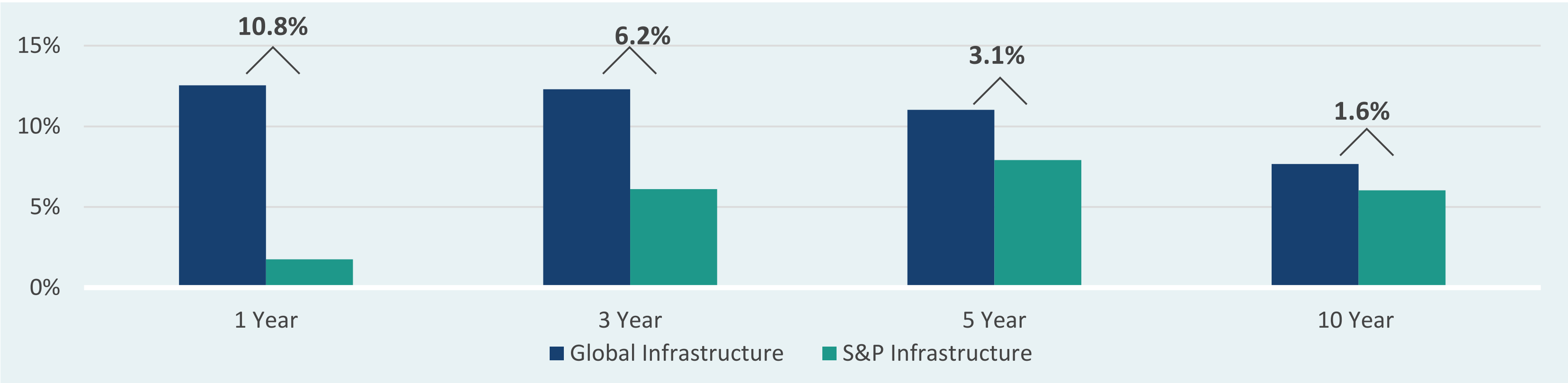
Private vs. liquid real assets performance

As of 6/30/2018

GLOBAL NATURAL RESOURCES FUNDS



GLOBAL INFRASTRUCTURE FUNDS



Aside from the 10-year period, natural resource funds underperformed the public index

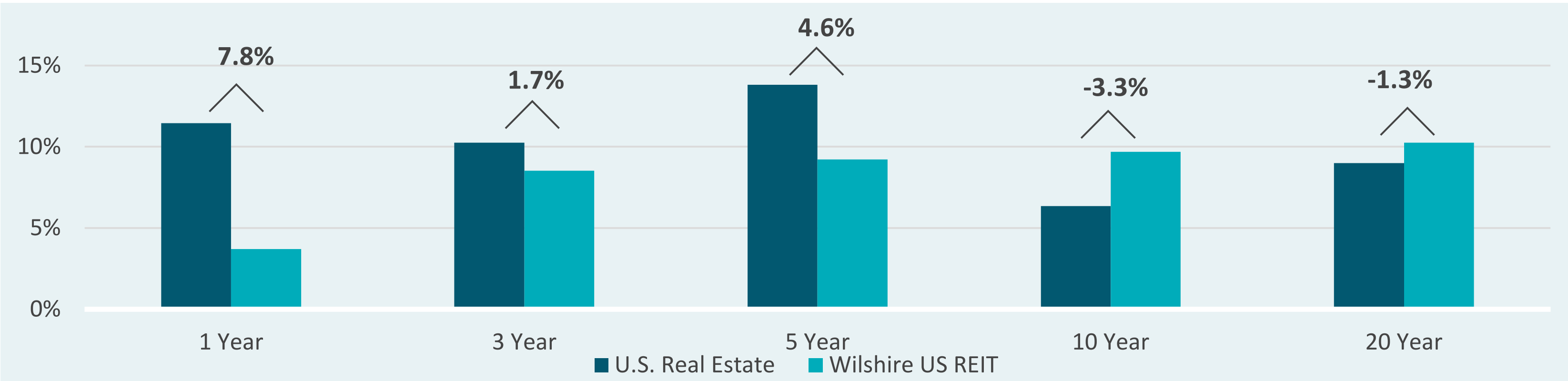
Infrastructure funds outperformed the public index across all periods

Sources: Thomson Reuters C|A PME: Global Natural Resources (vintage 2003 and later, inception of MSCI ACWI Energy benchmark) and Global Infrastructure (vintage 1996 and later, inception of S&P Infrastructure benchmark) universes as of June 30, 2018. Public Market Equivalent returns resulted from identical cash flows invested into and distributed from respective liquid real assets universes.

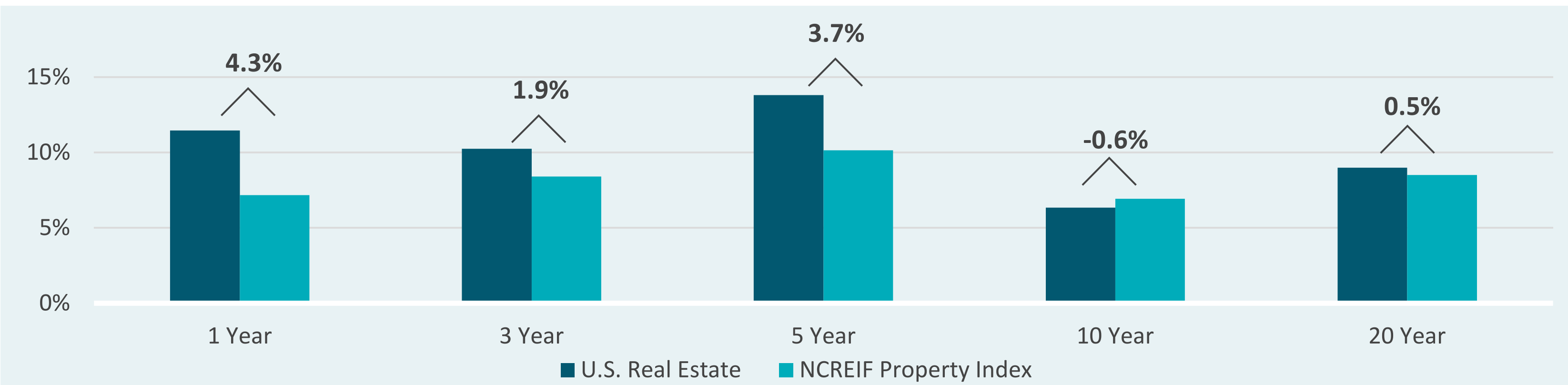
Private vs. liquid & core real estate performance

As of 6/30/2018

U.S PRIVATE REAL ESTATE FUNDS VS. LIQUID UNIVERSE



U.S. PRIVATE REAL ESTATE FUNDS VS. CORE FUNDS



Private real estate performance relative to REITs has been mixed

Private real estate funds outperformed the index during most time periods

Sources: Thomson Reuters C|A PME: Global and U.S. Real Estate universes as of June 30, 2018. Public Market Equivalent returns resulted from identical cash flows invested into and distributed from respective liquid real estate universes.

Definitions

Bloomberg US Weekly Consumer Comfort Index *- tracks the public's economic attitudes each week, providing a high-frequency read on consumer sentiment. The index, based on cell and landline telephone interviews with a random, representative national sample of U.S. adults, tracks Americans' ratings of the national economy, their personal finances and the buying climate on a weekly basis, with views of the economy's direction measured separately each month. (www.langerresearch.com)*

University of Michigan Consumer Sentiment Index *- A survey of consumer attitudes concerning both the present situation as well as expectations regarding economic conditions conducted by the University of Michigan. For the preliminary release approximately three hundred consumers are surveyed while five hundred are interviewed for the final figure. The level of consumer sentiment is related to the strength of consumer spending. (www.Bloomberg.com)*

NFIB Small Business Outlook *- Small Business Economic Trends (SBET) is a monthly assessment of the U.S. small-business economy and its near-term prospects. Its data are collected through mail surveys to random samples of the National Federal of Independent Business (NFIB) membership. The survey contains three broad question types: recent performance, near-term forecasts, and demographics. The topics addressed include: outlook, sales, earnings, employment, employee compensation, investment, inventories, credit conditions, and single most important problem. (http://www.nfib-sbet.org/about/)*

NAHB Housing Market Index – *the housing market index is a weighted average of separate diffusion induces for three key single-family indices: market conditions for the sale of new homes at the present time, market conditions for the sale of new homes in the next six months, and the traffic of prospective buyers of new homes. The first two series are rated on a scale of Good, Fair, and Poor and the last is rated on a scale of High/Very High, Average, and Low/Very Low. A diffusion index is calculated for each series by applying the formula "(Good-Poor + 100)/2" to the present and future sales series and "(High/Very High-Low/Very Low + 100)/2" to the traffic series. Each resulting index is then seasonally adjusted and weighted to produce the HMI. Based on this calculation, the HMI can range between 0 and 100.*

Notices & disclosures