

**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**



Meeting Date
02/27/19
Agenda Item
#8a.

PERIOD ENDING: DECEMBER 31, 2018
Investment Performance Review for

Contra Costa County Employees' Retirement Association

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Investment Landscape

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Review

TAB II

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**PERSPECTIVES
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SUCCESS**

1ST QUARTER 2019
Investment Landscape

Recent Verus research

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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 difficulty 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

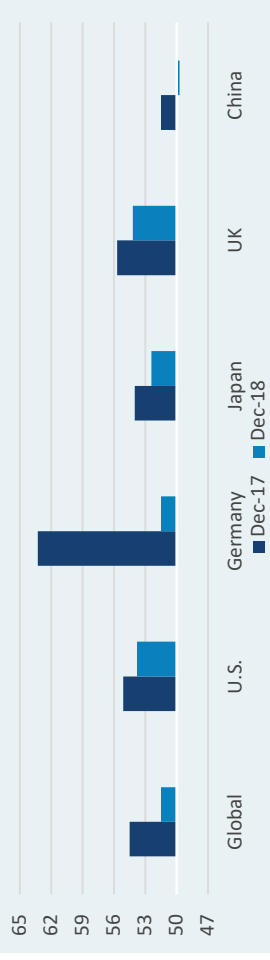
Article Source: Wall Street Journal, December 10th, 2018

“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

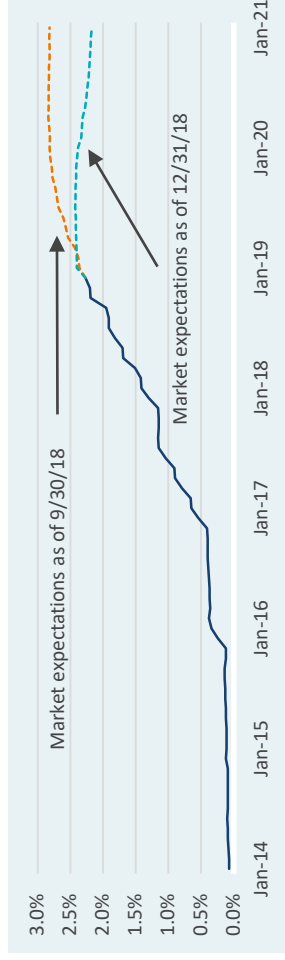
Article Source: Forbes, October 11th, 2018

GLOBAL MANUFACTURING PMIs



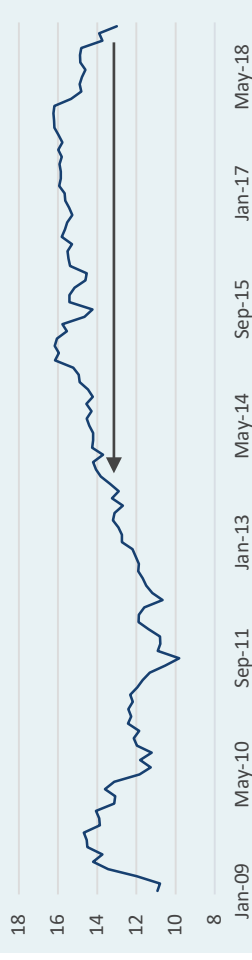
Source: Bloomberg, JPMorgan, Market, as of 12/31/18, 50 indicates a neutral level

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

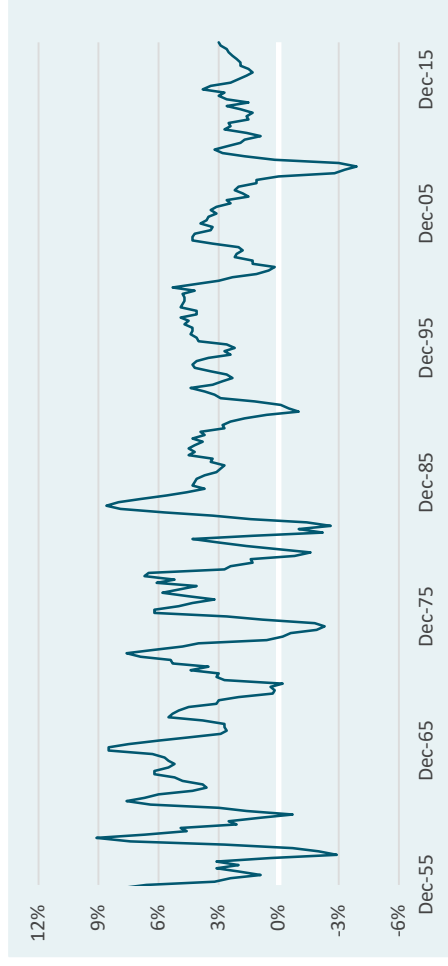
GDP growth

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.

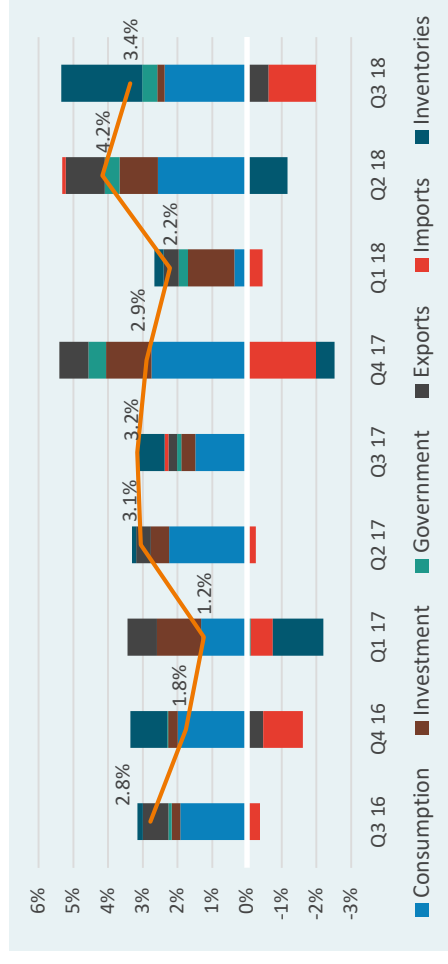
The economy appears to be slowing after a period of strong growth

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

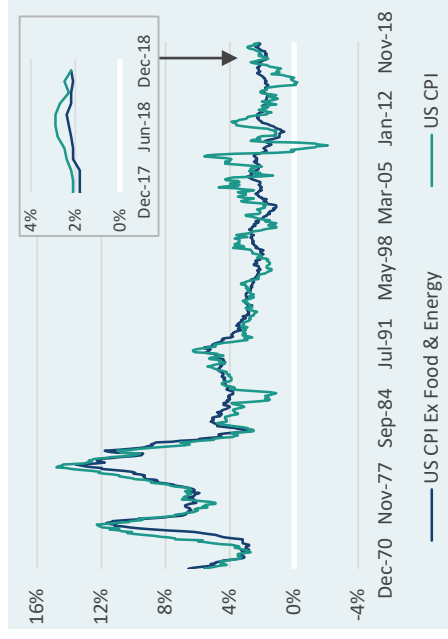
U.S. inflation remained near the Federal Reserve's 2.0% target. Headline U.S. inflation fell from 2.3% to 1.9% over the quarter, driven by lower oil prices. U.S. core CPI remained at 2.2%. Moderate inflation has likely contributed to the willingness of the Fed to keep on course with rate hikes.

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.

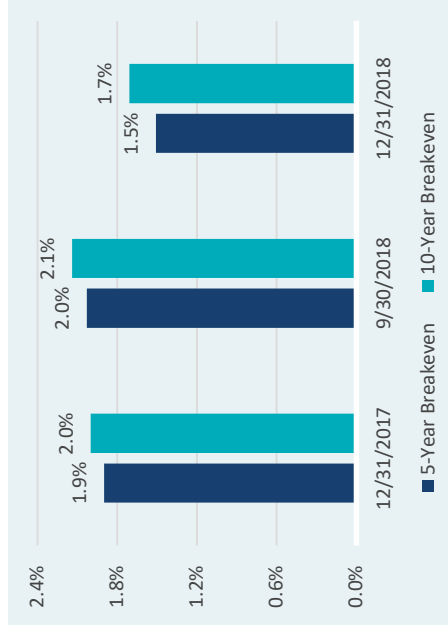
U.S.-China tariffs have recently been cited as a potential source of inflation risk. However, flow-through effects from import prices to consumer prices are complex, and the outcome may be more nuanced. We do not expect a material increase in inflation due to the tariffs that have been implemented.

U.S. CPI (YOY)



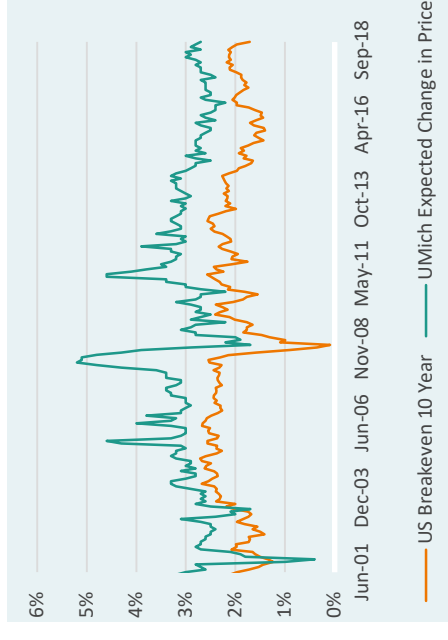
Source: Bloomberg, as of 12/31/18

BREAKEVEN INFLATION RATES



Source: FRED, as of 12/31/18

INFLATION EXPECTATIONS



Source: Bloomberg, as of 12/31/18

Labor market

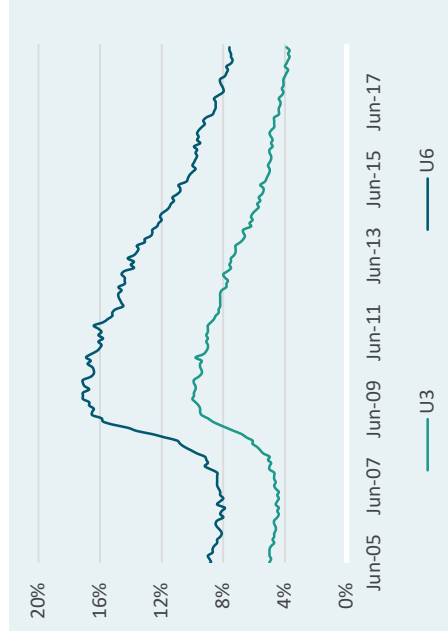
The labor market remained a bright spot in the U.S. economy, although this strength may reflect where the economy has been rather than where it is headed. Labor market conditions tend to lag the broader economy.

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.

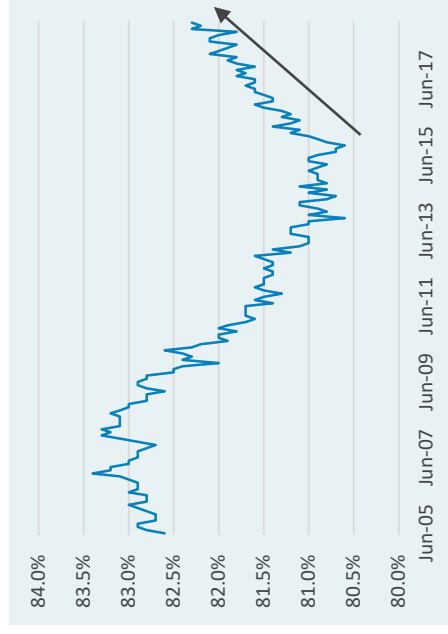
The tightness in the labor market appears to be translating to above average wage gains. In December, wage growth hit a cycle high of 3.3% from the previous year.

UNEMPLOYMENT RATE



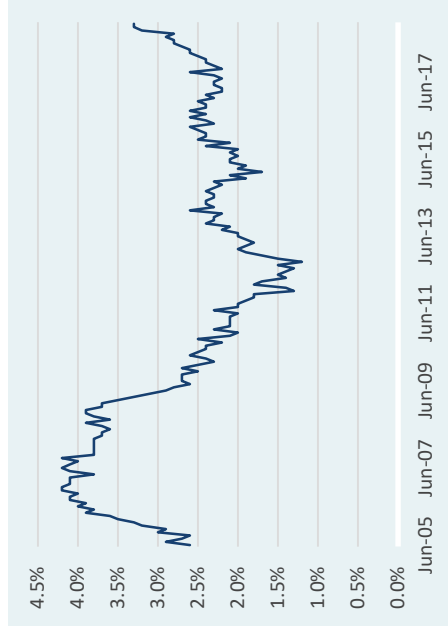
Source: FRED, as of 12/31/18

CORE AGE PARTICIPATION RATE



Source: Bloomberg, as 12/31/18

WAGE GROWTH (YOY)



Source: Bloomberg, as of 12/31/18

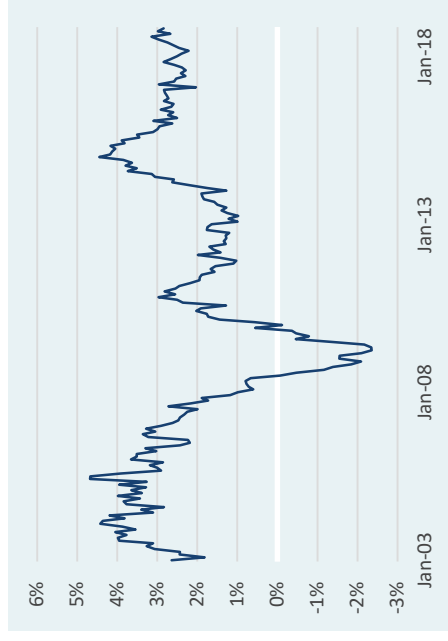
The consumer

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.

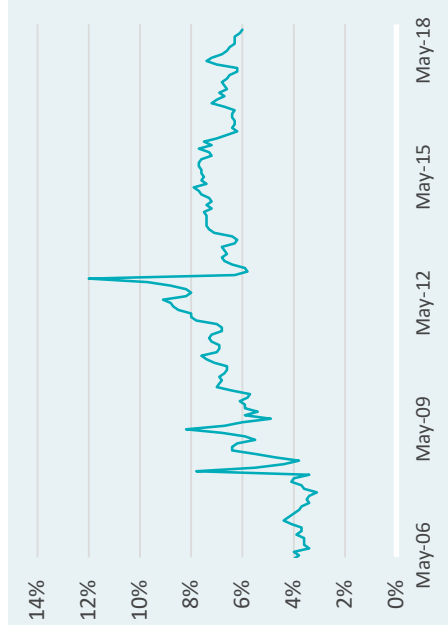
The 30-year fixed mortgage rate approached 5% towards the end of the year but tapered off as interest rates fell in December. Credit card interest rates have also risen materially. We believe further rate increases from this point will most likely be minimal, but that recent rate rises will act as a 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)



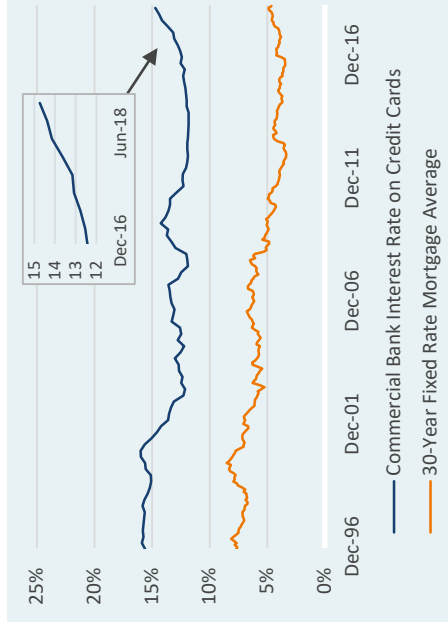
Source: Bloomberg, as of 11/30/18

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.

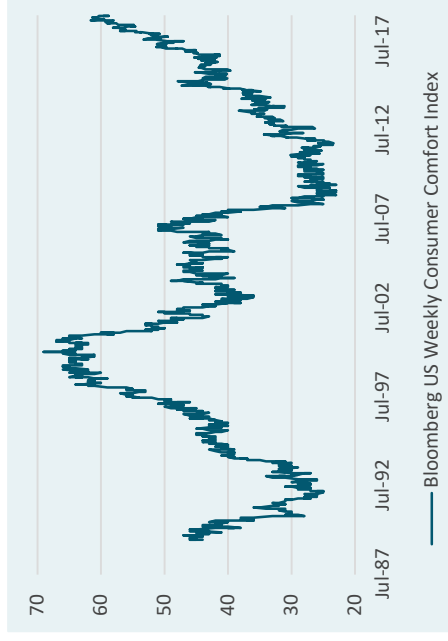
The University of Michigan Index of Consumer Sentiment fell modestly during the quarter from 100.1 to 98.3, but is still elevated relative to its own history (87th percentile since index inception in 1978). The recent plunge in stock prices was only reported by 12% of respondents as a primary economic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

focused on positive perceptions of employment and income prospects, according to the survey administrators.

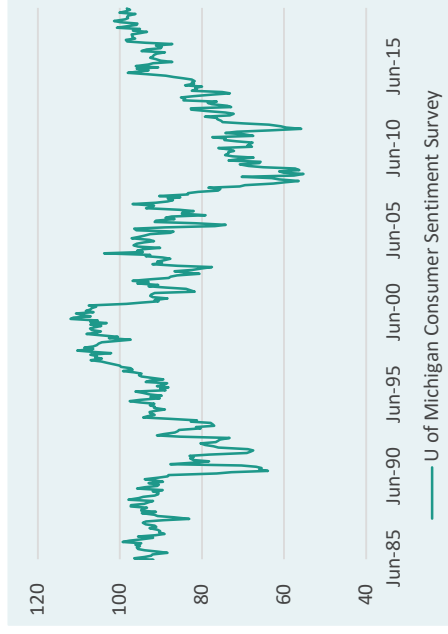
Small business sentiment drifted lower, but remained near record highs. At 104.4, the December reading for the NFIB Small Business Optimism Index was in the 92nd percentile of its own history going back to 1985.

Consumers and business are confident about the future

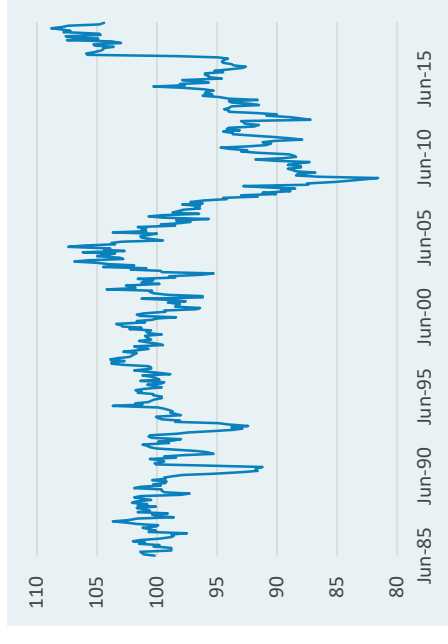
CONSUMER COMFORT INDEX



CONSUMER SENTIMENT



NFIB SMALL BUSINESS OPTIMISM INDEX



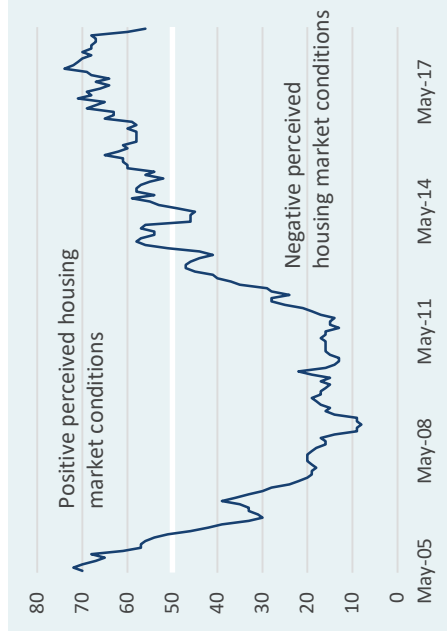
Housing

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.

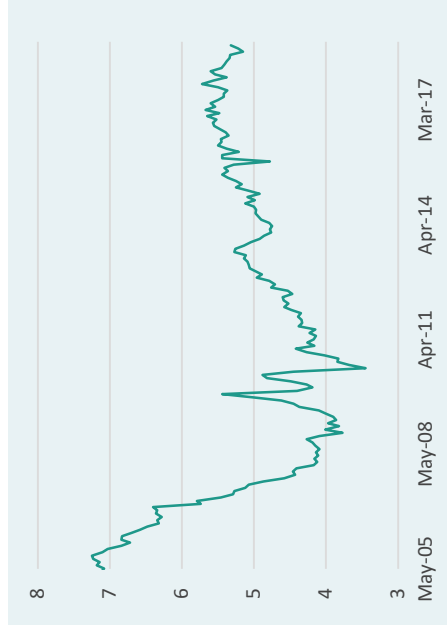
The U.S. housing market appears to be cooling off

NAHB HOUSING MARKET INDEX



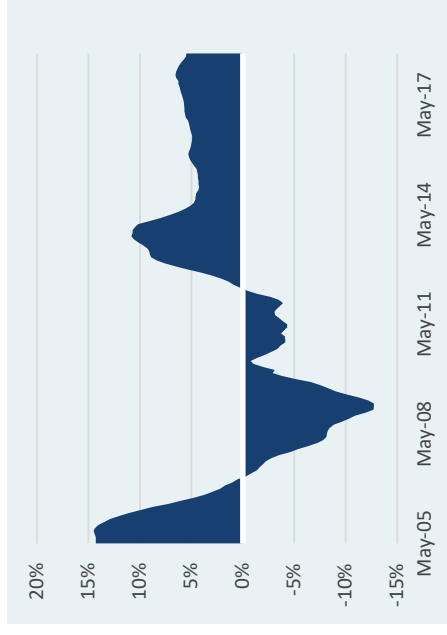
Source: Bloomberg, NAHB, as of 12/31/18 (see appendix)

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.

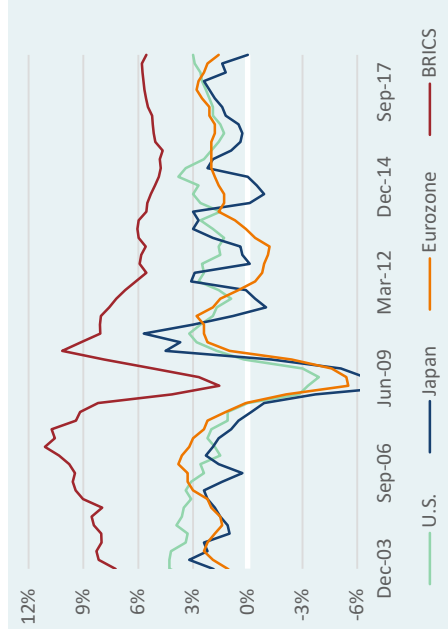
In the Eurozone, real GDP decelerated to 1.6% YoY as many economies struggled with stagnation and social unrest. European Union rules restrict the ability of member nations to fully implement fiscal and monetary stimulus to their economies, which may have contributed to Europe's uneven

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.

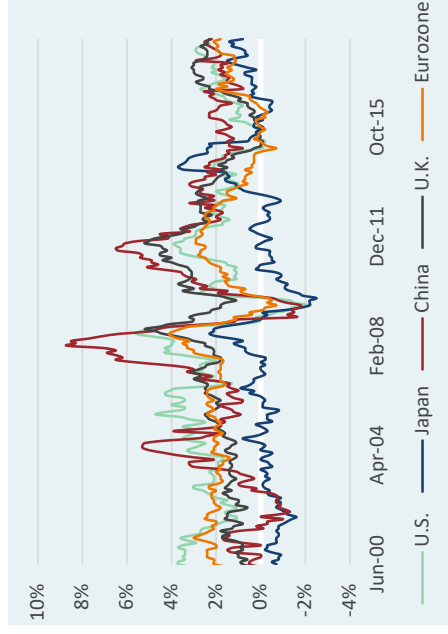
Global economic growth appears to be decelerating

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

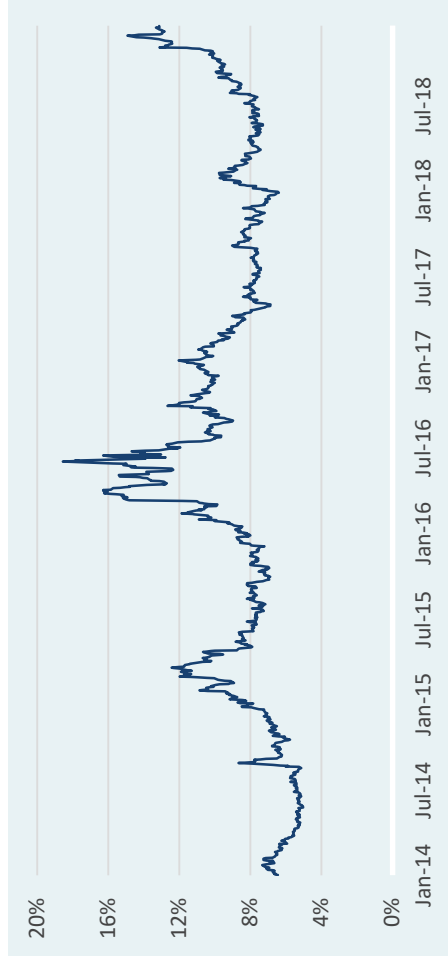
The chaos surrounding Brexit negotiations has not yet had a large impact on markets (outside of higher volatility in the British pound), but it will likely become an increasing area of focus for global investors the closer we get to the March 2019 deadline. While most political and market commentators 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.

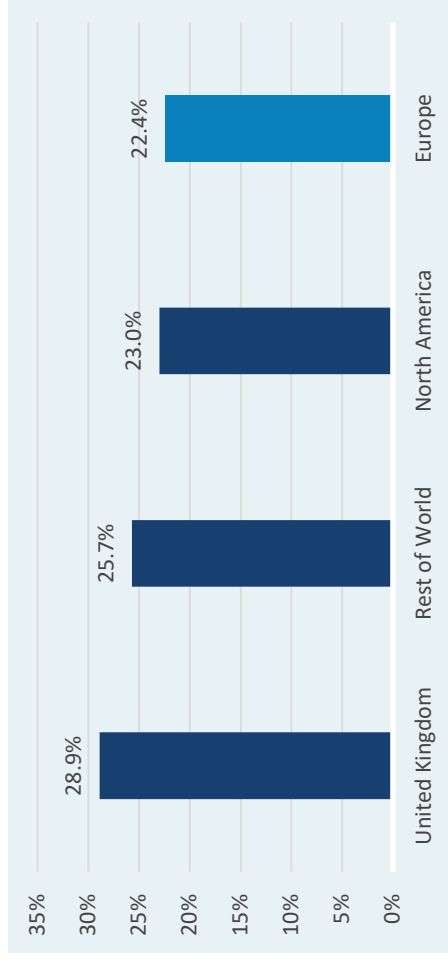
There will be both gains and losses from Brexit

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

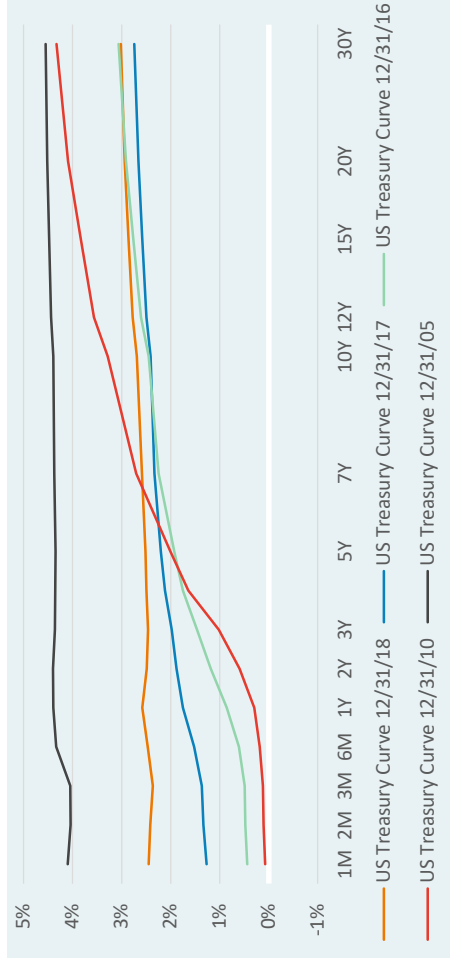
- The Federal Reserve raised the target for the fed funds rate by 0.25% in December, to a range of 2.25%-2.50%. Despite the hike, Fed officials indicated a more patient approach to future tightening, and lowered expectations for hikes in 2019 from three to two.
- The market's expectation for future rate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

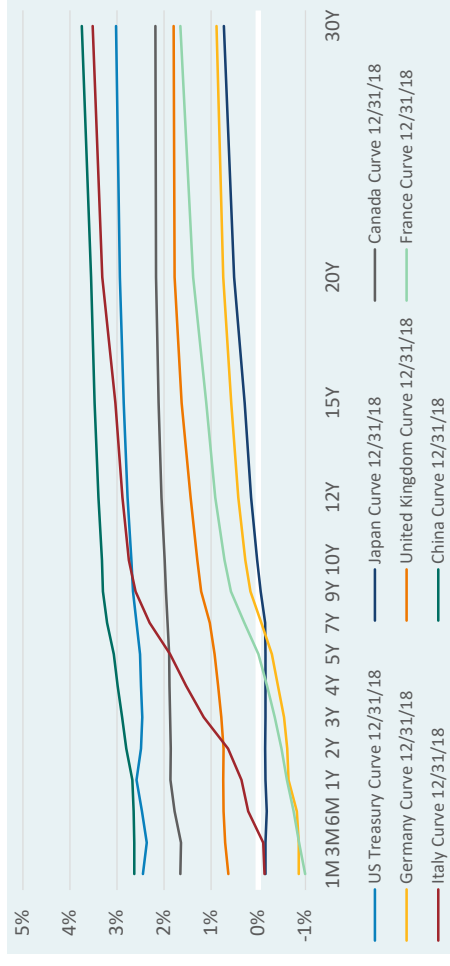
Source: Bloomberg, as of 12/31/18

Yield environment

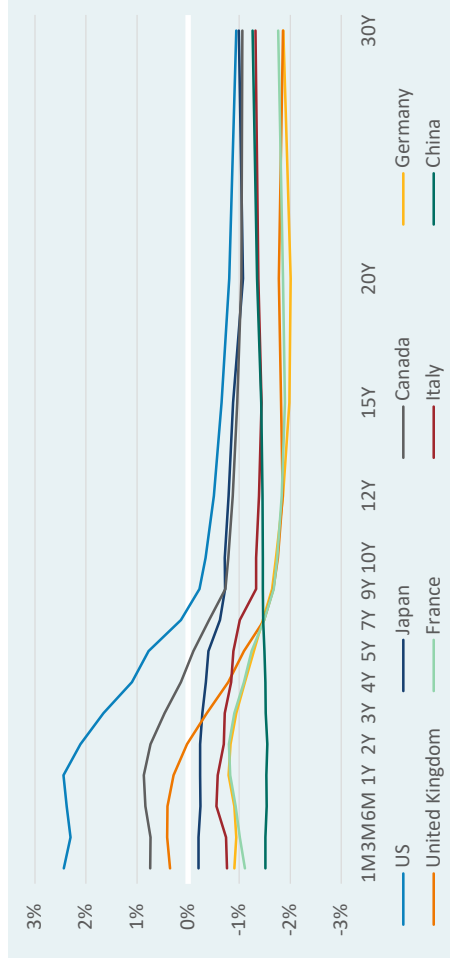
U.S. YIELD CURVE



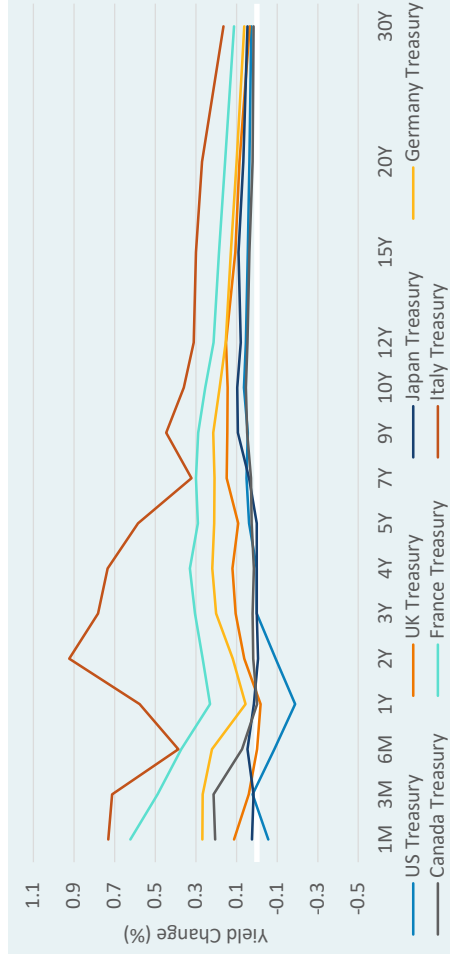
GLOBAL GOVERNMENT YIELD CURVES



YIELD CURVE CHANGES OVER LAST FIVE YEARS



IMPLIED CHANGES OVER NEXT YEAR



Source: Bloomberg, as of 12/31/18

Fed pricing

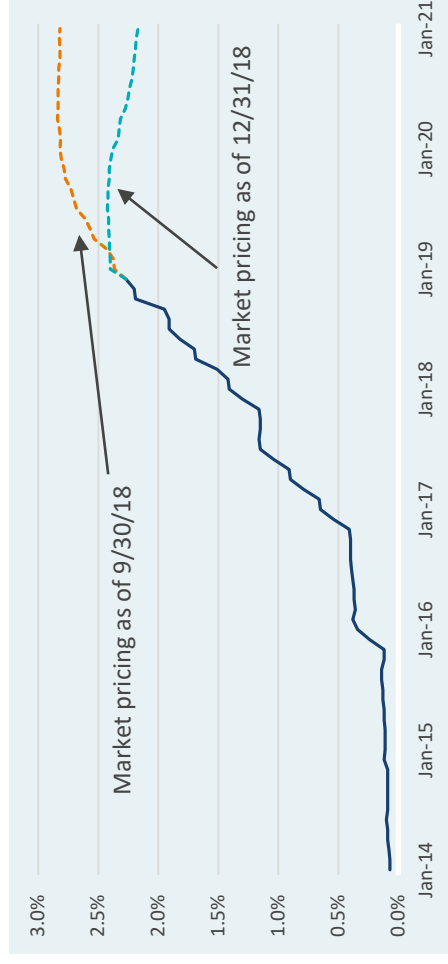
The Fed raised rates by another 25 bps in December to a target range of 2.25% to 2.50% on the fed funds rate, the fourth such hike of 2018. More important than what the Fed did, however, is what Fed officials said, and how the market reacted and adjusted its expectations for future monetary tightening. 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.

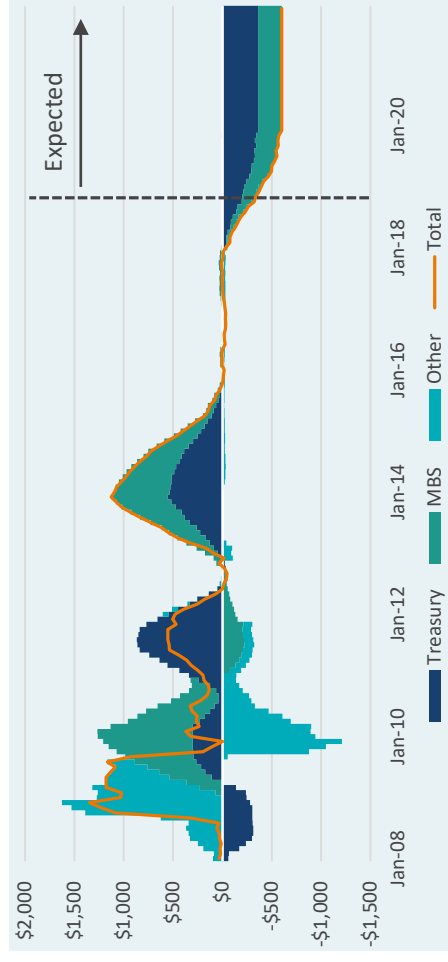
Market pricing of future Fed policy is extremely dovish

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.

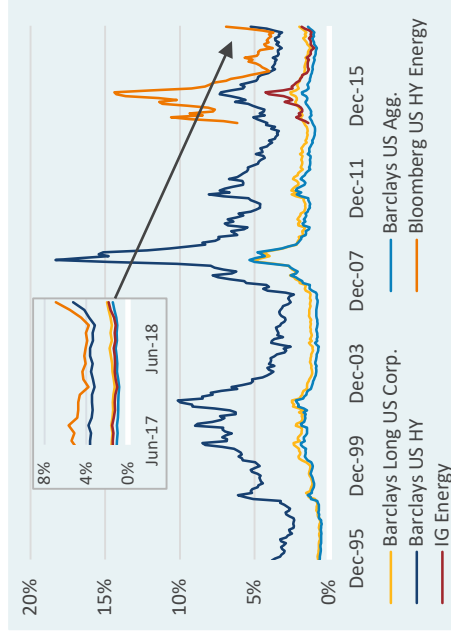
Loans were also under pressure in December as the asset class

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.

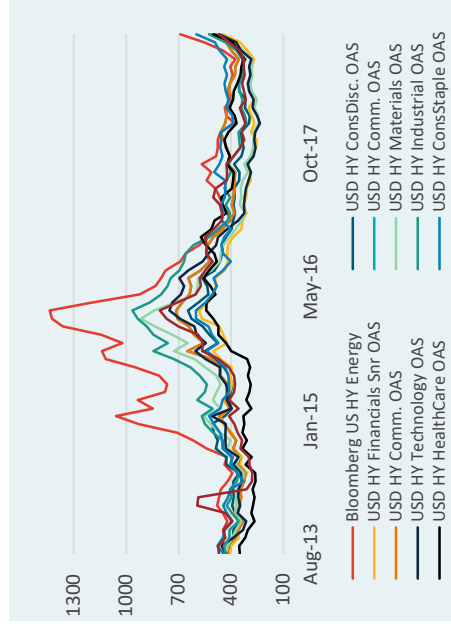
Credit spreads widened due to concerns over slowing global growth and broader risk-off behavior

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

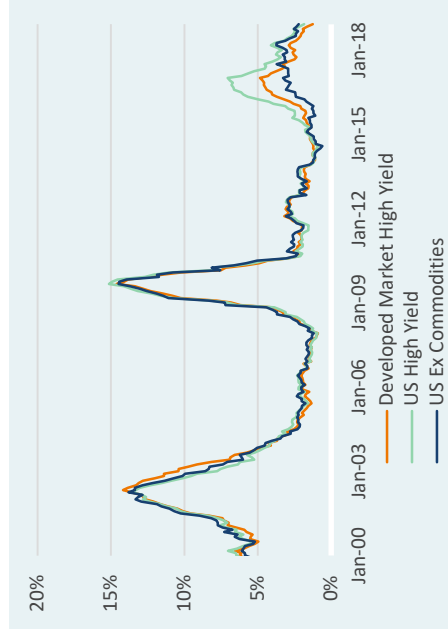
Default activity has been low and stable in the U.S. credit market, despite wider spreads. The par-weighted default rate of 1.9% remains below its long-term average of 3.0-3.5%. There were 29 defaults in 2018, affecting \$40.9 billion in bonds. iHeartRadio accounted for 40% of default volume (\$16 billion).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

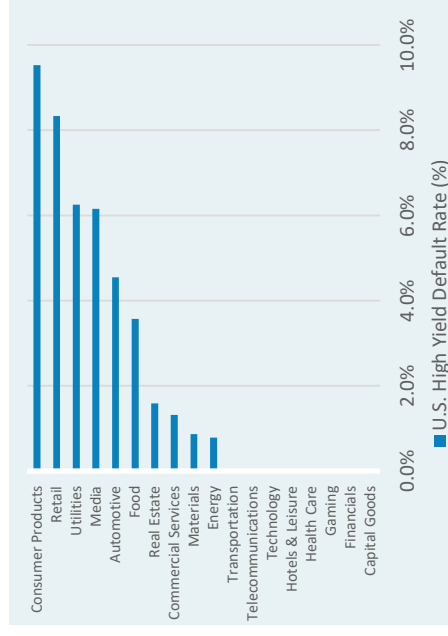
There were no high yield bonds issued in December due to market volatility – the first time this has happened since November 2008. Loan market issuance also slowed, with only \$8 billion in institutional loan volume. Gross new high yield and loan issue activity totaled \$187 billion and \$704 billion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

HY DEFAULT RATE (ROLLING 1-YEAR)



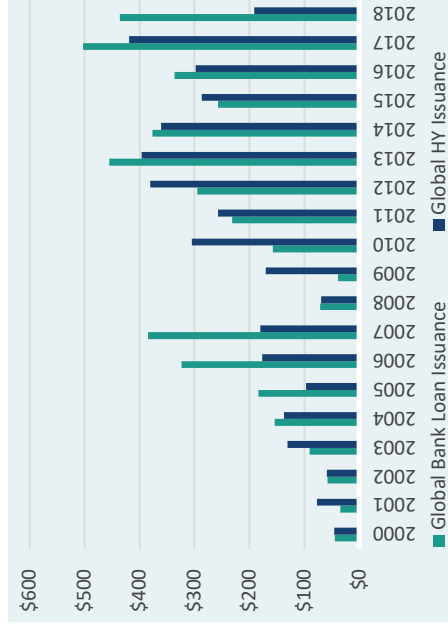
Source: BofA Merrill Lynch, as of 12/31/18

HY SECTOR DEFAULTS (LAST 12 MONTHS)



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

GLOBAL ISSUANCE (\$ BILLIONS)

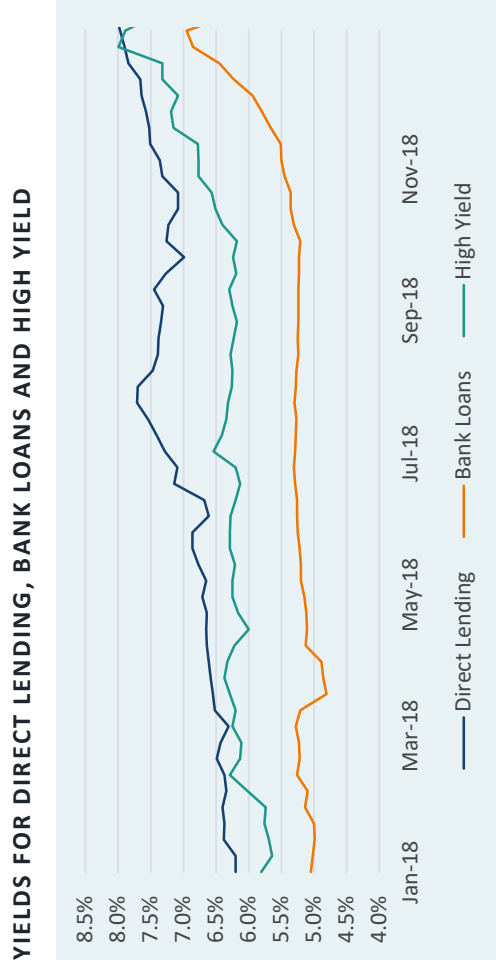


Source: Bloomberg, BofA Merrill Lynch, as of 12/31/18

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.

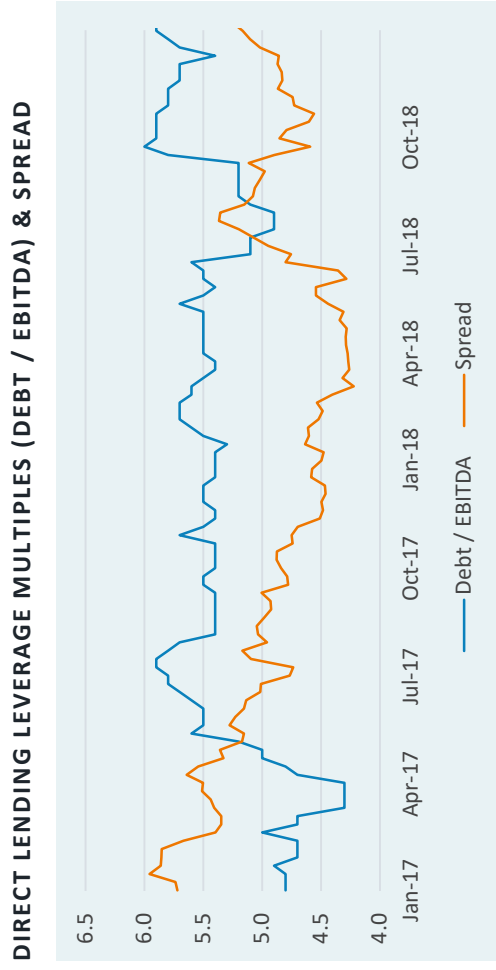
Yields for loans made by direct lending funds finished the year above 8% (8.04%). While yields have been aided by higher LIBOR rates,



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

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.



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

Equity

Equity environment

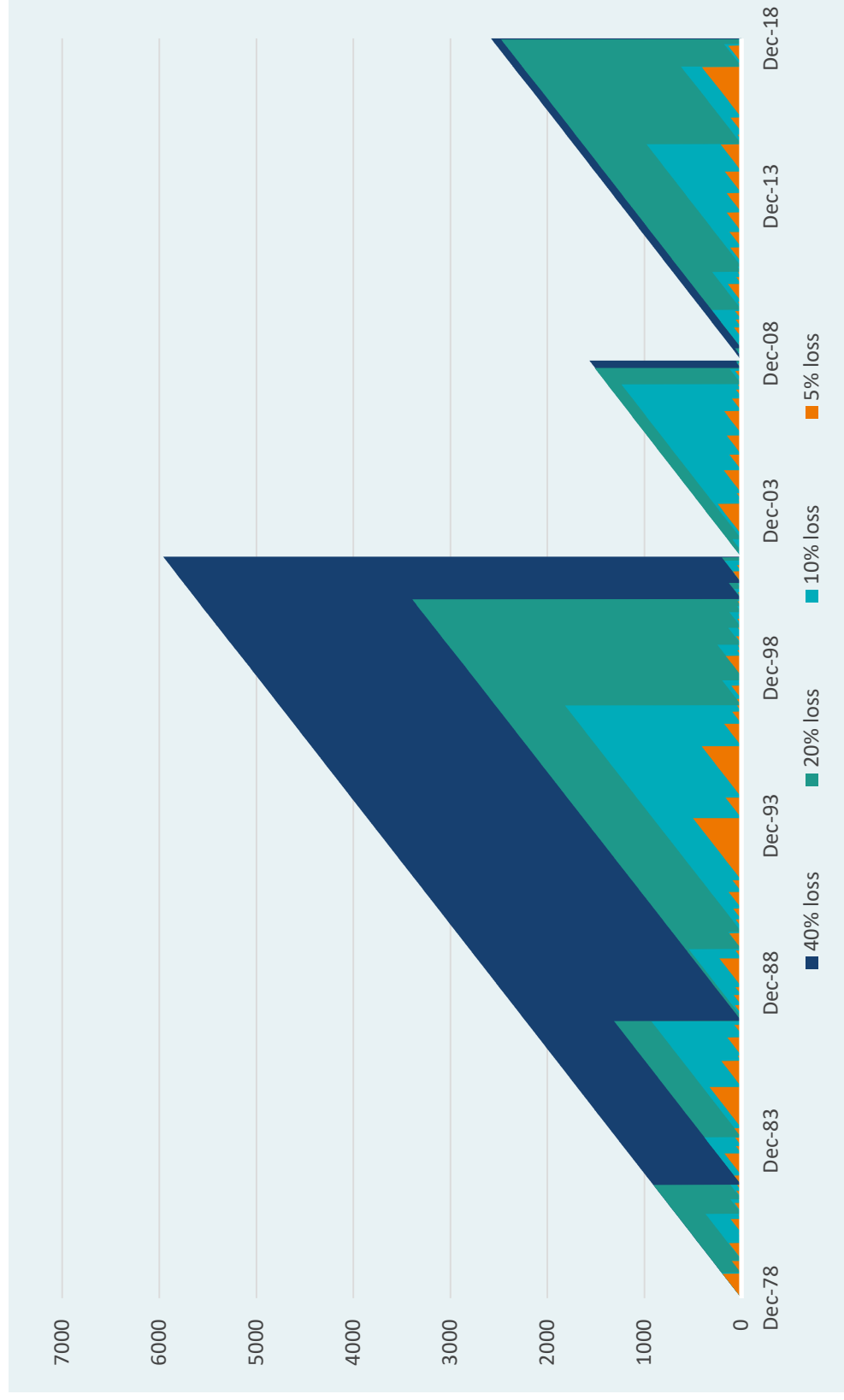
- U.S. equities experienced their worst quarter since 2008 – the S&P 500 Index returned -13.5%. The sell-off was due in part to concerns over a slowdown in global growth, and was exacerbated by low liquidity toward the end of the year.
- The drawdown from peak on the S&P 500 Index stopped just shy of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



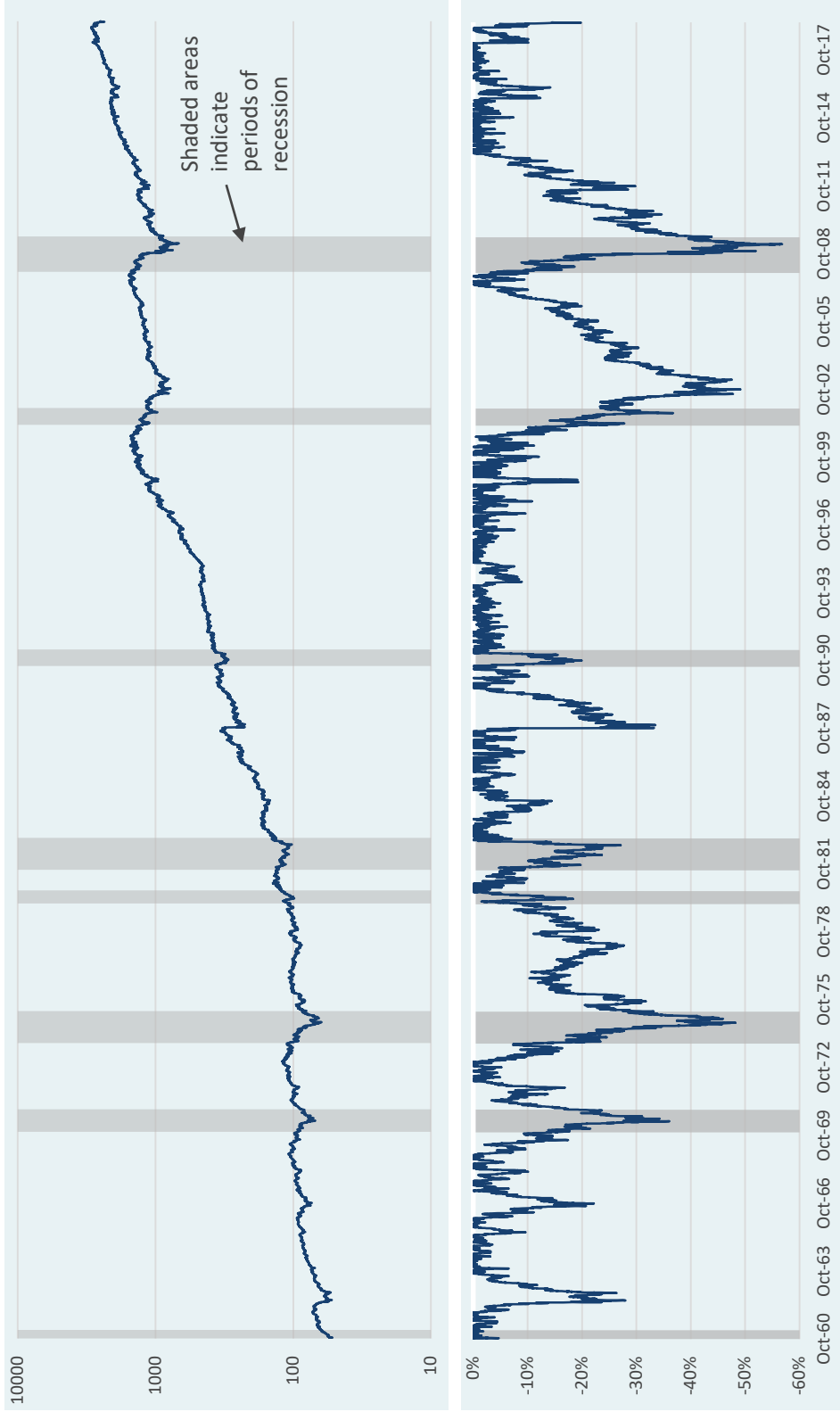
5% and 10% corrections occur regularly

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

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

Drawdowns of greater than 20% occur less frequently

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



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

The recent drawdown appears overdone based on economic conditions

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

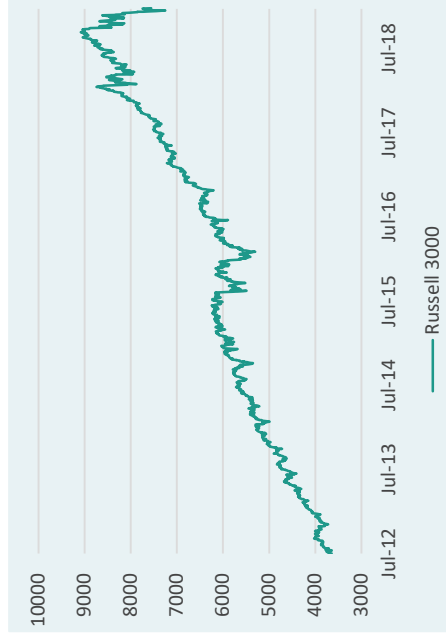
Domestic equity

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.

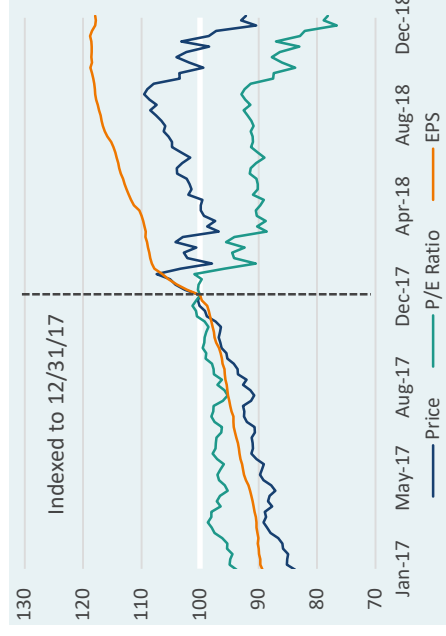
We maintain a neutral view on U.S. equities

U.S. EQUITIES



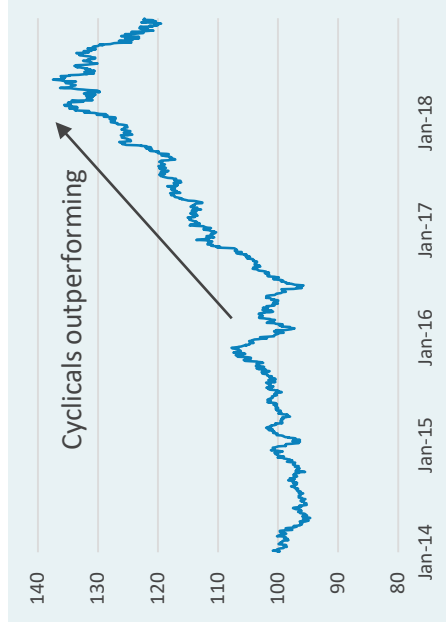
Source: Russell Investments, as of 12/31/18

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

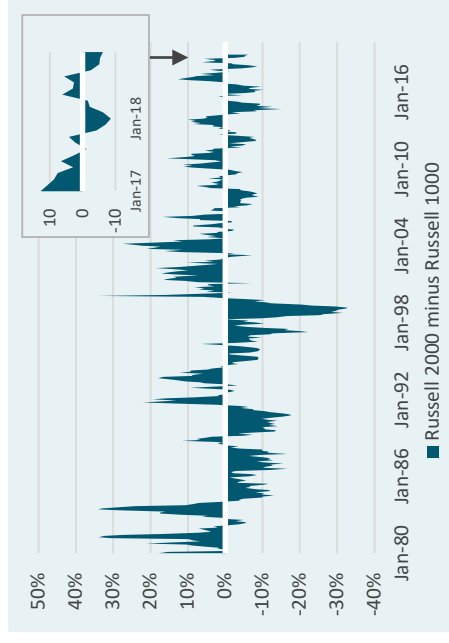
Large cap equities (Russell 1000 -13.8%) significantly outperformed small cap equities (Russell 2000 -20.2%) during the quarter. It may not be surprising that small cap equities underperformed, given the broad risk-off moves during this period. Growth stocks underperformed value stocks during the quarter (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.

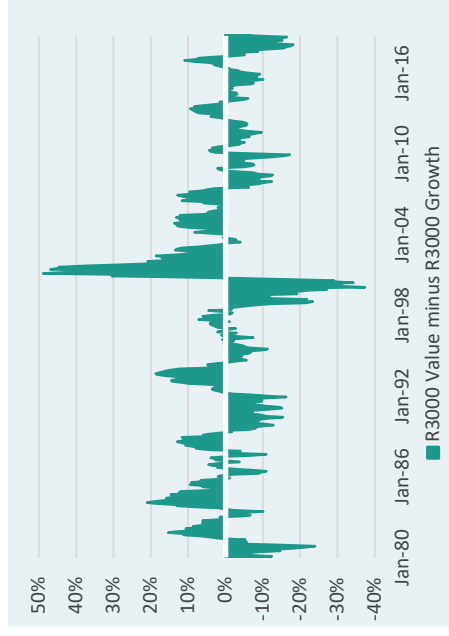
Long spans of style (size, value) underperformance is, and will always be, discouraging for investors. Similar to an investment in the broader equity market, we should expect to see rough patches of performance through time.

SMALL CAP VS LARGE CAP (YOY)



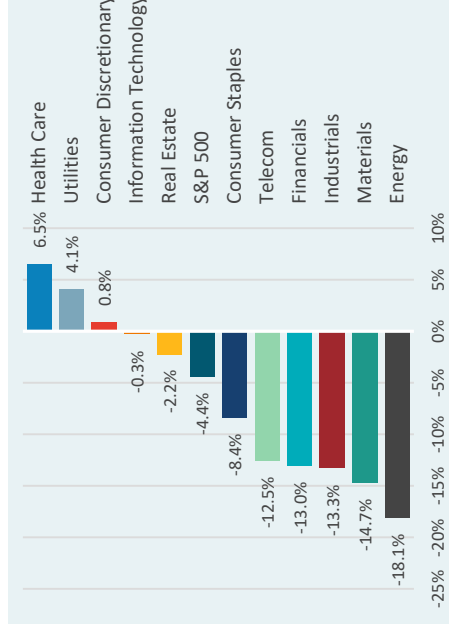
Source: FTSE, as of 12/31/18

VALUE VS GROWTH (YOY)



Source: FTSE, as of 12/31/18

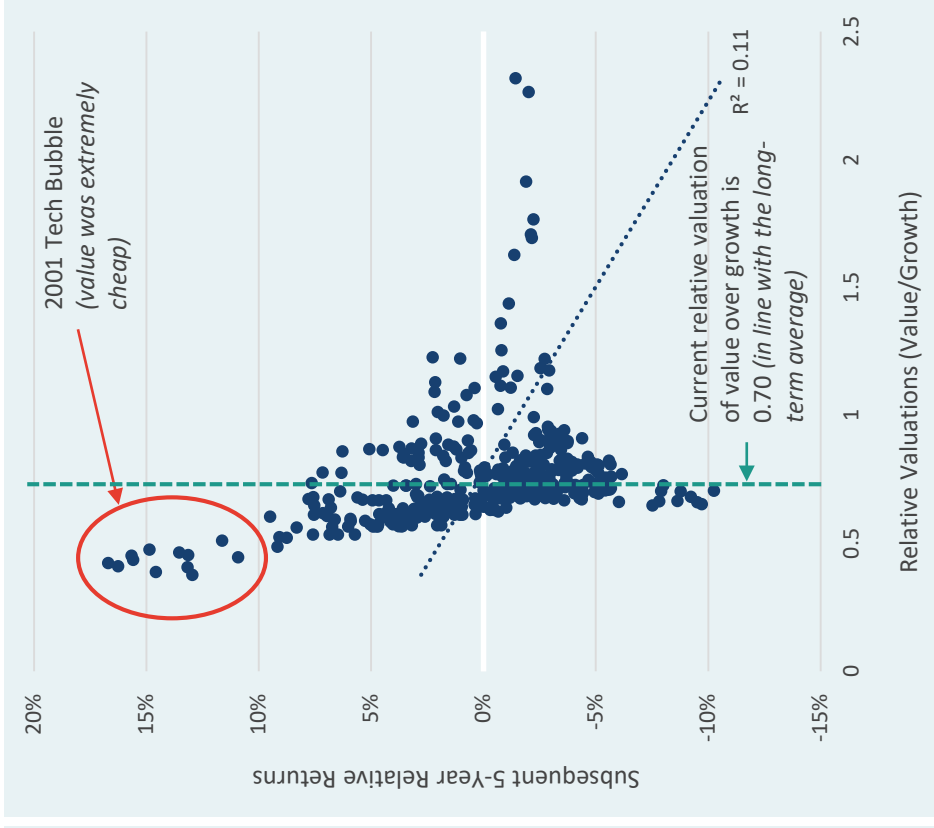
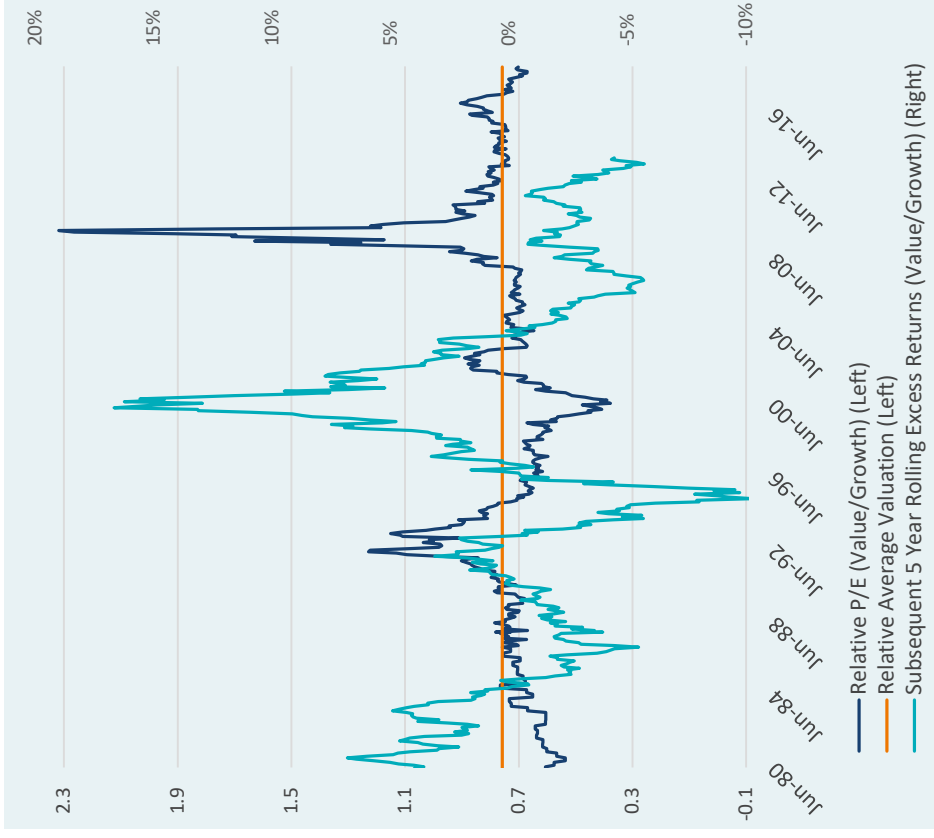
1-YEAR S&P 500 SECTOR RETURNS



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

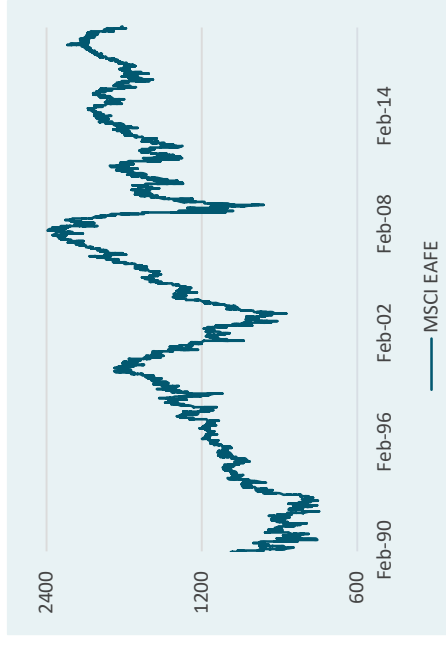
International developed equity

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.

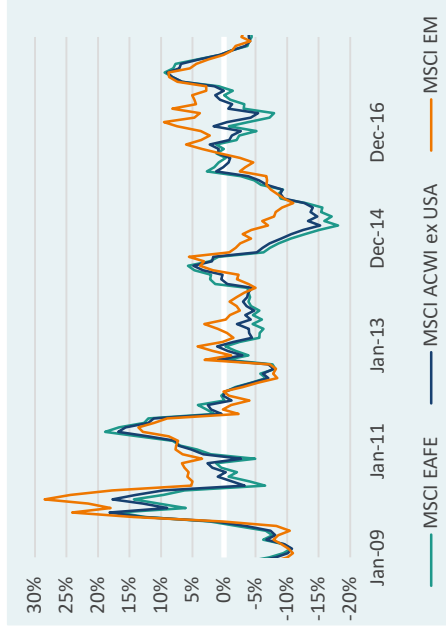
International developed equity markets are still cheap on both an absolute and relative basis at 11.9x forward earnings, but we believe there are good reasons for this pricing in certain markets. Within equity allocations, we are pessimistic on EAFE equities due to a negative view on the Eurozone. We 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

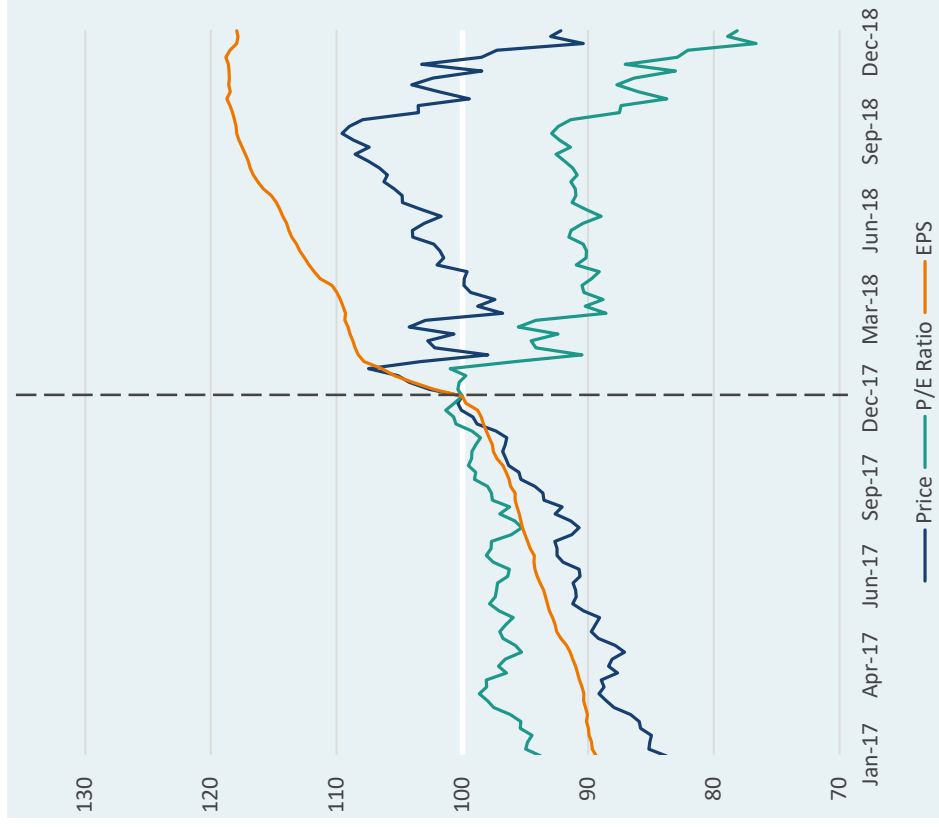
EARNINGS PER SHARE



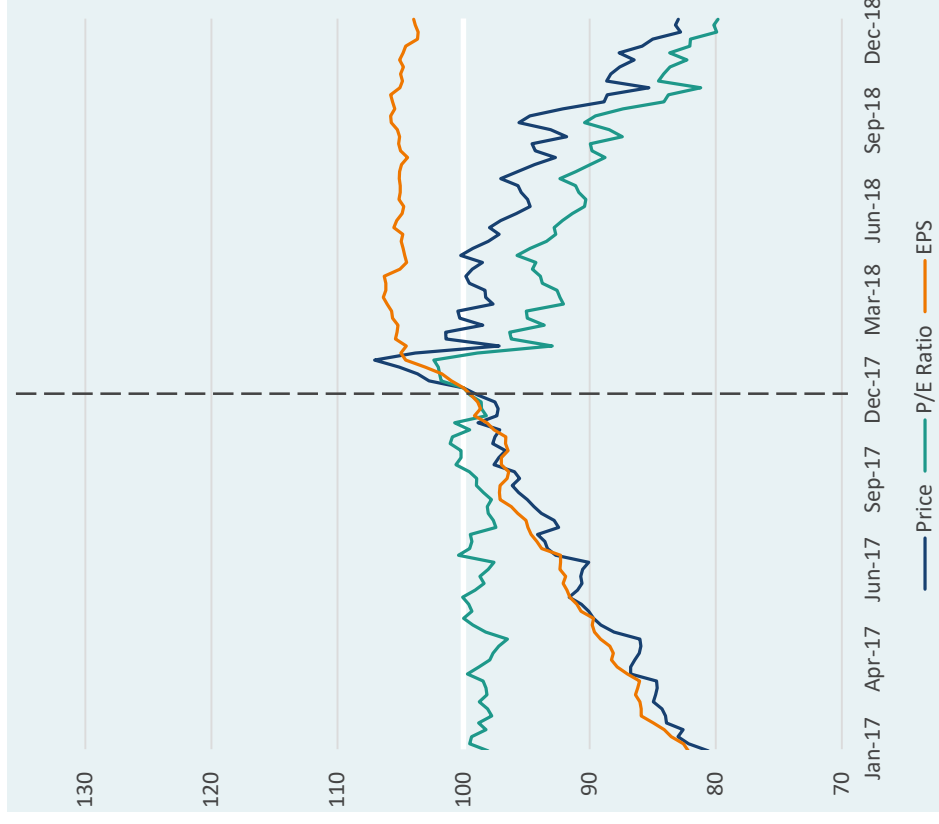
Source: Bloomberg, as of 12/31/18, indexed to earnings trough

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.

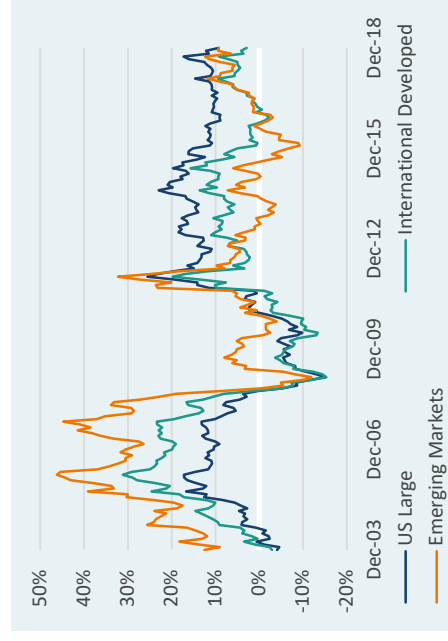
Valuations are near their long-term average, but remain much cheaper than developed market equities. Sentiment around emerging markets seems to be improving as the extreme negativity of 2018 dissipates, which creates possible

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.

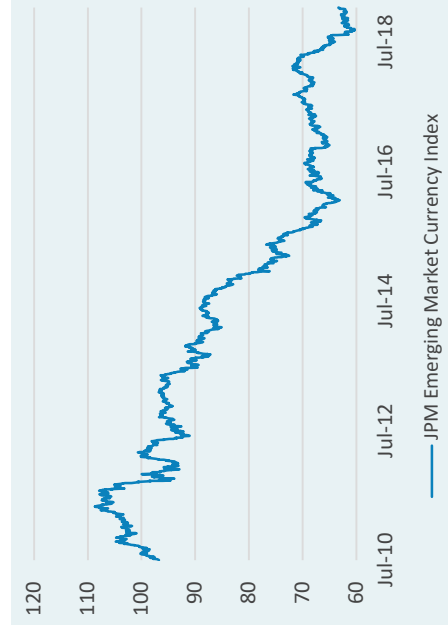
EM equities were the top performer in Q4

EQUITY PERFORMANCE (3-YR ROLLING)



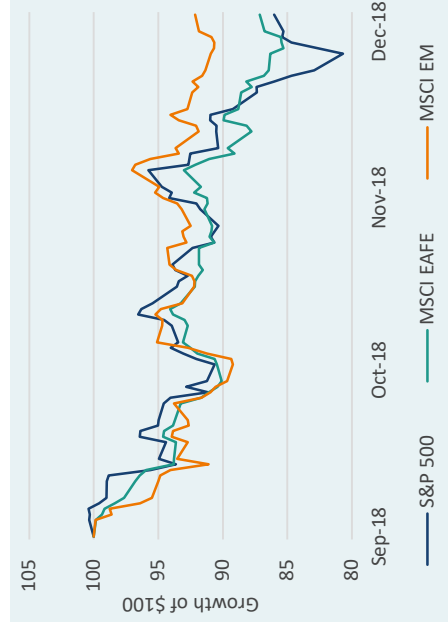
Source: Standard & Poor's, MSCI, as of 12/31/18

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

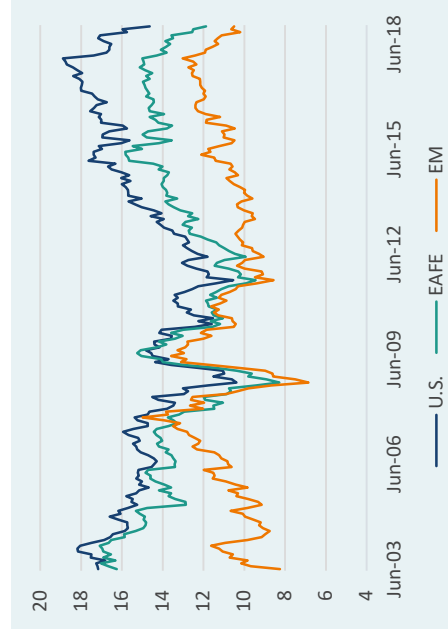
Equity valuations

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

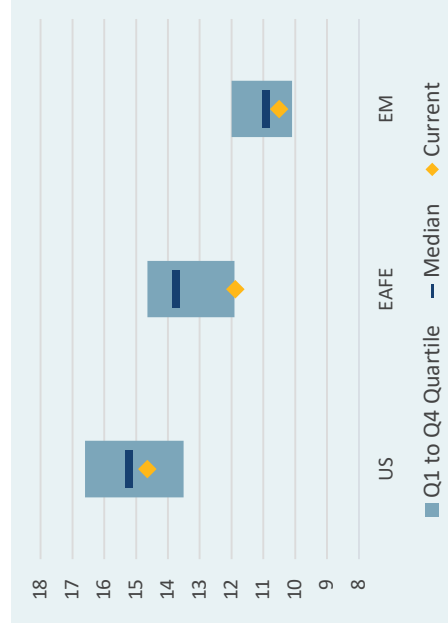
expensive is not a straightforward exercise. For one, as we have noted in the past, the broader macro environment (namely real interest rates and inflation) can strongly influence value. Higher (lower) real interest rates and inflation demand (higher) lower equity valuations, all else equal. Further, 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



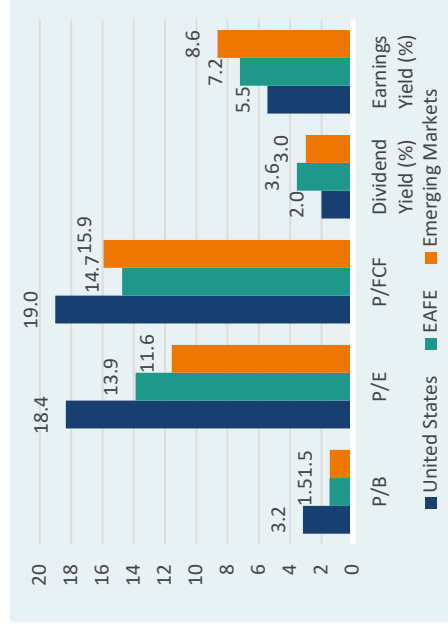
Source: MSCI, as of 12/31/18

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

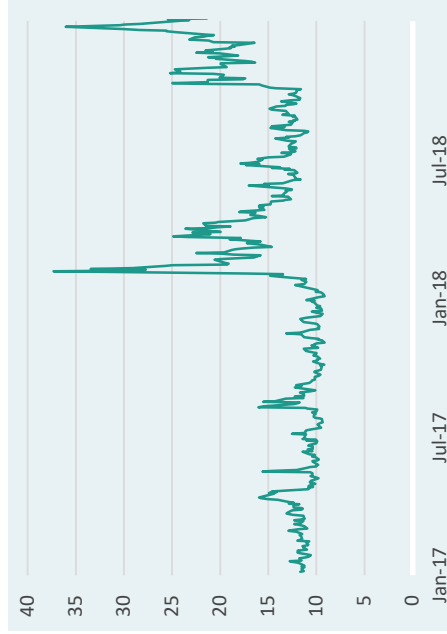
Equity volatility jumped in October, and remained elevated throughout the rest of the year. The VIX Index of implied volatility for the S&P 500 Index averaged 21 in the fourth quarter, above its long-term average of around 18, and hit a high of 36 on December 24th. Equities also experienced frequent 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.

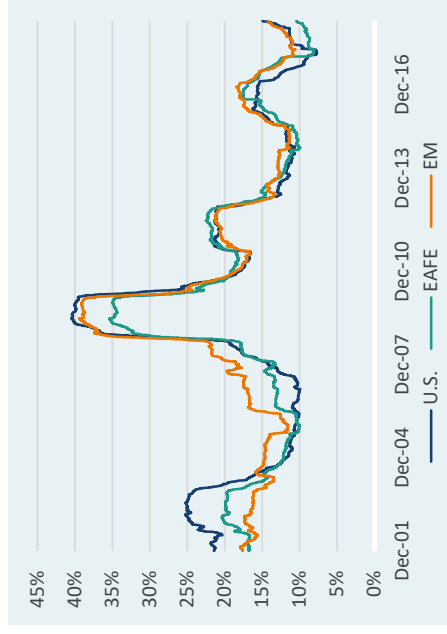
Equity volatility rose in Q4

U.S. IMPLIED VOLATILITY (VIX)



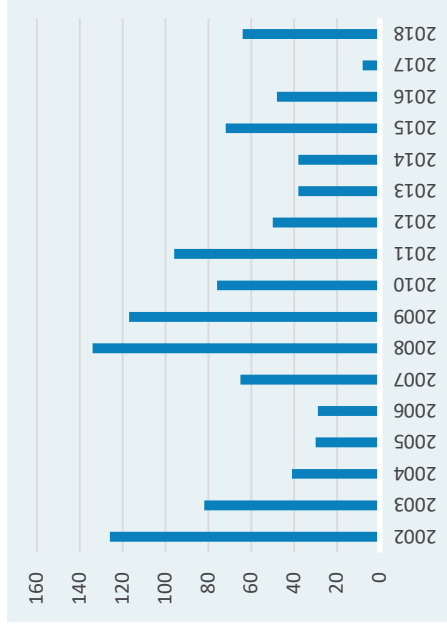
Source: CBOE, as of 12/31/18

REALIZED 1-YEAR ROLLING VOLATILITY



Source: Bloomberg, as of 12/31/18

S&P 500 – NUMBER OF >1% DAILY MOVES



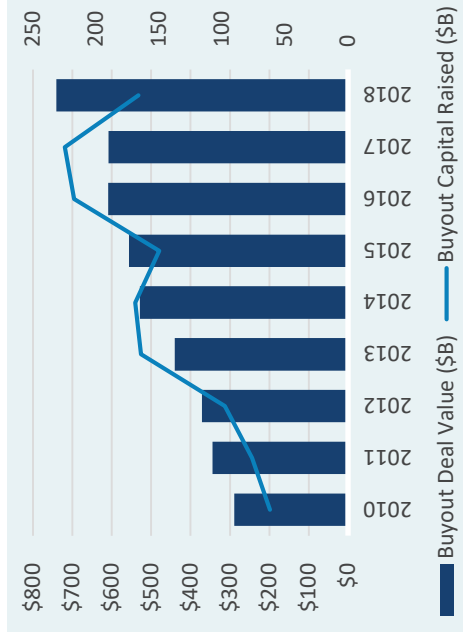
Source: Bloomberg, as of 12/31/18, includes down and up moves

Private equity

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

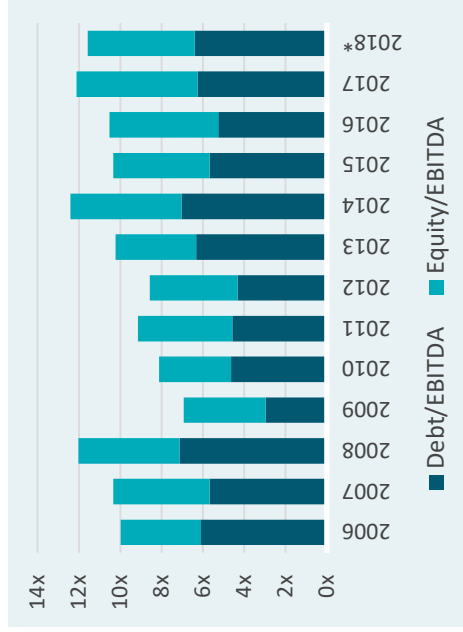
- Buyout activity has continued to increase in 2018. Through the fourth quarter buyouts are up 21.8% and 4.7% when measured by dollar value and number of transactions, respectively. The size of the average buyout, \$155.43, has increased from 2017, \$133.63. Unlike deal flow, fund capital raising has 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



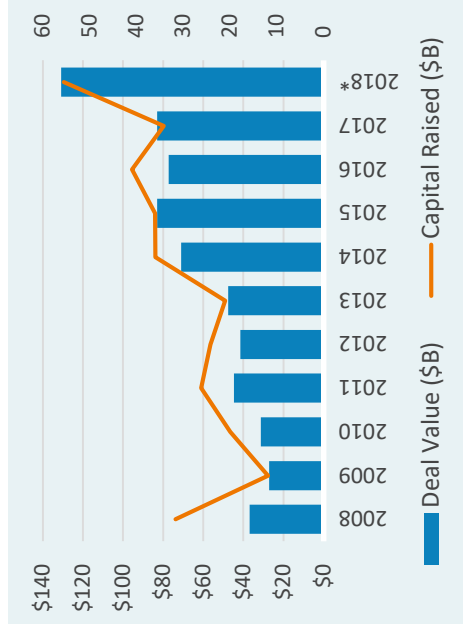
Source: PitchBook

TRANSACTION MULTIPLES



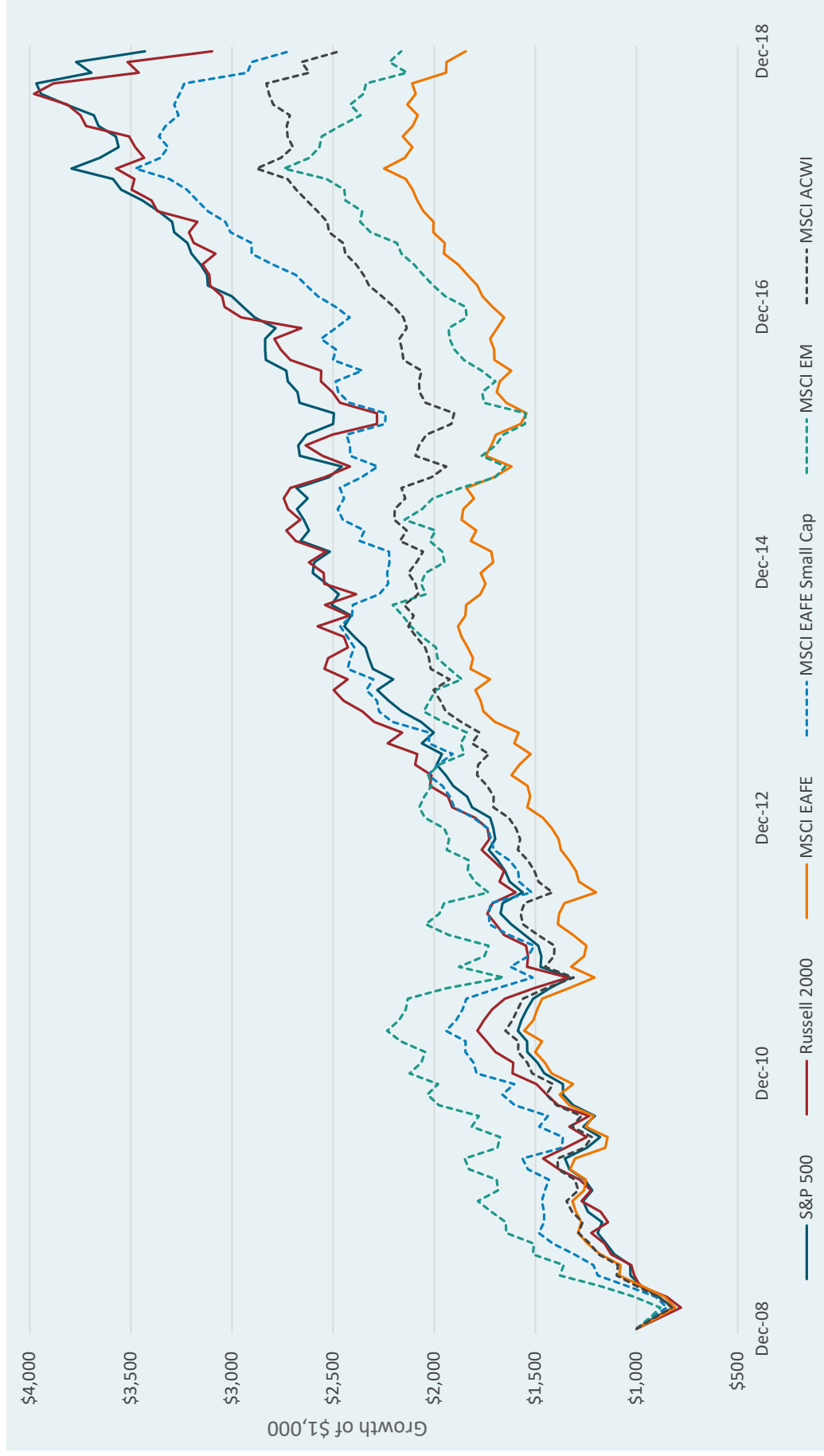
Source: PitchBook

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



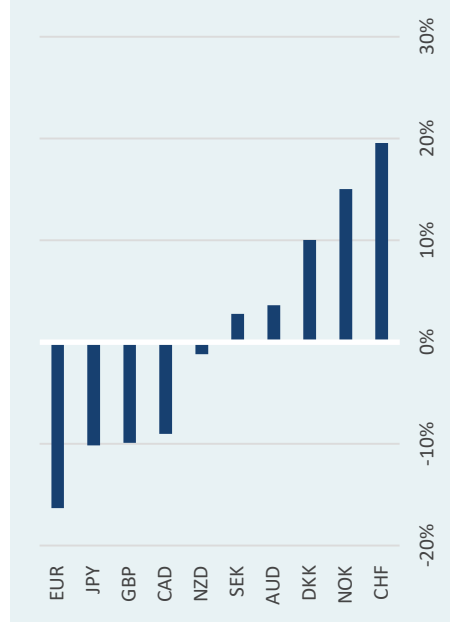
Source: Federal Reserve, as of 12/26/18

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

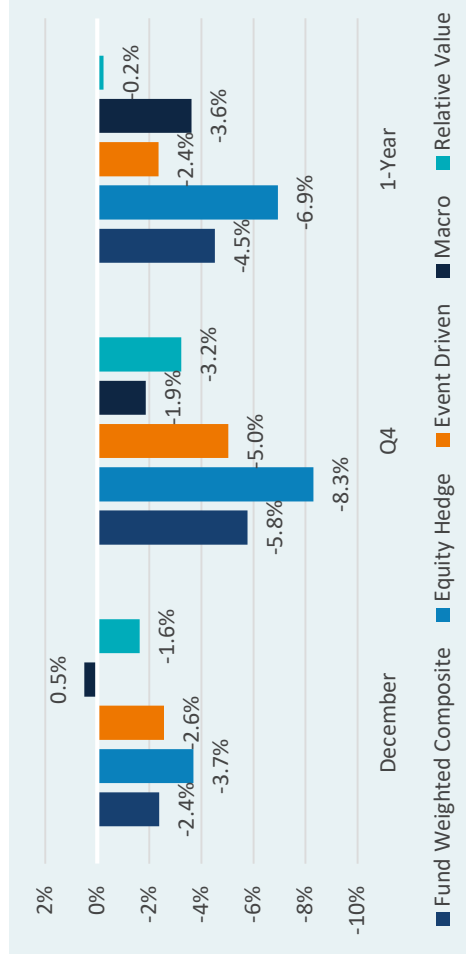
Hedge funds

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.

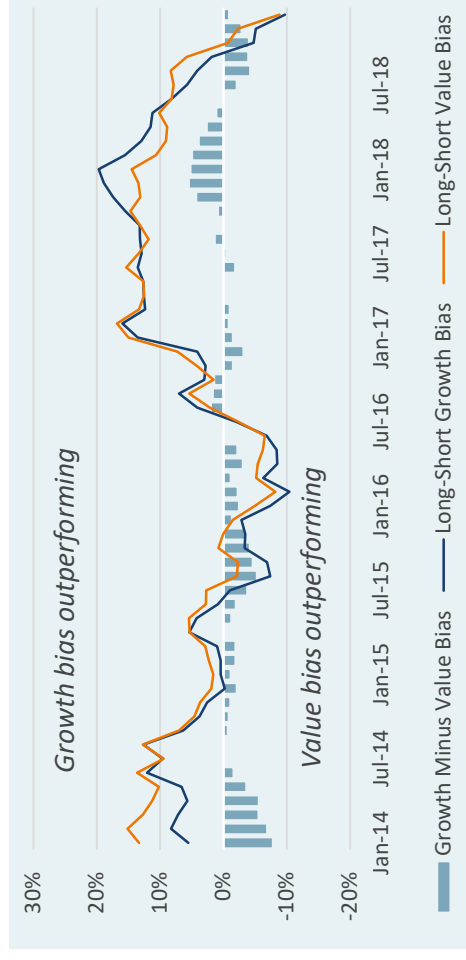
For managers trading fixed income securities, strategies focused on sovereign (-1.2%) and asset backed bonds (-1.7%) preserved capital relatively well during the market turbulence. Convertible arbitrage managers fared worse (-5.1%) due in part to greater relative sensitivity to equity market volatility.

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

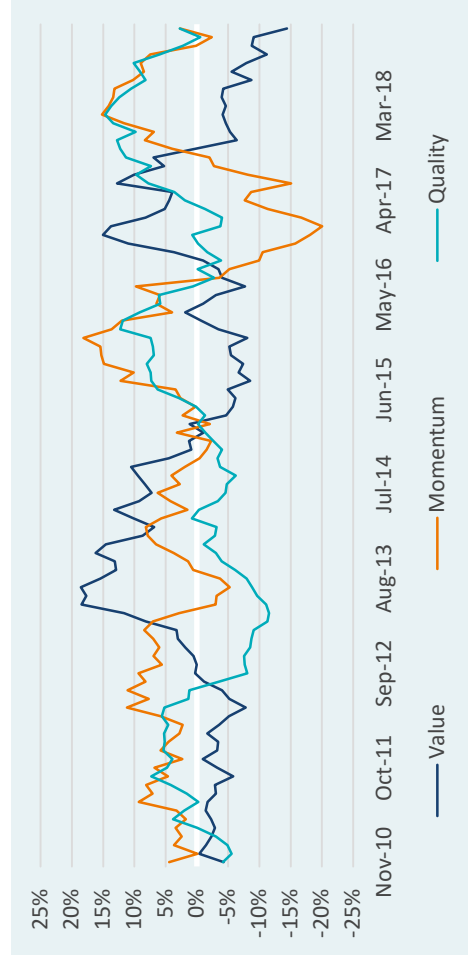
Alternative beta

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.

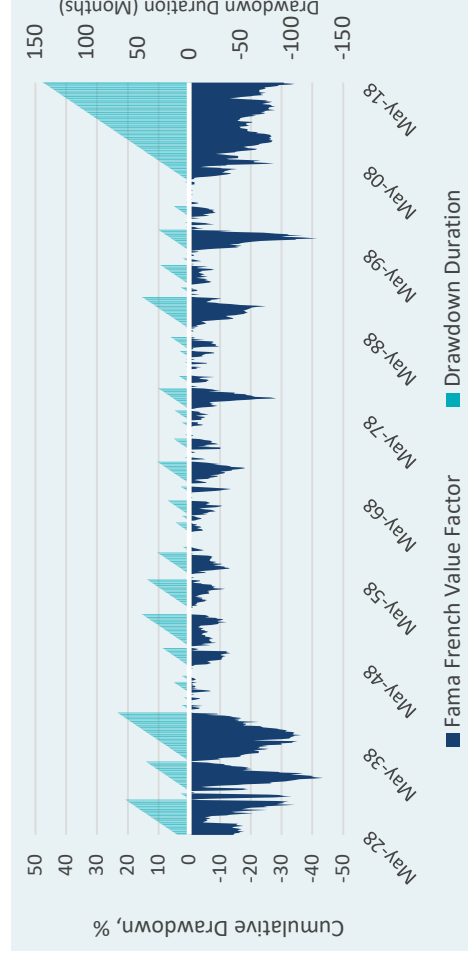
We continue to believe that alternative beta strategies are not “broken” per se, but instead have reflected extreme drawdowns in some factors and muted returns in others. We will continue to closely monitor these strategies and discuss the situation with managers in 2019.

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



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

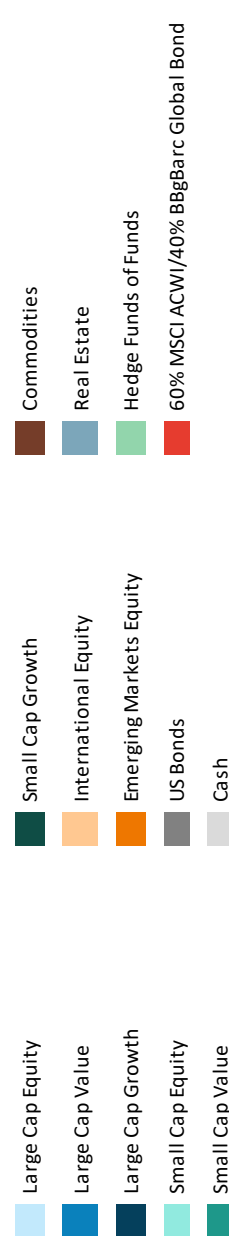
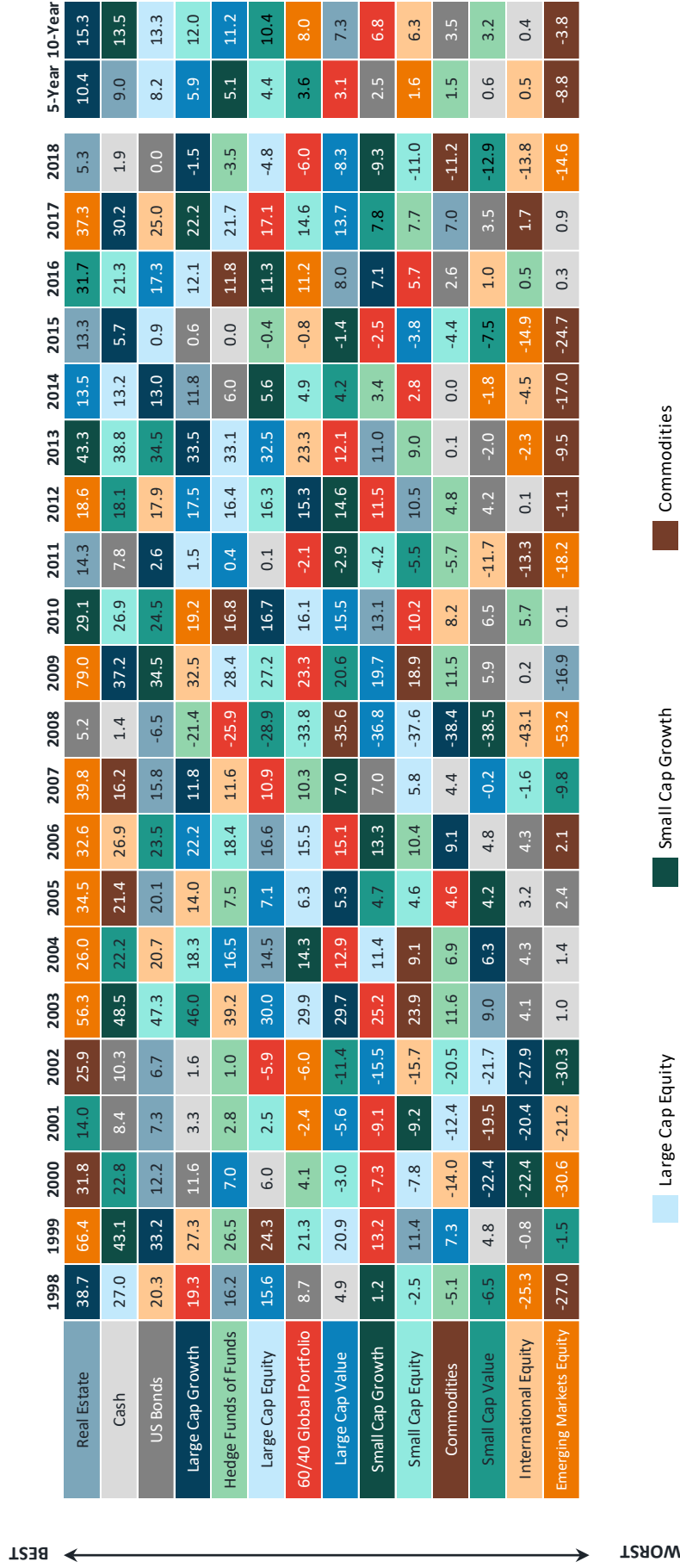
VALUE FACTOR DRAWDOWN MAGNITUDE AND DURATION



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

Appendix

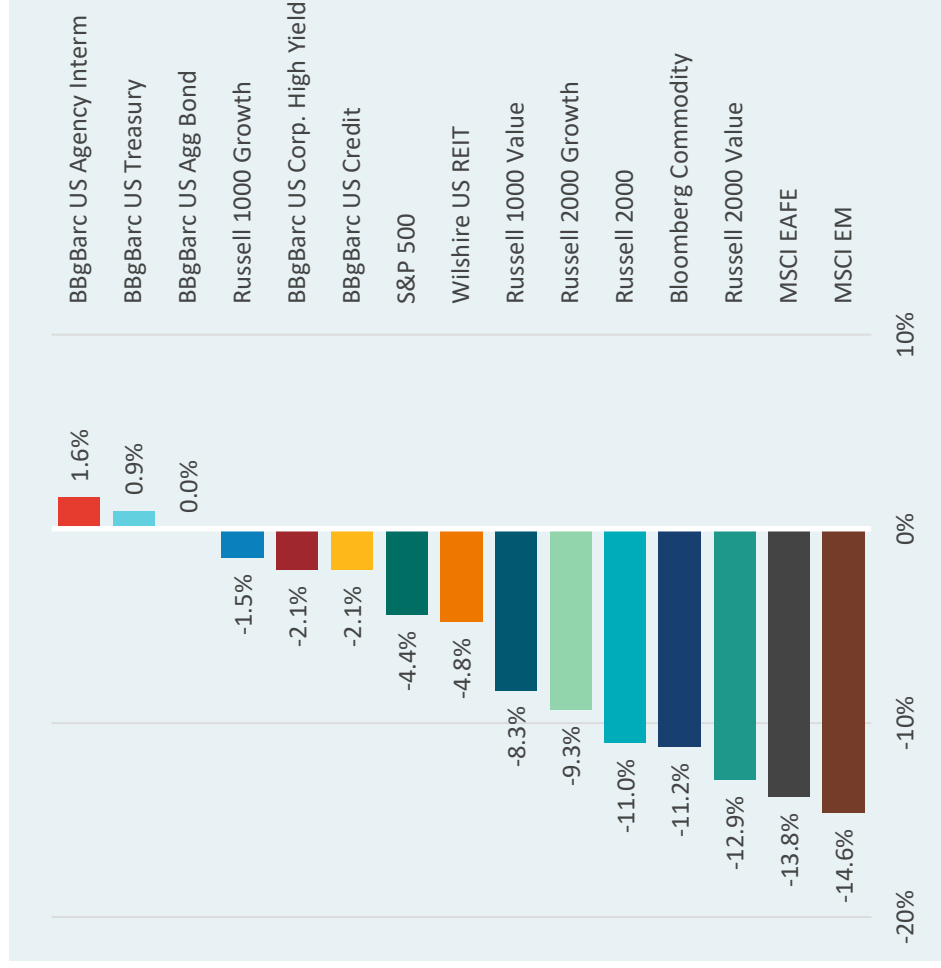
Periodic table of returns



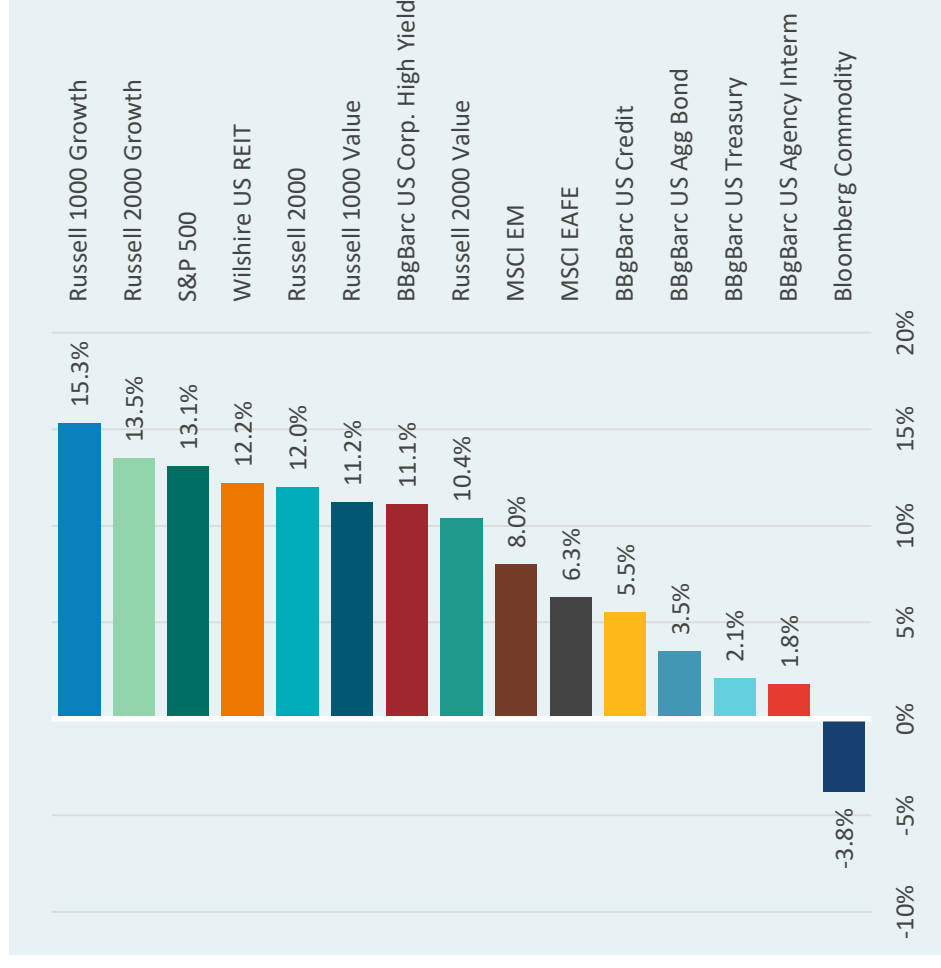
Source Data: Morningstar, Inc., Hedge Fund Research, Inc. (HFR), National Council of Real Estate Investment Fiduciaries (NCREIF). Indices used: Russell 1000 Value, Russell 1000 Growth, Russell 2000, Russell 2000 Value, Russell 2000 Growth, MSCI EAFE, MSCI EM, BbgBarc US Aggregate, T-Bill 90 Day, Bloomberg 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



TEN YEARS ENDING DECEMBER

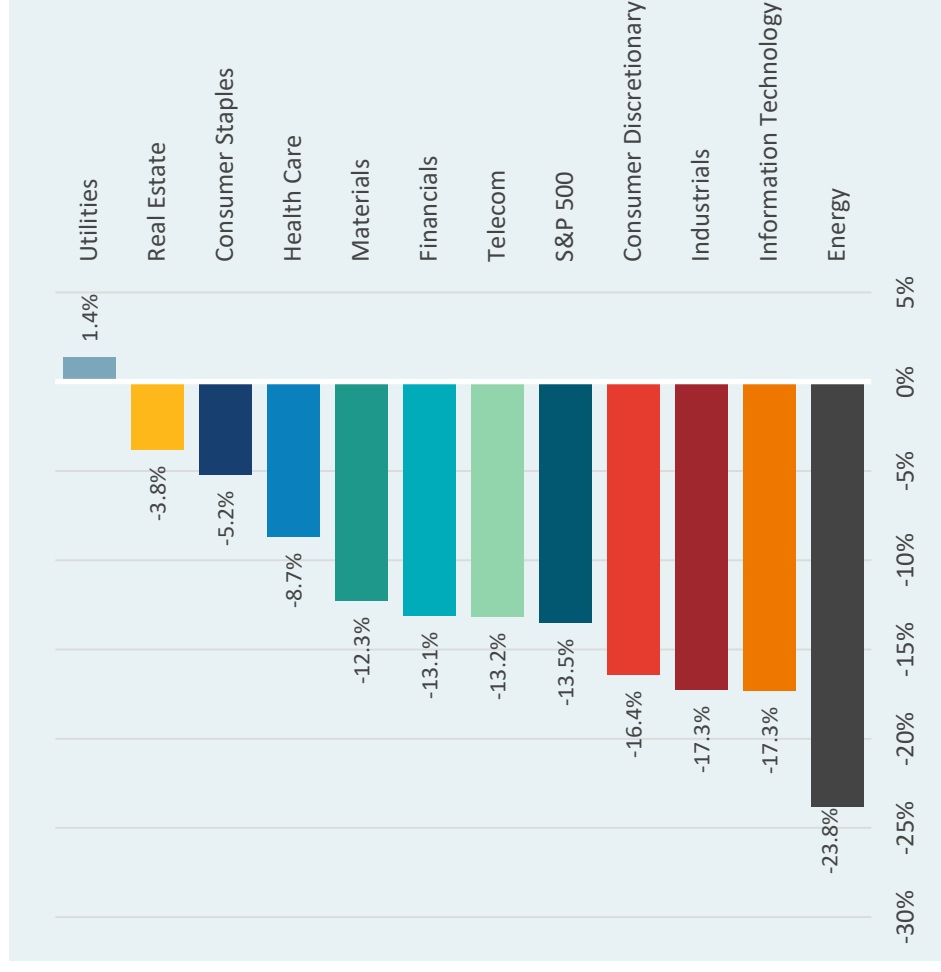


Source: Morningstar, as of 12/31/18

Source: Morningstar, as of 12/31/18

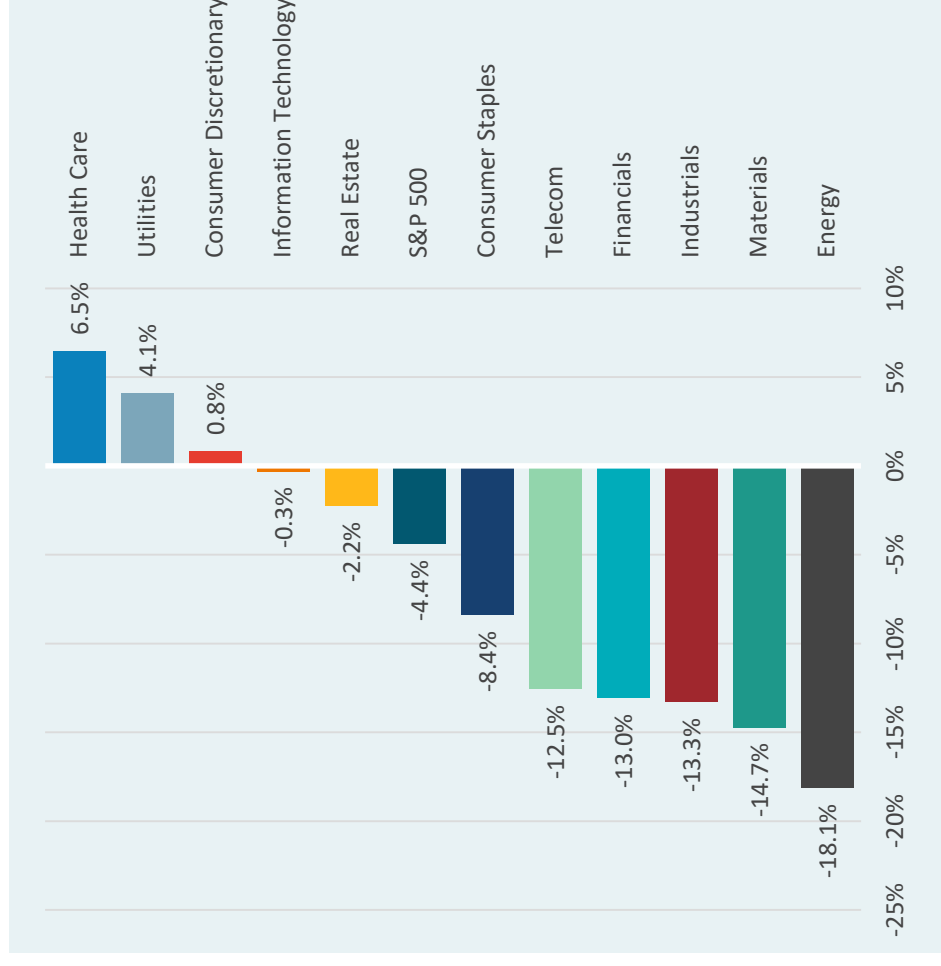
S&P 500 sector returns

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

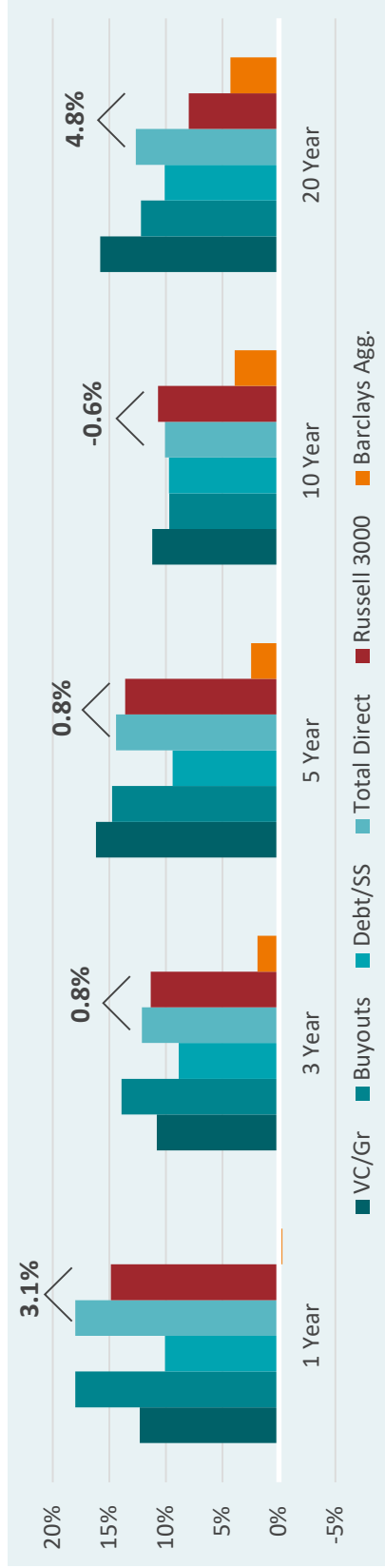
	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
MSCI ACWI	(7.0)	(12.8)	(9.4)	(9.4)	6.6	4.3	9.5
MSCI ACWI ex US	(4.5)	(11.5)	(14.2)	(14.2)	4.5	0.7	6.6
MSCI EAFE	(4.9)	(12.5)	(13.8)	(13.8)	2.9	0.5	6.3
MSCI EM	(2.7)	(7.5)	(14.6)	(14.6)	9.2	1.6	8.0
MSCI EAFE Small Cap	(6.4)	(16.0)	(17.9)	(17.9)	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

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

Private vs. public performance

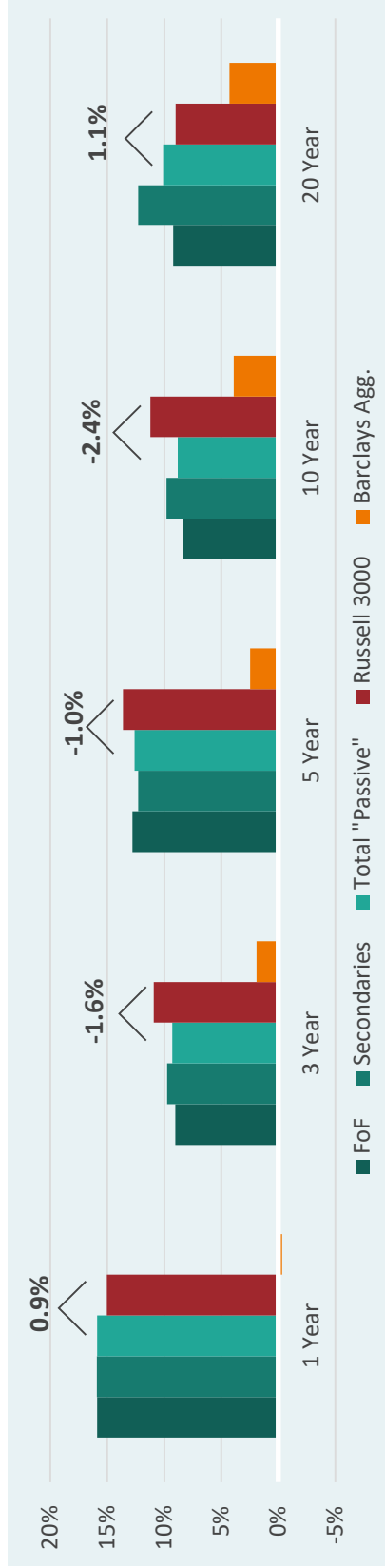
As of 6/30/2018

DIRECT PRIVATE EQUITY FUND INVESTMENTS



Direct private equity outperformed public equities across most time periods

"PASSIVE" STRATEGIES



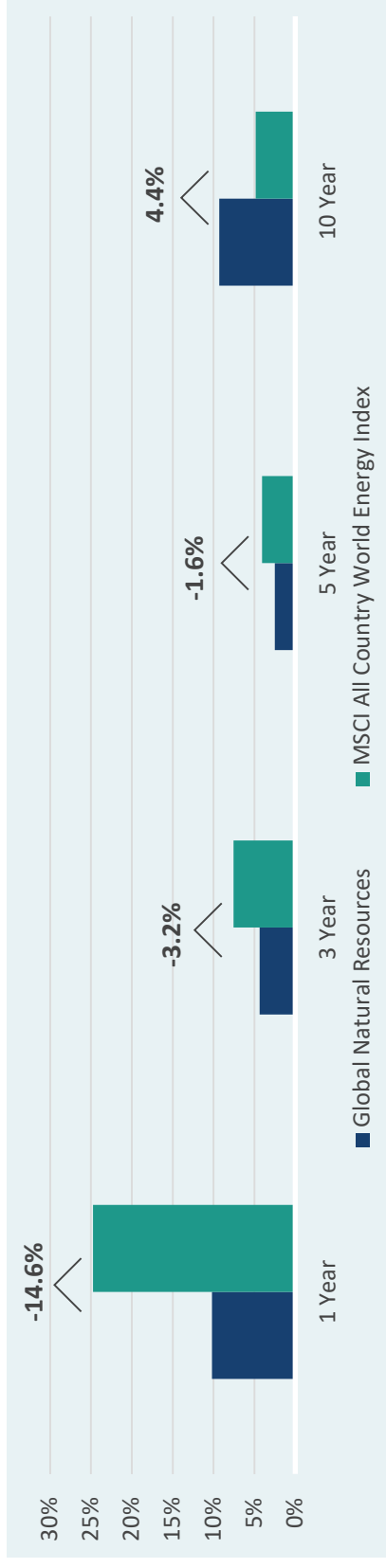
Fund-of-fund strategy performance relative to public equities has been mixed

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

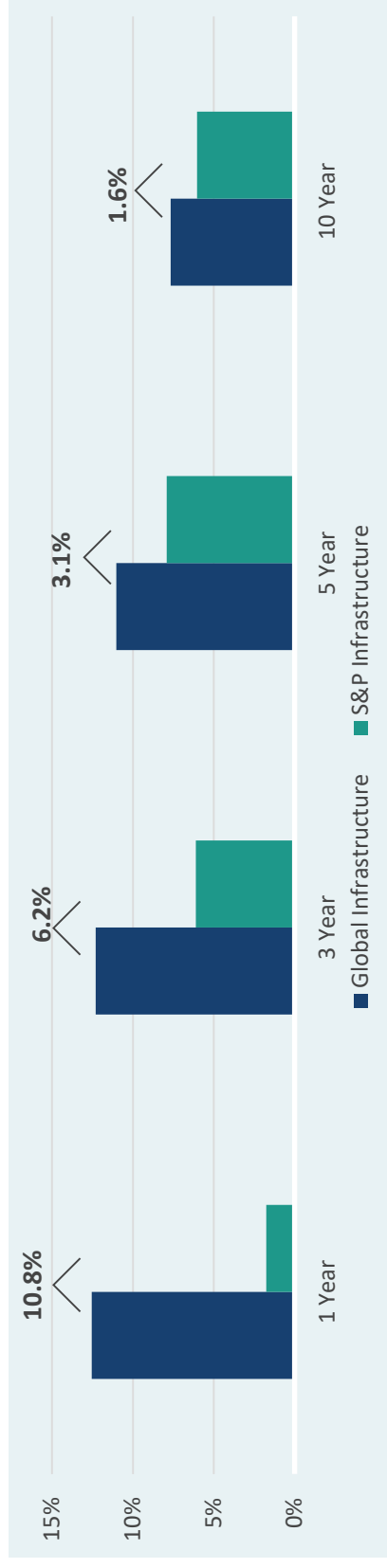
As of 6/30/2018

GLOBAL NATURAL RESOURCES FUNDS



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

GLOBAL INFRASTRUCTURE FUNDS



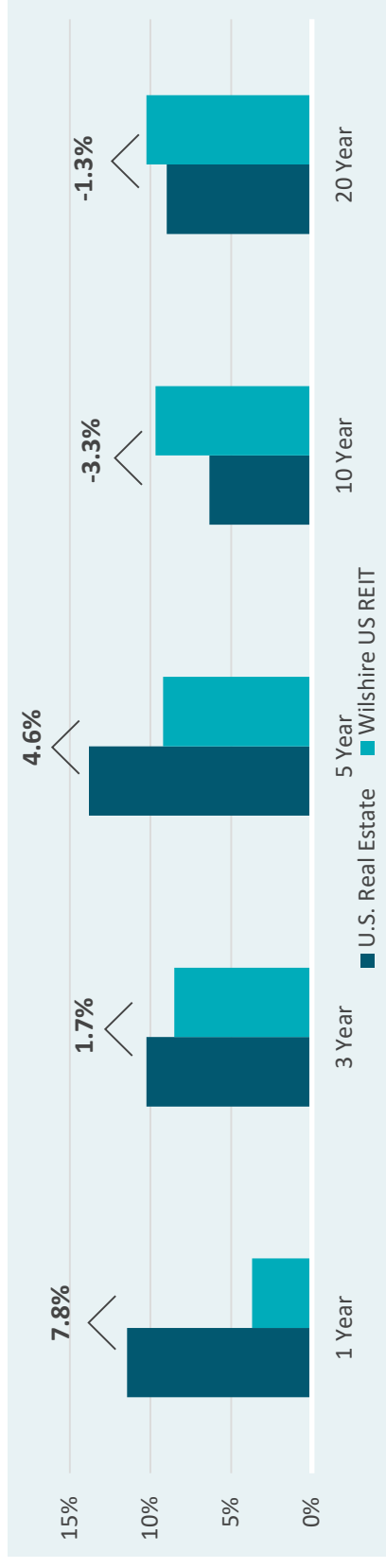
Infrastructure funds outperformed the public index across all periods

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

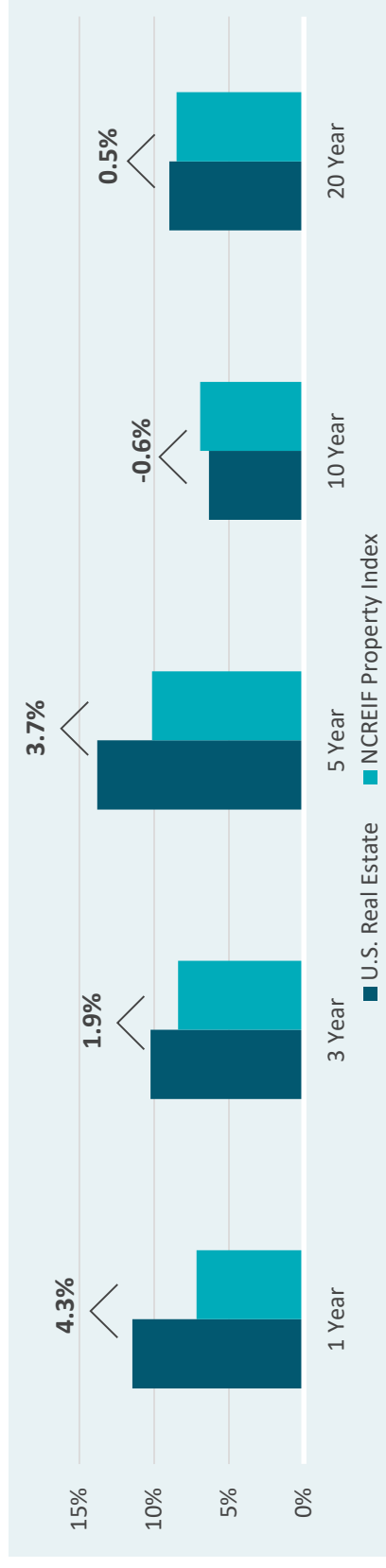
U.S. PRIVATE REAL ESTATE FUNDS VS. LIQUID UNIVERSE



Private real estate performance relative to REITs has been mixed

Private real estate funds outperformed the index during most time periods

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



Sources: Thomson Reuters C/IA 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.langetresearch.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.Bloomberq.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 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 indices 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 $(\text{Good-Poor} + 100)/2$ to the present and future sales series and $(\text{High/Very High-Low/Very Low} + 100)/2$ 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

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Contra Costa County Employees' Retirement Association

Investment Performance Review

Period Ending: December 31, 2018



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LOS ANGELES 310-297-1777

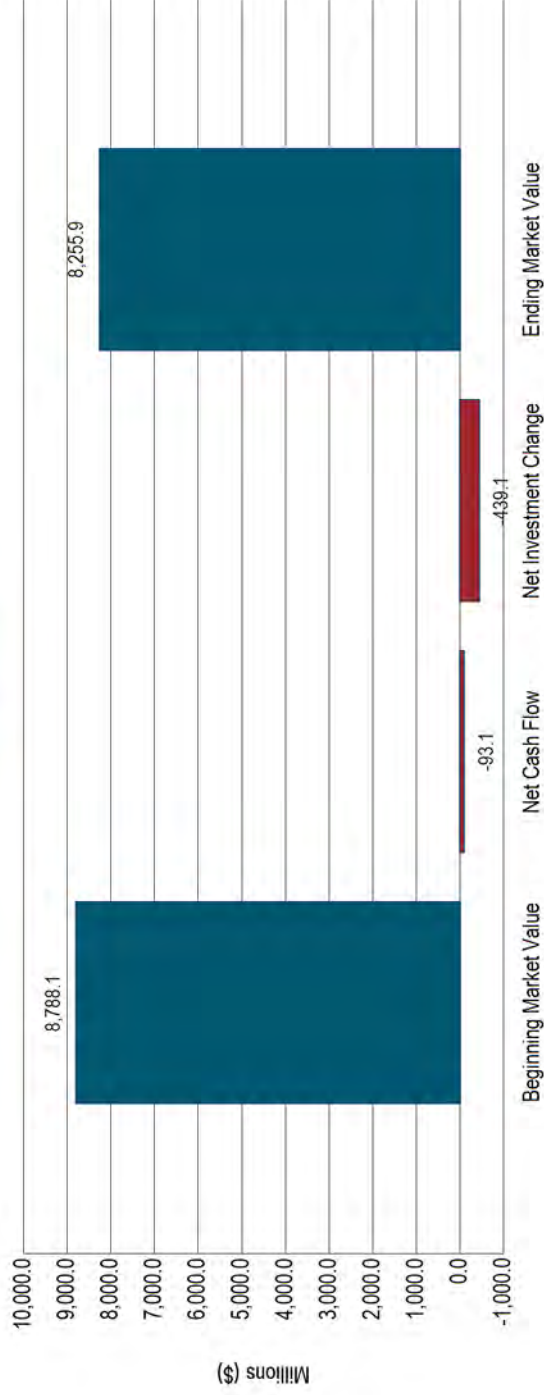
SAN FRANCISCO 415-362-3484

Total Fund
 Portfolio Reconciliation Period Ending: December 31, 2018

Portfolio Reconciliation

	Last Three Months	Year-To-Date
Beginning Market Value	\$8,788,140,564	\$8,532,697,023
Net Cash Flow	-\$93,142,541	-\$74,283,353
Net Investment Change	-\$439,124,716	-\$202,540,363
Ending Market Value	\$8,255,873,307	\$8,255,873,307

Change in Market Value
Last Three Months



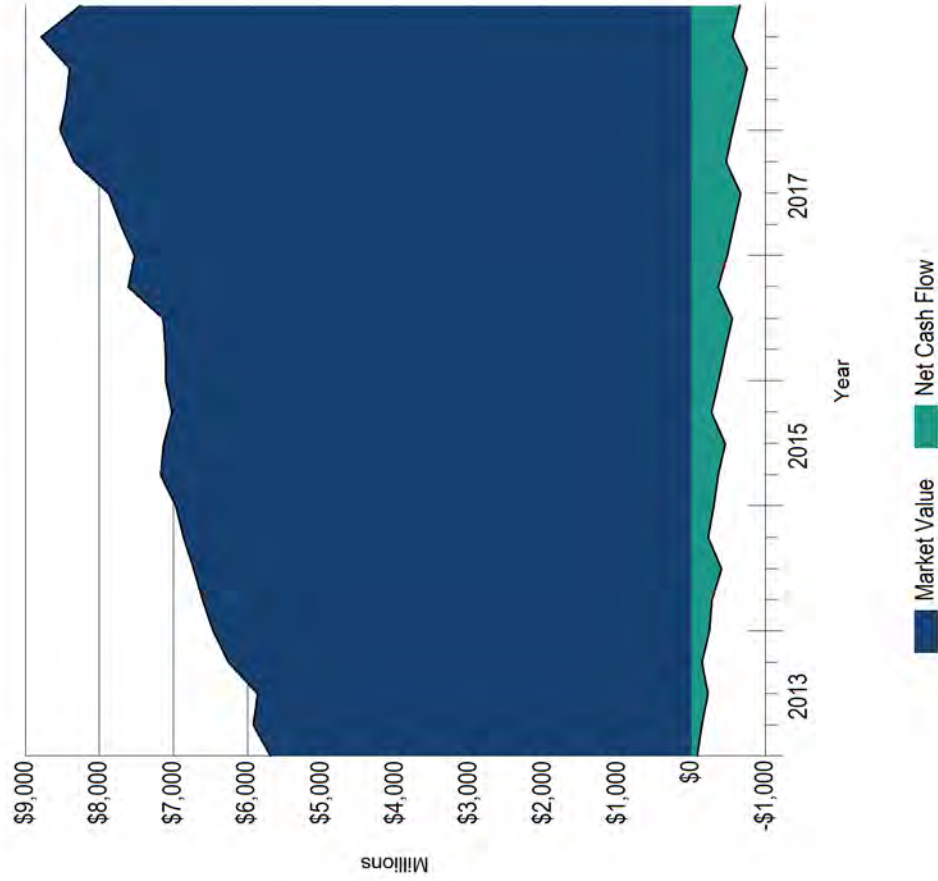
Contributions and withdrawals may include intra-account transfers between managers/funds.

Total Fund

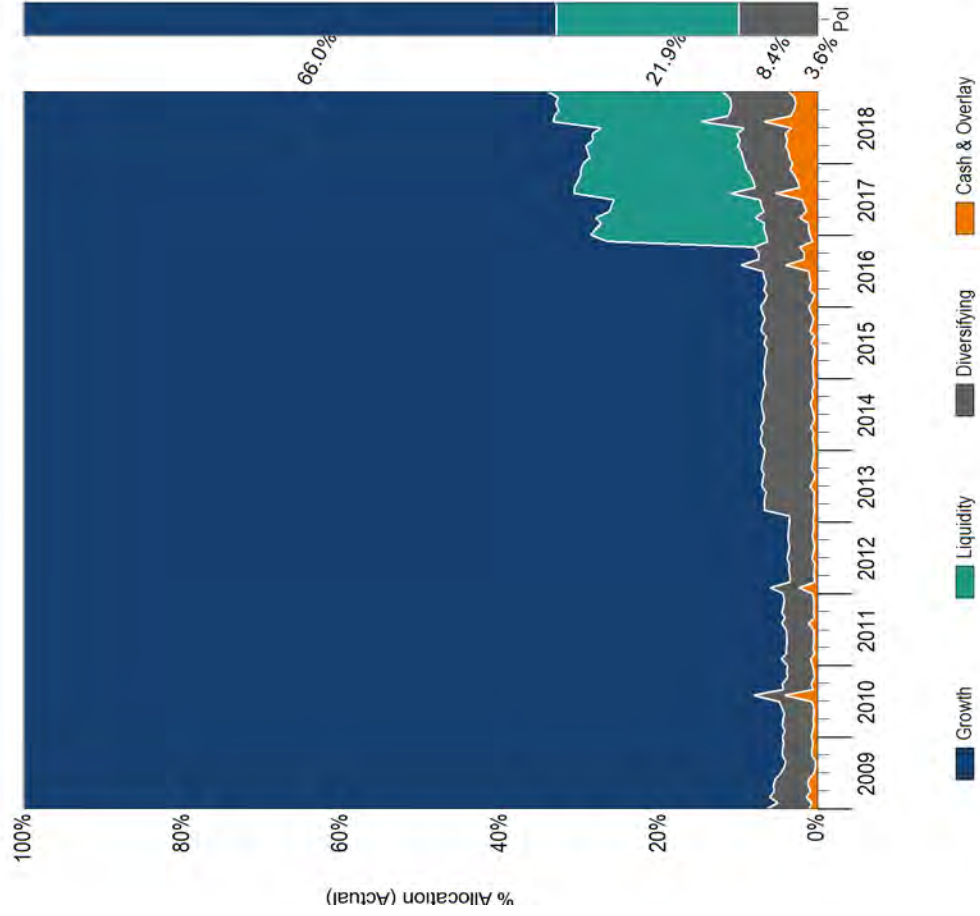
Asset Allocation History

Period Ending: December 31, 2018

Market Value History
Cumulative Cash Flows

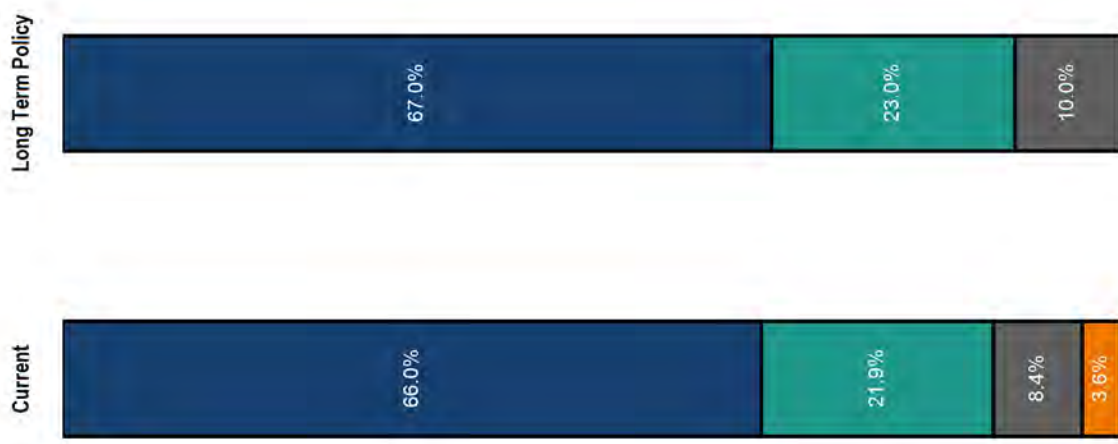


Asset Allocation History



Policy reflects FFP 4-Yr allocations approved in March 2018.

Total Fund
 Asset Allocation vs. Long Term Target Policy Period Ending: December 31, 2018



Allocation vs. Long Term Target

	Current Balance	Current Allocation	Long Term Target	Difference
Growth	\$5,451,581,055	66.0%	67.0%	-\$79,854,061
Liquidity	\$1,810,918,374	21.9%	23.0%	-\$87,932,486
Diversifying	\$693,574,093	8.4%	10.0%	-\$132,013,237
Cash & Overlay	\$299,799,785	3.6%	--	\$299,799,785
Total	\$8,255,873,307	100.0%	100.0%	

Allocation vs. Current Targets

	Current Balance	Current Allocation	Current Target	Difference
Growth	\$5,451,581,055	66.0%	69.0%	-\$244,971,527
Liquidity	\$1,810,918,374	21.9%	23.0%	-\$87,932,486
Diversifying	\$693,574,093	8.4%	8.0%	\$33,104,229
Cash & Overlay	\$299,799,785	3.6%	--	\$299,799,785
Total	\$8,255,873,307	100.0%	100.0%	

Long Term Targets reflect FFP 4-Yr allocations approved in March 2018.
 Current Targets reflect Phase 3 Targets approved in June 2018.



Total Fund
Executive Summary (Net of Fees) Period Ending: December 31, 2018

	% of Portfolio	QTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Fund	100.0	-5.2	-2.7	5.8	5.4	9.1	-2.7	13.9	6.9	2.1	7.7
Policy Index		-4.3	-0.9	7.1	6.1	--	-0.9	13.7	8.9	0.6	9.0
Growth	66.0	-7.4	-3.9	7.0	6.3	--	-3.9	18.7	7.6	2.3	8.1
Custom Growth Benchmark		-6.6	-2.1	8.7	6.9	--	-2.1	19.3	10.1	0.3	8.4
Diversifying	8.4	-0.9	-2.3	0.3	0.2	2.3	-2.3	2.6	0.8	-1.8	1.7
Custom Diversifying Benchmark		0.3	1.5	3.4	3.6	4.1	1.5	4.7	4.1	2.5	5.4
Liquidity	21.9	1.2	1.7	--	--	--	1.7	1.4	--	--	--
BBgBarc US Govt/Credit 1-3 Yr: TR		1.2	1.6	--	--	--	1.6	0.8	--	--	--

**Correlation between the Growth and Diversifying composites is .13, .11 and .29 over the previous 1, 3 and 5 year periods respectively.*

Policy Index (7/1/2018-Present): 11% Russell 3000, 19% MSCI ACWI ex-US (Gross), 11% MSCI ACWI (Net), 23% BBgBarc 1-3 Yr Govt/Credit, 3.5% BBgBarc US Aggregate, 2% BBgBarc Global Aggregate, 4% ICE BofAML High Yield Master II +2%, 2% ICE BofAML High Yield Master II, 1% Wilshire REIT, 1.8% NCREIF Property Index, 7.2% NCREIF ODCE Index, 2.0% CPI +4%, 10% S&P 500 +4%(Lagged), 2.5% HFRI EH Equity Market Neutral, Policy Index (10/1/2017-6/30/2018): 16.3% Russell 3000, 18.8% MSCI ACWI ex-US (Gross), 8.6% MSCI ACWI (Net), 25% BBgBarc 1-3 Yr Govt/Credit, 3.5% BBgBarc US Aggregate, 1.9% ICE BofAML High Yield Master II +2%, 4.3% ICE BofAML High Yield Master II, 1% Wilshire REIT, 1.6% NCREIF Property Index, 6.4% NCREIF ODCE Index, 2.5% CPI +4%, 10.1% S&P 500 +4%(Lagged), Policy Index (1/1/2017-9/30/2017): 22.9% Russell 3000, 11% MSCI ACWI ex-US (Gross), 10.9% MSCI ACWI (Net), 22.4% BBgBarc 1-3 Yr Govt/Credit, 3.2% BBgBarc US Aggregate, 1.7% ICE BofAML High Yield Master II +2%, 5.1% ICE BofAML High Yield Master II, 1% Wilshire REIT, 1.7% NCREIF Property Index, 6.8% NCREIF ODCE Index, 3.6% CPI +4%, 8.1% S&P 500 +4%(Lagged), 1.6% 90-day T-Bills, Policy Index (4/1/2012-12/31/16): 27.7% Russell 3000, 10.6% MSCI ACWI ex-US (Gross), 12.3% MSCI ACWI (Net), 19.6% BBgBarc U.S. Aggregate, 5% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 5.4% Wilshire REIT, 1.35% FTSE/EPRA NAREIT Developed exUS, 6.8% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills, Policy Index (4/1/2011-3/31/2012): 31% Russell 3000, 10.4% MSCI/EAFE (Gross), 9.6% MSCI ACWI (Net), 25% BBgBarc U.S. Aggregate, 3% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 8.4% Wilshire REIT, 3.1% NCREIF Property Index, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills, Policy Index (4/1/2010-3/31/2011): 35.6% Russell 3000, 10.4% MSCI/EAFE (Gross), 5% MSCI ACWI (Net), 25% BBgBarc U.S. Aggregate, 3% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 8.4% Wilshire REIT, 3.1% NCREIF Property Index, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills, Policy Index (7/1/2009-3/31/2010): 40.6% Russell 3000, 10.4% MSCI/EAFE (Gross), 25% BBgBarc U.S. Aggregate, 3% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 8.4% Wilshire REIT, 3.1% NCREIF Property Index, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.

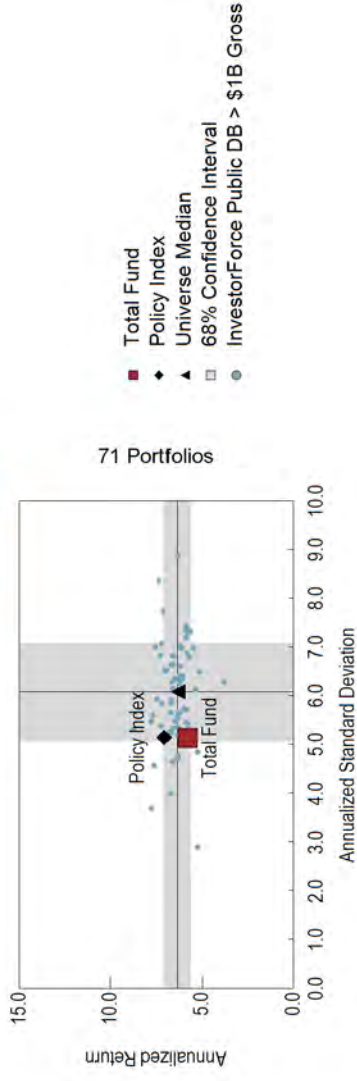
Total Fund
Executive Summary (Net of Fees)

Period Ending: December 31, 2018

3 Years

	Anlzd Return	Ann Excess BM Return	Anlzd Standard Deviation	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Information Ratio	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Total Fund	5.81%	-1.24%	5.14%	-0.96%	0.96	1.44%	0.92	0.93	-0.87	91.11%	108.37%

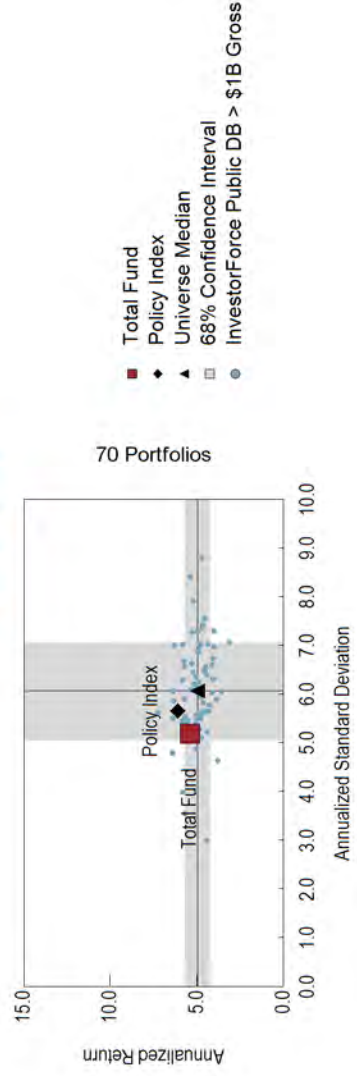
Risk vs. Return



5 Years

	Anlzd Return	Ann Excess BM Return	Anlzd Standard Deviation	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Information Ratio	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Total Fund	5.42%	-0.69%	5.19%	0.04%	0.88	1.64%	0.92	0.92	-0.42	85.96%	89.92%

Risk vs. Return



Total Fund Performance Summary (Gross of Fees) Period Ending: December 31, 2018

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Fund	8,255,873,307	100.0	-5.1	-2.5	6.2	5.9	9.7	-2.5	14.2	7.4	2.7	8.4
<i>Policy Index</i>			-4.3	-0.9	7.1	6.1	--	-0.9	13.7	8.9	0.6	9.0
<i>InvestorForce Public DB > \$1B Gross Rank</i>			10	25	70	9	10	25	83	74	5	6
Total Fund ex Overlay & Cash	7,956,073,522	96.4	-5.0	-2.1	6.3	6.0	9.8	-2.1	14.1	7.4	2.7	8.4
<i>Policy Index</i>			-4.3	-0.9	7.1	6.1	--	-0.9	13.7	8.9	0.6	9.0
<i>InvestorForce Public DB > \$1B Gross Rank</i>			9	20	60	9	9	20	84	74	5	6
Growth	5,451,581,055	66.0	-7.4	-3.6	7.4	6.8	--	-3.6	19.1	8.1	3.0	8.8
<i>Custom Growth Benchmark</i>			-6.6	-2.1	8.7	6.9	--	-2.1	19.3	10.1	0.3	8.4
Total Domestic Equity	1,040,209,174	12.6	-16.0	-7.2	8.6	7.6	13.7	-7.2	23.9	11.5	1.1	11.4
<i>Russell 3000</i>			-14.3	-5.2	9.0	7.9	13.2	-5.2	21.1	12.7	0.5	12.6
<i>InvestorForce Public DB US Eq Gross Rank</i>			88	78	56	36	14	78	6	77	21	50
<i>BlackRock Russell 1000 Index</i>		1.4	-13.8	-4.8	--	--	--	-4.8	--	--	--	--
<i>Russell 1000</i>			-13.8	-4.8	--	--	--	-4.8	--	--	--	--
<i>eV US Large Cap Equity Gross Rank</i>			49	47	--	--	--	47	--	--	--	--
<i>Jackson Square Partners</i>		3.6	-13.7	-2.0	6.6	7.9	15.3	-2.0	29.3	-4.4	6.1	13.9
<i>Russell 1000 Growth</i>			-15.9	-1.5	11.1	10.4	15.3	-1.5	30.2	7.1	5.7	13.0
<i>eV US Large Cap Growth Equity Gross Rank</i>			25	59	96	82	35	59	47	98	37	31
<i>Robeco Boston Partners</i>		3.2	-13.8	-8.7	8.1	6.3	12.7	-8.7	20.1	15.1	-3.9	12.0
<i>Russell 1000 Value</i>			-11.7	-8.3	7.0	5.9	11.2	-8.3	13.7	17.3	-3.8	13.5
<i>eV US Large Cap Value Equity Gross Rank</i>			59	55	36	50	28	55	23	50	65	55
<i>Emerald Advisers</i>		2.4	-22.3	-10.1	8.4	7.3	15.9	-10.1	28.8	10.1	4.1	7.3
<i>Russell 2000 Growth</i>			-21.7	-9.3	7.2	5.1	13.5	-9.3	22.2	11.3	-1.4	5.6
<i>eV US Small Cap Growth Equity Gross Rank</i>			72	85	69	38	34	85	26	54	19	21
<i>Ceredex</i>		2.1	-16.6	-11.3	8.6	4.8	--	-11.3	11.4	29.8	-4.4	3.3
<i>Russell 2000 Value</i>			-18.7	-12.9	7.4	3.6	--	-12.9	7.8	31.7	-7.5	4.2
<i>eV US Small Cap Value Equity Gross Rank</i>			22	25	23	33	--	25	48	32	52	74

Individual closed end funds are not shown in performance summary table. Transition account has \$289,305 of residual cash. Goldman Sachs has \$223 of residual cash. JPM Global has \$158,190 of residual cash. Lazard has \$39,637 of residual cash. Intech Large Cap has \$8,665 of residual cash. Intech Global Low Vol has \$17,444 of residual cash. Parametric Defensive Equity funded 7/23/2018. Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation. Effective 7/1/2018, Private Credit and Private Equity data provided by StepStone Group.

**Total Fund
Performance Summary (Gross of Fees)** Period Ending: December 31, 2018

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014
Total International Equity	1,442,678,741	17.5	-10.3	-14.3	2.9	1.5	5.9	1.2	-1.2	0.3
MSCI ACWI ex USA Gross			-11.4	-13.8	5.0	1.1	7.1	5.0	-5.3	-3.4
MSCI EAFE Gross			-12.5	-13.4	3.4	1.0	6.8	1.5	-0.4	-4.5
InvestorForce Public DB ex-US Eq Gross Rank			9	44	91	39	79	44	89	5
International Equity	827,656,847	10.0	-12.8	-13.6	3.1	1.7	6.0	1.2	-1.2	0.3
MSCI ACWI ex USA Gross			-11.4	-13.8	5.0	1.1	7.1	5.0	-5.3	-3.4
InvestorForce Public DB ex-US Eq Gross Rank			66	21	89	35	79	21	89	5
Pyrford		5.0	-9.5	-10.1	3.6	--	--	-10.1	19.8	3.4
MSCI ACWI ex USA Value			-10.7	-14.0	4.7	--	--	-14.0	22.7	8.9
eV ACWI ex-US Value Equity Gross Rank			12	5	55	--	--	5	74	59
William Blair			-15.9	-16.8	2.4	1.3	--	-16.8	30.9	-1.4
MSCI ACWI ex USA Growth		5.0	-12.2	-14.4	4.2	1.7	--	-14.4	32.0	0.1
eV ACWI ex-US Growth Equity Gross Rank			59	69	83	83	--	69	81	55
Emerging Markets Equity	615,021,894	7.4	-6.7	-15.3	--	--	--	-15.3	--	--
MSCI Emerging Markets			-7.5	-14.6	--	--	--	-14.6	--	--
InvestorForce Public DB Emg Mkt Eq Gross Rank			49	51	--	--	--	51	--	--
PIMCO RAE Emerging Markets		3.9	-6.9	-12.3	--	--	--	-12.3	--	--
MSCI Emerging Markets			-7.5	-14.6	--	--	--	-14.6	--	--
eV Emg Mkts Equity Gross Rank			41	19	--	--	--	19	--	--
TT Emerging Markets		3.5	-6.4	-18.4	--	--	--	-18.4	--	--
MSCI Emerging Markets			-7.5	-14.6	--	--	--	-14.6	--	--
eV Emg Mkts Equity Gross Rank			36	83	--	--	--	83	--	--
Total Global Equity	681,154,924	8.3	-11.9	-7.8	7.1	5.7	7.9	7.6	2.2	5.2
MSCI ACWI			-12.8	-9.4	6.6	4.3	9.5	7.9	-2.4	4.2
InvestorForce Public DB Gbl Eq Gross Rank			60	60	58	34	16	60	79	40
Artisan Partners		4.2	-15.2	-7.9	8.9	8.0	--	-7.9	32.9	5.6
MSCI ACWI			-12.8	-9.4	6.6	4.3	--	-9.4	24.0	7.9
eV All Global Equity Gross Rank			76	40	16	11	--	40	11	61
First Eagle		4.0	-8.1	-7.6	5.9	4.4	--	-7.6	15.1	11.7
MSCI ACWI			-12.8	-9.4	6.6	4.3	--	-9.4	24.0	7.9
eV All Global Equity Gross Rank			13	38	63	62	--	38	89	19

Individual closed end funds are not shown in performance summary table. Transition account has \$289,305 of residual cash. Goldman Sachs has \$223 of residual cash. JPM Global has \$158,190 of residual cash. Lazard has \$39,637 of residual cash. Intech Large Cap has \$8,665 of residual cash. Intech Global Low Vol has \$17,444 of residual cash. Parametric Defensive Equity funded 7/23/2018. Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation. Effective 7/1/2018, Private Credit and Private Equity data provided by StepStone Group.

Total Fund Performance Summary (Gross of Fees) Period Ending: December 31, 2018

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Private Credit	307,928,386	3.7	3.8	8.3	8.9	11.0	15.4	8.3	10.4	8.2	12.9	15.4
ICE BofAML High Yield Master II +2%			-4.2	-0.3	9.4	5.9	13.2	-0.3	9.6	19.8	-2.7	4.5
Total High Yield	327,878,586	4.0	-4.8	-3.2	5.6	2.8	9.9	-3.2	6.5	14.3	-3.5	1.2
ICE BofAML High Yield Master II			-4.7	-2.3	7.3	3.8	11.0	-2.3	7.5	17.5	-4.6	2.5
eV US High Yield Fixed Inc Gross Rank			73	88	71	87	64	88	74	47	68	83
Allianz Global Investors	327,878,586	4.0	-4.8	-3.2	5.6	2.8	9.9	-3.2	6.5	14.3	-3.5	1.2
ICE BofAML High Yield Master II			-4.7	-2.3	7.3	3.8	11.0	-2.3	7.5	17.5	-4.6	2.5
eV US High Yield Fixed Inc Gross Rank			73	88	71	87	64	88	74	47	68	83
Total Real Estate	699,299,265	8.5	0.5	7.4	8.0	11.5	11.4	7.4	11.1	5.5	13.5	20.6
Real Estate Benchmark			0.8	6.7	6.8	9.4	9.3	6.7	7.1	6.7	8.3	18.8
NCREIF-ODCE			1.8	8.3	8.2	10.4	7.0	8.3	7.6	8.8	15.0	12.5
NCREIF Property Index			1.4	6.7	7.2	9.3	7.5	6.7	7.0	8.0	13.3	11.8
Adelante	62,941,501	0.8	-6.3	-5.0	2.1	8.3	12.9	-5.0	7.8	4.1	5.1	33.4
Wilshire REIT			-6.9	-4.8	2.1	7.9	12.2	-4.8	4.2	7.2	4.2	31.8
Private Equity	952,102,813	11.5	2.2	12.1	11.1	12.4	10.9	12.1	11.9	9.4	11.6	17.3
S&P 500 Index +4% (Lagged)			8.7	22.6	21.9	18.5	16.4	22.6	23.3	20.0	3.4	24.5
Diversifying	693,574,093	8.4	-0.9	-2.0	0.7	0.6	2.7	-2.0	2.8	1.3	-1.4	2.2
Custom Diversifying Benchmark			0.3	1.5	3.4	3.6	4.1	1.5	4.7	4.1	2.5	5.4
Diversifying Fixed Income	495,702,114	6.0	-0.2	-1.7	1.3	2.4	3.5	-1.7	2.8	2.8	1.6	6.6
eV US Core Fixed Inc Gross Rank			99	99	99	95	90	99	96	72	15	25
AFL-CIO	318,502,545	3.9	2.1	0.6	2.2	2.9	3.9	0.6	3.6	2.4	1.6	6.6
BBGBarc US Aggregate TR			1.6	0.0	2.1	2.5	3.5	0.0	3.5	2.6	0.6	6.0
eV US Core Fixed Inc Gross Rank			6	16	70	39	79	16	76	87	15	25
Wellington Real Total Return	177,199,569	2.1	-3.9	-5.6	-1.3	-2.3	--	-5.6	1.9	-0.1	-4.9	-2.5
CPI + 4%			0.5	6.0	6.1	5.6	--	6.0	6.2	6.2	4.8	4.8
Diversifying Equity	197,871,979	2.4	-2.6	--	--	--	--	--	--	--	--	--
Parametric Defensive Equity	197,871,979	2.4	-2.6	--	--	--	--	--	--	--	--	--
91 Day T-Bill +4%			1.5	--	--	--	--	--	--	--	--	--

Individual closed end funds are not shown in performance summary table. Transition account has \$289,305 of residual cash. JPM Global has \$158,190 of residual cash. Lazard has \$39,637 of residual cash. Intech Large Cap has \$8,665 of residual cash. Intech Global Low Vol has \$17,444 of residual cash. Parametric Defensive Equity funded 7/23/2018. Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation. Effective 7/1/2018, Private Credit and Private Equity data provided by StepStone Group.

**Total Fund
Performance Summary (Gross of Fees)** Period Ending: December 31, 2018

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Liquidity	1,810,918,374	21.9	1.2	1.8	--	--	--	1.8	1.5	--	--	--
BBgBarc US Govt/Credit 1-3 Yr. TR			1.2	1.6	--	--	--	1.6	0.8	--	--	--
eV US Short Duration Fixed Inc Gross Rank			18	24	--	--	--	24	50	--	--	--
DFA Short Credit	407,716,214	4.9	1.2	1.2	--	--	--	1.2	1.9	--	--	--
ICE BofAML 1-5 Yrs US Corp & Govt. TR			1.4	1.4	--	--	--	1.4	1.3	--	--	--
eV US Short Duration Fixed Inc Gross Rank			22	93	--	--	--	93	26	--	--	--
Insight Short Duration	874,572,034	10.6	0.8	1.7	--	--	--	1.7	1.5	--	--	--
BBgBarc US Govt/Credit 1-3 Yr. TR			1.2	1.6	--	--	--	1.6	0.8	--	--	--
eV US Short Duration Fixed Inc Gross Rank			71	38	--	--	--	38	50	--	--	--
Sit Short Duration	528,630,126	6.4	2.0	2.5	--	--	--	2.5	1.3	--	--	--
BBgBarc US Govt 1-3 Yr TR			1.3	1.6	--	--	--	1.6	0.4	--	--	--
eV US Short Duration Fixed Inc Gross Rank			1	1	--	--	--	1	68	--	--	--
Total Cash	266,783,799	3.2	0.6	1.7	1.2	0.1	--	1.7	0.9	0.9	0.1	-3.0
91 Day T-Bills			0.6	1.9	1.1	0.6	--	1.9	0.9	0.3	0.0	0.0
Cash	266,783,799	3.2	0.6	1.7	1.2	1.0	3.2	1.7	0.9	0.9	0.1	1.4

Individual closed end funds are not shown in performance summary table. Transition account has \$289,305 of residual cash. Goldman Sachs has \$223 of residual cash. JPM Global has \$158,190 of residual cash. Lazard has \$39,637 of residual cash. Intech Large Cap has \$8,665 of residual cash. Intech Global Low Vol has \$17,444 of residual cash. Parametric Defensive Equity funded 7/23/2018. Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation. Effective 7/1/2018, Private Credit and Private Equity data provided by StepStone Group.

Total Fund Performance Summary (Net of Fees)

Period Ending: December 31, 2018

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Fund	8,255,873,307	100.0	-5.2	-2.7	5.8	5.4	9.1	-2.7	13.9	6.9	2.1	7.7
Policy Index			-4.3	-0.9	7.1	6.1	--	-0.9	13.7	8.9	0.6	9.0
Total Fund ex Overlay & Cash	7,956,073,522	96.4	-5.0	-2.4	5.9	5.5	9.2	-2.4	13.8	6.9	2.1	7.7
Policy Index			-4.3	-0.9	7.1	6.1	--	-0.9	13.7	8.9	0.6	9.0
Growth	5,451,581,055	66.0	-7.4	-3.9	7.0	6.3	--	-3.9	18.7	7.6	2.3	8.1
Custom Growth Benchmark			-6.6	-2.1	8.7	6.9	--	-2.1	19.3	10.1	0.3	8.4
Total Domestic Equity	1,040,209,174	12.6	-16.0	-7.6	8.2	7.2	13.3	-7.6	23.5	11.1	0.6	11.0
Russell 3000			-14.3	-5.2	9.0	7.9	13.2	-5.2	21.1	12.7	0.5	12.6
BlackRock Russell 1000 Index		1.4	-13.8	-4.8	--	--	--	-4.8	--	--	--	--
Russell 1000			-13.8	-4.8	--	--	--	-4.8	--	--	--	--
Jackson Square Partners		3.6	-13.8	-2.4	6.1	7.4	14.9	-2.4	28.7	-4.8	5.6	13.4
Russell 1000 Growth			-15.9	-1.5	11.1	10.4	15.3	-1.5	30.2	7.1	5.7	13.0
Robeco Boston Partners		3.2	-13.8	-8.9	7.7	6.0	12.3	-8.9	19.7	14.7	-4.2	11.6
Russell 1000 Value			-11.7	-8.3	7.0	5.9	11.2	-8.3	13.7	17.3	-3.8	13.5
Emerald Advisers		2.4	-22.4	-10.7	7.7	6.7	15.2	-10.7	28.0	9.4	3.5	6.6
Russell 2000 Growth			-21.7	-9.3	7.2	5.1	13.5	-9.3	22.2	11.3	-1.4	5.6
Ceredex		2.1	-16.7	-11.8	8.0	4.2	--	-11.8	10.7	29.1	-5.0	2.7
Russell 2000 Value			-18.7	-12.9	7.4	3.6	--	-12.9	7.8	31.7	-7.5	4.2
Total International Equity	1,442,678,741	17.5	-10.4	-14.7	2.4	1.1	5.5	-14.7	25.0	0.8	-1.6	0.0
MSCI ACWI ex USA Gross			-11.4	-13.8	5.0	1.1	7.1	-13.8	27.8	5.0	-5.3	-3.4
MSCI EAFE Gross			-12.5	-13.4	3.4	1.0	6.8	-13.4	25.6	1.5	-0.4	-4.5
International Equity	827,656,847	10.0	-12.9	-13.9	2.7	1.3	5.6	-13.9	24.8	0.8	-1.6	0.0
MSCI ACWI ex USA Gross			-11.4	-13.8	5.0	1.1	7.1	-13.8	27.8	5.0	-5.3	-3.4
Plyford		5.0	-9.6	-10.5	3.2	--	--	-10.5	19.3	3.0	-3.3	--
MSCI ACWI ex USA Value			-10.7	-14.0	4.7	--	--	-14.0	22.7	8.9	-10.1	--
William Blair		5.0	-16.0	-17.1	2.0	0.9	--	-17.1	30.4	-1.8	0.0	-1.7
MSCI ACWI ex USA Growth			-12.2	-14.4	4.2	1.7	--	-14.4	32.0	0.1	-1.3	-2.6
Emerging Markets Equity	615,021,894	7.4	-6.8	-15.7	--	--	--	-15.7	--	--	--	--
MSCI Emerging Markets			-7.5	-14.6	--	--	--	-14.6	--	--	--	--
PIMCO RAE Emerging Markets		3.9	-7.0	-12.6	--	--	--	-12.6	--	--	--	--
MSCI Emerging Markets			-7.5	-14.6	--	--	--	-14.6	--	--	--	--
TT Emerging Markets		3.5	-6.6	-18.9	--	--	--	-18.9	--	--	--	--
MSCI Emerging Markets			-7.5	-14.6	--	--	--	-14.6	--	--	--	--

Individual closed end funds are not shown in performance summary table. Transition account has \$289,305 of residual cash. JPM Global has \$158,190 of residual cash. Lazard has \$39.637 of residual cash. Intech Large Cap has \$8,665 of residual cash. Intech Global Low Vol has \$17,444 of residual cash. Parametric Defensive Equity funded 7/23/2018. Effective 7/1/2018. Private Credit and Private Equity data provided by StepStone Group.

**Total Fund
Performance Summary (Net of Fees)**

Period Ending: December 31, 2018

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Global Equity	681,154,924	8.3	-12.0	-8.5	6.3	5.0	7.3	-8.5	22.8	6.9	1.6	4.5
MSCI ACWI			-12.8	-9.4	6.6	4.3	9.5	-9.4	24.0	7.9	-2.4	4.2
Artisan Partners	347,975,016	4.2	-15.4	-8.6	8.1	7.2	--	-8.6	31.9	4.8	8.4	3.1
MSCI ACWI			-12.8	-9.4	6.6	4.3	--	-9.4	24.0	7.9	-2.4	4.2
First Eagle	333,004,273	4.0	-8.3	-8.3	5.1	3.7	--	-8.3	14.3	10.9	-0.6	3.7
MSCI ACWI			-12.8	-9.4	6.6	4.3	--	-9.4	24.0	7.9	-2.4	4.2
Private Credit	307,928,386	3.7	3.8	8.3	8.5	9.9	13.0	8.3	10.4	6.9	11.6	12.3
ICE BofAML High Yield Master II +2%			-4.2	-0.3	9.4	5.9	13.2	-0.3	9.6	19.8	-2.7	4.5
Total High Yield	327,878,586	4.0	-4.9	-3.6	5.2	2.5	9.6	-3.6	6.1	13.9	-3.9	0.8
ICE BofAML High Yield Master II			-4.7	-2.3	7.3	3.8	11.0	-2.3	7.5	17.5	-4.6	2.5
Allianz Global Investors	327,878,586	4.0	-4.9	-3.6	5.2	2.5	9.5	-3.6	6.1	13.9	-3.9	0.8
ICE BofAML High Yield Master II			-4.7	-2.3	7.3	3.8	11.0	-2.3	7.5	17.5	-4.6	2.5
Total Real Estate	699,299,265	8.5	0.5	7.4	7.7	10.8	10.5	7.4	11.0	4.8	12.4	19.1
Real Estate Benchmark			0.8	6.7	6.8	9.4	9.3	6.7	7.1	6.7	8.3	18.8
NCREIF-ODCE			1.8	8.3	8.2	10.4	7.0	8.3	7.6	8.8	15.0	12.5
NCREIF Property Index			1.4	6.7	7.2	9.3	7.5	6.7	7.0	8.0	13.3	11.8
Adelante	62,941,501	0.8	-6.4	-5.5	1.6	7.8	12.4	-5.5	7.2	3.6	4.6	32.7
Wilshire REIT			-6.9	-4.8	2.1	7.9	12.2	-4.8	4.2	7.2	4.2	31.8
Private Equity	952,102,813	11.5	2.2	12.1	10.9	11.6	9.1	12.1	11.9	8.9	9.9	15.2
S&P 500 Index +4% (Lagged)			8.7	22.6	21.9	18.5	16.4	22.6	23.3	20.0	3.4	24.5
Diversifying	693,574,093	8.4	-0.9	-2.3	0.3	0.2	2.3	-2.3	2.6	0.8	-1.8	1.7
Custom Diversifying Benchmark			0.3	1.5	3.4	3.6	4.1	1.5	4.7	4.1	2.5	5.4
Diversifying Fixed Income	495,702,114	6.0	-0.2	-2.0	1.0	2.0	3.2	-2.0	2.6	2.3	1.1	6.1
AFL-CIO	318,502,545	3.9	1.9	0.2	1.7	2.5	3.4	0.2	3.2	1.9	1.1	6.1
BBGBarc US Aggregate TR			1.6	0.0	2.1	2.5	3.5	0.0	3.5	2.6	0.6	6.0
Wellington Real Total Return	177,199,569	2.1	-3.9	-5.6	-1.5	-2.6	--	-5.6	1.9	-0.6	-5.4	-3.1
CPI + 4%			0.5	6.0	6.1	5.6	--	6.0	6.2	6.2	4.8	4.8

Individual closed end funds are not shown in performance summary table. Transition account has \$289,305 of residual cash. Goldman Sachs has \$223 of residual cash. JPM Global has \$158,190 of residual cash. Lazard has \$39.637 of residual cash. Intech Large Cap has \$8,665 of residual cash. Intech Global Low Vol has \$17,444 of residual cash. Parametric Defensive Equity funded 7/23/2018. Effective 7/1/2018. Private Credit and Private Equity data provided by StepStone Group.

**Total Fund
Performance Summary (Net of Fees)** Period Ending: December 31, 2018

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Diversifying Equity	197,871,979	2.4	-2.6	--	--	--	--	--	--	--	--	--
Parametric Defensive Equity	197,871,979	2.4	-2.6	--	--	--	--	--	--	--	--	--
91 Day T-Bill +4%			1.5	--	--	--	--	--	--	--	--	--
Liquidity	1,810,918,374	21.9	1.2	1.7	--	--	--	1.7	1.4	--	--	--
BBgBarc US Govt/Credit 1-3 Yr. TR			1.2	1.6	--	--	--	1.6	0.8	--	--	--
DFA Short Credit	407,716,214	4.9	1.2	1.1	--	--	--	1.1	1.8	--	--	--
ICE BofAML 1-5 Yrs US Corp & Govt TR			1.4	1.4	--	--	--	1.4	1.3	--	--	--
Insight Short Duration	874,572,034	10.6	0.8	1.7	--	--	--	1.7	1.5	--	--	--
BBgBarc US Govt/Credit 1-3 Yr. TR			1.2	1.6	--	--	--	1.6	0.8	--	--	--
Sit Short Duration	528,630,126	6.4	2.0	2.3	--	--	--	2.3	1.1	--	--	--
BBgBarc US Govt 1-3 Yr TR			1.3	1.6	--	--	--	1.6	0.4	--	--	--
Total Cash	266,783,799	3.2	0.6	1.7	1.2	0.1	--	1.7	0.9	0.9	0.1	-3.0
91 Day T-Bills			0.6	1.9	1.1	0.6	--	1.9	0.9	0.3	0.0	0.0
Cash	266,783,799	3.2	0.6	1.7	1.2	1.0	2.9	1.7	0.9	0.9	0.1	1.4

Individual closed end funds are not shown in performance summary table. Transition account has \$289,305 of residual cash. Goldman Sachs has \$223 of residual cash. JPM Global has \$158,190 of residual cash. Lazard has \$39.637 of residual cash. Intech Large Cap has \$8,665 of residual cash. Intech Global Low Vol has \$17,444 of residual cash. Parametric Defensive Equity funded 7/23/2018. Effective 7/1/2018, Private Credit and Private Equity data provided by StepStone Group.

Total Fund
Closed End Funds - Investment Summary

Period Ending: December 31, 2018

StepStone Group Analysis (*)													
Closing Date	Manager Name/Fund Name	Estimated Market Value as of 12/31/18 ¹	Total Commitment	% Called	Current Qtr. Change in		Total Distributions	Remaining Commitment	Distrib./Paid-In (DPI)	Tot. Value/Paid-In (TVPI)	Latest Valuation		
					Contributed Capital	Distributed Capital							
	Private Credit												
8/31/2015	Angelo Gordon Energy Credit Opp.	\$6,755,595	\$16,500,000	114%	\$18,750,000	\$0	\$18,128,316	\$2,319,783	0.97	1.33	9/30/2018		
12/18/2017	Stepstone CC Opportunities Fund	\$219,491,751	\$650,000,000	34%	\$222,571,686	\$4,524,464	\$4,531,899	\$431,952,778	0.02	1.01	9/30/2018		
7/1/2006	Torchlight II	\$4,582,942	\$128,000,000	170%	\$218,238,292	\$13,330,649	\$204,245,825	\$0	0.94	0.96	12/31/2018		
12/12/2008	Torchlight III	\$0	\$75,000,000	112%	\$83,825,058	\$36,421	\$124,835,174	\$0	1.49	1.49	12/31/2018		
8/1/2012	Torchlight IV	\$23,552,031	\$60,000,000	141%	\$84,469,432	\$45,169	\$90,626,591	\$0	1.07	1.35	12/31/2018		
3/12/2015	Torchlight V	\$53,546,067	\$75,000,000	60%	\$45,000,000	\$0	\$4,739,774	\$30,000,000	0.11	1.30	9/30/2018		
	Total Private Credit	\$307,928,386											
													3.7%

*All Data provided by StepStone Group
¹Latest valuation + capital calls - distributions

Total Fund
Closed End Funds - Investment Summary

Period Ending: December 31, 2018

Verus Internal Analysis

Inception Date	Manager Name/Fund Name	Estimated Market Value as of 12/31/2018 ³	Total Commitment	Total % Called	Capital Called	Current Qtr. Capital Called	Current Qtr. Distributions	Total Distributions ⁵	Remaining Commitment	Distrib./ Paid-in (DPI) ¹	Tot. Value/ Paid-in (TVPI) ²	Latest Valuation
Real Estate												
1/23/2012	Angelo Gordon Realty Fund VIII	\$26,122,480	\$80,000,000	94%	\$75,401,855	\$0	\$3,200,000	\$94,978,501	\$12,334,302	1.26	1.61	9/30/2018
12/8/2014	Angelo Gordon Realty Fund IX	\$57,621,141	\$85,000,000	86%	\$55,575,000	\$4,875,000	\$3,575,000	\$9,775,000	\$12,122,500	0.16	1.19	9/30/2018
6/23/2005	DLJ RECP III	\$23,199,008	\$75,000,000	95%	\$70,968,662	\$0	\$0	\$72,565,242	\$4,031,338	1.02	1.35	9/30/2018
2/11/2008	DLJ RECP IV	\$90,413,218	\$100,000,000	95%	\$95,460,264	\$0	\$0	\$67,629,710	\$4,539,736	0.71	1.66	9/30/2018
7/1/2014	DLJ RECP V	\$47,833,399	\$75,000,000	107%	\$79,931,685	\$7,709,903	\$0	\$50,780,984	\$24,803,276	0.64	1.23	9/30/2018
6/17/1998	Hearststone II ⁴	-\$3,484	\$25,000,000	80%	\$19,932,386	\$0	\$0	\$19,952,734	\$2,520,348	1.00	1.00	9/30/2018
11/26/2007	Invesco Real Estate II	\$425,670	\$85,000,000	92%	\$78,202,813	\$0	\$0	\$100,620,489	\$6,797,187	1.29	1.29	12/31/2018
6/30/2013	Invesco Real Estate III	\$12,774,765	\$35,000,000	93%	\$32,386,423	\$0	\$0	\$32,987,218	\$2,613,577	1.02	1.41	12/31/2018
6/30/2014	Invesco Real Estate IV	\$26,805,973	\$35,000,000	85%	\$29,808,739	\$2,448,117	\$1,798,052	\$9,376,527	\$5,191,261	0.31	1.21	12/31/2018
7/16/2013	LaSalle Income & Growth VI	\$29,017,358	\$75,000,000	95%	\$71,428,571	\$0	\$8,033,126	\$78,272,483	\$3,571,429	1.10	1.50	9/30/2018
2/28/2017	LaSalle Income & Growth VII	\$51,653,639	\$75,000,000	72%	\$54,224,861	\$7,635,483	\$13,273,864	\$13,273,864	\$20,775,139	0.24	1.20	9/30/2018
7/3/2013	Long Wharf Fund IV	\$12,101,592	\$25,000,000	100%	\$25,000,000	\$0	\$1,627,540	\$23,485,895	\$0	0.94	1.42	12/31/2018
9/30/2016	Long Wharf Fund V	\$49,447,742	\$50,000,000	100%	\$50,000,000	\$6,215,012	\$2,627,670	\$6,969,039	\$0	0.14	1.13	12/31/2018
12/31/2011	Oaktree REOF V	\$5,216,833	\$50,000,000	100%	\$50,000,000	\$0	\$400,000	\$80,116,587	\$25,750,000	1.60	1.71	12/31/2018
9/30/2013	Oaktree REOF VI	\$39,385,683	\$80,000,000	100%	\$80,000,000	\$0	\$3,888,703	\$73,678,405	\$18,400,000	0.92	1.41	12/31/2018
4/1/2015	Oaktree REOF VII	\$34,158,375	\$85,000,000	47%	\$30,745,000	\$6,500,000	\$0	\$4,615,000	\$38,870,000	0.15	1.26	12/31/2018
11/10/2013	Paulson Real Estate Fund II	\$24,739,053	\$20,000,000	97%	\$19,345,623	\$0	\$0	\$4,594,996	\$654,377	0.24	1.52	9/30/2018
1/25/2012	Siguler Gulf DREOF	\$31,764,566	\$75,000,000	93%	\$69,375,000	\$0	\$15,697,719	\$89,705,668	\$5,625,000	1.29	1.75	9/30/2018
8/31/2013	Siguler Gulf DREOF II	\$50,069,029	\$70,000,000	82%	\$57,120,000	\$0	\$3,710,338	\$29,608,106	\$12,880,000	0.52	1.39	9/30/2018
1/27/2016	Siguler Gulf DREOF II Co-Inv	\$23,611,725	\$25,000,000	82%	\$20,537,862	\$687,500	\$972,301	\$972,301	\$4,462,138	0.05	1.20	9/30/2018
Total Closed End Real Estate		\$636,357,764	\$1,185,000,000	90%	\$1,065,444,746	\$36,071,015	\$58,804,314	\$862,958,749	\$205,941,607	0.81	1.41	
		% of Portfolio (Market Value)										
												7.7%

¹(DPI) is equal to (capital returned / capital called)
²(TVPI) is equal to (market value + capital returned) / capital called
³Latest valuation + capital calls - distributions
⁴No further capital to be called
⁵Total distributions may include recallable distributions

Total Fund
 Closed End Funds - Investment Summary
 Period Ending: December 31, 2018

StepStone Group Analysis (*)

Closing Date	Manager Name/Fund Name	Estimated Market Value as of 12/31/18 ¹	Total Commitment	Total Called	Contributed Capital	Current Qtr. Change in Contributed Capital	Current Qtr. Change in Distributed Capital	Total Distributions	Remaining Commitment	Distrib./Paid-In (DPI)	Tot. Value/Paid-In (TVPI)	Latest Valuation
Private Equity & Venture Capital												
2/11/2004	Adams Street Partners	\$149,976,465	\$210,000,000	84%	\$175,403,125	\$3,500,000	\$5,674,744	\$121,161,543	\$34,596,875	0.69	1.55	9/30/2018
12/31/2008	Adams Street Partners II	\$8,878,668	\$30,000,000	95%	\$28,365,000	\$0	\$1,509,720	\$0	\$1,635,000	1.38	1.70	9/30/2018
12/31/2008	Adams Street Partners - Fund 5	\$2,521,424	\$40,000,000	77%	\$30,611,900	\$0	\$1,002,150	\$0	\$9,388,100	0.46	1.20	9/30/2018
1/18/1996	Adams Street Partners - BPF	\$2,456,860	\$59,565,614	108%	\$64,307,595	\$0	\$209,461	\$2,103,276	\$2,048,205	1.59	1.62	6/30/2018
3/31/2016	Adams Street Venture Innovation	\$24,907,754	\$75,000,000	34%	\$25,162,500	\$5,250,000	\$0	\$3,885,504	\$49,837,500	0.00	0.99	9/30/2018
11/27/2013	Aether Real Assets III	\$22,942,562	\$25,000,000	84%	\$20,975,964	\$434,041	\$158,687	\$1,529,981	\$5,788,713	0.10	1.19	9/30/2018
11/30/2013	Aether Real Assets III Surplus	\$56,216,534	\$50,000,000	94%	\$46,891,321	\$1,624,967	\$1,073,361	\$6,175,954	\$5,727,835	0.08	1.28	9/30/2018
1/30/2016	Aether Real Assets IV	\$28,874,312	\$50,000,000	50%	\$25,189,265	\$981,108	\$687,976	\$36,331,243	\$26,328,058	0.06	1.21	9/30/2018
11/26/2003	Bay Area Equity Fund	\$2,890,434	\$10,000,000	100%	\$10,000,000	\$0	\$0	\$2,026,313	\$0	3.63	3.92	9/30/2018
11/26/2003	Bay Area Equity Fund II	\$11,158,188	\$10,000,000	100%	\$10,000,000	\$0	\$0	\$49,128,304	\$0	0.20	1.32	9/30/2018
1/16/2008	Carpenter Bancfund	\$0	\$30,000,000	98%	\$29,314,657	\$0	\$0	\$7,107,576	\$904,309	1.68	1.68	9/30/2018
6/30/2013	Commonfund	\$48,010,389	\$50,000,000	86%	\$43,071,846	\$374,998	\$1,118,878	\$25,225,856	\$7,225,005	0.17	1.28	9/30/2018
11/26/2003	EIF US Power Fund I	-\$9,042	\$30,000,000	130%	\$38,960,280	\$0	\$64,348	\$13,844,471	\$0	1.65	1.65	9/30/2018
7/15/2005	EIF US Power Fund II	\$20,221,097	\$50,000,000	130%	\$65,029,556	\$0	\$919,034	\$39,187,764	\$1	1.00	1.31	9/30/2018
5/31/2007	EIF US Power Fund III	\$23,187,413	\$65,000,000	110%	\$71,430,128	\$21,031	\$21,031	\$10,040,744	\$0	1.00	1.33	9/30/2018
8/31/2010	EIF US Power Fund IV	\$45,299,312	\$50,000,000	120%	\$59,968,849	\$343,261	\$0	\$5,500,000	\$3,777,443	0.42	1.18	9/30/2018
11/28/2016	EIF US Power Fund V	\$39,759,201	\$50,000,000	89%	\$44,299,203	\$6,869,298	\$12,500	\$23,594,952	\$9,891,068	0.14	1.04	9/30/2018
2/12/2004	Nogales	\$0	\$15,000,000	120%	\$18,026,408	\$0	\$0	\$24,699,218	\$1,291,060	0.77	0.77	9/30/2017
2/28/2010	Oaktree PIF 2009	\$9,436,522	\$40,000,000	87%	\$34,812,448	\$0	\$0	\$18,678,543	\$6,308,961	1.13	1.40	9/30/2018
8/15/2013	Ocean Avenue Fund II	\$26,472,694	\$30,000,000	82%	\$24,600,000	\$2,400,000	\$3,750,000	\$13,948,271	\$4,800,000	0.41	1.48	9/30/2018
4/15/2016	Ocean Avenue Fund III	\$31,387,958	\$50,000,000	56%	\$28,000,000	\$0	\$0	\$3,658,641	\$22,000,000	0.20	1.32	9/30/2018
11/30/2007	Paladin III	\$25,141,407	\$25,000,000	132%	\$33,058,868	\$304,691	\$33,215	\$166,966,622	\$538,351	0.71	1.47	9/30/2018
8/22/2011	Pathway 6	\$35,749,111	\$40,000,000	92%	\$36,930,846	\$777,916	\$4,016,884	\$20,993,394	\$5,066,589	0.51	1.47	6/30/2018
7/10/2013	Pathway 7	\$63,231,506	\$70,000,000	87%	\$60,663,445	\$2,629,535	\$2,725,665	\$41,905,281	\$11,763,038	0.23	1.27	6/30/2018
11/23/2015	Pathway 8	\$35,100,660	\$50,000,000	64%	\$32,083,722	\$3,415,158	\$767,128	\$29,158,659	\$19,347,637	0.11	1.21	6/30/2018
1/19/1999	Pathway	\$21,505,882	\$125,000,000	100%	\$124,513,501	\$71,000	\$2,355,823	\$0	\$11,156,115	1.34	1.51	6/30/2018
7/31/2009	Pathway 2008	\$21,179,039	\$30,000,000	96%	\$28,664,294	\$228,214	\$2,715,862	\$64,468,378	\$3,670,543	0.86	1.60	6/30/2018
6/30/2014	Siguler Gulf CCCERA Opportunities	\$143,655,665	\$200,000,000	68%	\$135,702,500	\$3,450,000	\$22,482,384	\$71,776,773	\$72,156,609	0.31	1.37	9/30/2018
8/31/2013	Siguler Gulf Secondary Opportunities	\$19,511,832	\$50,000,000	60%	\$29,999,802	\$0	\$18,332,343	\$65,018,668	\$42,440,738	0.97	1.62	9/30/2018
12/8/2015	Wastewater Opportunity Fund	\$12,439,068	\$25,000,000	72%	\$17,974,369	\$4,536,304	\$3,596,436	\$3,611,308	\$7,047,858	0.20	0.89	9/30/2018
Total Private Equity and Venture Capital		\$952,102,813	\$1,634,565,614	85%	\$1,394,011,393	\$37,211,522	\$75,727,631	\$871,727,238	\$364,735,589	0.63	1.31	
				% of Portfolio (Market Value)								
												11.5%

* All Data provided by StepStone Group
¹Latest valuation + capital calls - distributions

Total Fund

Closed End Funds - IRR Summary

Period Ending: December 31, 2018

Private Credit	Inception	Fund Level(G)	CCCERA(G)	Fund Level(N)	CCCERA(N)	IRR Date
Angelo Gordon Energy Cred Opp.	09/24/2015	-	-	-	14.5%	09/30/2018
Stepstone CC Opportunities Fund ¹	02/02/2018	-	-	-	-	-
Torchlight II	07/01/2006	0.0%	0.2%	-1.2%	-1.0%	12/31/2018
Torchlight III	12/12/2008	18.3%	16.3%	13.7%	13.8%	06/30/2018
Torchlight IV	08/01/2012	13.6%	14.0%	10.5%	11.2%	12/31/2018
Torchlight V	03/12/2015	24.2%	24.0%	15.9%	15.7%	09/30/2018
Real Estate	Inception	Fund Level(G)	CCCERA(G)	Fund Level(N)	CCCERA(N)	IRR Date
Angelo Gordon VIII	01/23/2012	-	-	-	15.9%	09/30/2018
Angelo Gordon IX	12/08/2014	-	-	-	11.8%	09/30/2018
DLJ RECP III	06/23/2005	1.0%	1.0%	-2.0%	-2.0%	06/30/2018
DLJ RECP IV	02/11/2008	7.0%	7.0%	4.0%	5.0%	06/30/2018
DLJ RECP V	07/01/2014	26.0%	26.0%	14.0%	14.0%	06/30/2018
Hearthstone II	06/17/1998	-	30.1%	-	30.1%	09/30/2018
Invesco Fund III	06/30/2013	17.2%	-	13.6%	-	12/31/2018
Invesco Fund IV	06/30/2014	18.1%	-	12.7%	-	09/30/2018
LaSalle Income & Growth VI	07/16/2013	16.3%	16.3%	13.5%	13.5%	09/30/2018
LaSalle Income & Growth VII	02/28/2017	15.8%	16.4%	13.7%	14.1%	09/30/2018
Long Wharf IV	07/03/2013	17.2%	17.3%	12.4%	12.4%	12/31/2018
Long Wharf V	09/30/2016	16.1%	18.2%	10.2%	11.4%	12/31/2018
Oaktree REOF V	12/31/2011	17.0%	-	12.6%	-	12/31/2018
Oaktree REOF VI	09/30/2013	14.9%	-	10.0%	-	12/31/2018
Oaktree REOF VII	04/01/2015	73.7%	-	39.7%	-	12/31/2018
Paulson	11/10/2013	-	-	14.9%	-	12/31/2017
Siguler Guff I	01/25/2012	14.8%	17.3%	13.3%	14.1%	09/30/2018
Siguler Guff II	08/31/2013	14.2%	13.8%	12.7%	11.4%	09/30/2018
Siguler Guff DREOF II Co-Inv	01/27/2016	13.0%	13.1%	11.9%	10.0%	09/30/2018

¹ Manager has yet to report IRR figure due to no capital invested or meaningful distributions.

² Fund level data includes CCCERA and all other fund investors.

³ Net IRR calculated after deductions of management fees and carried interest to the General Partner.

Total Fund
 Closed End Funds - IRR Summary

Period Ending: December 31, 2018

Private Equity & Venture Capital	Inception	Fund Level (G)	CCCERA (G)	Fund Level (N)	CCCERA (N)	IRR Date
Adams Street Partners	3/18/1996	11.5%	12.9%	-	10.4%	9/30/2018
Adams Street Partners II	1/16/2009	17.4%	17.3%	-	14.8%	9/30/2018
Adams Street Partners - Fund 5	9/21/2012	9.7%	9.6%	-	6.8%	9/30/2018
Adams Street Partners Venture	4/28/2017	9.5%	9.5%	-	-2.6%	9/30/2018
Adams Street Partners - BPF	1/18/1996	10.7%	14.3%	-	11.6%	9/30/2018
Aether Real Assets III	11/27/2013	10.4%	-	7.6%	-	9/30/2018
Aether Real Assets III Surplus	11/27/2013	11.5%	-	9.8%	-	9/30/2018
Aether Real Assets IV	1/1/2016	23.5%	-	17.3%	-	9/30/2018
Bay Area Equity Fund I	6/14/2004	25.8%	25.8%	23.2%	23.2%	9/30/2018
Bay Area Equity Fund II	12/7/2009	6.0%	6.0%	5.0%	5.0%	9/30/2018
CommonFund	6/28/2013	-	-	-	10.3%	9/30/2018
Energy Investor Fund	11/26/2003	33.5%	34.7%	28.5%	28.3%	9/30/2018
Energy Investor Fund II	8/16/2005	6.8%	6.4%	4.2%	3.8%	9/30/2018
Energy Investor Fund III	5/30/2007	8.2%	8.2%	5.7%	5.7%	9/30/2018
Energy Investor Fund IV	11/28/2011	10.6%	10.8%	6.4%	6.2%	9/30/2018
Energy Investor Fund V	11/26/2016	20.5%	17.9%	8.3%	6.8%	9/30/2018
Oaktree PIF 2009	2/18/2010	7.2%	-	7.0%	-	12/31/2018
Ocean Avenue II	6/11/2014	-	-	15.9%	-	12/31/2018
Ocean Avenue III	4/15/2016	-	-	35.9%	-	12/31/2018
Paladin III	11/30/2007	16.6%	-	8.6%	-	9/30/2018
Pathway 6	5/24/2011	17.0%	17.0%	14.3%	14.3%	9/30/2018
Benchmark ⁴		15.0%	-	-	-	9/30/2018
Pathway 7	2/7/2013	15.8%	15.8%	12.7%	12.7%	9/30/2018
Benchmark ⁵		14.6%	-	-	-	9/30/2018
Pathway 8 ¹	11/6/2015	22.7%	23.3%	20.2%	21.1%	9/30/2018
Benchmark ⁶		14.4%	-	-	-	9/30/2018
Pathway Private Equity Fund	11/9/1998	10.4%	10.4%	8.6%	8.6%	9/30/2018
Benchmark ⁷		10.5%	-	-	-	9/30/2018
Pathway Private Equity Fund 2008	12/26/2008	15.4%	15.4%	12.7%	12.7%	9/30/2018
Benchmark ⁸		13.6%	-	-	-	9/30/2018
Siguler Guff CCCERA Opportunities	6/3/2014	19.2%	19.8%	18.6%	16.5%	9/30/2018
Siguler Guff Secondary Opportunities ⁸	11/30/2016	76.0%	550.2%	70.4%	291.8%	9/30/2018
Wastewater Opportunity Fund	12/8/2015	-1.3%	-	-14.8%	-	9/30/2018

¹Manager has yet to report IRR figure due to no capital invested or meaningful distributions.

²Fund level data includes CCCERA and all other fund investors.

³Net IRR calculated after deductions of management fees and carried interest to the General Partner.

⁴Private IQ global all private equity median pooled return for vintage years 2011-2014, as of September 30, 2018.

⁵Private IQ global all private equity median pooled return for vintage years 2012-2016, as of September 30, 2018.

⁶Private IQ global all private equity median pooled return for vintage years 2015-2018, as of September 30, 2018.

⁷Private IQ global all private equity median pooled return for vintage years 1999-2011, as of September 30, 2018.

⁸Private IQ global all private equity median pooled return for vintage years 2008-2014, as of September 30, 2018.

**Total Fund
Performance Analysis - 3 Years (Net of Fees) Period Ending: December 31, 2018**

3 Years

	Ann Excess BM Return	Anlzd Ret	Anlzd Std Dev	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Info Ratio	Up Mkt Cap Ratio	Down Mkt Cap Ratio
Jackson Square Partners	-5.02%	6.13%	12.61%	-4.14%	0.92	5.62%	0.81	0.40	-0.89	83.97%	113.93%
Robeco Boston Partners	0.77%	7.72%	12.31%	0.16%	1.09	3.15%	0.94	0.54	0.24	106.83%	101.55%
Emerald Advisers	0.51%	7.75%	17.14%	0.54%	1.00	4.21%	0.94	0.39	0.12	95.60%	94.37%
Ceredex	0.65%	8.02%	13.90%	2.05%	0.81	5.92%	0.87	0.50	0.11	87.86%	86.43%
Pyrford	-1.53%	3.22%	9.42%	-0.04%	0.69	5.84%	0.78	0.23	-0.26	57.61%	68.04%
William Blair	-2.19%	2.01%	12.44%	-2.33%	1.03	2.87%	0.95	0.08	-0.76	91.06%	105.06%
Artisan Partners	1.51%	8.10%	13.34%	0.54%	1.15	5.67%	0.83	0.53	0.27	126.12%	114.92%
First Eagle	-1.49%	5.10%	7.32%	0.86%	0.64	4.61%	0.87	0.55	-0.32	57.69%	58.75%
Allianz Global Investors	-2.03%	5.23%	4.40%	-1.36%	0.91	1.17%	0.94	0.95	-1.74	82.02%	110.58%
Adelante	-0.43%	1.63%	12.95%	-0.31%	0.94	1.88%	0.98	0.05	-0.23	87.40%	93.34%
AFL-CIO	-0.31%	1.74%	2.55%	0.00%	0.85	0.84%	0.92	0.27	-0.37	81.06%	80.82%
Wellington Real Total Return	-7.57%	-1.46%	4.62%	-3.26%	0.29	4.65%	0.00	-0.54	-1.63	-13.47%	23,204.41%

Performance Analysis excludes closed end funds and those funds without 3 years of performance.

Total Fund Performance Analysis - 5 Years (Net of Fees) Period Ending: December 31, 2018

5 Years

	Anlzd Ret	Ann Excess BM Return	Anlzd Std Dev	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Info Ratio	Up Mkt Cap Ratio	Down Mkt Cap Ratio
Jackson Square Partners	7.44%	-2.96%	12.63%	-2.67%	0.97	4.95%	0.85	0.54	-0.60	90.69%	109.25%
Robeco Boston Partners	5.97%	0.03%	12.01%	-0.41%	1.07	3.02%	0.94	0.44	0.01	103.97%	102.71%
Emerald Advisers	6.66%	1.53%	17.40%	1.47%	1.01	5.60%	0.90	0.35	0.27	105.52%	97.90%
Ceredex	4.23%	0.63%	13.91%	1.16%	0.85	5.53%	0.87	0.26	0.11	87.04%	91.49%
William Blair	0.87%	-0.82%	11.62%	-0.75%	0.96	2.79%	0.94	0.02	-0.29	85.12%	95.63%
Artisan Partners	7.15%	2.89%	12.70%	2.68%	1.05	5.58%	0.81	0.51	0.52	113.23%	91.94%
First Eagle	3.67%	-0.59%	7.67%	0.85%	0.66	4.57%	0.88	0.39	-0.13	56.66%	66.35%
Allianz Global Investors	2.45%	-1.37%	4.79%	-1.04%	0.91	1.06%	0.96	0.38	-1.29	82.91%	100.75%
Adelante	7.83%	-0.04%	13.35%	0.40%	0.94	1.76%	0.99	0.54	-0.02	89.83%	93.88%
AFL-CIO	2.48%	-0.04%	2.50%	0.29%	0.87	0.74%	0.94	0.73	-0.06	87.61%	80.91%
Wellington Real Total Return	-2.58%	-8.15%	5.34%	-10.27%	1.38	5.16%	0.07	-0.60	-1.58	-18.79%	1,080.85%

Performance Analysis excludes closed end funds and those funds without 5 years of performance.

Total Fund Investment Fund Fee Analysis **Period Ending: December 31, 2018**

Name	Asset Class	Fee Schedule	Market Value	Estimated Fee Value	Estimated Fee
BlackRock Russell 1000 Index	Growth	0.03% of Assets	\$114,251,251	\$34,275	0.03%
Jackson Square Partners	Growth	0.50% of First 100.0 Mil, 0.40% of Next 150.0 Mil, 0.35% Thereafter	\$294,082,588	\$1,254,289	0.43%
Robeco Boston Partners	Growth	0.50% of First 25.0 Mil, 0.30% Thereafter	\$265,438,078	\$846,314	0.32%
Emerald Advisers	Growth	0.75% of First 10.0 Mil, 0.60% Thereafter	\$194,396,033	\$1,181,376	0.61%
Ceredex	Growth	0.85% of First 10.0 Mil, 0.68% of Next 40.0 Mil, 0.51% Thereafter	\$172,032,560	\$979,366	0.57%
Pyrford	Growth	0.70% of First 50.0 Mil, 0.50% of Next 50.0 Mil, 0.35% Thereafter	\$415,515,408	\$1,704,304	0.41%
William Blair	Growth	0.80% of First 20.0 Mil, 0.60% of Next 30.0 Mil, 0.50% of Next 50.0 Mil, 0.45% of Next 50.0 Mil, 0.40% of Next 50.0 Mil, 0.30% Thereafter	\$412,141,439	\$1,651,424	0.40%
PIMCO RAE Emerging Markets	Growth	0.75% of First 50.0 Mil, 0.68% of Next 50.0 Mil, 0.50% of Next 100.0 Mil, 0.45% Thereafter	\$323,920,700	\$1,770,143	0.55%
TT Emerging Markets	Growth	0.70% of First 100.0 Mil, 0.65% of Next 100.0 Mil, 0.60% Thereafter	\$291,101,194	\$1,896,607	0.65%
Artisan Partners	Growth	0.75% of Assets	\$347,975,016	\$2,609,813	0.75%
First Eagle	Growth	0.75% of Assets	\$333,004,273	\$2,497,532	0.75%
Allianz Global Investors	Growth	0.50% of First 50.0 Mil, 0.40% of Next 50.0 Mil, 0.35% Thereafter	\$327,878,586	\$1,247,575	0.38%
AFL-CIO	Diversifying	0.43% of Assets	\$318,502,545	\$1,369,561	0.43%

Mutual fund fees shown are sourced from Morningstar and are as of the most current prospectus.

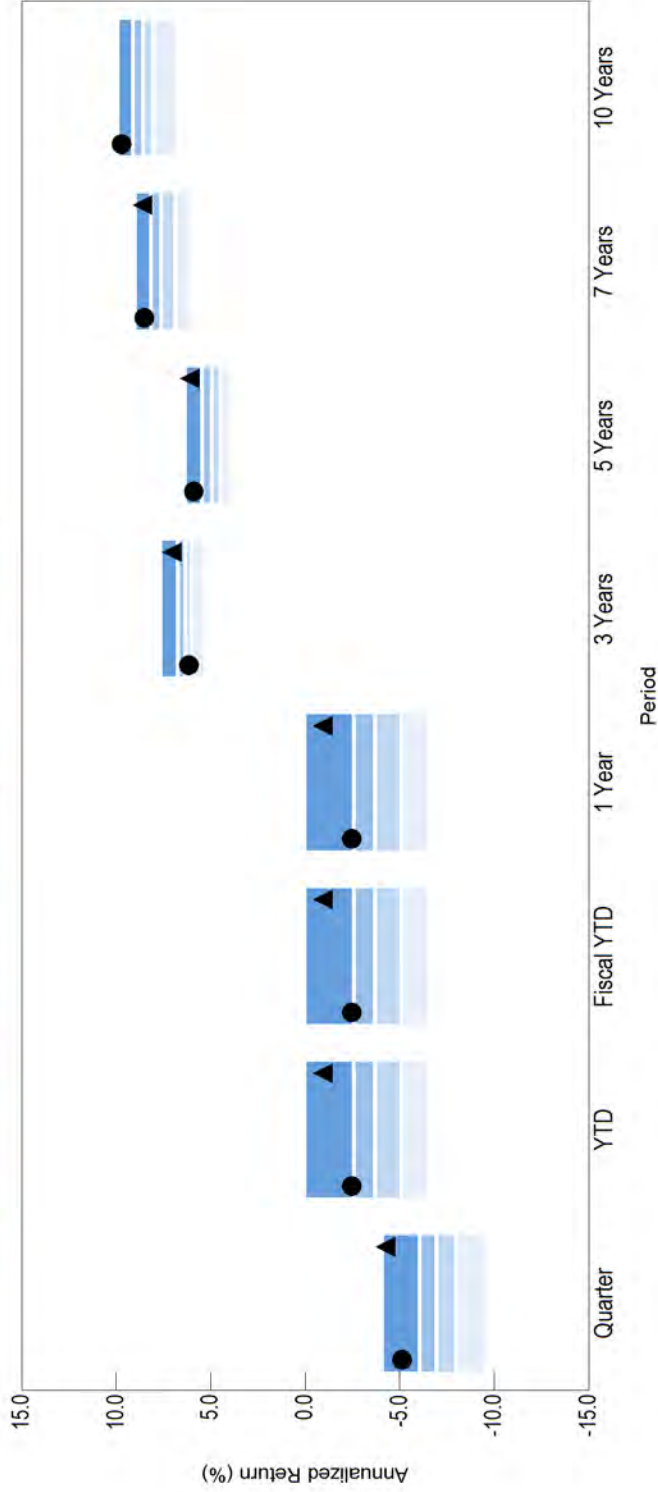
**Total Fund
Investment Fund Fee Analysis** **Period Ending: December 31, 2018**

Name	Asset Class	Fee Schedule	Market Value	Estimated Fee Value	Estimated Fee
Wellington Real Total Return	Diversifying	0.35% of Assets	\$177,199,569	\$620,198	0.35%
Parametric Defensive Equity	Diversifying	0.42% of First 200.0 Mil, 0.39% Thereafter	\$197,871,979	\$831,062	0.42%
DFA Short Credit	Liquidity	0.20% of First 25.0 Mil, 0.10% Thereafter	\$407,716,214	\$432,716	0.11%
Insight Short Duration	Liquidity	0.06% of First 500.0 Mil, 0.05% of Next 500.0 Mil, 0.04% Thereafter	\$874,572,034	\$487,286	0.06%
Sit Short Duration	Liquidity	0.15% of Assets	\$528,630,126	\$792,945	0.15%

Mutual fund fees shown are sourced from Morningstar and are as of the most current prospectus.

Total Fund
Peer Universe Comparison: Cumulative Performance (Gross of Fees) Period Ending: December 31, 2018

Total Fund Cumulative Performance vs. InvestorForce Public DB > \$1B Gross



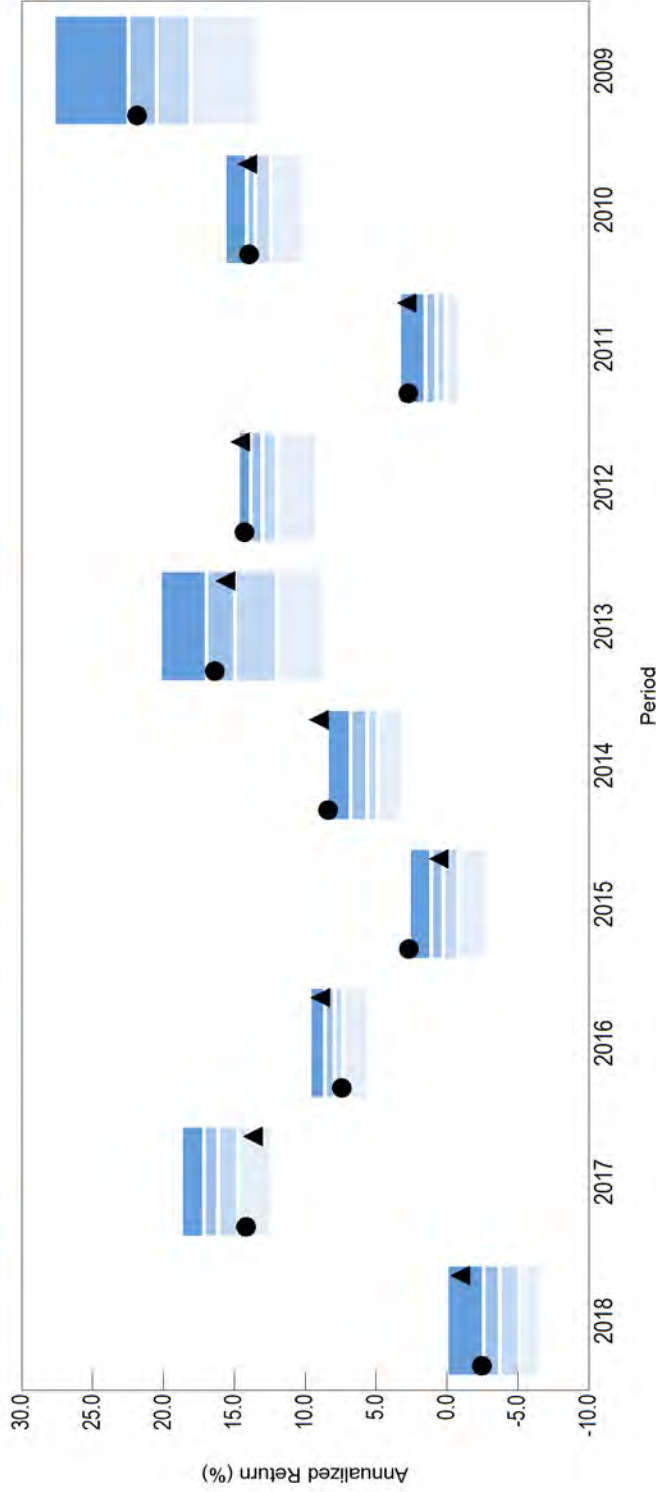
Return (Rank)

5th Percentile	-4.1	0.0	0.0	0.0	7.6	6.4	9.0	9.9
25th Percentile	-6.0	-2.6	-2.6	-2.6	6.7	5.5	8.2	9.1
Median	-6.9	-3.7	-3.7	-3.7	6.3	5.0	7.6	8.6
75th Percentile	-8.0	-5.1	-5.1	-5.1	6.0	4.5	6.9	8.1
95th Percentile	-9.6	-6.6	-6.6	-6.6	5.3	3.9	6.0	6.8
# of Portfolios	73	71	71	71	71	70	69	67
● Total Fund	-5.1 (10)	-2.5 (25)	-2.5 (25)	-2.5 (25)	6.2 (70)	5.9 (9)	8.5 (17)	9.7 (10)
▲ Policy Index	-4.3 (6)	-0.9 (8)	-0.9 (8)	-0.9 (8)	7.1 (20)	6.1 (8)	8.6 (16)	--

Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation.

Total Fund
Peer Universe Comparison: Consecutive Periods (Gross of Fees) Period Ending: December 31, 2018

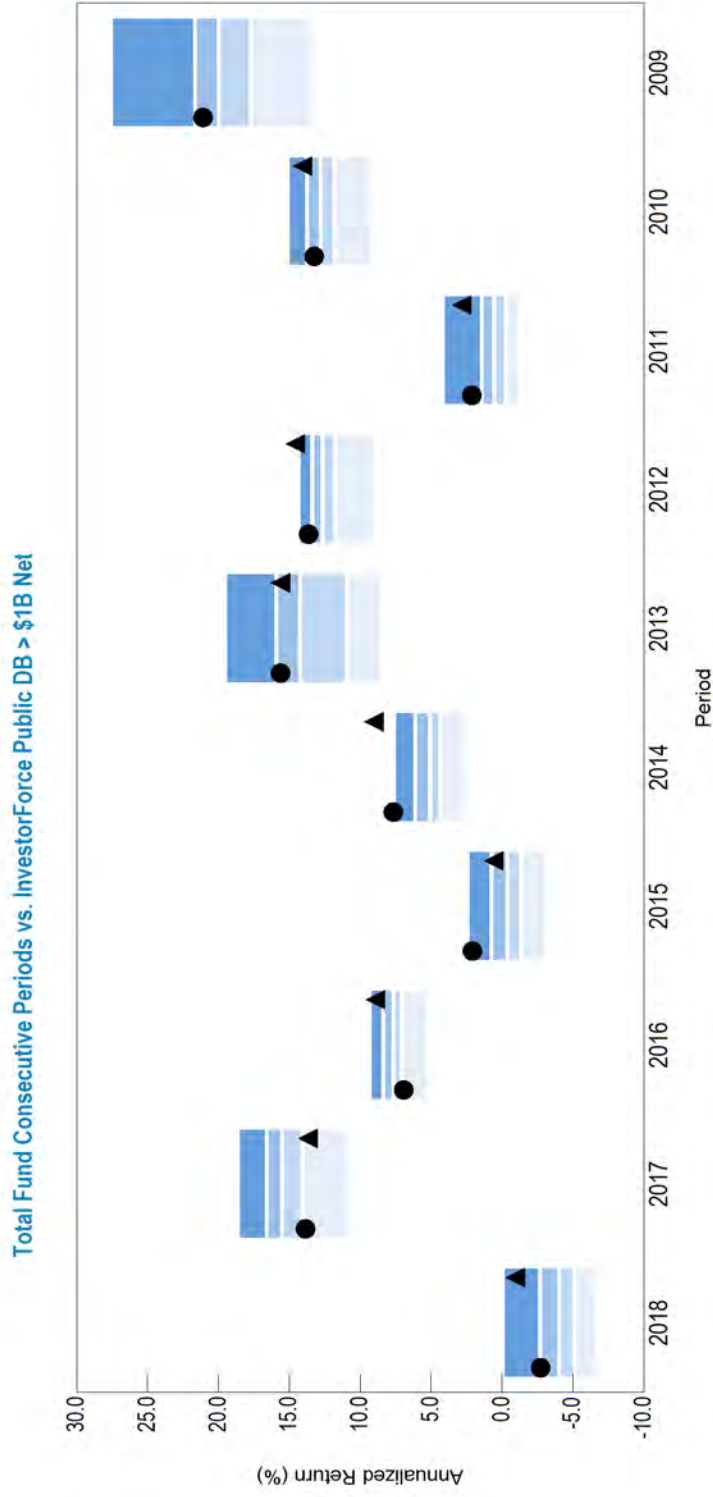
Total Fund Consecutive Periods vs. InvestorForce Public DB > \$1B Gross



Return (Rank)	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
5th Percentile	0.0	18.8	9.7	2.7	8.5	20.2	14.7	3.3	15.7	27.7
25th Percentile	-2.6	17.2	8.6	1.1	6.8	17.0	13.9	1.6	14.2	22.5
Median	-3.7	16.2	8.0	0.3	5.7	15.0	13.0	0.8	13.5	20.5
75th Percentile	-5.1	14.8	7.4	-0.7	4.9	12.0	12.1	0.1	12.5	18.1
95th Percentile	-6.6	12.4	5.5	-2.8	3.1	8.7	9.2	-0.9	10.2	13.4
# of Portfolios	71	98	92	98	79	67	74	68	66	66
● Total Fund	-2.5 (25)	14.2 (83)	7.4 (74)	2.7 (5)	8.4 (6)	16.4 (33)	14.3 (13)	2.7 (9)	14.0 (29)	21.9 (34)
▲ Policy Index	-0.9 (8)	13.7 (89)	8.9 (15)	0.6 (40)	9.0 (2)	15.6 (43)	14.6 (8)	2.8 (9)	14.1 (27)	-- (--)

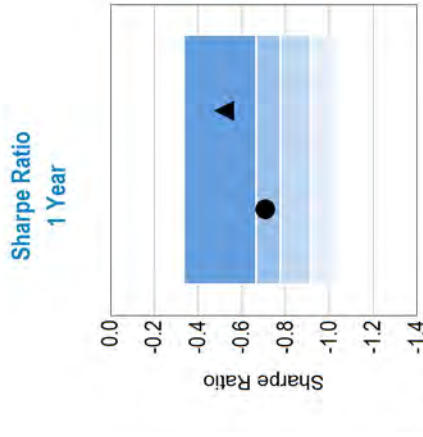
Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation.

Total Fund
Peer Universe Comparison: Consecutive Periods (Net of Fees) Period Ending: December 31, 2018

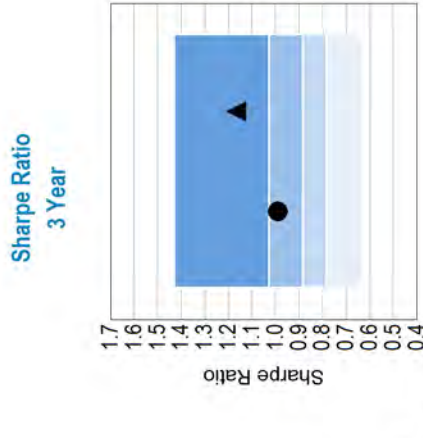


Year	5th Percentile	25th Percentile	Median	75th Percentile	95th Percentile	# of Portfolios	Total Fund	Policy Index
2009	-0.1	18.6	16.6	15.6	14.3	63	27.5	21.1 (33)
2010	-2.7	16.6	15.6	14.1	13.4	61	15.1	14.1 (15)
2011	-4.0	14.1	13.7	12.7	12.8	62	15.1	14.1 (15)
2012	-5.1	14.1	13.7	11.8	11.8	62	15.1	14.1 (15)
2013	-6.6	10.7	10.7	9.0	9.0	62	15.1	14.1 (15)
2014	6.3	6.1	5.1	4.4	4.4	55	4.2	2.8 (11)
2015	-2.7	2.4	0.8	-0.4	-0.3	57	4.2	2.8 (11)
2016	-0.1	9.3	8.4	7.1	7.6	62	4.2	2.8 (11)
2017	-2.7	18.6	16.6	14.1	14.3	61	4.2	2.8 (11)
2018	-0.1	18.6	16.6	14.1	14.3	61	4.2	2.8 (11)

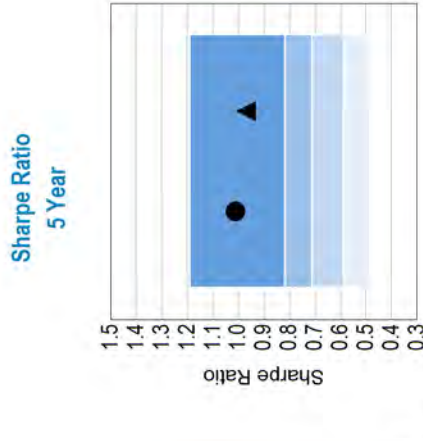
Total Fund
 Sharpe Ratio Ranking (Gross of Fees) Period Ending: December 31, 2018



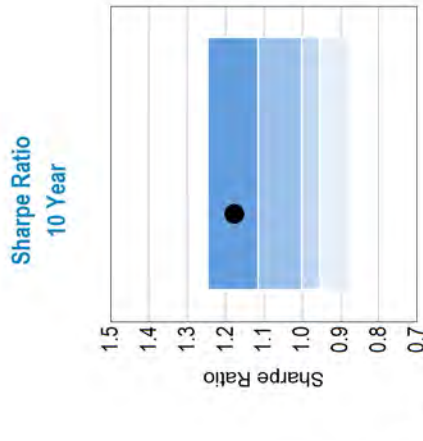
● Total Fund Value	-0.7
▲ Policy Index Value	35
● Total Fund Value	-0.5
▲ Policy Index Value	10
Universe 5th %tile	-0.3
Universe 25th %tile	-0.7
Universe Median	-0.8
Universe 75th %tile	-0.9
Universe 95th %tile	-1.0



● Total Fund Value	1.0
▲ Policy Index Value	31
● Total Fund Value	1.2
▲ Policy Index Value	13
Universe 5th %tile	1.4
Universe 25th %tile	1.0
Universe Median	0.9
Universe 75th %tile	0.8
Universe 95th %tile	0.6



● Total Fund Value	1.0
▲ Policy Index Value	9
● Total Fund Value	1.0
▲ Policy Index Value	10
Universe 5th %tile	1.2
Universe 25th %tile	0.8
Universe Median	0.7
Universe 75th %tile	0.6
Universe 95th %tile	0.5



● Total Fund Value	1.2
▲ Policy Index Value	7
● Total Fund Value	--
▲ Policy Index Value	--
Universe 5th %tile	1.2
Universe 25th %tile	1.1
Universe Median	1.0
Universe 75th %tile	1.0
Universe 95th %tile	0.9

Domestic Equity Managers

Jackson Square Partners Manager Portfolio Overview

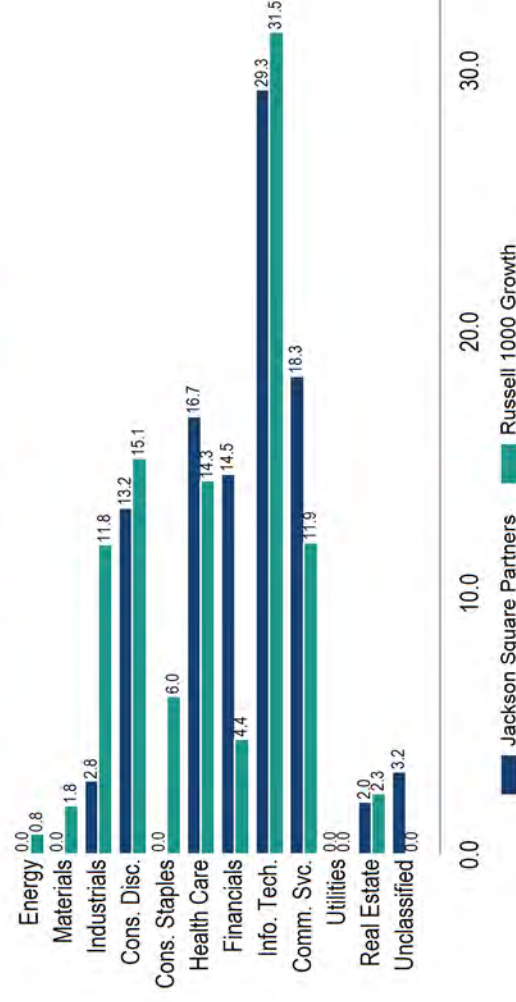
Period Ending: December 31, 2018

Domestic equity large cap growth portfolio concentrated in companies with sustainable long-term growth characteristics. Primary personnel include Jeffrey Van Harte, Christopher Bonavico, Christopher Ericksen, and Daniel Prislín.

Characteristics

	Portfolio	Russell 1000 Growth
Number of Holdings	29	546
Weighted Avg. Market Cap. (\$B)	144.27	222.12
Median Market Cap. (\$B)	43.50	10.28
Price To Earnings	29.15	23.28
Price To Book	6.65	8.63
Price To Sales	6.30	5.46
Return on Equity (%)	23.80	32.72
Yield (%)	0.93	1.45
Beta	0.92	1.00

Sector Allocation (%) vs Russell 1000 Growth



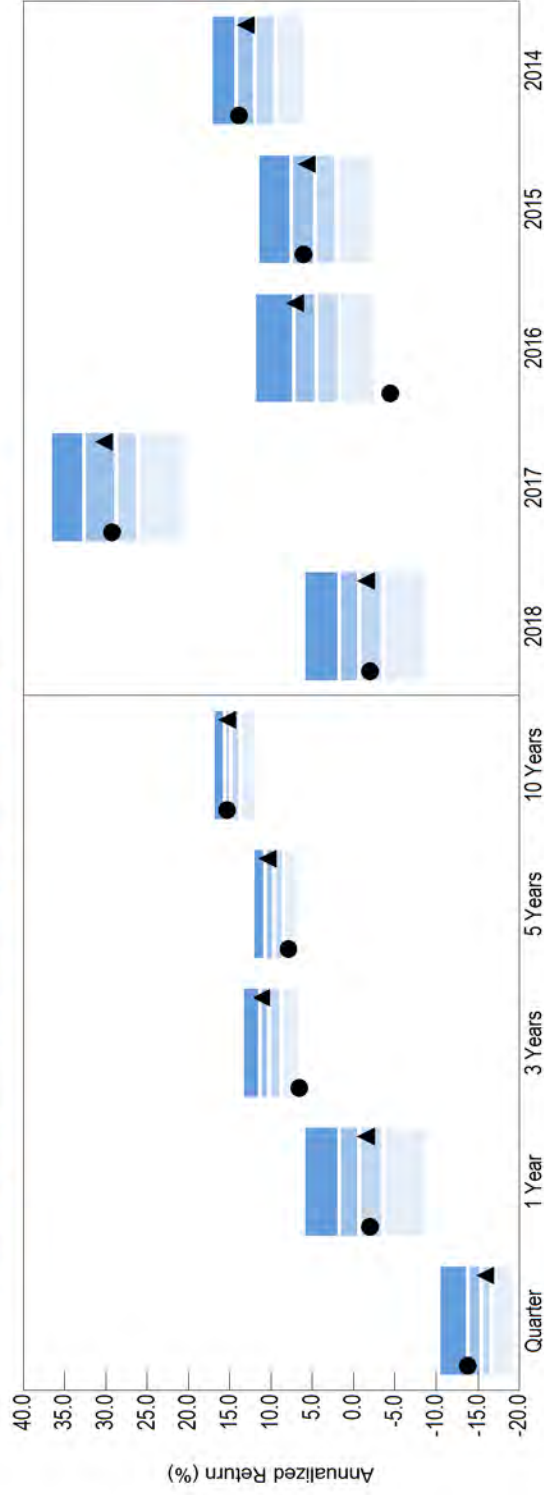
Largest Holdings

	End Weight	Return	Top Contributors		Bottom Contributors			
			Avg Wgt	Return	Contribution	Avg Wgt	Return	Contribution
MICROSOFT	9.10	-10.80	2.54	11.99	0.30	3.93	-32.78	-1.29
IQVIA HOLDINGS	5.28	-10.46	3.93	5.62	0.22	4.32	-27.64	-1.20
KKR AND A	4.35	-27.64	1.15	10.75	0.12	8.95	-10.80	-0.97
BIOGEN	4.35	-14.83	3.58	0.90	0.03	3.72	-25.40	-0.95
DOLLAR GENERAL	4.20	-0.84	3.82	-0.84	-0.03	3.80	-22.18	-0.84
TRIPADVISOR 'A'	4.18	5.62	2.83	-1.47	-0.04	2.43	-34.51	-0.84
HASBRO	4.18	-22.18	0.54	-14.99	-0.08	3.14	-26.70	-0.84
TAKE TWO INTACT.SFTW.	4.01	-25.40	0.64	-26.24	-0.17	4.93	-14.83	-0.73
UNITEDHEALTH GROUP	3.98	-6.06	4.07	-4.27	-0.17	4.11	-15.16	-0.62
INTERCONTINENTAL EX.	3.87	0.90	1.53	-13.23	-0.20	3.44	-17.62	-0.61

Unclassified sector allocation includes cash allocations.

Jackson Square Partners
 Manager Performance Comparisons (Gross of Fees) Period Ending: December 31, 2018

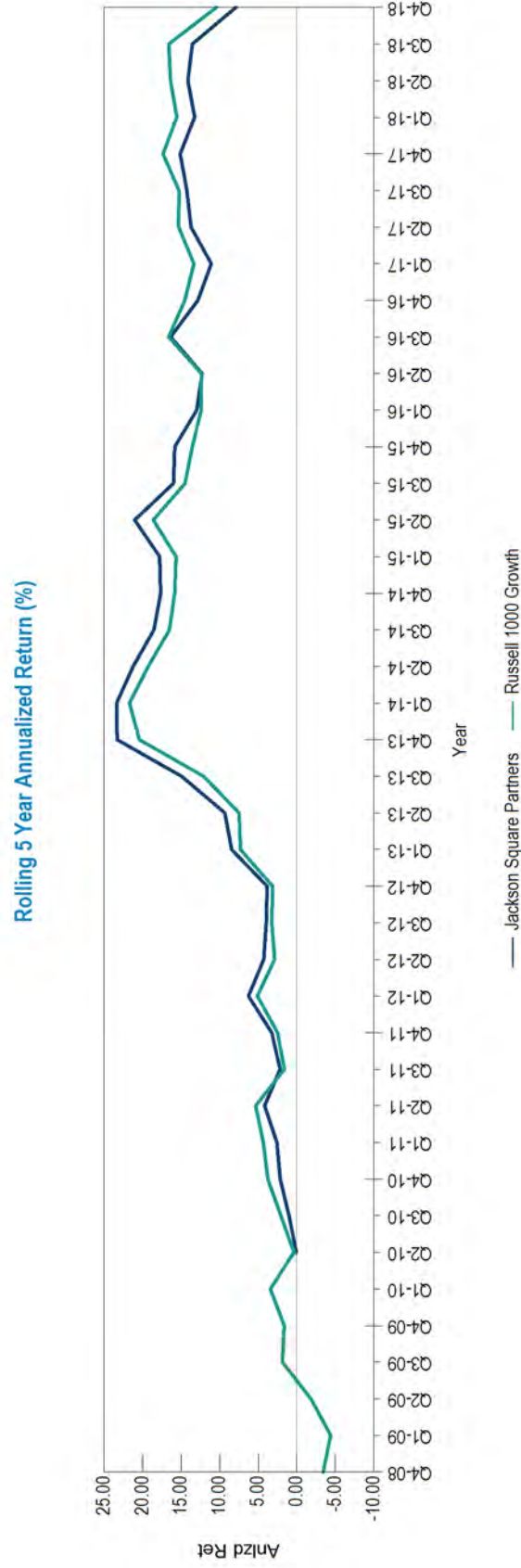
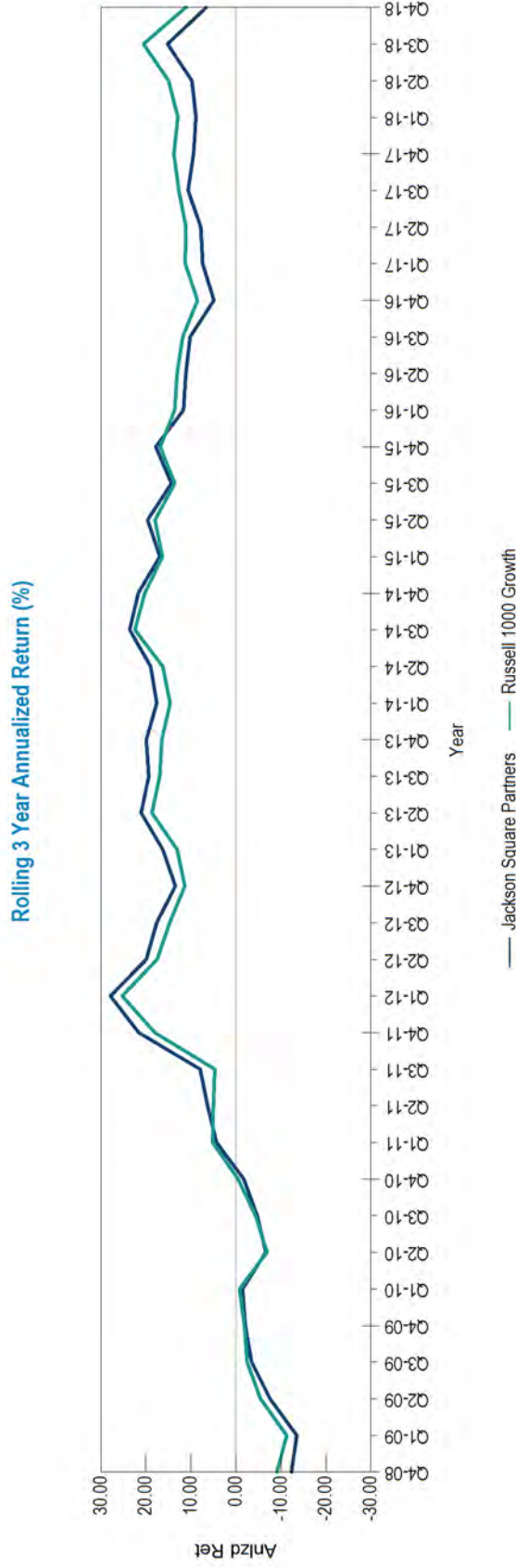
Jackson Square Partners vs. eV US Large Cap Growth Equity Gross Universe



Return (Rank)

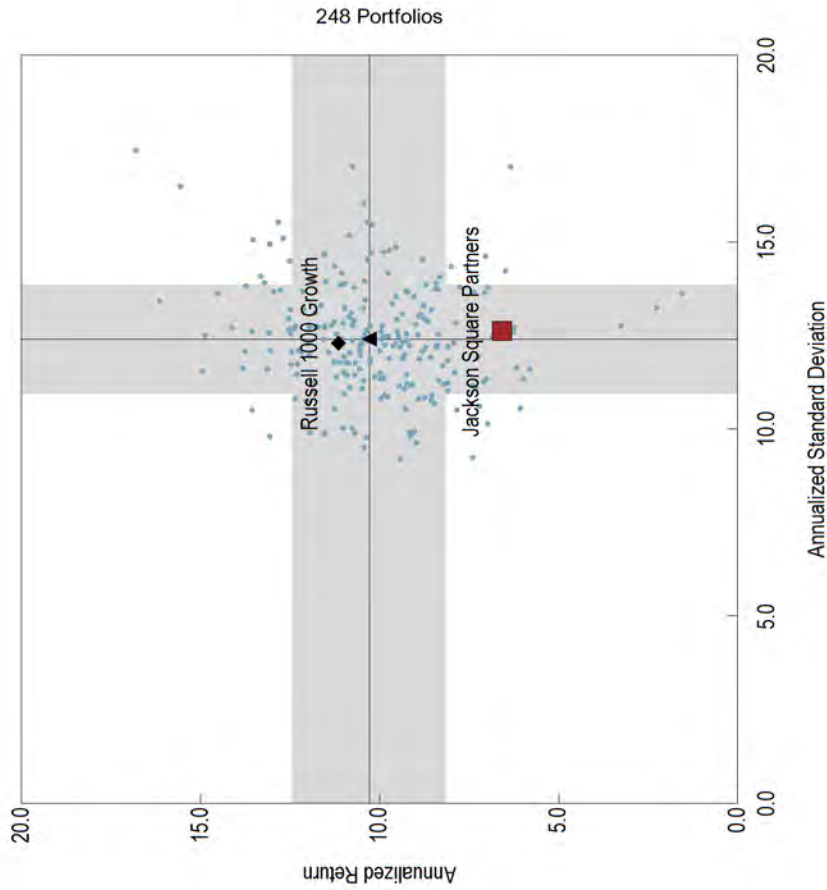
5th Percentile	-10.3	6.1	13.5	12.2	17.0	36.7	12.0	11.6	17.3
25th Percentile	-13.8	1.7	11.4	10.8	15.7	32.7	7.3	7.6	14.3
Median	-15.3	-0.6	10.3	9.6	14.9	28.8	4.6	4.7	12.0
75th Percentile	-16.6	-3.5	8.8	8.5	13.8	26.2	1.8	2.1	9.5
95th Percentile	-19.2	-8.8	6.6	6.8	11.6	20.5	-2.7	-2.4	5.8
# of Portfolios	255	255	248	244	217	265	282	270	291
● Jackson Square Partners	-13.7 (25)	-2.0 (59)	6.6 (96)	7.9 (82)	15.3 (35)	29.3 (47)	-4.4 (98)	6.1 (37)	13.9 (31)
▲ Russell 1000 Growth	-15.9 (60)	-1.5 (57)	11.1 (29)	10.4 (32)	15.3 (36)	30.2 (42)	7.1 (26)	5.7 (42)	13.0 (38)

Jackson Square Partners
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees) Period Ending: December 31, 2018

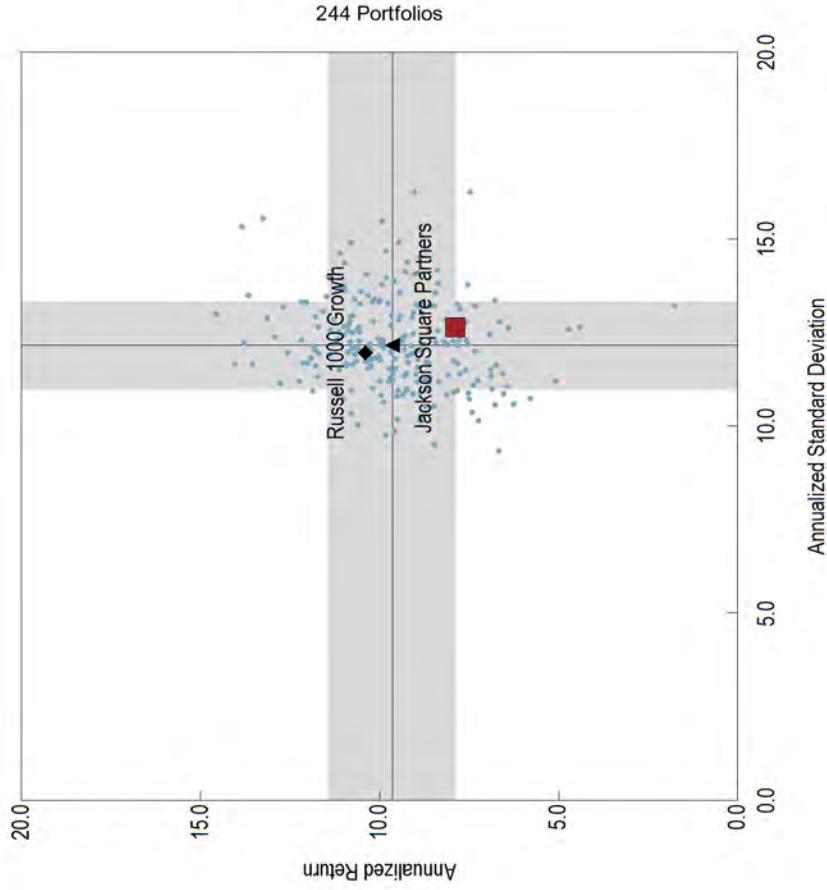


Jackson Square Partners
 Risk vs. Return 3 & 5 Year (Gross of Fees) Period Ending: December 31, 2018

3 Years



5 Years



3 Years

5 Years

Portfolio	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Jackson Square Partners	6.6%	12.6%	0.4
Russell 1000 Growth	11.1%	12.3%	0.8
eV US Large Cap Growth Equity Gross Median	10.3%	12.4%	0.7
Jackson Square Partners	7.9%	12.6%	0.6
Russell 1000 Growth	10.4%	12.0%	0.8
eV US Large Cap Growth Equity Gross Median	9.6%	12.2%	0.7

Robeco Boston Partners Manager Portfolio Overview

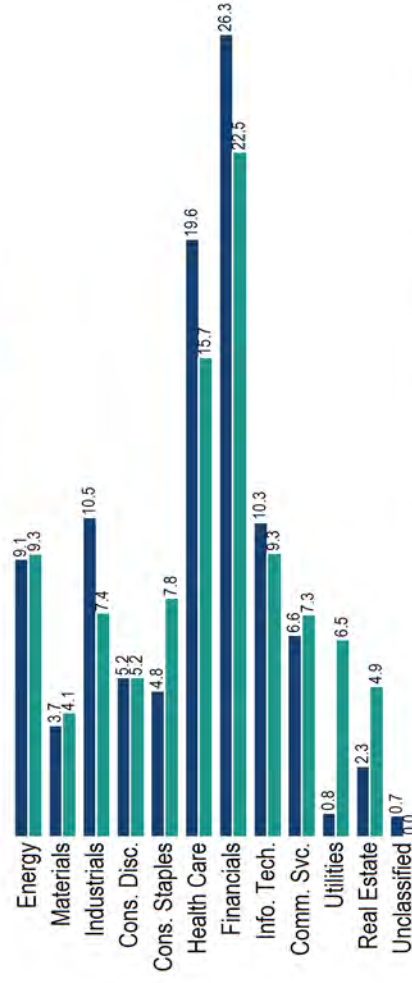
Period Ending: December 31, 2018

Domestic equity large cap value portfolio exhibiting low turnover in companies with low valuations relative to intrinsic value. Primary personnel include Mark Donovan and David Pyle.

Characteristics

	Portfolio	Russell 1000 Value
Number of Holdings	84	725
Weighted Avg. Market Cap. (\$B)	143.70	111.52
Median Market Cap. (\$B)	34.86	8.19
Price To Earnings	16.43	18.10
Price To Book	2.88	2.57
Price To Sales	2.69	3.05
Return on Equity (%)	17.65	14.22
Yield (%)	2.76	2.83
Beta	1.15	1.00

Sector Allocation (%) vs Russell 1000 Value



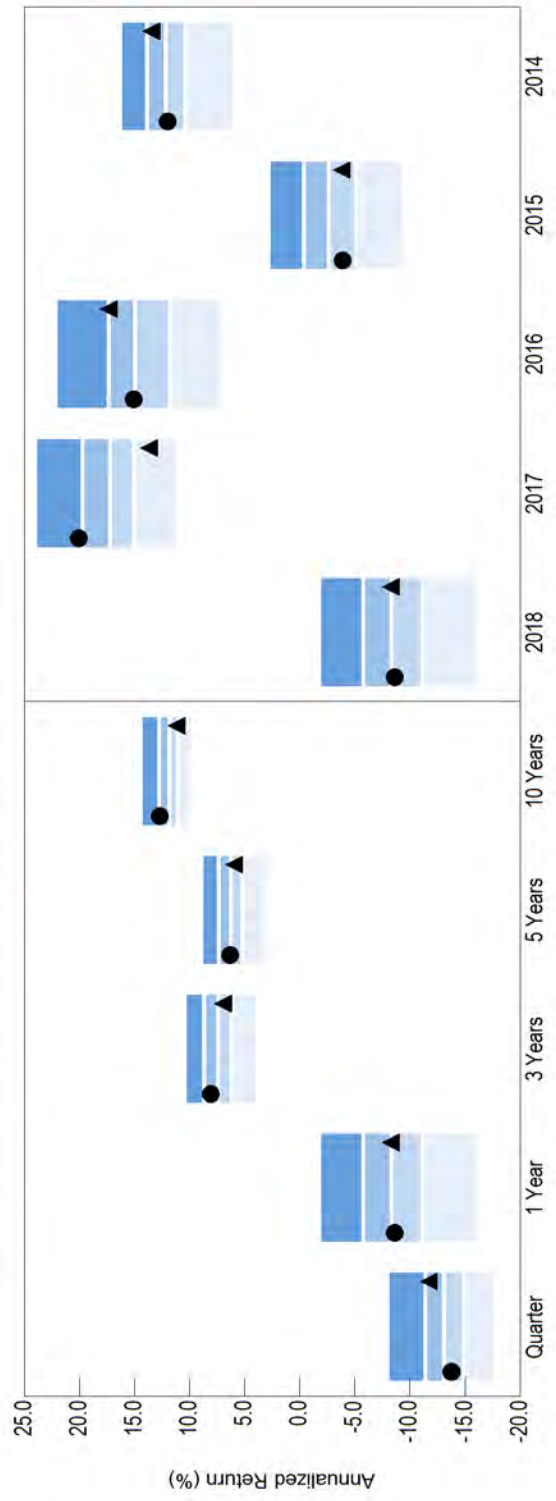
Largest Holdings

	End Weight	Return	Avg Wgt	Contribution	Return	Contribution
BERKSHIRE HATHAWAY 'B'	4.55	-4.64	2.29	0.15	6.45	0.15
JOHNSON & JOHNSON	4.55	-6.01	1.15	0.10	8.49	0.10
CISCO SYSTEMS	3.53	-10.33	0.77	0.09	11.43	0.09
JP MORGAN CHASE & CO.	3.39	-12.89	0.54	0.06	10.75	0.06
PFIZER	3.29	-0.19	0.73	0.01	1.52	0.01
COMCAST A	3.16	-2.79	0.17	0.01	5.38	0.01
BANK OF AMERICA	2.92	-15.88	0.26	0.00	0.44	0.00
PROCTER & GAMBLE	2.86	11.43	0.17	0.00	0.15	0.00
CHEVRON	2.73	-10.18	0.17	0.00	0.05	0.00
WELLS FARGO & CO	2.63	-11.62	1.04	0.00	-0.41	0.00
VERIZON COMMUNICATIONS			3.07		-26.94	
MERCK & COMPANY			3.75		-15.88	
PROCTER & GAMBLE			1.30		-42.97	
DOLLAR TREE			3.75		-12.89	
COCA COLA EUROPEAN PARTNERS			1.70		-25.66	
PULTEGROUP EQUITY			1.80		-23.41	
RES.D.TST.PROPS.SHBI			3.24		-11.62	
ESSEX PROPERTY TST.			3.42		-10.33	
TOLL BROTHERS			2.15		-16.19	
NOVARTIS 'B' SPN-ADR			1.73		-19.11	

Unclassified sector allocation includes cash allocations.

Robeco Boston Partners
 Manager Performance Comparisons (Gross of Fees) Period Ending: December 31, 2018

Robeco Boston Partners vs. eV US Large Cap Value Equity Gross Universe

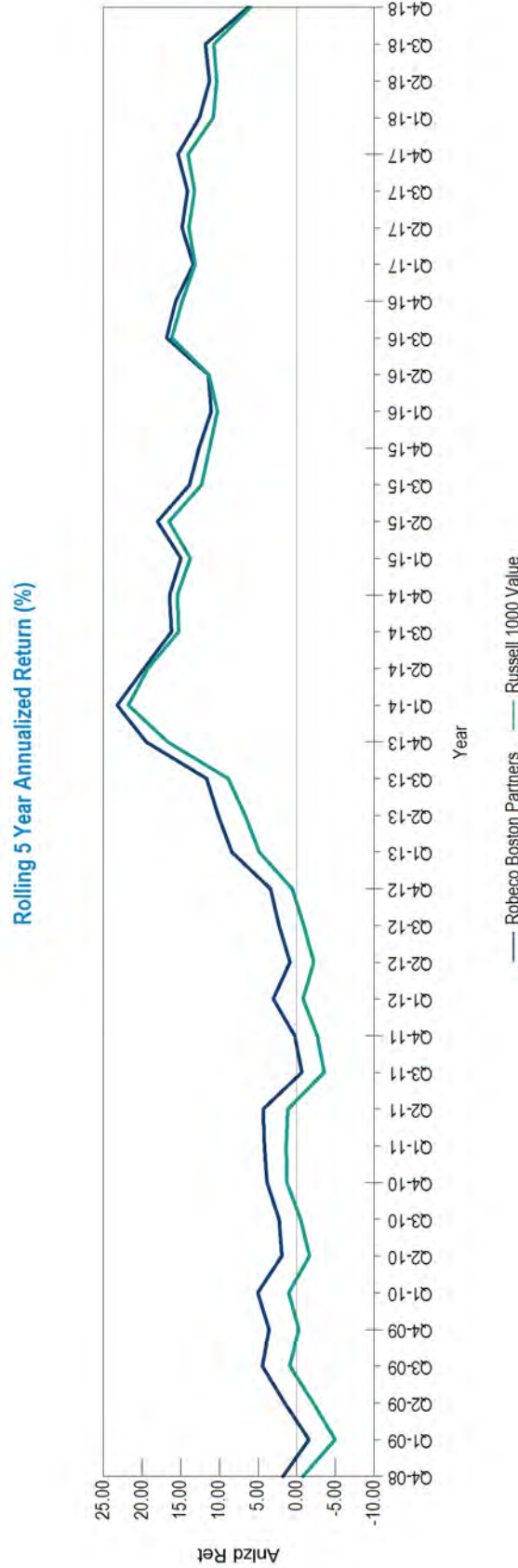
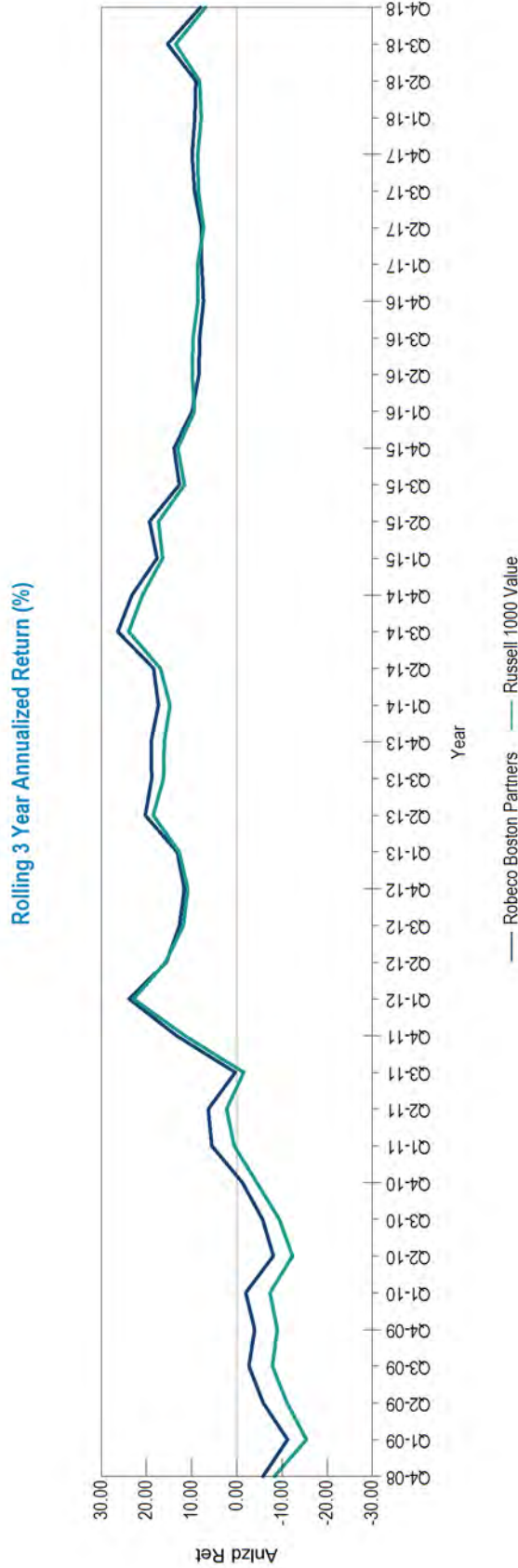


Return (Rank)

5th Percentile	25th Percentile	Median	75th Percentile	95th Percentile	# of Portfolios	2014	2015	2016	2017	2018	10 Years	5 Years	3 Years	1 Year	Quarter
-8.1	-11.4	-13.1	-14.8	-17.6	336	16.3	2.8	22.1	24.0	-1.8	14.4	8.9	10.4	-1.8	-15.0
13.9	-0.4	-2.6	-5.1	-9.4	307	13.9	-0.4	17.4	19.8	-5.8	12.8	7.3	8.7	-5.8	-11.4
12.2	10.4	11.8	15.0	17.0	346	12.2	-2.6	15.0	17.2	-8.3	11.9	6.3	7.4	-8.3	-13.1
5.9	7.0	7.0	7.0	7.0	333	5.9	-9.4	7.0	11.2	-11.1	11.1	5.2	6.2	-11.1	-14.8
12.0 (55)	-3.9 (65)	-3.8 (64)	15.1 (50)	17.3 (26)	336	12.0	3.12	15.1	20.1 (23)	-8.7 (55)	12.7 (28)	6.3 (50)	8.1 (36)	-8.7 (55)	-13.8 (59)
13.5 (33)	-3.8 (64)	-3.8 (64)	17.3 (26)	13.7 (87)	336	13.5	-3.8	17.3	13.7 (87)	-8.3 (50)	11.2 (74)	5.9 (60)	7.0 (59)	-8.3 (50)	-11.7 (30)

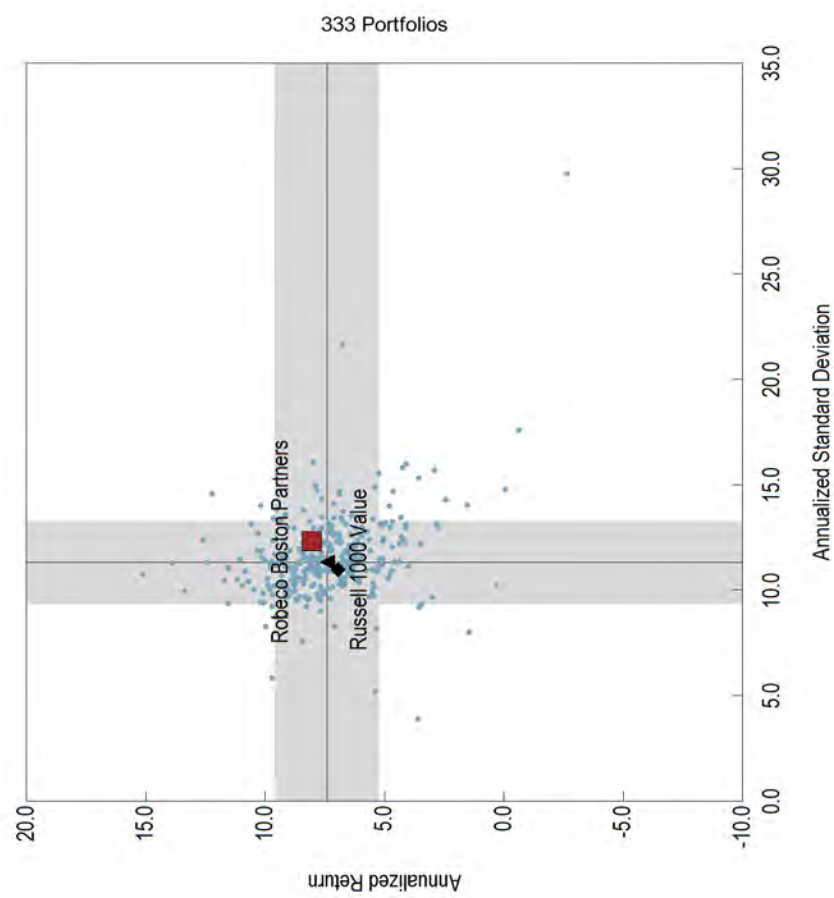
● Robeco Boston Partners
 ▲ Russell 1000 Value

Robeco Boston Partners
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees) Period Ending: December 31, 2018

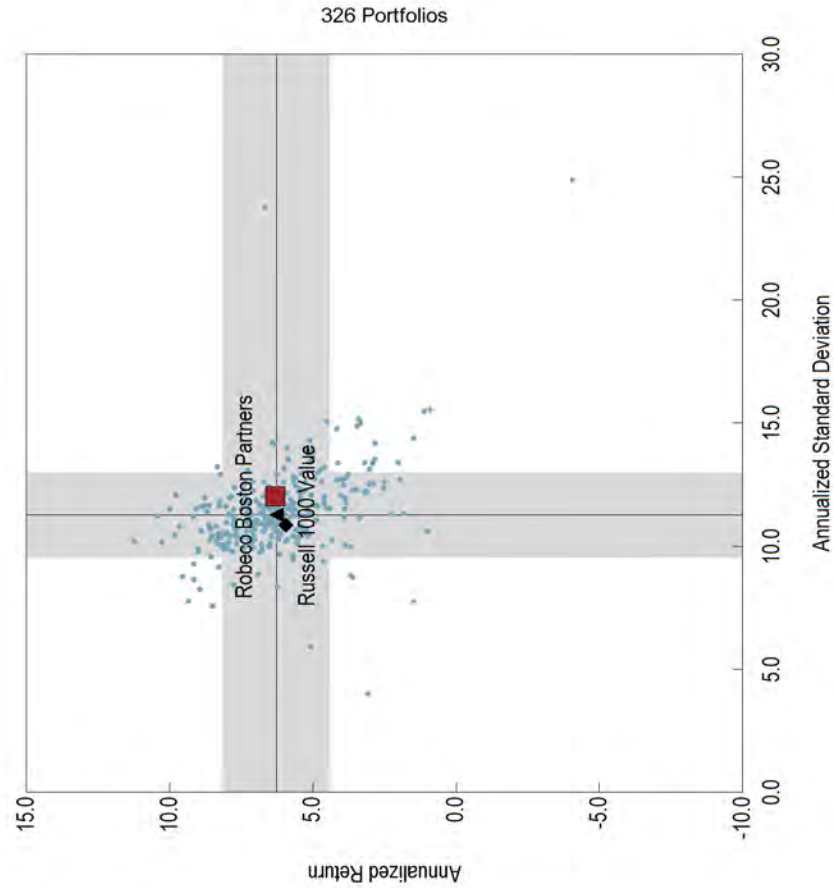


Robeco Boston Partners
 Risk vs. Return 3 & 5 Year (Gross of Fees) Period Ending: December 31, 2018

3 Years



5 Years



3 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Robeco Boston Partners	8.1%	12.3%	0.6
Russell 1000 Value	7.0%	11.0%	0.5
eV US Large Cap Value Equity Gross Median	7.4%	11.3%	0.5

5 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Robeco Boston Partners	6.3%	12.0%	0.5
Russell 1000 Value	5.9%	10.9%	0.5
eV US Large Cap Value Equity Gross Median	6.3%	11.3%	0.5

Emerald Advisers Manager Portfolio Overview

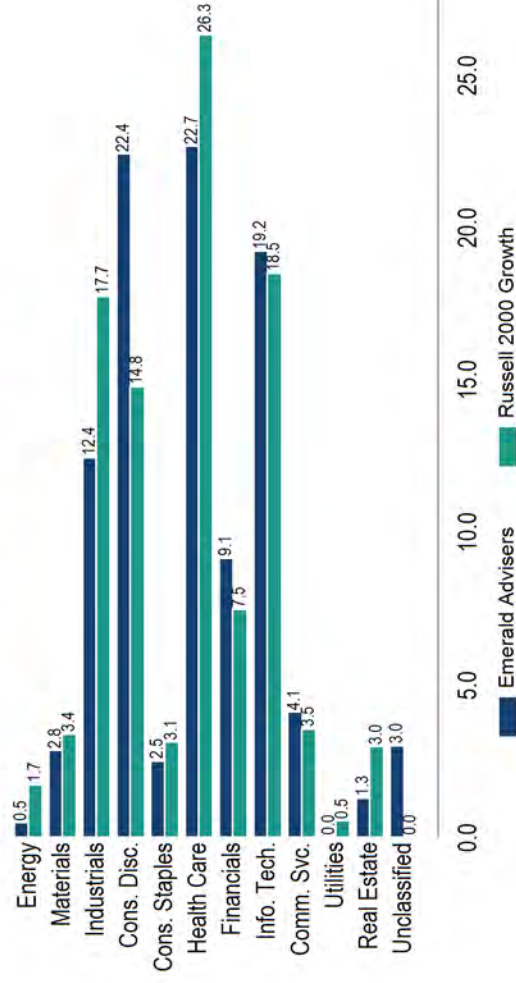
Period Ending: December 31, 2018

Domestic equity small cap growth portfolio of companies with significantly high growth rates. Primary personnel include Kenneth Mertz, Joseph Garner, and Stacey Sears.

Characteristics

	Portfolio	Russell 2000 Growth
Number of Holdings	118	1,257
Weighted Avg. Market Cap. (\$B)	2.41	2.17
Median Market Cap. (\$B)	1.53	0.78
Price To Earnings	5.89	14.61
Price To Book	5.91	4.90
Price To Sales	3.86	3.66
Return on Equity (%)	-2.95	7.00
Yield (%)	0.52	0.60
Beta	1.08	1.00

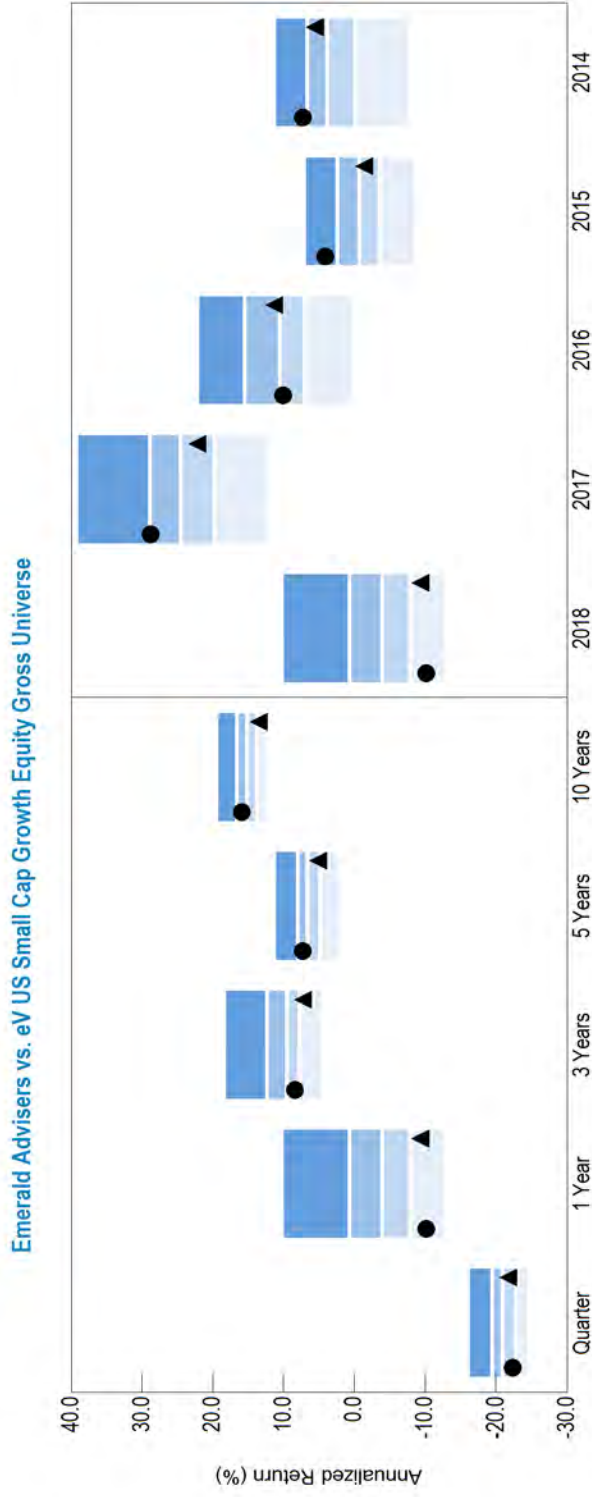
Sector Allocation (%) vs Russell 2000 Growth



Largest Holdings

	End Weight	Return	Top Contributors				Bottom Contributors					
			Avg Wgt	Return	Contribution	Avg Wgt	Return	Contribution				
CHEGG	3.29	-0.04	1.04	19.23	0.20	2.20	-38.35	-0.84	VONAGE HOLDINGS	2.20	-38.35	-0.84
CIENA	2.20	8.55	1.77	8.55	0.15	1.77	-35.29	-0.62	CADENCE BANCORP.'A'	1.77	-35.29	-0.62
PLANET FITNESS CLA	2.15	-0.76	0.73	19.89	0.14	0.80	-63.38	-0.51	G1 THERAPEUTICS	0.80	-63.38	-0.51
TREX	2.03	-22.89	0.85	7.57	0.06	1.18	-42.59	-0.50	TELADOC HEALTH	1.18	-42.59	-0.50
EPAM SYSTEMS	2.02	-15.75	0.89	5.96	0.05	1.75	-27.78	-0.49	VARONIS SYSTEMS	1.75	-27.78	-0.49
FIVE BELOW	2.00	-21.33	0.89	5.96	0.05	0.69	-67.90	-0.47	AVROBIO	0.69	-67.90	-0.47
VONAGE HOLDINGS	1.75	-38.35	0.55	8.32	0.05	1.51	-30.79	-0.47	OLLIES BARGAIN OUTLET HLDG.	1.51	-30.79	-0.47
VARONIS SYSTEMS	1.74	-27.78	0.72	6.24	0.04	1.57	-29.13	-0.46	CHILDRENS PLACE	1.57	-29.13	-0.46
CADENCE BANCORP.'A'	1.54	-35.29	0.83	3.02	0.03	2.00	-21.33	-0.43	FIVE BELOW	2.00	-21.33	-0.43
TELADOC HEALTH	1.53	-42.59	0.21	0.42	0.00	1.34	-31.38	-0.42	REATA PHARMS.CLA	1.34	-31.38	-0.42
			0.24	-0.20	0.00				HORIZON PHARMA	0.24	-0.20	0.00

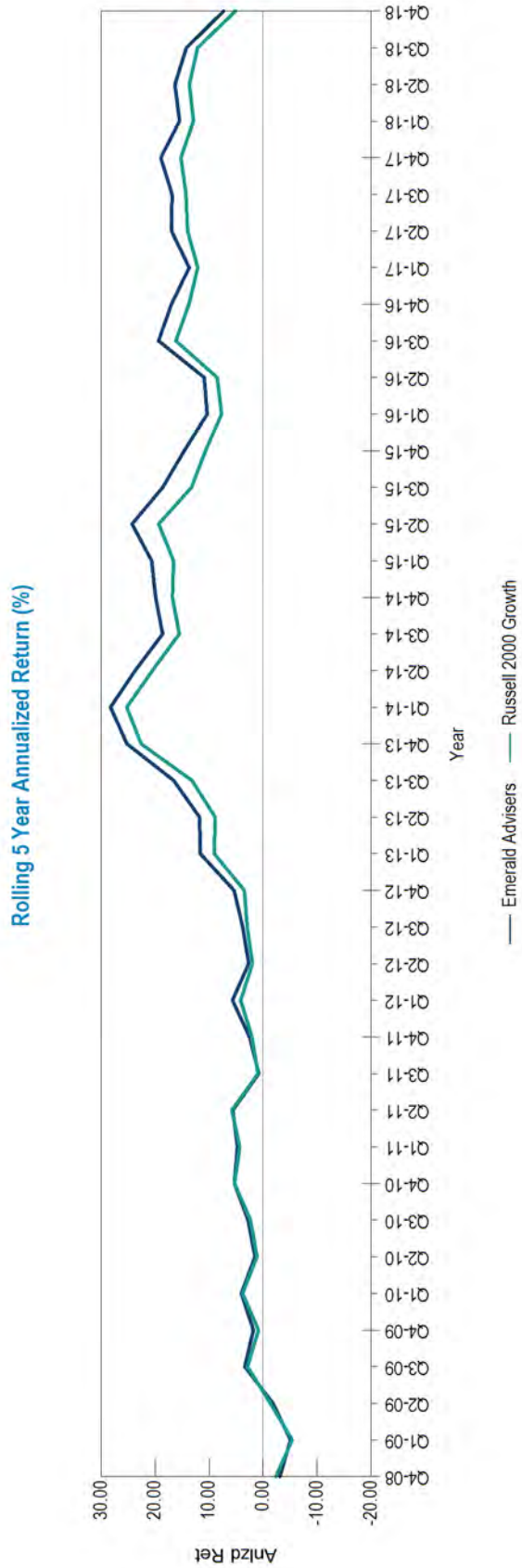
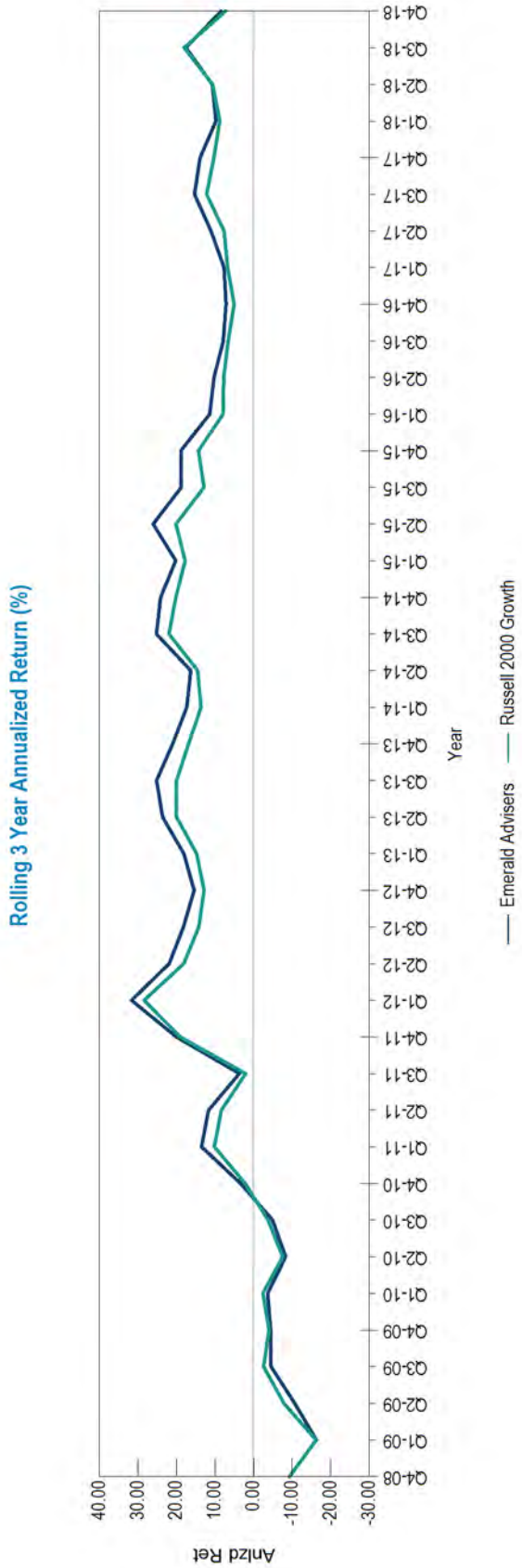
Unclassified sector allocation includes cash allocations.



Return (Rank)

5th Percentile	-16.1	10.2	18.3	11.3	19.4	10.2	39.2	22.2	7.1	11.3
25th Percentile	-19.4	0.7	12.4	8.1	16.6	0.7	28.9	15.5	2.5	6.7
Median	-20.8	-3.9	9.6	6.7	15.2	-3.9	24.6	10.6	-0.6	3.9
75th Percentile	-22.7	-7.9	7.8	4.9	13.9	-7.9	19.8	7.1	-3.5	-0.1
95th Percentile	-24.6	-12.8	4.6	2.1	12.4	-12.8	12.1	0.2	-8.7	-7.6
# of Portfolios	164	164	160	155	140	164	174	170	154	161
● Emerald Advisers	-22.3 (72)	-10.1 (85)	8.4 (69)	7.3 (38)	15.9 (34)	-10.1 (85)	28.8 (26)	10.1 (54)	4.1 (19)	7.3 (21)
▲ Russell 2000 Growth	-21.7 (65)	-9.3 (80)	7.2 (80)	5.1 (73)	13.5 (81)	-9.3 (80)	22.2 (62)	11.3 (49)	-1.4 (59)	5.6 (32)

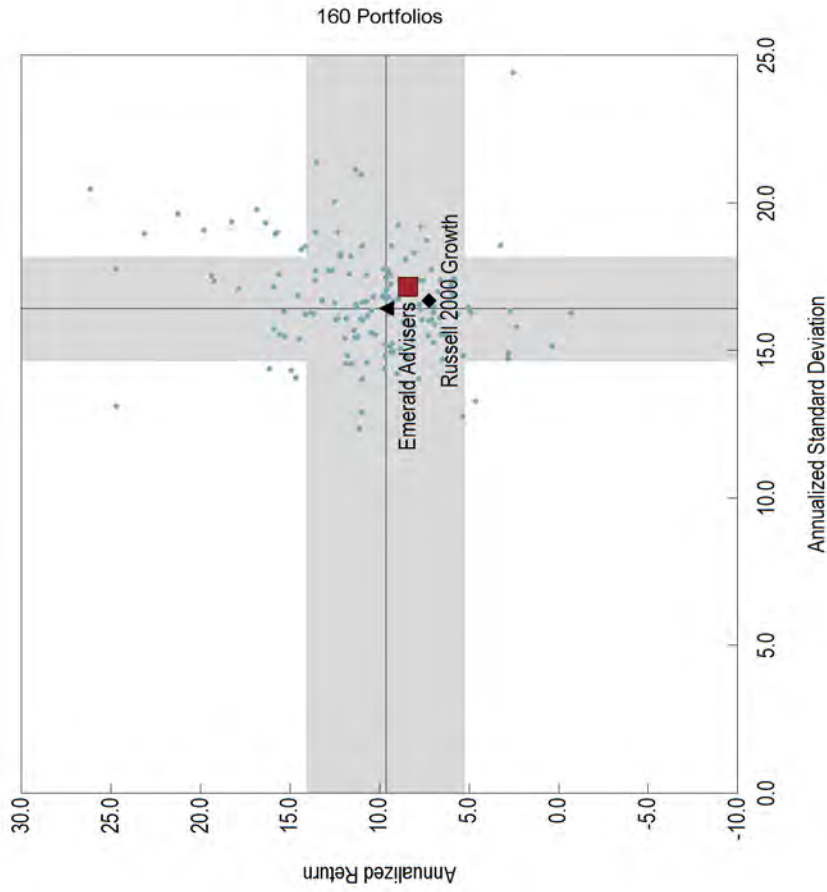
Emerald Advisers
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees) Period Ending: December 31, 2018



Emerald Advisers Period Ending: December 31, 2018
Risk vs. Return 3 & 5 Year (Gross of Fees)

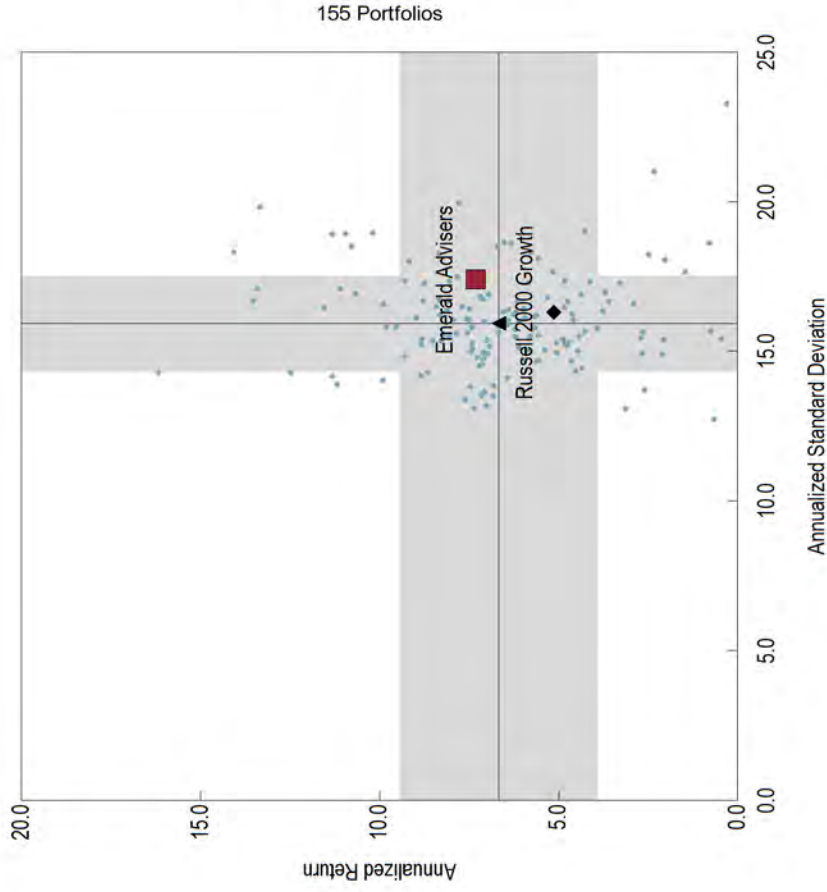
3 Years

5 Years



3 Years

5 Years



	Emerald Advisers	Russell 2000 Growth	eV US Small Cap Growth Equity Gross Median
3 Years Annualized Return	8.4%	7.2%	9.6%
3 Years Annualized Standard Deviation	17.2%	16.7%	16.4%
3 Years Sharpe Ratio	0.4	0.4	0.5
5 Years Annualized Return	7.3%	5.1%	6.7%
5 Years Annualized Standard Deviation	17.4%	16.3%	15.9%
5 Years Sharpe Ratio	0.4	0.3	0.4

Ceredex Manager Portfolio Overview

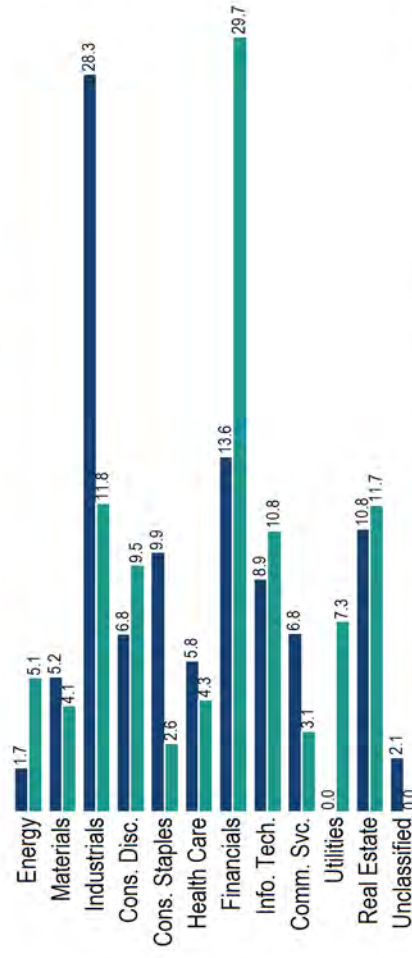
Period Ending: December 31, 2018

Domestic equity small cap value portfolio of companies with dividend yields and low valuations. Primary personnel include Brett Barner and David Maynard.

Characteristics

	Portfolio	Russell 2000 Value
Number of Holdings	81	1,387
Weighted Avg. Market Cap. (\$B)	2.22	1.81
Median Market Cap. (\$B)	1.57	0.59
Price To Earnings	19.07	13.15
Price To Book	2.44	1.53
Price To Sales	2.30	2.65
Return on Equity (%)	15.23	7.78
Yield (%)	2.94	2.22
Beta	0.79	1.00

Sector Allocation (%) vs Russell 2000 Value



Top Contributors

	End Weight	Return	Avg Wgt	Contribution	Return	Avg Wgt	Contribution
B & G FOODS	4.96	6.99	4.08	0.29	6.99	4.38	-22.51
POWER INTEGRATIONS	4.81	-3.26	1.28	0.25	19.23	3.73	-24.05
MEREDITH	4.77	2.68	4.63	0.12	2.68	2.72	-28.40
ENERGIZER HOLDINGS	4.60	-22.51	0.02	0.00	2.19	4.09	-17.23
HILL-ROM HOLDINGS	4.34	-6.00	0.22	0.00	-0.16	2.43	-26.43
KEMPER	4.00	-17.23	0.02	0.00	-14.00	1.45	-39.26
TETRA TECH	3.36	-24.05	0.02	0.00	-20.16	1.23	-45.64
PHYSICIANS REALTY TST.	3.33	-3.59	0.02	0.00	-15.42	1.07	-50.81
TANGER FAC.OUTLET CNTRS.	2.84	-10.28	0.41	-0.01	-1.22	2.36	-20.76
OUTFRONT MEDIA	2.80	-7.61	0.03	-0.01	-21.90	1.71	-27.46

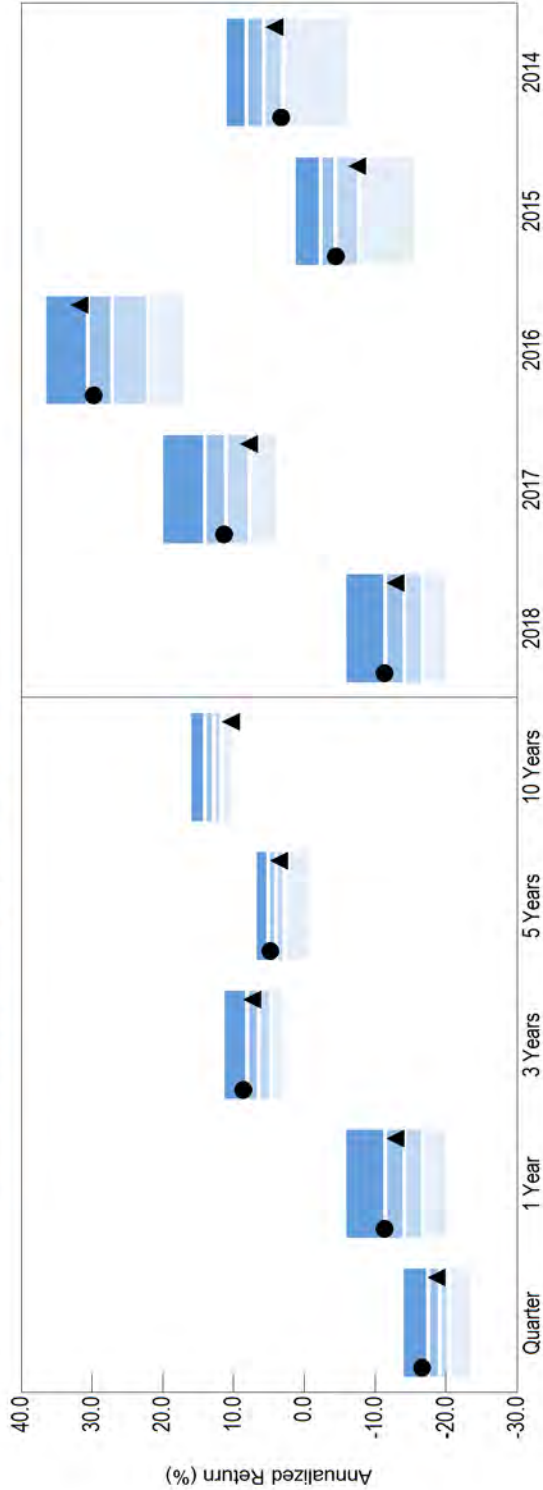
Largest Holdings

	End Weight	Return	Avg Wgt	Contribution	Return	Avg Wgt	Contribution
B & G FOODS	4.96	6.99	4.08	0.29	6.99	4.38	-22.51
POWER INTEGRATIONS	4.81	-3.26	1.28	0.25	19.23	3.73	-24.05
MEREDITH	4.77	2.68	4.63	0.12	2.68	2.72	-28.40
ENERGIZER HOLDINGS	4.60	-22.51	0.02	0.00	2.19	4.09	-17.23
HILL-ROM HOLDINGS	4.34	-6.00	0.22	0.00	-0.16	2.43	-26.43
KEMPER	4.00	-17.23	0.02	0.00	-14.00	1.45	-39.26
TETRA TECH	3.36	-24.05	0.02	0.00	-20.16	1.23	-45.64
PHYSICIANS REALTY TST.	3.33	-3.59	0.02	0.00	-15.42	1.07	-50.81
TANGER FAC.OUTLET CNTRS.	2.84	-10.28	0.41	-0.01	-1.22	2.36	-20.76
OUTFRONT MEDIA	2.80	-7.61	0.03	-0.01	-21.90	1.71	-27.46

Unclassified sector allocation includes cash allocations.

Ceredex
 Manager Performance Comparisons (Gross of Fees) Period Ending: December 31, 2018

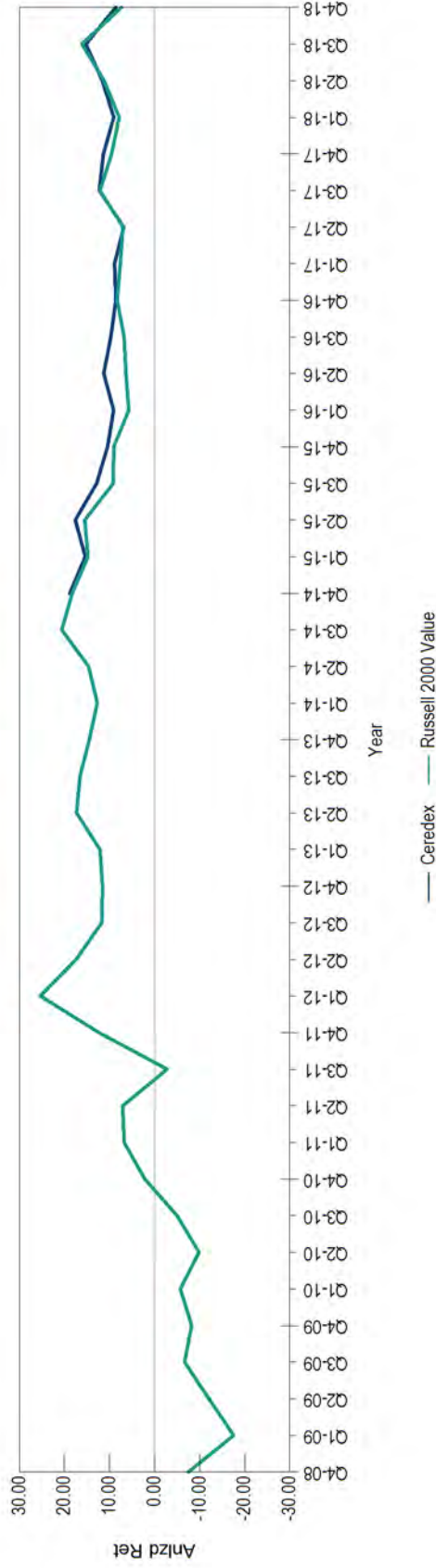
Ceredex vs. eV US Small Cap Value Equity Gross Universe



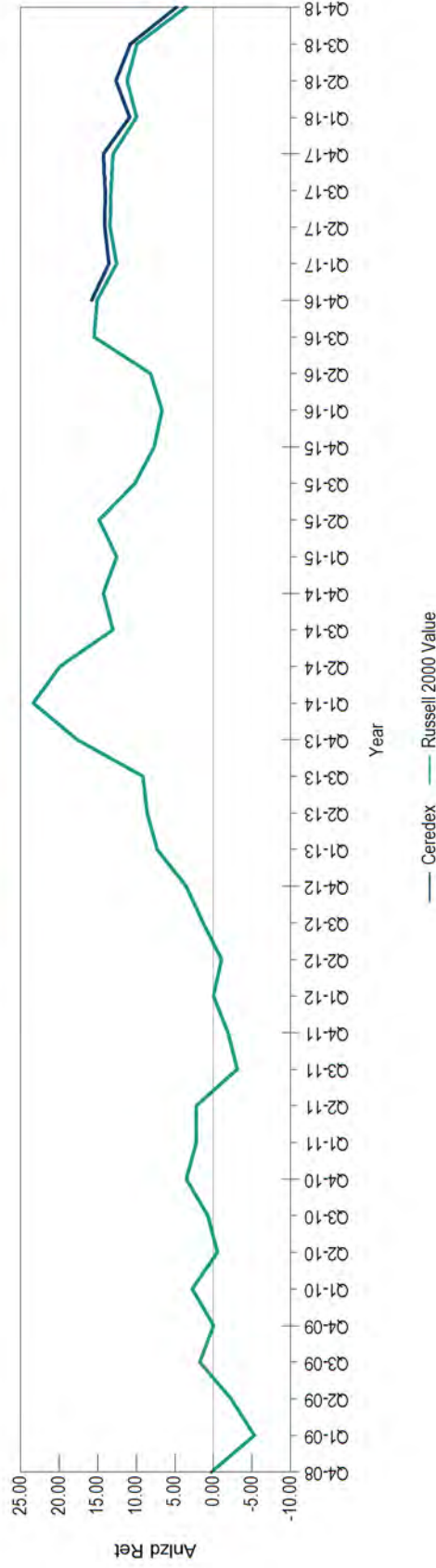
Return (Rank)

Period	5th Percentile	25th Percentile	Median	75th Percentile	95th Percentile	# of Portfolios
Quarter	-13.8	-17.5	-19.0	-20.3	-23.5	220
1 Year	-5.7	-11.4	-14.0	-16.7	-20.2	220
3 Years	11.4	8.2	6.5	4.8	2.7	214
5 Years	7.0	5.2	4.1	2.9	-0.8	205
10 Years	16.2	14.1	12.9	11.7	10.0	177
2014	11.2	8.2	5.8	3.1	-6.3	206
2015	1.5	-2.2	-4.3	-7.7	-15.8	212
2016	36.7	30.7	27.2	22.2	16.8	222
2017	20.2	14.1	11.1	7.8	3.7	224
2018	-5.7	-11.4	-14.0	-16.7	-20.2	220
Ceredex	-16.6 (22)	-11.3 (25)	8.6 (23)	4.8 (33)	4.8 (33)	
Russell 2000 Value	-18.7 (45)	-12.9 (39)	7.4 (36)	3.6 (63)	10.4 (94)	

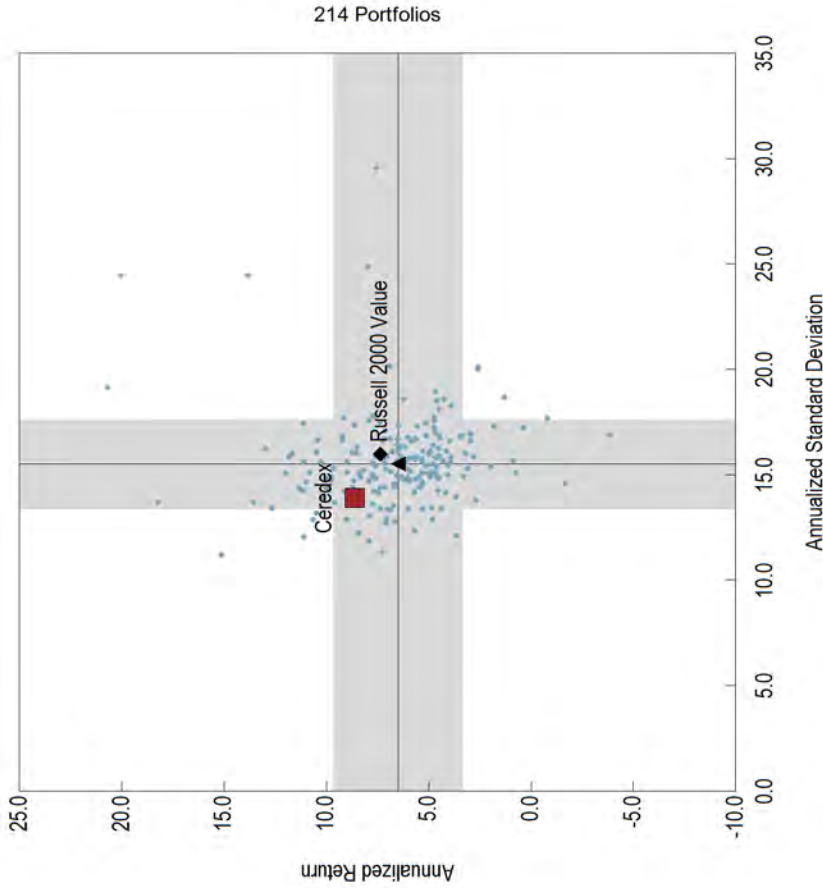
Rolling 3 Year Annualized Return (%)



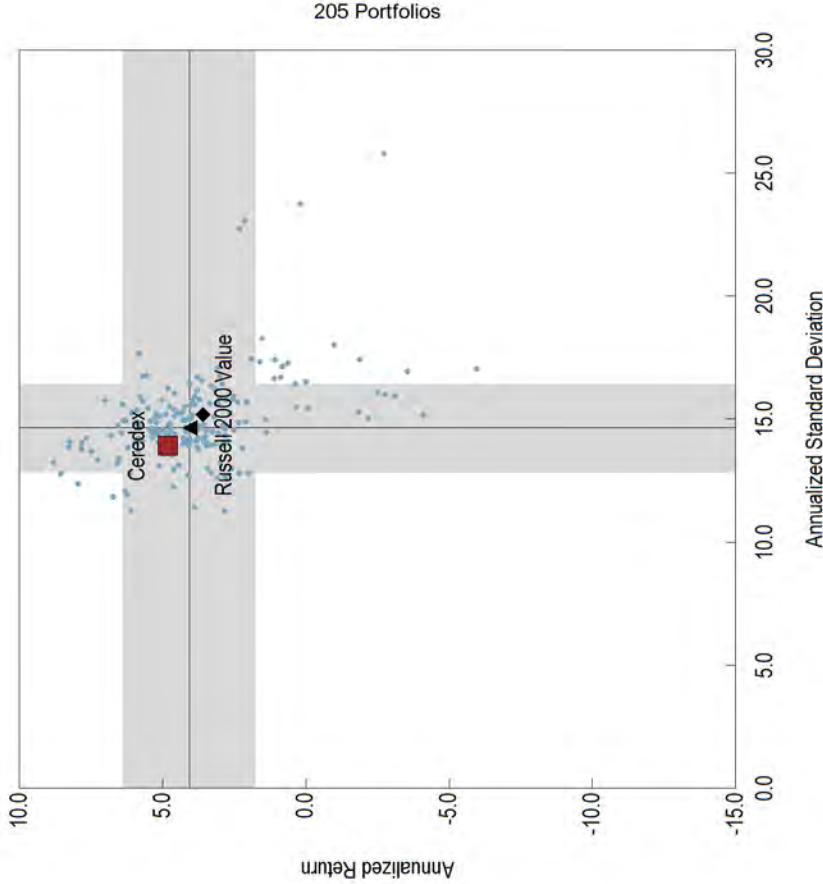
Rolling 5 Year Annualized Return (%)



3 Years



5 Years



3 Years

5 Years

Ceredex
Russell 2000 Value
eV US Small Cap Value Equity Gross Median

Ceredex
Russell 2000 Value
eV US Small Cap Value Equity Gross Median

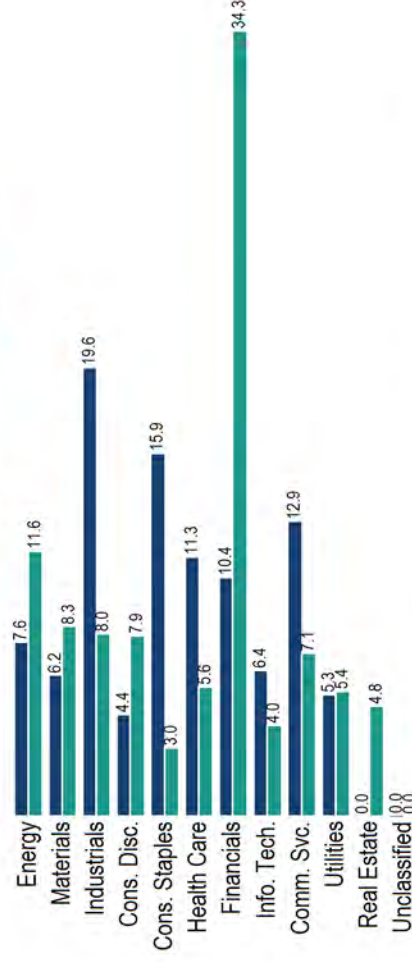
International Equity Managers

International equity value portfolio of non-US companies with low valuations at the country and stock level. Primary personnel include Tony Cousins, Daniel McDonagh, and Paul Simons.

Characteristics

	Portfolio	MSCI ACWI ex USA Value
Number of Holdings	74	1,277
Weighted Avg. Market Cap. (\$B)	56.86	47.74
Median Market Cap. (\$B)	20.64	6.43
Price To Earnings	17.88	11.78
Price To Book	3.09	1.37
Price To Sales	2.37	1.72
Return on Equity (%)	17.41	12.01
Yield (%)	4.09	4.67
Beta	0.72	1.00

Sector Allocation (%) vs MSCI ACWI ex USA Value



Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	92.4%	73.9%
Emerging*	7.6%	26.1%
Cash	0.0%	
Top 10 Largest Countries		
Switzerland	14.3%	3.2%
United Kingdom	13.0%	15.2%
Australia	11.5%	4.8%
Japan	10.8%	16.7%
France	8.7%	7.0%
Germany	8.0%	5.8%
Hong Kong	5.2%	2.6%
Singapore	5.2%	0.9%
Netherlands	4.7%	1.2%
Sweden	4.6%	1.5%
Total-Top 10 Largest Countries	86.0%	59.0%

Top Contributors

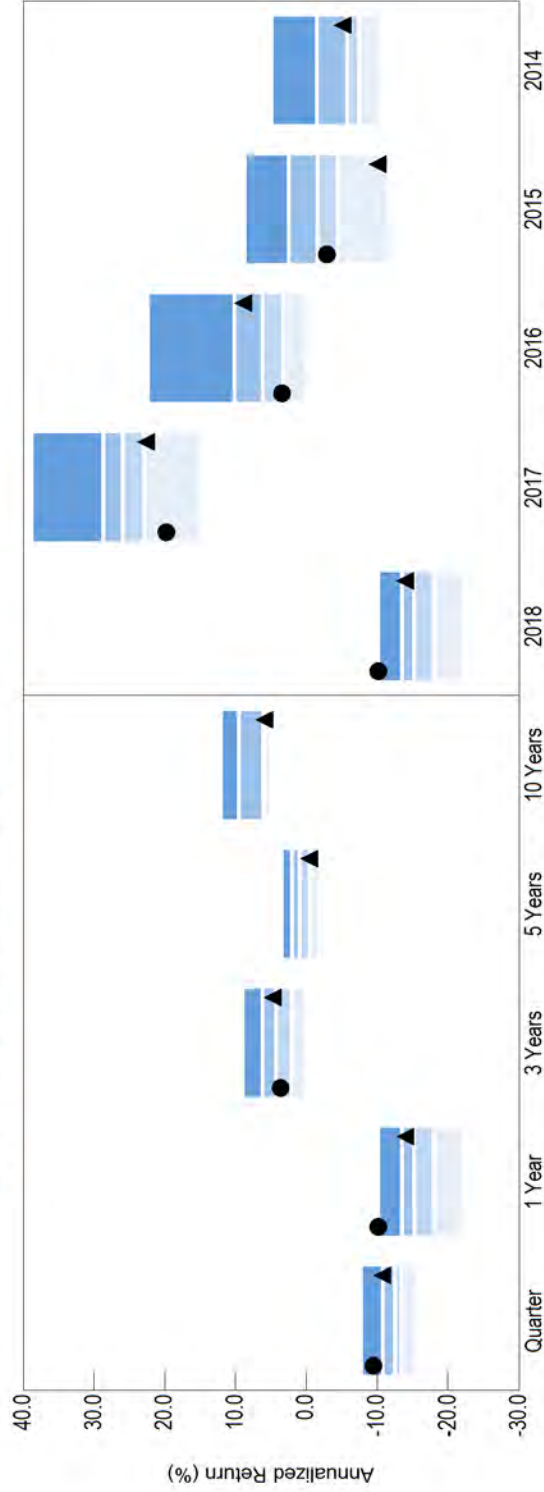
	Avg Wgt	Return	Contribution
NEWCREST MINING	0.77	9.28	0.07
ROCHE HOLDING	3.08	1.44	0.04
WOOLWORTHS GROUP	2.00	1.94	0.04
NIHON KOHDEN	1.39	2.66	0.04
FIELMANN	1.20	2.77	0.03
TELENOR	1.78	1.58	0.03
CHUNGHWA TELECOM	1.34	2.05	0.03
POWER ASSETS HOLDINGS	0.77	-0.06	0.00
ABC-MART	1.04	-0.40	0.00
RUBIS	0.76	-1.03	-0.01

Bottom Contributors

	Avg Wgt	Return	Contribution
BRITISH AMERICAN TOBACCO	1.49	-29.55	-0.44
WOODSIDE PETROLEUM	1.87	-21.01	-0.39
GEA GROUP	1.18	-28.49	-0.34
BUREAU VERITAS	1.47	-21.21	-0.31
FUCHS PETROLUB	1.72	-17.59	-0.30
SAP	1.56	-19.09	-0.30
ROYAL DUTCH SHELL A	2.20	-13.31	-0.29
SUMITOMO RUBBER INDS.	1.45	-19.17	-0.28
LEGRAND	1.21	-22.71	-0.28
COMPUTERSHARE	1.70	-16.16	-0.27

Unclassified sector allocation includes cash allocations.

Pyrford vs. eV ACWI ex-US Value Equity Gross Universe

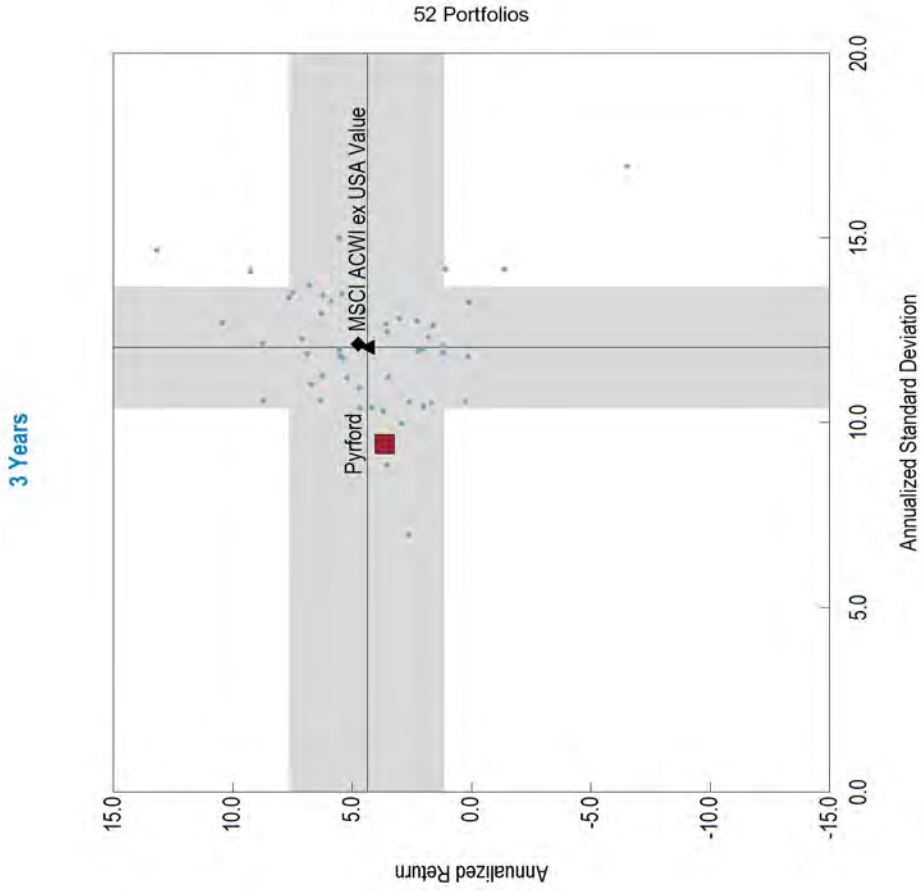


Return (Rank)

Period	5th Percentile	25th Percentile	Median	75th Percentile	95th Percentile	# of Portfolios
Quarter	-7.8	-10.8	-12.5	-13.4	-15.7	54
1 Year	-10.2	-13.4	-15.2	-17.9	-21.9	54
3 Years	9.0	6.3	4.4	2.2	0.1	52
5 Years	3.5	2.1	1.0	-0.4	-1.8	44
10 Years	12.1	9.6	6.2	5.8	5.0	27
2014	-10.2	-13.4	-15.2	-17.9	-21.9	54
2015	38.8	28.8	26.0	23.0	15.0	56
2016	22.3	10.2	6.2	3.3	-0.1	55
2017	8.7	2.5	-1.6	-4.3	-11.6	45
2018	3.4	-2.9	-10.1	-14.0	-21.9	37

● Pyrford
▲ MSCI ACWI ex USA Value

Pyrford
 Risk vs. Return 3 Year (Gross of Fees) Period Ending: December 31, 2018



	3 Years		
	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Pyrford	3.6%	9.4%	0.3
MSCI ACWI ex USA Value	4.7%	12.1%	0.3
eV ACWI ex-US Value Equity Gross Median	4.4%	12.0%	0.3

William Blair Manager Portfolio Overview

Period Ending: December 31, 2018

International equity growth portfolio of non-US companies with high growth rates constructed from the security level. Primary personnel include Simon Fennell and Jeffrey Urbina.

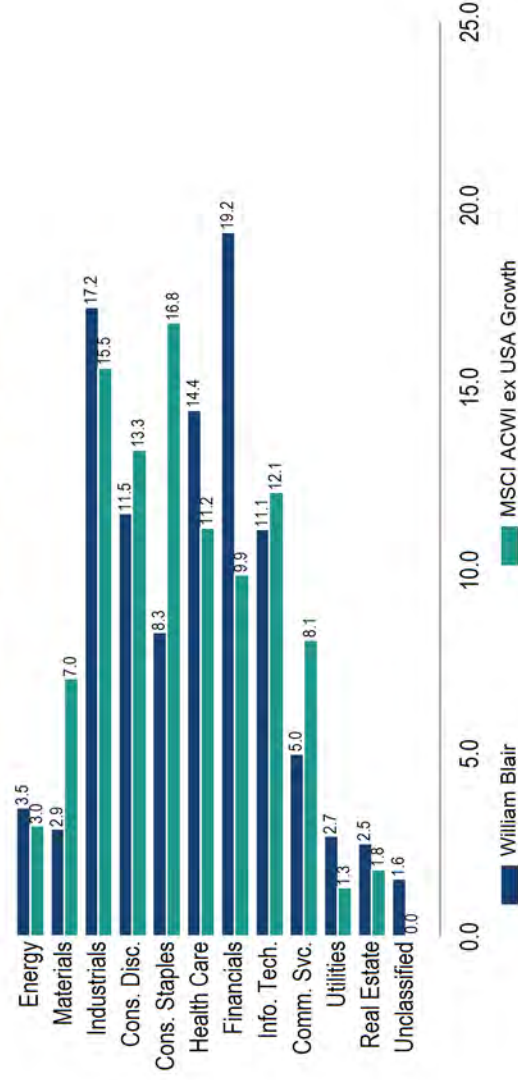
Characteristics

	Portfolio	MSCI ACWI ex USA Growth
Number of Holdings	185	1,133
Weighted Avg. Market Cap. (\$B)	51.18	64.60
Median Market Cap. (\$B)	8.97	7.49
Price To Earnings	23.07	21.68
Price To Book	4.81	3.78
Price To Sales	4.26	3.42
Return on Equity (%)	23.36	19.26
Yield (%)	2.19	2.19
Beta	1.07	1.00

Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	84.5%	74.0%
Emerging*	13.9%	26.0%
Top 10 Largest Countries		
United Kingdom	15.3%	7.6%
Japan	14.0%	16.5%
France	12.1%	7.9%
Canada	5.9%	6.5%
Netherlands	5.5%	3.4%
Hong Kong	5.1%	2.6%
Germany	4.9%	6.1%
Switzerland	4.3%	8.6%
Australia	4.1%	4.6%
China*	4.0%	7.7%
Total-Top 10 Largest Countries	75.3%	71.6%

Sector Allocation (%) vs MSCI ACWI ex USA Growth



Top Contributors

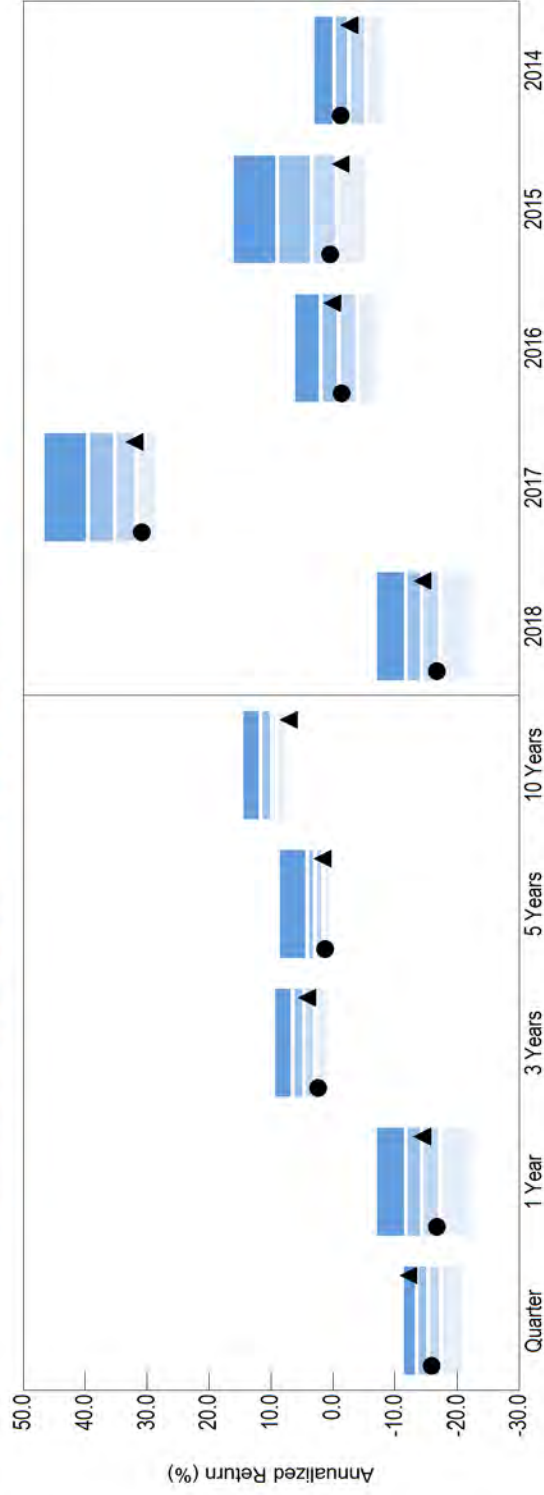
	Avg Wgt	Return	Contribution	Avg Wgt	Return	Contribution
BANK CENTRAL ASIA	0.88	11.93	0.10	TOTAL	2.33	-17.49
HDFC BANK	0.49	9.82	0.05	SUNCOR ENERGY	1.50	-27.19
INTERGLOBE AVIATION	0.08	46.43	0.04	LONZA GROUP	1.62	-24.66
GREGGS	0.19	17.20	0.03	DSV 'B'	1.41	-27.72
TITAN COMPANY	0.16	19.99	0.03	AIRBUS	1.63	-23.61
LI NING	0.17	13.45	0.02	PHILIPS	1.62	-22.41
MARUTI SUZUKI INDIA	0.42	5.49	0.02	ELTN.KONINKLUKE	1.11	-30.13
M DIAS BRANCO	0.16	13.03	0.02	WIRECARD	1.80	-17.46
INDUSTRIA ON	0.25	7.46	0.02	TORONTO-DOMINION	1.01	-30.86
MR PRICE GROUP	0.15	11.09	0.02	BANK	0.90	-34.40
BRITANNIA INDS.				ARKEMA		
				ASSTEAD GROUP		

Bottom Contributors

Unclassified sector allocation includes cash allocations.

William Blair
 Manager Performance Comparisons (Gross of Fees) Period Ending: December 31, 2018

William Blair vs. eV ACWI ex-US Growth Equity Gross Universe

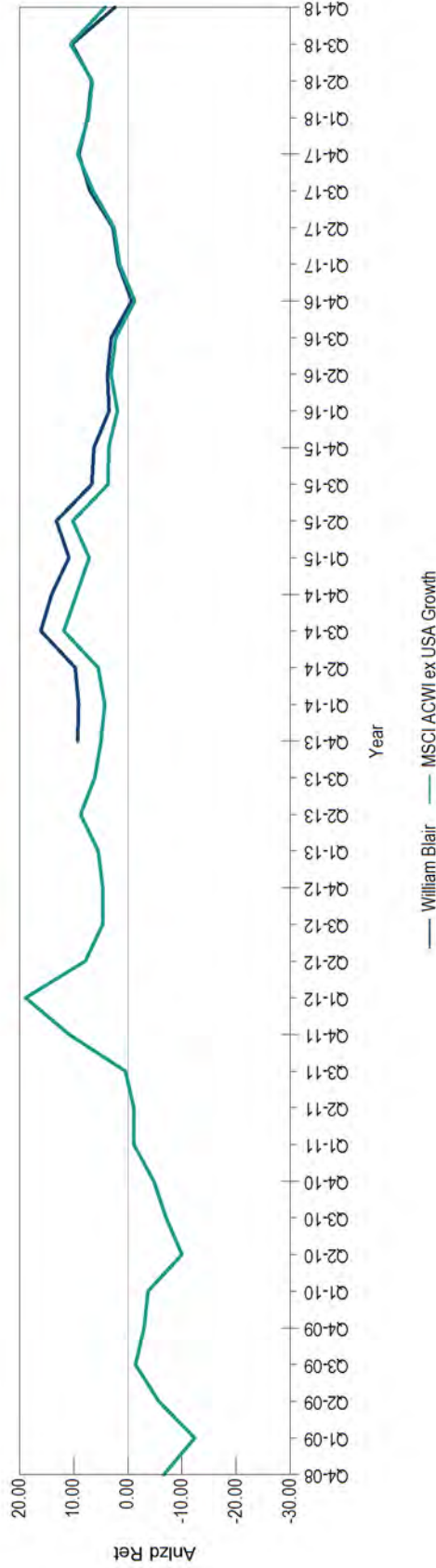


Return (Rank)

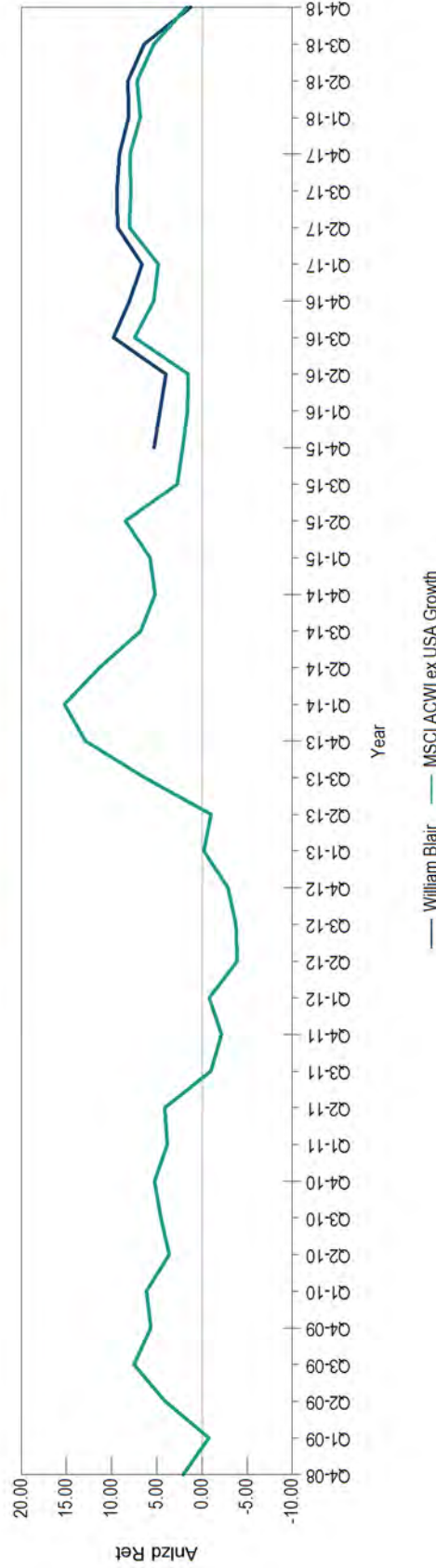
5th Percentile	-11.2	9.6	8.9	14.7	14.7	46.8	6.3	16.3	3.2
25th Percentile	-13.5	6.5	4.2	11.7	11.7	39.6	2.0	9.0	-0.1
Median	-15.3	4.7	3.0	9.9	9.9	35.3	-0.9	3.5	-2.5
75th Percentile	-17.4	2.9	1.6	9.1	9.1	31.8	-3.9	-0.5	-5.3
95th Percentile	-21.0	0.7	0.4	7.4	7.4	28.3	-7.4	-5.4	-8.2
# of Portfolios	82	82	71	51	51	94	90	70	50
● William Blair	-15.9 (59)	2.4 (83)	1.3 (83)	--	--	30.9 (81)	-1.4 (55)	0.5 (69)	-1.2 (37)
▲ MSCI ACWI ex USA Growth	-12.2 (19)	4.2 (64)	1.7 (74)	7.1 (96)	7.1 (96)	32.0 (75)	0.1 (45)	-1.3 (83)	-2.6 (53)

William Blair
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees) Period Ending: December 31, 2018

Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)



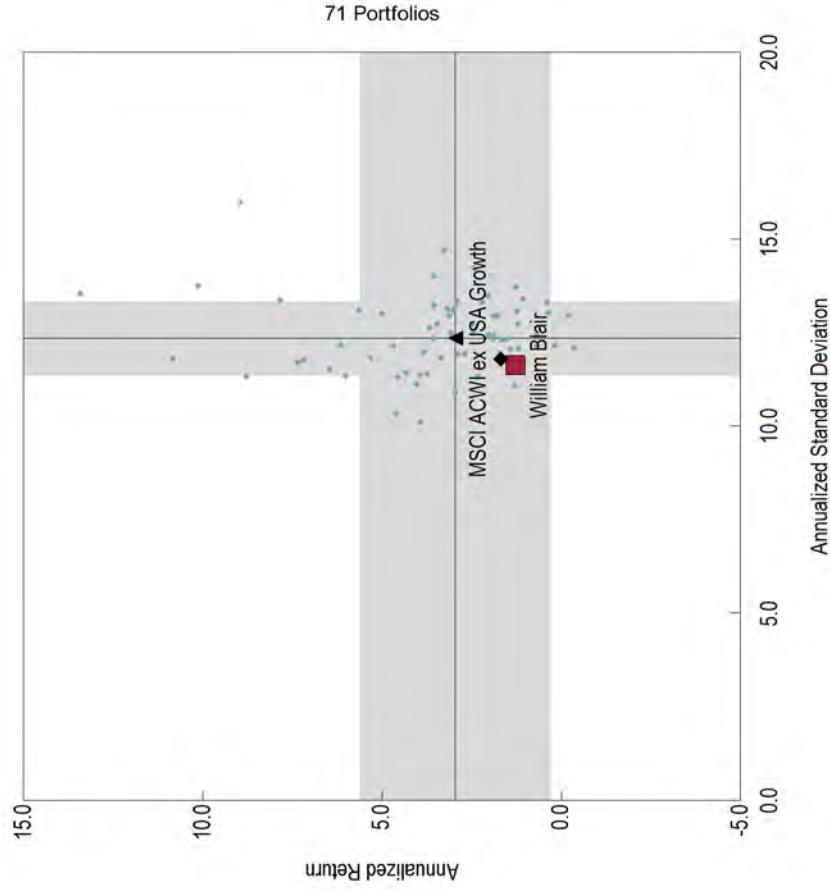
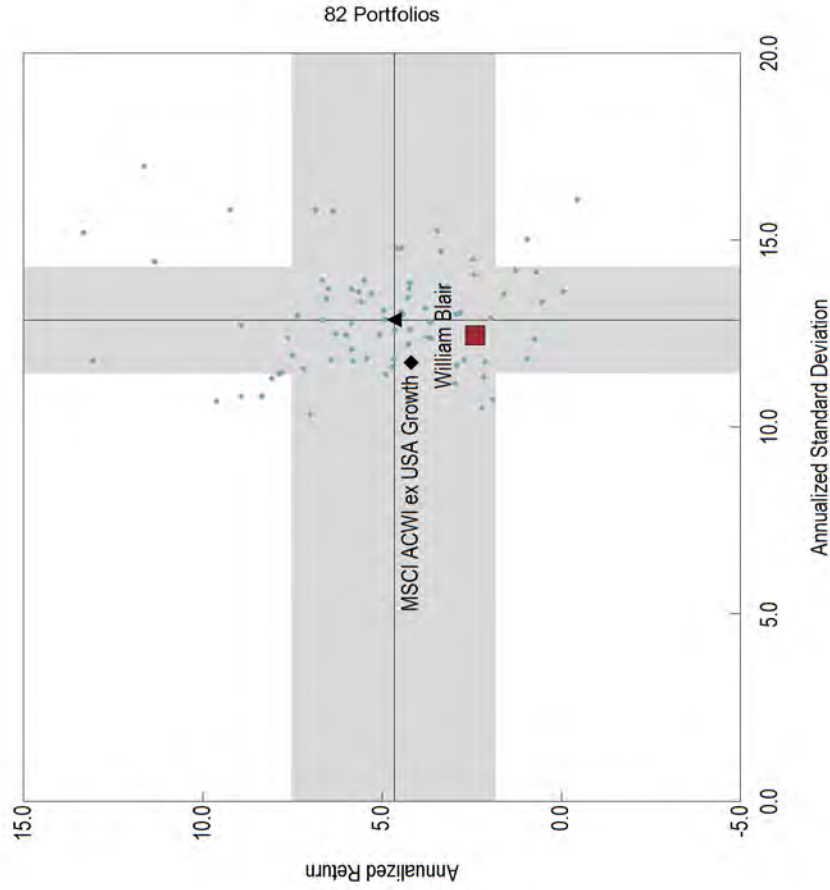
William Blair

Risk vs. Return 3 & 5 Year (Gross of Fees)

Period Ending: December 31, 2018

3 Years

5 Years



3 Years

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
William Blair	2.4%	12.4%	0.1
MSCI ACWI ex USA Growth	4.2%	11.7%	0.3
eV ACWI ex-US Growth Equity Gross Median	4.7%	12.9%	0.3

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
William Blair	1.3%	11.6%	0.1
MSCI ACWI ex USA Growth	1.7%	11.8%	0.1
eV ACWI ex-US Growth Equity Gross Median	3.0%	12.3%	0.2

PIMCO RAE Emerging Markets Manager Portfolio Overview

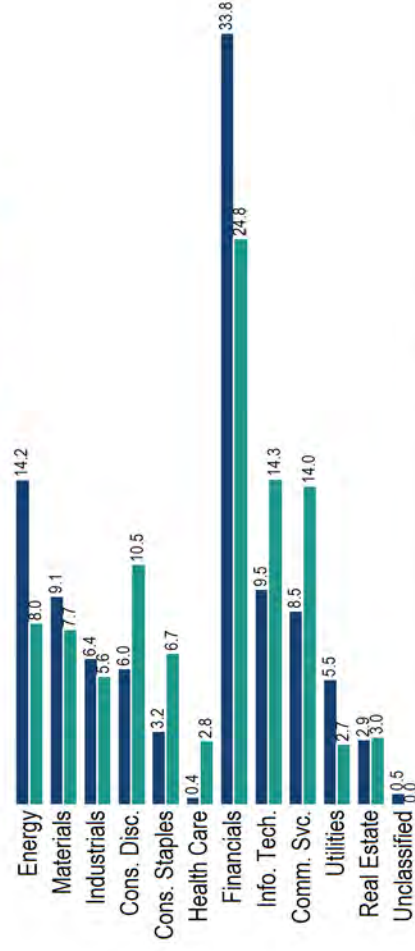
Period Ending: December 31, 2018

The PIMCO RAE Emerging Markets seeks to invest 80% of its assets in investments that are economically tied to emerging market countries. The portfolio is sub-advised by Research Affiliates, LLC.

Characteristics

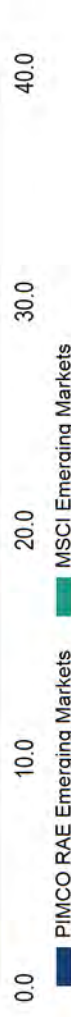
	Portfolio	MSCI Emerging Markets
Number of Holdings	573	1,125
Weighted Avg. Market Cap. (\$B)	34.55	69.96
Median Market Cap. (\$B)	3.64	4.95
Price To Earnings	10.74	16.63
Price To Book	1.17	2.89
Price To Sales	1.20	2.58
Return on Equity (%)	10.79	17.46
Yield (%)	4.30	2.94
Beta		1.00

Sector Allocation (%) vs MSCI Emerging Markets



Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	10.5%	0.0%
Emerging*	89.0%	100.0%
Top 10 Largest Countries		
China*	20.1%	30.3%
Korea*	19.9%	13.8%
Hong Kong	10.1%	0.0%
Taiwan*	10.0%	11.4%
Russia*	9.9%	3.6%
Brazil*	5.4%	7.5%
India*	5.2%	9.4%
South Africa*	4.5%	6.2%
Thailand*	3.0%	2.4%
Turkey*	2.6%	0.6%
Total-Top 10 Largest Countries	90.7%	85.4%

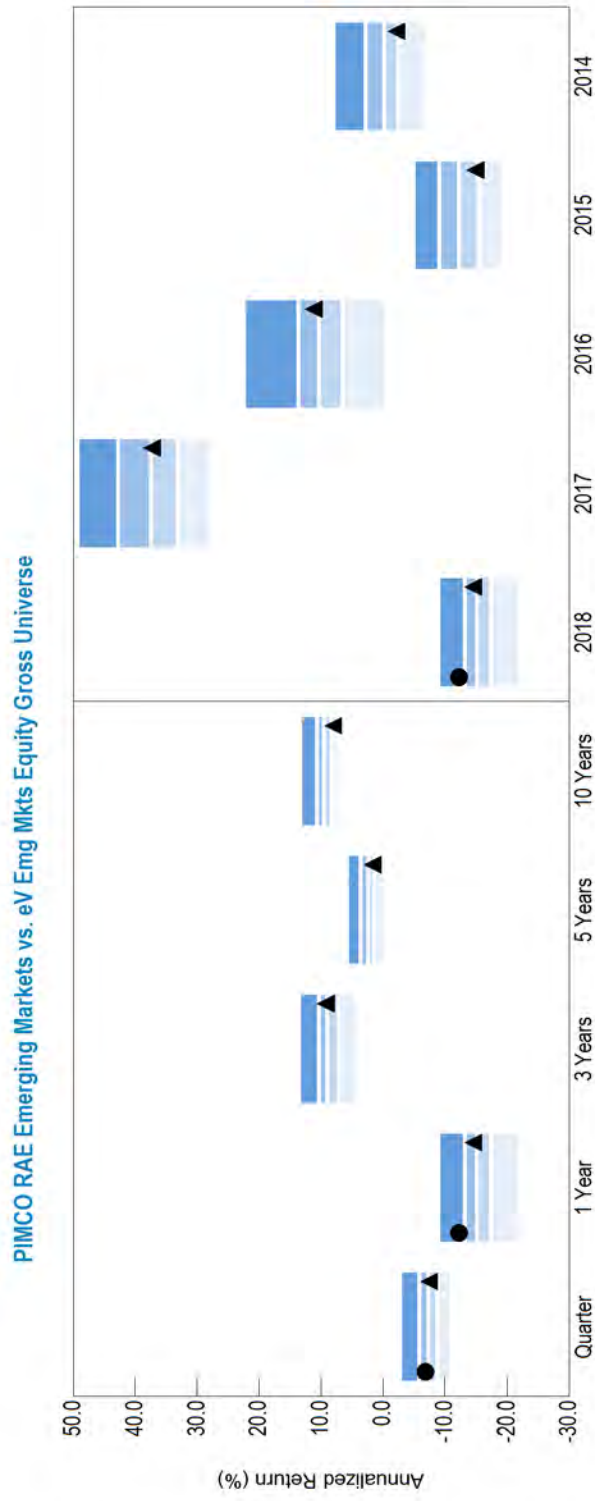


Bottom Contributors

	End Weight	Return	Contribution	End Weight	Return	Contribution
CIA.ENG.T.DE	0.36	110.39	0.40	2.83	-17.17	-0.49
MINASGR.ADR 1:1	0.55	64.66	0.35	3.91	-11.42	-0.45
BANCO DO BRASIL ON	0.42	42.73	0.18	1.39	-21.98	-0.31
BNC.BRADESCO	0.13	122.28	0.15	0.99	-28.74	-0.28
PF.SPN.ADR 1:1	1.21	12.11	0.15	3.93	-5.61	-0.22
ADANI POWER	0.53	25.03	0.13	0.87	-23.64	-0.20
KOREA ELECTRIC POWER	0.27	45.45	0.12	0.57	-26.81	-0.15
ITAU UNIBANCO BANCO HLDG.ADR 1:1	0.39	27.32	0.11	0.65	-22.92	-0.15
GOLD FIELDS SPN.ADR 1:1	0.16	61.94	0.10	0.41	-31.53	-0.13
BANCO DO ESTADO DO RIO GRANDE DO SUL B PN	0.19	46.47	0.09	0.47	-25.44	-0.12
POWER FINANCE	0.09	0.09	0.00			

Unclassified sector allocation includes cash allocations.

PIMCO RAE Emerging Markets
 Manager Performance Comparisons (Gross of Fees) Period Ending: December 31, 2018



	Quarter	1 Year	3 Years	5 Years	10 Years	2014	2015	2016	2017	2018
5th Percentile	-2.8	-9.0	13.5	5.7	13.2	49.2	22.4	13.7	42.8	-9.0
25th Percentile	-5.8	-13.2	10.4	3.6	10.7	42.8	13.7	10.4	37.6	-13.2
Median	-7.3	-15.2	9.1	2.4	9.5	37.6	10.4	6.6	33.2	-15.2
75th Percentile	-8.7	-17.4	7.2	1.5	8.4	33.2	6.6	-0.6	27.8	-17.4
95th Percentile	-11.0	-21.8	4.1	-0.3	7.2	27.8	-0.6	337	343	-21.8
# of Portfolios	356	355	336	294	150	343	337	11.2	37.3	355
● PIMCO RAE Emerging Markets	-6.9 (41)	-12.3 (19)	-- (-)	-- (-)	-- (-)	-- (-)	-- (-)	-- (-)	-- (-)	-12.3 (19)
▲ MSCI Emerging Markets	-7.5 (55)	-14.6 (43)	9.2 (47)	1.6 (72)	8.0 (86)	37.3 (53)	11.2 (45)	-14.9 (70)	-19.2 (74)	-14.6 (43)

TT Emerging Markets Manager Portfolio Overview

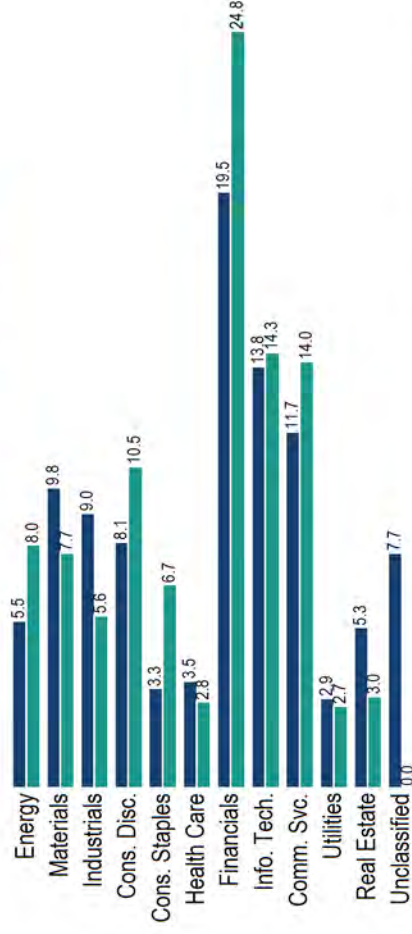
Period Ending: December 31, 2018

The Emerging Markets Unconstrained strategy aims to outperform its benchmark, MSCI Emerging Markets Index by 5% per annum over a three-year rolling period. It targets high returns and long term capital growth by investing in a focused portfolio of primarily equity and equity-related securities traded in the Emerging Markets.

Characteristics

	Portfolio	MSCI Emerging Markets
Number of Holdings	63	1,125
Weighted Avg. Market Cap. (\$B)	40.97	69.96
Median Market Cap. (\$B)	8.59	4.95
Price To Earnings	14.37	16.63
Price To Book	2.91	2.89
Price To Sales	3.84	2.58
Return on Equity (%)	21.74	17.46
Yield (%)	2.08	2.94
Beta		1.00

Sector Allocation (%) vs MSCI Emerging Markets



Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	15.5%	0.0%
Emerging*	78.4%	100.0%
Frontier**	1.7%	0.0%
Top 10 Largest Countries		
India*	16.2%	9.4%
Korea*	15.4%	13.8%
China*	15.2%	30.3%
Brazil*	9.8%	7.5%
South Africa*	8.1%	6.2%
United Kingdom	6.1%	0.0%
Russia*	5.8%	3.6%
United States	4.4%	0.0%
Cash	4.4%	0.0%
Taiwan*	3.2%	11.4%
Total-Top 10 Largest Countries	88.7%	82.4%

Country Allocation

	TT Emerging Markets	MSCI Emerging Markets	
Top Contributors			
	End Weight	Return	Contribution
CIA SANEAMIENTO DO PARANA UNITS	1.23	52.92	0.65
ICICI BANK	2.56	22.39	0.57
LOMA NEGRA SPN/ADR 1:5	1.85	25.91	0.48
BB SEGURIDADE ON	1.92	23.83	0.46
ATACADAO DISTRIBUICAO	1.55	27.39	0.42
PUBLIC JOINT STOCK POLYUS GDR	1.11	28.05	0.31
OBEROI REALTY	1.81	12.86	0.23
PAKUWON JATI	0.79	24.75	0.19
LONGFOR GROUP HOLDINGS	1.21	15.78	0.19
FUTURE RETAIL	1.54	11.79	0.18
Bottom Contributors			
	End Weight	Return	Contribution
BAIDU 'A' ADR 10:1	3.12	-30.65	-0.96
ALIBABA GROUP HLDG.SPN.ADR 1:1	4.35	-16.81	-0.73
CHINA PACIFIC INSURANCE (GROUP) 'H'	4.17	-16.11	-0.67
HANA FINANCIAL GROUP	3.19	-19.11	-0.61
SAMSUNG ELTN.PREF.	3.25	-16.61	-0.54
SASOL	2.13	-23.64	-0.50
NASPERS	5.94	-6.76	-0.40
GENTING	1.69	-21.78	-0.37
SUZANO PAPEL E CELULOSE ON	1.90	-18.39	-0.35
SUNNY OPTICAL TECH.(GP.)	1.51	-22.97	-0.35

Unclassified sector allocation includes cash allocations.

Global Equity Managers

Artisan Partners Manager Portfolio Overview

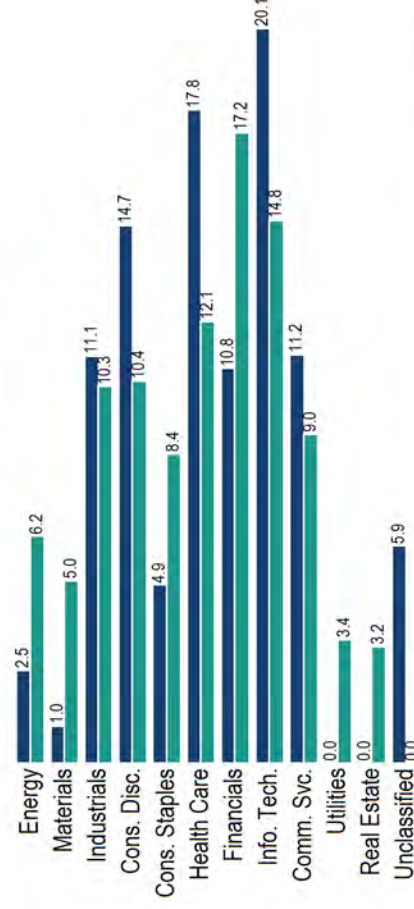
Period Ending: December 31, 2018

Global equity portfolio of companies that is benchmark agnostic with accelerating profit cycles and a focus on capital allocation. Primary personnel include James Hamel, Craig Cepukenas, and Matthew Kamm.

Characteristics

	Portfolio	MSCI ACWI
Number of Holdings	47	2,758
Weighted Avg. Market Cap. (\$B)	75.46	120.64
Median Market Cap. (\$B)	22.83	8.52
Price To Earnings	23.15	18.55
Price To Book	6.92	3.40
Price To Sales	6.38	3.22
Return on Equity (%)	20.04	18.75
Yield (%)	1.10	2.76
Beta	1.25	1.00

Sector Allocation (%) vs MSCI ACWI



Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	91.5%	88.1%
Emerging*	2.6%	11.9%
Top 10 Largest Countries		
United States	50.9%	54.3%
United Kingdom	8.2%	5.2%
Hong Kong	7.4%	1.2%
Cash	5.9%	0.0%
Japan	5.7%	7.6%
Switzerland	4.9%	2.7%
Denmark	3.0%	0.5%
India*	2.6%	1.1%
Netherlands	2.4%	1.1%
France	2.2%	3.4%
Total-Top 10 Largest Countries	93.4%	77.1%

Top Contributors

	Avg Wgt	Return	Contribution
HDFC BANK ADR 1:3	1.95	10.08	0.20
GENMAB	2.05	3.95	0.08
CREE	0.48	12.95	0.06
SANDS CHINA	1.56	-3.30	-0.05
TENCENT HOLDINGS	1.99	-2.89	-0.06
S&P GLOBAL	0.48	-12.78	-0.06
BURBERRY GROUP	0.45	-15.34	-0.07
STATE STREET	0.32	-24.16	-0.08
XIAOMI-W ORD	0.48	-16.69	-0.08
ASTRAZENECA	2.51	-3.81	-0.10

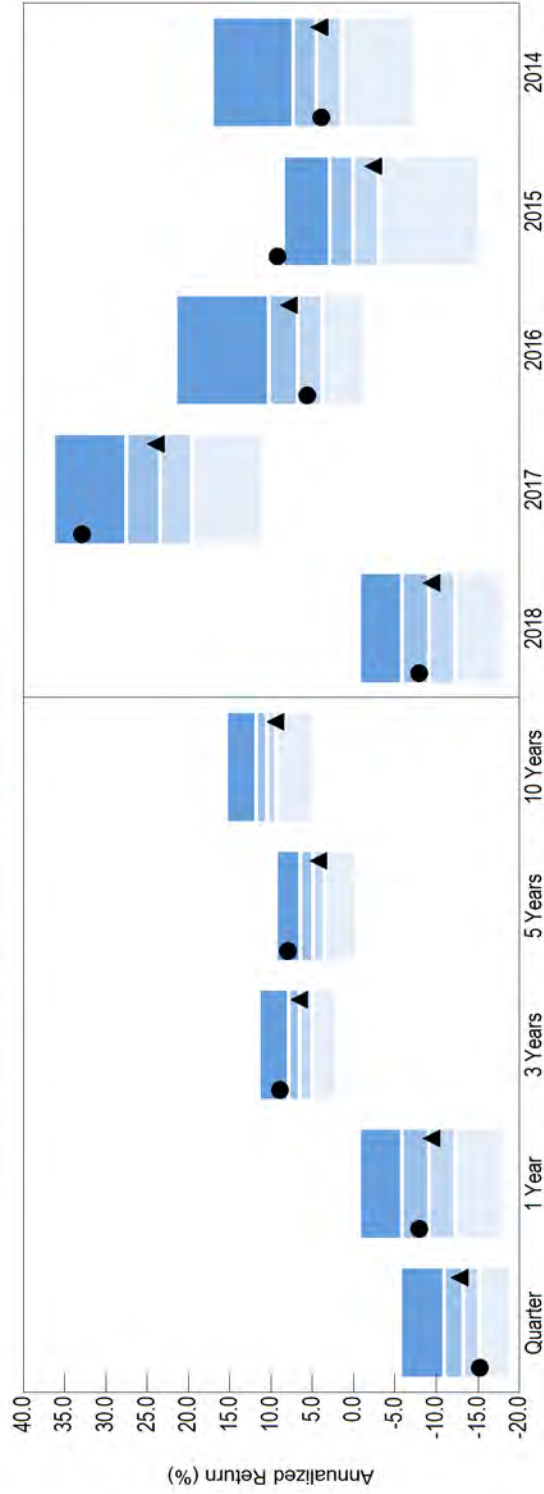
Bottom Contributors

	Avg Wgt	Return	Contribution
FEVERTREE DRINKS	2.51	-40.48	-1.02
NOBLE ENERGY	2.40	-39.60	-0.95
VISA 'A'	6.76	-11.94	-0.81
TEMENOS N	2.84	-26.62	-0.75
IHS MARKIT	6.59	-11.10	-0.73
NINTENDO	2.59	-26.87	-0.70
PIONEER NTRL.RES.	2.82	-24.50	-0.69
AMADEUS IT GROUP	2.65	-25.17	-0.67
APTIV	2.45	-26.40	-0.65
LONZA GROUP	2.48	-24.66	-0.61

Unclassified sector allocation includes cash allocations.

Artisan Partners
 Manager Performance Comparisons (Gross of Fees) Period Ending: December 31, 2018

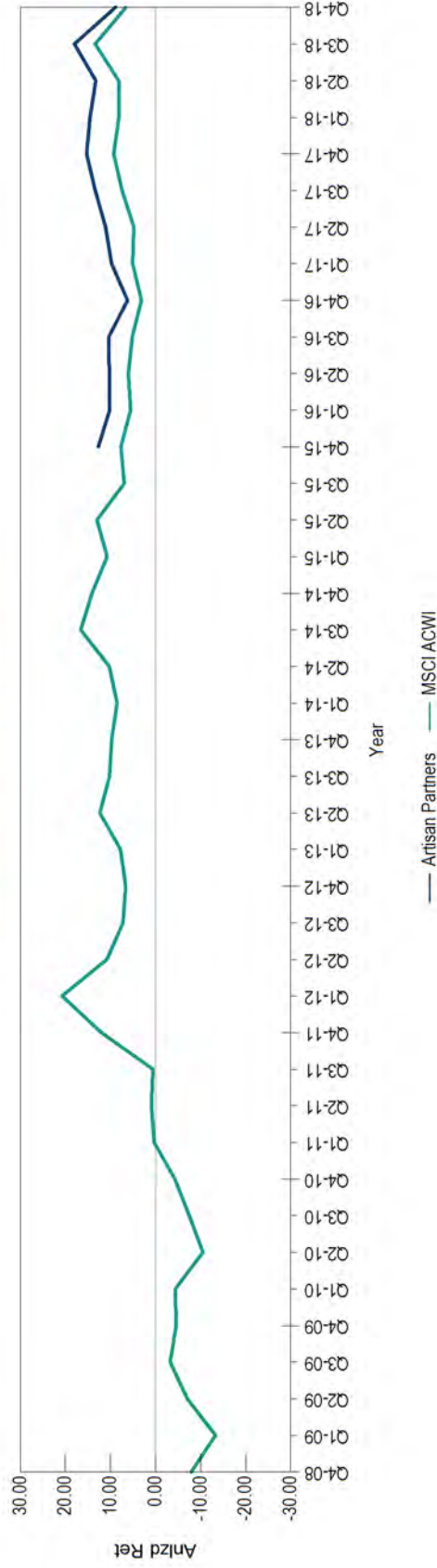
Artisan Partners vs. eV All Global Equity Gross Universe



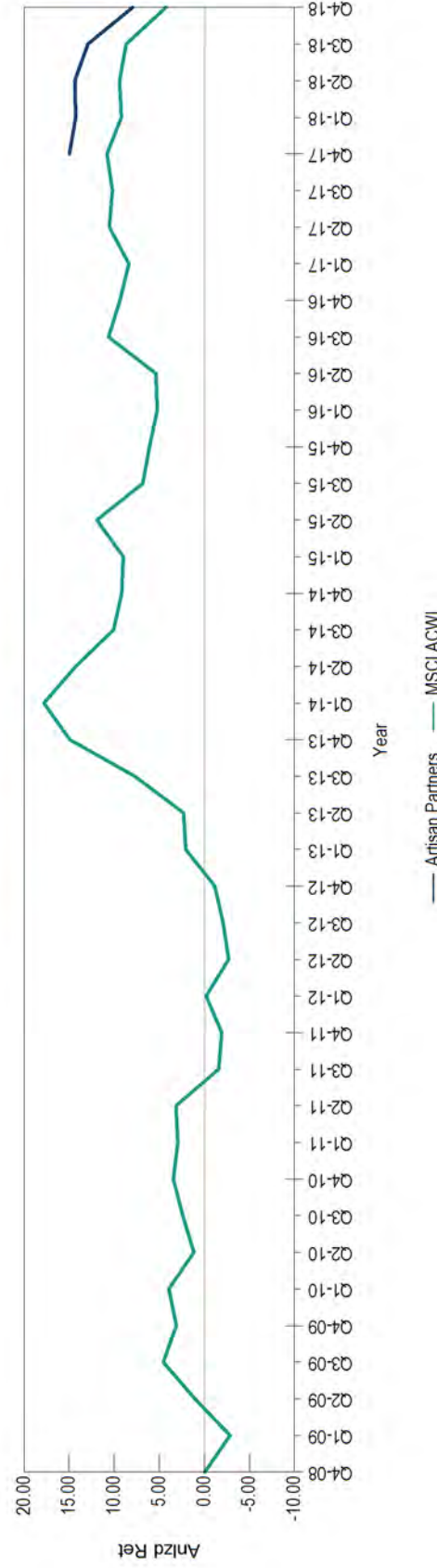
Return (Rank)

5th Percentile	-5.7	11.5	9.4	15.4	36.3	21.5	8.5	17.1
25th Percentile	-11.0	7.9	6.5	11.8	27.6	10.3	3.0	7.4
Median	-13.2	6.6	5.0	10.5	23.5	6.8	0.1	4.6
75th Percentile	-15.2	5.0	3.6	9.4	19.6	3.9	-2.9	1.5
95th Percentile	-18.9	2.0	-0.3	4.8	11.0	-1.4	-15.1	-7.4
# of Portfolios	920	861	743	480	880	842	692	609
● Artisan Partners	-15.2 (76)	8.9 (16)	8.0 (11)	-- (-)	32.9 (11)	5.6 (61)	9.2 (4)	3.9 (56)
▲ MSCIACWI	-12.8 (45)	6.6 (51)	4.3 (66)	9.5 (75)	24.0 (47)	7.9 (42)	-2.4 (73)	4.2 (54)

Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)

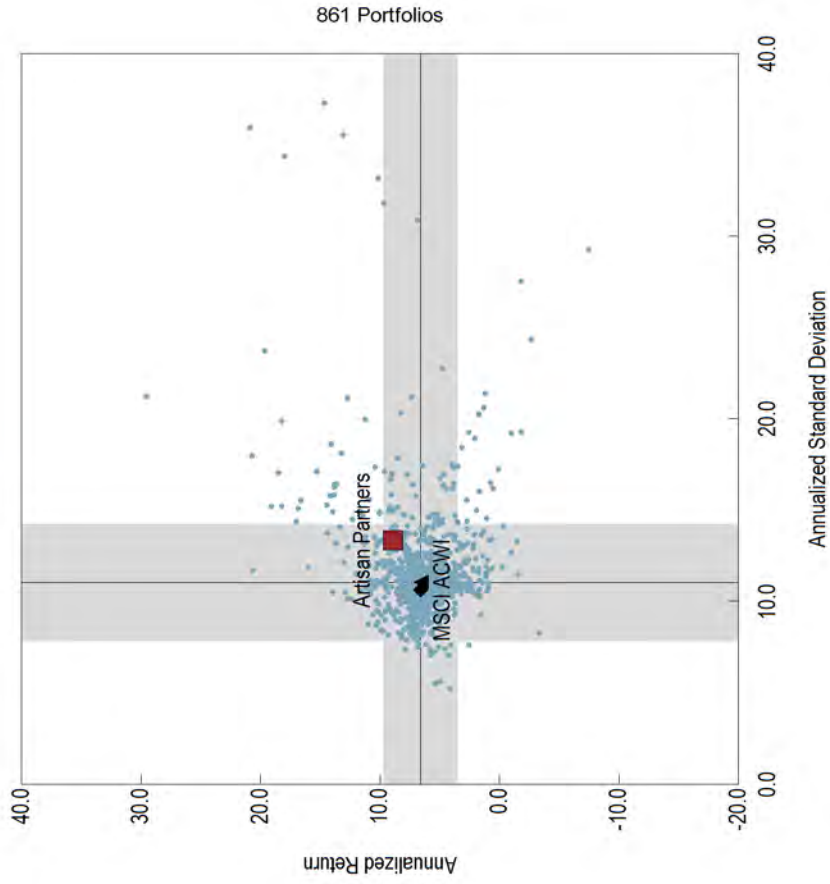


Artisan Partners

Risk vs. Return 3 & 5 Year (Gross of Fees)

Period Ending: December 31, 2018

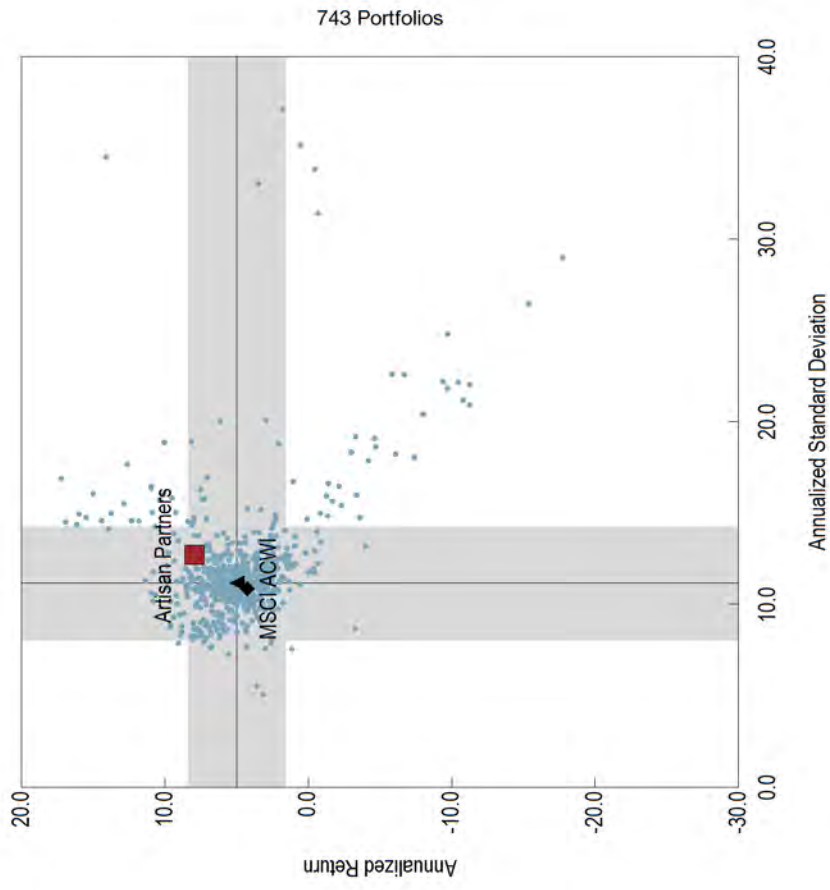
3 Years



3 Years

	Artisan Partners	MSCI ACWI	eV All Global Equity Gross Median
Annualized Return	8.9%	6.6%	6.6%
Annualized Standard Deviation	13.3%	10.6%	11.0%
Sharpe Ratio	0.6	0.5	0.5

5 Years



5 Years

	Artisan Partners	MSCI ACWI	eV All Global Equity Gross Median
Annualized Return	8.0%	4.3%	5.0%
Annualized Standard Deviation	12.7%	10.9%	11.2%
Sharpe Ratio	0.6	0.3	0.4

First Eagle Manager Portfolio Overview

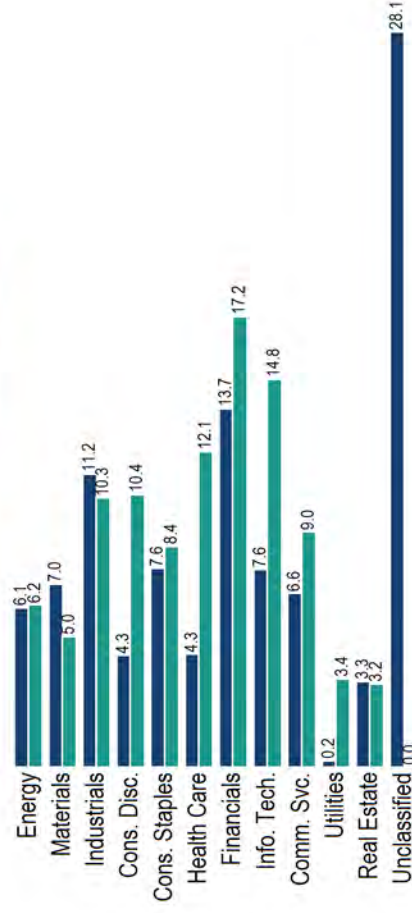
Period Ending: December 31, 2018

Global equity portfolio that is benchmark agnostic comprised of companies with low valuations. Primary personnel include Matt McLennan and Kimball Brooker.

Characteristics

	Portfolio	MSCI ACWI
Number of Holdings	167	2,758
Weighted Avg. Market Cap. (\$B)	65.89	120.64
Median Market Cap. (\$B)	16.49	8.52
Price To Earnings	16.39	18.55
Price To Book	2.73	3.40
Price To Sales	3.29	3.22
Return on Equity (%)	16.39	18.75
Yield (%)	2.87	2.76
Beta	0.64	1.00

Sector Allocation (%) vs MSCI ACWI



Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals	80.7%	88.1%
Developed	4.1%	11.9%
Emerging*	15.2%	
Cash		
Top 10 Largest Countries	47.7%	54.3%
United States	15.2%	0.0%
Cash	11.0%	7.6%
Japan	5.2%	3.4%
France	4.9%	5.2%
United Kingdom	3.4%	3.0%
Canada	2.0%	2.7%
Switzerland	1.9%	1.6%
Korea*	1.4%	0.4%
Singapore	1.3%	1.2%
Hong Kong		
Total-Top 10 Largest Countries	94.0%	79.4%

Top Contributors

	Avg Wgt	Return	Contribution	Avg Wgt	Return	Contribution
BARRICK GOLD (NYS)	0.46	23.11	0.11	SCHLUMBERGER	1.41	-40.10
OMNICOM GROUP	1.19	8.57	0.10	NATIONAL OILWELL VARCO	1.20	-40.24
JARDINE MATHESON HDG.	0.83	10.88	0.09	WEYERHAEUSER	1.31	-31.40
AGNICO EAGLE MINES	0.37	18.56	0.07	EXXON MOBIL	1.66	-18.98
WHEATON PRMTL. (NYS)	0.43	12.24	0.05	BRITISH AMERICAN	1.01	-29.55
NEWCREST MINING	0.55	9.28	0.05	TOBACCO		-0.30
NEWMONT MINING	0.34	15.23	0.05	FANUC	1.48	-19.43
WILLIS TOWERS WATSON	0.56	8.18	0.05	ORACLE	2.23	-12.08
FRANCO-NEVADA	0.28	12.51	0.03	TECHNIPFMC	0.72	-37.01
XILINX	0.49	6.68	0.03	SOMPO HOLDINGS	1.27	-20.16
				FLOWSERVE	0.72	-30.48

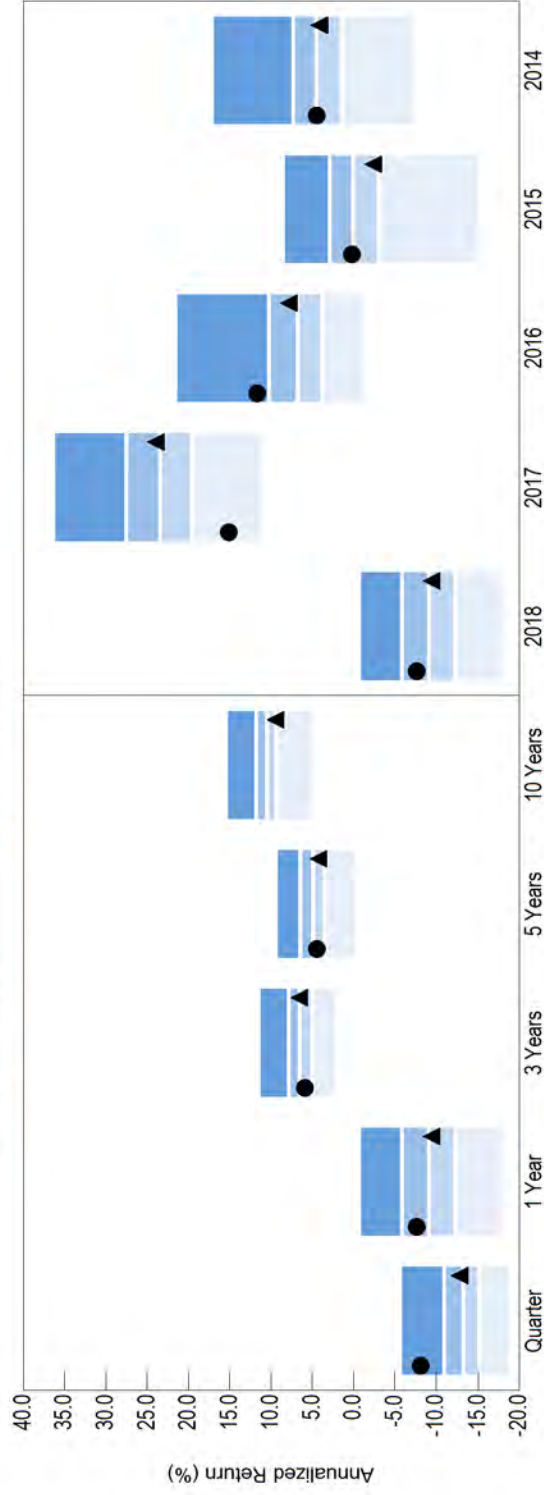
Bottom Contributors

	Avg Wgt	Return	Contribution	Avg Wgt	Return	Contribution
BARRICK GOLD (NYS)	0.46	23.11	0.11	SCHLUMBERGER	1.41	-40.10
OMNICOM GROUP	1.19	8.57	0.10	NATIONAL OILWELL VARCO	1.20	-40.24
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XILINX	0.49	6.68	0.03	SOMPO HOLDINGS	1.27	-20.16
				FLOWSERVE	0.72	-30.48

Unclassified sector allocation includes cash allocations and Gold allocations (9.1% as of 12/31/2018).

First Eagle
 Manager Performance Comparisons (Gross of Fees) Period Ending: December 31, 2018

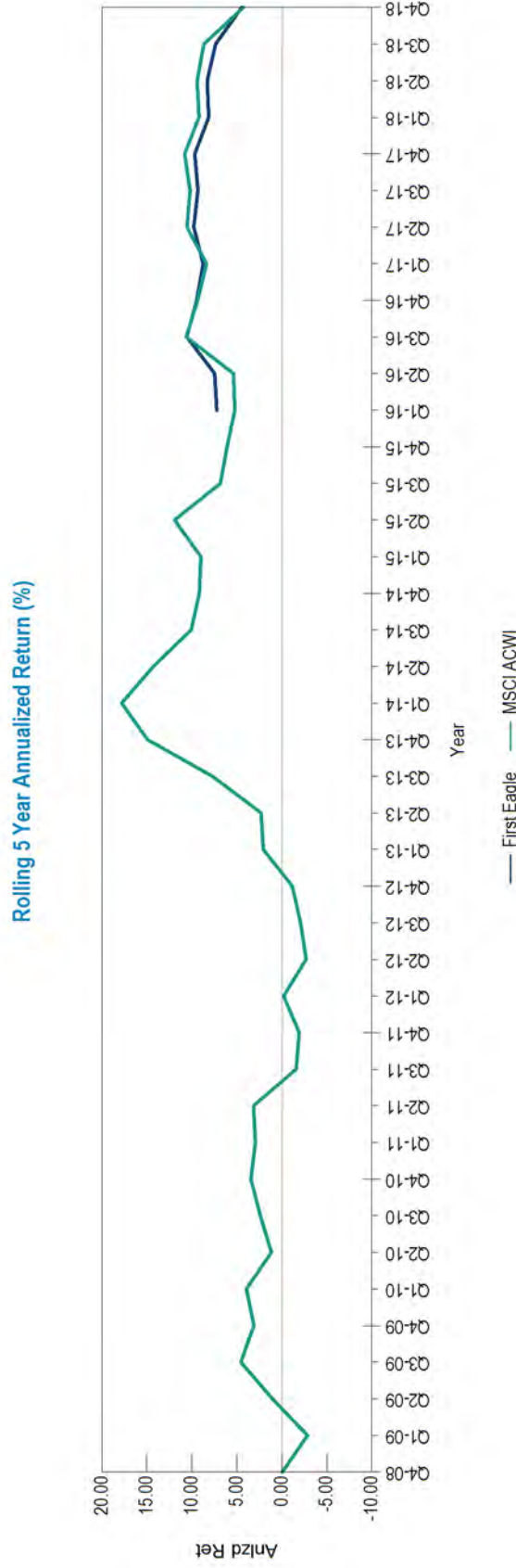
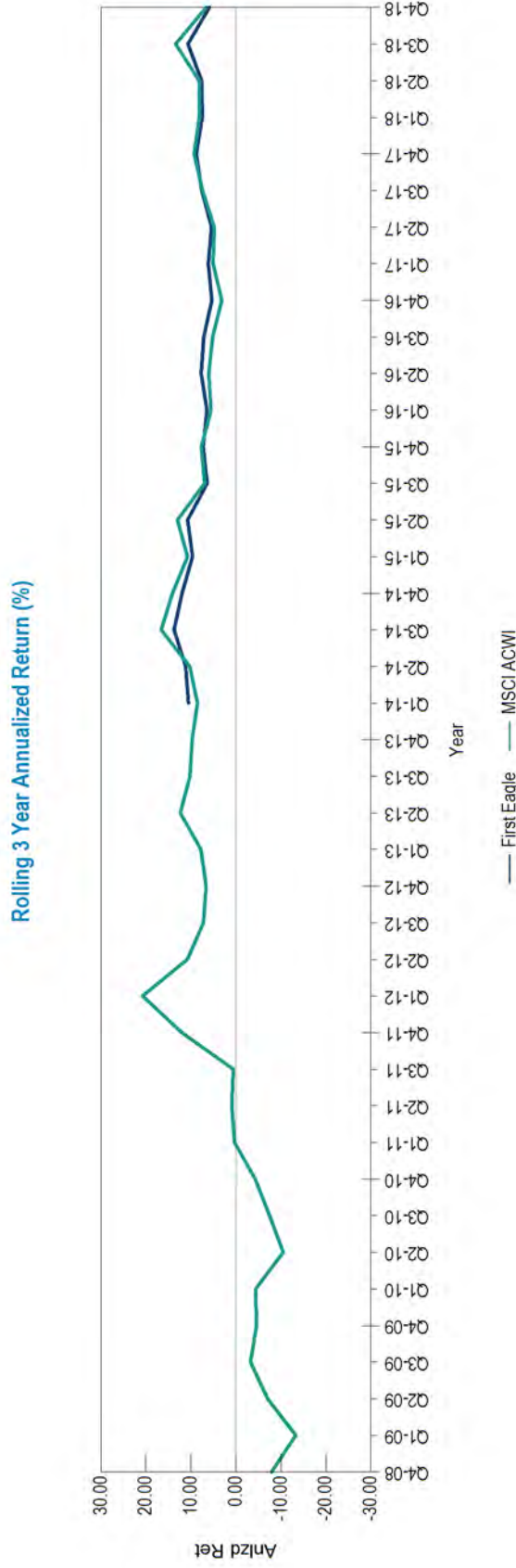
First Eagle vs. eV All Global Equity Gross Universe



Return (Rank)

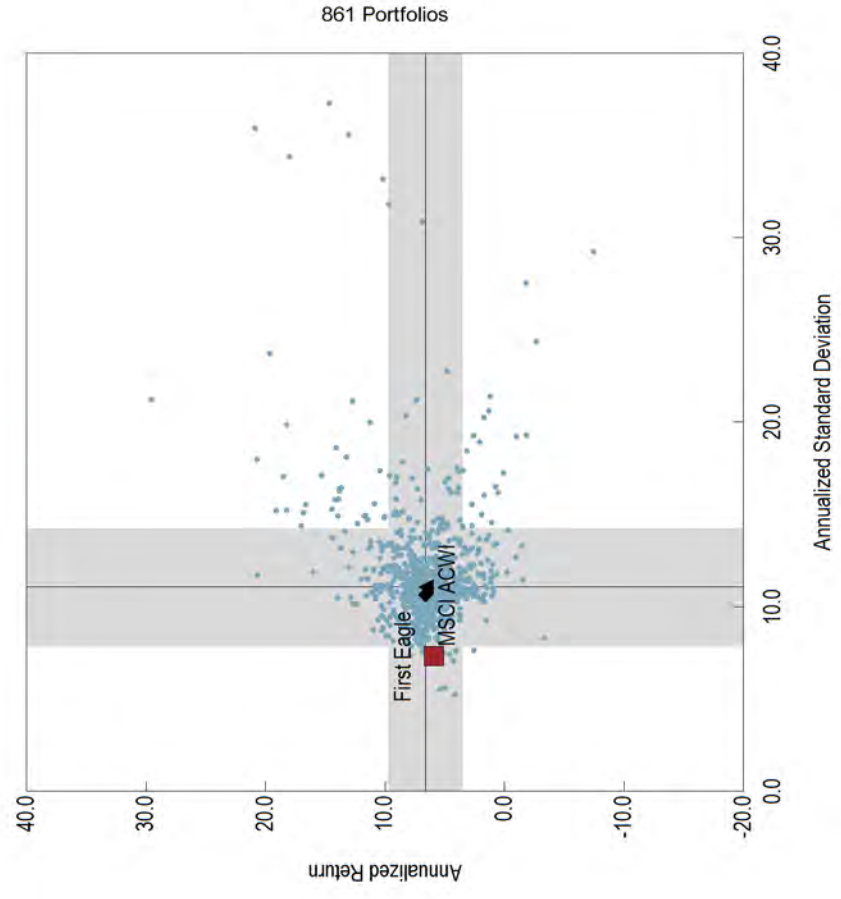
	Quarter	1 Year	3 Years	5 Years	10 Years	2014	2015	2016	2017	2018
5th Percentile	-5.7	-0.7	11.5	9.4	15.4	36.3	8.5	21.5	36.3	-0.7
25th Percentile	-11.0	-5.8	7.9	6.5	11.8	27.6	3.0	10.3	27.6	-5.8
Median	-13.2	-9.1	6.6	5.0	10.5	23.5	0.1	6.8	23.5	-9.1
75th Percentile	-15.2	-12.2	5.0	3.6	9.4	19.6	-2.9	3.9	19.6	-12.2
95th Percentile	-18.9	-18.1	2.0	-0.3	4.8	11.0	-15.1	-1.4	11.0	-18.1
# of Portfolios	920	920	861	743	480	880	692	842	880	920
● First Eagle	-8.1 (13)	-7.6 (38)	5.9 (63)	4.4 (62)	-- (-)	15.1 (89)	0.2 (49)	11.7 (19)	15.1 (89)	-7.6 (38)
▲ MSCIACWI	-12.8 (45)	-9.4 (53)	6.6 (51)	4.3 (66)	9.5 (75)	24.0 (47)	-2.4 (73)	7.9 (42)	24.0 (47)	-9.4 (53)

First Eagle
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees) Period Ending: December 31, 2018



First Eagle
 Risk vs. Return 3 & 5 Year (Gross of Fees) Period Ending: December 31, 2018

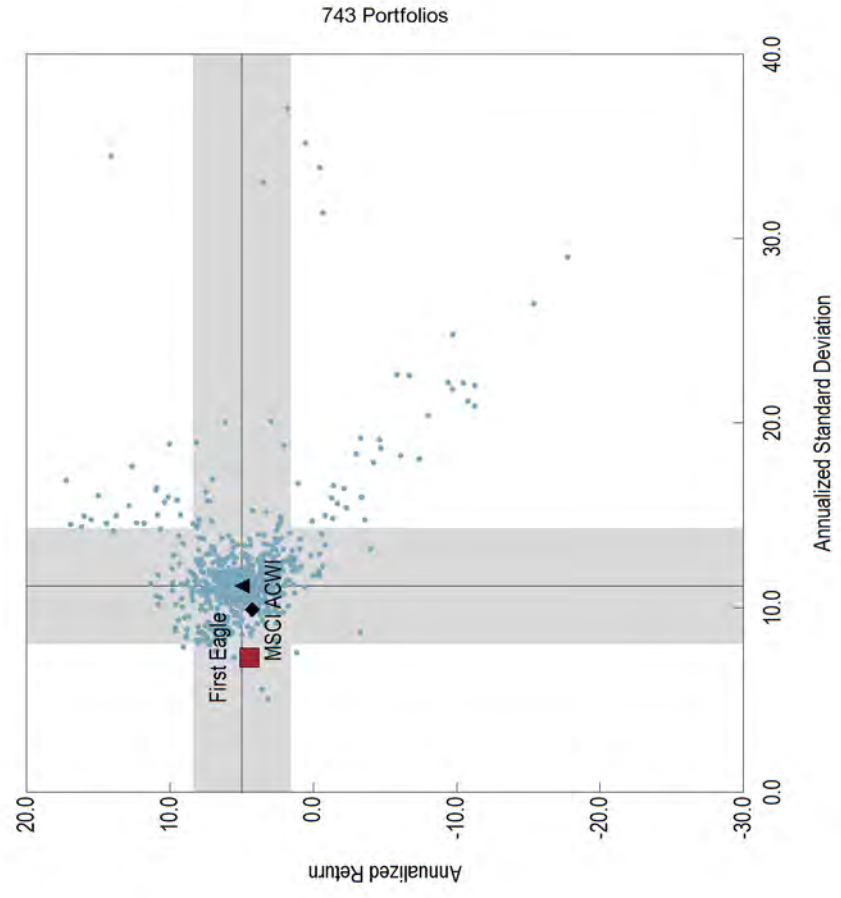
3 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
First Eagle	5.9%	7.3%	0.7
MSCI ACWI	6.6%	10.6%	0.5
eV All Global Equity Gross Median	6.6%	11.0%	0.5

5 Years



5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
First Eagle	4.4%	7.7%	0.5
MSCI ACWI	4.3%	10.9%	0.3
eV All Global Equity Gross Median	5.0%	11.2%	0.4

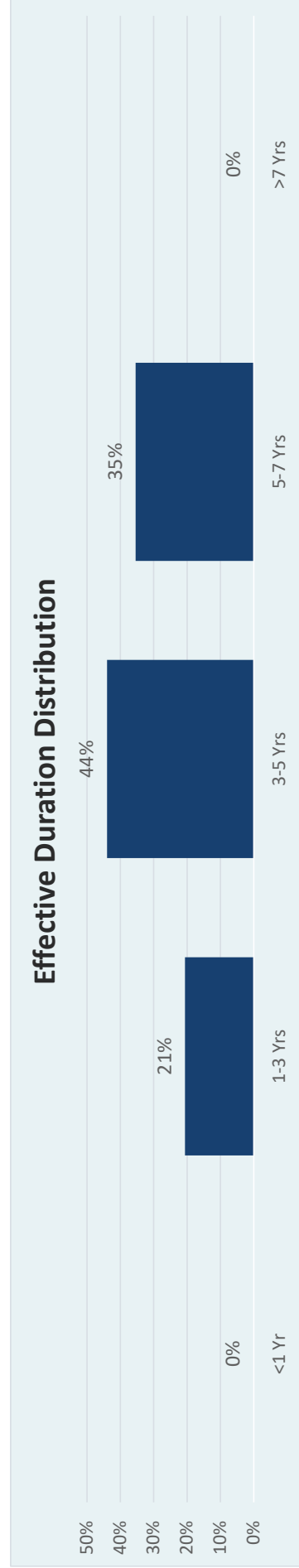
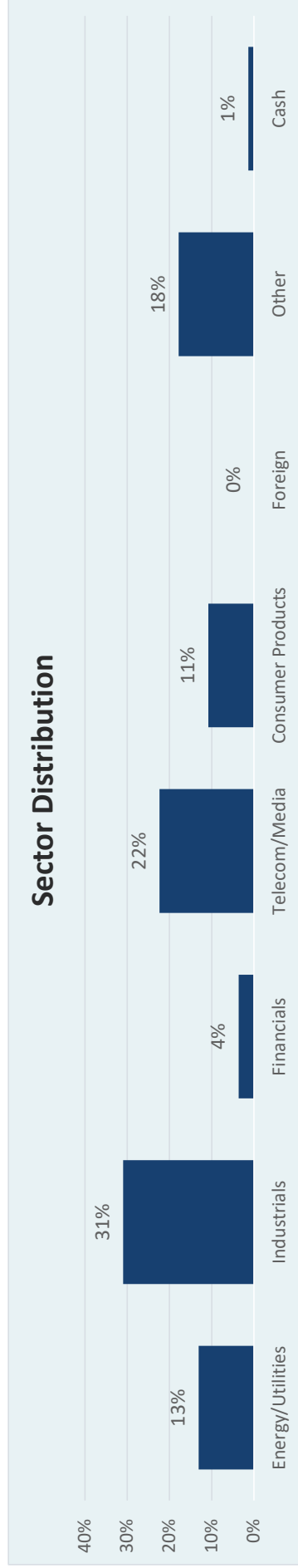
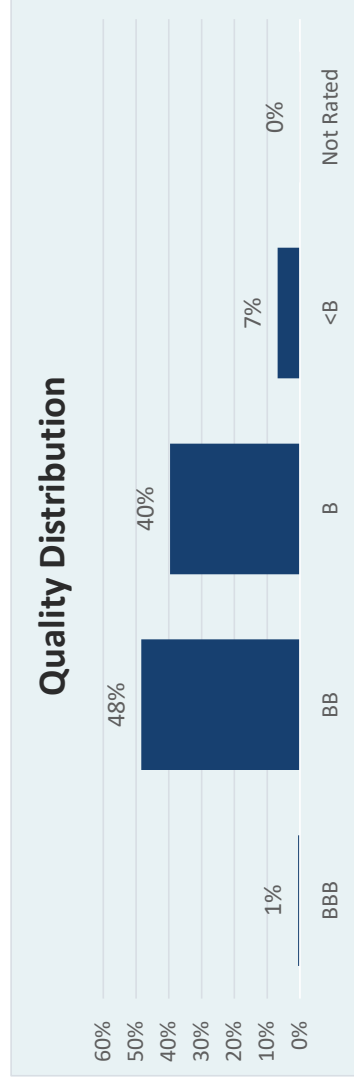
High Yield Managers

Allianz Global Investors Manager Portfolio Overview

Period Ending: December 31, 2018

Domestic high yield fixed income portfolio with a focus on security selection. Primary personnel include Douglas Forsyth, Justin Kass, William Stickney, and Michael Yee.

	Allianz	ICE BofAML HY Master II
Effective Duration	4.40	4.20
Yield to Maturity	7.60	8.00
Average Quality	B1	B1
Average Coupon	6.4%	6.4%

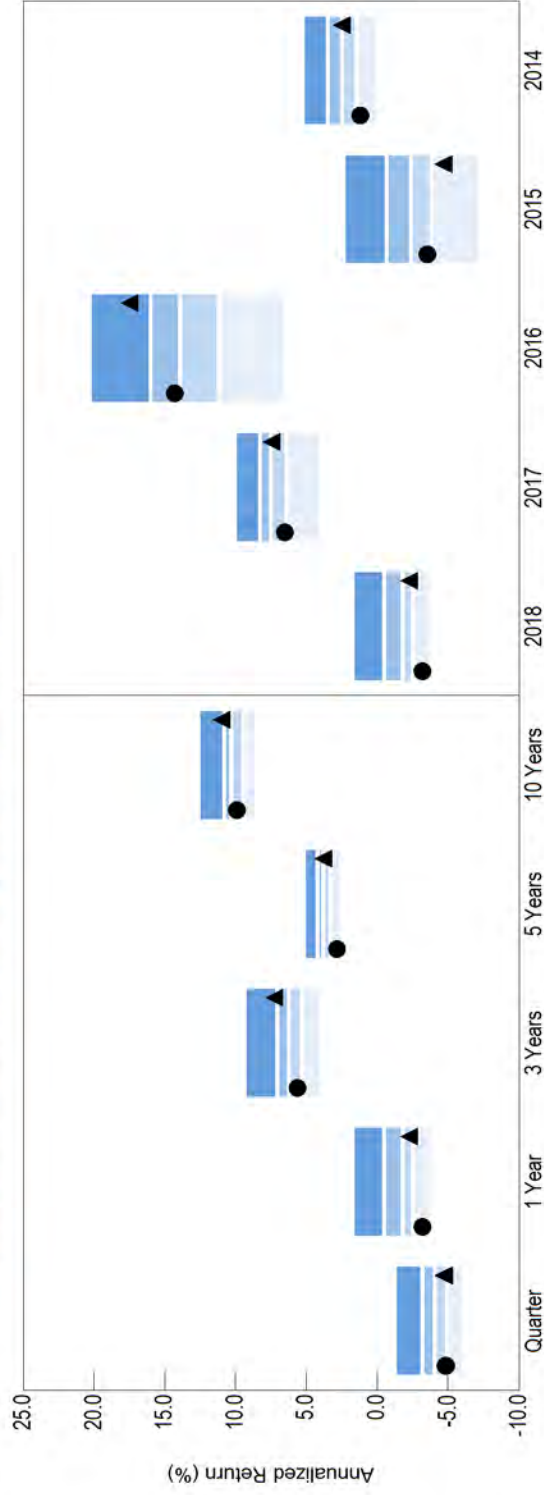


Quality distribution excludes cash.



Allianz Global Investors
 Manager Performance Comparisons (Gross of Fees) Period Ending: December 31, 2018

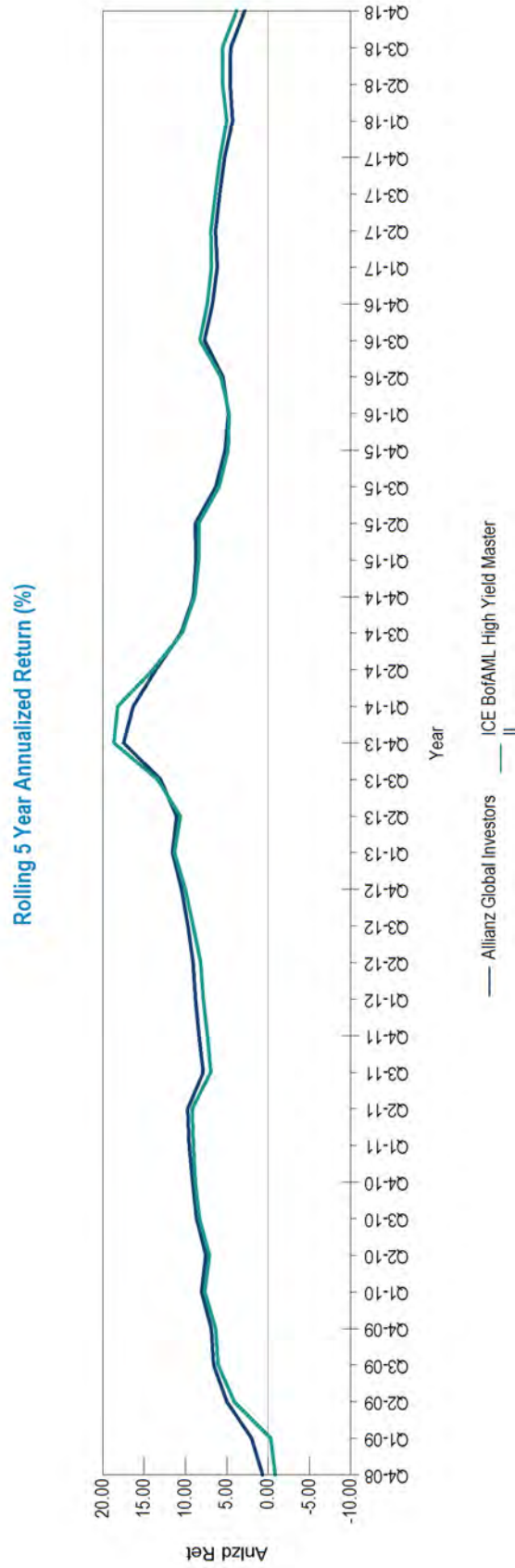
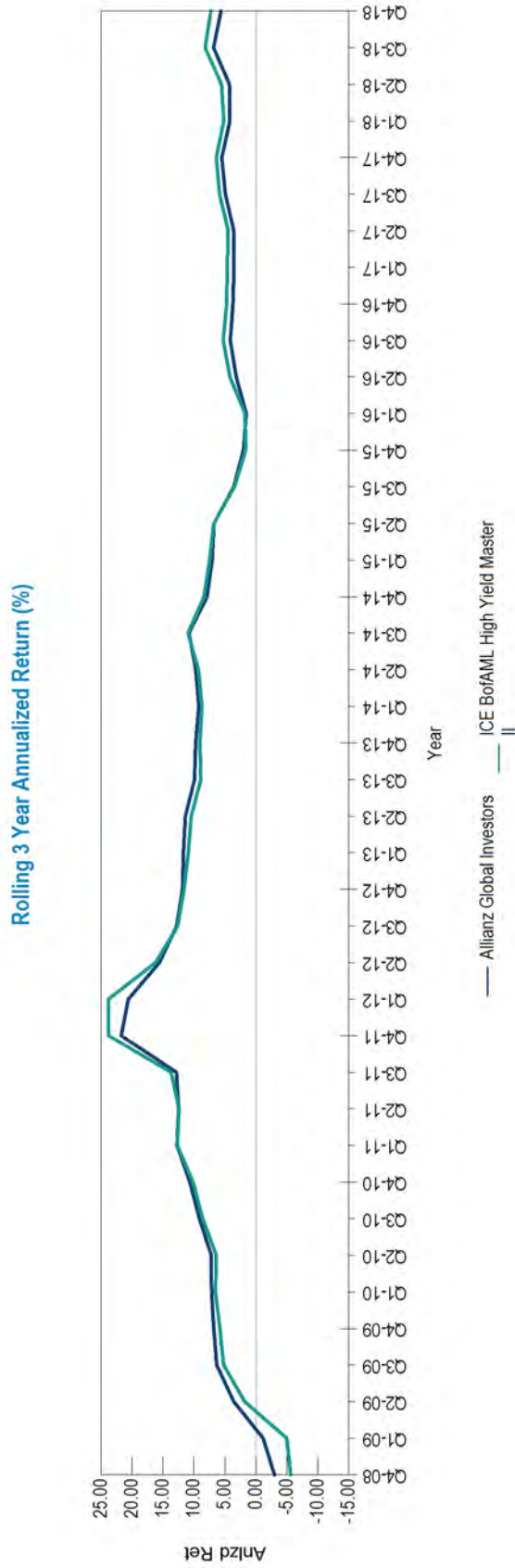
Allianz Global Investors vs. eV US High Yield Fixed Inc Gross Universe



Return (Rank)

	Quarter	1 Year	3 Years	5 Years	10 Years	2014	2015	2016	2017	2018
5th Percentile	-1.3	1.7	9.3	5.2	12.6			20.3	10.0	1.7
25th Percentile	-3.2	-0.5	7.1	4.3	10.9			16.0	8.3	-0.5
Median	-4.0	-1.8	6.3	3.8	10.3			14.0	7.5	-1.8
75th Percentile	-4.9	-2.5	5.4	3.3	9.5			11.3	6.5	-2.5
95th Percentile	-6.0	-3.8	4.0	2.5	8.5			6.6	4.0	-3.8
# of Portfolios	210	210	197	179	126		183	183	198	210
Allianz Global Investors	-4.8 (73)	-3.2 (88)	5.6 (71)	2.8 (87)	9.9 (64)		14.3 (47)	14.3 (47)	6.5 (74)	-3.2 (88)
ICE BofAML High Yield Master II	-4.7 (68)	-2.3 (69)	7.3 (23)	3.8 (49)	11.0 (21)		17.5 (14)	17.5 (14)	7.5 (53)	-2.3 (69)
							-4.6 (83)	-3.5 (68)		
							2.5 (50)	1.2 (83)		

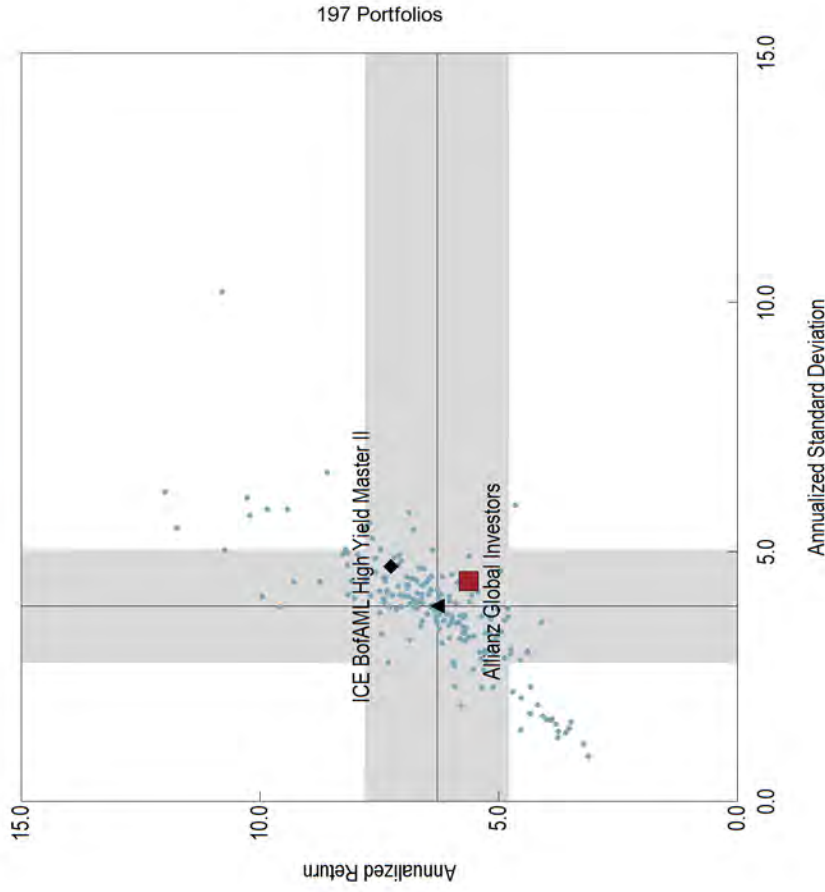
Allianz Global Investors
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees) Period Ending: December 31, 2018



Allianz Global Investors
 Risk vs. Return 3 & 5 Year (Gross of Fees)

Period Ending: December 31, 2018

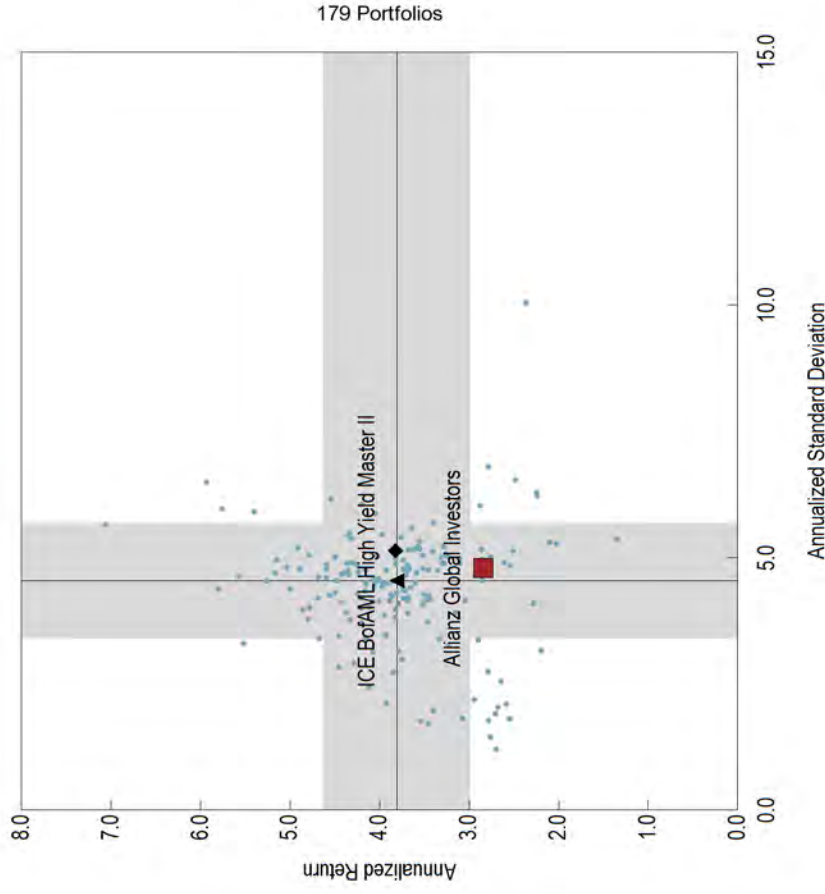
3 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Allianz Global Investors	5.6%	4.4%	1.0
ICE BofAML High Yield Master II	7.3%	4.7%	1.3
eV US High Yield Fixed Inc Gross Median	6.3%	3.9%	1.4

5 Years



5 Years

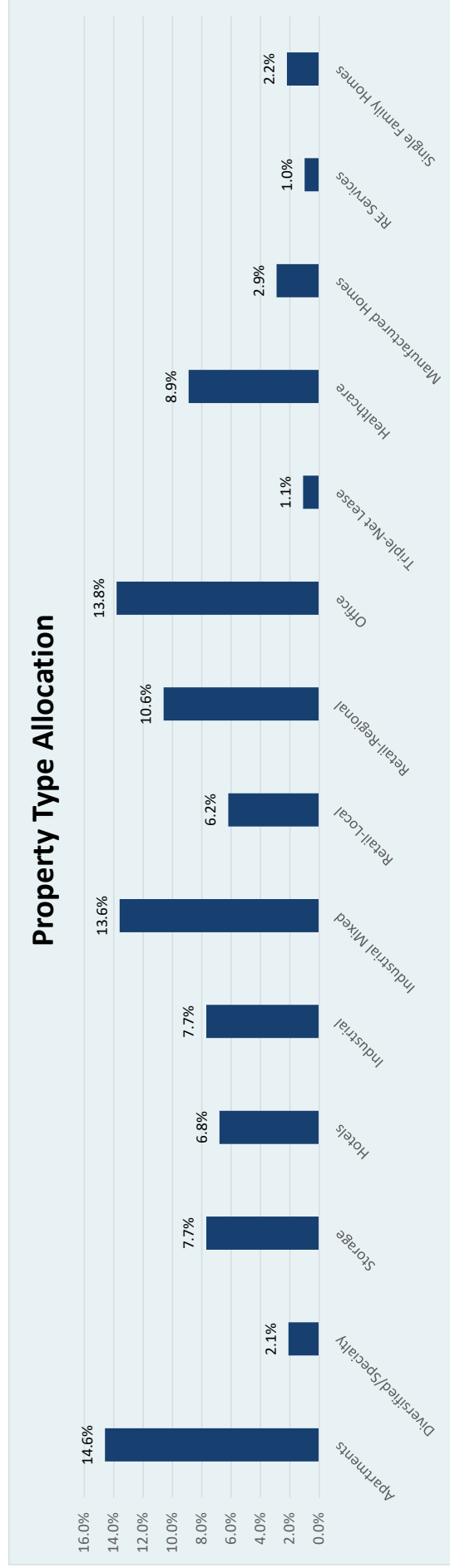
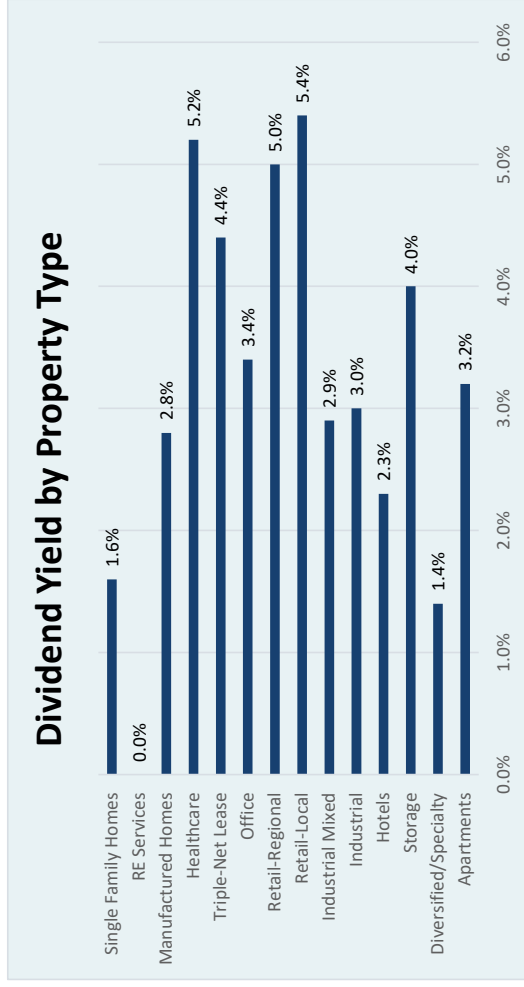
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Allianz Global Investors	2.8%	4.8%	0.5
ICE BofAML High Yield Master II	3.8%	5.1%	0.6
eV US High Yield Fixed Inc Gross Median	3.8%	4.5%	0.7

Real Estate Managers

Diversified portfolio of U.S. REITs with a focus on the underlying real estate assets

Top Five Holdings

Company	Property Type	Allocation
Simon Property Group	Retail-Regional	9.1%
Pologis Inc.	Industrial	6.4%
Equity Residential	Apartments	5.7%
Equinix Inc	Industrial Mixed	5.4%
Ventas, inc	Healthcare	4.9%



0.8% is allocated to Cash and Cash Equivalents

Diversifying Fixed Income Managers

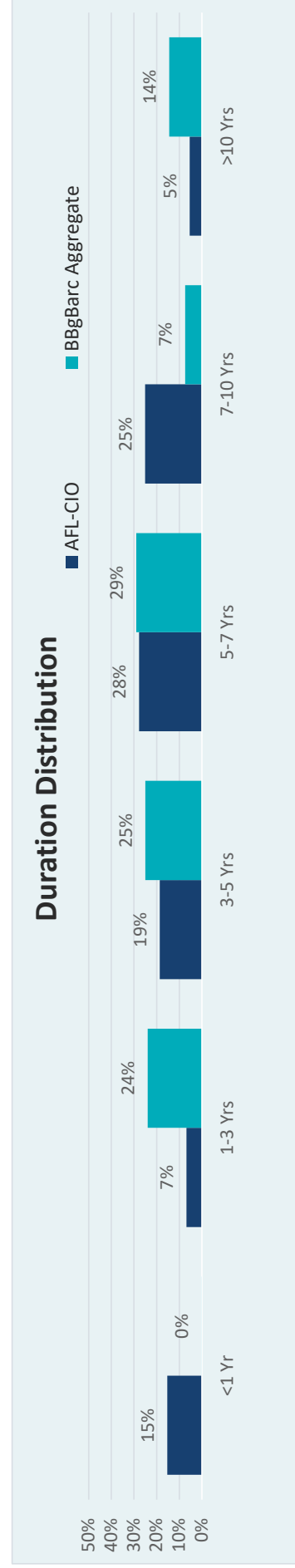
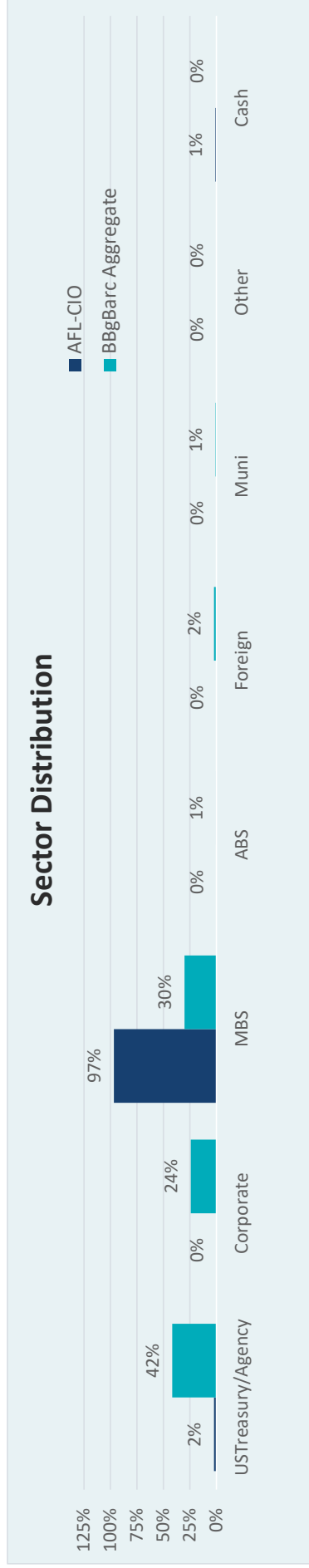
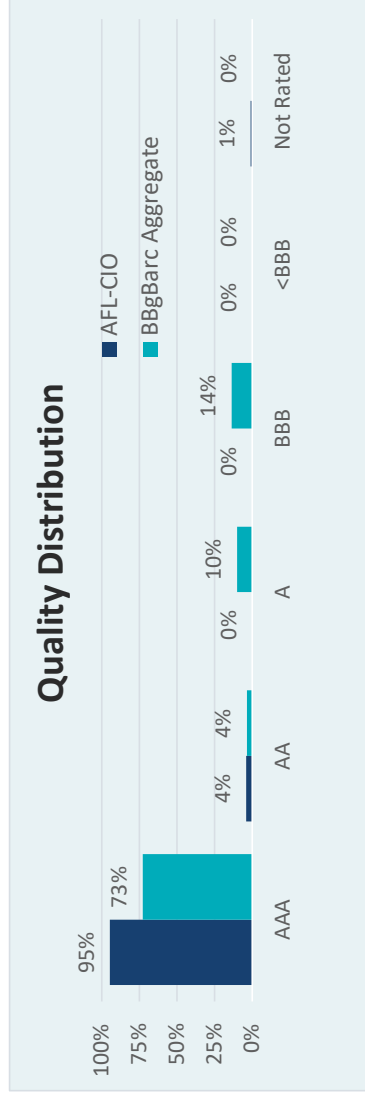
AFL-CIO

Manager Portfolio Overview

Period Ending: December 31, 2018

Domestic core fixed income portfolio with an exclusive focus on mortgage-related securities. Primary personnel include Stephen Coyle and Chang Su.

	AFL-CIO	BBgBarc Aggregate
Effective Duration	5.57	5.93
Yield to Maturity	3.42	3.19
Average Quality	AAA	AA
Average Coupon	3.4%	3.2%

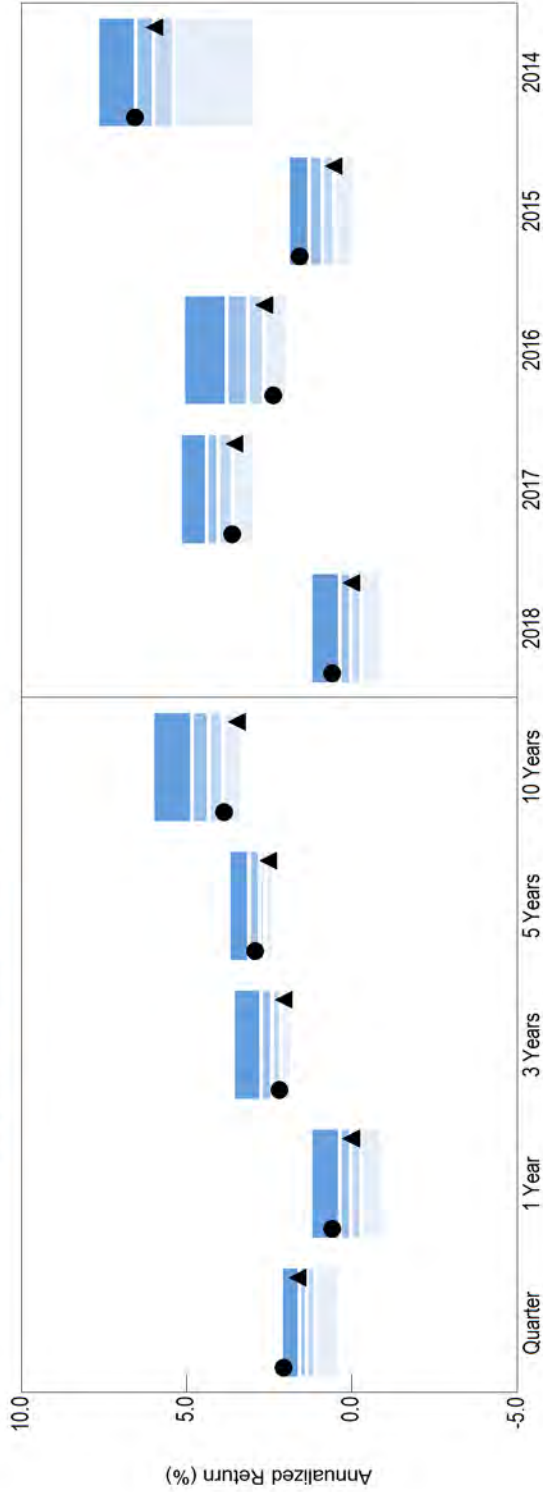


Duration and Quality distributions exclude cash.



AFL-CIO
 Manager Performance Comparisons (Gross of Fees) Period Ending: December 31, 2018

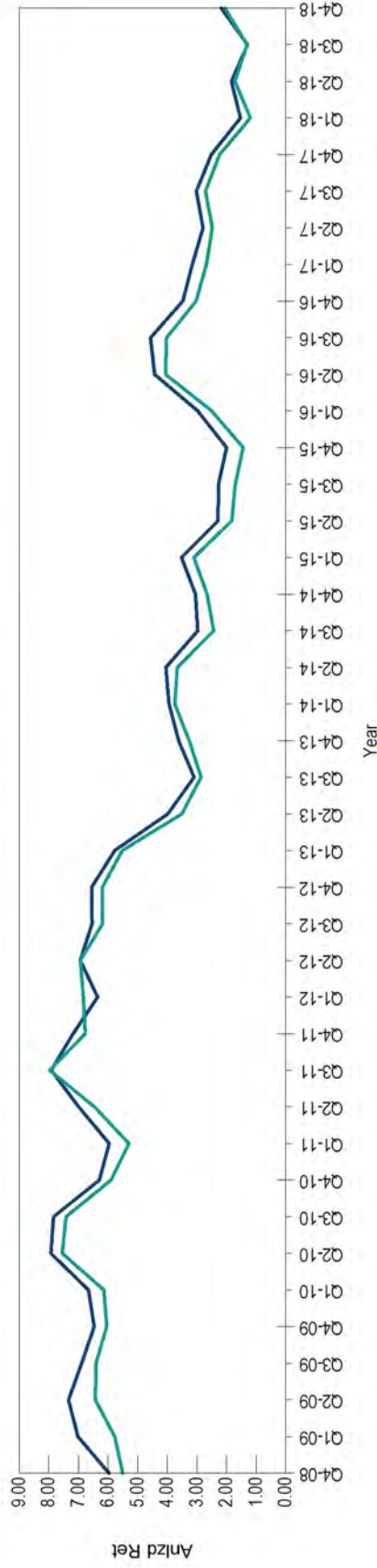
AFL-CIO vs. eV US Core Fixed Inc Gross Universe



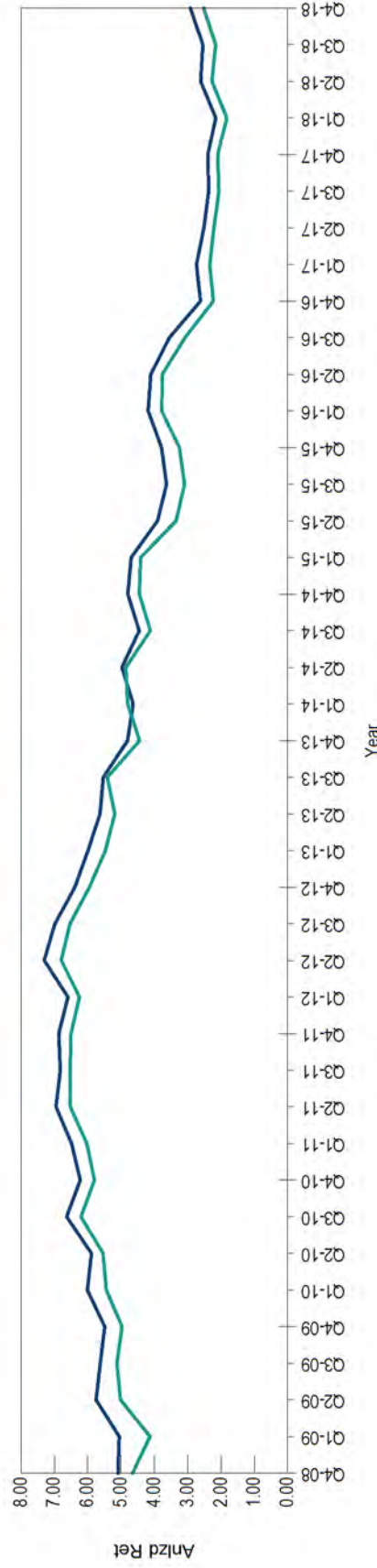
Return (Rank)

5th Percentile	2.1	1.2	3.6	3.7	6.0	1.2	5.2	5.1	1.9	7.7
25th Percentile	1.6	0.4	2.8	3.1	4.8	0.4	4.4	3.8	1.3	6.5
Median	1.4	0.0	2.4	2.8	4.3	0.0	4.0	3.2	0.9	6.0
75th Percentile	1.1	-0.3	2.1	2.6	3.9	-0.3	3.6	2.7	0.5	5.4
95th Percentile	0.4	-0.9	1.8	2.4	3.3	-0.9	2.9	2.0	-0.1	2.9
# of Portfolios	240	240	237	232	210	240	233	223	196	213
● AFL-CIO	2.1 (6)	0.6 (16)	2.2 (70)	2.9 (39)	3.9 (79)	0.6 (16)	3.6 (76)	2.4 (87)	1.6 (15)	6.6 (25)
▲ BBgBarc US Aggregate TR	1.6 (19)	0.0 (54)	2.1 (84)	2.5 (84)	3.5 (93)	0.0 (54)	3.5 (79)	2.6 (77)	0.6 (75)	6.0 (52)

Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)

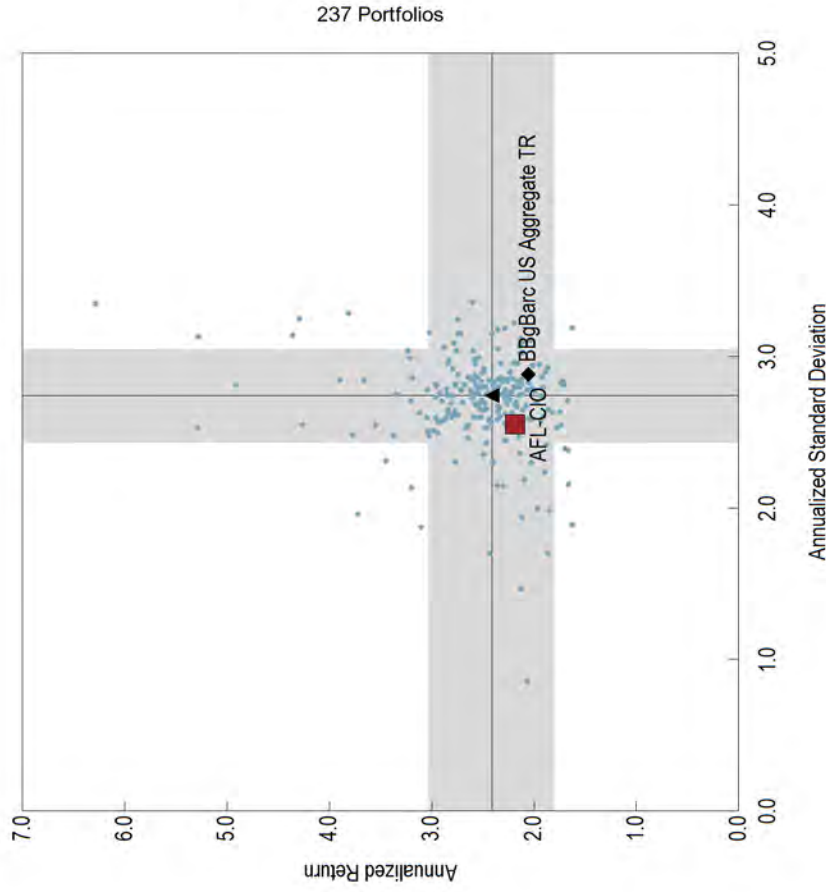


AFL-CIO

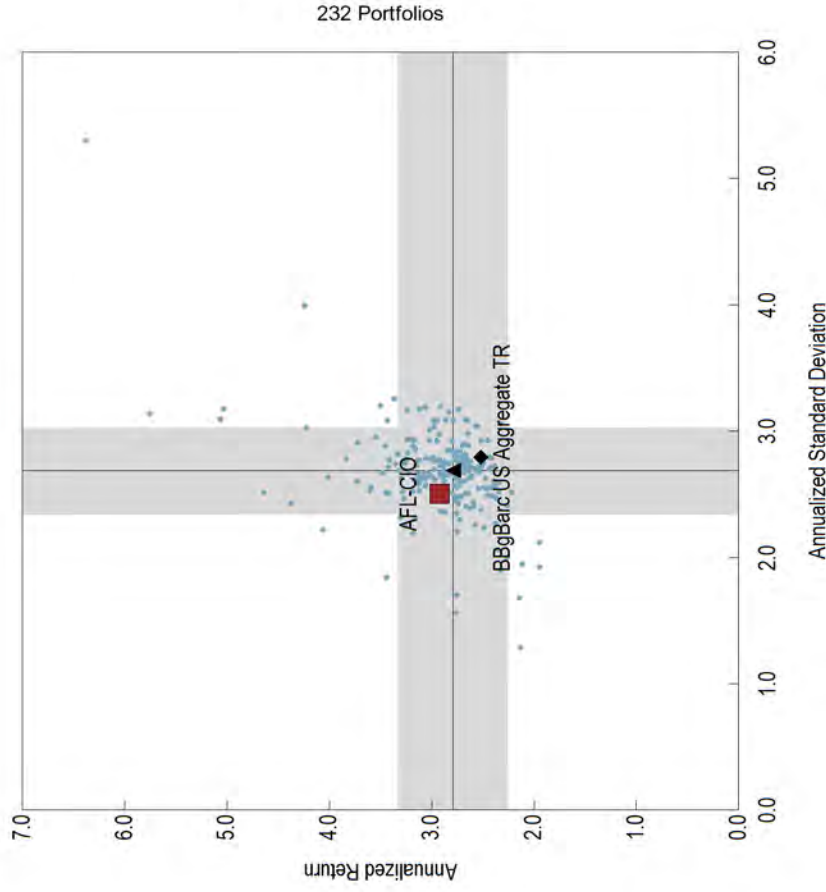
Risk vs. Return 3 & 5 Year (Gross of Fees)

Period Ending: December 31, 2018

3 Years



5 Years



3 Years

5 Years

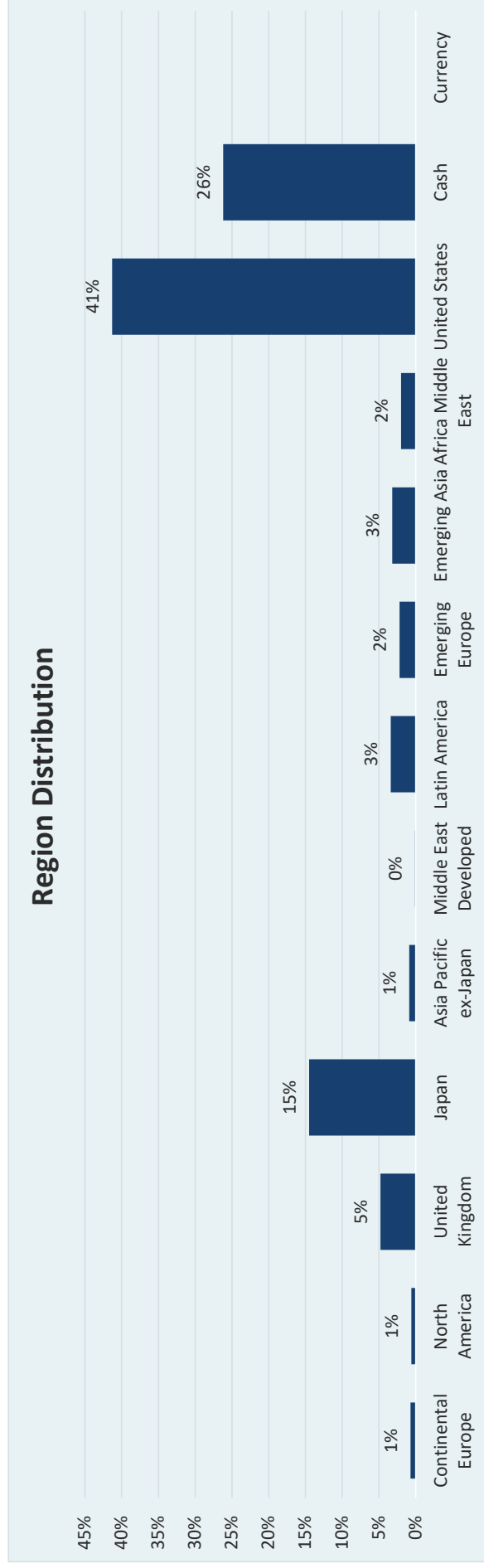
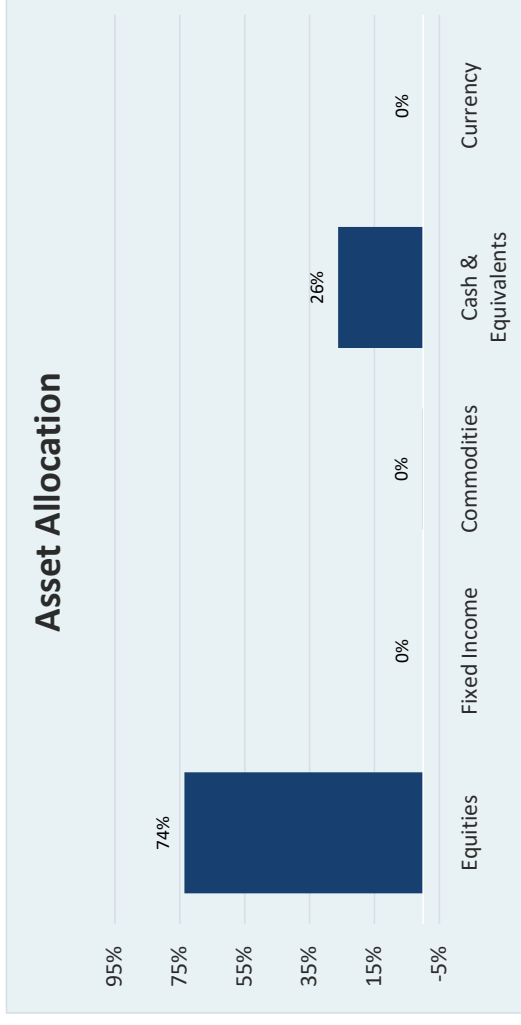
AFL-CIO
BBgBarc US Aggregate TR
eV US Core Fixed Inc Gross Median

Wellington Total Return Manager Portfolio Overview

Period Ending: December 31, 2018

Tactical multi-asset class real return strategy with a focus on managing risk of active strategies used to gain exposure to attractive assets of markets.

Wellington Total Return	
Number of Equity Holdings	1099
Number of Commodity Holdings	151
Effective Duration (Years)	3.80
Average Quality	n/a



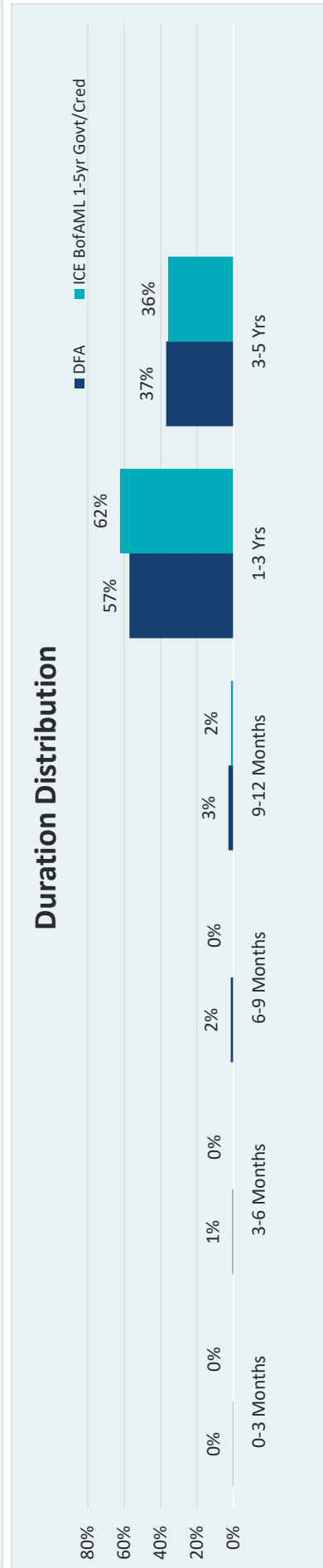
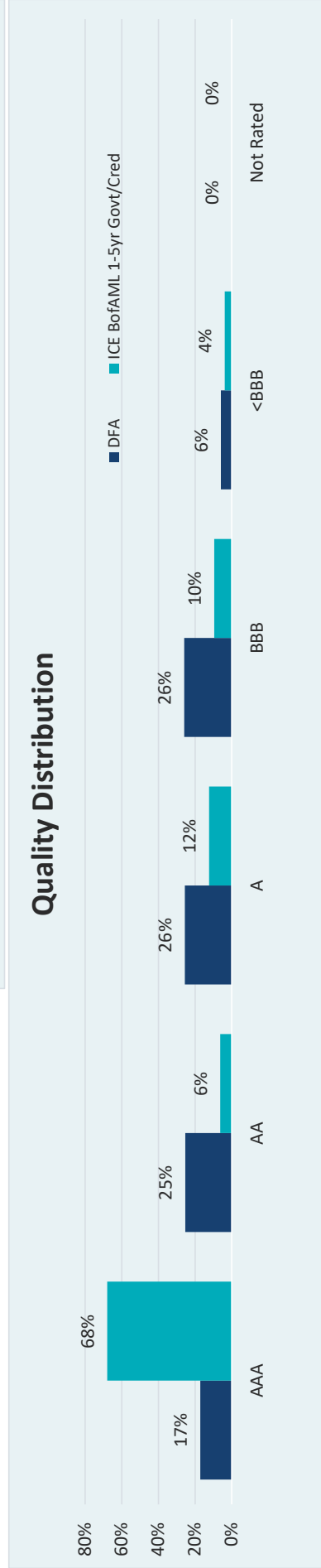
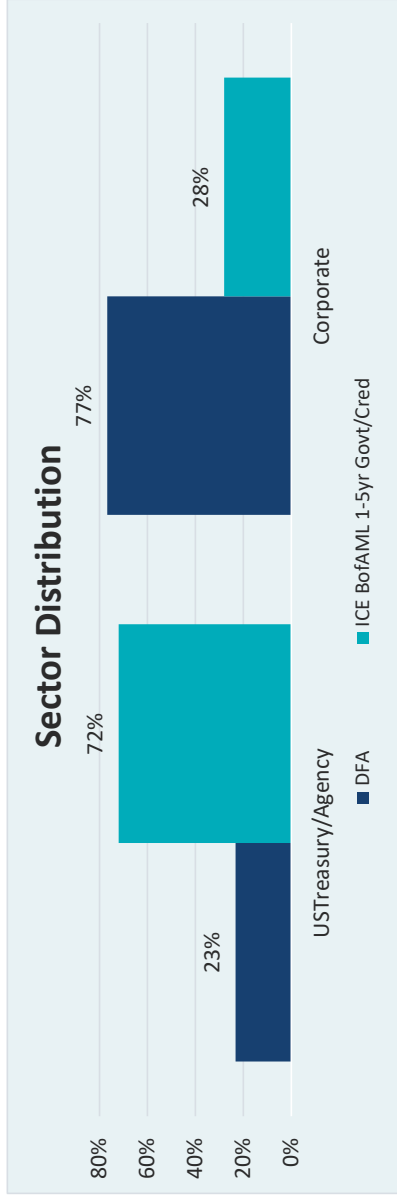
Liquidity Managers

DFA Short Credit Manager Portfolio Overview

Period Ending: December 31, 2018

Domestic short term US credit fixed income portfolio that maximizes total return through income and capital appreciation. Primary personnel include Dave Plecha and Joseph Kolerich.

	DFA	ICE BofAML 1-5yr Govt/Cred
Effective Duration	2.51	2.61
Yield to Maturity	3.25	2.87
Average Quality	A+	Aa1
Average Coupon	2.77%	2.63%

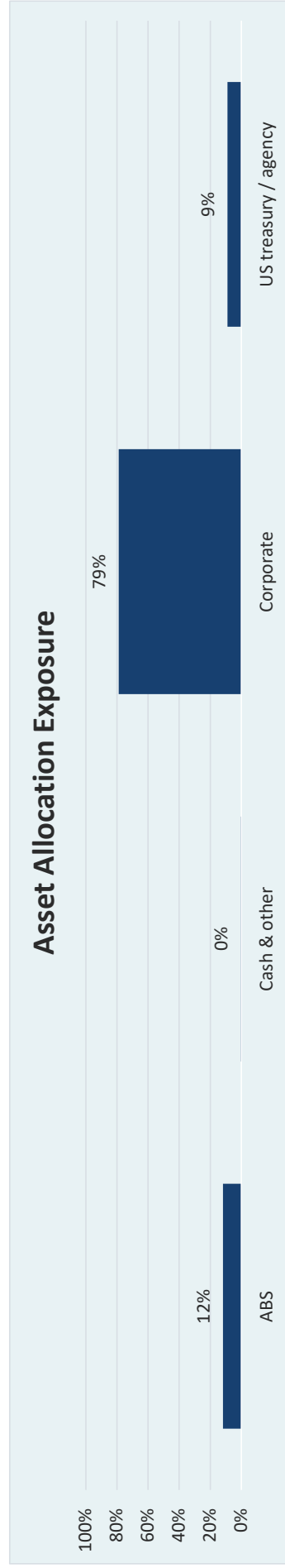
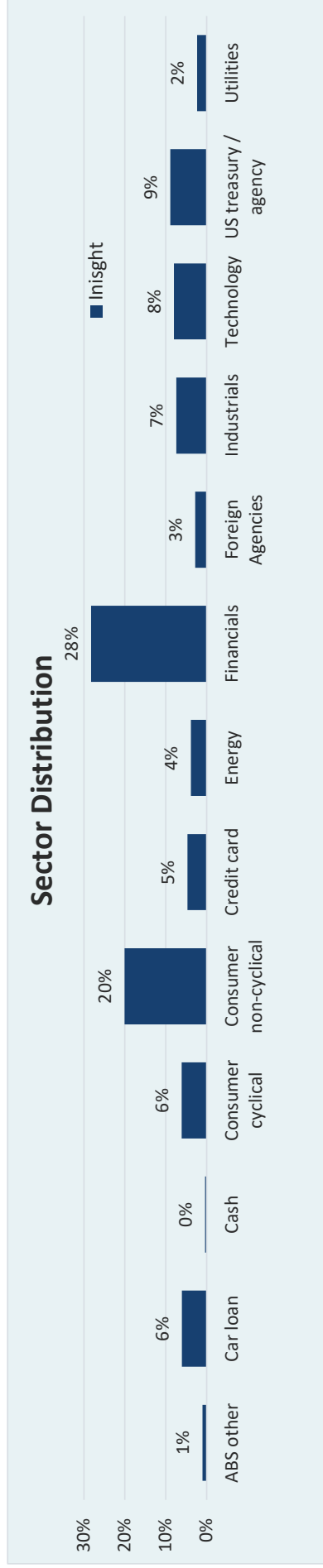
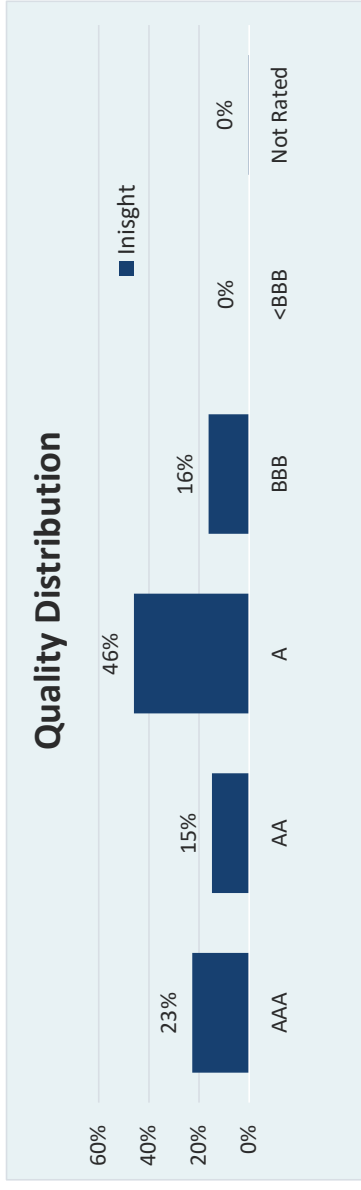


Insight Short Duration Manager Portfolio Overview

Period Ending: December 31, 2018

High quality, short duration multi-sector fixed income portfolio comprised of Treasuries, Agencies, investment grade corporates, and ABS designed specifically to meet CCCERA's liabilities. Key personnel include Gerard Berrigan and Jesse Fogarty.

	Insight	BbgBarc 1-3yr Govt
Effective Duration	1.54	1.91
Yield to Maturity	3.18	2.53
Average Quality	A+	AAA
Average Coupon	2.5%	2.1%

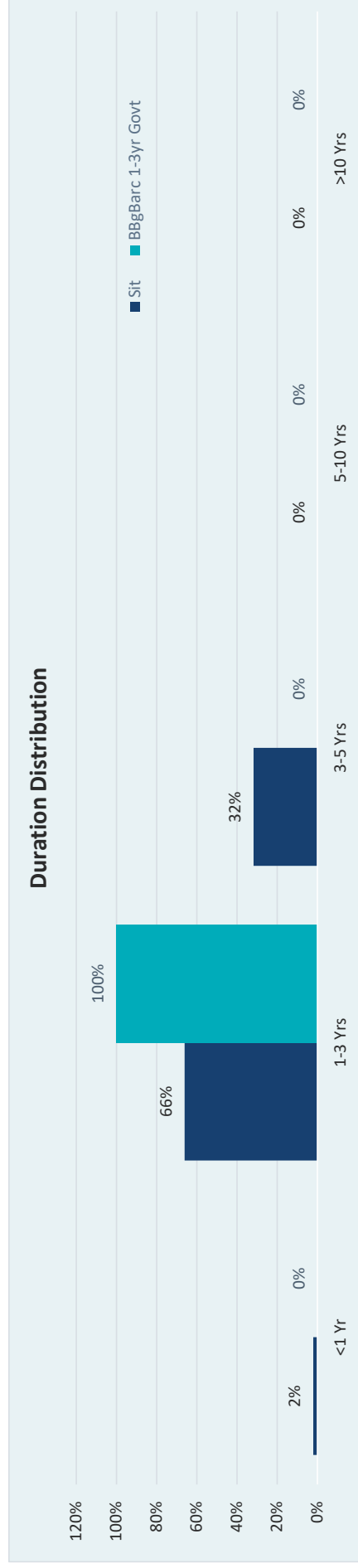
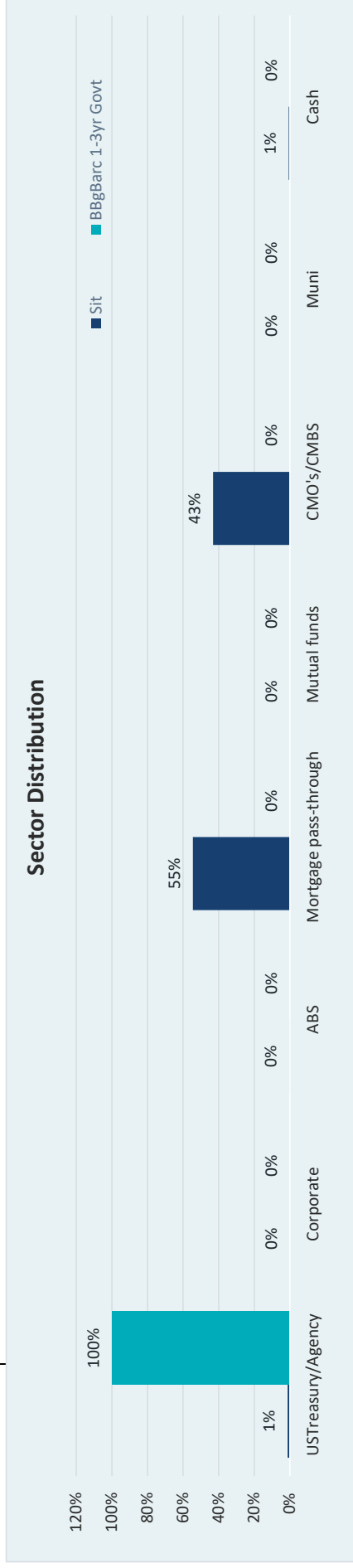


Sit Short Duration Manager Portfolio Overview

Period Ending: December 31, 2018

Short duration fixed income portfolio with a focus on earning high levels of interest income. Primary personnel include Bryce Doty, Paul Jungquist and Michael Brilley.

	Sit	BBgBarc 1-3yr Govt
Adjusted Duration	2.60	1.9
Yield to Maturity	3.10	2.5
Average Quality	AAA	AAA
Average Coupon	6.5%	2.0%



Performance Return Calculations

Performance is calculated using Modified Dietz and for time periods with large cash flow (generally greater than 10% of portfolio value), Time Weighted Rates of Return (TWRR) methodologies. Monthly returns are geometrically linked and annualized for periods longer than one year.

Data Source

Verus is an independent third party consulting firm and calculates returns from best source book of record data. Returns calculated by Verus may deviate from those shown by the manager in part, but not limited to, differences in prices and market values reported by the custodian and manager, as well as significant cash flows into or out of an account. It is the responsibility of the manager and custodian to provide insight into the pricing methodologies and any difference in valuation.

Illiquid Alternatives

Due to the inability to receive final valuation prior to report production, closed end funds (including but are not limited to Real Estate, Hedge Funds, Private Equity, and Private Credit) performance is typically reported at a one-quarter lag. Valuation is reported at a one-quarter lag, adjusted for current quarter flow (cash flows are captured real time). Closed end fund performance is calculated using a time-weighted return methodology consistent with all portfolio and total fund performance calculations. For Private Markets, performance reports also include Verus-calculated multiples based on flows and valuations (e.g. DPI and TVPI) and manager-provided IRRs.

Manager Line Up

Manager	Inception Date	Data Source	Manager	Inception Date	Data Source
BlackRock Russell 1000 Index	4/20/2017	BlackRock	Long Wharf Fund IV	7/3/2013	Long Wharf
Jackson Square Partners	5/1/2005	State Street	Long Wharf Fund V	9/30/2016	Long Wharf
Robeco Boston Partners	6/1/1995	State Street	Invesco Real Estate II	11/26/2007	Invesco
Emerald Advisors	4/7/2003	State Street	Invesco Real Estate III	6/30/2013	Invesco
Ceredex	11/6/2011	State Street	Invesco Real Estate IV	6/30/2014	Invesco
Plyford	4/25/2014	State Street	Oaktree REOF V	12/31/2011	Oaktree
William Blair	10/29/2010	William Blair	Oaktree REOF VI	9/30/2013	Oaktree
Artisan Partners	10/1/2012	SEI Trust	Oaktree REOF VII	4/1/2015	Oaktree
First Eagle	1/18/2011	State Street	Siguler Guff DREOF	1/25/2012	Siguler Guff
PIMCO RAE Emerging Markets	2/28/2017	State Street	Siguler Guff DREOF II	8/31/2013	Siguler Guff
TT Emerging Markets	7/27/2017	TT	Siguler Guff DREOF II Co-Inv	1/27/2016	Siguler Guff
AFL-CIO	6/30/1991	AFL-CIO	Paulson Real Estate Fund II	11/10/2013	State Street
Sit Short Duration	1/2/2016	State Street	Adams Street Partners	3/18/1996	StepStone Group
DFA Short Credit	11/21/2016	State Street	Adams Street Partners II	1/16/2009	StepStone Group
Insight Short Duration	11/18/2016	State Street	Adams Street Partners Venture	4/28/2017	StepStone Group
BlackRock	4/20/2017	BlackRock	Adams Street Partners - BFP	1/18/1996	StepStone Group
Torchlight II	9/30/2006	StepStone Group	Adams Street Partners - Fund 5	9/21/2012	StepStone Group
Torchlight III	12/31/2008	StepStone Group	Bay Area Equity Fund	6/14/2004	StepStone Group
Torchlight IV	7/1/2012	StepStone Group	Bay Area Equity Fund II	12/7/2009	StepStone Group
Torchlight V	7/1/2012	StepStone Group	Carpenter Bancfund	1/31/2008	StepStone Group
Allianz Global Investors	4/25/2000	State Street	EIF US Power Fund I	11/26/2003	StepStone Group
BlackRock Transition	1/1/2016	State Street	EIF US Power Fund II	8/16/2005	StepStone Group
Wellington Real Total Return	2/26/2013	State Street	EIF US Power Fund III	5/30/2007	StepStone Group
Aether Real Assets III	11/27/2013	StepStone Group	EIF US Power Fund IV	11/28/2011	StepStone Group
Commonfund	6/28/2013	StepStone Group	EIF US Power Fund V	11/28/2016	StepStone Group
Adelante	9/30/2001	State Street	Nogales	2/15/2004	StepStone Group
Cash	-	State Street	Paladin III	11/30/2007	StepStone Group
Angelo Gordon Realty Fund VIII	1/23/2012	Angelo Gordon	Ocean Avenue Fund II	6/11/2014	StepStone Group
Angelo Gordon Realty Fund IX	12/8/2014	Angelo Gordon	Ocean Avenue Fund III	4/15/2016	StepStone Group
Angelo Gordon Energy Credit Opp	9/24/2015	StepStone Group	Pathway	1/19/1998	StepStone Group
DLJ RECP III	6/23/2005	DLJ	Pathway 2008	12/26/2008	StepStone Group
DLJ RECP IV	2/11/2008	DLJ	Pathway 6	5/24/2011	StepStone Group

DLJ RECP V	7/1/2014	DLJ	Pathway 7	2/7/2013	StepStone Group
Wastewater Opp. Fund	12/8/2015	StepStone Group	Siguler Guff CCCERA Opps	6/3/2014	StepStone Group
LaSalle Income & Growth VI	7/16/2013	LaSalle	Siguler Guff Secondary Opps	11/30/2016	StepStone Group
LaSalle Income & Growth VII	2/28/2017	LaSalle	Aether Real Assets IV	3/16/2016	StepStone Group
Hearststone II	6/17/1998	Hearststone	StepStone CC Opportunities Fund	2/1/2018	StepStone Group
Parametric Overlay	3/29/2017	State Street	Parametric Defensive Equity	7/23/2018	State Street

Policy & Custom Index Composition

Policy Index (7/1/2018 - present)	11% Russell 3000, 19% MSCI ACWI ex-US (Gross), 11% MSCI ACWI (Net), 1% Wilshire REIT, 1.8% NCREIF Property Index, 7.2% NCREIF ODCE Index, 2% CPI + 4%, 10% S&P 500 +4% (Lagged), 4% ICE BofAML High Yield Master II +2%, 2% ICE BofAML High Yield Master II, 23% BBgBarc 1-3 Yr Gov/Credit, 3.5% BBgBarc US Aggregate, 2% BBgBarc Global Aggregate, 2.5% HFRI EH Equity Market Neutral.
Policy Index (10/1/2017 - 6/30/2018)	16.3% Russell 3000, 18.8% MSCI ACWI ex-US (Gross), 8.6% MSCI ACWI (Net), 1% Wilshire REIT, 1.6% NCREIF Property Index, 6.4% NCREIF ODCE Index, 2.5% CPI + 4%, 10.1% S&P 500 +4% (Lagged), 1.9% ICE BofAML High Yield Master II +2%, 4.3% ICE BofAML High Yield Master II, 25% BBgBarc 1-3 Yr Gov/Credit, 3.5% BBgBarc US Aggregate.
Policy Index (1/1/2017 - 9/30/2017)	22.9% Russell 3000, 11% MSCI ACWI ex-US (Gross), 10.9% MSCI ACWI (Net), 1% Wilshire REIT, 1.7% NCREIF Property Index, 6.8% NCREIF ODCE Index, 3.6% CPI + 4%, 8.1% S&P 500 +4% (Lagged), 1.7% ICE BofAML High Yield Master II +2%, 5.1% ICE BofAML High Yield Master II, 22.4% BBgBarc 1-3 Yr Gov/Credit, 3.2% BBgBarc US Aggregate, 1.6% 91-Day T-Bills.
Policy Index (4/1/2012-12/31/2016)	27.7% Russell 3000, 10.6% MSCI ACWI ex-US (Gross), 12.3% MSCI ACWI (Net), 19.6% BBgBarc U.S. Aggregate, 5% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 13.5% Real Estate Benchmark, 6.8% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.
Policy Index (4/1/2011-3/31/2012)	31% Russell 3000, 10.4% MSCI EAFE (Gross), 9.6% MSCI ACWI (Net), 25% BBgBarc U.S. Aggregate, 3% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 8.4% DJ Wilshire REIT, 3.1% NCREIF, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.
Policy Index (4/1/2010-3/31/2011)	35.6% Russell 3000, 10.4% MSCI EAFE (Gross), 5% MSCI ACWI (Net), 25% BBgBarc U.S. Aggregate, 3% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 8.4% DJ Wilshire REIT, 3.1% NCREIF, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.
Policy Index (7/1/2009-3/31/2010)	40.6% Russell 3000, 10.4% MSCI EAFE (Gross), 25% BBgBarc U.S. Aggregate, 3% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 8.4% DJ Wilshire REIT, 3.1% NCREIF, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.
Custom Growth Benchmark (7/1/2018 - present)	16.0% Russell 3000, 27.5% MSCI ACWI ex-US (Gross), 15.9% MSCI ACWI (Net), 1.5% Wilshire REIT, 2.6% NCREIF Property Index, 10.4% NCREIF ODCE Index, 14.5% S&P 500 +4% (Lagged), 5.8% ICE BofAML High Yield Master II +2%, 2.9% ICE BofAML High Yield Master II, 2.9% BBgBarc Global Bond
Custom Growth Benchmark (9/30/2017-6/30/2018)	23.6% Russell 3000, 27.2% MSCI ACWI ex-US (Gross), 12.5% MSCI ACWI (Net), 1.5% Wilshire REIT, 2.3% NCREIF Property Index, 9.3% NCREIF ODCE Index, 14.6% S&P 500 +4% (Lagged), 2.8% ICE BofAML High Yield Master II +2%, 6.2% ICE BofAML High Yield Master II
Custom Growth Benchmark (1/1/2017-9/30/2017)	32.6% Russell 3000, 15.7% MSCI ACWI ex-US (Gross), 15.5% MSCI ACWI (Net), 1.4% Wilshire REIT, 2.4% NCREIF Property Index, 9.6% NCREIF ODCE Index, 1.6% CPI +4%, 11.5% S&P 500 +4% (Lagged), 2.4% ICE BofAML High Yield Master II +2%, 7.3% ICE BofAML High Yield Master II
Custom Growth Benchmark (Prior to 1/1/2017)	Weighted-average of the benchmarks of the sub-composites that make up the composite.
Custom Diversifying Benchmark (7/1/2018 - present)	43.75% BBgBarc US Aggregate, 25% CPI + 4%, 31.25% HFRI EH Equity Market Neutral.
Custom Diversifying Benchmark (10/1/2017 - 6/30/2018)	58.33% BBgBarc US Aggregate, 41.67% CPI + 4%.
Custom Diversifying Benchmark (1/1/2017 - 9/30/2017)	56.1% BBgBarc US Aggregate, 43.9% CPI + 4%.
Custom Diversifying Benchmark (Prior to 1/1/2017)	Weighted-average of the benchmarks of the sub-composites that make up the composite.
Real Estate Benchmark (current)	11% Wilshire REIT, 18% NCREIF Property Index, 71% NCREIF ODCE Index.
Real Estate Benchmark (4/1/2012-11/30/2016)	40% Wilshire REIT, 50% NCREIF Property Index, 10% FTSE/EPRA NAREIT Developed ex-US.

Other Disclosures

All data prior to 12/31/2014 was provided by previous consultant. As of 7/1/2018 all Private Equity and Private Credit data is provided by StepStone Group.

Glossary

Allocation Effect: An attribution effect that describes the amount attributable to the managers' asset allocation decisions, relative to the benchmark.

Alpha: The excess return of a portfolio after adjusting for market risk. This excess return is attributable to the selection skill of the portfolio manager. Alpha is calculated as: Portfolio Return - [Risk-free Rate + Portfolio Beta x (Market Return - Risk-free Rate)].

Benchmark R-squared: Measures how well the Benchmark return series fits the manager's return series. The higher the Benchmark R-squared, the more appropriate the benchmark is for the manager.

Beta: A measure of systematic, or market risk; the part of risk in a portfolio or security that is attributable to general market movements. Beta is calculated by dividing the covariance of a security by the variance of the market.

Book-to-Market: The ratio of book value per share to market price per share. Growth managers typically have low book-to-market ratios while value managers typically have high book-to-market ratios.

Capture Ratio: A statistical measure of an investment manager's overall performance in up or down markets. The capture ratio is used to evaluate how well an investment manager performed relative to an index during periods when that index has risen (up market) or fallen (down market). The capture ratio is calculated by dividing the manager's returns by the returns of the index during the up/down market, and multiplying that factor by 100.

Correlation: A measure of the relative movement of returns of one security or asset class relative to another over time. A correlation of 1 means the returns of two securities move in lock step, a correlation of -1 means the returns of two securities move in the exact opposite direction over time. Correlation is used as a measure to help maximize the benefits of diversification when constructing an investment portfolio.

Excess Return: A measure of the difference in appreciation or depreciation in the price of an investment compared to its benchmark, over a given time period. This is usually expressed as a percentage and may be annualized over a number of years or represent a single period.

Information Ratio: A measure of a manager's ability to earn excess return without incurring additional risk. Information ratio is calculated as: excess return divided by tracking error.

Interaction Effect: An attribution effect that describes the portion of active management that is contributable to the cross interaction between the allocation and selection effect. This can also be explained as an effect that cannot be easily traced to a source.

Portfolio Turnover: The percentage of a portfolio that is sold and replaced (turned over) during a given time period. Low portfolio turnover is indicative of a buy and hold strategy while high portfolio turnover implies a more active form of management.

Price-to-Earnings Ratio (P/E): Also called the earnings multiplier, it is calculated by dividing the price of a company's stock into earnings per share. Growth managers typically hold stocks with high price-to-earnings ratios whereas value managers hold stocks with low price-to-earnings ratios.

R-Squared: Also called the coefficient of determination, it measures the amount of variation in one variable explained by variations in another, i.e., the goodness of fit to a benchmark. In the case of investments, the term is used to explain the amount of variation in a security or portfolio explained by movements in the market or the portfolio's benchmark.

Selection Effect: An attribution effect that describes the amount attributable to the managers' stock selection decisions, relative to the benchmark.

Sharpe Ratio: A measure of portfolio efficiency. The Sharpe Ratio indicates excess portfolio return for each unit of risk associated with achieving the excess return. The higher the Sharpe Ratio, the more efficient the portfolio. Sharpe ratio is calculated as: Portfolio Excess Return / Portfolio Standard Deviation.

Sortino Ratio: Measures the risk-adjusted return of an investment, portfolio, or strategy. It is a modification of the Sharpe Ratio, but penalizes only those returns falling below a specified benchmark. The Sortino Ratio uses downside deviation in the denominator rather than standard deviation, like the Sharpe Ratio.

Standard Deviation: A measure of volatility, or risk, inherent in a security or portfolio. The standard deviation of a series is a measure of the extent to which observations in the series differ from the arithmetic mean of the series. For example, if a security has an average annual rate of return of 10% and a standard deviation of 5%, then two-thirds of the time, one would expect to receive an annual rate of return between 5% and 15%.

Style Analysis: A return based analysis designed to identify combinations of passive investments to closely replicate the performance of funds

Style Map: A specialized form or scatter plot chart typically used to show where a Manager lies in relation to a set of style indices on a two-dimensional plane. This is simply a way of viewing the asset loadings in a different context. The coordinates are calculated by rescaling the asset loadings to range from -1 to 1 on each axis and are dependent on the Style Indices comprising the Map.

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