



**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**



PERIOD ENDING: DECEMBER 31, 2019

Investment Performance Review for

Contra Costa County Employees' Retirement Association

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Verus⁷⁷⁷

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Investment Landscape

TAB I

Investment Performance
Review

TAB II



**PERSPECTIVES
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1ST QUARTER 2020
Investment Landscape

Recent Verus research

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Annual outlooks

CAPITAL MARKET ASSUMPTIONS

Some important developments occurred in the last year. During our 2020 Capital Market Assumptions webinar, we discussed:

- Market movements of 2019 and how these shifts have affected our long-term outlook
- The impact of falling interest rates on fixed income expectations
- Why it is important to differentiate between shorter-term and longer-term forecasting exercises

Topics of interests

WHY BENCHMARKS MATTER

In this Topics of Interest paper, we seek to outline the importance of benchmark selection within the investment process. The white paper addresses the following points:

- Benchmarks which appear similar can behave very differently, even over long periods of time
- Unconsidered benchmark selection can introduce uncompensated tracking error
- Tools available to investors to assist in determining appropriate benchmark indexes

RISK IN MANAGER SELECTION

In our latest Topics of Interest paper, we provide a framework for assessing the candidacy of a manager for portfolio inclusion and consider the implications of one manager versus alternatives. It addresses the following questions:

- Does the manager add a desired exposure?
- Does the manager exhibit skill?
- What does the manager add to the broader portfolio relative to other candidates?

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4th quarter summary

THE ECONOMIC CLIMATE

- Real GDP grew at a 2.1% rate year-over-year in the third quarter (2.1% quarterly annualized rate). Falling imports and weak fixed investment (-0.2% contribution) acted as a drag on growth, while personal consumption continued to be the greatest driver of growth. **p. 7**
- U.S. and Chinese negotiators signed the “phase one” trade agreement, and Boris Johnson’s Conservative Party in the U.K. won a decisive victory. These events appear to have removed some uncertainty from the geopolitical landscape over the short- to intermediate-term. **p. 15**

PORTFOLIO IMPACTS

- Global equity markets exhibited strong performance through Q4, and U.S. equity performance was in-line (MSCI ACWI +9.0%, S&P 500 +9.1%). Emerging markets were the top performing asset class (+11.8%). **p. 40**
- U.S. headline inflation increased 2.3% YoY in December, alongside the core inflation growth figure, and up from 1.7% in September. Although this was a notable jump in the inflation rate, investors appear more concerned about global deflationary forces, as indicated by the 10yr U.S. TIPS Breakeven Inflation Rate of 1.73%. Cyclical price pressures remain surprisingly absent from the current environment. **p. 9**

THE INVESTMENT CLIMATE

- In October, the Federal Open Market Committee cut interest rates by 0.25% to a new range of 1.50 – 1.75%. This marked the third consecutive rate cut by the committee. **p. 18**
- Global sovereign bond yields picked up modestly in Q4, on higher inflation and growth prospects. The dollar value of negative-yielding outstanding debt fell from nearly \$15 trillion to just above \$11 trillion. Central bankers appealed for fiscal action, citing the limited capacity of monetary policy to sustain further economic expansion. **p. 18**

ASSET ALLOCATION ISSUES

- Most risk assets provided sizable gains in Q4. Global equities delivered +9.0%, U.S. high yield increased +2.6%, and Emerging Market Local Debt rose +5.2%. Longer duration fixed income saw losses as interest rates rebounded. **p. 40**
- The U.S. dollar weakened -0.5% against both developed and emerging currencies in Q4, reversing moves of the prior quarter. Dollar volatility remains low relative to the big swings that occurred throughout 2014-2018. **p. 35**
- Although risk assets appear to have rocketed higher in 2019, which may create concerns over valuations, it is important to note that much of this performance was due to assets recovering from a sharp fall in late-2018. **p. 25**

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

What drove the market in Q4?

“U.S. trade deficit falls 7.6% in October to 16-month low on decline in Chinese imports”

U.S. FEDERAL TRADE DEFICIT (\$BILLIONS)

Jun	Jul	Aug	Sep	Oct	Nov
53.7	52.7	53.5	51.1	46.9	43.1

Article Source: MarketWatch, December 5th, 2019

“As markets climb higher, are stocks becoming overvalued?”

BLENDED FORWARD 12-MONTH P/E RATIO OF THE S&P 500 INDEX

Jul	Aug	Sep	Oct	Nov	Dec
17.0x	16.6x	16.9x	17.3x	17.8x	18.3x

Article Source: CNBC, December 30th, 2019

“Fed ‘prepared to adjust’ balance sheet to prevent repo market flare-up”

MONTHLY CHANGE IN THE SIZE OF THE FED BALANCE SHEET (\$BILLIONS)

Jul	Aug	Sep	Oct	Nov	Dec
-47.7	-19.2	97.8	162.1	33.1	112.7

Article Source: Yahoo Canada Finance, December 11th, 2019

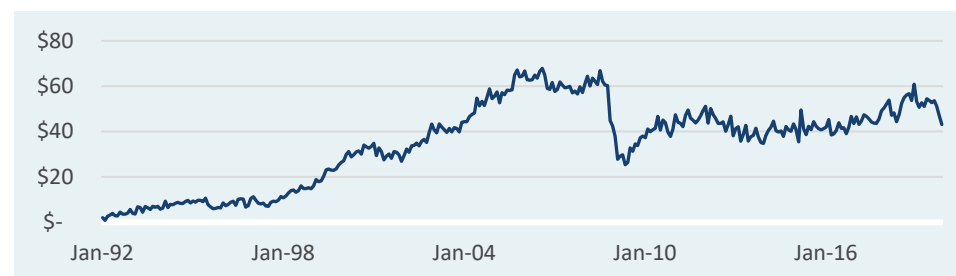
“China’s pork price jumps 110 per cent, sending consumer inflation rocketing to eight-year high”

CHINA CPI INFLATION (YoY % CHANGE)

Jul	Aug	Sep	Oct	Nov	Dec
2.8	2.8	3.0	3.8	4.5	4.5

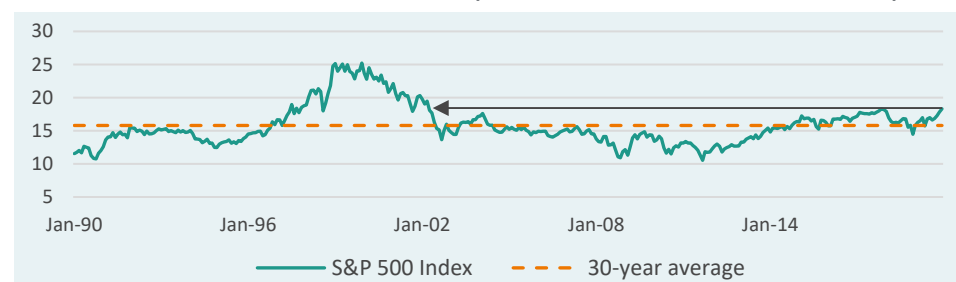
Article Source: South China Morning Post, December 10th, 2019

U.S. MONTHLY TRADE DEFICIT (BILLIONS)



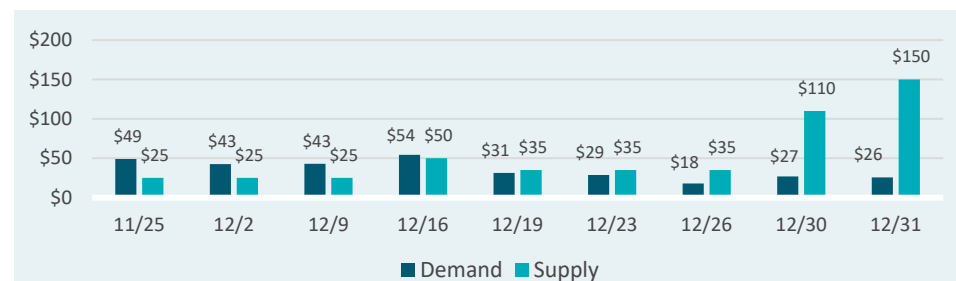
Source: Bloomberg, as of 11/30/19

FORWARD PRICE/EARNINGS RATIO (BLENDED 12-MONTH EARNINGS)



Source: Bloomberg, as of 12/31/19.

YEAR-END LIQUIDITY OFFERED UP BY THE NEW YORK FED (BILLIONS)



Source: New York Fed, as of 12/31/19.

Economic environment

U.S. economics summary

- Real GDP grew at a 2.1% rate year-over-year in the third quarter (2.0% quarterly annualized rate). Falling imports and weak fixed investment (-0.2% contribution) acted as a drag on growth, while personal consumption continued to be the greatest driver of growth.
- U.S. headline inflation came in at 2.3% YoY in December, in line with the core inflation growth figure. Despite more than 10 years of economic expansion, cyclical price pressures seem surprisingly absent from the current environment. Investors appear more concerned about global deflationary forces.
- The U.S. labor market showed further strength in the fourth quarter and unemployment remained at 50-year lows of 3.5%.
- Consumer sentiment indicators remain near all-time-highs and improved slightly over the quarter.
- American households are in a

strong financial position, with balance sheets that appear increasingly robust. At the end of Q3, U.S. household debt outstanding was equal to about 74% of GDP, the healthiest level since Q4 2001.

- U.S. and Chinese negotiators signed the “phase one” agreement on trade, and Boris Johnson’s Conservative Party won a decisive victory in the U.K. These developments may ease some of the economic uncertainty across the global economy, providing a tailwind to future growth.
- Existing home sales grew +2.7% YoY in November. New home sales, a far smaller portion of the overall market, grew at a stronger rate of +16.9% YoY, as construction activity further accelerated. Rising homebuilder activity in recent years may ease some of the low inventory pressures in the current market environment.

	Most Recent	12 Months Prior
GDP (YoY)	2.1% <i>9/30/19</i>	3.1% <i>9/30/18</i>
Inflation (CPI YoY, Core)	2.3% <i>12/31/19</i>	2.2% <i>12/31/18</i>
Expected Inflation (5yr-5yr forward)	1.8% <i>12/31/19</i>	1.8% <i>12/31/18</i>
Fed Funds Target Range	1.50 – 1.75% <i>12/31/19</i>	2.25 – 2.50% <i>12/31/18</i>
10 Year Rate	1.9% <i>12/31/19</i>	2.7% <i>12/31/18</i>
U-3 Unemployment	3.5% <i>12/31/19</i>	3.9% <i>12/31/18</i>
U-6 Unemployment	6.7% <i>12/31/19</i>	7.6% <i>12/31/18</i>

GDP growth

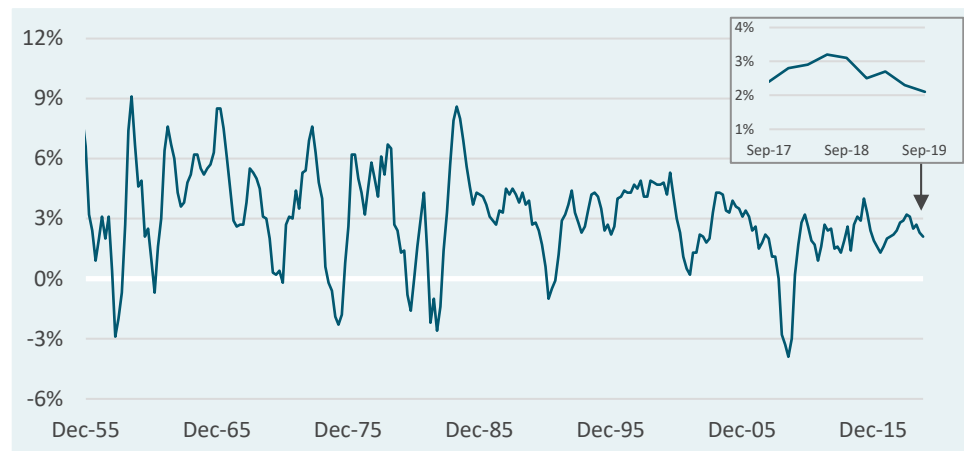
Real GDP grew at a 2.1% rate year-over-year in the third quarter (2.1% quarterly annualized rate). Falling imports detracted -0.3% from the overall GDP print, along with weak fixed investment (-0.2% contribution). Personal consumption, the largest component of gross domestic product, continued to drive the economy forward. The U.S. economy is pacing near the 2.0% rate that economists generally expect for full year 2020.

While trade policies and conflict likely resulted in a mild drag on economic growth in 2019, the U.S. and China have signed

the “phase one” trade deal. A partial trade resolution, or at least an indication that negotiations are headed in a more positive direction, could provide a lift to the economy and markets.

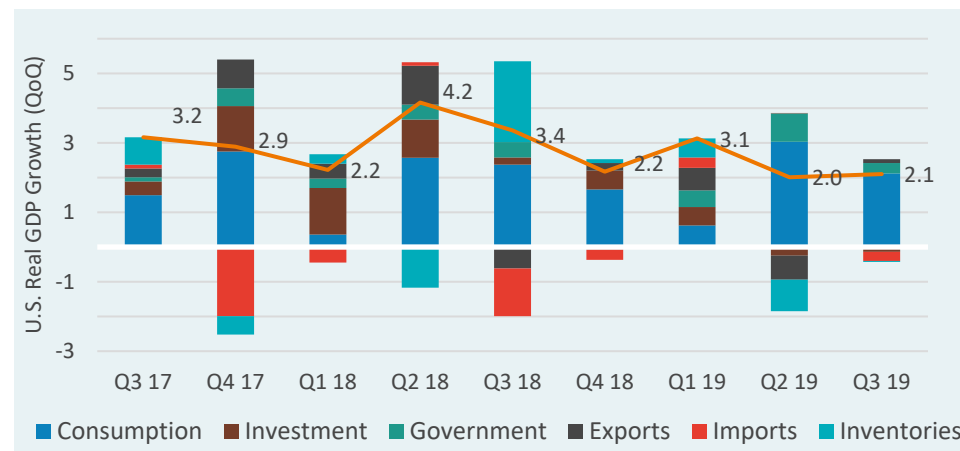
On January 17th, the Federal Reserve Bank of Atlanta GDPNow forecast indicated GDP growth of 1.8% in the fourth quarter. This forecast dipped recently due to weak personal consumption expenditures.

U.S. REAL GDP GROWTH (YOY)



Source: Bloomberg, as of 9/30/19

U.S. GDP GROWTH ATTRIBUTION



Source: BEA, annualized quarterly rate, as of 9/30/19

Inflation

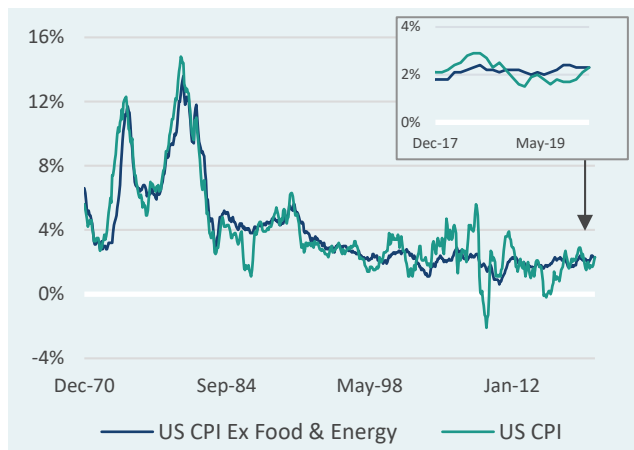
U.S. headline inflation increased 2.3% YoY in December, in line with the core inflation growth figure, and up from 1.7% in September. Although this is a notable jump in the inflation rate, investors appear more concerned about global deflationary forces. Cyclical price pressures remain surprisingly absent from the current environment.

During the quarter, the market's pricing of inflation increased from a low of 1.48% to 1.73%. While the breakeven rate has risen materially from its cycle low of 1.18% achieved in February 2016, it remains depressed by historical standards.

Consumer expectations moved in the opposite direction, falling from 2.7% at the beginning of the year to 2.3% in December.

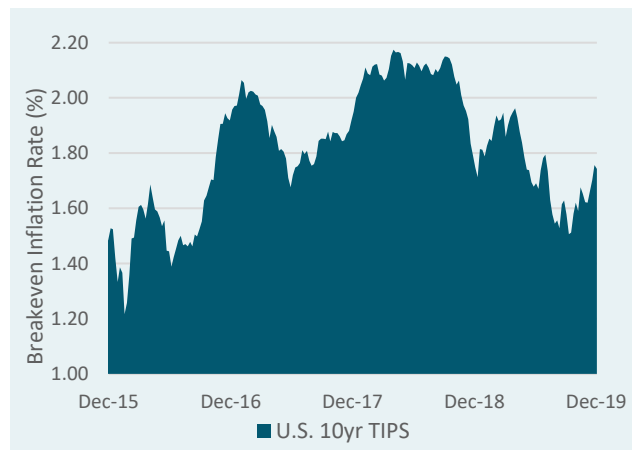
We believe it is likely that inflation will remain subdued. But it is also worth noting that if inflation or inflation fears returned to the markets, this might place central banks in a perilous position. It is doubtful that central banks could hike interest rates for any sustained period of time without risking recession.

U.S. CPI (YOY)



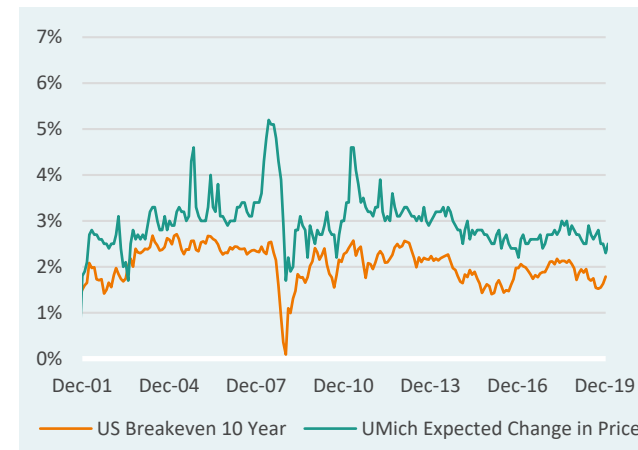
Source: Bloomberg, as of 12/31/19

U.S. BREAKEVEN INFLATION RATE



Source: FRED, as of 12/31/19

INFLATION EXPECTATIONS



Source: Bloomberg, as of 12/31/19

Labor market

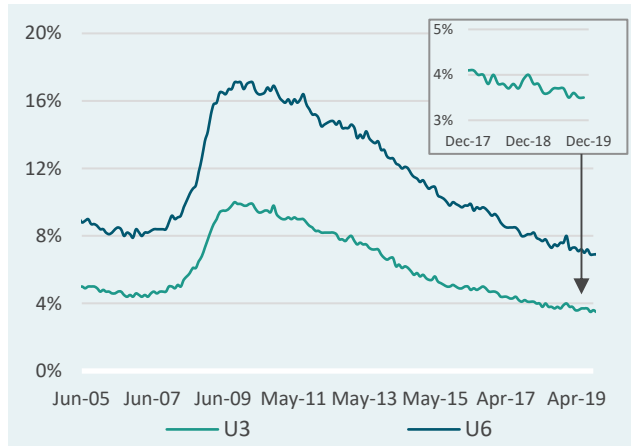
The U.S. labor market continued to show strength in Q4 and unemployment remained at 50-year lows of 3.5%. Year-over-year growth in non-farm payroll additions slowed to its lowest level since September 2017 at 1.4%. Nearly 1.24 jobs are now available per unemployed worker in the labor force, which suggests there is a limited remaining supply of workers to meet business hiring demands.

Average hourly earnings for production and nonsupervisory employees grew 3.0% year-over-year in December, outpacing inflation (2.3%). Sustained real wage growth would support sentiment, which is near cycle highs.

One plausible case for strong consumption to continue hinges on the fact that several key unemployment rates are near historic lows. The unemployment rate for workers who are at least 25 years old and lack high school diplomas (5.3%) is at an at all-time-low level since the data was first recorded in the year 2000. Typically, workers with less education earn less in nominal terms, but have a higher marginal propensity to consume per each dollar earned. These recent increases in employment for those workers who are more likely to spend may lead to outsized positive impacts on economic growth.

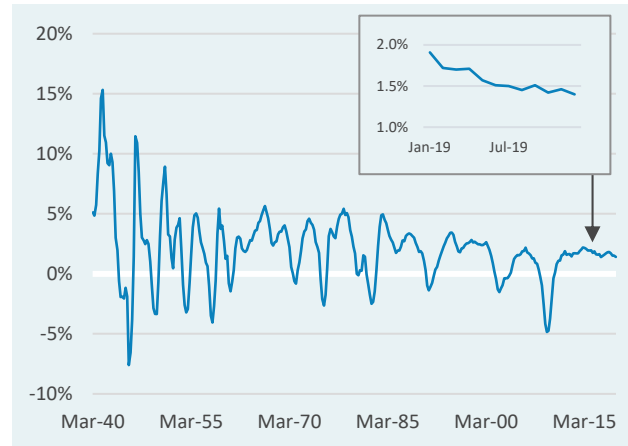
U.S. labor market remains strong, though further upside may be limited

U.S. UNEMPLOYMENT



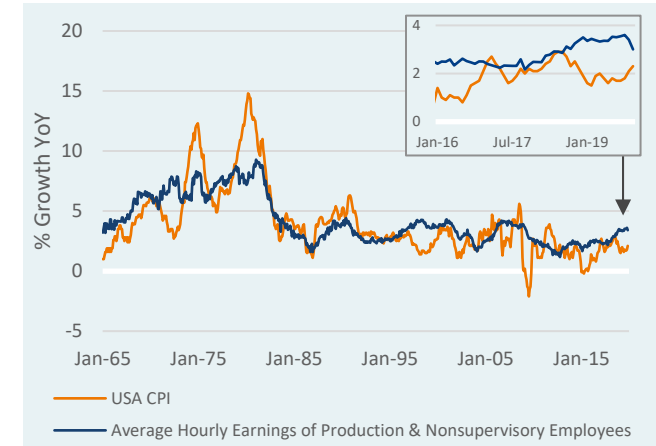
Source: FRED, as of 12/31/19

NON-FARM PAYROLL GROWTH (YOY)



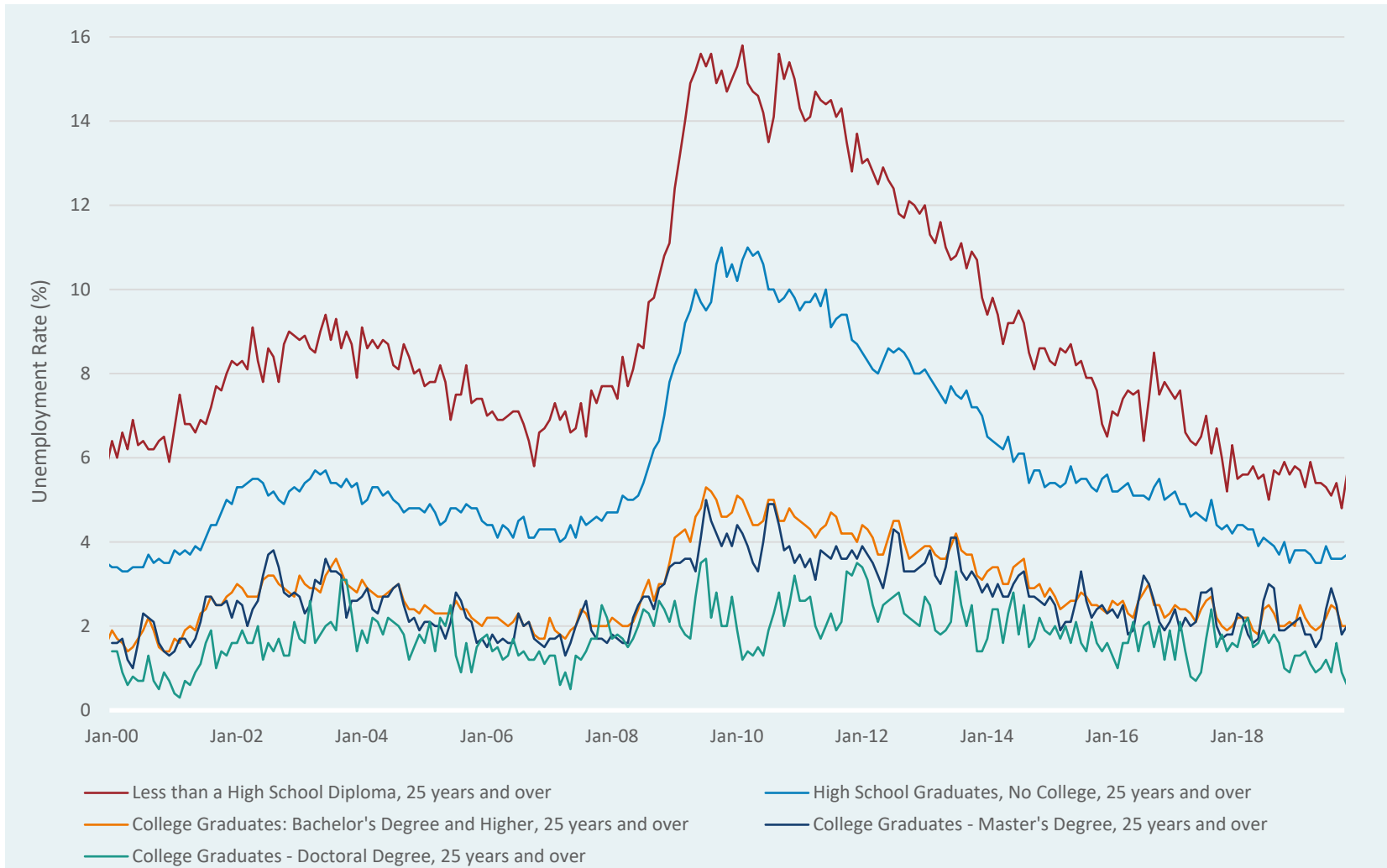
Source: BLS, as 12/31/19

U.S. WAGE GROWTH



Source: FRED, as of 11/30/19

U.S. unemployment



The U.S. job market is very strong, for all levels of education

Source: FRED, as of 11/30/19

The consumer

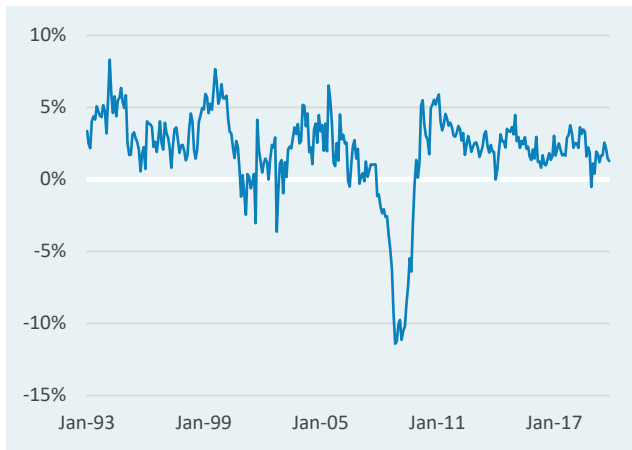
The U.S. consumer continued to push the U.S. economy forward, supported by low unemployment, solid wage gains, and high sentiment. American households are in a strong financial position, with balance sheets that appear robust. At the end of Q3, U.S. household debt outstanding was equal to about 74% of GDP, the healthiest level since Q4 2001.

Retail sales growth slid a bit in real terms, but much of this move was due to a pickup in inflation. The price of a barrel of WTI crude oil rose from \$53 to \$61, helping to propel year-over-year growth in headline inflation from 1.7% to 2.3%. Overall, retail sales growth remains solid, and has been boosted

recently by a surge in e-commerce sales. Cyber Monday sales grew nearly 20% this year, hitting a record \$9.4 billion U.S. dollars according to data from Adobe Analytics. Shoppers' carts were also about 6% larger at checkout than they were last year, perhaps hinting at a more optimistic consumer outlook.

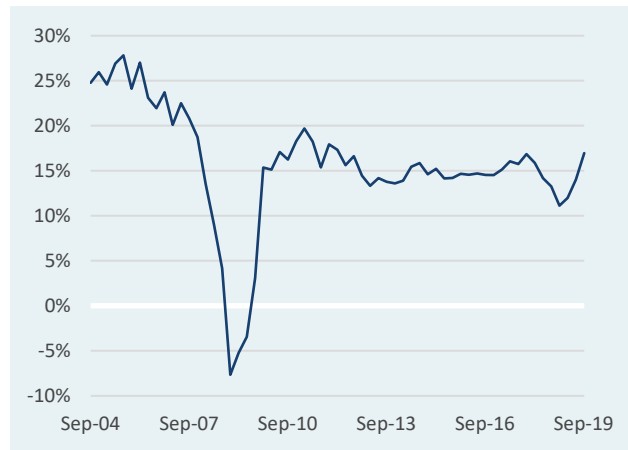
Credit conditions remain benign. Credit-card borrowing ticked down slightly and was offset by faster growth in auto and student loans. Some might consider credit-card debt "worse debt" and auto and student loan debt "better debt" in that prudent investments in transportation and human capital are likely higher-returning than ultra-short-term consumption.

REAL RETAIL SALES GROWTH (YOY)



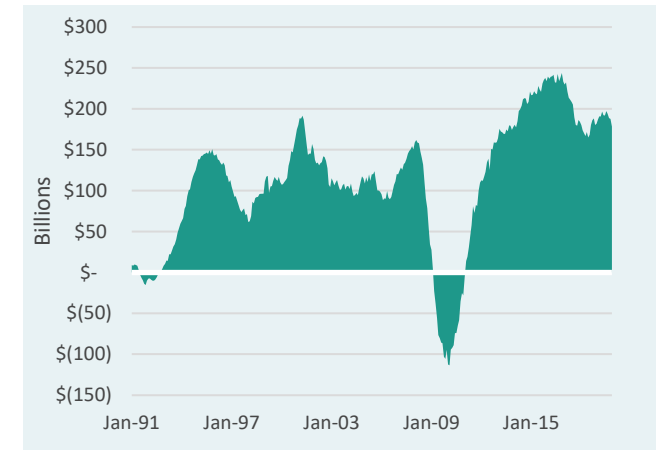
Source: FRED, as of 11/30/19

E-COMMERCE SALES GROWTH (QUARTERLY YOY)



Source: U.S. Census Bureau, Bloomberg, as of 9/30/19

12-MONTH GROWTH IN CONSUMER CREDIT



Source: Federal Reserve, Bloomberg, as of 11/30/19

Sentiment

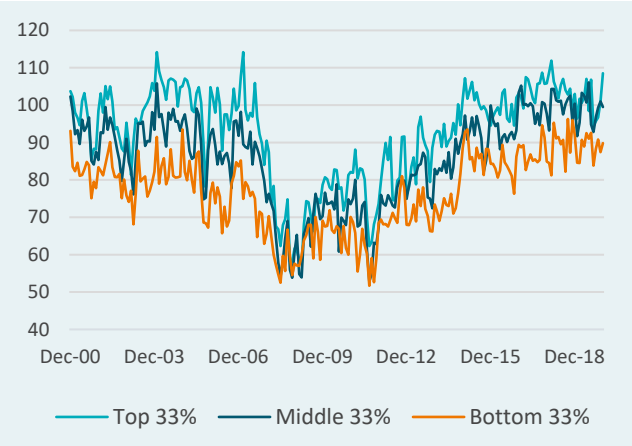
Consumer sentiment indicators remain near all-time-highs and improved slightly as a number of closely-followed geopolitical storylines appeared to move closer to resolution. The U.S. and China “phase one” trade deal, and the victory of Boris Johnson’s Conservative Party in the U.K. appears to have at least removed some uncertainty from the geopolitical landscape over the short- to intermediate-term.

Over the quarter, the difference between the sentiment reading for the top third of income earners and the bottom

third of income earners moved from the 10th percentile to the 65th percentile of monthly periods since 2001, indicating a widening in the gap between the “haves” and “have-nots”.

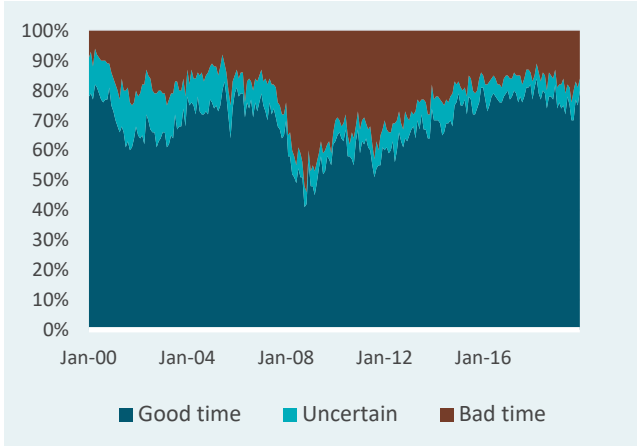
Consumers view the economic conditions for buying big-ticket household items such as furniture, refrigerators and televisions as close to as favorable as they have been over the course of the expansion. This belief appears to be rooted in dual expectations for job security and real wage gains.

CONSUMER SENTIMENT BY INCOME BRACKET



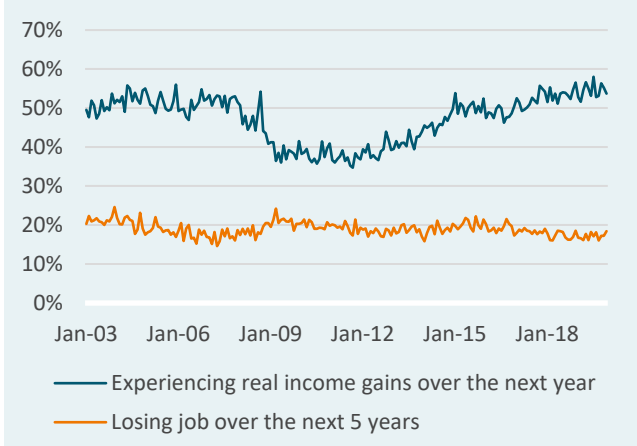
Source: University of Michigan, as of 12/31/19

CONDITIONS FOR BUYING BIG-TICKET ITEMS (%)



Source: University of Michigan, as of 12/31/19

CONSUMER FEAR GAUGE



Source: University of Michigan, as of 12/31/19

Housing

In the first half of 2019 the housing market appeared to be cooling off, coming down from a strong boom throughout the recent economic expansion. The average home sales price is down -8% from the highs of late-2017, although other variables such as the types and location of homes sold can impact these numbers. Homebuilding activity ticked up in the second half of the year as homebuilder sentiment jolted higher in 2019.

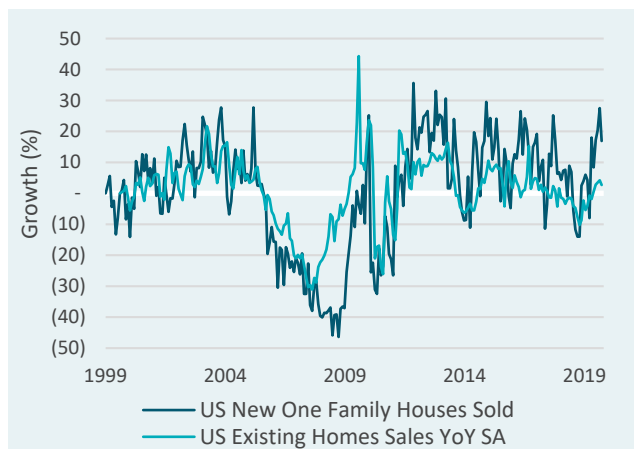
Existing home sales grew +2.7% YoY in November. New home sales, a far smaller portion of the overall market, grew at a stronger rate of +16.9% YoY, as construction activity further accelerated. Rising homebuilder activity in recent years may

ease some of the low inventory pressures in the current market environment.

The housing boom has contributed to a rebound in the U.S. homeownership rate. A decade-long trend away from buying and towards renting appears to have reversed in mid-2016. Since that time, the rate of homeownership has risen to 64.7% from a low of 63.1%.

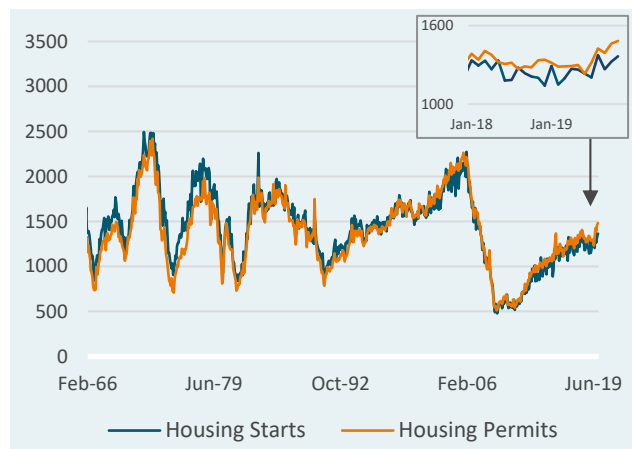
It is always helpful to remember that home price trends can vary meaningfully by location, which means national statistics are sometimes difficult to interpret at a local level.

U.S. HOME SALES (YOY)



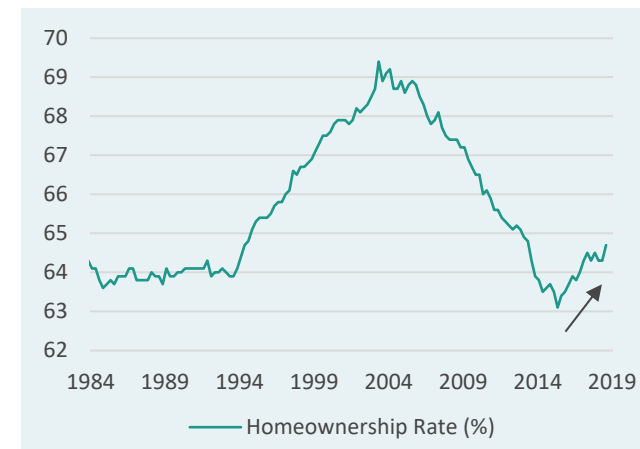
Source: FRED, as of 11/30/19

HOUSING STARTS & PERMITS



Source: Bloomberg, NAHB, as of 11/30/19 (see appendix)

HOMEOWNERSHIP RATE



Source: FRED, as of 9/30/19

International economics summary

- The growth of international developed economies remains in a range of 0.5% to 2.0%, near the 2.1% growth rate of the slowing U.S. economy.
- In January, the IMF forecasted 2.9% global growth in 2019 and an acceleration to 3.3% in 2020. These growth expectations were 0.1% lower than the previous quarter's report, and were mostly a result of downward adjustments to emerging markets expectations.
- Inflation continues to be muted across international developed markets, keeping more options on the table for central banks to step in as needed with accommodative policy.
- The U.K. general election in December resulted in a landslide victory for Boris Johnson. The election, through a consolidation of Tory party power, effectively guarantees that Brexit will ultimately be carried out.
- While the global economy has exhibited mild growth, labor markets continue to tighten across the board. By traditional unemployment measures, job markets are now stronger than pre-2008 levels in most major economies.
- U.S. and Chinese negotiators signed the “phase one” agreement on trade, and the decisive victory of Boris Johnson's Conservative Party in the U.K. appears to have at least removed some uncertainty from the geopolitical landscape over the short- to intermediate-term.
- China has experienced a significant jump in inflation to 4.5% as an outbreak of African swine fever resulted in a doubling of pork prices. This compares to a 5-year average inflation rate of 1.9%. An acceleration of inflation may create issues for Chinese leadership in an already-slowing economy.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	2.1% <i>9/30/19</i>	2.3% <i>12/31/19</i>	3.5% <i>12/31/19</i>
Eurozone	1.2% <i>9/30/19</i>	1.3% <i>12/31/19</i>	7.5% <i>11/30/19</i>
Japan	1.7% <i>9/30/19</i>	0.9% <i>12/31/19</i>	2.2% <i>11/30/19</i>
BRICS Nations	4.9% <i>9/30/19</i>	4.4% <i>12/31/19</i>	5.1% <i>9/30/19</i>
Brazil	1.2% <i>9/30/19</i>	4.3% <i>12/31/19</i>	11.2% <i>11/30/19</i>
Russia	1.7% <i>9/30/19</i>	3.1% <i>12/31/19</i>	4.6% <i>11/30/19</i>
India	4.5% <i>9/30/19</i>	7.4% <i>12/31/19</i>	8.5% <i>12/31/17</i>
China	6.0% <i>9/30/19</i>	4.5% <i>12/31/19</i>	3.6% <i>9/30/19</i>

International economics

The United States grew at a pace of 2.1% year-over-year in the third quarter, moving more closely in line with other developed nations which have posted growth of 1.0%-2.0%.

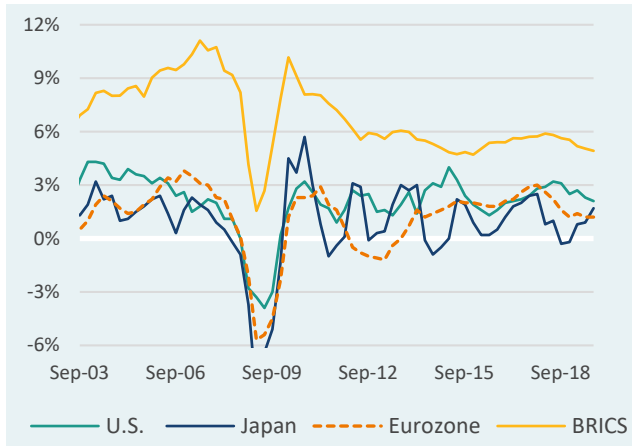
While the global economy has exhibited mild growth, labor markets continue to tighten across the board. By traditional unemployment measures, job markets are now stronger than pre-2008 levels in most major economies.

Inflation has remained subdued across international developed markets, and many pundits have viewed the mild inflation data as a cue for central banks to step in and

attempt to bolster economic growth through more accommodative policy. Inflation remains muted in emerging economies, and most economies are experiencing CPI below the 5-year average.

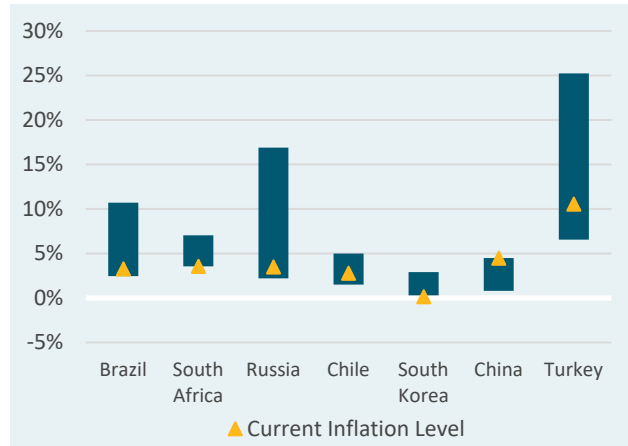
China's inflation rate has become an outlier, jumping to 4.5% as an outbreak of African swine fever resulted in a doubling of pork prices in the country during the year. This compares to a 5-year average inflation rate of 1.9%. Prices of other meats in China have also increased on heightened demand for pork substitutes. An acceleration of inflation may create issues for Chinese leadership in an already-slowing economy.

REAL GDP GROWTH (YOY)



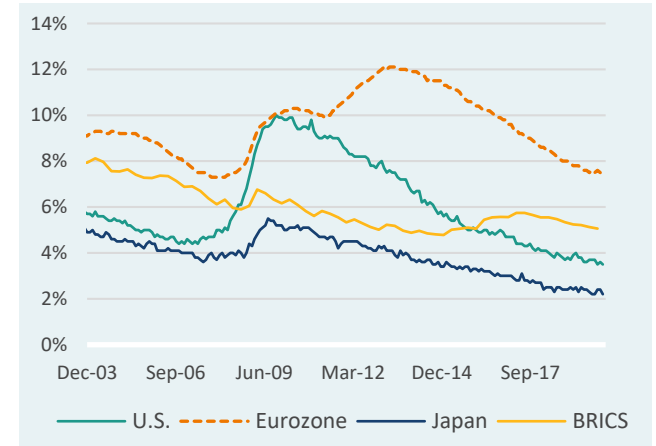
Source: Bloomberg, as of 9/30/19

INFLATION (CPI YOY)



Source: Bloomberg, inflation range of past 5 years, as of 11/30/19

UNEMPLOYMENT RATE



Source: Bloomberg, as of 11/30/19 or most recent release

Fixed income rates & credit

Interest rate environment

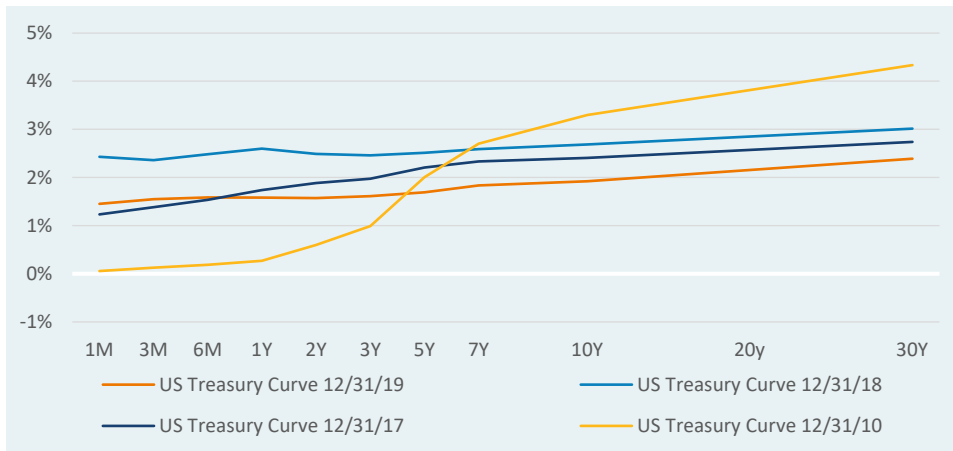
- The global sovereign bond rally lost steam in Q4 as inflation and growth prospects mildly reflat. Central bankers at the European Central Bank and the Federal Reserve signaled that policy would likely remain on hold in the absence of significant economic developments.
- Global ten-year sovereign bond yields picked up moderately, most significantly in Europe. Over the quarter, the U.S.-dollar value of global outstanding negative-yielding debt fell from nearly \$15 trillion to just above \$11 trillion.
- In October, the Federal Open Market Committee cut the range for its benchmark interest rate by 0.25% to a new range of 1.50 to 1.75%.
- Diversity of opinion among FOMC participants about the path of interest rates has faded. Most members now expect rates to remain flat in 2020, and move back toward 2.50% over the longer term.
- The New York Fed conducted a series of term repurchase operations aimed at providing sufficient liquidity for firms to get through the year-end turn when demand for cash typically surges. The Fed balance sheet grew by \$300B in Q4, and analysts continue to debate whether the Fed’s involvement in repo markets should be considered “technical” or “stimulative” in nature.
- The Governing Council of the ECB decided to leave key interest rates unchanged and confirmed that net asset purchases to the tune of €20 billion per month had begun in November.
- In Christine Lagarde’s first major move as President, she announced the ECB’s first Strategic Policy review since 2003, which will begin in January and will address a wide range of topics, including: low inflation, the price-stability goal, climate change, and cryptocurrency.

Area	Short Term (3M)	10-Year
United States	1.54%	1.92%
Germany	(0.78%)	(0.19%)
France	(0.65%)	0.12%
Spain	(0.61%)	0.47%
Italy	(0.34%)	1.41%
Greece	0.26%	1.47%
U.K.	0.69%	0.82%
Japan	(0.10%)	(0.01%)
Australia	0.94%	1.37%
China	2.43%	3.14%
Brazil	4.30%	6.79%
Russia	4.95%	6.36%

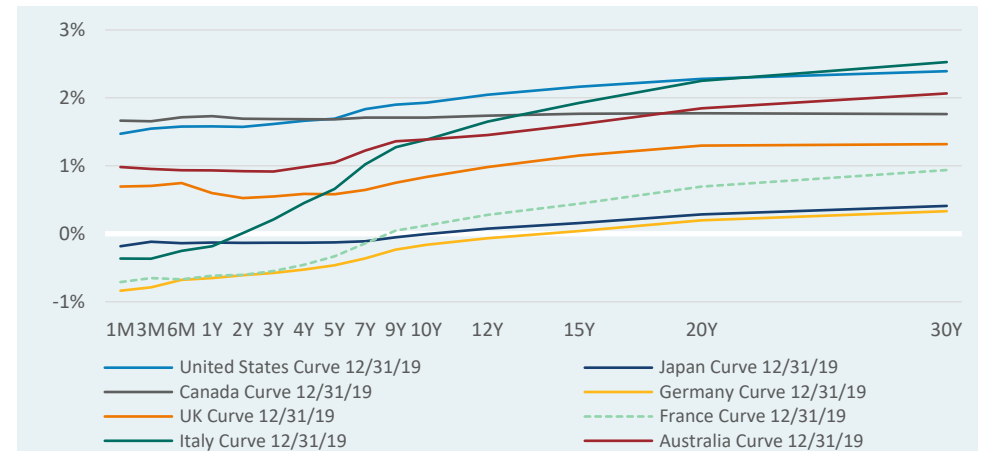
Source: Bloomberg, as of 12/31/19

Yield environment

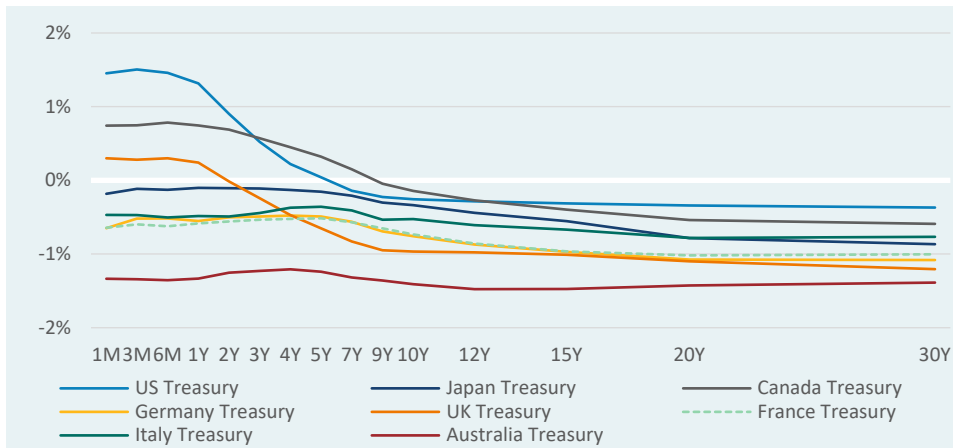
U.S. YIELD CURVE



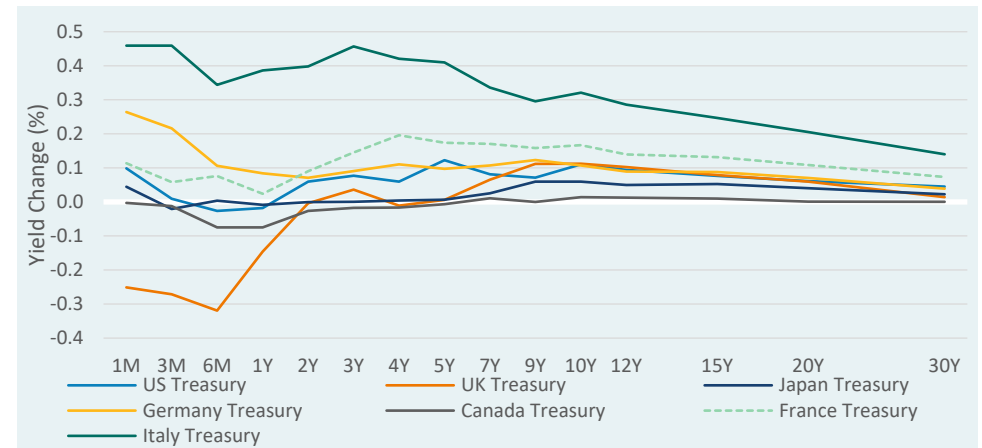
GLOBAL GOVERNMENT YIELD CURVES



YIELD CURVE CHANGES OVER LAST FIVE YEARS



IMPLIED CHANGES OVER NEXT YEAR



Source: Bloomberg, as of 12/31/19

Credit environment

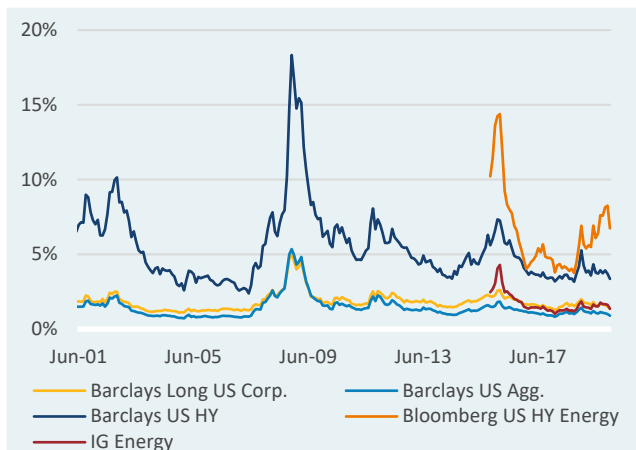
Credit enjoyed a positive 2019 driven by tightening spreads. Both investment grade and below-investment grade assets remained somewhat stable over the period. In high yield, CCCs and energy-related bonds were the best performers during Q4. High yield spreads tightened meaningfully over the year and the quarter (190 bps and 37 bps, respectively). Investment grade bonds also enjoyed positive performance fueled by this year's rate rally, attractive profit margins, and continued demand from investors for higher quality credit.

In the fourth quarter, high yield bonds have returned +3.4%, materially outperforming bank loans (+1.7%) and investment grade credit (+1.1%). In 2019, high yield bonds have returned +14.4%, materially outperforming bank loans (+8.6%) and slightly

outperforming investment grade credit (+13.8%). Bank loans have experienced outflows for much of the year driven by lessening demand for the asset class.

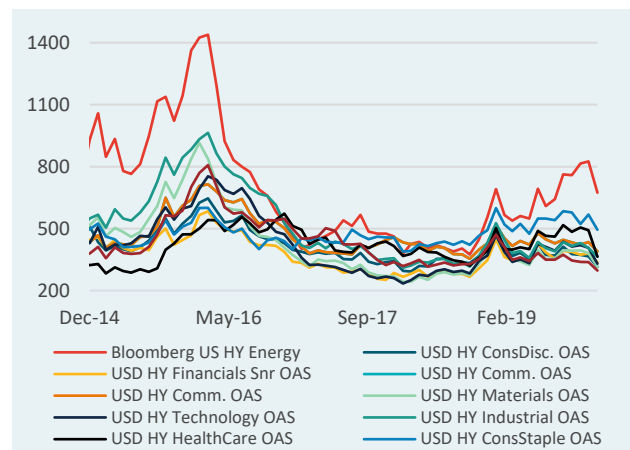
Based on concerns over late-cycle behavior in credit markets, we do not believe investors are being adequately compensated for credit risk. Late-cycle volatility tends to coincide with widening credit spreads and higher propensity for default activity. An underweight to U.S. investment grade, high yield credit, and bank loans may be warranted, with an overweight to emerging market debt which appears to offer more attractive value. This positioning should result in an overall neutral credit risk stance. Within U.S. markets, higher quality and more liquid assets appear most attractive.

SPREADS



Source: Barclays, Bloomberg, as of 12/31/19

HIGH YIELD SECTOR SPREADS (BPS)



Source: Bloomberg, as of 12/31/19

Market	Credit Spread (OAS)	
	12/31/19	12/31/18
Long U.S. Corp	1.4%	2.0%
U.S. Inv Grade Corp	0.9%	1.5%
U.S. High Yield	3.4%	5.3%
U.S. Bank Loans*	4.4%	5.1%

Source: Barclays, Credit Suisse, Bloomberg, as of 12/31/19

*Discount margin (4-year life)

High yield – what’s in it?

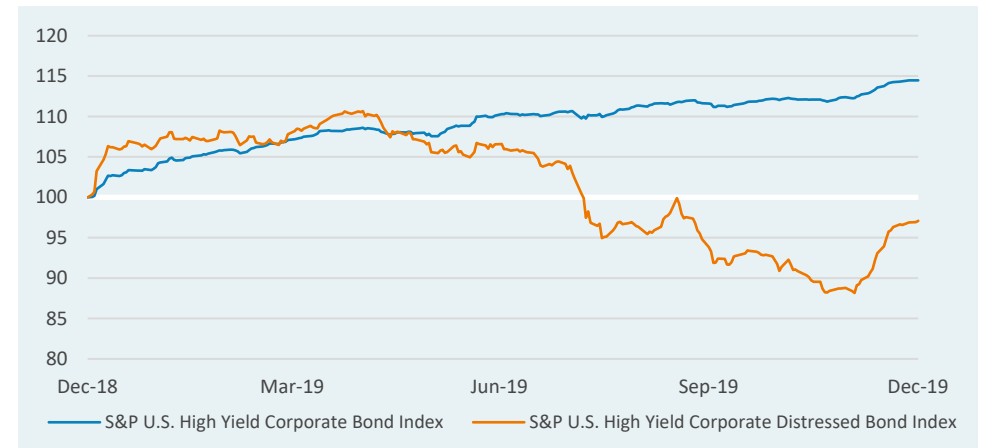
The high yield market rallied in 2019 to provide double digit positive returns for only the fourth time since the 2008-2009 global financial crisis. However, the market was characterized by significant divergences as investors rotated into upper-tier credits relative to lower-tier credits due to volatility and geopolitical uncertainty picking up during the year. This was evidenced by the ratio of CCC/BB credit spread levels, which climbed to levels last seen two decades ago. Investors generally see CCC credits as a proxy for less liquid and/or more complex situations and risks, especially relative to the BB segment.

The distressed market was negatively impacted by investor distaste for less liquid risk during the year. This was particularly true in the energy sector, and in certain retail and healthcare industries. Selling pressures peaked in November as the riskiest segment of the high yield market suffered losses in excess of those experienced during the 2018 year-end drawdown. Market participants pulled money from the space, which resulted in significant redemptions amongst distressed-focused hedge funds and even closures of hedge funds that had previously successfully navigated the global financial crisis.

CCC/BB SPREAD RATIO



HIGH YIELD VS. HIGH YIELD DISTRESSED (INDEXED 12/31/2018=100)



Source: Standard & Poor’s, J.P. Morgan, Wall Street Journal, as of 12/31/19

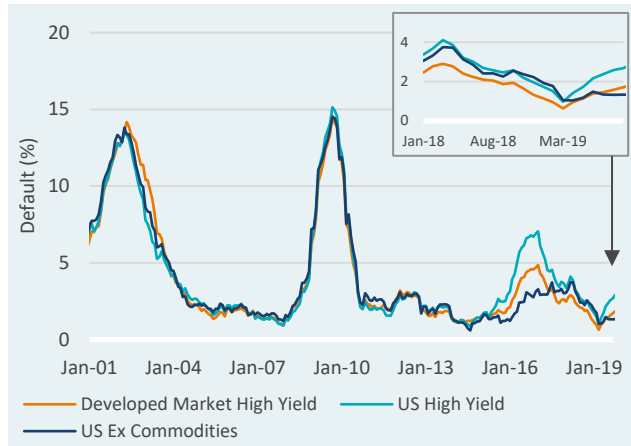
Default & issuance

Default activity for 2019 was slightly higher than 2018 by roughly 0.8%. This was mainly due to elevated defaults in commodity-related industries such as energy and metals/mining. The par-weighted default rate for high yield ended the year at 2.6% and remained below its long-term average range of 3.0-3.5%.

For loans, the par-weighted default rate for 2019 was 1.6% and remained below the long-term average of 3.1%, according to data from J.P. Morgan. Notably, defaults in commodity-related sectors accounted for essentially half of the year's default/distressed activity.

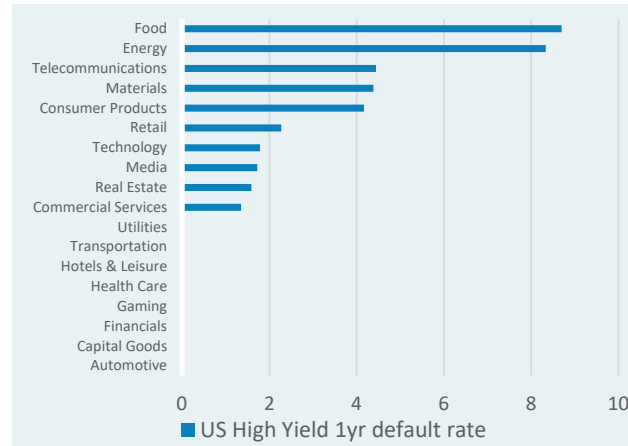
Gross high yield issue activity for 2019 was \$287 billion which was up 52% from a year ago. Loan market issuance is significantly behind last year's pace, likely influenced by lower demand for floating rate securities now that the Federal Reserve has paused monetary tightening. Gross loan issuance is essentially down 44% from a year ago although there was an increase in issuance at the end of December.

HY DEFAULT RATE (ROLLING 1-YEAR)



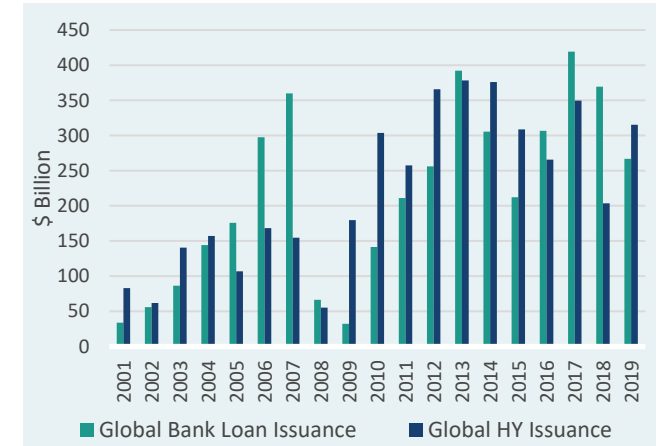
Source: BofA Merrill Lynch, as of 12/31/19

U.S. HY SECTOR DEFAULTS (LAST 12 MONTHS)



Source: BofA Merrill Lynch, as of 12/31/19 – par weighted

GLOBAL ISSUANCE (\$ BILLIONS)



Source: Bloomberg, BofA Merrill Lynch, as of 12/31/19

Equity

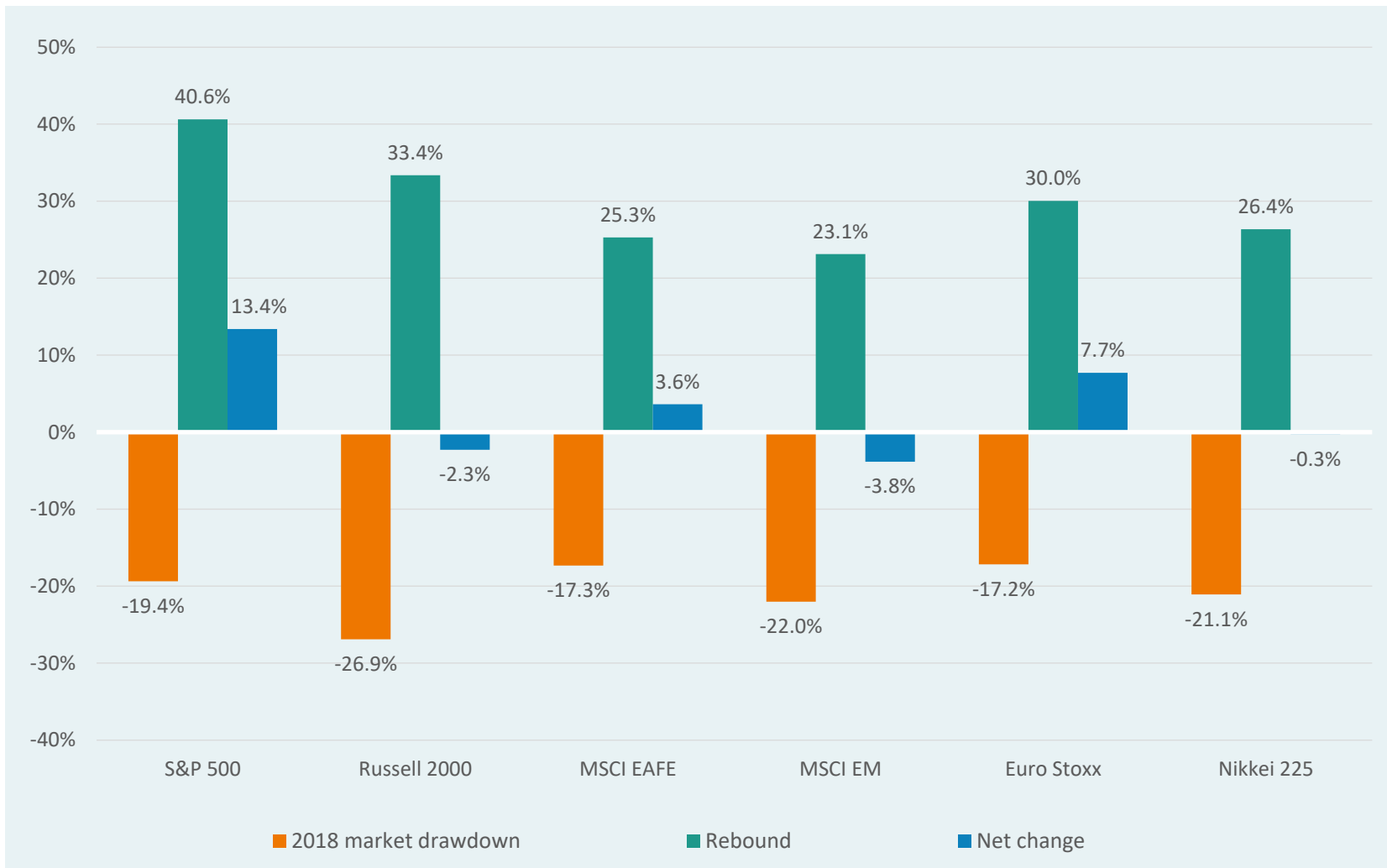
Equity environment

- Global equity markets exhibited strong performance through Q4, and U.S. equity performance was in-line (MSCI ACWI +9.0%, S&P 500 +9.1%). Emerging markets were the top performing asset class (+11.8%).
- Global currency volatility has been muted over the last few years, which has made ignoring currency exposure less consequential. Expecting low currency volatility to persist may be an assumption that gets investors into trouble.
- Unhedged U.S. investors in U.K. equities outperformed their hedged peers by 7.8% in Q4, as a stronger pound sterling dominated the U.K. equity return narrative.
- Based on price-to-forward earnings ratios international equity valuations appear elevated, but unlike in the U.S., they do not yet appear stretched.
- The outlook for monetary policy remains supportive of global equity price movement in 2020. Of the five major global central banks (Federal Reserve, European Central Bank, Bank of England, Bank of Japan, People’s Bank of China), four out of five are providing accommodation through their respective balance sheets. Futures imply better than 50/50 odds that the Bank of England cuts its main rate 0.25% at the end of January and China has continued to cut its benchmark lending rate.
- Inflation remains muted in emerging economies, and most economies are experiencing CPI below the 5-year average. Central bank policy has remained accommodative in many major countries within the universe such as China, South Korea, Brazil, and South Africa. This accommodation could provide a boost for equity market pricing as we move further into 2020.

	QTD TOTAL RETURN		1 YEAR TOTAL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)
US Large Cap (S&P 500)	9.1%		31.5%	
US Small Cap (Russell 2000)	9.9%		25.5%	
US Large Value (Russell 1000 Value)	7.4%		26.5%	
US Large Growth (Russell 1000 Growth)	10.6%		36.4%	
International Large (MSCI EAFE)	8.2%	5.8%	22.0%	24.6%
Eurozone (Euro Stoxx 50)	8.3%	5.9%	25.9%	32.1%
U.K. (FTSE 100)	10.8%	3.0%	22.1%	19.5%
Japan (NIKKEI 225)	8.2%	9.6%	21.9%	23.5%
Emerging Markets (MSCI Emerging Markets)	11.8%	9.5%	18.4%	17.7%

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 12/31/19

A different look at 2019 performance



Most of the high returns of 2019 were due to markets recovering from the 2018 drop

Adjusting for this effect shows us that 2019 was a fairly average year

Source: Standard & Poor's, MSCI, Verus, as of 12/31/19 – "Drawdown" defined as the total market fall in 2018, "Rebound" defined as the total % return from the low point of the fall to the end of 2019. "Net Change" defined as the % market return from the 2018 high point to the end of 2019.

Domestic equity

U.S. equities outpaced international in the third quarter (S&P 500 +9.1%, MSCI EAFE +8.2%) as domestic markets continued to lead.

Falling interest rates in 2019 have supported stock prices, as fixed income becomes less attractive on a relative basis, and cheaper borrowing should bolster future corporate earnings. As the dividend yield of U.S. stocks is once again higher than U.S. Treasury yields, investors may feel pressure to maintain greater exposure to equities in order to meet return objectives.

The S&P 500 delivered a 31.5% total return in calendar year

2019, while underlying corporate profits are expected to be flat at +0.3%. This of course means that performance has been driven by higher stock multiples rather than fundamentals. It is worth noting that a significant portion of 2019 performance was a recovery from the late-2018 sell-off of nearly -20%.

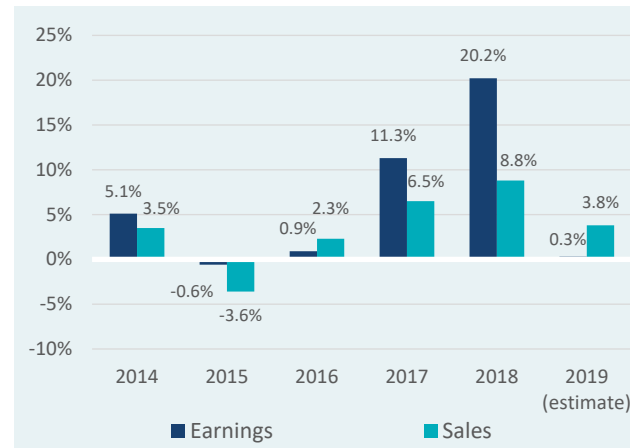
U.S. markets may continue to outperform over the shorter-term due to relative economic and market strength, and prices may certainly rise further. But history suggests that a widening gap between U.S. and international stock valuations will constrain U.S. performance over the longer-term.

U.S. EQUITIES



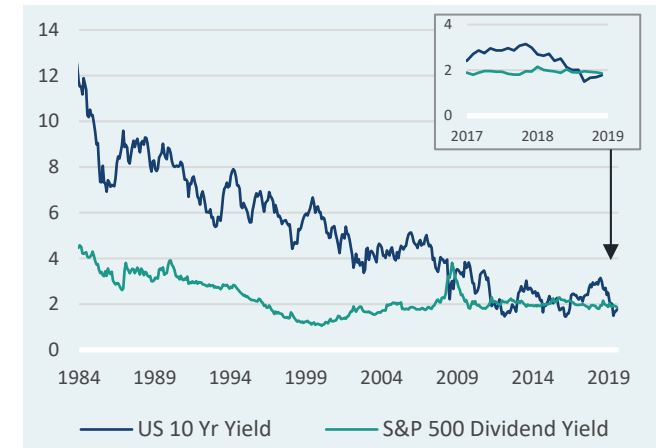
Source: Standard & Poor's, as of 12/31/19

EARNINGS



Source: FactSet, as of 12/20/19

RELATIVE YIELDS



Source: Standard & Poor's, as of 11/30/19

Domestic equity size & style

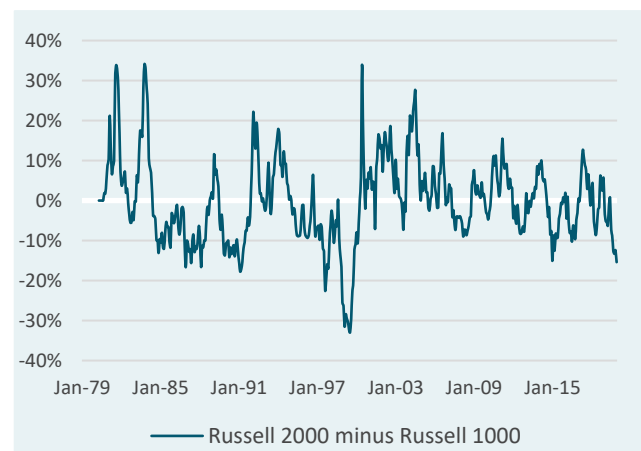
Value stocks lagged growth stocks during the fourth quarter (Russell 1000 Growth +10.6%, Russell 1000 Value +7.4%) while small cap stocks outperformed large stocks (Russell 2000 +9.9%, Russell 1000 +9.0%). During calendar year 2019, both size and value factors significantly underperformed (Russell 1000 +31.4%, Russell 2000 +25.5%; Russell 3000 Growth +35.8%, Russell 3000 Value +26.2%).

The impact of sector performance on the value premium was significant, once again, in 2019. Information Technology delivered very high returns (+50.3%) – a sector which tends to contain more growth stocks. Energy (+11.8%) and Materials (+24.6%) – industries which traditionally contain more value stocks – lagged

the overall index (S&P 500 +31.5%).

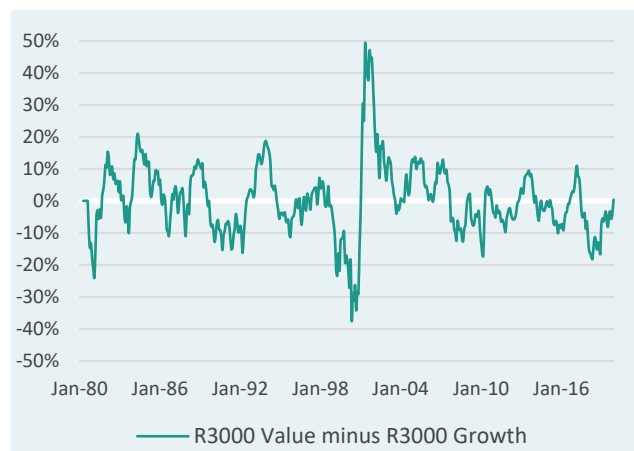
In mid-2016 we argued that there were clear and economic reasons for long-term value factor underperformance, and that a tactical overweight to the value factor did not appear warranted. This view has continued to be correct, as those who bought into value anytime of the past three years would have underperformed. While value continues to be historically cheap, price itself is not a catalyst for outperformance. We remain watchful of value stocks, but do not yet see clear signs of opportunity. As always, attempting to time factors is extremely difficult. We believe this should be done only rarely, if at all, and only when market conditions are particularly compelling.

SMALL CAP VS LARGE CAP (YOY)



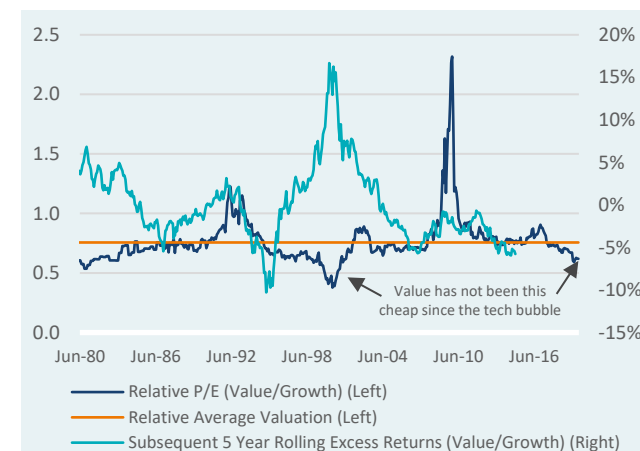
Source: FTSE, as of 12/31/19

VALUE VS GROWTH (YOY)



Source: FTSE, as of 12/31/19

VALUE CONTINUES TO LOOK CHEAP



Source: Russell, Bloomberg, as of 12/31/19

International developed equity

Equities in Europe and Japan posted strong performance for the quarter but failed to keep up with stocks in the U.S. and emerging markets. The U.S. dollar appreciated slightly against the yen, providing headwinds (-1.4%) for unhedged U.S. investors in Japanese stocks. Conversely, a slightly weaker U.S. dollar against the euro put some additional wind in the sails (+2.4%) of U.S. investors in European equities.

When investing in international equities, the “which currency should my assets be denominated?” question has been nearly equally as important as the “what assets should I hold?” question. Over the last three years however, global

currency volatility has been muted, which has made it much easier for investors to avoid thinking about their various currency exposures. Verus’ view remains that currency risk is not compensated, and that it tends to result in increased risk without necessarily adding to return.

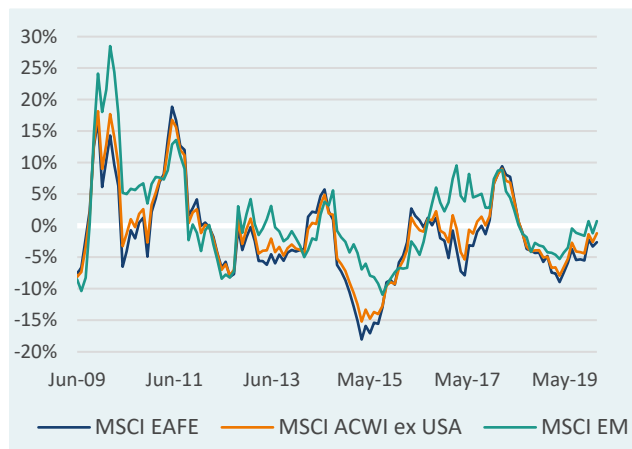
International equity valuations remain elevated, but unlike in the U.S., they do not yet appear stretched. Forward price-to-earnings ratios for the MSCI U.K. and Italy indices rank in the 59th and 52nd percentiles respectively, relative to the monthly expansion average. Valuations are a bit richer in the rest of the EAFE complex, but they may still have room to run.

INTERNATIONAL DEVELOPED EQUITIES



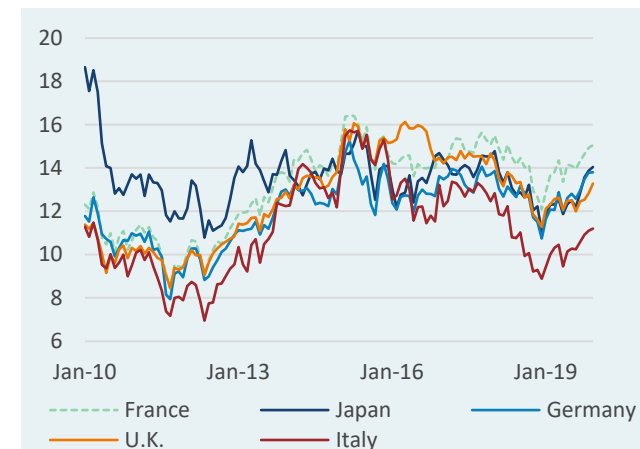
Source: MSCI, as of 12/31/19

EFFECT OF CURRENCY (1-YEAR ROLLING)



Source: MSCI, as of 12/31/19

BLENDED FORWARD 12-MONTH P/E RATIOS



Source: MSCI, Bloomberg, as of 12/31/19

Emerging market equity

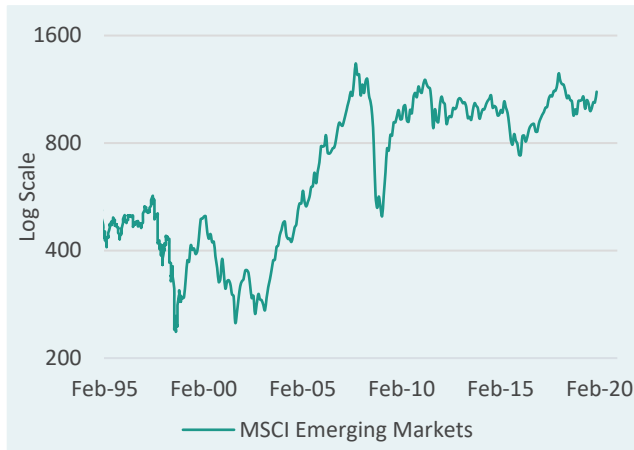
Emerging market equities (+11.8%) outperformed both U.S. (+9.1%) and international developed equities (+8.2%) over the quarter, but still lagged over the full calendar year. In 2019, emerging market equities delivered a total return of 18.4%, and trailed the total return of international developed equities by 3.6%. Regionally, the Asian segment (+12.5%) of the emerging market complex performed better than the Latin American (+10.5%) segment in both Q4 and in 2019.

Emerging market equities saw multiple expansion in Q4: the forward P/E of the MSCI EM Index expanded from a level in

line with the 5-year average to a bit higher than average levels. We do not yet view pricing in this space as rich and see there being more room for multiple expansion.

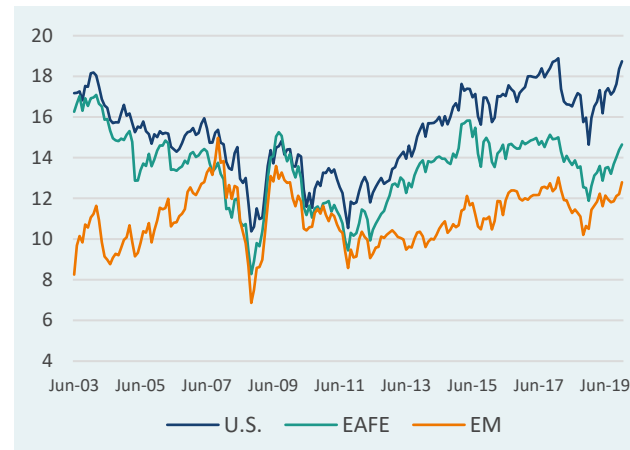
Inflation remains muted in emerging economies, and most economies are experiencing CPI below the 5-year average. Central bank policy has remained accommodative in many major countries within the universe such as China, South Korea, Brazil, and South Africa. This accommodation could provide a boost for equity market pricing as we move further into 2020.

EMERGING MARKET EQUITY



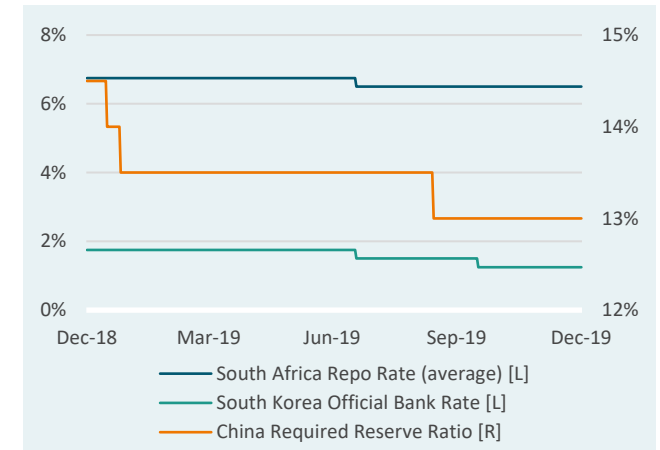
Source: MSCI, as of 12/31/19

FORWARD P/E



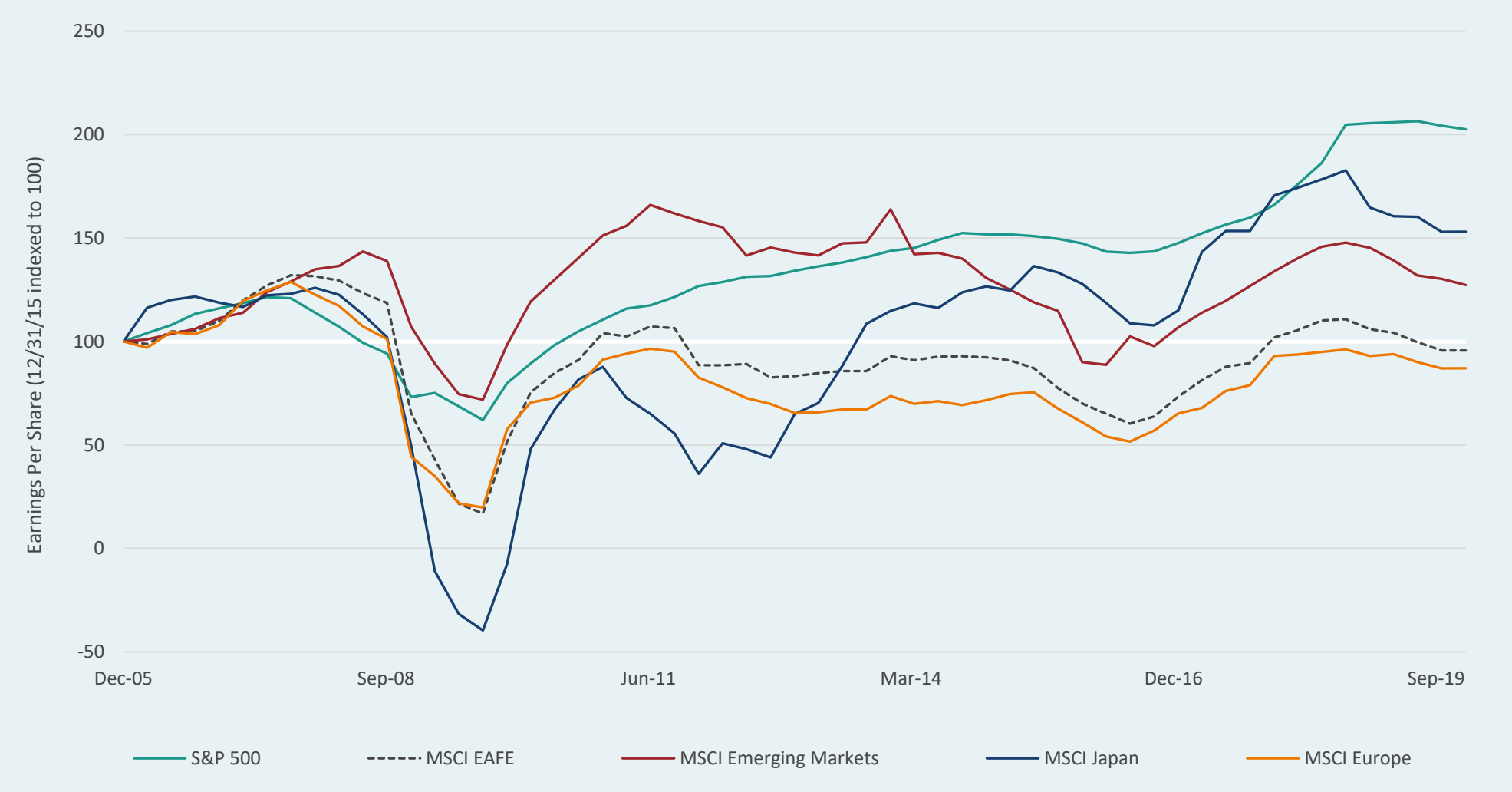
Source: MSCI, as of 12/31/19

CENTRAL BANK ACCOMODATION



Source: MSCI, as of 12/31/19

Equity earnings growth



Source: Bloomberg, as of 12/31/19

Equity valuations

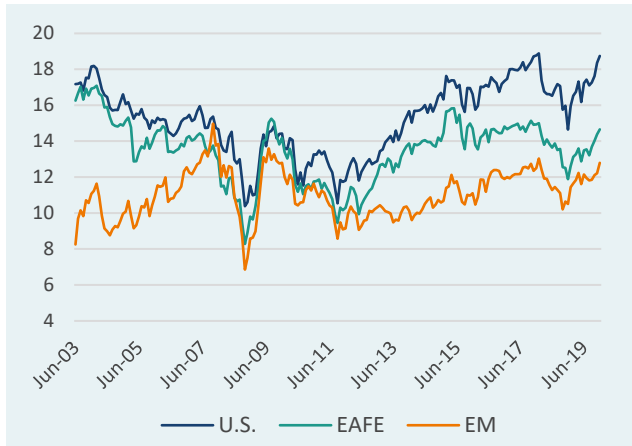
Equity valuations expanded materially in 2019 as prices recovered from their year-end 2018 fall and then continued climbing through the fourth quarter. U.S. equities are expensive relative to their long-run average and prices may become more difficult to justify in an environment of flat earnings growth. International and emerging equity valuations are near average levels. We remain watchful of earnings trends in 2020, which may have important implications for the future path of equities.

In the United States, stocks within the Information Technology

(22.7x) and Communication Services (19.5x) sectors have retained forward P/E ratios elevated well above their respective 5- and 10-year averages. Last year, growing concerns over data privacy, support for anti-trust regulation, and several idiosyncratic scandals weighed on the tech sector. Over the course of this election year, we expect the issue of mega-cap tech regulation to remain beneath the microscope.

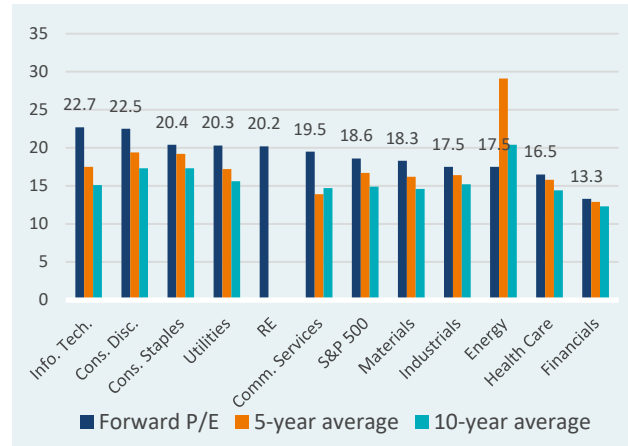
Compared to U.S. and EM equities, international developed equities offer the greatest yield at present, offering a three-month average trailing dividend yield of 3.4%.

FORWARD P/E RATIOS



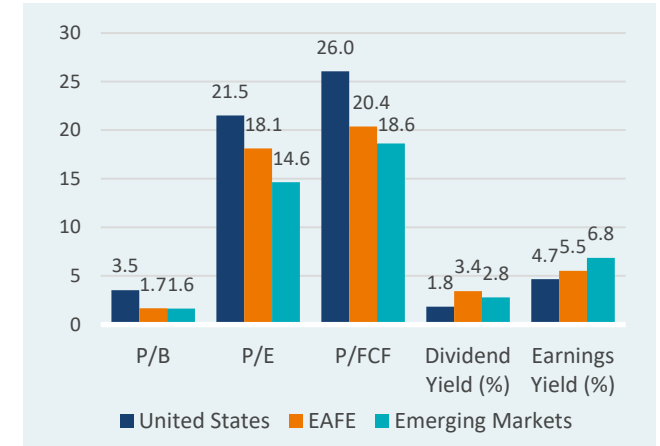
Source: MSCI, 12m forward P/E, as of 12/31/19

S&P 500 INDEX FORWARD SECTOR P/E RATIOS



Source: Standard & Poor's, FactSet, as of 1/17/20

VALUATION METRICS (3-MONTH AVERAGE)



Source: Bloomberg, MSCI as of 12/31/19 - trailing P/E

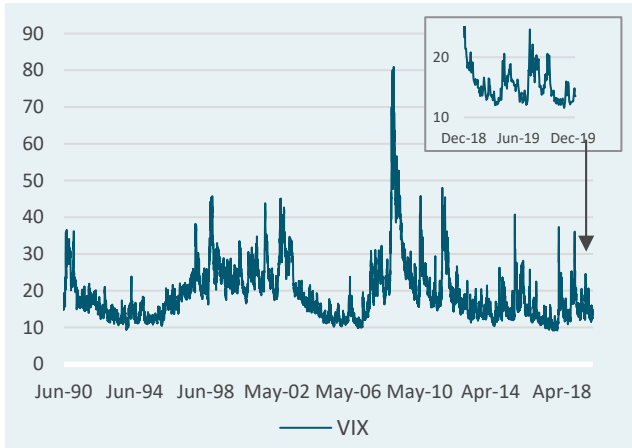
Equity volatility

The implied volatility of large-cap U.S. stocks returned to a subdued level. The CBOE VIX Index, which calculates the market's expectation for volatility implied by S&P 500 Index options, declined from 16.2 to 13.8, a reading which lies in the 15th percentile of weekly readings over the last thirty years. Net non-commercial short VIX positioning reached new all-time-highs in the 4th quarter, meaning that many people are betting on volatility to remain low and push lower. Some investors view this assumption as concerning, and as a signal that the market may be ready for a correction.

U.S. large-cap and emerging market stocks have experienced a higher degree of volatility than international developed stocks over the last several years. Some of the divergence may be attributable to the impacts of the ever-changing U.S.-China trade narrative which has held the full attention of market participants for much of the prior two years.

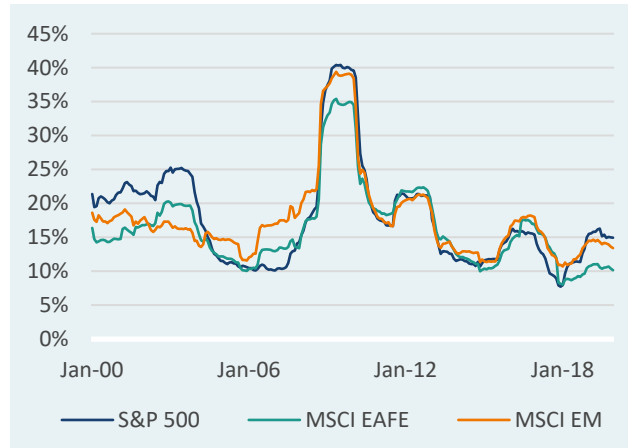
The MSCI EM Index touched new all-time highs in April and did not eclipse that level for another 174 days. In 2019, the S&P 500 and MSCI EAFE indices spent a maximum of 65 and 82 trading days between fresh all-time highs, respectively.

U.S. IMPLIED VOLATILITY (VIX)



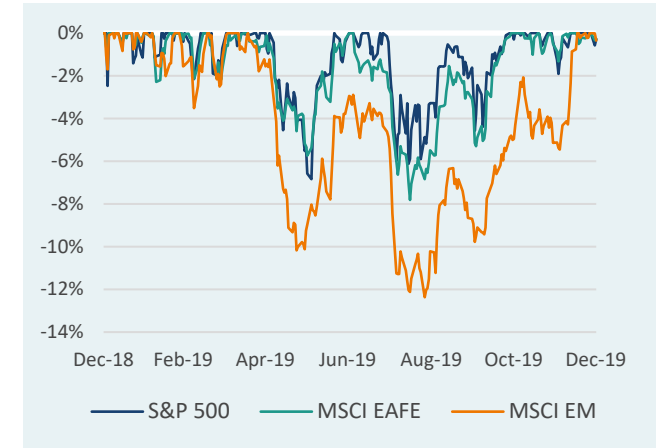
Source: CBOE, as of 12/31/19

ROLLING 1-YEAR REALIZED VOLATILITY



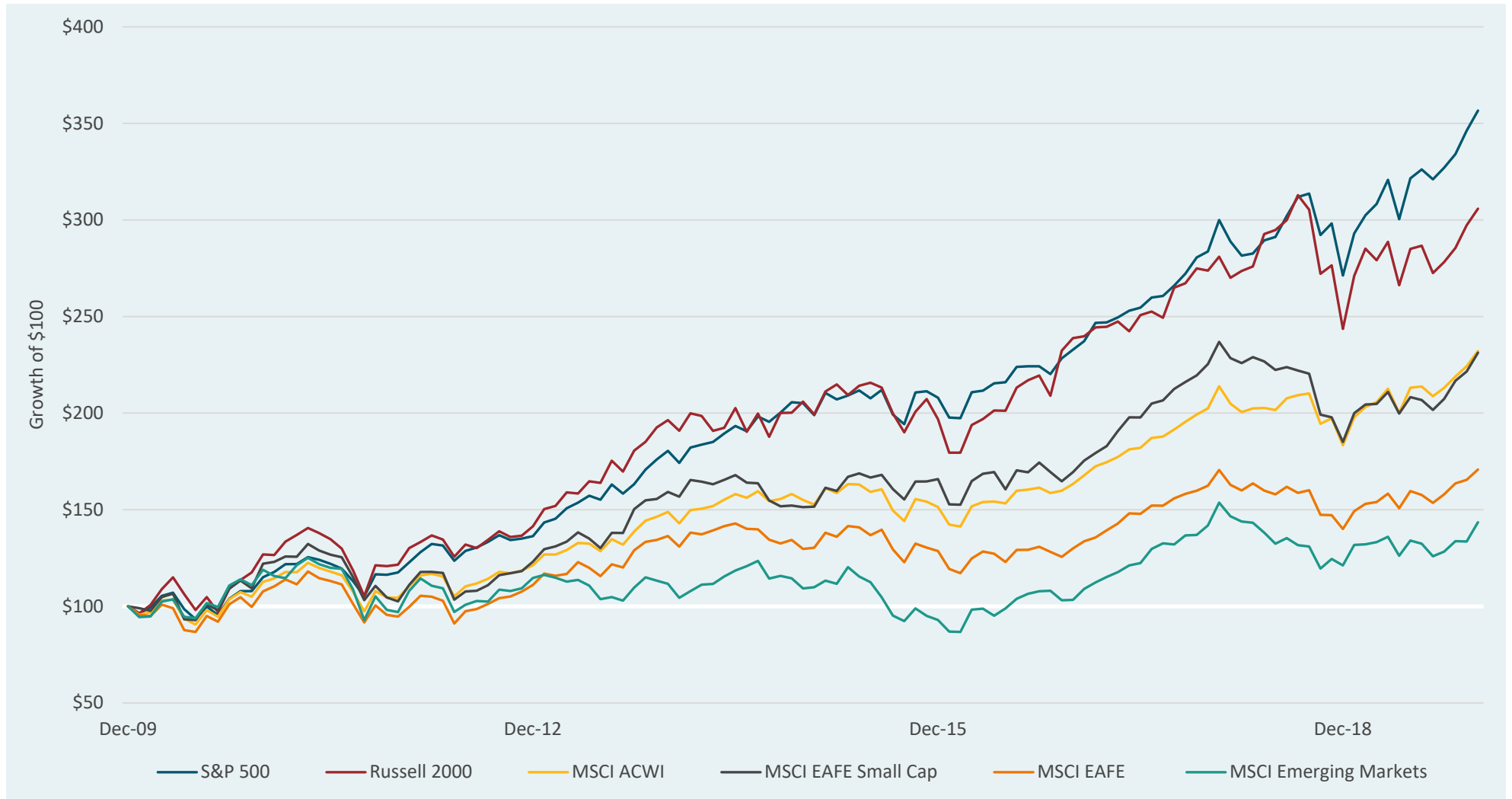
Source: Standard & Poor's, MSCI, Bloomberg, as of 12/31/19

2019 MAX DRAWDOWNS FROM PREVIOUS ALL-TIME-HIGH INDEX LEVELS



Source: Standard & Poor's, MSCI, Bloomberg, as of 12/31/19

Long-term equity performance



Source: Standard & Poor's, Russell, MSCI, Bloomberg, as of 12/31/19

Other assets

Currency

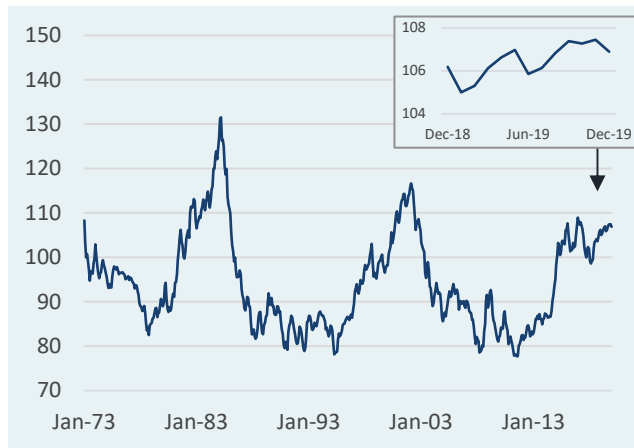
The U.S. dollar weakened versus both developed and emerging market currency baskets in the 4th quarter, fading some of the strong relative performance it had experienced back in Q3 2019. An index tracking the weighted average of the foreign exchange value of the U.S. dollar against major currencies fell 0.5%.

J.P. Morgan’s Emerging Market Currency Index fell -1.4% in 2019. Many analysts have argued that global disinflationary pressures have eased some long-standing concerns over the risk of capital flight within the emerging market complex. So

long as inflationary risks are muted, then higher nominal interest rates in the emerging market complex should afford emerging market central bankers’ further room to cut rates than their developed market peers. If implemented, the relative accommodation supplied may fuel both growth and currency depreciation.

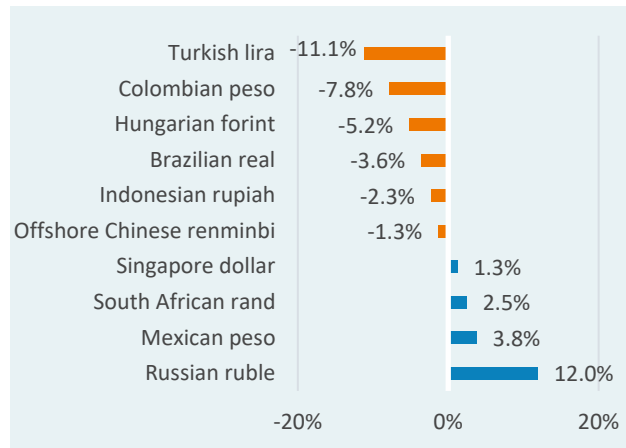
The British pound sterling bounced back sharply in Q4, rising from \$1.23 to \$1.33. Prime Minister Boris Johnson’s Conservative Party secured a firm majority in Parliament, lifting the shroud of “Brexit” from the geopolitical landscape.

U.S. DOLLAR TRADE WEIGHTED INDEX



Source: Federal Reserve, Verus, as of 12/31/19

JP MORGAN EMCI CONSTITUENT 2019 RETURNS



Source: J.P. Morgan, Bloomberg, as of 12/31/19

GBP/USD



Source: Bloomberg, as of 12/31/19

Appendix

Periodic table of returns

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	5-Year	10-Year
Large Cap Growth	38.7	66.4	31.8	14.0	25.9	56.3	26.0	34.5	32.6	39.8	5.2	79.0	29.1	14.3	18.6	43.3	13.5	13.3	31.7	37.3	6.7	36.4	14.6	15.2
Large Cap Equity	27.0	43.1	22.8	8.4	10.3	48.5	22.2	21.4	26.9	16.2	1.4	37.2	26.9	7.8	18.1	38.8	13.2	5.7	21.3	30.2	1.9	31.4	11.5	13.5
Small Cap Growth	20.3	33.2	12.2	7.3	6.7	47.3	20.7	20.1	23.5	15.8	-6.5	34.5	24.5	2.6	17.9	34.5	13.0	0.9	17.3	25.0	0.0	28.5	9.3	13.0
Large Cap Value	19.3	27.3	11.6	3.3	1.6	46.0	18.3	14.0	22.2	11.8	-21.4	32.5	19.2	1.5	17.5	33.5	11.8	0.6	12.1	22.2	-1.5	26.5	8.6	11.8
Small Cap Equity	16.2	26.5	7.0	2.8	1.0	39.2	16.5	7.5	18.4	11.6	-25.9	28.4	16.8	0.4	16.4	33.1	6.0	0.0	11.8	21.7	-3.5	25.5	8.3	11.8
Small Cap Value	8.7	21.3	4.1	-2.4	-6.0	29.9	14.3	6.3	15.5	10.3	-33.8	23.3	16.1	-2.1	15.3	23.3	4.9	-0.8	11.2	14.6	-6.0	22.4	8.2	10.6
International Equity	15.6	24.3	6.0	2.5	-5.9	30.0	14.5	7.1	16.6	10.9	-28.9	27.2	16.7	0.1	16.3	32.5	5.6	-0.4	11.3	17.1	-4.8	22.0	7.0	9.8
60/40 Global Portfolio	4.9	20.9	-3.0	-5.6	-11.4	29.7	12.9	5.3	15.1	7.0	-35.6	20.6	15.5	-2.9	14.6	12.1	4.2	-1.4	8.0	13.7	-8.3	18.6	6.1	6.4
Emerging Markets Equity	1.2	13.2	-7.3	-9.1	-15.5	25.2	11.4	4.7	13.3	7.0	-36.8	19.7	13.1	-4.2	11.5	11.0	3.4	-2.5	7.1	7.8	-9.3	18.4	5.7	5.5
US Bonds	-2.5	11.4	-7.8	-9.2	-15.7	23.9	9.1	4.6	10.4	5.8	-37.6	18.9	10.2	-5.5	10.5	9.0	2.8	-3.8	5.7	7.7	-11.0	8.7	5.6	3.7
Hedge Funds of Funds	-5.1	7.3	-14.0	-12.4	-20.5	11.6	6.9	4.6	9.1	4.4	-38.4	11.5	8.2	-5.7	4.8	0.1	0.0	-4.4	2.6	7.0	-11.2	7.8	3.0	3.7
Commodities	-6.5	4.8	-22.4	-19.5	-21.7	9.0	6.3	4.2	4.8	-0.2	-38.5	5.9	6.5	-11.7	4.2	-2.0	-1.8	-7.5	1.0	3.5	-12.9	7.7	2.2	2.8
Real Estate	-25.3	-0.8	-22.4	-20.4	-27.9	4.1	4.3	3.2	4.3	-1.6	-43.1	0.2	5.7	-13.3	0.1	-2.3	-4.5	-14.9	0.5	1.7	-13.8	4.8	1.1	0.6
Cash	-27.0	-1.5	-30.6	-21.2	-30.3	1.0	1.4	2.4	2.1	-9.8	-53.2	-16.9	0.1	-18.2	-1.1	-9.5	-17.0	-24.7	0.3	0.9	-14.6	2.1	-3.9	-4.7

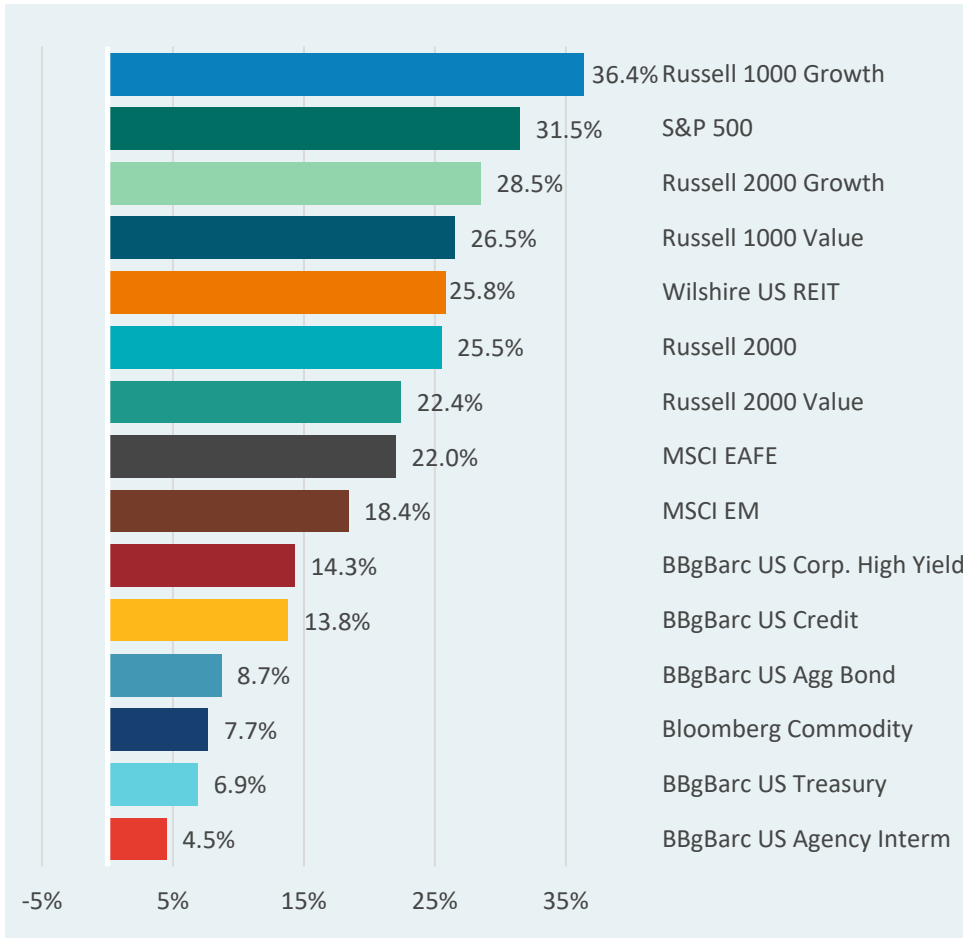
BEST
↑
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WORST

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

Source Data: Morningstar, Inc., Hedge Fund Research, Inc. (HFR), National Council of Real Estate Investment Fiduciaries (NCREIF). Indices used: Russell 1000, Russell 1000 Value, Russell 1000 Growth, Russell 2000, Russell 2000 Value, Russell 2000 Growth, MSCI EAFE, MSCI EM, BBgBarc US Aggregate, T-Bill 90 Day, Bloomberg Commodity, NCREIF Property, HFRI FOF, MSCI ACWI, BBgBarc Global Bond. NCREIF Property Index performance data as of 9/30/19.

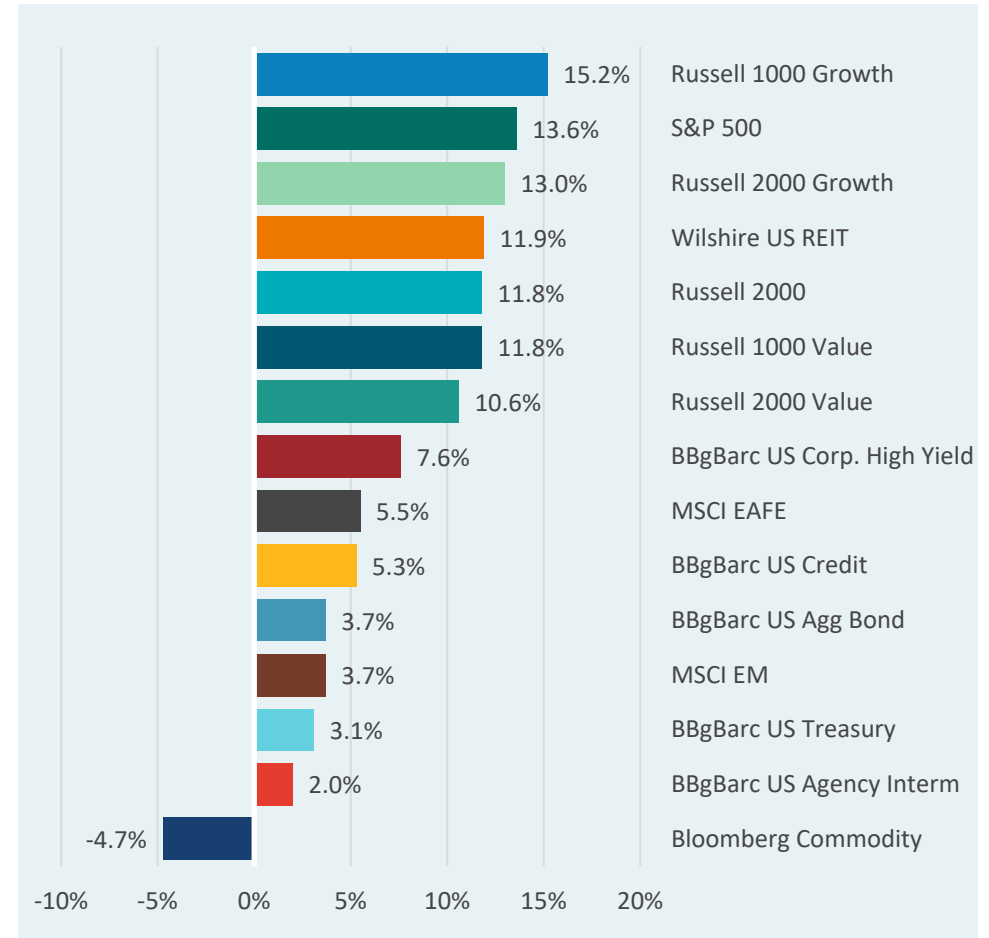
Major asset class returns

ONE YEAR ENDING DECEMBER



Source: Morningstar, as of 12/31/19

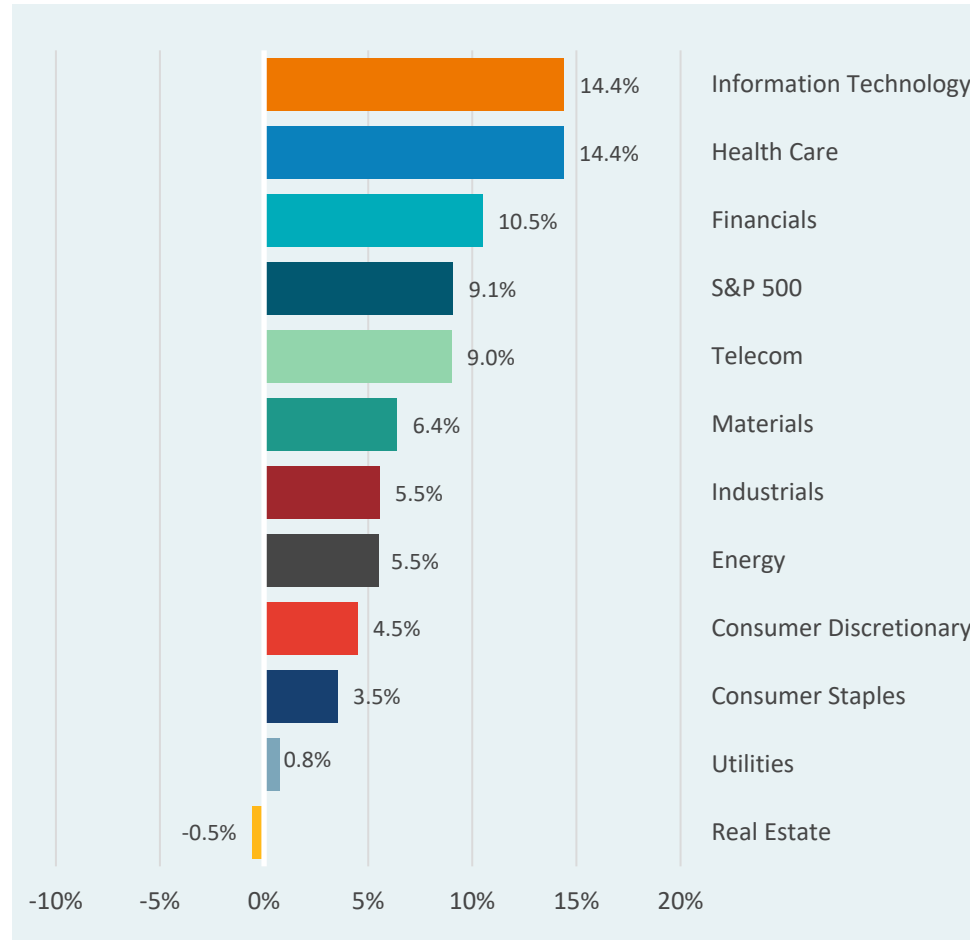
TEN YEARS ENDING DECEMBER



Source: Morningstar, as of 12/31/19

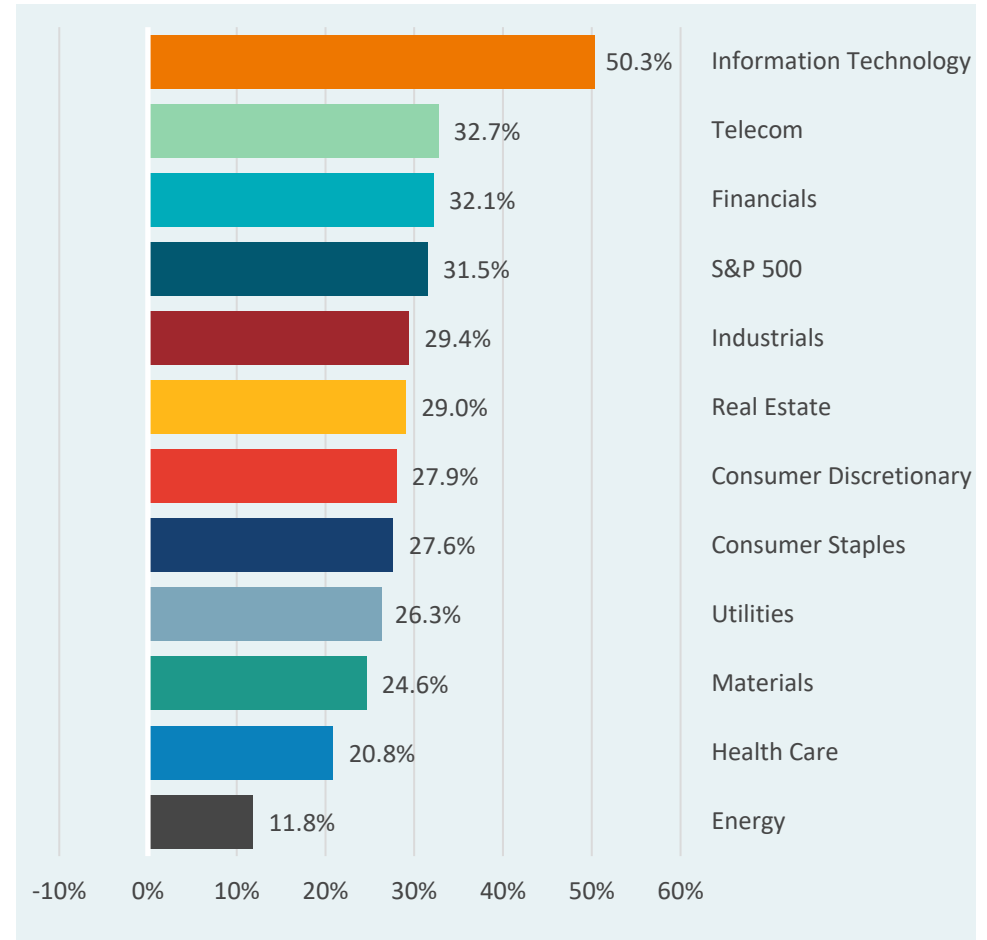
S&P 500 sector returns

Q4 2019



Source: Morningstar, as of 12/31/19

ONE YEAR ENDING DECEMBER



Source: Morningstar, as of 12/31/19

Detailed index returns

DOMESTIC EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Core Index							
S&P 500	3.0	9.1	31.5	31.5	15.3	11.7	13.6
S&P 500 Equal Weighted	2.8	7.6	29.2	29.2	12.4	9.8	13.5
DJ Industrial Average	1.9	6.7	25.3	25.3	15.7	12.6	13.4
Russell Top 200	3.1	9.8	31.8	31.8	16.2	12.3	13.7
Russell 1000	2.9	9.0	31.4	31.4	15.0	11.5	13.5
Russell 2000	2.9	9.9	25.5	25.5	8.6	8.2	11.8
Russell 3000	2.9	9.1	31.0	31.0	14.6	11.2	13.4
Russell Mid Cap	2.3	7.1	30.5	30.5	12.1	9.3	13.2
Style Index							
Russell 1000 Growth	3.0	10.6	36.4	36.4	20.5	14.6	15.2
Russell 1000 Value	2.8	7.4	26.5	26.5	9.7	8.3	11.8
Russell 2000 Growth	2.3	11.4	28.5	28.5	12.5	9.3	13.0
Russell 2000 Value	3.5	8.5	22.4	22.4	4.8	7.0	10.6

INTERNATIONAL EQUITY

Broad Index							
MSCI ACWI	3.5	9.0	26.6	26.6	12.4	8.4	8.8
MSCI ACWI ex US	4.3	8.9	21.5	21.5	9.9	5.5	5.0
MSCI EAFE	3.2	8.2	22.0	22.0	9.6	5.7	5.5
MSCI EM	7.5	11.8	18.4	18.4	11.6	5.6	3.7
MSCI EAFE Small Cap	4.4	11.5	25.0	25.0	10.9	8.9	8.7
Style Index							
MSCI EAFE Growth	2.9	8.4	27.9	27.9	12.8	7.7	6.9
MSCI EAFE Value	3.7	7.8	16.1	16.1	6.3	3.5	4.0
Regional Index							
MSCI UK	5.2	10.0	21.0	21.0	8.3	3.3	5.0
MSCI Japan	2.1	7.6	19.6	19.6	8.9	7.7	6.6
MSCI Euro	2.9	7.9	22.9	22.9	9.1	5.1	3.7
MSCI EM Asia	7.1	12.5	19.2	19.2	12.9	6.6	5.8
MSCI EM Latin American	10.3	10.5	17.5	17.5	10.7	4.2	(0.6)

FIXED INCOME

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
BBgBarc US TIPS	0.4	0.8	8.4	8.4	3.3	2.6	3.4
BBgBarc US Treasury Bills	0.1	0.5	2.3	2.3	1.7	1.1	0.6
BBgBarc US Agg Bond	(0.1)	0.2	8.7	8.7	4.0	3.0	3.7
Duration							
BBgBarc US Treasury 1-3 Yr	0.2	0.5	3.6	3.6	1.9	1.4	1.2
BBgBarc US Treasury Long	(2.8)	(4.1)	14.8	14.8	6.9	4.1	7.0
BBgBarc US Treasury	(0.6)	(0.8)	6.9	6.9	3.3	2.4	3.1
Issuer							
BBgBarc US MBS	0.3	0.7	6.4	6.4	3.2	2.6	3.2
BBgBarc US Corp. High Yield	2.0	2.6	14.3	14.3	6.4	6.1	7.6
BBgBarc US Agency Interm	0.1	0.3	4.5	4.5	2.4	1.9	2.0
BBgBarc US Credit	0.3	1.1	13.8	13.8	5.8	4.4	5.3

OTHER

Index							
Bloomberg Commodity	5.0	4.4	7.7	7.7	(0.9)	(3.9)	(4.7)
Wilshire US REIT	(0.7)	(1.1)	25.8	25.8	7.6	6.9	11.9
CS Leveraged Loans	1.6	1.7	8.2	8.2	4.5	4.5	5.2
Alerian MLP	8.9	(4.6)	6.7	6.7	(5.0)	(7.0)	4.8
Regional Index							
JPM EMBI Global Div	2.0	1.8	15.0	15.0	6.7	6.2	6.9
JPM GBI-EM Global Div	4.1	5.2	13.5	13.5	7.0	2.8	2.7
Hedge Funds							
HFRI Composite	1.8	3.5	10.4	10.4	4.5	3.5	4.0
HFRI FOF Composite	1.3	2.5	7.8	7.8	3.7	2.2	2.8
Currency (Spot)							
Euro	1.8	3.0	(1.8)	(1.8)	2.1	(1.5)	(2.4)
Pound	2.4	7.5	4.0	4.0	2.3	(3.2)	(2.0)
Yen	0.8	(0.6)	1.0	1.0	2.4	2.0	(1.5)

Source: Morningstar, HFR, as of 12/31/19

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.lanqerresearch.com)

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

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

NAHB Housing Market Index - the housing market index is a weighted average of separate diffusion 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.

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Contra Costa County Employees' Retirement Association

Investment Performance Review
Period Ending: December 31, 2019



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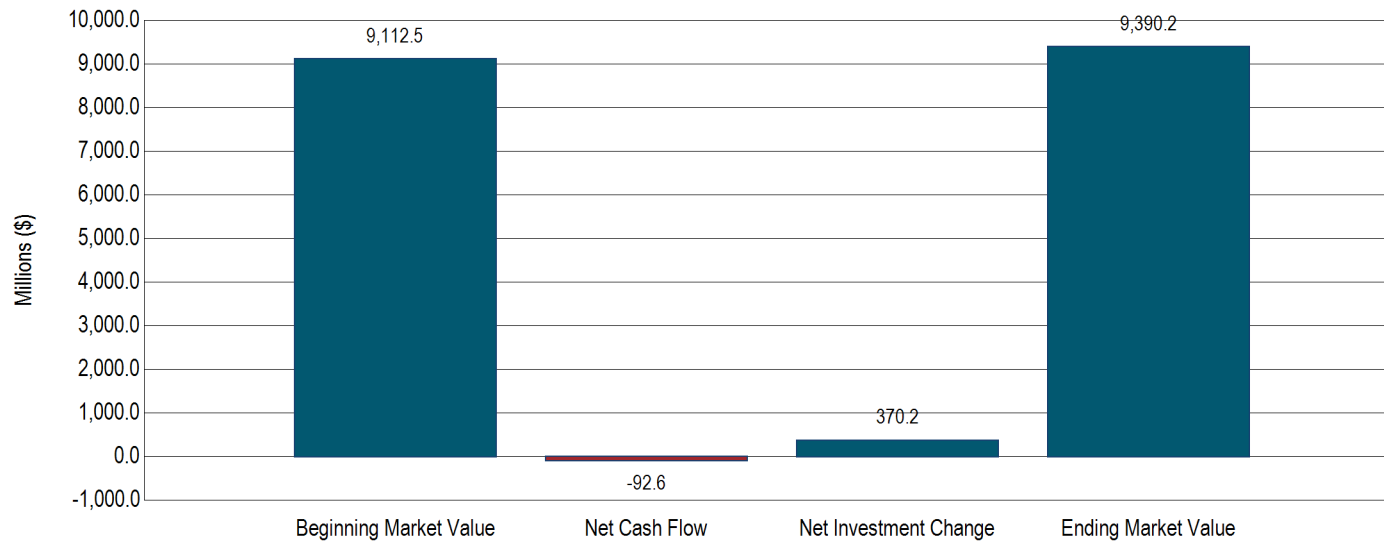
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SAN FRANCISCO 415-362-3484

Portfolio Reconciliation

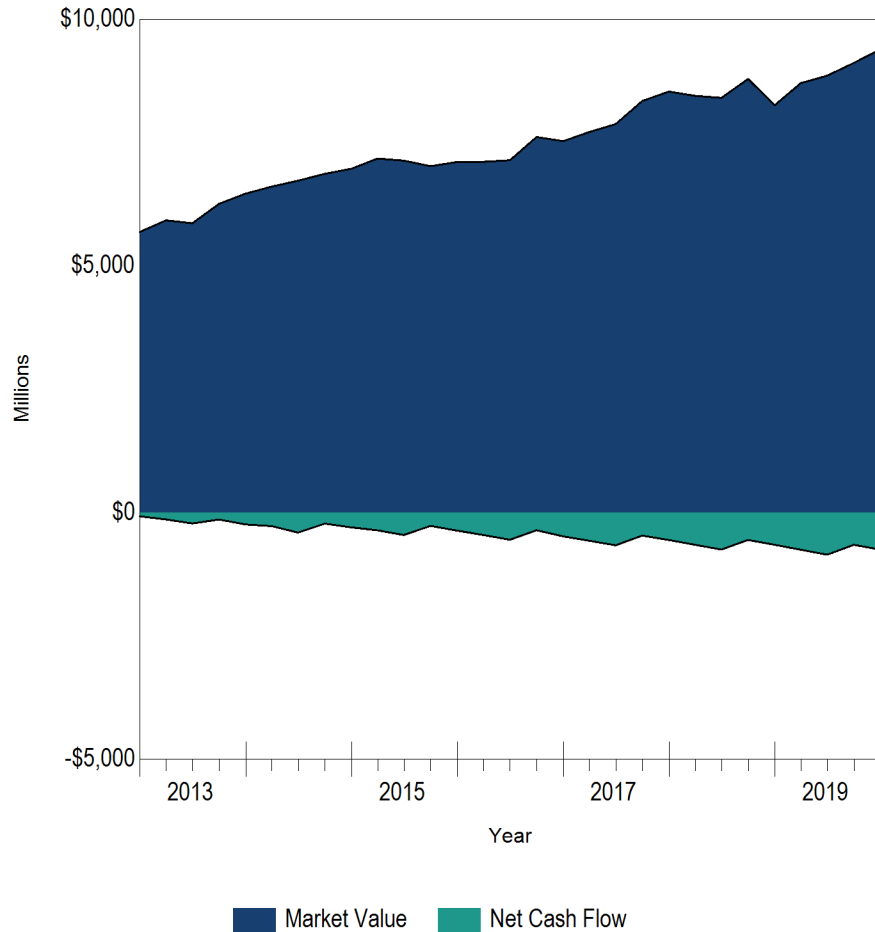
	Last Three Months	Year-To-Date
Beginning Market Value	\$9,112,546,495	\$8,255,873,307
Net Cash Flow	-\$92,588,760	-\$75,240,768
Net Investment Change	\$370,230,301	\$1,209,555,498
Ending Market Value	\$9,390,188,036	\$9,390,188,036

**Change in Market Value
Last Three Months**

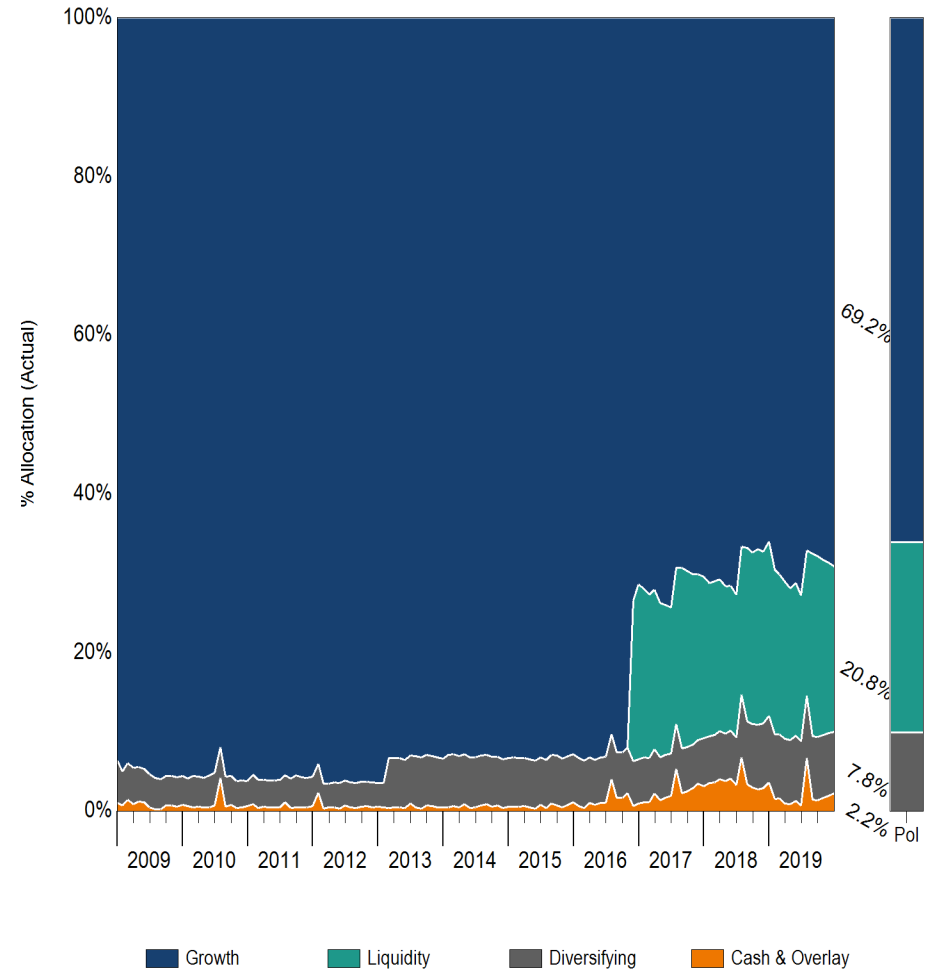


Contributions and withdrawals may include intra-account transfers between managers/funds.

Market Value History
Cumulative Cash Flows



Asset Allocation History

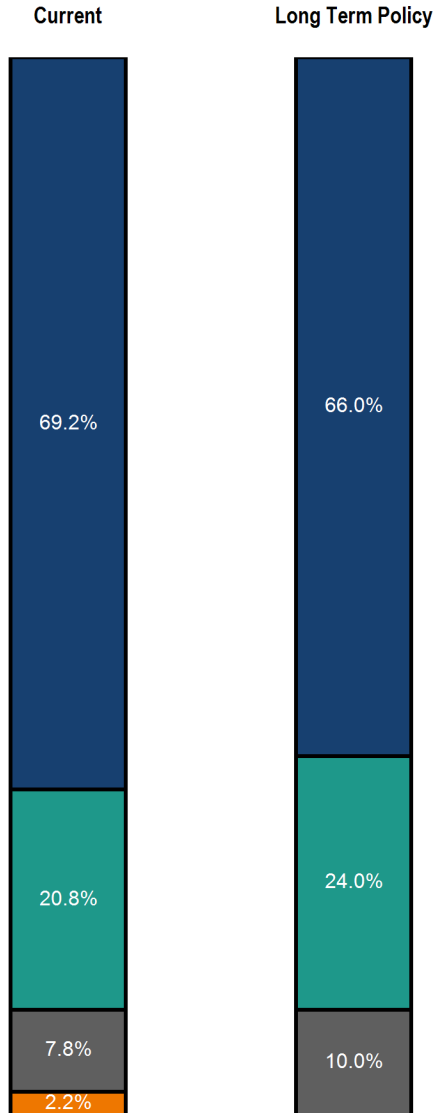


Policy reflects FFP 4-Yr allocations approved in June 2019.

Total Fund

Asset Allocation vs. Long Term Target Policy

Period Ending: December 31, 2019



Allocation vs. Long Term Target

	Current Balance	Current Allocation	Long Term Target	Difference
Growth	\$6,497,135,406	69.2%	66.0%	\$299,611,302
Liquidity	\$1,956,149,326	20.8%	24.0%	-\$297,495,803
Diversifying	\$728,611,654	7.8%	10.0%	-\$210,407,149
Cash & Overlay	\$208,291,650	2.2%	--	\$208,291,650
Total	\$9,390,188,036	100.0%	100.0%	

Allocation vs. Current Targets

	Current Balance	Current Allocation	Current Target	Difference
Growth	\$6,497,135,406	69.2%	68.0%	\$111,807,541
Liquidity	\$1,956,149,326	20.8%	24.0%	-\$297,495,803
Diversifying	\$728,611,654	7.8%	8.0%	-\$22,603,389
Cash & Overlay	\$208,291,650	2.2%	--	\$208,291,650
Total	\$9,390,188,036	100.0%	100.0%	

Long Term Targets reflect FFP 4-Yr allocations approved in June 2019.
Current Targets reflect targets approved in June 2019.

Total Fund

Executive Summary (Net of Fees)

Period Ending: December 31, 2019

	% of Portfolio	QTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015
Total Fund	100.0	4.1	14.6	8.3	6.8	8.5	14.6	-2.7	13.9	6.9	2.1
<i>Policy Index</i>		4.3	14.6	8.9	7.2	9.1	14.6	-0.9	13.7	8.9	0.6
Growth	69.2	5.5	18.4	10.5	8.2	--	18.4	-3.9	18.7	7.6	2.3
<i>Custom Growth Benchmark</i>		6.1	19.3	11.7	9.0	--	19.3	-2.1	19.3	10.1	0.3
Diversifying	7.8	0.5	6.8	2.3	1.2	2.3	6.8	-2.3	2.6	0.8	-1.8
<i>Custom Diversifying Benchmark</i>		0.5	6.1	4.0	3.7	4.1	6.1	1.4	4.7	4.1	2.5
Liquidity	20.8	0.5	4.8	2.6	--	--	4.8	1.7	1.4	--	--
<i>BBgBarc US Govt/Credit 1-3 Yr. TR</i>		0.6	4.0	2.1	--	--	4.0	1.6	0.8	--	--

*Correlation between the Growth and Diversifying composites is .10, .24 and .26 over the previous 1, 3 and 5 year periods respectively.

Policy Index (7/1/2019-Present): 10% Russell 3000, 18% MSCI ACWI ex-US (Gross), 11% MSCI ACWI (Net), 24% BBgBarc 1-3 Yr Gov/Credit, 3.5% BBgBarc US Aggregate, 2% BBgBarc Global Aggregate, 5% ICE BofAML High Yield Master II +2%, 2% ICE BofAML High Yield Master II, 1% Wilshire REIT, 1.6% NCREIF Property Index, 6.4% NCREIF ODCE Index, 2.0% CPI +4%, 11% S&P 500 +4%(Lagged), 2.5% HFRI EH Equity Market Neutral. Policy Index (7/1/2018-6/30/2019): 11% Russell 3000, 19% MSCI ACWI ex-US (Gross), 11% MSCI ACWI (Net), 23% BBgBarc 1-3 Yr Gov/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 Gov/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 Gov/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, 6.75% NCREIF Property Index, 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.

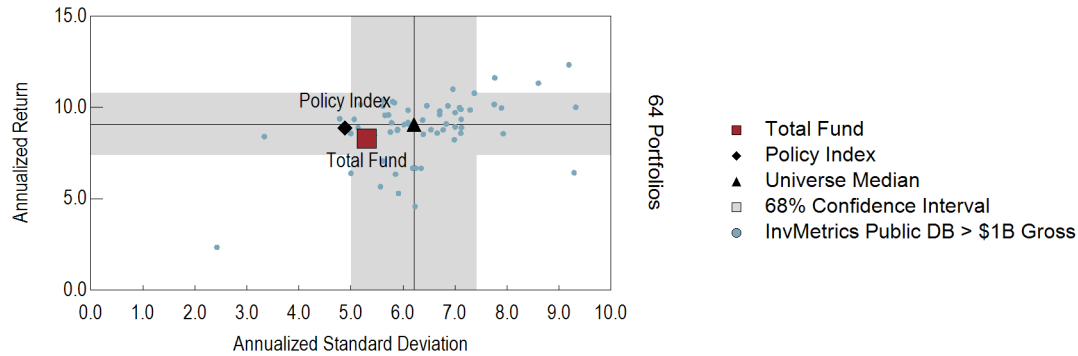
Total Fund Executive Summary (Net of Fees)

Period Ending: December 31, 2019

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	8.29%	-0.58%	5.31%	-0.90%	1.04	1.61%	0.91	1.25	-0.36	97.49%	107.25%

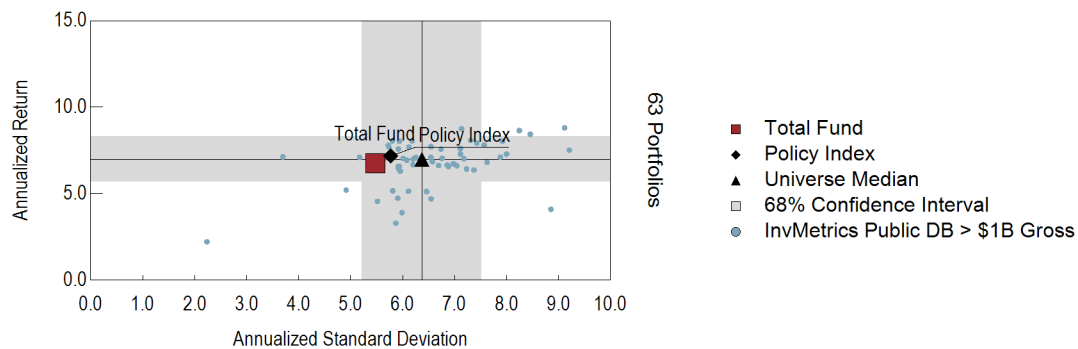
Risk vs. Return



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	6.75%	-0.42%	5.47%	0.30%	0.90	1.80%	0.90	1.04	-0.23	89.39%	89.27%

Risk vs. Return



Total Fund
Performance Summary (Gross of Fees)

Period Ending: December 31, 2019

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015
Total Fund	9,390,188,036	100.0	4.1	14.9	8.6	7.1	9.1	14.9	-2.5	14.2	7.4	2.7
Policy Index			4.3	14.6	8.9	7.2	9.1	14.6	-0.9	13.7	8.9	0.6
InvMetrics Public DB > \$1B Gross Rank			76	89	73	35	14	89	25	83	74	5
Total Fund ex Overlay & Cash	9,181,896,386	97.8	4.1	14.7	8.6	7.2	9.1	14.7	-2.1	14.1	7.4	2.7
Policy Index			4.3	14.6	8.9	7.2	9.1	14.6	-0.9	13.7	8.9	0.6
InvMetrics Public DB > \$1B Gross Rank			78	90	70	34	13	90	20	84	74	5
Growth	6,497,135,406	69.2	5.6	18.7	10.9	8.7	--	18.7	-3.6	19.1	8.1	3.0
Custom Growth Benchmark			6.1	19.3	11.7	9.0	--	19.3	-2.1	19.3	10.1	0.3
Total Domestic Equity	1,019,488,911	10.9	7.2	26.7	13.4	10.4	13.4	26.7	-7.2	23.9	11.5	1.1
Russell 3000			9.1	31.0	14.6	11.2	13.4	31.0	-5.2	21.1	12.7	0.5
InvMetrics Public DB US Eq Gross Rank			89	88	58	64	34	88	78	6	77	21
BlackRock Russell 1000 Index	204,604,006	2.2	9.0	31.4	--	--	--	31.4	-4.8	--	--	--
Russell 1000			9.0	31.4	--	--	--	31.4	-4.8	--	--	--
eV US Large Cap Equity Gross Rank			40	38	--	--	--	38	47	--	--	--
Jackson Square Partners	244,269,952	2.6	5.7	27.9	17.4	10.4	14.0	27.9	-2.0	29.3	-4.4	6.1
Russell 1000 Growth			10.6	36.4	20.5	14.6	15.2	36.4	-1.5	30.2	7.1	5.7
eV US Large Cap Growth Equity Gross Rank			96	93	79	94	67	93	59	47	98	37
Boston Partners	251,080,501	2.7	8.1	24.3	10.9	8.5	12.4	24.3	-8.7	20.1	15.1	-3.9
Russell 1000 Value			7.4	26.5	9.7	8.3	11.8	26.5	-8.3	13.7	17.3	-3.8
eV US Large Cap Value Equity Gross Rank			43	77	50	60	41	77	55	23	50	65
Emerald Advisers	159,009,461	1.7	11.1	30.3	14.7	11.6	15.7	30.3	-10.1	28.8	10.1	4.1
Russell 2000 Growth			11.4	28.5	12.5	9.3	13.0	28.5	-9.3	22.2	11.3	-1.4
eV US Small Cap Growth Equity Gross Rank			32	45	64	52	28	45	85	26	54	19
Ceredex	160,524,993	1.7	2.6	18.4	5.3	7.7	--	18.4	-11.3	11.4	29.8	-4.4
Russell 2000 Value			8.5	22.4	4.8	7.0	--	22.4	-12.9	7.8	31.7	-7.5
eV US Small Cap Value Equity Gross Rank			99	86	56	48	--	86	25	48	32	52

Individual closed end funds are not shown in performance summary table. AQR Global Risk Premium funded 1/18/2019. PanAgora Risk Parity funded 3/15/2019. 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, 2019

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015
Total International Equity	1,716,185,180	18.3	10.9	23.7	10.0	5.9	6.0	23.7	-14.3	25.5	1.2	-1.2
MSCI ACWI ex USA Gross			9.0	22.1	10.4	6.0	5.4	22.1	-13.8	27.8	5.0	-5.3
MSCI EAFE Gross			8.2	22.7	10.1	6.2	6.0	22.7	-13.4	25.6	1.5	-0.4
InvMetrics Public DB ex-US Eq Gross Rank			8	28	51	56	57	28	44	90	89	28
International Equity	986,003,553	10.5	9.7	27.0	11.2	6.6	6.3	27.0	-13.6	25.3	1.2	-1.2
MSCI ACWI ex USA Gross			9.0	22.1	10.4	6.0	5.4	22.1	-13.8	27.8	5.0	-5.3
InvMetrics Public DB ex-US Eq Gross Rank			55	6	22	35	44	6	21	93	89	28
Pyrford	485,671,948	5.2	8.4	22.1	9.5	5.7	--	22.1	-10.1	19.8	3.4	-2.9
MSCI ACWI ex USA Value			8.2	15.7	6.9	3.6	--	15.7	-14.0	22.7	8.9	-10.1
eV ACWI ex-US Value Equity Gross Rank			91	36	27	42	--	36	5	84	74	59
William Blair	500,331,604	5.3	11.0	32.0	12.9	7.3	--	32.0	-16.8	30.9	-1.4	0.5
MSCI ACWI ex USA Growth			9.6	27.3	12.9	7.3	--	27.3	-14.4	32.0	0.1	-1.3
eV ACWI ex-US Growth Equity Gross Rank			38	42	78	86	--	42	69	81	55	69
Emerging Markets Equity	730,181,627	7.8	12.5	19.4	--	--	--	19.4	-15.3	--	--	--
MSCI Emerging Markets			11.8	18.4	--	--	--	18.4	-14.6	--	--	--
InvMetrics Public DB Emg Mkt Eq Gross Rank			4	27	--	--	--	27	51	--	--	--
PIMCO RAE Emerging Markets	369,299,185	3.9	11.2	14.6	--	--	--	14.6	-12.3	--	--	--
MSCI Emerging Markets			11.8	18.4	--	--	--	18.4	-14.6	--	--	--
eV Emg Mkts Equity Gross Rank			54	82	--	--	--	82	19	--	--	--
TT Emerging Markets	360,882,442	3.8	13.9	24.8	--	--	--	24.8	-18.4	--	--	--
MSCI Emerging Markets			11.8	18.4	--	--	--	18.4	-14.6	--	--	--
eV Emg Mkts Equity Gross Rank			9	23	--	--	--	23	83	--	--	--
Total Global Equity	794,334,977	8.5	7.3	28.9	13.7	10.1	8.2	28.9	-7.8	23.7	7.6	2.2
MSCI ACWI			9.0	26.6	12.4	8.4	8.8	26.6	-9.4	24.0	7.9	-2.4
InvMetrics Public DB Glbl Eq Gross Rank			77	1	43	1	11	1	60	79	40	16
Artisan Partners	404,024,936	4.3	9.7	37.0	18.8	14.1	--	37.0	-7.9	32.9	5.6	9.2
MSCI ACWI			9.0	26.6	12.4	8.4	--	26.6	-9.4	24.0	7.9	-2.4
eV All Global Equity Gross Rank			31	7	10	5	--	7	40	11	61	4
First Eagle	390,143,027	4.2	4.9	21.0	8.8	7.6	--	21.0	-7.6	15.1	11.7	0.2
MSCI ACWI			9.0	26.6	12.4	8.4	--	26.6	-9.4	24.0	7.9	-2.4
eV All Global Equity Gross Rank			89	82	85	71	--	82	38	89	19	49

Individual closed end funds are not shown in performance summary table. AQR Global Risk Premium funded 1/18/2019. PanAgora Risk Parity funded 3/15/2019. 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, 2019

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015
Private Credit	539,105,455	5.7	1.7	7.7	8.8	9.5	13.9	7.7	8.3	10.4	8.2	12.9
ICE BofAML High Yield Master II +2%			3.1	16.7	8.5	8.3	9.6	16.7	-0.3	9.6	19.8	-2.7
Total High Yield	208,823,867	2.2	2.7	16.0	6.2	5.7	7.3	16.0	-3.2	6.5	14.3	-3.5
ICE BofAML High Yield Master II			2.6	14.4	6.3	6.1	7.5	14.4	-2.3	7.5	17.5	-4.6
eV US High Yield Fixed Inc Gross Rank			37	15	66	68	70	15	88	74	47	68
Allianz Global Investors	208,823,867	2.2	2.7	16.0	6.2	5.7	7.3	16.0	-3.2	6.5	14.3	-3.5
ICE BofAML High Yield Master II			2.6	14.4	6.3	6.1	7.5	14.4	-2.3	7.5	17.5	-4.6
eV US High Yield Fixed Inc Gross Rank			37	15	66	68	70	15	88	74	47	68
Total Real Estate	714,060,165	7.6	1.0	8.1	8.9	9.1	12.4	8.1	7.4	11.1	5.5	13.5
Real Estate Benchmark			1.2	7.7	7.2	7.3	10.6	7.7	6.7	7.1	6.7	8.3
NCREIF-ODCE			1.5	5.3	7.1	9.0	11.4	5.3	8.3	7.6	8.8	15.0
NCREIF Property Index			1.6	6.4	6.7	8.2	10.2	6.4	6.7	7.0	8.0	13.3
Adelante	80,205,371	0.9	-0.7	28.2	9.5	7.5	12.8	28.2	-5.0	7.8	4.1	5.1
Wilshire REIT			-1.1	25.8	7.6	6.9	11.9	25.8	-4.8	4.2	7.2	4.2
Private Equity	1,045,326,147	11.1	2.6	8.4	10.8	10.7	11.9	8.4	12.1	11.9	9.4	11.6
S&P 500 Index +4% (Lagged)			2.7	8.4	17.9	15.2	17.7	8.4	22.6	23.3	20.0	3.4
Risk Parity	459,810,703	4.9	1.7	--	--	--	--	--	--	--	--	--
60% MSCI ACWI Net/40% BBgBarc Global Aggregate			5.5	--	--	--	--	--	--	--	--	--
AQR Global Risk Premium-EL	236,618,370	2.5	3.5	--	--	--	--	--	--	--	--	--
60% MSCI ACWI Net/40% BBgBarc Global Aggregate			5.5	--	--	--	--	--	--	--	--	--
PanAgora Risk Parity Multi Asset	223,192,333	2.4	-0.2	--	--	--	--	--	--	--	--	--
60% MSCI ACWI Net/40% BBgBarc Global Aggregate			5.5	--	--	--	--	--	--	--	--	--

Individual closed end funds are not shown in performance summary table. AQR Global Risk Premium funded 1/18/2019. PanAgora Risk Parity funded 3/15/2019. 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, 2019

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015
Diversifying	728,611,654	7.8	0.6	7.1	2.6	1.5	2.7	7.1	-2.0	2.8	1.3	-1.4
Custom Diversifying Benchmark			0.5	6.1	4.0	3.7	4.1	6.1	1.4	4.7	4.1	2.5
Diversifying Fixed Income	523,900,999	5.6	0.5	8.6	3.2	2.8	3.7	8.6	-1.7	2.8	2.8	1.6
eV US Core Fixed Inc Gross Rank			13	81	99	98	92	81	99	96	72	15
AFL-CIO	333,841,377	3.6	-0.3	8.2	4.1	3.2	4.0	8.2	0.6	3.6	2.4	1.6
BBgBarc US Aggregate TR			0.2	8.7	4.0	3.0	3.7	8.7	0.0	3.5	2.6	0.6
eV US Core Fixed Inc Gross Rank			98	90	81	74	74	90	16	76	87	15
Wellington Real Total Return	190,059,622	2.0	2.1	9.2	1.7	0.0	--	9.2	-5.6	1.9	-0.1	-4.9
CPI + 4%			1.1	6.4	6.2	5.9	--	6.4	6.0	6.2	6.2	4.8
Diversifying Equity	204,710,656	2.2	0.8	3.3	--	--	--	3.3	--	--	--	--
Parametric Defensive Equity	204,710,656	2.2	0.8	3.3	--	--	--	3.3	--	--	--	--
91 Day T-Bill +4%			1.3	6.1	--	--	--	6.1	--	--	--	--
Liquidity	1,956,149,326	20.8	0.5	4.9	2.7	--	--	4.9	1.8	1.5	--	--
BBgBarc US Govt/Credit 1-3 Yr. TR			0.6	4.0	2.1	--	--	4.0	1.6	0.8	--	--
eV US Short Duration Fixed Inc Gross Rank			74	35	37	--	--	35	24	50	--	--
DFA Short Credit	460,934,054	4.9	0.7	5.2	2.8	--	--	5.2	1.2	1.9	--	--
ICE BofAML 1-5 Yrs US Corp & Govt TR			0.5	5.1	2.6	--	--	5.1	1.4	1.3	--	--
eV US Short Duration Fixed Inc Gross Rank			25	21	33	--	--	21	93	26	--	--
Insight Short Duration	956,150,002	10.2	0.7	4.7	2.6	--	--	4.7	1.7	1.5	--	--
BBgBarc US Govt/Credit 1-3 Yr. TR			0.6	4.0	2.1	--	--	4.0	1.6	0.8	--	--
eV US Short Duration Fixed Inc Gross Rank			23	46	48	--	--	46	38	50	--	--
Sit Short Duration	539,065,270	5.7	0.0	4.9	2.9	--	--	4.9	2.5	1.3	--	--
BBgBarc US Govt 1-3 Yr TR			0.5	3.6	1.9	--	--	3.6	1.6	0.4	--	--
eV US Short Duration Fixed Inc Gross Rank			99	35	27	--	--	35	1	68	--	--
Total Cash	169,198,397	1.8	0.7	3.3	2.0	1.4	3.0	3.3	1.7	0.9	0.9	0.1
91 Day T-Bills			0.4	2.1	1.6	1.1	0.6	2.1	1.9	0.9	0.3	0.0
Cash	168,995,241	1.8	0.7	3.4	2.0	1.4	3.1	3.4	1.7	0.9	0.9	0.1
State Street Cash/Tax Reclaims	195,870	0.0	5.1	--	--	--	--	--	--	--	--	--
Northern Trust Transition	7,286	0.0	2.7	--	--	--	--	--	--	--	--	--

Individual closed end funds are not shown in performance summary table. AQR Global Risk Premium funded 1/18/2019. PanAgora Risk Parity funded 3/15/2019. Effective 3/1/2019 the custodian of record switched from State Street to Northern Trust. State Street Cash/Tax Reclaims reflects \$-28,935 in cash and \$224,806 in potential tax reclaims at State Street after assets were transferred to Northern Trust. 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, 2019

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015
Total Fund	9,390,188,036	100.0	4.1	14.6	8.3	6.8	8.5	14.6	-2.7	13.9	6.9	2.1
<i>Policy Index</i>			4.3	14.6	8.9	7.2	9.1	14.6	-0.9	13.7	8.9	0.6
Total Fund ex Overlay & Cash	9,181,896,386	97.8	4.0	14.4	8.3	6.8	8.5	14.4	-2.4	13.8	6.9	2.1
<i>Policy Index</i>			4.3	14.6	8.9	7.2	9.1	14.6	-0.9	13.7	8.9	0.6
Growth	6,497,135,406	69.2	5.5	18.4	10.5	8.2	--	18.4	-3.9	18.7	7.6	2.3
<i>Custom Growth Benchmark</i>			6.1	19.3	11.7	9.0	--	19.3	-2.1	19.3	10.1	0.3
Total Domestic Equity	1,019,488,911	10.9	7.1	26.1	12.9	10.0	12.9	26.1	-7.6	23.5	11.1	0.6
<i>Russell 3000</i>			9.1	31.0	14.6	11.2	13.4	31.0	-5.2	21.1	12.7	0.5
BlackRock Russell 1000 Index	204,604,006	2.2	9.0	31.4	--	--	--	31.4	-4.8	--	--	--
<i>Russell 1000</i>			9.0	31.4	--	--	--	31.4	-4.8	--	--	--
Jackson Square Partners	244,269,952	2.6	5.6	27.3	17.0	10.0	13.5	27.3	-2.4	28.7	-4.8	5.6
<i>Russell 1000 Growth</i>			10.6	36.4	20.5	14.6	15.2	36.4	-1.5	30.2	7.1	5.7
Boston Partners	251,080,501	2.7	8.0	23.8	10.5	8.2	12.1	23.8	-8.9	19.7	14.7	-4.2
<i>Russell 1000 Value</i>			7.4	26.5	9.7	8.3	11.8	26.5	-8.3	13.7	17.3	-3.8
Emerald Advisers	159,009,461	1.7	10.9	29.4	13.9	10.9	14.9	29.4	-10.7	28.0	9.4	3.5
<i>Russell 2000 Growth</i>			11.4	28.5	12.5	9.3	13.0	28.5	-9.3	22.2	11.3	-1.4
Ceredex	160,524,993	1.7	2.4	17.7	4.8	7.1	--	17.7	-11.8	10.7	29.1	-5.0
<i>Russell 2000 Value</i>			8.5	22.4	4.8	7.0	--	22.4	-12.9	7.8	31.7	-7.5
Total International Equity	1,716,185,180	18.3	10.7	23.2	9.5	5.4	5.5	23.2	-14.7	25.0	0.8	-1.6
<i>MSCI ACWI ex USA Gross</i>			9.0	22.1	10.4	6.0	5.4	22.1	-13.8	27.8	5.0	-5.3
<i>MSCI EAFE Gross</i>			8.2	22.7	10.1	6.2	6.0	22.7	-13.4	25.6	1.5	-0.4
International Equity	986,003,553	10.5	9.6	26.5	10.8	6.1	5.9	26.5	-13.9	24.8	0.8	-1.6
<i>MSCI ACWI ex USA Gross</i>			9.0	22.1	10.4	6.0	5.4	22.1	-13.8	27.8	5.0	-5.3
Pyrford	485,671,948	5.2	8.3	21.6	9.1	5.3	--	21.6	-10.5	19.3	3.0	-3.3
<i>MSCI ACWI ex USA Value</i>			8.2	15.7	6.9	3.6	--	15.7	-14.0	22.7	8.9	-10.1
William Blair	500,331,604	5.3	10.9	31.5	12.4	6.9	--	31.5	-17.1	30.4	-1.8	0.0
<i>MSCI ACWI ex USA Growth</i>			9.6	27.3	12.9	7.3	--	27.3	-14.4	32.0	0.1	-1.3
Emerging Markets Equity	730,181,627	7.8	12.3	18.7	--	--	--	18.7	-15.7	--	--	--
<i>MSCI Emerging Markets</i>			11.8	18.4	--	--	--	18.4	-14.6	--	--	--
PIMCO RAE Emerging Markets	369,299,185	3.9	11.1	14.0	--	--	--	14.0	-12.6	--	--	--
<i>MSCI Emerging Markets</i>			11.8	18.4	--	--	--	18.4	-14.6	--	--	--
TT Emerging Markets	360,882,442	3.8	13.7	24.0	--	--	--	24.0	-18.9	--	--	--
<i>MSCI Emerging Markets</i>			11.8	18.4	--	--	--	18.4	-14.6	--	--	--

Individual closed end funds are not shown in performance summary table. AQR Global Risk Premium funded 1/18/2019. PanAgora Risk Parity funded 3/15/2019. 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, 2019

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015
Total Global Equity	794,334,977	8.5	7.1	27.9	12.9	9.3	7.5	27.9	-8.5	22.8	6.9	1.6
<i>MSCI ACWI</i>			9.0	26.6	12.4	8.4	8.8	26.6	-9.4	24.0	7.9	-2.4
Artisan Partners	404,024,936	4.3	9.5	36.0	17.9	13.2	--	36.0	-8.6	31.9	4.8	8.4
<i>MSCI ACWI</i>			9.0	26.6	12.4	8.4	--	26.6	-9.4	24.0	7.9	-2.4
First Eagle	390,143,027	4.2	4.7	20.1	7.9	6.8	--	20.1	-8.3	14.3	10.9	-0.6
<i>MSCI ACWI</i>			9.0	26.6	12.4	8.4	--	26.6	-9.4	24.0	7.9	-2.4
Private Credit	539,105,455	5.7	1.7	7.7	8.8	9.0	12.1	7.7	8.3	10.4	6.9	11.6
<i>ICE BofAML High Yield Master II +2%</i>			3.1	16.7	8.5	8.3	9.6	16.7	-0.3	9.6	19.8	-2.7
Total High Yield	208,823,867	2.2	2.6	15.4	5.7	5.3	7.0	15.4	-3.6	6.1	13.9	-3.9
<i>ICE BofAML High Yield Master II</i>			2.6	14.4	6.3	6.1	7.5	14.4	-2.3	7.5	17.5	-4.6
Allianz Global Investors	208,823,867	2.2	2.6	15.4	5.7	5.3	6.9	15.4	-3.6	6.1	13.9	-3.9
<i>ICE BofAML High Yield Master II</i>			2.6	14.4	6.3	6.1	7.5	14.4	-2.3	7.5	17.5	-4.6
Total Real Estate	714,060,165	7.6	1.0	8.1	8.8	8.7	11.6	8.1	7.4	11.0	4.8	12.4
<i>Real Estate Benchmark</i>			1.2	7.7	7.2	7.3	10.6	7.7	6.7	7.1	6.7	8.3
<i>NCREIF-ODCE</i>			1.5	5.3	7.1	9.0	11.4	5.3	8.3	7.6	8.8	15.0
<i>NCREIF Property Index</i>			1.6	6.4	6.7	8.2	10.2	6.4	6.7	7.0	8.0	13.3
Adelante	80,205,371	0.9	-0.8	27.5	8.9	7.0	12.3	27.5	-5.5	7.2	3.6	4.6
<i>Wilshire REIT</i>			-1.1	25.8	7.6	6.9	11.9	25.8	-4.8	4.2	7.2	4.2
Private Equity	1,045,326,147	11.1	2.6	8.4	10.8	10.2	10.5	8.4	12.1	11.9	8.9	9.9
<i>S&P 500 Index +4% (Lagged)</i>			2.7	8.4	17.9	15.2	17.7	8.4	22.6	23.3	20.0	3.4
Risk Parity	459,810,703	4.9	1.7	--	--	--	--	--	--	--	--	--
<i>60% MSCI ACWI Net/40% BBgBarc Global Aggregate</i>			5.5	--	--	--	--	--	--	--	--	--
AQR Global Risk Premium-EL	236,618,370	2.5	3.5	--	--	--	--	--	--	--	--	--
<i>60% MSCI ACWI Net/40% BBgBarc Global Aggregate</i>			5.5	--	--	--	--	--	--	--	--	--
PanAgora Risk Parity Multi Asset	223,192,333	2.4	-0.2	--	--	--	--	--	--	--	--	--
<i>60% MSCI ACWI Net/40% BBgBarc Global Aggregate</i>			5.5	--	--	--	--	--	--	--	--	--

Individual closed end funds are not shown in performance summary table. AQR Global Risk Premium funded 1/18/2019. PanAgora Risk Parity funded 3/15/2019. 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, 2019

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015
Diversifying	728,611,654	7.8	0.5	6.8	2.3	1.2	2.3	6.8	-2.3	2.6	0.8	-1.8
<i>Custom Diversifying Benchmark</i>			0.5	6.1	4.0	3.7	4.1	6.1	1.4	4.7	4.1	2.5
Diversifying Fixed Income	523,900,999	5.6	0.5	8.3	2.9	2.4	3.4	8.3	-2.0	2.6	2.3	1.1
AFL-CIO	333,841,377	3.6	-0.4	7.8	3.7	2.8	3.6	7.8	0.2	3.2	1.9	1.1
<i>BBgBarc US Aggregate TR</i>			0.2	8.7	4.0	3.0	3.7	8.7	0.0	3.5	2.6	0.6
Wellington Real Total Return	190,059,622	2.0	2.1	9.2	1.7	-0.2	--	9.2	-5.6	1.9	-0.6	-5.4
<i>CPI + 4%</i>			1.1	6.4	6.2	5.9	--	6.4	6.0	6.2	6.2	4.8
Diversifying Equity	204,710,656	2.2	0.7	3.0	--	--	--	3.0	--	--	--	--
Parametric Defensive Equity	204,710,656	2.2	0.7	3.0	--	--	--	3.0	--	--	--	--
<i>91 Day T-Bill +4%</i>			1.3	6.1	--	--	--	6.1	--	--	--	--
Liquidity	1,956,149,326	20.8	0.5	4.8	2.6	--	--	4.8	1.7	1.4	--	--
<i>BBgBarc US Govt/Credit 1-3 Yr. TR</i>			0.6	4.0	2.1	--	--	4.0	1.6	0.8	--	--
DFA Short Credit	460,934,054	4.9	0.7	5.2	2.7	--	--	5.2	1.1	1.8	--	--
<i>ICE BofAML 1-5 Yrs US Corp & Govt TR</i>			0.5	5.1	2.6	--	--	5.1	1.4	1.3	--	--
Insight Short Duration	956,150,002	10.2	0.7	4.6	2.6	--	--	4.6	1.7	1.5	--	--
<i>BBgBarc US Govt/Credit 1-3 Yr. TR</i>			0.6	4.0	2.1	--	--	4.0	1.6	0.8	--	--
Sit Short Duration	539,065,270	5.7	0.0	4.7	2.7	--	--	4.7	2.3	1.1	--	--
<i>BBgBarc US Govt 1-3 Yr TR</i>			0.5	3.6	1.9	--	--	3.6	1.6	0.4	--	--
Total Cash	169,198,397	1.8	0.7	3.3	2.0	1.4	3.0	3.3	1.7	0.9	0.9	0.1
<i>91 Day T-Bills</i>			0.4	2.1	1.6	1.1	0.6	2.1	1.9	0.9	0.3	0.0
Cash	168,995,241	1.8	0.7	3.4	2.0	1.4	3.1	3.4	1.7	0.9	0.9	0.1
State Street Cash/Tax Reclaims	195,870	0.0	5.1	--	--	--	--	--	--	--	--	--
Northern Trust Transition	7,286	0.0	2.7	--	--	--	--	--	--	--	--	--

Individual closed end funds are not shown in performance summary table. AQR Global Risk Premium funded 1/18/2019. PanAgora Risk Parity funded 3/15/2019. Effective 3/1/2019 the custodian of record switched from State Street to Northern Trust. State Street Cash/Tax Reclaims reflects \$-28,935 in cash and \$224,806 in potential tax reclaims at State Street after assets were transferred to Northern Trust. 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, 2019

StepStone Group Analysis (*)												
Closing Date	Manager Name/Fund Name	Estimated Market Value as of 12/31/19 ¹	Total Commitment	% Called	Contributed Capital	Current Qtr. Change in Contributed Capital	Current Qtr. Change in Distributed Capital	Total Distributions	Remaining Commitment	Distrib./ Paid-In (DPI) ²	Tot. Value/ Paid-In (TVPI) ³	Latest Valuation
Private Credit												
8/31/2015	Angelo Gordon Energy Credit Opp. ⁴	\$4,310,949	\$16,500,000	114%	\$18,750,000	\$0	\$0	\$18,829,566	\$2,319,783	1.00	1.23	9/30/2019
12/18/2017	Stepstone CC Opportunities Fund	\$499,336,996	\$920,000,000	53%	\$486,208,462	\$28,986,673	\$3,456	\$21,489,403	\$455,256,439	0.04	1.07	9/30/2019
7/1/2006	Torchlight II ⁴	\$0	\$128,000,000	171%	\$218,263,562	\$0	\$0	\$208,563,775	\$0	0.96	0.96	9/30/2019
8/1/2012	Torchlight IV	\$10,230,704	\$60,000,000	141%	\$84,866,971	\$109,223	\$4,256,417	\$104,809,507	\$0	1.23	1.36	9/30/2019
3/12/2015	Torchlight V	\$25,226,806	\$75,000,000	80%	\$60,000,000	\$0	\$15,448,615	\$50,184,746	\$15,000,000	0.84	1.26	9/30/2019
Total Private Credit		\$539,105,455										
% of Portfolio (Market Value)		5.7%										

*All Data provided by StepStone Group

¹Latest valuation + capital calls - distributions

²(DPI) is equal to (capital returned / capital called)

³(TVPI) is equal to (market value + capital returned) / capital called

⁴Capital has been fully called and fund is in redemption.

Total Fund
Closed End Funds - Investment Summary

Period Ending: December 31, 2019

Verus Internal Analysis												
Inception Date	Manager Name/Fund Name	Estimated Market Value as of 12/31/2019 ¹	Total Commitment	Total % Called	Capital Called	Current Qtr. Capital Called	Current Qtr. Distributions	Total Distributions ⁸	Remaining Commitment	Distrib./Paid-In (DPI) ²	Tot. Value/Paid-In (TVPI) ³	Latest Valuation
Real Estate												
1/23/2012	Angelo Gordon Realty Fund VIII ⁷	\$22,192,554	\$80,000,000	94%	\$75,401,855	\$0	\$0	\$98,433,174	\$12,334,302	1.31	1.60	9/30/2019
12/8/2014	Angelo Gordon Realty Fund IX	\$63,926,050	\$65,000,000	86%	\$55,575,000	\$0	\$0	\$8,775,000	\$12,122,500	0.16	1.31	9/30/2019
6/23/2005	DLJ RECP III	\$21,069,138	\$75,000,000	134%	\$100,580,205 ⁴	\$0	\$0	\$69,918,318	\$4,031,338	0.70	0.90	9/30/2019
2/11/2008	DLJ RECP IV	\$78,589,326	\$100,000,000	125%	\$125,138,489 ⁵	\$0	\$2,609,291	\$81,657,887	\$2,890,809	0.65	1.28	9/30/2019
7/1/2014	DLJ RECP V	\$45,167,624	\$75,000,000	126%	\$94,533,721 ⁶	\$0	\$4,755,688	\$70,848,380	\$15,635,816	0.75	1.23	9/30/2019
3/19/2019	DLJ RECP VI	\$23,656,312	\$50,000,000	50%	\$24,949,538	-\$4,663,463	\$220,742	\$220,742	\$25,050,462	0.01	0.96	9/30/2019
6/17/1998	Hearthstone II ⁷	-\$1,452	\$25,000,000	80%	\$19,932,386	\$0	\$0	\$19,952,734	\$0	1.00	1.00	9/30/2019
6/30/2013	Invesco Real Estate III ⁷	\$2,054,977	\$35,000,000	93%	\$32,386,423	\$0	\$1,512,241	\$42,502,805	\$2,613,577	1.31	1.38	12/31/2019
6/30/2014	Invesco Real Estate IV ⁷	\$16,901,831	\$35,000,000	85%	\$29,808,739	\$0	\$6,500,649	\$22,353,948	\$5,191,261	0.75	1.32	12/31/2019
6/30/2013	Invesco Real Estate V	\$19,496,203	\$75,000,000	30%	\$22,517,045	\$4,498,311	\$4,723,439	\$4,723,439	\$56,224,458 ⁹	0.21	1.08	12/31/2019
7/16/2013	LaSalle Income & Growth VI ⁷	\$25,305,992	\$75,000,000	95%	\$71,428,571	\$0	\$3,022,774	\$81,382,065	\$3,571,429	1.14	1.49	9/30/2019
2/28/2017	LaSalle Income & Growth VII	\$50,559,229	\$75,000,000	90%	\$67,368,453	\$2,496,216	\$3,830,921	\$31,765,322	\$7,544,444	0.47	1.22	9/30/2019
7/3/2013	Long Wharf Fund IV ⁷	\$7,024,191	\$25,000,000	100%	\$25,000,000	\$0	\$1,183,665	\$30,587,887	\$0	1.22	1.50	12/31/2019
9/30/2016	Long Wharf Fund V ⁷	\$42,060,312	\$50,000,000	100%	\$50,000,000	\$0	\$3,484,520	\$19,764,653	\$0	0.40	1.24	12/31/2019
12/31/2011	Oaktree REOF V ⁷	\$4,241,993	\$50,000,000	100%	\$50,000,000	\$0	\$352,000	\$75,380,955	\$5,000,000	1.51	1.59	12/31/2019
9/30/2013	Oaktree REOF VI ⁷	\$28,718,003	\$80,000,000	100%	\$80,000,000	\$0	\$1,769,202	\$84,010,175	\$18,400,000 ⁹	1.05	1.41	12/31/2019
4/1/2015	Oaktree REOF VII	\$56,048,590	\$65,000,000	92%	\$59,995,000	\$0	\$5,200,000	\$18,915,000	\$23,920,000 ⁹	0.32	1.25	12/31/2019
11/10/2013	Paulson Real Estate Fund II ⁷	\$24,641,354	\$20,000,000	97%	\$19,345,623	\$0	\$849,261	\$6,632,647	\$654,377	0.34	1.62	9/30/2019
1/25/2012	Siguler Guff DREOF	\$33,502,236	\$75,000,000	93%	\$69,375,000	\$0	\$18,944	\$90,282,563	\$5,625,000	1.30	1.78	9/30/2019
8/31/2013	Siguler Guff DREOF II	\$49,042,504	\$70,000,000	89%	\$61,985,000	\$0	\$1,055,497	\$36,732,006	\$8,015,000	0.59	1.38	9/30/2019
1/27/2016	Siguler Guff DREOF II Co-Inv	\$19,657,827	\$25,000,000	82%	\$20,537,862	\$0	\$1,662,583	\$8,321,475	\$4,462,138	0.41	1.36	9/30/2019
Total Closed End Real Estate		\$633,854,794	\$1,225,000,000	94%	\$1,155,858,911	\$2,331,064	\$42,751,417	\$903,161,173	\$213,286,910	0.78	1.33	
% of Portfolio (Market Value)		6.8%										

¹Latest valuation + capital calls - distributions

²(DPI) is equal to (capital returned / capital called)

³(TVPI) is equal to (market value + capital returned) / capital called

⁴Includes \$7,231,879 in management fees charged outside the fund.

⁵Includes \$11,036,354 in management fees charged outside the fund.

⁶Includes \$887,307 in management fees charged outside the fund.

⁷Capital has been fully called and fund is in redemption.

⁸Total distributions may include recallable distributions

⁹Remaining commitment includes recallable distributions

Total Fund

Closed End Funds - Investment Summary

Period Ending: December 31, 2019

StepStone Group Analysis (*)

Closing Date	Manager Name/Fund Name	Estimated Market Value as of 12/31/19 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) ²	Tot. Value/Paid-In (TVPI) ³	Latest Valuation
Private Equity & Venture Capital												
2/11/2004	Adams Street Partners	\$144,186,277	\$210,000,000	89%	\$186,793,125	\$1,750,000	\$9,211,270	\$155,716,619	\$23,206,875	0.83	1.61	9/30/2019
12/31/2008	Adams Street Partners II	\$6,803,533	\$30,000,000	95%	\$28,365,000	\$0	\$1,592,605	\$41,534,562	\$1,635,000	1.46	1.70	9/30/2019
12/31/2008	Adams Street Partners - Fund 5	\$20,421,474	\$40,000,000	77%	\$30,611,900	\$0	\$547,414	\$17,181,437	\$9,388,100	0.56	1.23	9/30/2019
1/18/1996	Adams Street Partners - BPF	\$1,762,463	\$59,565,614	97%	\$57,517,409	\$0	\$0	\$102,731,103	\$2,048,205	1.79	1.82	9/30/2019
3/31/2016	Adams Street Venture Innovation	\$54,113,494	\$75,000,000	61%	\$45,412,500	\$0	\$0	\$0	\$29,587,500	0.00	1.19	9/30/2019
5/18/2018	AE Industrial Partners Fund II, LP	\$4,635,156	\$35,000,000	15%	\$5,103,684	\$0	\$0	\$0	\$29,896,316	0.00	0.91	9/30/2019
11/27/2013	Aether Real Assets III	\$20,444,816	\$25,000,000	93%	\$23,183,517	\$440,666	\$152,132	\$3,758,603	\$3,887,782	0.16	1.04	9/30/2019
11/30/2013	Aether Real Assets III Surplus	\$49,501,679	\$50,000,000	99%	\$49,696,370	\$0	\$0	\$8,516,717	\$3,336,311	0.17	1.17	9/30/2019
1/30/2016	Aether Real Assets IV	\$39,010,919	\$50,000,000	74%	\$36,955,325	\$1,707,308	\$109,930	\$2,149,276	\$15,187,389	0.06	1.11	9/30/2019
11/26/2003	Bay Area Equity Fund I ⁴	\$2,405,548	\$10,000,000	100%	\$10,000,000	\$0	\$0	\$37,018,019	\$0	3.70	3.94	9/30/2019
11/26/2003	Bay Area Equity Fund II ⁴	\$12,029,163	\$10,000,000	100%	\$10,000,000	\$0	\$0	\$2,026,313	\$0	0.20	1.41	9/30/2019
6/30/2013	Commonfund	\$41,612,032	\$50,000,000	87%	\$43,324,995	\$0	\$0	\$10,460,771	\$6,675,005	0.24	1.20	9/30/2019
7/15/2005	EIF US Power Fund II ⁴	\$6,665,595	\$50,000,000	130%	\$65,029,556	\$0	\$0	\$72,650,020	\$0	1.12	1.22	6/30/2019
5/31/2007	EIF US Power Fund III ⁴	\$16,646,603	\$65,000,000	110%	\$71,409,097	\$0	\$0	\$73,638,258	\$0	1.03	1.26	9/30/2019
8/31/2010	EIF US Power Fund IV	\$43,497,299	\$50,000,000	127%	\$63,746,288	\$0	\$4,444,181	\$30,262,595	\$4	0.47	1.16	9/30/2019
11/28/2016	EIF US Power Fund V	\$42,937,747	\$50,000,000	95%	\$47,434,111	\$0	\$12,500	\$9,204,621	\$9,566,328	0.19	1.10	9/30/2019
2/21/2019	Genstar Capital Partners IX, L.P.	\$11,355,539	\$50,000,000	23%	\$11,588,302	\$5,916,759	\$0	\$0	\$38,411,698	0.00	0.98	9/30/2019
2/28/2010	Oaktree PIF 2009	\$2,003,266	\$40,000,000	87%	\$34,816,729	\$621	\$3,973,348	\$45,239,703	\$6,308,961	1.30	1.36	9/30/2019
8/15/2013	Ocean Avenue Fund II	\$29,681,342	\$30,000,000	87%	\$26,100,000	\$0	\$0	\$12,440,759	\$3,900,000	0.48	1.61	9/30/2019
4/15/2016	Ocean Avenue Fund III	\$54,339,183	\$50,000,000	87%	\$43,500,000	\$1,500,000	\$4,000,000	\$10,000,000	\$6,500,000	0.23	1.48	9/30/2019
11/30/2007	Paladin III	\$40,850,637	\$25,000,000	135%	\$33,767,853	\$207,816	\$51,567	\$24,922,119	\$519,296	0.74	1.95	9/30/2019
8/22/2011	Pathway 6	\$35,728,990	\$40,000,000	95%	\$37,949,925	\$81,000	\$2,059,850	\$26,171,658	\$4,324,230	0.69	1.63	9/30/2019
7/10/2013	Pathway 7	\$71,479,317	\$70,000,000	92%	\$64,259,537	\$157,500	\$3,460,928	\$24,984,769	\$8,732,121	0.39	1.50	9/30/2019
11/23/2015	Pathway 8	\$46,814,073	\$50,000,000	74%	\$36,878,846	\$745,235	\$806,507	\$5,587,274	\$14,980,114	0.15	1.42	9/30/2019
1/19/1999	Pathway	\$14,623,173	\$125,000,000	100%	\$124,872,985	\$73,210	\$399,321	\$173,696,455	\$10,972,469	1.39	1.51	9/30/2019
7/31/2009	Pathway 2008	\$18,729,050	\$30,000,000	97%	\$29,176,161	\$93,933	\$1,177,697	\$29,432,721	\$3,194,260	1.01	1.65	9/30/2019
6/3/2014	Siguler Guff CCCERA Opportunities	\$177,369,645	\$200,000,000	78%	\$155,705,741	\$8,350,000	\$2,146,643	\$51,219,831	\$51,874,772	0.33	1.47	9/30/2019
8/31/2013	Siguler Guff Secondary Opportunities ⁴	\$82,569	\$50,000,000	60%	\$29,999,802	\$0	\$86,465	\$42,724,959	\$46,394,813	1.42	1.43	6/30/2019
5/18/2018	Siris Partners IV, L.P.	\$16,126,886	\$35,000,000	46%	\$16,204,485	\$5,531,521	\$0	\$0	\$18,795,515	0.00	1.00	9/30/2019
6/28/2019	TPG Healthcare Partners, L.P.	-\$9,910	\$24,000,000	3%	\$617,686	\$617,686	\$0	\$0	\$23,382,314	-	-	9/30/2019
5/24/2019	Trident VIII, L.P.	\$0	\$40,000,000	0%	\$0	\$0	\$0	\$0	\$40,000,000	-	-	-
12/8/2015	Wastewater Opportunity Fund	\$19,478,590	\$25,000,000	89%	\$22,288,924	\$1,619,721	\$0	\$2,031,922	\$2,733,302	0.09	0.97	9/30/2019
Total Private Equity and Venture Capital		\$1,045,326,147	\$1,743,565,614	83%	\$1,442,309,852	\$28,792,975	\$34,232,359	\$1,015,301,084	\$415,438,680	0.70	1.43	

% of Portfolio (Market Value) 11.1%

* All Data provided by StepStone Group

¹ Latest valuation + capital calls - distributions

² (DPI) is equal to (capital returned / capital called)

³ (TVPI) is equal to (market value + capital returned) / capital called

⁴ Capital has been fully called and fund is in redemption.

Total Fund

Closed End Funds - IRR Summary

Period Ending: December 31, 2019

Private Credit	Inception	Fund Level (G) ²	CCCERA (G)	Fund Level (N) ^{2,3}	CCCERA (N) ³	IRR Date
Angelo Gordon Energy Cred Opp. ⁴	09/24/2015	-	-	-	9.9%	09/30/2019
Stepstone CC Opportunities Fund	02/02/2018	-	11.8%	-	10.0%	09/30/2019
Torchlight II ⁴	07/01/2006	0.0%	0.2%	-1.2%	-1.0%	09/30/2019
Torchlight IV	08/01/2012	12.8%	13.3%	10.1%	10.8%	12/31/2019
Torchlight V	03/12/2015	17.8%	17.9%	11.7%	11.6%	09/30/2019

Real Estate	Inception	Fund Level (G) ²	CCCERA (G)	Fund Level (N) ^{2,3}	CCCERA (N) ³	IRR Date
Angelo Gordon VIII ⁴	01/23/2012	-	-	-	14.9%	09/30/2019
Angelo Gordon IX	12/08/2014	-	-	-	11.5%	09/30/2019
DLJ RECP III	06/23/2005	0.0%	0.0%	-3.0%	-2.0%	09/30/2019
DLJ RECP IV	02/11/2008	6.0%	6.0%	4.0%	5.0%	09/30/2019
DLJ RECP V	07/01/2014	20.0%	20.0%	11.0%	11.0%	09/30/2019
DLJ RECP VI ¹	03/19/2019	-	-	-	-	-
Hearthstone II ⁴	06/17/1998	-	30.1%	-	30.1%	09/30/2019
Invesco Fund III ⁴	06/30/2013	15.1%	-	12.1%	-	12/31/2019
Invesco Fund IV ⁴	06/30/2014	17.6%	-	13.1%	-	09/30/2019
Invesco Fund V	02/20/2019	15.3%	-	12.0%	-	12/31/2019
LaSalle Income & Growth VI ⁴	07/16/2013	14.7%	14.7%	12.2%	12.2%	12/31/2019
LaSalle Income & Growth VII	02/28/2017	13.9%	14.1%	11.3%	11.4%	12/31/2019
Long Wharf IV ⁴	07/03/2013	17.7%	17.9%	13.1%	13.2%	12/31/2019
Long Wharf V ⁴	09/30/2016	16.4%	17.7%	11.0%	11.8%	12/31/2019
Oaktree REOF V ⁴	12/31/2011	16.8%	-	12.4%	-	12/31/2019
Oaktree REOF VI ⁴	09/30/2013	14.0%	-	9.2%	-	12/31/2019
Oaktree REOF VII	04/01/2015	41.9%	-	24.8%	-	12/31/2019
Paulson ⁴	11/10/2013	19.0%	-	13.1%	-	12/31/2018
Siguler Guff I	01/25/2012	14.1%	16.9%	12.6%	13.7%	09/30/2019
Siguler Guff II	08/31/2013	12.4%	12.3%	11.0%	10.0%	09/30/2019
Siguler Guff DREOF II Co-Inv	01/27/2016	14.5%	14.5%	13.5%	11.5%	09/30/2019

¹Manager has yet to report IRR figure.

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.

⁴Capital has been fully called and fund is in redemption.

Total Fund
Closed End Funds - IRR Summary

Period Ending: December 31, 2019

Private Equity & Venture Capital	Closing Date	Fund Level (G) ²	CCCERA (G)	Fund Level (N) ^{2,3}	CCCERA (N) ³	IRR Date
Adams Street Partners	2/11/2004	-	12.6%	-	10.3%	9/30/2019
Adams Street Partners II	12/31/2008	-	14.1%	-	11.4%	9/30/2019
Adams Street Partners - Fund 5	12/31/2008	-	9.0%	-	6.3%	9/30/2019
Adams Street Partners Venture	1/18/1996	-	26.4%	-	20.6%	9/30/2019
Adams Street Partners - BPF	3/31/2016	-	14.3%	-	11.6%	9/30/2019
AE Industrial Partners Fund II, LP ¹	5/18/2018	-	-	-	-	-
Aether Real Assets III	11/27/2013	5.1%	5.1%	1.5%	1.5%	9/30/2019
Aether Real Assets III Surplus	11/30/2013	6.7%	6.7%	4.7%	4.7%	9/30/2019
Aether Real Assets IV	1/30/2016	13.3%	13.2%	7.2%	7.2%	9/30/2019
Bay Area Equity Fund I ⁹	11/26/2003	31.5%	31.5%	23.2%	23.2%	9/30/2019
Bay Area Equity Fund II ⁹	11/26/2003	10.3%	10.3%	5.3%	5.3%	9/30/2019
CommonFund	6/30/2013	-	-	-	7.3%	9/30/2019
Energy Investor Fund II ⁹	7/15/2005	6.3%	5.8%	3.6%	3.2%	9/30/2019
Energy Investor Fund III ⁹	5/31/2007	6.5%	6.5%	3.9%	3.9%	9/30/2019
Energy Investor Fund IV	8/31/2010	8.9%	8.8%	5.1%	4.9%	9/30/2019
Energy Investor Fund V	11/28/2016	13.7%	13.2%	8.2%	7.8%	9/30/2019
Genstar Capital Partners IX, L.P. ¹	2/21/2019	-	-	-	-	-
Oaktree PIF 2009	2/28/2010	6.8%	-	6.6%	-	9/30/2019
Ocean Avenue II	8/15/2013	17.8%	-	15.0%	-	9/30/2019
Ocean Avenue III	4/15/2016	36.3%	-	31.7%	-	9/30/2019
Paladin III	11/30/2007	20.9%	-	12.5%	-	9/30/2019
Pathway 6	8/22/2011	16.4%	16.4%	13.9%	13.9%	9/30/2019
Benchmark ⁴		14.2%	-	-	-	9/30/2019
Pathway 7	7/10/2013	16.9%	16.9%	14.3%	14.3%	9/30/2019
Benchmark ⁵		14.0%	-	-	-	9/30/2019
Pathway 8	11/23/2015	20.5%	20.9%	18.5%	19.2%	9/30/2019
Benchmark ⁶		13.7%	-	-	-	9/30/2019
Pathway Private Equity Fund	1/19/1999	10.2%	10.2%	8.4%	8.4%	9/30/2019
Benchmark ⁷		10.3%	-	-	-	9/30/2019
Pathway Private Equity Fund 2008	7/31/2009	14.5%	14.5%	12.0%	12.0%	9/30/2019
Benchmark ⁸		13.0%	-	-	-	9/30/2019
Siguler Guff CCCERA Opportunities	6/3/2014	18.7%	19.4%	18.2%	16.4%	9/30/2019
Siguler Guff Secondary Opportunities ⁹	8/31/2013	55.4%	118.6%	49.5%	69.2%	9/30/2019
Siris Partners IV, L.P. ¹	5/18/2018	-	-	-	-	-
TPG Healthcare Partners, L.P. ¹	6/28/2019	-	-	-	-	-
Trident VIII, L.P. ¹	5/24/2019	-	-	-	-	-
Wastewater Opportunity Fund	12/8/2015	5.1%	-	-2.2%	-	9/30/2019

¹Manager has yet to report IRR figure.

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, 2019.

⁵Private iQ global all private equity median pooled return for vintage years 2012-2016, as of September 30, 2019.

⁶Private iQ global all private equity median pooled return for vintage years 2015-2018, as of September 30, 2019.

⁷Private iQ global all private equity median pooled return for vintage years 1999-2011, as of September 30, 2019.

⁸Private iQ global all private equity median pooled return for vintage years 2008-2014, as of September 30, 2019.

⁹Capital has been fully called and fund is in redemption.

Total Fund
Performance Analysis - 3 Years (Net of Fees)

Period Ending: December 31, 2019

	3 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	16.95%	-3.53%	12.88%	-2.00%	0.93	4.05%	0.91	1.19	-0.87	82.88%	95.71%
Boston Partners	10.51%	0.83%	12.62%	0.53%	1.03	2.46%	0.96	0.70	0.34	104.74%	99.77%
Emerald Advisers	13.94%	1.44%	17.27%	1.46%	1.00	4.81%	0.92	0.71	0.30	100.61%	94.02%
Ceredex	4.75%	-0.02%	16.03%	0.20%	0.95	5.21%	0.90	0.19	0.00	92.82%	95.04%
Pyrford	9.08%	2.20%	9.44%	4.06%	0.73	4.89%	0.85	0.79	0.45	78.18%	64.79%
William Blair	12.43%	-0.46%	12.38%	-0.95%	1.04	2.60%	0.96	0.87	-0.18	98.61%	101.42%
Artisan Partners	17.90%	5.46%	12.74%	4.86%	1.05	4.50%	0.88	1.28	1.21	128.25%	95.91%
First Eagle	7.95%	-4.49%	8.47%	-0.99%	0.72	3.89%	0.93	0.75	-1.15	58.94%	71.19%
Allianz Global Investors	5.71%	-0.61%	4.41%	-0.76%	1.02	1.02%	0.95	0.92	-0.60	97.71%	113.94%
Adelante	8.91%	1.28%	11.56%	1.72%	0.94	1.64%	0.98	0.63	0.78	94.99%	85.58%
AFL-CIO	3.65%	-0.38%	2.82%	-0.15%	0.94	0.63%	0.95	0.71	-0.59	90.41%	91.97%
Wellington Real Total Return	1.69%	-4.49%	4.16%	-1.94%	0.59	4.15%	0.01	0.01	-1.08	35.67%	NM

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

Total Fund
Performance Analysis - 3 Years (Net of Fees)

Period Ending: December 31, 2019

	3 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	16.95%	-3.53%	12.88%	-2.00%	0.93	4.05%	0.91	1.19	-0.87	82.88%	95.71%
Boston Partners	10.51%	0.83%	12.62%	0.53%	1.03	2.46%	0.96	0.70	0.34	104.74%	99.77%
Emerald Advisers	13.94%	1.44%	17.27%	1.46%	1.00	4.81%	0.92	0.71	0.30	100.61%	94.02%
Ceredex	4.75%	-0.02%	16.03%	0.20%	0.95	5.21%	0.90	0.19	0.00	92.82%	95.04%
Pyrford	9.08%	2.20%	9.44%	4.06%	0.73	4.89%	0.85	0.79	0.45	78.18%	64.79%
William Blair	12.43%	-0.46%	12.38%	-0.95%	1.04	2.60%	0.96	0.87	-0.18	98.61%	101.42%
Artisan Partners	17.90%	5.46%	12.74%	4.86%	1.05	4.50%	0.88	1.28	1.21	128.25%	95.91%
First Eagle	7.95%	-4.49%	8.47%	-0.99%	0.72	3.89%	0.93	0.75	-1.15	58.94%	71.19%
Allianz Global Investors	5.71%	-0.61%	4.41%	-0.76%	1.02	1.02%	0.95	0.92	-0.60	97.71%	113.94%
Adelante	8.91%	1.28%	11.56%	1.72%	0.94	1.64%	0.98	0.63	0.78	94.99%	85.58%
AFL-CIO	3.65%	-0.38%	2.82%	-0.15%	0.94	0.63%	0.95	0.71	-0.59	90.41%	91.97%
Wellington Real Total Return	1.69%	-4.49%	4.16%	-1.94%	0.59	4.15%	0.01	0.01	-1.08	35.67%	NM

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, 2019

	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	9.96%	-4.67%	13.22%	-3.93%	0.95	4.97%	0.86	0.67	-0.94	81.49%	108.57%
Boston Partners	8.20%	-0.09%	13.06%	-0.63%	1.07	2.87%	0.96	0.55	-0.03	105.17%	104.32%
Emerald Advisers	10.86%	1.52%	17.60%	1.53%	1.00	4.94%	0.92	0.56	0.31	105.37%	97.91%
Ceredex	7.11%	0.12%	14.85%	1.04%	0.87	5.93%	0.86	0.41	0.02	85.12%	91.35%
Pyrford	5.27%	1.62%	10.36%	2.67%	0.71	5.67%	0.84	0.41	0.29	62.75%	68.70%
William Blair	6.90%	-0.40%	12.37%	-0.22%	0.98	2.69%	0.95	0.47	-0.15	93.91%	97.75%
Artisan Partners	13.24%	4.83%	13.04%	4.64%	1.02	4.99%	0.85	0.93	0.97	125.33%	90.94%
First Eagle	6.76%	-1.65%	8.58%	0.96%	0.69	4.59%	0.90	0.67	-0.36	56.39%	65.53%
Allianz Global Investors	5.27%	-0.87%	5.18%	-0.50%	0.94	1.27%	0.94	0.81	-0.68	90.90%	101.38%
Adelante	6.97%	0.10%	13.03%	0.48%	0.95	1.80%	0.98	0.45	0.06	90.35%	93.44%
AFL-CIO	2.80%	-0.25%	2.83%	0.06%	0.90	0.74%	0.94	0.62	-0.33	86.57%	84.27%
Wellington Real Total Return	-0.22%	-6.11%	5.44%	-5.61%	0.92	5.38%	0.02	-0.23	-1.14	9.22%	NM

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

Total Fund Investment Fund Fee Analysis

Period Ending: December 31, 2019

Name	Asset Class	Fee Schedule	Market Value	Estimated Fee Value	Estimated Fee
BlackRock Russell 1000 Index	Growth	0.03% of Assets	\$204,604,006	\$61,381	0.03%
Jackson Square Partners	Growth	0.50% of First 100.0 Mil, 0.40% of Next 150.0 Mil, 0.35% Thereafter	\$244,269,952	\$1,077,080	0.44%
Boston Partners	Growth	0.50% of First 25.0 Mil, 0.30% Thereafter	\$251,080,501	\$803,242	0.32%
Emerald Advisers	Growth	0.75% of First 10.0 Mil, 0.60% Thereafter	\$159,009,461	\$969,057	0.61%
Ceredex	Growth	0.85% of First 10.0 Mil, 0.68% of Next 40.0 Mil, 0.51% Thereafter	\$160,524,993	\$920,677	0.57%
Pyrford	Growth	0.70% of First 50.0 Mil, 0.50% of Next 50.0 Mil, 0.35% Thereafter	\$485,671,948	\$1,949,852	0.40%
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	\$500,331,604	\$1,915,995	0.38%
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	\$369,299,185	\$1,974,346	0.53%
TT Emerging Markets	Growth	0.70% of First 100.0 Mil, 0.65% of Next 100.0 Mil, 0.60% Thereafter	\$360,882,442	\$2,315,295	0.64%
Artisan Partners	Growth	0.75% of Assets	\$404,024,936	\$3,030,187	0.75%
First Eagle	Growth	0.75% of Assets	\$390,143,027	\$2,926,073	0.75%
Allianz Global Investors	Growth	0.50% of First 50.0 Mil, 0.40% of Next 50.0 Mil, 0.35% Thereafter	\$208,823,867	\$830,884	0.40%
AQR Global Risk Premium-EL	Growth	0.38% of Assets	\$236,618,370	\$899,150	0.38%

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, 2019

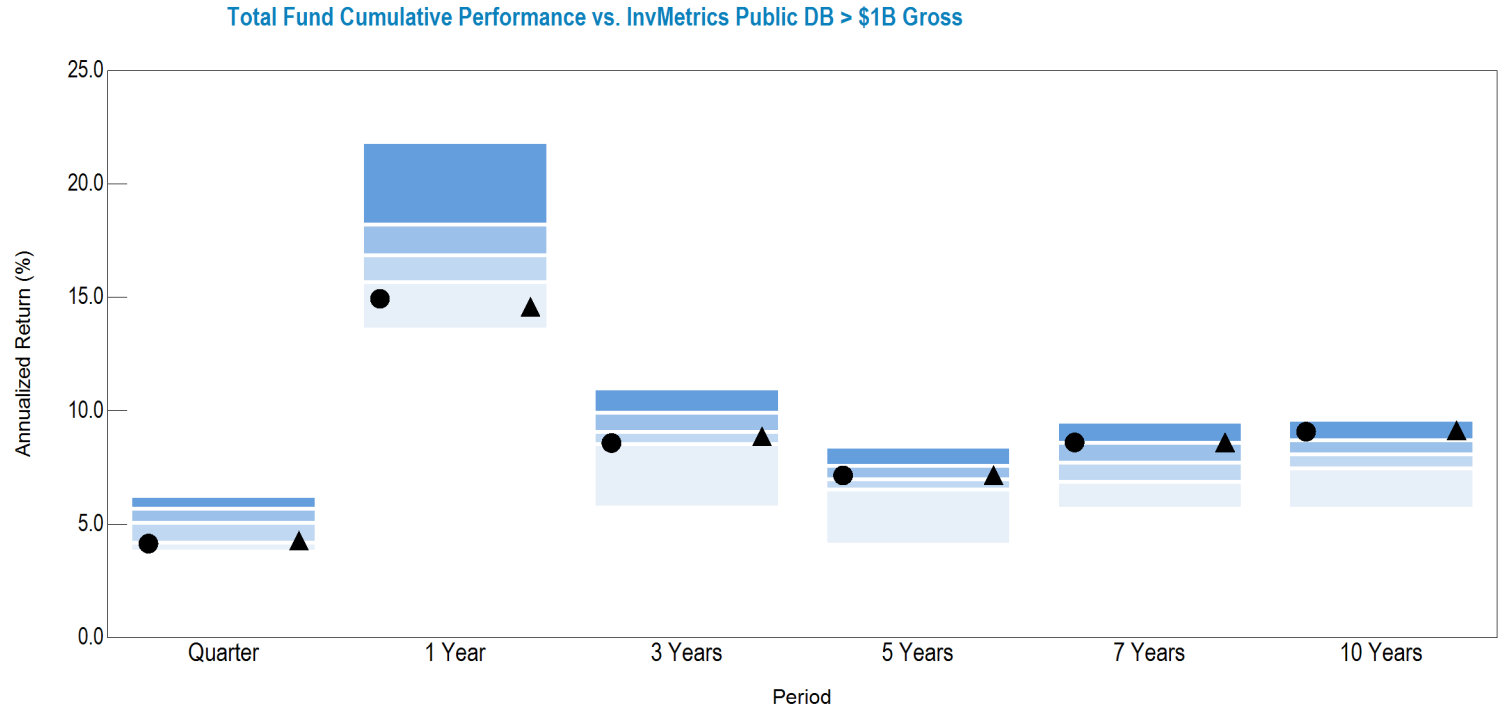
Name	Asset Class	Fee Schedule	Market Value	Estimated Fee Value	Estimated Fee
PanAgora Risk Parity Multi Asset	Growth	0.35% of Assets	\$223,192,333	\$781,173	0.35%
AFL-CIO	Diversifying	0.43% of Assets	\$333,841,377	\$1,435,518	0.43%
Wellington Real Total Return	Diversifying	0.35% of Assets	\$190,059,622	\$665,209	0.35%
Parametric Defensive Equity	Diversifying	0.42% of First 200.0 Mil, 0.39% Thereafter	\$204,710,656	\$858,372	0.42%
DFA Short Credit	Liquidity	0.20% of First 25.0 Mil, 0.10% Thereafter	\$460,934,054	\$485,934	0.11%
Insight Short Duration	Liquidity	0.06% of First 500.0 Mil, 0.05% of Next 500.0 Mil, 0.04% Thereafter	\$956,150,002	\$528,075	0.06%
Sit Short Duration	Liquidity	0.15% of Assets	\$539,065,270	\$808,598	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, 2019



	Quarter		1 Year		3 Years		5 Years		7 Years		10 Years	
Return (Rank)												
5th Percentile	6.2	(76)	21.8	(89)	11.0	(73)	8.4	(35)	9.5	(25)	9.6	(14)
25th Percentile	5.7	(73)	18.2	(91)	9.9	(58)	7.6	(34)	8.6	(25)	8.7	(11)
Median	5.1		16.9		9.1		7.0		7.7		8.1	
75th Percentile	4.2		15.7		8.5		6.5		6.9		7.5	
95th Percentile	3.8		13.6		5.8		4.1		5.7		5.7	
# of Portfolios	64		64		64		63		60		56	
● Total Fund	4.1	(76)	14.9	(89)	8.6	(73)	7.1	(35)	8.6	(25)	9.1	(14)
▲ Policy Index	4.3	(73)	14.6	(91)	8.9	(58)	7.2	(34)	8.6	(25)	9.1	(11)

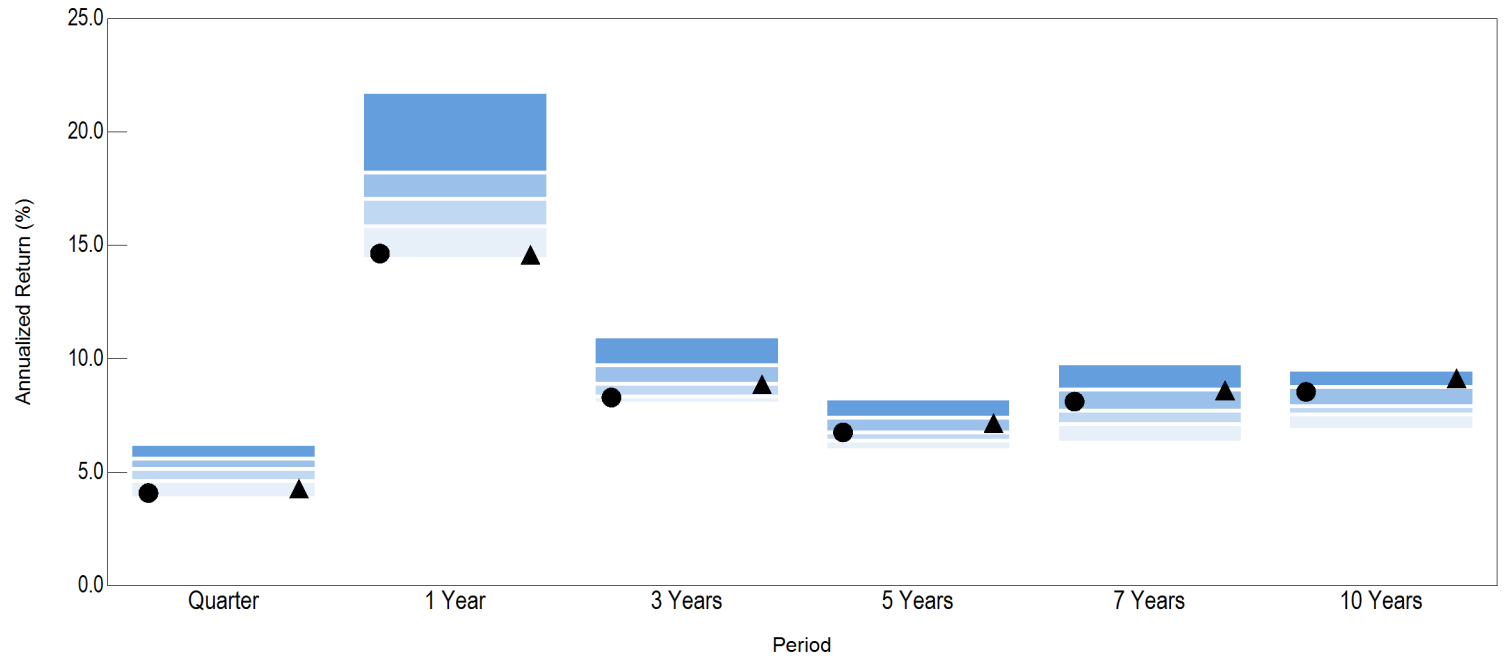
Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation.

Total Fund

Peer Universe Comparison: Cumulative Performance (Net of Fees)

Period Ending: December 31, 2019

Total Fund Cumulative Performance vs. InvMetrics Public DB > \$1B Net

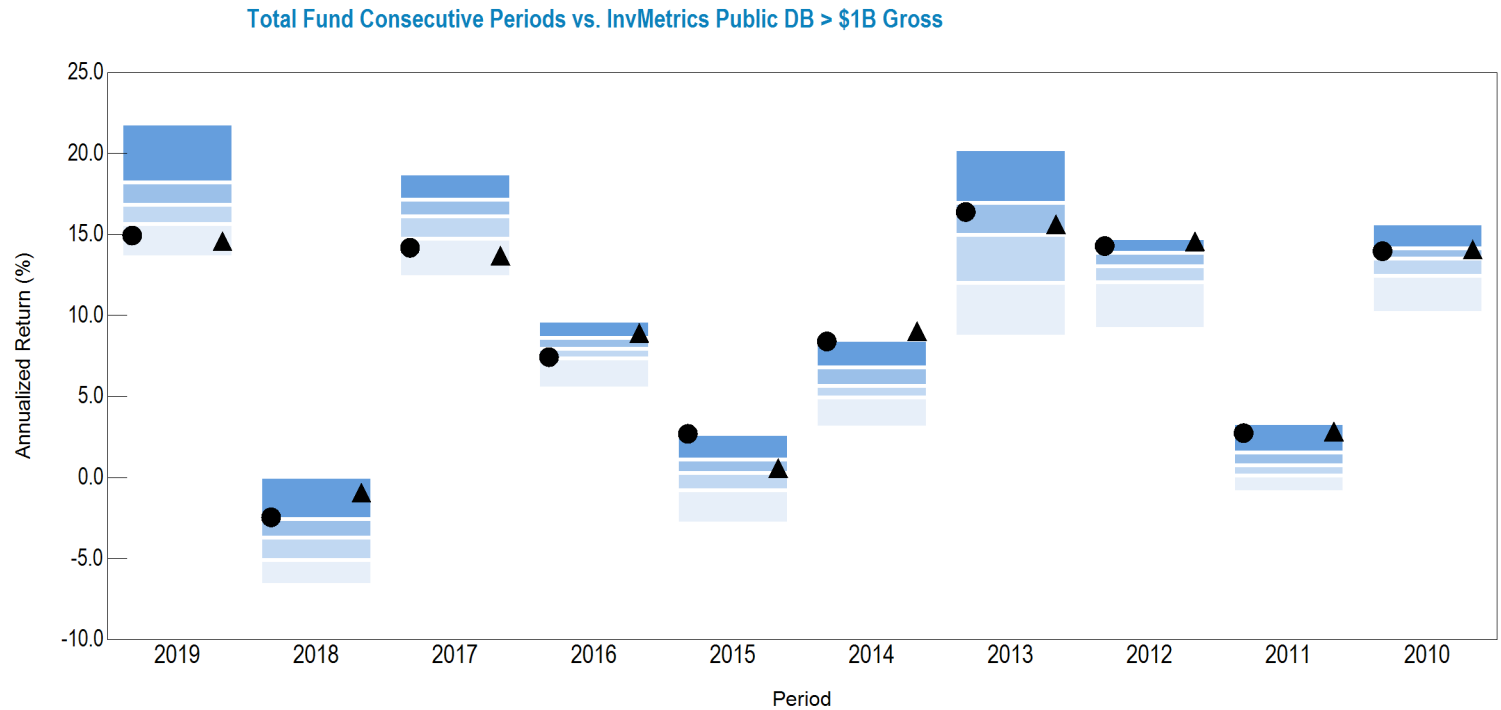


	Quarter		1 Year		3 Years		5 Years		7 Years		10 Years	
5th Percentile	6.2		21.7		11.0		8.2		9.8		9.5	
25th Percentile	5.6		18.2		9.7		7.4		8.7		8.8	
Median	5.2		17.1		8.9		6.8		7.7		7.9	
75th Percentile	4.6		15.9		8.3		6.4		7.1		7.5	
95th Percentile	3.9		14.4		8.0		6.0		6.3		6.9	
# of Portfolios	58		58		58		56		55		49	
● Total Fund	4.1	(89)	14.6	(94)	8.3	(80)	6.8	(51)	8.1	(47)	8.5	(31)
▲ Policy Index	4.3	(84)	14.6	(95)	8.9	(51)	7.2	(34)	8.6	(27)	9.1	(11)

Total Fund

Peer Universe Comparison: Consecutive Periods (Gross of Fees)

Period Ending: December 31, 2019



	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
5th Percentile	21.8	0.0	18.8	9.7	2.7	8.5	20.2	14.7	3.3	15.7
25th Percentile	18.2	-2.6	17.2	8.6	1.1	6.8	17.0	13.9	1.6	14.2
Median	16.9	-3.7	16.2	8.0	0.3	5.7	15.0	13.0	0.8	13.5
75th Percentile	15.7	-5.1	14.8	7.4	-0.7	4.9	12.0	12.1	0.1	12.5
95th Percentile	13.6	-6.6	12.4	5.5	-2.8	3.1	8.7	9.2	-0.9	10.2
# of Portfolios	64	71	98	92	98	79	67	74	68	66
● Total Fund	14.9 (89)	-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)
▲ Policy Index	14.6 (91)	-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)

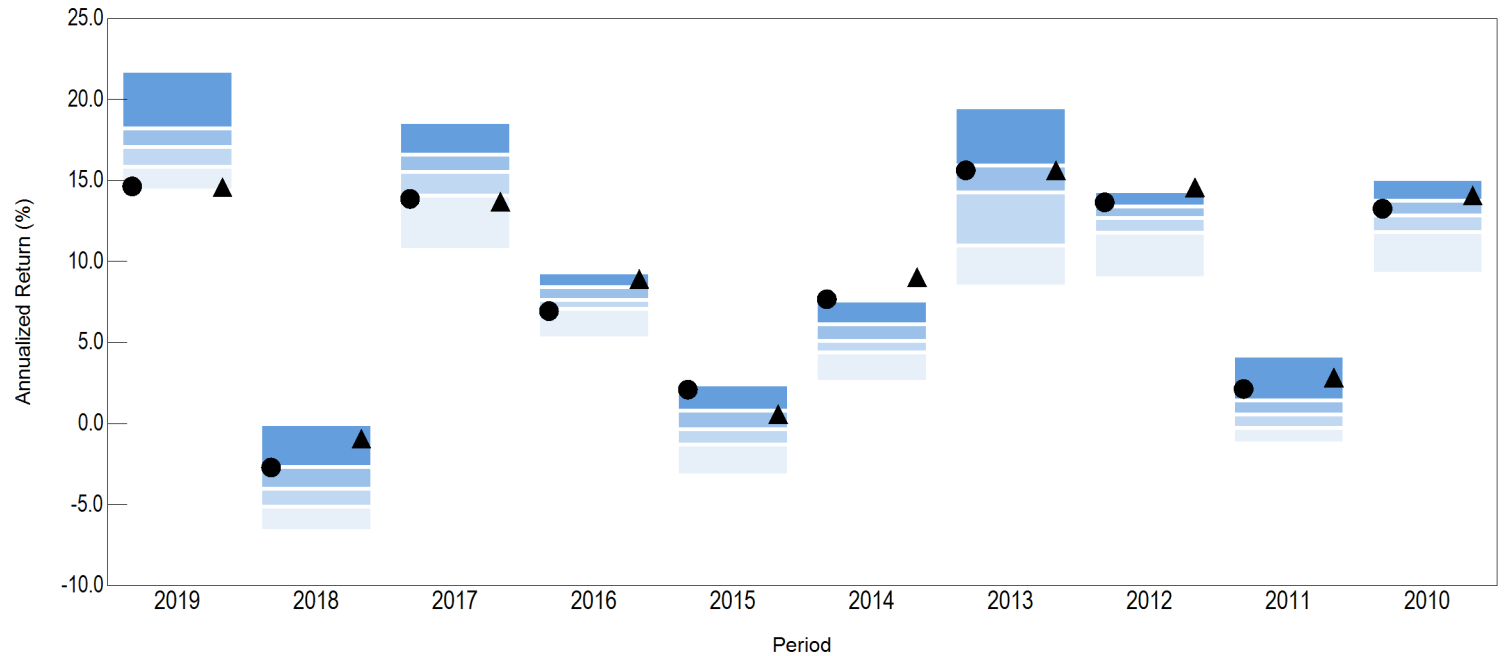
Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation.

Total Fund

Peer Universe Comparison: Consecutive Periods (Net of Fees)

Period Ending: December 31, 2019

Total Fund Consecutive Periods vs. InvMetrics Public DB > \$1B Net

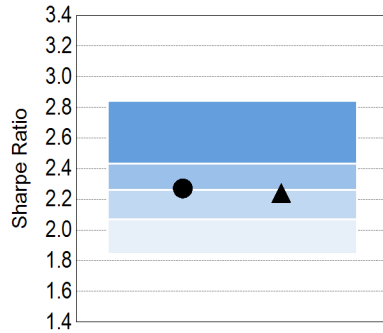


	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
5th Percentile	21.7	-0.1	18.6	9.3	2.4	7.6	19.5	14.3	4.2	15.1
25th Percentile	18.2	-2.7	16.6	8.4	0.8	6.1	16.0	13.4	1.5	13.8
Median	17.1	-4.0	15.6	7.7	-0.4	5.1	14.3	12.7	0.6	12.8
75th Percentile	15.9	-5.1	14.1	7.1	-1.3	4.4	11.0	11.8	-0.3	11.8
95th Percentile	14.4	-6.6	10.7	5.3	-3.2	2.6	8.5	9.0	-1.2	9.3
# of Portfolios	58	63	61	62	57	55	48	44	42	41
● Total Fund	14.6 (94)	-2.7 (27)	13.9 (81)	6.9 (78)	2.1 (12)	7.7 (5)	15.6 (33)	13.6 (21)	2.1 (12)	13.3 (34)
▲ Policy Index	14.6 (95)	-0.9 (8)	13.7 (85)	8.9 (13)	0.6 (29)	9.0 (2)	15.6 (33)	14.6 (1)	2.8 (11)	14.1 (15)

Total Fund
Sharpe Ratio Ranking (Gross of Fees)

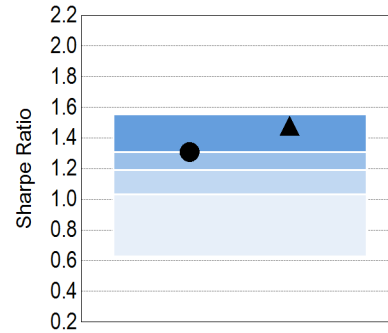
Period Ending: December 31, 2019

Sharpe Ratio
1 Year



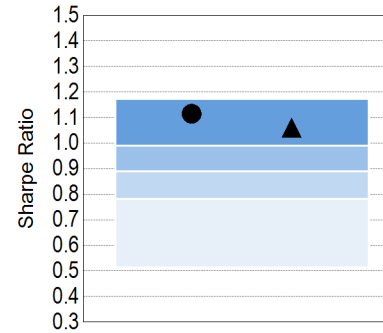
● Total Fund	
Value	2.3
Rank	50
▲ Policy Index	
Value	2.2
Rank	53
Universe	
5th %tile	2.8
25th %tile	2.4
Median	2.3
75th %tile	2.1
95th %tile	1.8

Sharpe Ratio
3 Year



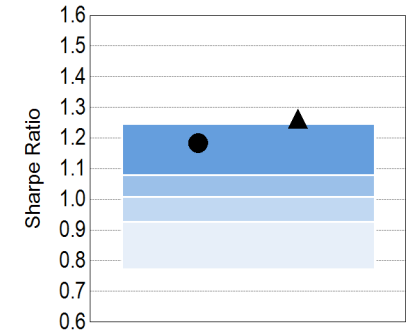
● Total Fund	
Value	1.3
Rank	26
▲ Policy Index	
Value	1.5
Rank	11
Universe	
5th %tile	1.6
25th %tile	1.3
Median	1.2
75th %tile	1.0
95th %tile	0.6

Sharpe Ratio
5 Year



● Total Fund	
Value	1.1
Rank	12
▲ Policy Index	
Value	1.1
Rank	18
Universe	
5th %tile	1.2
25th %tile	1.0
Median	0.9
75th %tile	0.8
95th %tile	0.5

Sharpe Ratio
10 Year



● Total Fund	
Value	1.2
Rank	12
▲ Policy Index	
Value	1.3
Rank	2
Universe	
5th %tile	1.2
25th %tile	1.1
Median	1.0
75th %tile	0.9
95th %tile	0.8

Domestic Equity Managers

Jackson Square Partners Manager Portfolio Overview

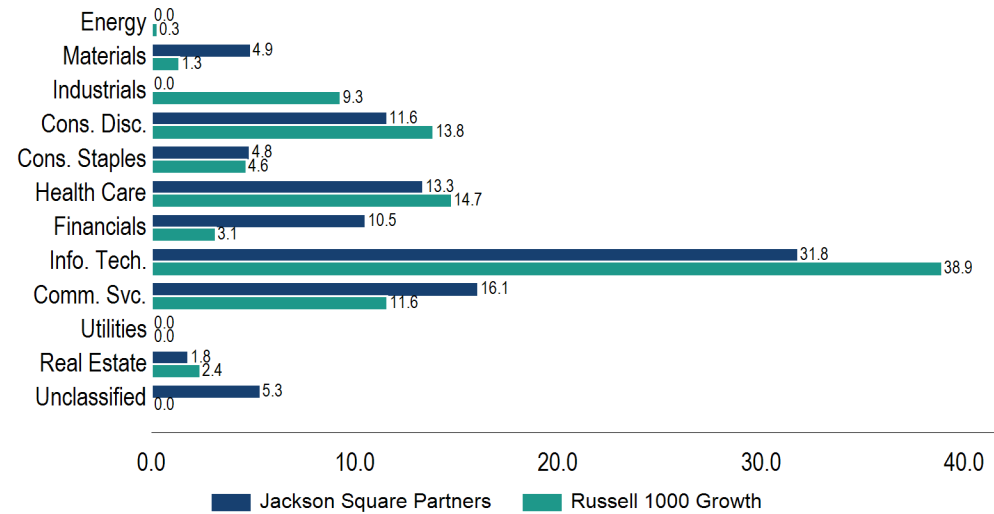
Period Ending: December 31, 2019

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 Prislin.

Characteristics

	Portfolio	Russell 1000 Growth
Number of Holdings	26	530
Weighted Avg. Market Cap. (\$B)	222.36	362.87
Median Market Cap. (\$B)	55.87	13.03
Price To Earnings	37.81	29.74
Price To Book	5.67	8.79
Price To Sales	3.22	3.14
Return on Equity (%)	21.11	34.60
Yield (%)	0.81	1.17
Beta	0.79	1.00

Sector Allocation (%) vs Russell 1000 Growth



Largest Holdings

	End Weight	Return
MICROSOFT	9.95	13.82
IQVIA HOLDINGS	5.55	3.43
ALPHABET A	4.89	9.68
CHARTER COMMS.CL.A	4.89	17.70
BALL	4.85	-10.98
CONSTELLATION BRANDS 'A'	4.81	-8.10
UNITEDHEALTH GROUP	4.46	35.80
HASBRO	4.40	-10.40
MASTERCARD	4.07	10.09
DOLLAR TREE	3.90	-17.62

Top Contributors

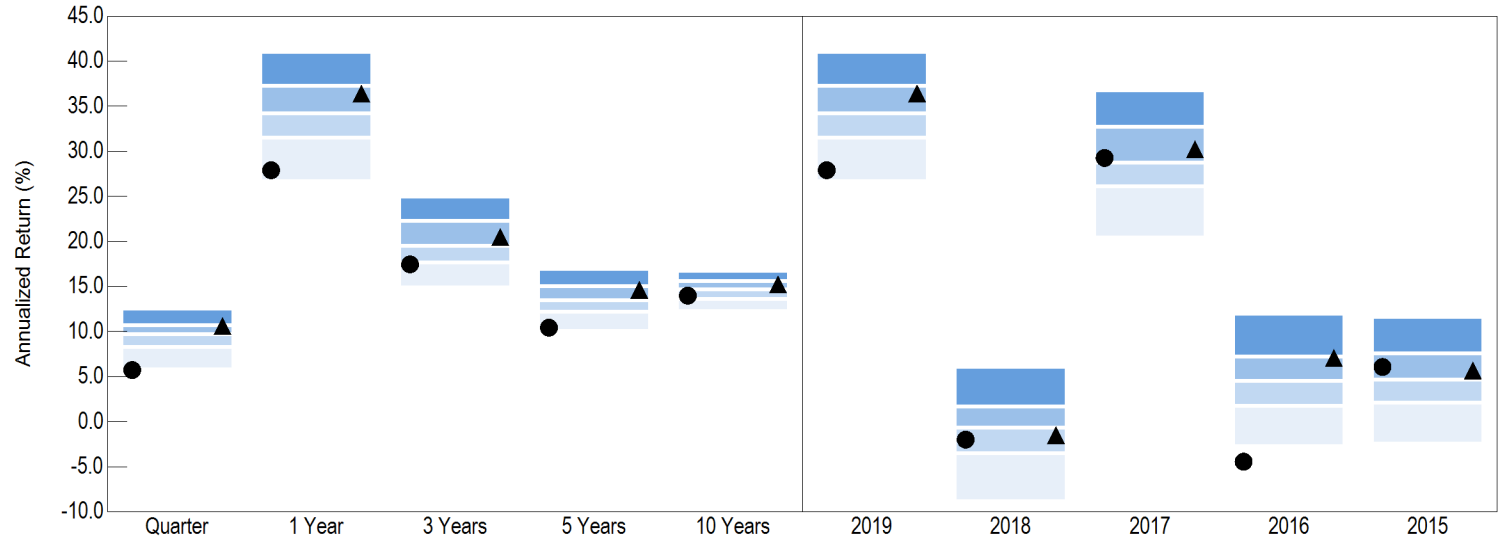
	Avg Wgt	Return	Contribution
MICROSOFT	3.34	13.82	0.46
UNITEDHEALTH GROUP	1.16	35.80	0.42
CHARTER COMMS.CL.A	1.46	17.70	0.26
AUTODESK	0.94	24.21	0.23
APPLIED MATS.	0.92	22.76	0.21
BIOGEN	0.65	27.45	0.18
NETFLIX	0.85	20.91	0.18
KKR AND A	1.62	9.11	0.15
DOMINO'S PIZZA	0.69	20.37	0.14
CHARLES SCHWAB	0.96	14.14	0.14

Bottom Contributors

	Avg Wgt	Return	Contribution
DOLLAR TREE	1.67	-17.62	-0.29
BALL	1.79	-10.98	-0.20
HASBRO	1.57	-10.40	-0.16
CONSTELLATION BRANDS 'A'	1.58	-8.10	-0.13
ARISTA NETWORKS	0.84	-14.87	-0.13
LIBERTY GLOBAL SR.C	1.17	-8.39	-0.10
TRIPADVISOR 'A'	0.67	-11.68	-0.08
CME GROUP	0.89	-3.49	-0.03
TAKE TWO INTACT.SFTW.	1.05	-2.32	-0.02
ALPHABET 'C' (XET)	0.15	11.08	0.02

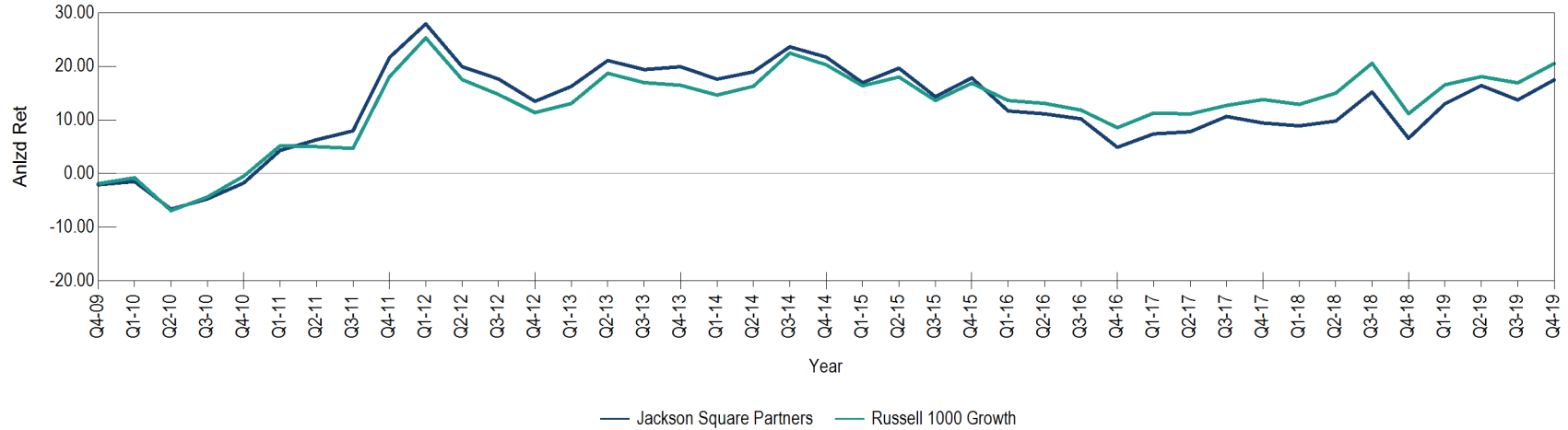
Unclassified sector allocation includes cash allocations.

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

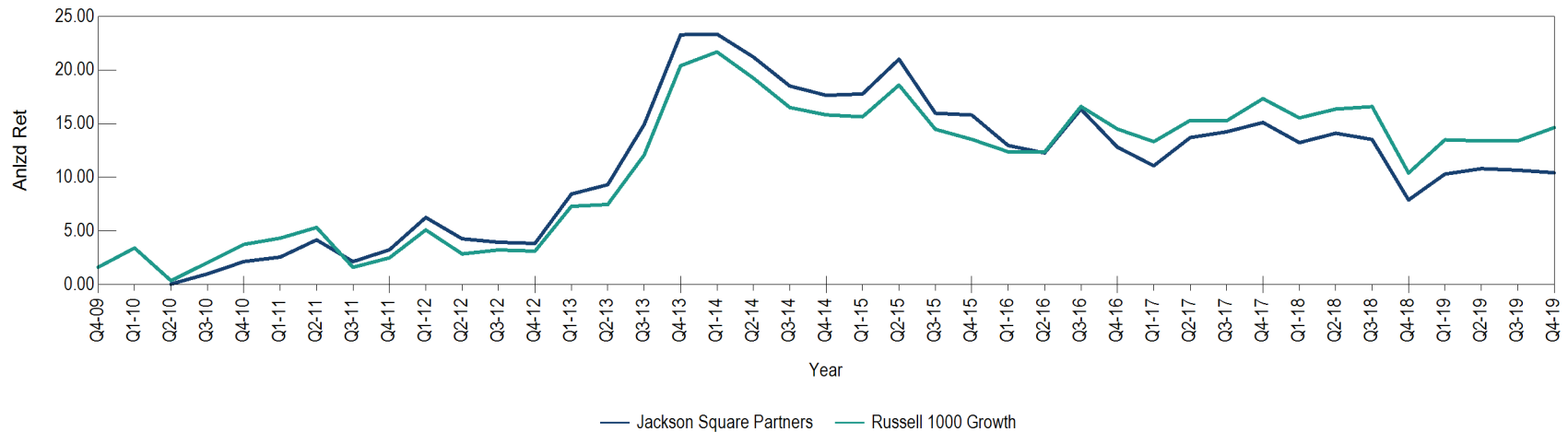


	Return (Rank)										
	Quarter	1 Year	3 Years	5 Years	10 Years	2019	2018	2017	2016	2015	
5th Percentile	12.5	41.0	25.0	16.9	16.7	41.0	6.1	36.7	12.0	11.6	
25th Percentile	10.7	37.3	22.3	15.0	15.6	37.3	1.7	32.7	7.3	7.6	
Median	9.7	34.2	19.5	13.5	14.7	34.2	-0.6	28.8	4.6	4.7	
75th Percentile	8.3	31.6	17.7	12.2	13.7	31.6	-3.5	26.2	1.8	2.1	
95th Percentile	5.8	26.7	15.0	10.1	12.3	26.7	-8.8	20.5	-2.7	-2.4	
# of Portfolios	236	236	230	225	199	236	255	265	282	270	
● Jackson Square Partners	5.7 (96)	27.9 (93)	17.4 (79)	10.4 (94)	14.0 (67)	27.9 (93)	-2.0 (59)	29.3 (47)	-4.4 (98)	6.1 (37)	
▲ Russell 1000 Growth	10.6 (27)	36.4 (31)	20.5 (44)	14.6 (31)	15.2 (33)	36.4 (31)	-1.5 (57)	30.2 (42)	7.1 (26)	5.7 (42)	

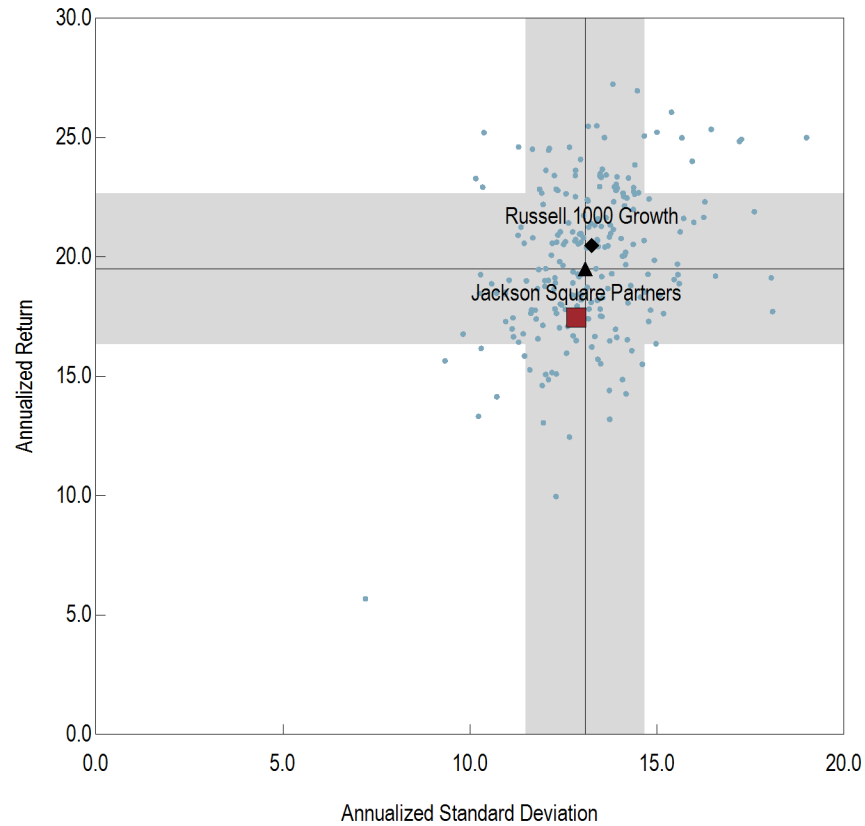
Rolling 3 Year Annualized Return (%)



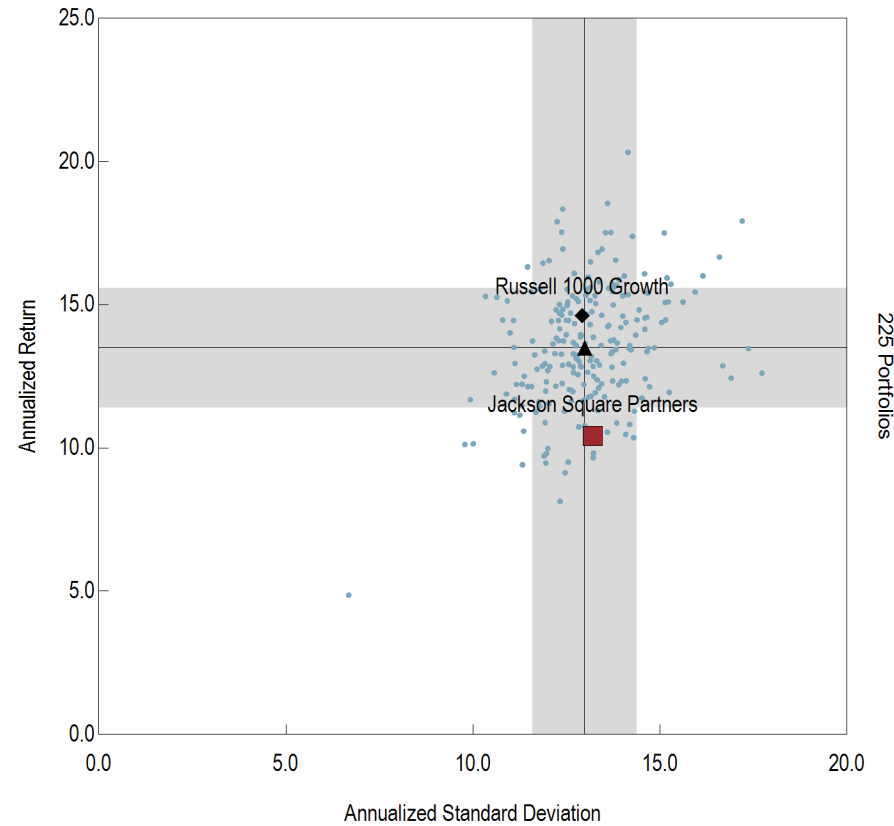
Rolling 5 Year Annualized Return (%)



3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Jackson Square Partners	17.4%	12.9%	1.2
Russell 1000 Growth	20.5%	13.3%	1.4
eV US Large Cap Growth Equity Gross Median	19.5%	13.1%	1.4

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Jackson Square Partners	10.4%	13.2%	0.7
Russell 1000 Growth	14.6%	12.9%	1.1
eV US Large Cap Growth Equity Gross Median	13.5%	13.0%	1.0

Boston Partners Manager Portfolio Overview

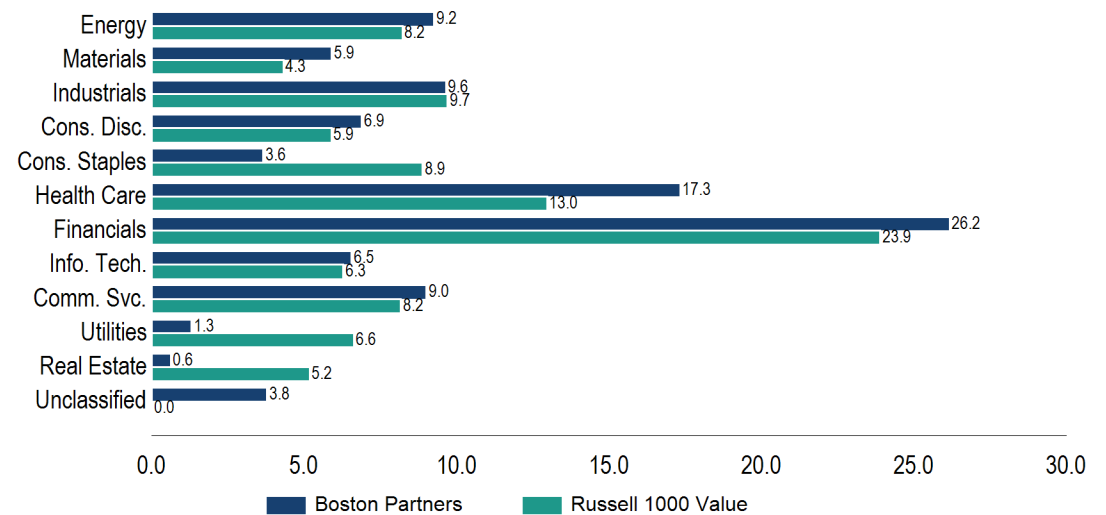
Period Ending: December 31, 2019

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	77	764
Weighted Avg. Market Cap. (\$B)	136.54	123.34
Median Market Cap. (\$B)	39.14	9.64
Price To Earnings	17.23	18.48
Price To Book	2.23	2.32
Price To Sales	1.23	1.51
Return on Equity (%)	17.11	13.97
Yield (%)	2.03	2.49
Beta	1.04	1.00

Sector Allocation (%) vs Russell 1000 Value



Largest Holdings

	End Weight	Return
BANK OF AMERICA	4.47	21.40
BERKSHIRE HATHAWAY 'B'	4.46	8.88
JP MORGAN CHASE & CO.	3.47	19.40
CITIGROUP	2.62	16.45
WELLS FARGO & CO	2.54	7.67
PROCTER & GAMBLE	2.49	1.06
CIGNA	2.40	34.72
CHUBB	2.33	-3.11
VERIZON COMMUNICATIONS	2.33	2.78
COMCAST A	2.30	0.23

Top Contributors

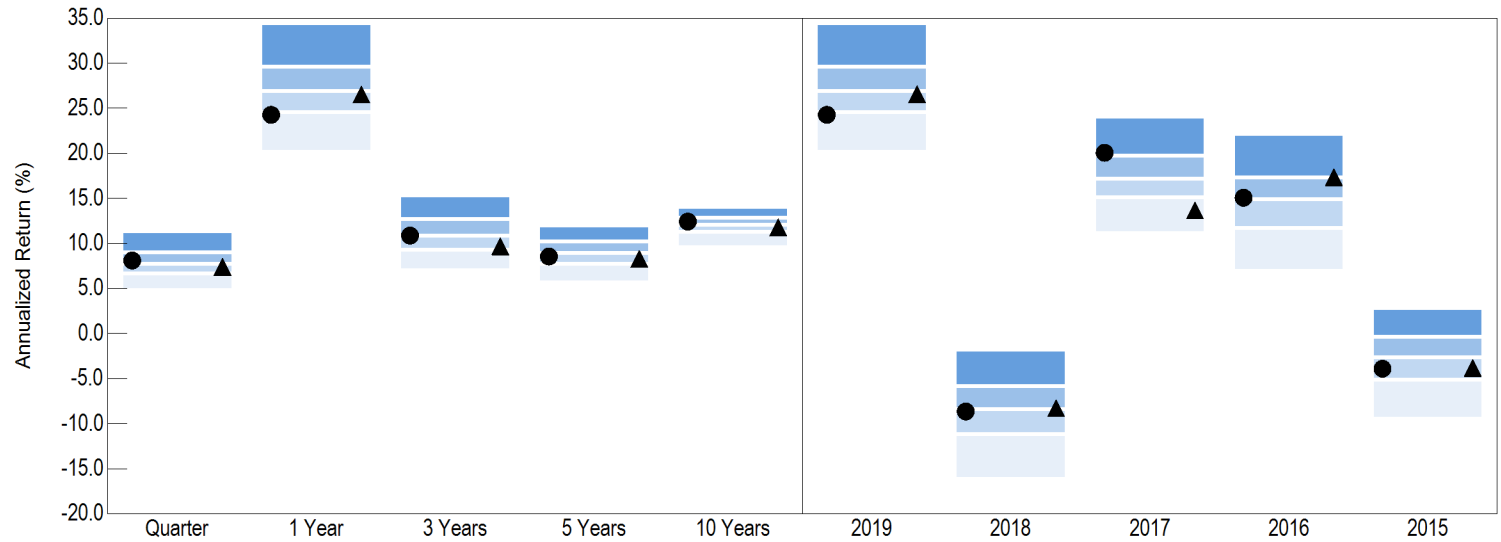
	Avg Wgt	Return	Contribution
BANK OF AMERICA	1.26	21.40	0.27
CIGNA	0.64	34.72	0.22
JP MORGAN CHASE & CO.	0.99	19.40	0.19
UNITEDHEALTH GROUP	0.42	35.80	0.15
BERKSHIRE HATHAWAY 'B'	1.47	8.88	0.13
CITIGROUP	0.74	16.45	0.12
ANTHEM	0.42	26.14	0.11
CVS HEALTH	0.40	18.69	0.08
LAS VEGAS SANDS	0.36	20.88	0.07
UNITED TECHNOLOGIES	0.72	10.24	0.07

Bottom Contributors

	Avg Wgt	Return	Contribution
AMERICAN INTL.GP.	0.73	-7.26	-0.05
DUPONT DE NEMOURS	0.38	-9.56	-0.04
TRAVELERS COS.	0.37	-7.34	-0.03
CHUBB	0.76	-3.11	-0.02
LIBERTY GLOBAL SR.C	0.21	-8.39	-0.02
ORACLE	0.48	-3.30	-0.02
ESSEX PROPERTY TST.	0.20	-7.30	-0.01
EQUITY	0.23	-5.53	-0.01
RESD.TST.PROPS. SHBI	0.23	-5.53	-0.01
CH ROBINSON WWD.	0.17	-7.15	-0.01
CISCO SYSTEMS	0.54	-2.21	-0.01

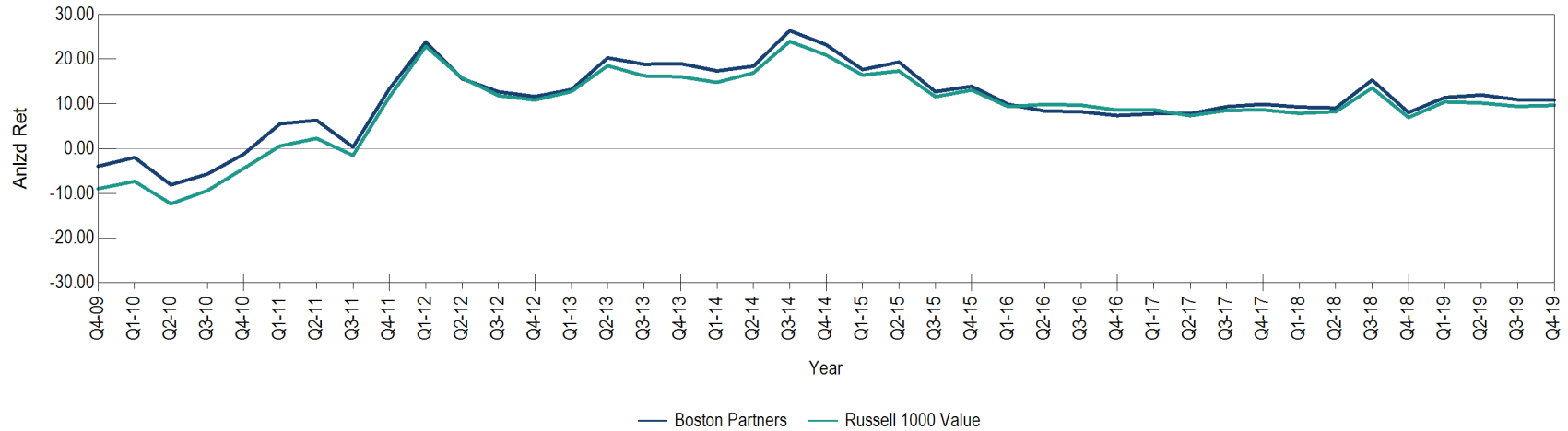
Unclassified sector allocation includes cash allocations.

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

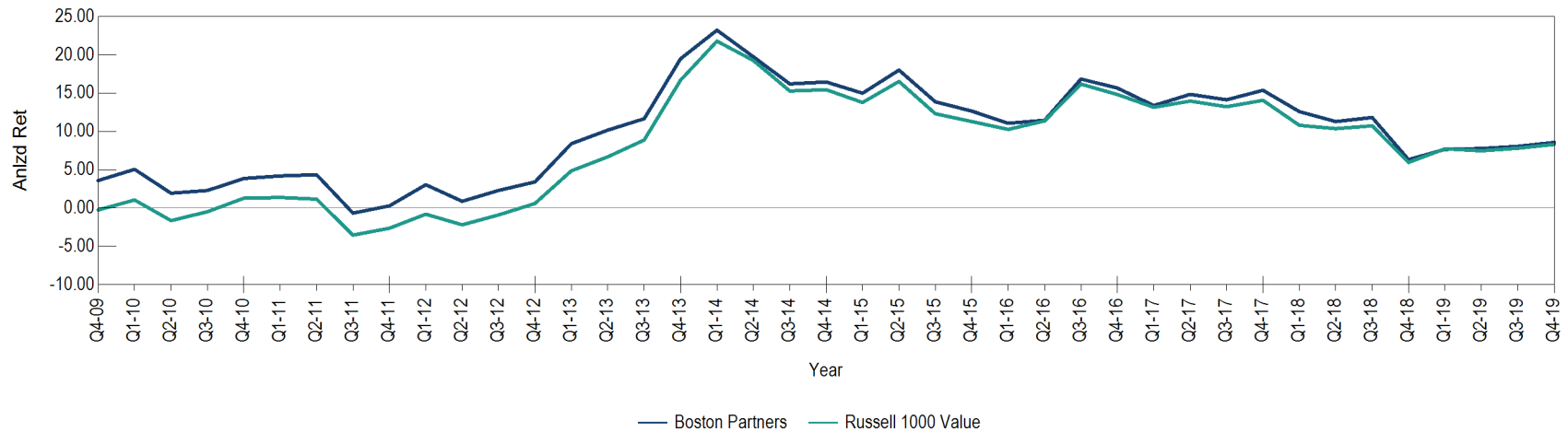


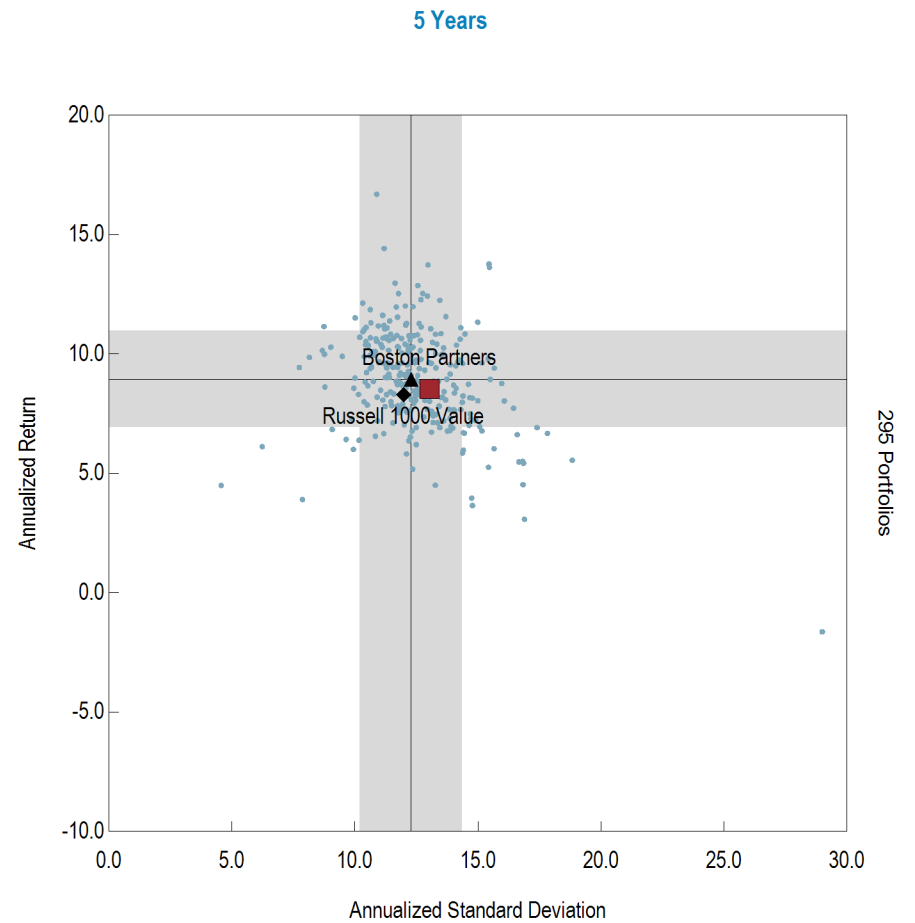
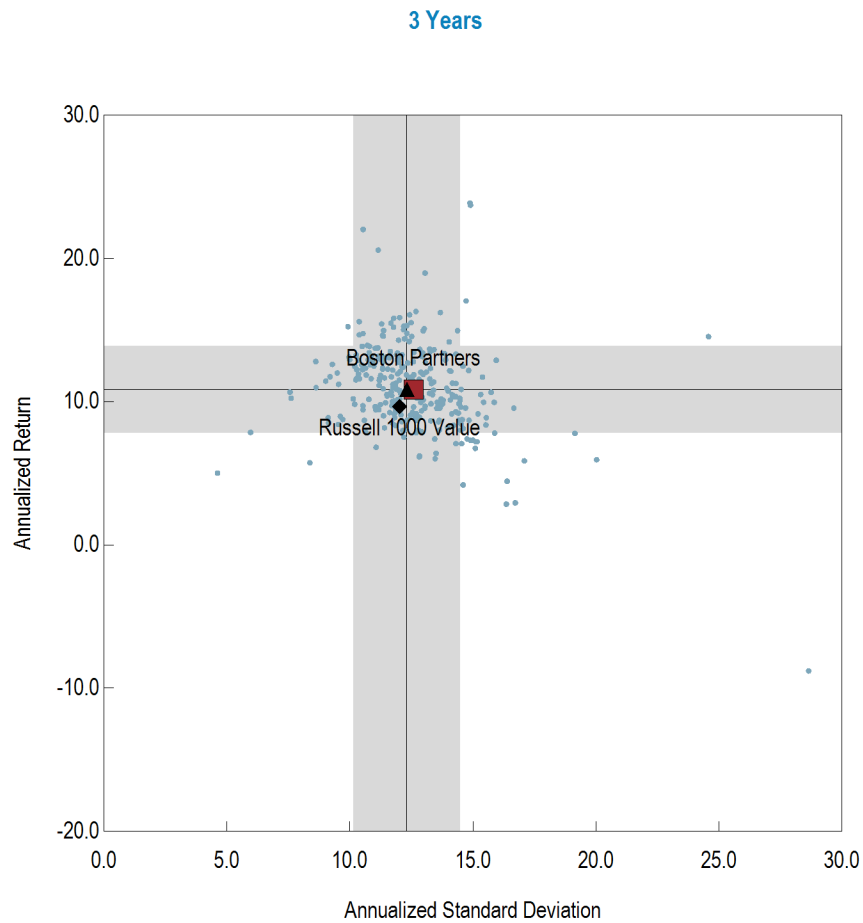
	Quarter	1 Year	3 Years	5 Years	10 Years	2019	2018	2017	2016	2015
5th Percentile	11.3	34.4	15.3	12.0	14.0	34.4	-1.8	24.0	22.1	2.8
25th Percentile	9.0	29.6	12.8	10.3	12.8	29.6	-5.8	19.8	17.4	-0.4
Median	7.7	26.9	10.9	8.9	12.1	26.9	-8.3	17.2	15.0	-2.6
75th Percentile	6.7	24.6	9.3	7.8	11.3	24.6	-11.1	15.1	11.8	-5.1
95th Percentile	4.8	20.2	7.1	5.7	9.6	20.2	-16.1	11.2	7.0	-9.4
# of Portfolios	310	310	305	295	250	310	336	342	346	312
● Boston Partners	8.1 (43)	24.3 (77)	10.9 (50)	8.5 (60)	12.4 (41)	24.3 (77)	-8.7 (55)	20.1 (23)	15.1 (50)	-3.9 (65)
▲ Russell 1000 Value	7.4 (60)	26.5 (55)	9.7 (70)	8.3 (65)	11.8 (62)	26.5 (55)	-8.3 (50)	13.7 (87)	17.3 (26)	-3.8 (64)

Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)





	3 Years			5 Years			
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	
Boston Partners	10.9%	12.6%	0.7	Boston Partners	8.5%	13.0%	0.6
Russell 1000 Value	9.7%	12.0%	0.7	Russell 1000 Value	8.3%	12.0%	0.6
eV US Large Cap Value Equity Gross Median	10.9%	12.3%	0.8	eV US Large Cap Value Equity Gross Median	8.9%	12.3%	0.7

Emerald Advisers Manager Portfolio Overview

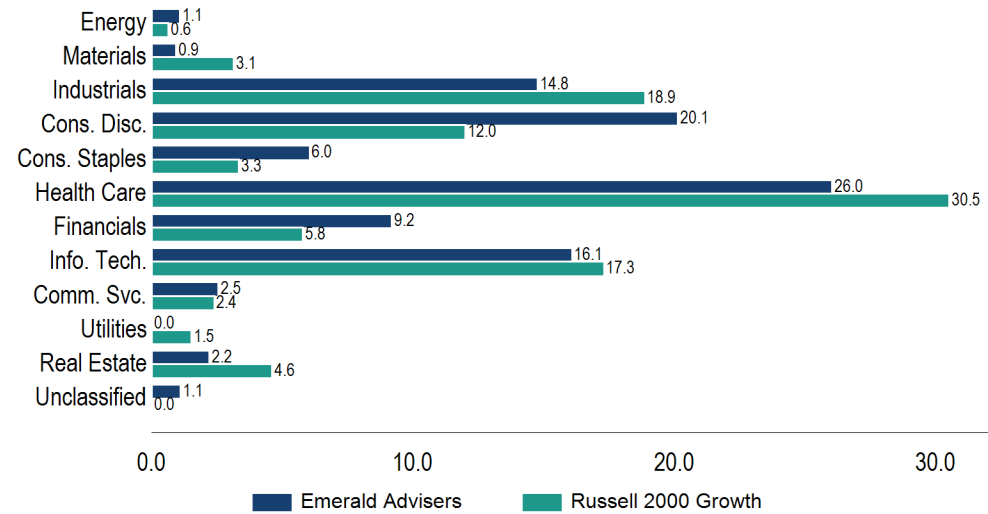
Period Ending: December 31, 2019

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	119	1,172
Weighted Avg. Market Cap. (\$B)	2.92	2.73
Median Market Cap. (\$B)	2.10	0.92
Price To Earnings	24.74	26.45
Price To Book	4.16	4.45
Price To Sales	2.35	1.60
Return on Equity (%)	-8.60	-3.17
Yield (%)	0.44	0.74
Beta	1.12	1.00

Sector Allocation (%) vs Russell 2000 Growth



Largest Holdings

	End Weight	Return
CHEGG	2.65	26.58
TREX	2.25	-1.15
FRESHPET	2.10	18.73
PLANET FITNESS CL.A	1.99	29.05
CHURCHILL DOWNS	1.99	11.63
HORIZON THERAPEUTICS PUBLIC	1.94	32.94
NEOGENOMICS	1.92	52.98
THE SIMPLY GOOD FOODS	1.81	-1.55
VARONIS SYSTEMS	1.80	29.99
TETRA TECH	1.79	-0.52

Top Contributors

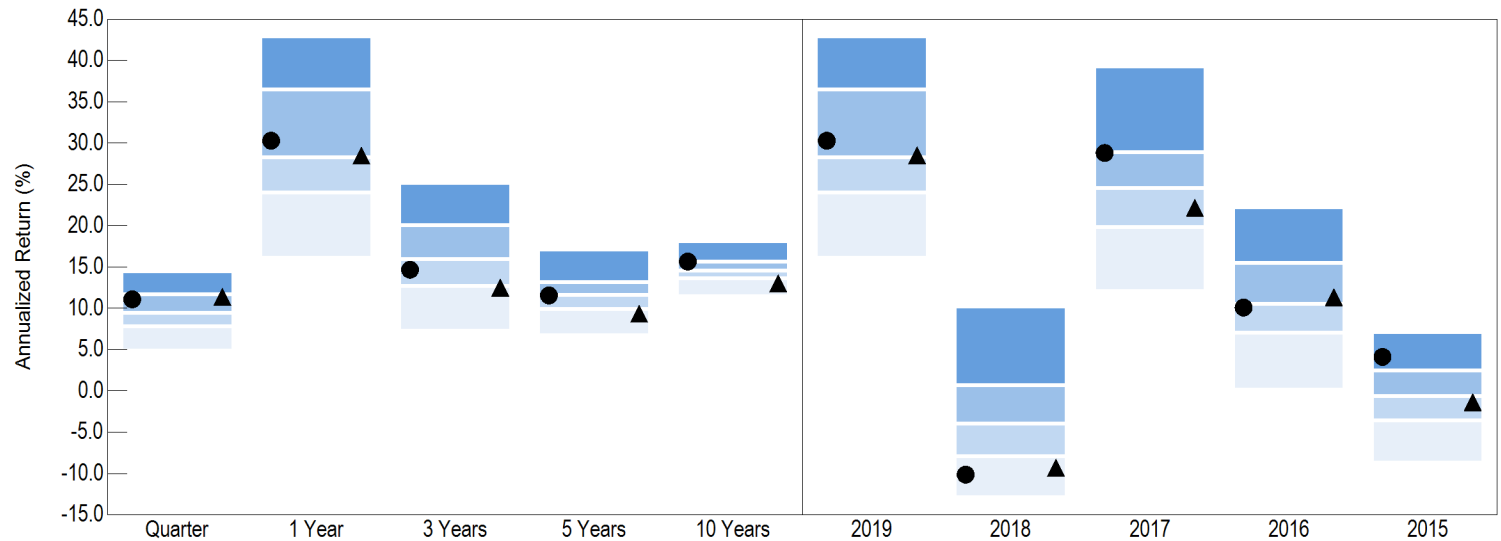
	Avg Wgt	Return	Contribution
REATA PHARMS.CL.A	0.36	154.61	0.55
ARQULE	0.17	178.38	0.30
NEOGENOMICS	0.53	52.98	0.28
KARYOPHARM THERAPEUTICS	0.24	99.27	0.23
CHEGG	0.82	26.58	0.22
HORIZON THERAPEUTICS PUBLIC	0.53	32.94	0.18
PLANET FITNESS CL.A	0.56	29.05	0.16
VARONIS SYSTEMS	0.50	29.99	0.15
AIMMUNE THERAPEUTICS	0.21	59.84	0.13
RAPID7	0.52	23.42	0.12

Bottom Contributors

	Avg Wgt	Return	Contribution
VONAGE HOLDINGS	0.47	-34.42	-0.16
RADIUS HEALTH	0.38	-21.71	-0.08
FORESCOUT TECHNOLOGIES	0.58	-13.50	-0.08
NV5 GLOBAL	0.29	-26.10	-0.07
MERCURY SYSTEMS	0.50	-14.86	-0.07
JACK IN THE BOX	0.47	-13.92	-0.07
CHILDRENS PLACE	0.34	-17.95	-0.06
MERITAGE HOMES	0.46	-13.13	-0.06
TRINET GROUP	0.54	-8.97	-0.05
VOCERA COMMUNICATIONS	0.27	-15.78	-0.04

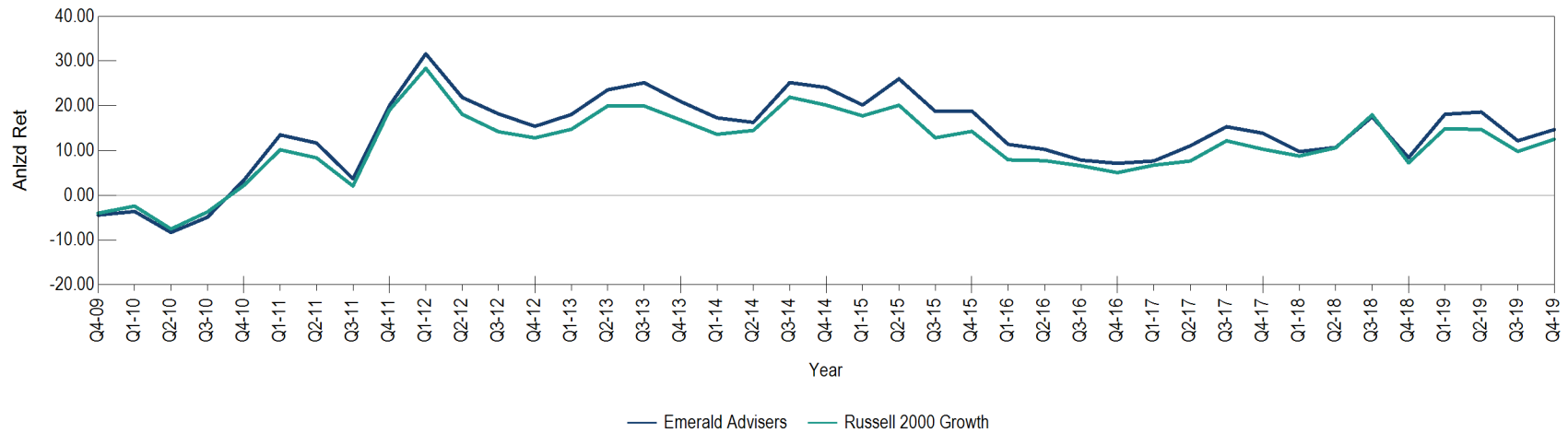
Unclassified sector allocation includes cash allocations.

Emerald Advisers vs. eV US Small Cap Growth Equity Gross Universe

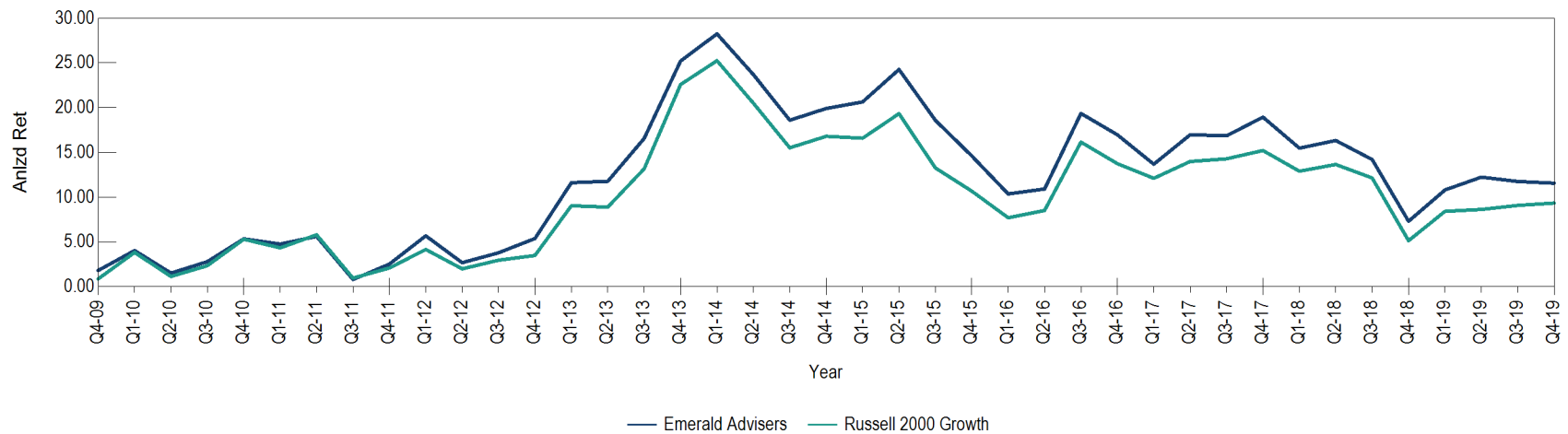


	Quarter	1 Year	3 Years	5 Years	10 Years	2019	2018	2017	2016	2015
5th Percentile	14.4	42.9	25.2	17.1	18.1	42.9	10.2	39.2	22.2	7.1
25th Percentile	11.7	36.5	20.1	13.2	15.7	36.5	0.7	28.9	15.5	2.5
Median	9.5	28.3	16.0	11.7	14.6	28.3	-3.9	24.6	10.6	-0.6
75th Percentile	7.8	24.1	12.7	9.9	13.7	24.1	-7.9	19.8	7.1	-3.5
95th Percentile	4.9	16.2	7.3	6.7	11.5	16.2	-12.8	12.1	0.2	-8.7
# of Portfolios	151	151	150	141	129	151	164	174	170	154
● Emerald Advisers	11.1 (32)	30.3 (45)	14.7 (64)	11.6 (52)	15.7 (28)	30.3 (45)	-10.1 (85)	28.8 (26)	10.1 (54)	4.1 (19)
▲ Russell 2000 Growth	11.4 (29)	28.5 (49)	12.5 (79)	9.3 (81)	13.0 (83)	28.5 (49)	-9.3 (80)	22.2 (62)	11.3 (49)	-1.4 (59)

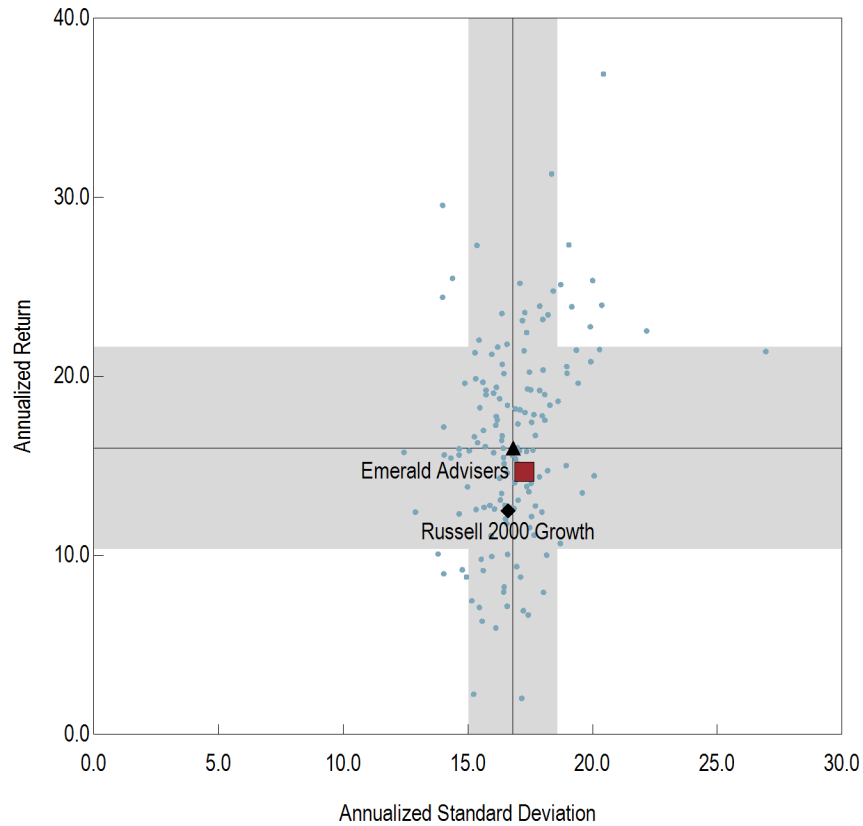
Rolling 3 Year Annualized Return (%)



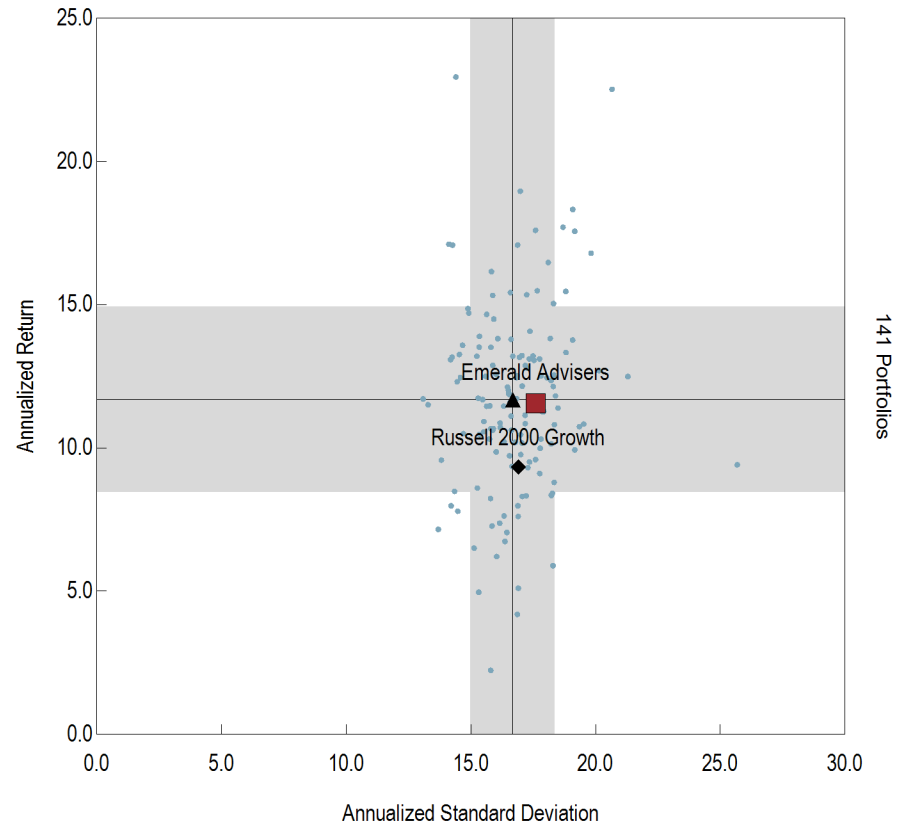
Rolling 5 Year Annualized Return (%)



3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Emerald Advisers	14.7%	17.3%	0.8
Russell 2000 Growth	12.5%	16.6%	0.7
eV US Small Cap Growth Equity Gross Median	16.0%	16.8%	0.9

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Emerald Advisers	11.6%	17.6%	0.6
Russell 2000 Growth	9.3%	16.9%	0.5
eV US Small Cap Growth Equity Gross Median	11.7%	16.7%	0.6

Ceredex Manager Portfolio Overview

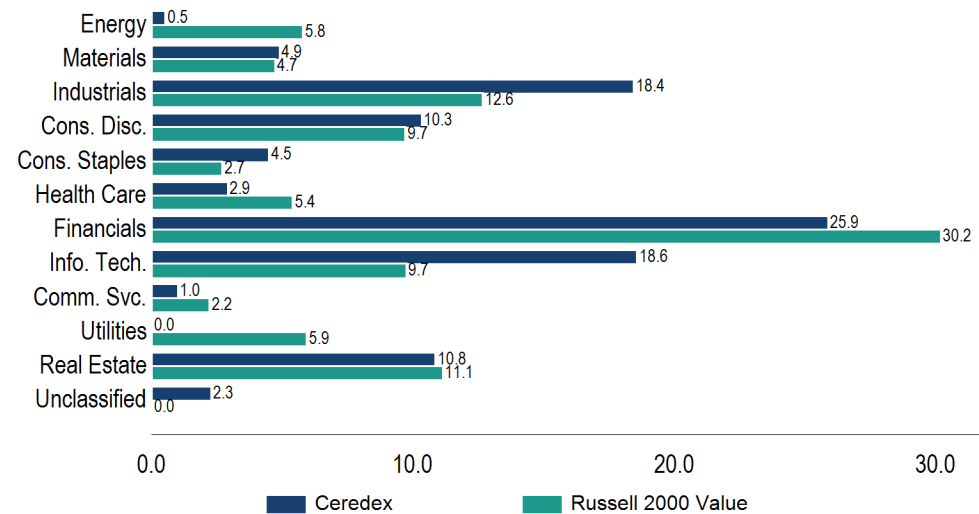
Period Ending: December 31, 2019

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	82	1,402
Weighted Avg. Market Cap. (\$B)	3.50	2.17
Median Market Cap. (\$B)	2.22	0.70
Price To Earnings	18.14	16.29
Price To Book	2.45	1.71
Price To Sales	1.23	0.92
Return on Equity (%)	17.70	5.31
Yield (%)	2.52	2.13
Beta	0.87	1.00

Sector Allocation (%) vs Russell 2000 Value



Largest Holdings

	End Weight	Return
POWER INTEGRATIONS	5.06	9.60
KEMPER	4.92	-0.20
SABRE	4.48	0.82
ENERGIZER HOLDINGS	4.46	15.93
SLM	4.37	1.32
PHYSICIANS REALTY TST.	3.91	8.12
FIRST AMER.FINL.	3.69	-0.51
CUBIC	3.43	-9.74
AMER.EAG.OUTFITTERS	2.75	-8.51
HILL-ROM HOLDINGS	2.68	8.09

Top Contributors

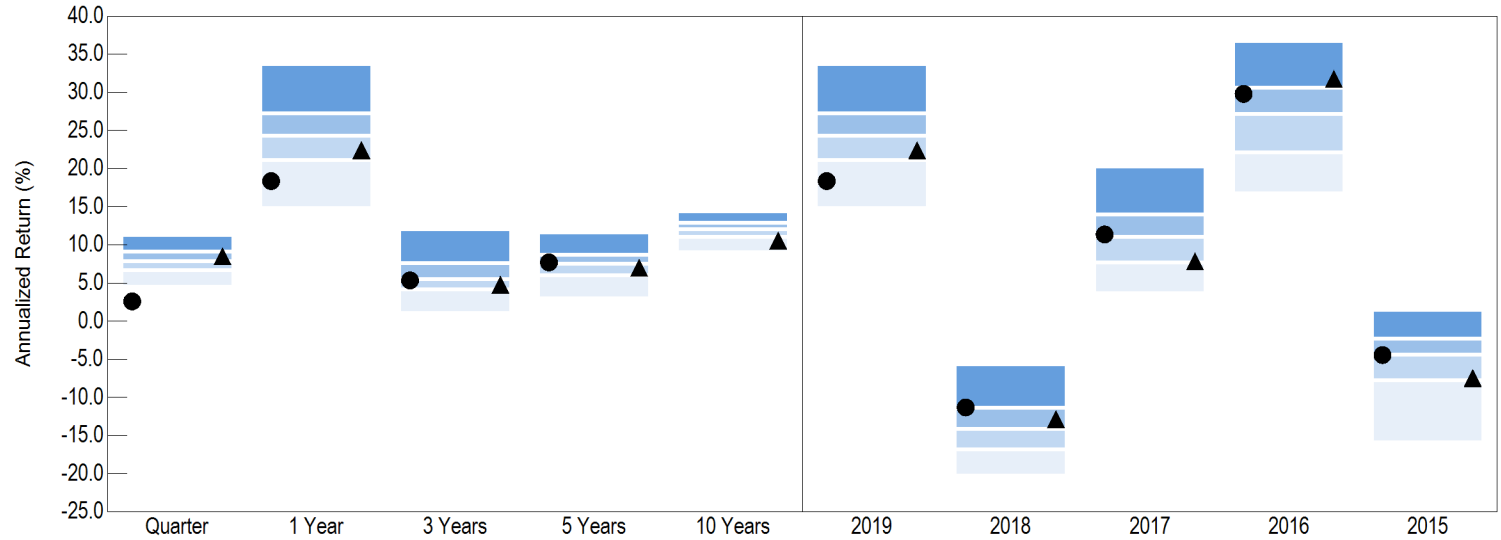
	Avg Wgt	Return	Contribution
ENERGIZER HOLDINGS	1.42	15.93	0.23
POWER INTEGRATIONS	1.57	9.60	0.15
COHU	0.15	69.70	0.11
PHYSICIANS REALTY TST.	1.24	8.12	0.10
MKS INSTRUMENTS	0.46	19.45	0.09
BANK OF HAWAII	0.65	11.56	0.08
MONOLITHIC PWR.SYS.	0.46	14.64	0.07
FIRST HAWAIIAN	0.67	9.05	0.06
HILL-ROM HOLDINGS	0.74	8.09	0.06
PENSKE AUTOMOTIVE GP.	0.83	7.07	0.06

Bottom Contributors

	Avg Wgt	Return	Contribution
CHILDRENS PLACE	1.01	-17.95	-0.18
CUBIC	1.09	-9.74	-0.11
US SILICA HOLDINGS	0.23	-34.97	-0.08
COVANTA HOLDING	0.61	-12.73	-0.08
AMER.EAG.OUTFITTERS	0.91	-8.51	-0.08
APOGEE ENTERPRISES	0.42	-16.25	-0.07
HERMAN MILLER	0.62	-9.24	-0.06
ALEXANDER & BALDWIN	0.36	-13.77	-0.05
EVERCORE A	0.80	-5.98	-0.05
DESIGNER BRANDS A	0.44	-6.62	-0.03

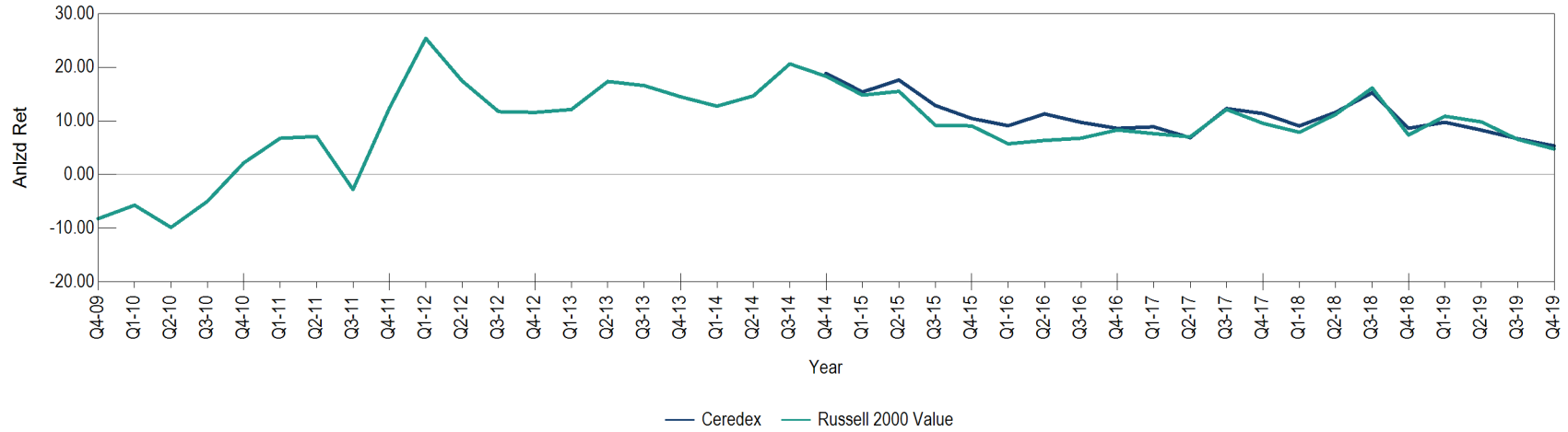
Unclassified sector allocation includes cash allocations.

Ceredex vs. eV US Small Cap Value Equity Gross Universe

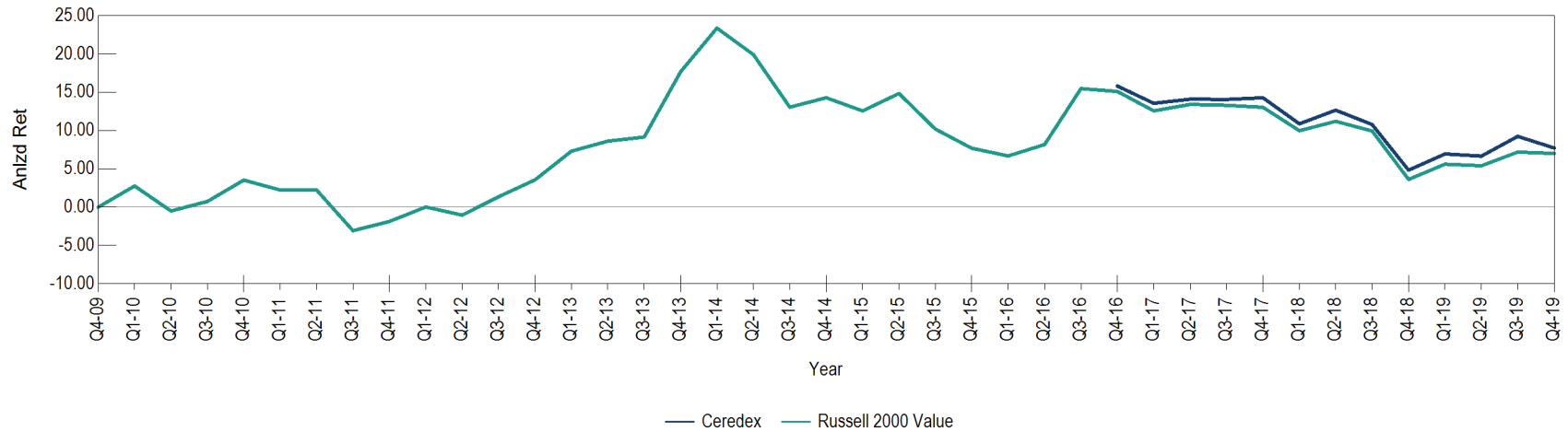


	Return (Rank)									
	Quarter	1 Year	3 Years	5 Years	10 Years	2019	2018	2017	2016	2015
5th Percentile	11.2	33.7	12.0	11.6	14.4	33.7	-5.7	20.2	36.7	1.5
25th Percentile	9.2	27.3	7.6	8.7	13.0	27.3	-11.4	14.1	30.7	-2.2
Median	7.9	24.4	5.6	7.5	12.1	24.4	-14.0	11.1	27.2	-4.3
75th Percentile	6.7	21.2	4.2	6.0	11.1	21.2	-16.7	7.8	22.2	-7.7
95th Percentile	4.5	14.9	1.1	3.0	9.0	14.9	-20.2	3.7	16.8	-15.8
# of Portfolios	209	209	205	196	174	209	220	224	222	212
● Ceredex	2.6 (99)	18.4 (86)	5.3 (56)	7.7 (48)	-- (--)	18.4 (86)	-11.3 (25)	11.4 (48)	29.8 (32)	-4.4 (52)
▲ Russell 2000 Value	8.5 (36)	22.4 (69)	4.8 (64)	7.0 (58)	10.6 (82)	22.4 (69)	-12.9 (39)	7.8 (75)	31.7 (17)	-7.5 (74)

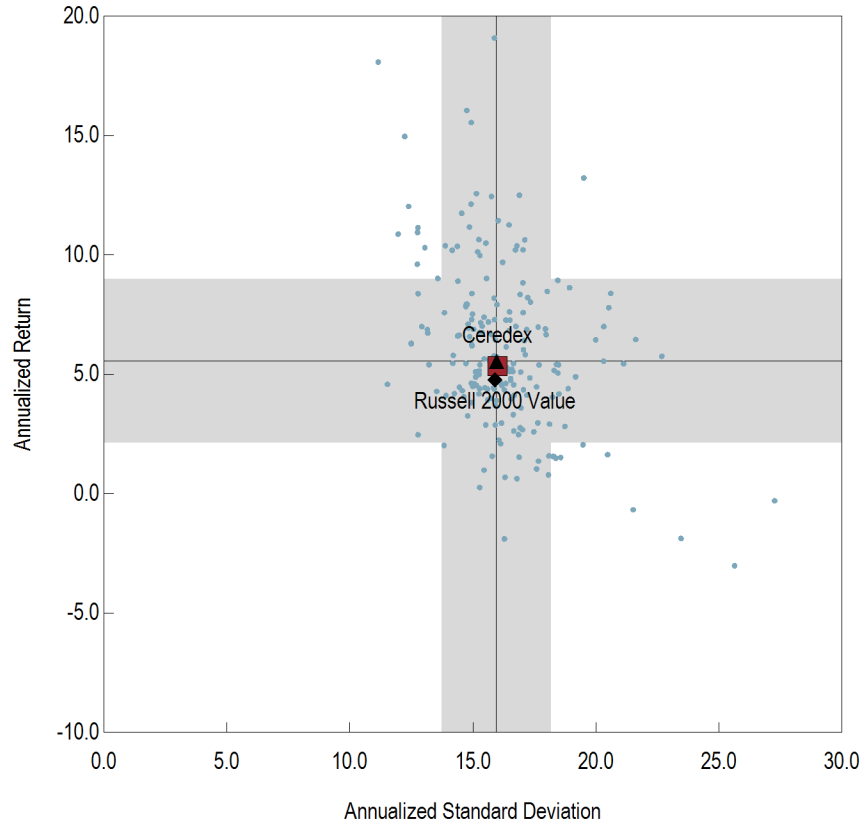
Rolling 3 Year Annualized Return (%)



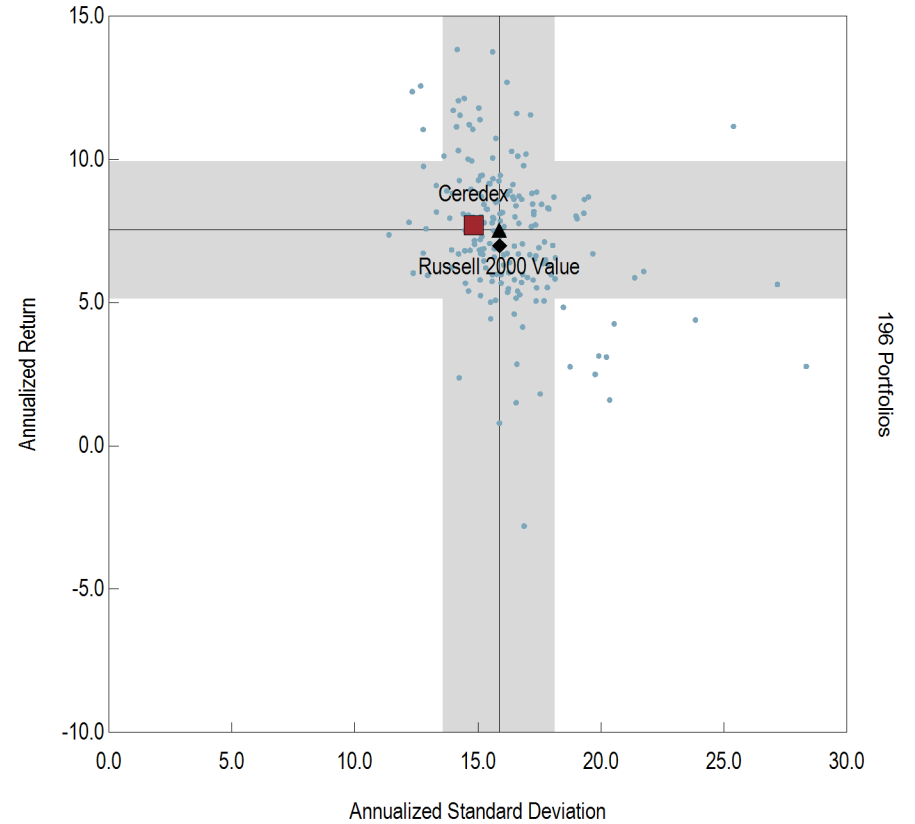
Rolling 5 Year Annualized Return (%)



3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Ceredex	5.3%	16.0%	0.2
Russell 2000 Value	4.8%	15.9%	0.2
eV US Small Cap Value Equity Gross Median	5.6%	16.0%	0.2

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Ceredex	7.7%	14.8%	0.4
Russell 2000 Value	7.0%	15.9%	0.4
eV US Small Cap Value Equity Gross Median	7.5%	15.9%	0.4

International Equity Managers

Pyrford Manager Portfolio Overview

Period Ending: December 31, 2019

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.

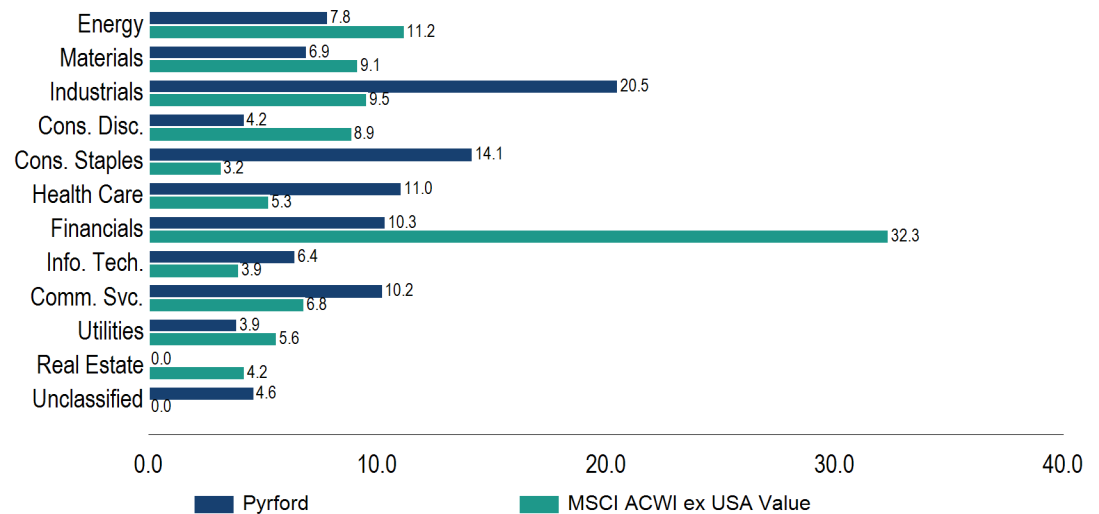
Characteristics

	MSCI ACWI Portfolio	MSCI ACWI ex USA Value
Number of Holdings	73	1,466
Weighted Avg. Market Cap. (\$B)	68.49	52.68
Median Market Cap. (\$B)	24.44	7.27
Price To Earnings	18.75	12.29
Price To Book	2.51	1.65
Price To Sales	1.51	0.86
Return on Equity (%)	17.67	11.42
Yield (%)	3.63	4.27
Beta	0.90	1.00

Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	88.9%	72.9%
Emerging*	6.5%	27.1%
Top 10 Largest Countries		
Switzerland	13.7%	3.7%
United Kingdom	13.0%	14.4%
Japan	11.0%	16.3%
Australia	10.7%	4.5%
Germany	10.0%	6.4%
France	9.3%	7.2%
Hong Kong	4.7%	2.3%
Cash	4.6%	0.0%
Singapore	4.5%	0.8%
Netherlands	4.4%	1.1%
Total-Top 10 Largest Countries	85.9%	56.7%

Sector Allocation (%) vs MSCI ACWI ex USA Value



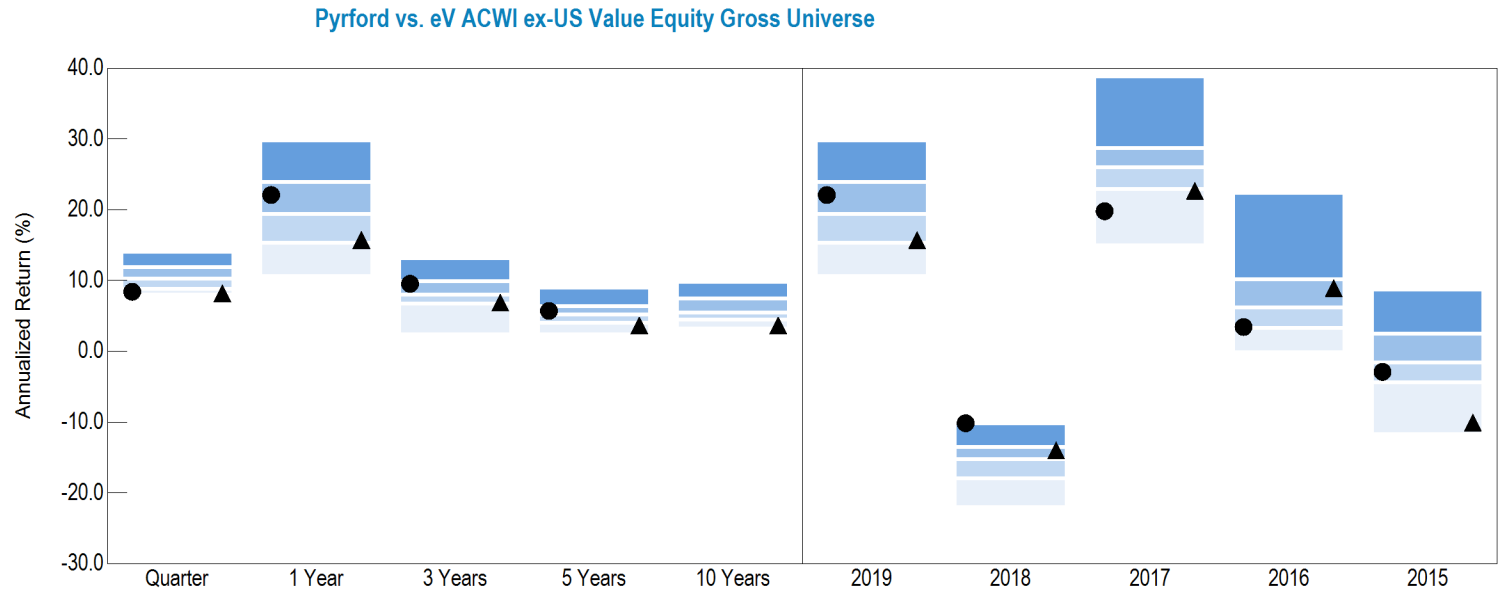
Top Contributors

	Avg Wgt	Return	Contribution
FUCHS PETROLUB PREF.	1.63	31.77	0.52
LEGAL & GENERAL	1.35	31.13	0.42
ROCHE HOLDING	3.51	11.32	0.40
TAIWAN SEMICON.MNFG.	1.44	26.88	0.39
NATIONAL GRID	1.97	17.24	0.34
BRITISH AMERICAN TOBACCO	1.49	19.44	0.29
KDDI	1.96	14.51	0.28
GEA GROUP	1.26	21.27	0.27
NOVARTIS 'R'	2.63	9.35	0.25
SSE	1.00	24.16	0.24

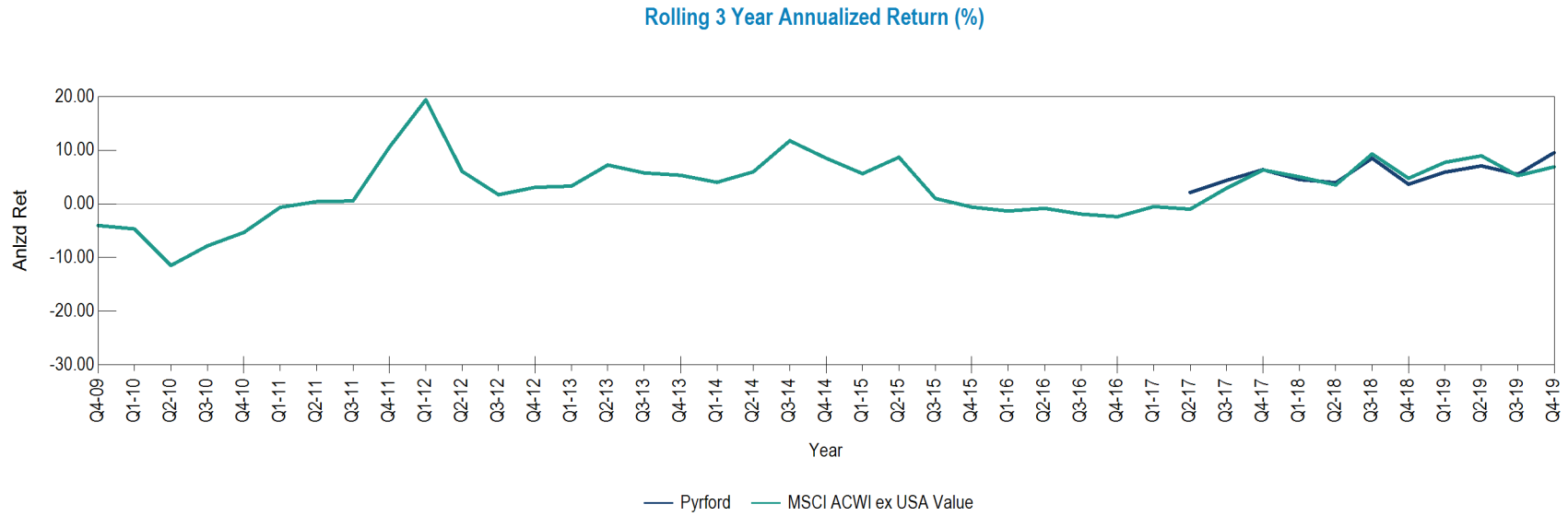
Bottom Contributors

	Avg Wgt	Return	Contribution
TELENOR	1.92	-8.84	-0.17
NIHON KOHDEN	1.58	-5.09	-0.08
NEWCREST MINING	0.80	-9.27	-0.07
UNILEVER	1.85	-3.61	-0.07
NESTLE 'R'	3.59	-0.36	-0.01
AXIATA GROUP	1.03	-0.29	0.00
VODAFONE GROUP	1.46	-0.19	0.00
BP	0.68	-0.18	0.00
MERIDA INDUSTRY	0.35	3.49	0.01
ROYAL DUTCH SHELL B	0.88	2.09	0.02

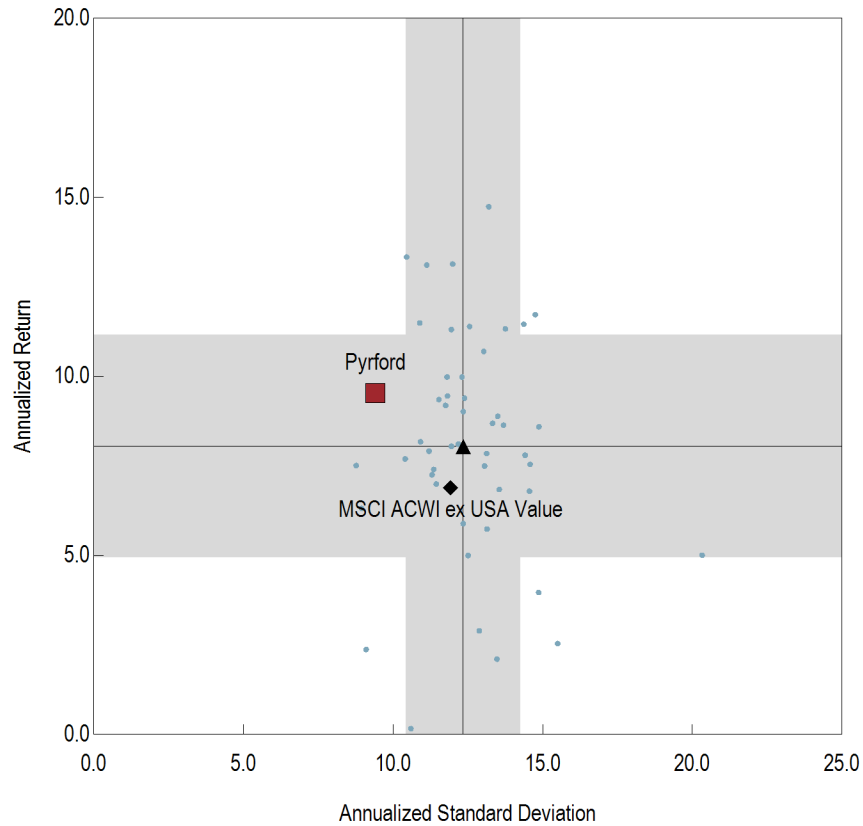
Unclassified sector allocation includes cash allocations.



	Return (Rank)									
	Quarter	1 Year	3 Years	5 Years	10 Years	2019	2018	2017	2016	2015
5th Percentile	14.1	29.7	13.1	8.9	9.7	29.7	-10.2	38.8	22.3	8.7
25th Percentile	12.0	24.0	10.0	6.4	7.5	24.0	-13.4	28.8	10.2	2.5
Median	10.3	19.4	8.0	5.3	5.5	19.4	-15.2	26.0	6.2	-1.6
75th Percentile	8.9	15.4	6.8	4.1	4.5	15.4	-17.9	23.0	3.3	-4.3
95th Percentile	8.0	10.7	2.4	2.5	3.3	10.7	-21.9	15.0	-0.1	-11.6
# of Portfolios	51	51	49	44	27	51	54	56	55	45
● Pyrford	8.4 (91)	22.1 (36)	9.5 (27)	5.7 (42)	-- (--)	22.1 (36)	-10.1 (5)	19.8 (84)	3.4 (74)	-2.9 (59)
▲ MSCI ACWI ex USA Value	8.2 (92)	15.7 (74)	6.9 (73)	3.6 (82)	3.6 (93)	15.7 (74)	-14.0 (32)	22.7 (77)	8.9 (35)	-10.1 (93)

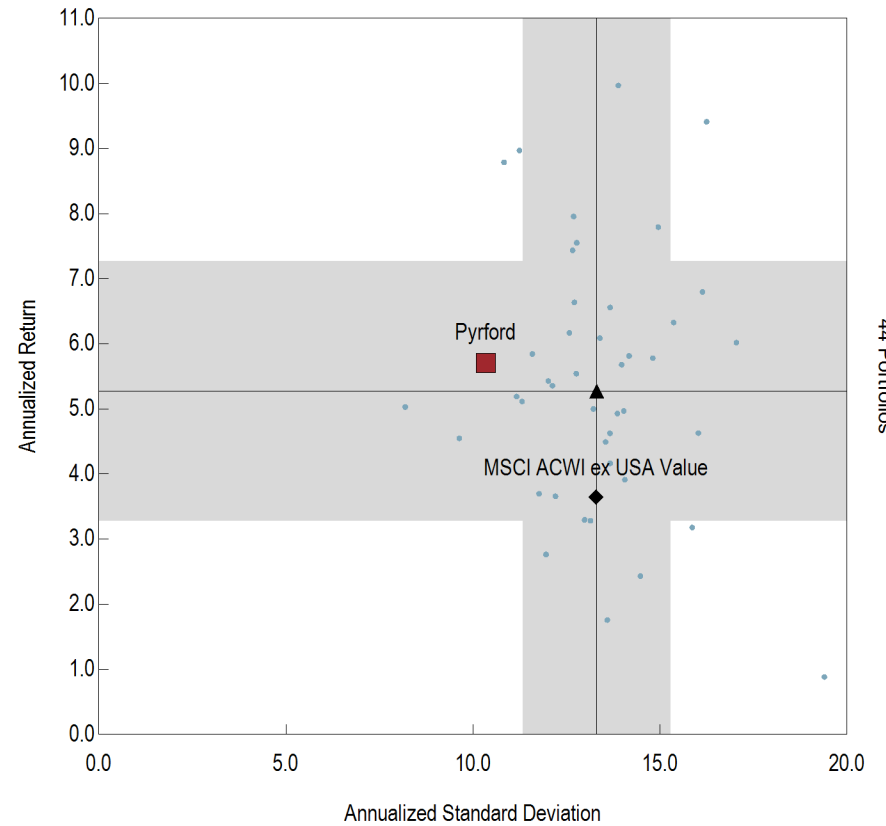


3 Years



49 Portfolios

5 Years



44 Portfolios

3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Pyrford	9.5%	9.4%	0.8
MSCI ACWI ex USA Value	6.9%	11.9%	0.4
eV ACWI ex-US Value Equity Gross Median	8.0%	12.3%	0.5

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Pyrford	5.7%	10.3%	0.4
MSCI ACWI ex USA Value	3.6%	13.3%	0.2
eV ACWI ex-US Value Equity Gross Median	5.3%	13.3%	0.3

William Blair Manager Portfolio Overview

Period Ending: December 31, 2019

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

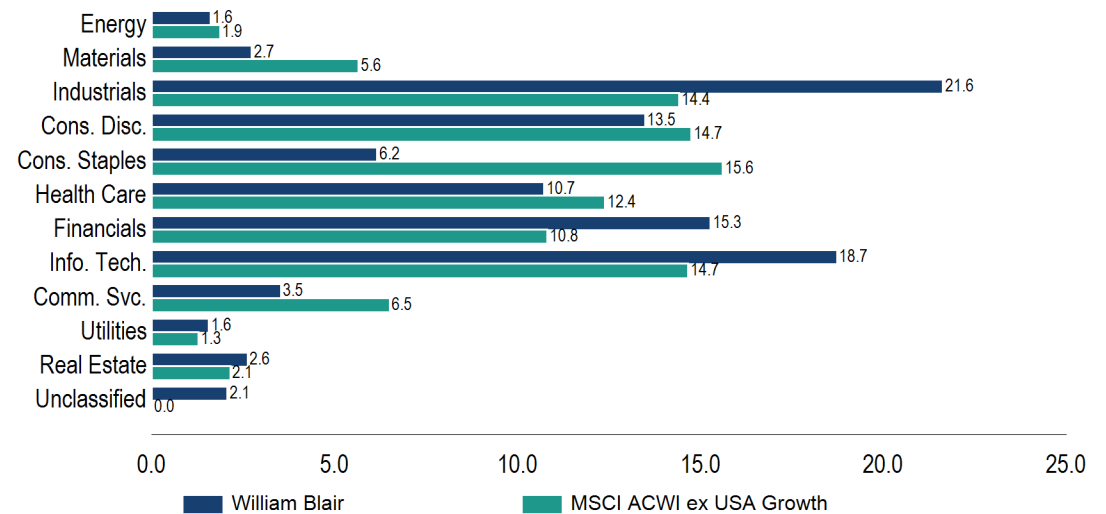
Characteristics

	MSCI ACWI Portfolio	MSCI ACWI ex USA Growth
Number of Holdings	202	1,214
Weighted Avg. Market Cap. (\$B)	69.53	95.33
Median Market Cap. (\$B)	11.11	8.85
Price To Earnings	27.09	23.80
Price To Book	4.72	3.58
Price To Sales	2.55	1.85
Return on Equity (%)	23.04	19.04
Yield (%)	1.40	1.83
Beta	1.14	1.00

Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	81.5%	72.5%
Emerging*	17.0%	27.5%
Top 10 Largest Countries		
United Kingdom	13.6%	7.4%
Japan	12.6%	16.1%
France	10.2%	7.9%
China*	6.6%	9.4%
Hong Kong	5.5%	2.3%
Canada	5.1%	6.6%
Switzerland	5.0%	8.6%
Denmark	4.7%	2.2%
Germany	4.4%	5.0%
Sweden	4.1%	2.1%
Total-Top 10 Largest Countries	72.0%	67.7%

Sector Allocation (%) vs MSCI ACWI ex USA Growth



Top Contributors

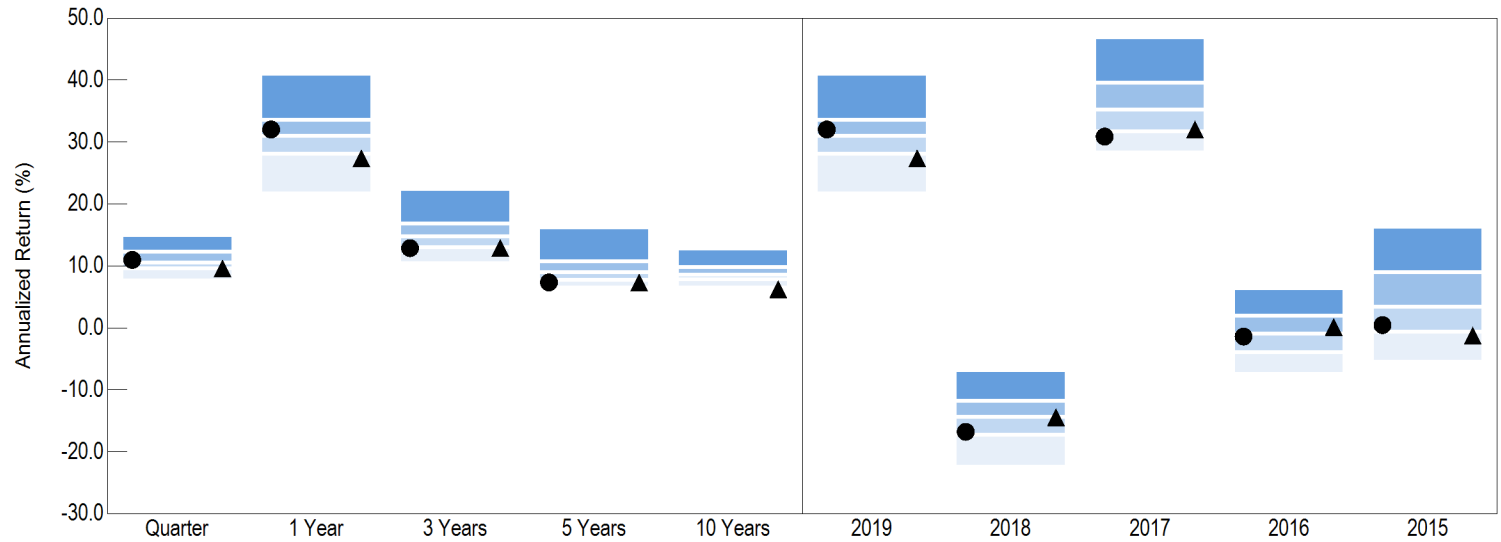
	Avg Wgt	Return	Contribution
ALIBABA GROUP HOLDING ADR 1:8	1.86	26.83	0.50
TAIWAN SEMICON.SPN.ADR 1:5	1.84	25.88	0.48
ATLAS COPCO A	1.20	30.64	0.37
ASML HOLDING	1.70	19.99	0.34
SIKA	1.01	28.26	0.29
TENCENT HOLDINGS	1.93	14.44	0.28
KERING	0.84	28.87	0.24
LVMH	1.35	17.60	0.24
CSL	1.01	22.99	0.23
KEYENCE	1.58	14.43	0.23

Bottom Contributors

	Avg Wgt	Return	Contribution
SHISEIDO	1.09	-9.97	-0.11
THALES	0.75	-9.07	-0.07
START TODAY	0.30	-16.71	-0.05
COMPASS GROUP	1.40	-2.92	-0.04
TEMENOS N	0.70	-5.54	-0.04
HISCOX DI	0.41	-7.78	-0.03
DIGITAL ARTS	0.13	-22.28	-0.03
TORONTO-DOMINION BANK	0.96	-2.76	-0.03
SAFRAN	1.38	-1.88	-0.03
CHRISTIAN HANSEN HOLDING	0.39	-5.03	-0.02

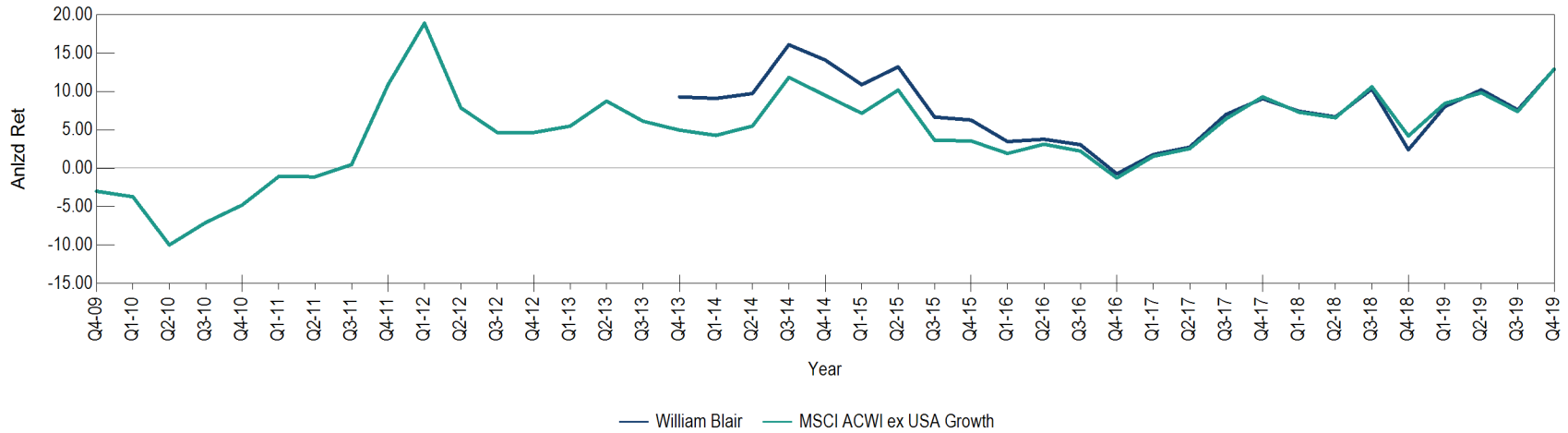
Unclassified sector allocation includes cash allocations.

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

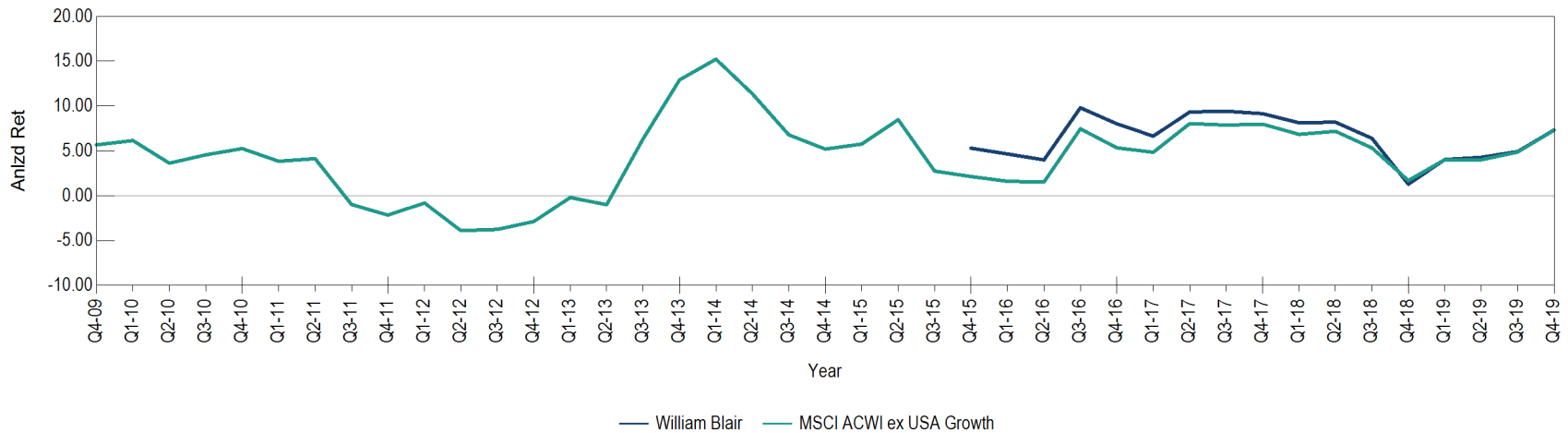


	Return (Rank)										
5th Percentile	14.9	41.0	22.4	16.2	12.7	41.0	-6.8	46.8	6.3	16.3	
25th Percentile	12.4	33.6	16.9	10.8	9.9	33.6	-11.7	39.6	2.0	9.0	
Median	10.6	31.0	14.8	9.1	8.7	31.0	-14.3	35.3	-0.9	3.5	
75th Percentile	9.6	28.2	13.1	7.8	7.9	28.2	-17.2	31.8	-3.9	-0.5	
95th Percentile	7.7	21.8	10.5	6.5	6.6	21.8	-22.3	28.3	-7.4	-5.4	
# of Portfolios	92	92	86	78	54	92	82	94	90	70	
● William Blair	11.0 (38)	32.0 (42)	12.9 (78)	7.3 (86)	-- (--)	32.0 (42)	-16.8 (69)	30.9 (81)	-1.4 (55)	0.5 (69)	
▲ MSCI ACWI ex USA Growth	9.6 (76)	27.3 (80)	12.9 (78)	7.3 (88)	6.2 (99)	27.3 (80)	-14.4 (51)	32.0 (75)	0.1 (45)	-1.3 (83)	

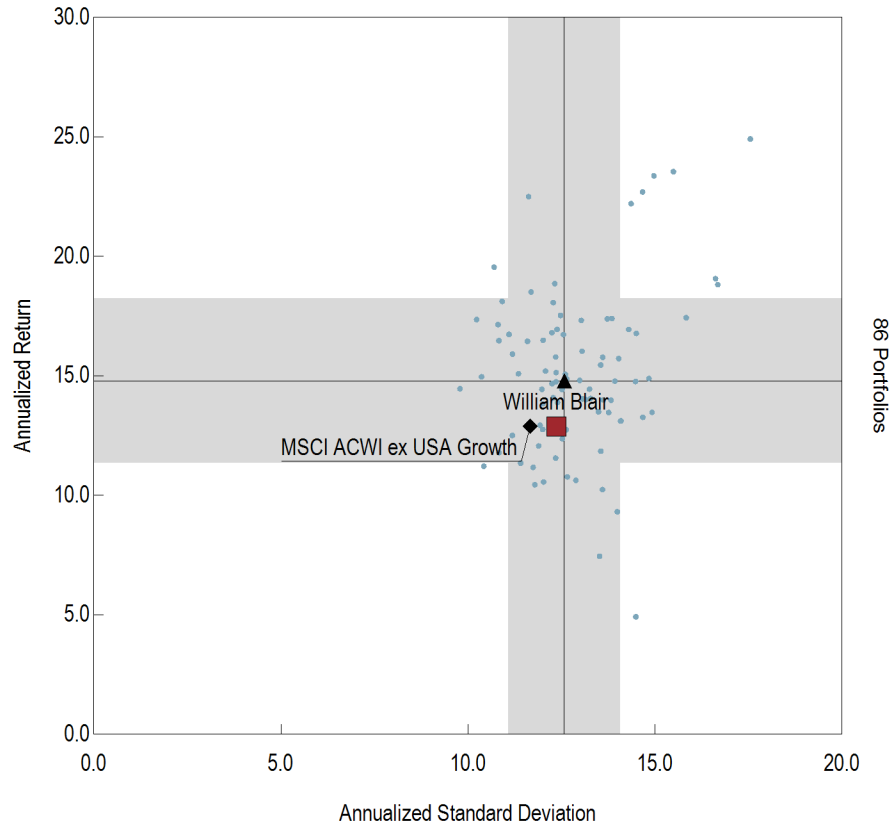
Rolling 3 Year Annualized Return (%)



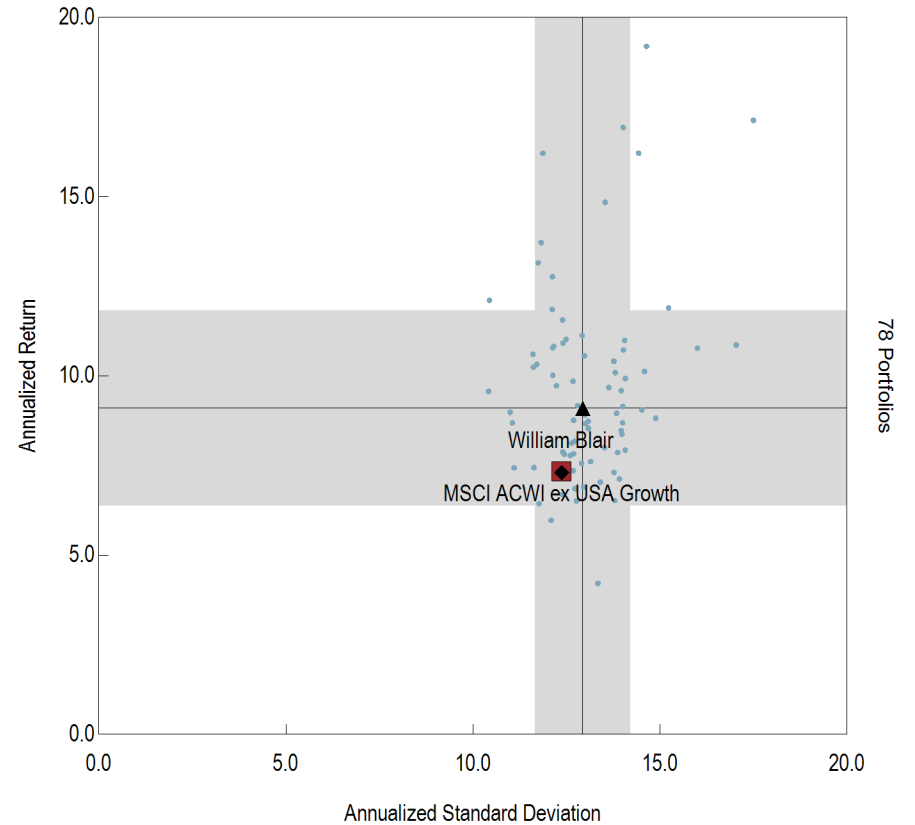
Rolling 5 Year Annualized Return (%)



3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
William Blair	12.9%	12.4%	0.9
MSCI ACWI ex USA Growth	12.9%	11.7%	1.0
eV ACWI ex-US Growth Equity Gross Median	14.8%	12.6%	1.0

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
William Blair	7.3%	12.4%	0.5
MSCI ACWI ex USA Growth	7.3%	12.4%	0.5
eV ACWI ex-US Growth Equity Gross Median	9.1%	12.9%	0.6

PIMCO RAE Emerging Markets Manager Portfolio Overview

Period Ending: December 31, 2019

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.

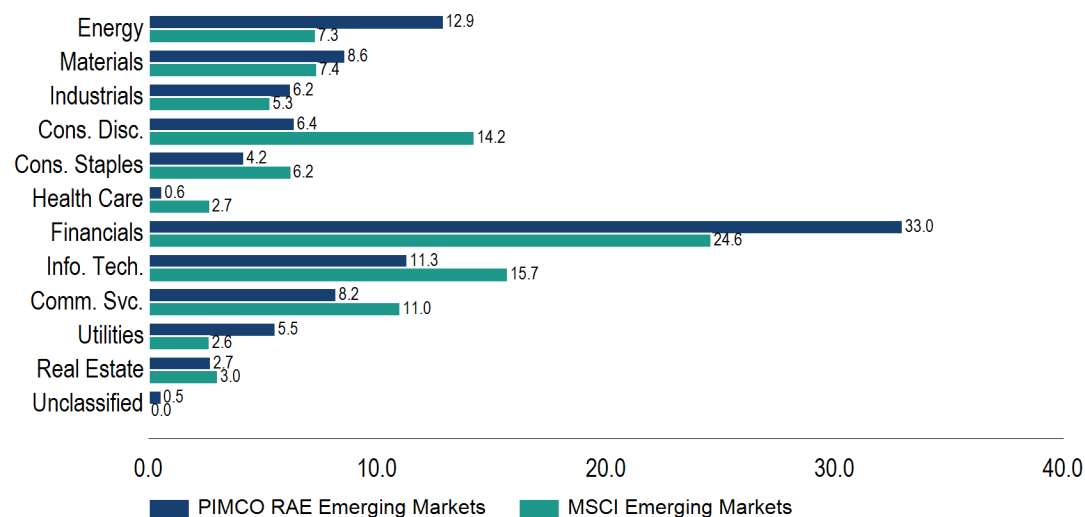
Characteristics

	Portfolio	MSCI Emerging Markets
Number of Holdings	635	1,371
Weighted Avg. Market Cap. (\$B)	40.92	106.20
Median Market Cap. (\$B)	3.77	5.93
Price To Earnings	8.76	14.97
Price To Book	1.67	2.57
Price To Sales	0.51	1.28
Return on Equity (%)	10.66	16.97
Yield (%)	4.07	2.69
Beta		1.00

Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	7.8%	0.0%
Emerging*	91.6%	100.0%
Top 10 Largest Countries		
Korea*	16.5%	11.8%
China*	16.2%	33.8%
Russia*	11.6%	3.9%
Taiwan*	10.8%	11.8%
Brazil*	9.1%	7.5%
Hong Kong	7.2%	0.0%
India*	6.5%	8.7%
South Africa*	4.8%	4.8%
Turkey*	4.4%	0.5%
Mexico*	2.9%	2.3%
Total-Top 10 Largest Countries	89.9%	85.2%

Sector Allocation (%) vs MSCI Emerging Markets



Top Contributors

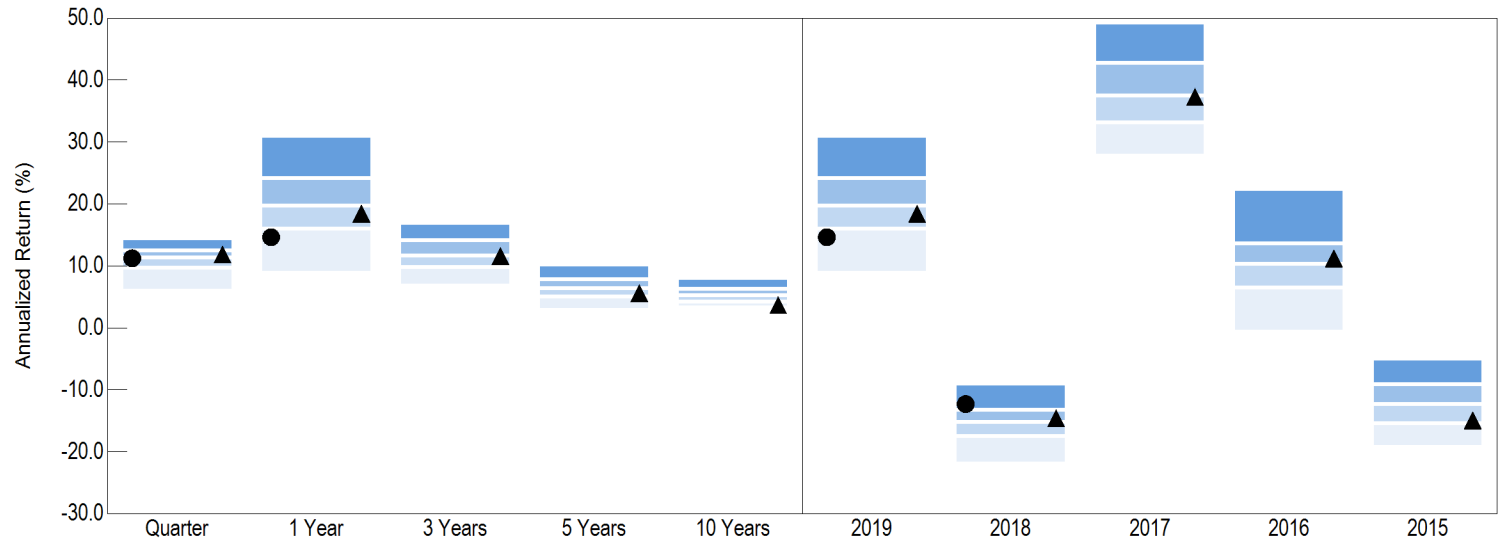
	End Weight	Return	Contribution
PJSC GAZPROM ADR CDI 1:2	4.85	19.18	0.93
SURGUTNEFTEGAS PUBLIC JOINT ADR 1:10	1.25	50.33	0.63
SAMSUNG ELECTRONICS	3.13	17.67	0.55
CHINA CON.BANK 'H'	3.62	13.23	0.48
TATA MOTORS	0.72	56.52	0.41
PJSC LUKOIL SPON (LON) ADR	1.39	23.59	0.33
INDL&COML.BOC.'H'	2.11	14.98	0.32
TAIWAN SEMICON.SPN.ADR 1:5	1.08	25.88	0.28
HON HAI PRECN.IND.	0.94	28.38	0.27
METALURGICA GERDAU PN	0.40	54.18	0.21

Bottom Contributors

	End Weight	Return	Contribution
JBS ON	0.43	-18.53	-0.08
HYUNDAI MOTOR	0.99	-6.99	-0.07
TELKOM SA SOC	0.11	-45.68	-0.05
TURKIYE HALK BANKASI	0.34	-14.52	-0.05
MTN GROUP	0.69	-7.12	-0.05
CHINA TELECOM 'H'	0.45	-9.53	-0.04
CHINA UNICOM (HONG KONG)	0.36	-11.24	-0.04
HYUNDAI STEEL	0.20	-16.38	-0.03
CENCOSUD	0.15	-20.11	-0.03
INDIAN OIL	0.18	-15.43	-0.03

Unclassified sector allocation includes cash allocations.

PIMCO RAE Emerging Markets vs. eV Emg Mkts Equity Gross Universe



	Return (Rank)															
5th Percentile	14.4	31.0	16.9	10.1	8.0	31.0	-9.0	49.2	22.4	-5.0						
25th Percentile	12.5	24.2	14.2	7.9	6.4	24.2	-13.2	42.8	13.7	-9.0						
Median	11.5	19.8	11.7	6.5	5.3	19.8	-15.2	37.6	10.4	-12.2						
75th Percentile	9.8	16.1	9.9	5.2	4.3	16.1	-17.4	33.2	6.6	-15.3						
95th Percentile	6.0	8.9	6.9	3.0	3.3	8.9	-21.8	27.8	-0.6	-19.2						
# of Portfolios	375	373	347	304	150	373	355	343	337	273						
● PIMCO RAE Emerging Markets	11.2 (54)	14.6 (82)	-- (--)	-- (--)	-- (--)	14.6 (82)	-12.3 (19)	-- (--)	-- (--)	-- (--)						
▲ MSCI Emerging Markets	11.8 (40)	18.4 (62)	11.6 (53)	5.6 (67)	3.7 (90)	18.4 (62)	-14.6 (43)	37.3 (53)	11.2 (45)	-14.9 (70)						

TT Emerging Markets Manager Portfolio Overview

Period Ending: December 31, 2019

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.

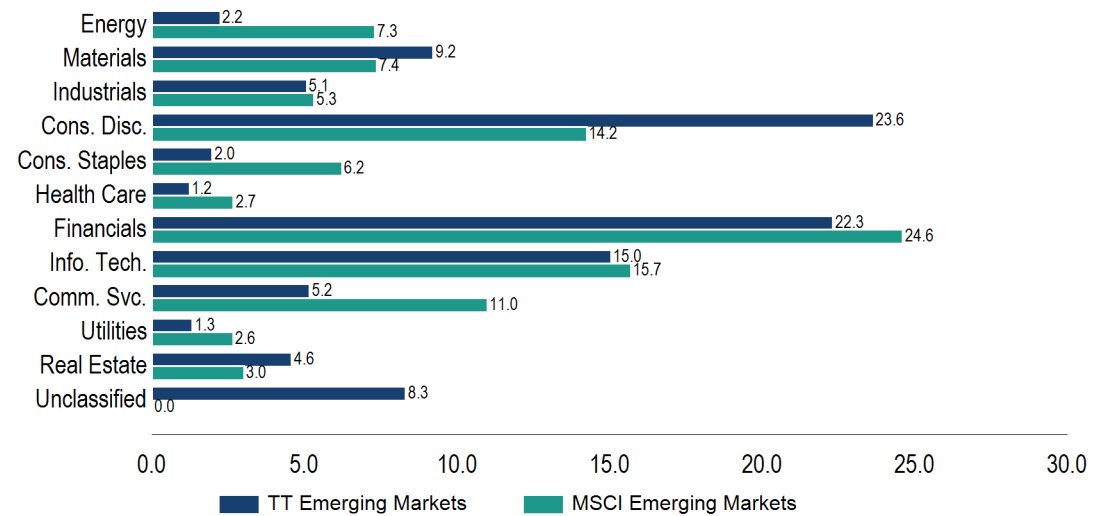
Characteristics

	Portfolio	MSCI Emerging Markets
Number of Holdings	66	1,371
Weighted Avg. Market Cap. (\$B)	91.32	106.20
Median Market Cap. (\$B)	9.58	5.93
Price To Earnings	14.25	14.97
Price To Book	2.57	2.57
Price To Sales	1.37	1.28
Return on Equity (%)	18.26	16.97
Yield (%)	2.16	2.69
Beta		1.00

Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	21.4%	0.0%
Emerging*	74.7%	100.0%
Frontier**	0.8%	0.0%
Top 10 Largest Countries		
India*	14.6%	8.7%
Korea*	13.7%	11.8%
Brazil*	12.7%	7.5%
China*	12.6%	33.8%
Hong Kong	7.4%	0.0%
Taiwan*	6.1%	11.8%
United States	5.4%	0.0%
Russia*	4.8%	3.9%
South Africa*	4.4%	4.8%
Netherlands	3.7%	0.0%
Total-Top 10 Largest Countries	86.0%	82.4%

Sector Allocation (%) vs MSCI Emerging Markets



Top Contributors

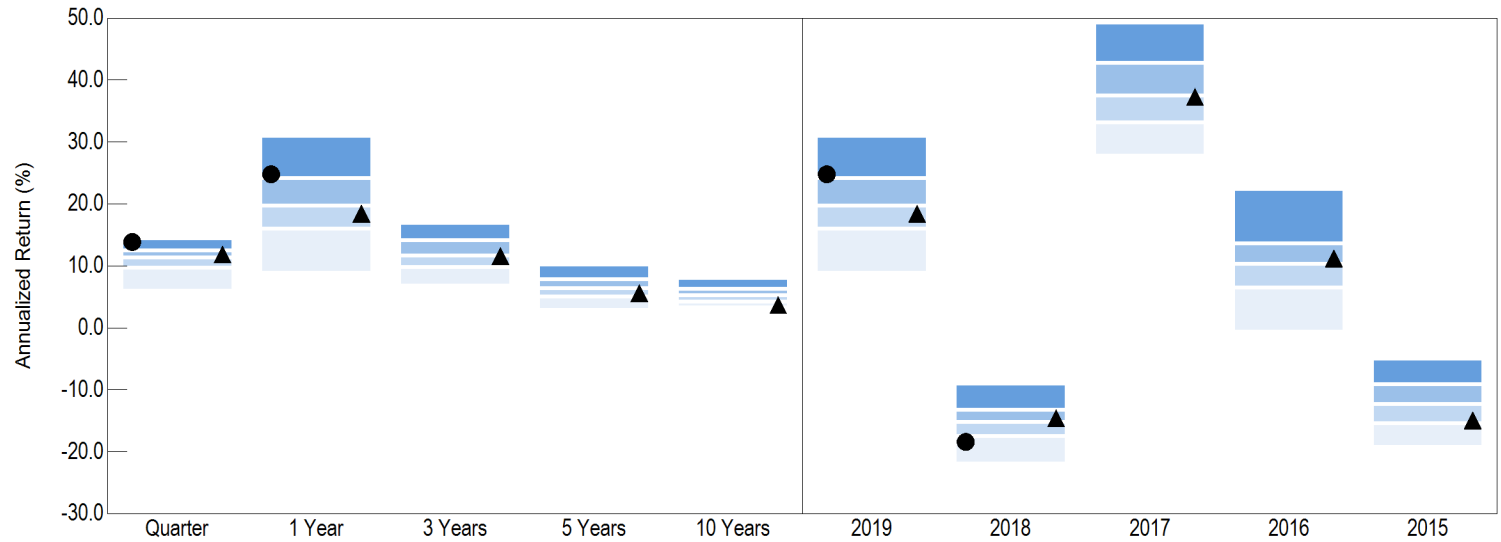
	End Weight	Return	Contribution
ALIBABA GROUP HOLDING ADR 1:8	7.37	26.83	1.98
SAMSUNG ELTN.PREF.	6.27	18.88	1.18
TAIWAN SEMICON.MNFG.	2.80	26.88	0.75
ESTACIO PARTICIPACOES ON	1.81	36.32	0.66
ICICI BANK	2.73	23.37	0.64
TENCENT HOLDINGS	3.64	14.44	0.53
LUKOIL OAO SPN.ADR 1:1	2.22	23.03	0.51
GUANGZHOU AUTOMOBILE GP. 'H'	1.63	30.12	0.49
BANCO DO BRASIL ON	2.22	21.61	0.48
HANSOL CHEMICAL	1.23	37.74	0.46

Bottom Contributors

	End Weight	Return	Contribution
LARSEN & TOUBRO	1.47	-12.57	-0.19
OCI	1.35	-10.87	-0.15
FUTURE RETAIL	0.97	-10.90	-0.11
PKO BANK	1.45	-7.23	-0.10
ULTRATECH CEMENT	1.27	-7.47	-0.09
AYALA LAND	0.69	-5.31	-0.04
TCI	0.60	-5.61	-0.03
ARVIND FASHIONS	0.19	-10.24	-0.02
CEMEX ADR 1:10	0.72	-2.30	-0.02
PTRO.BRAO.ADR 1:2	0.00	15.91	0.00

Unclassified sector allocation includes cash allocations.

TT Emerging Markets vs. eV Emg Mkts Equity Gross Universe



	Return (Rank)															
5th Percentile	14.4	31.0	16.9	10.1	8.0	31.0	-9.0	49.2	22.4	-5.0						
25th Percentile	12.5	24.2	14.2	7.9	6.4	24.2	-13.2	42.8	13.7	-9.0						
Median	11.5	19.8	11.7	6.5	5.3	19.8	-15.2	37.6	10.4	-12.2						
75th Percentile	9.8	16.1	9.9	5.2	4.3	16.1	-17.4	33.2	6.6	-15.3						
95th Percentile	6.0	8.9	6.9	3.0	3.3	8.9	-21.8	27.8	-0.6	-19.2						
# of Portfolios	375	373	347	304	150	373	355	343	337	273						
● TT Emerging Markets	13.9 (9)	24.8 (23)	-- (--)	-- (--)	-- (--)	24.8 (23)	-18.4 (83)	-- (--)	-- (--)	-- (--)						
▲ MSCI Emerging Markets	11.8 (40)	18.4 (62)	11.6 (53)	5.6 (67)	3.7 (90)	18.4 (62)	-14.6 (43)	37.3 (53)	11.2 (45)	-14.9 (70)						

Global Equity Managers

Artisan Partners Manager Portfolio Overview

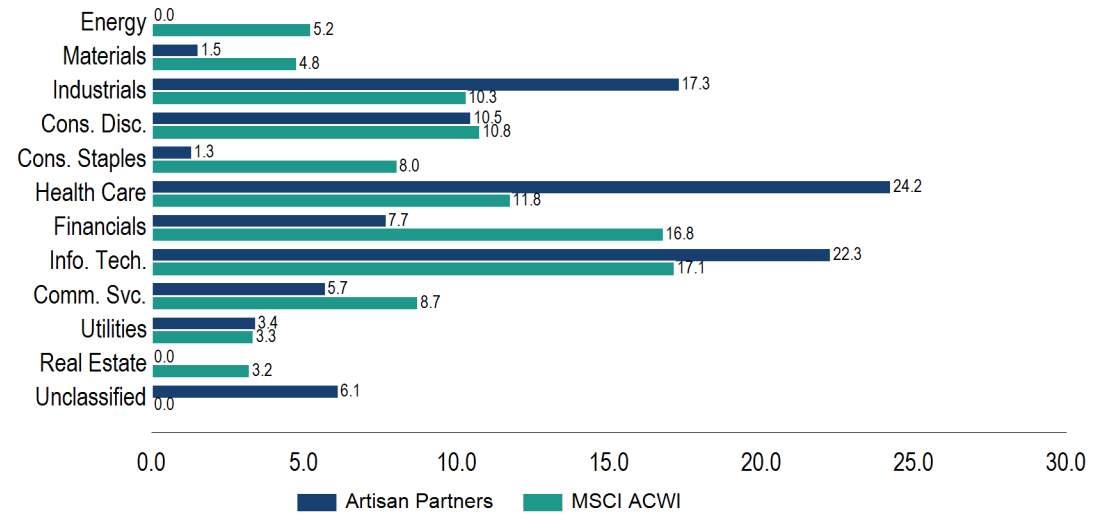
Period Ending: December 31, 2019

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	3,017
Weighted Avg. Market Cap. (\$B)	125.91	176.60
Median Market Cap. (\$B)	35.91	9.96
Price To Earnings	32.84	19.43
Price To Book	5.69	3.08
Price To Sales	3.04	1.56
Return on Equity (%)	20.73	19.36
Yield (%)	0.92	2.36
Beta	1.19	1.00

Sector Allocation (%) vs MSCI ACWI



Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	92.5%	87.9%
Emerging*	1.4%	12.1%
Top 10 Largest Countries		
United States	56.4%	55.7%
United Kingdom	10.8%	4.8%
Denmark	6.4%	0.5%
Cash	6.1%	0.0%
Hong Kong	5.7%	1.0%
Switzerland	3.5%	2.7%
Japan	3.2%	7.2%
Spain	2.4%	0.8%
Netherlands	2.3%	1.2%
Germany	1.9%	2.5%
Total-Top 10 Largest Countries	98.6%	76.5%

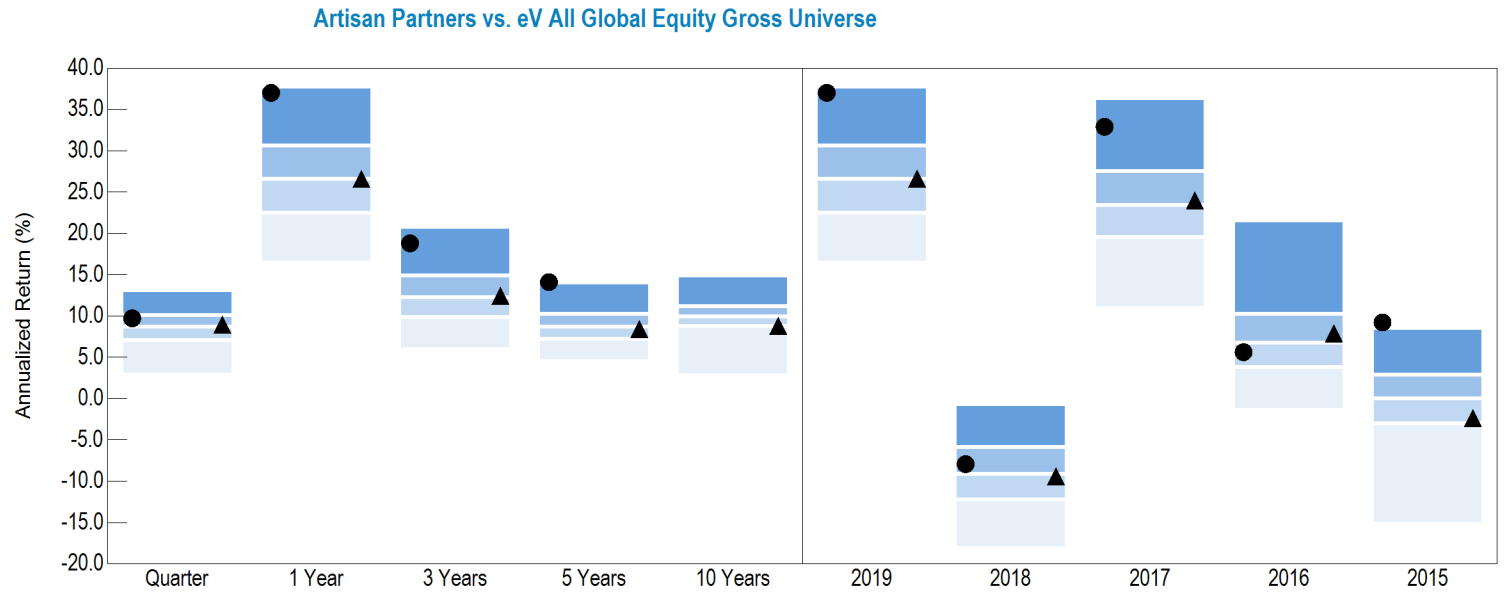
Top Contributors

	Avg Wgt	Return	Contribution
ADVANCED MICRO DEVICES	2.29	58.19	1.33
IHS MARKIT	6.36	12.66	0.81
BANK OF AMERICA	3.50	21.40	0.75
TECHTRONIC INDS.	3.88	17.21	0.67
VESTAS WINDSYSTEMS	2.08	30.23	0.63
MICROSOFT	3.84	13.82	0.53
ANTHEM	1.89	26.14	0.49
CERIDIAN HCM HOLDING	1.15	37.49	0.43
LONDON STOCK EX.GROUP	2.90	14.00	0.41
TENCENT HOLDINGS	2.57	14.44	0.37

Bottom Contributors

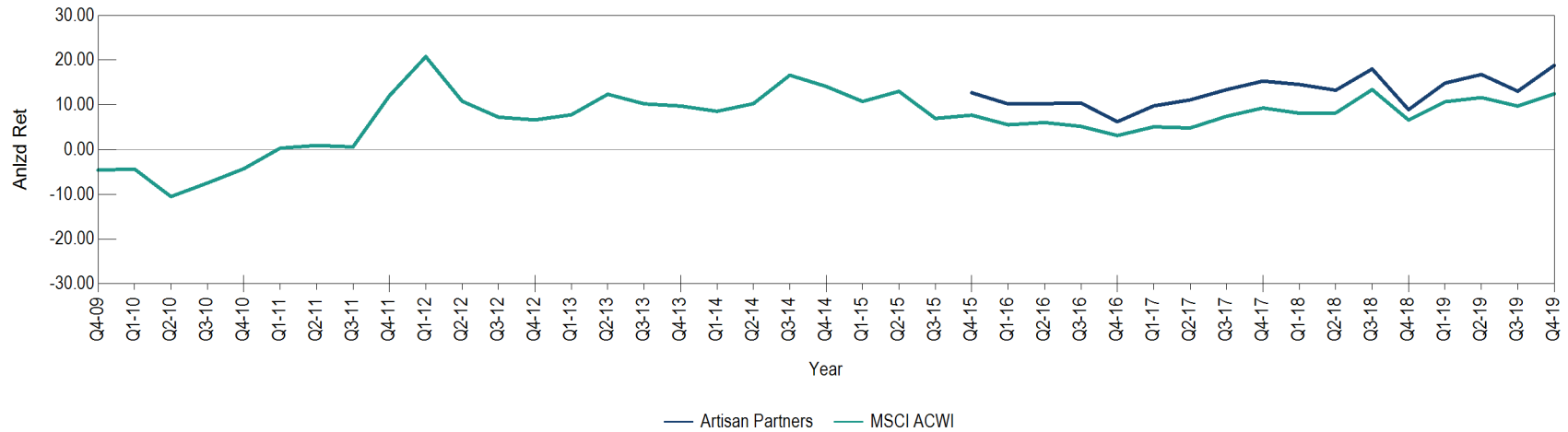
	Avg Wgt	Return	Contribution
PAGSEGURO DIGITAL A	1.76	-26.24	-0.46
ARISTA NETWORKS	2.10	-14.87	-0.31
L3HARRIS TECHNOLOGIES	3.54	-4.80	-0.17
TREASURY WINE ESTATES	1.47	-8.85	-0.13
VEEVA SYSTEMS CL.A	1.55	-7.88	-0.12
PROGRESSIVE OHIO	1.56	-6.17	-0.10
FEVERTREE DRINKS	1.34	-7.14	-0.10
TEMENOS N	1.30	-5.54	-0.07
ZOOM VIDEO COMMUNICATIONS A	0.63	-10.71	-0.07
ATLASSIAN 'A'	1.06	-4.07	-0.04

Unclassified sector allocation includes cash allocations.

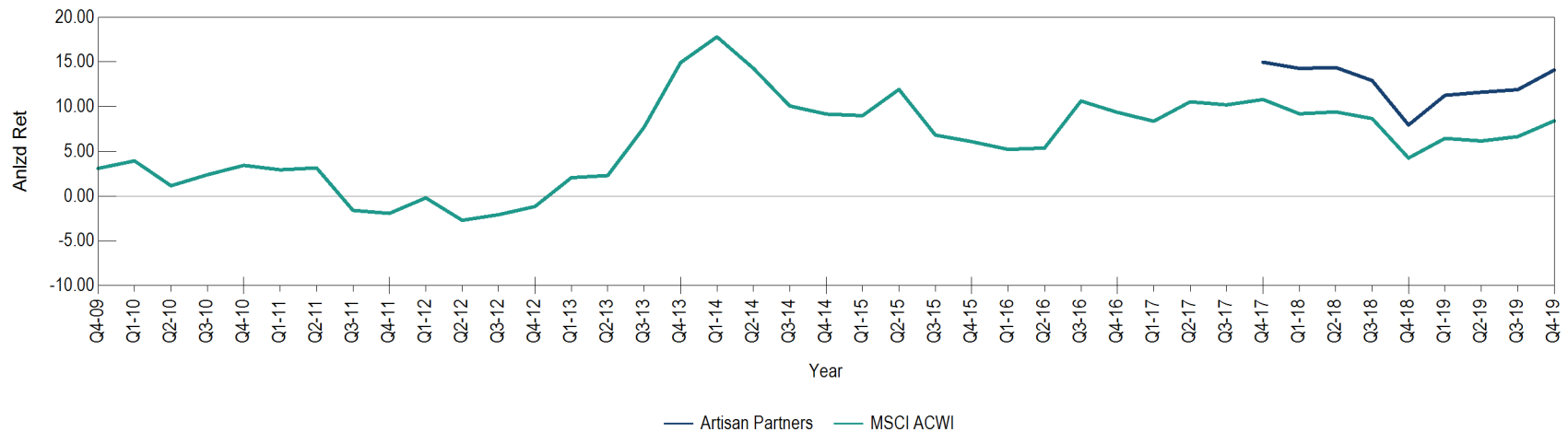


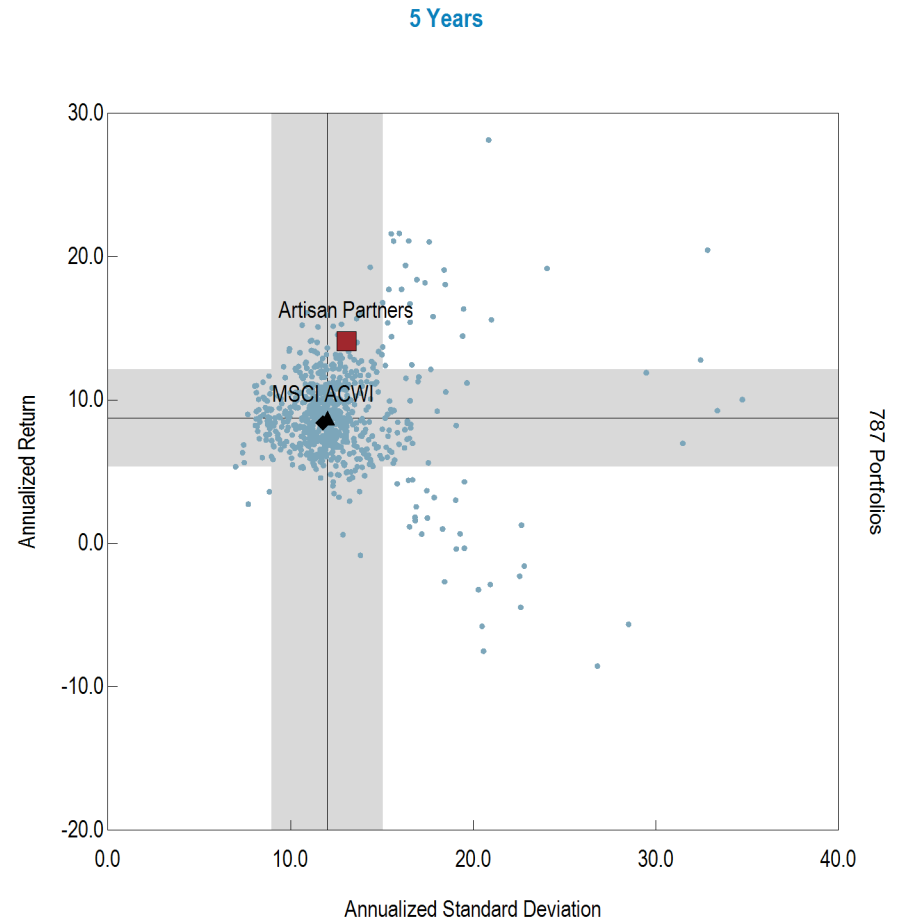
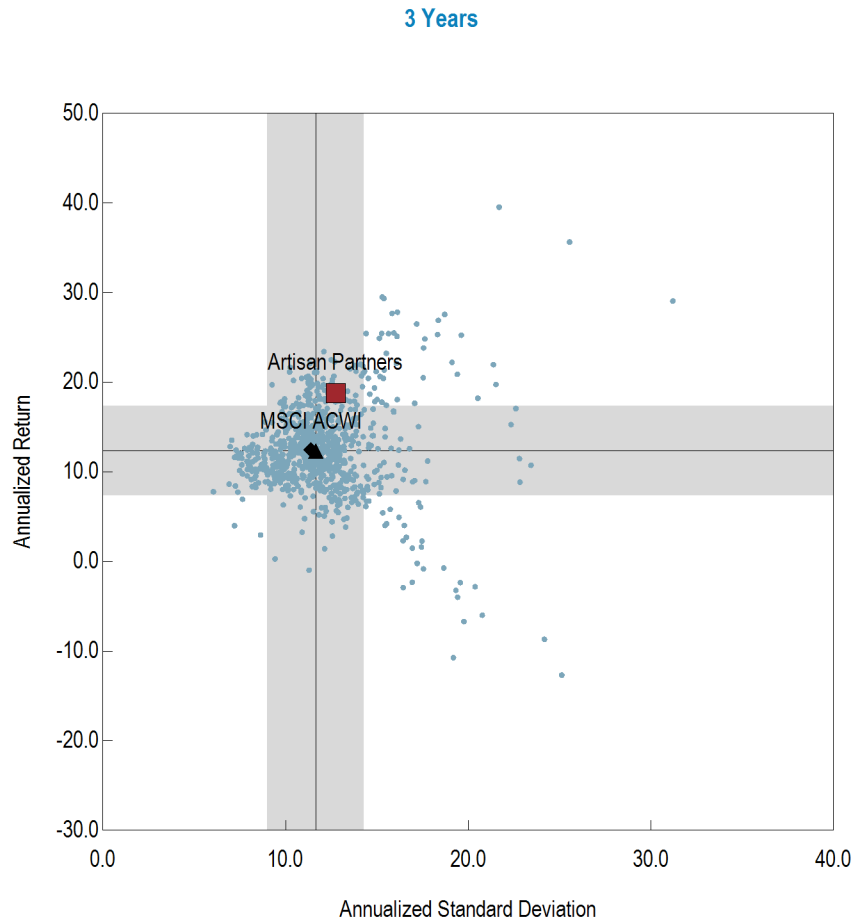
	Return (Rank)									
	Quarter	1 Year	3 Years	5 Years	10 Years	2019	2018	2017	2016	2015
5th Percentile	13.1	37.7	20.7	14.0	14.8	37.7	-0.7	36.3	21.5	8.5
25th Percentile	10.2	30.7	14.9	10.3	11.2	30.7	-5.8	27.6	10.3	3.0
Median	8.7	26.6	12.3	8.8	10.0	26.6	-9.1	23.5	6.8	0.1
75th Percentile	7.1	22.5	9.9	7.3	8.8	22.5	-12.2	19.6	3.9	-2.9
95th Percentile	2.9	16.5	6.0	4.6	2.9	16.5	-18.1	11.0	-1.4	-15.1
# of Portfolios	957	957	898	787	497	957	920	880	842	692
● Artisan Partners	9.7 (31)	37.0 (7)	18.8 (10)	14.1 (5)	-- (--)	37.0 (7)	-7.9 (40)	32.9 (11)	5.6 (61)	9.2 (4)
▲ MSCI ACWI	9.0 (46)	26.6 (51)	12.4 (49)	8.4 (57)	8.8 (78)	26.6 (51)	-9.4 (53)	24.0 (47)	7.9 (42)	-2.4 (73)

Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)





	3 Years		
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Artisan Partners	18.8%	12.7%	1.3
MSCI ACWI	12.4%	11.4%	0.9
eV All Global Equity Gross Median	12.3%	11.7%	1.0

	5 Years		
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Artisan Partners	14.1%	13.1%	1.0
MSCI ACWI	8.4%	11.8%	0.6
eV All Global Equity Gross Median	8.8%	12.0%	0.7

First Eagle Manager Portfolio Overview

Period Ending: December 31, 2019

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

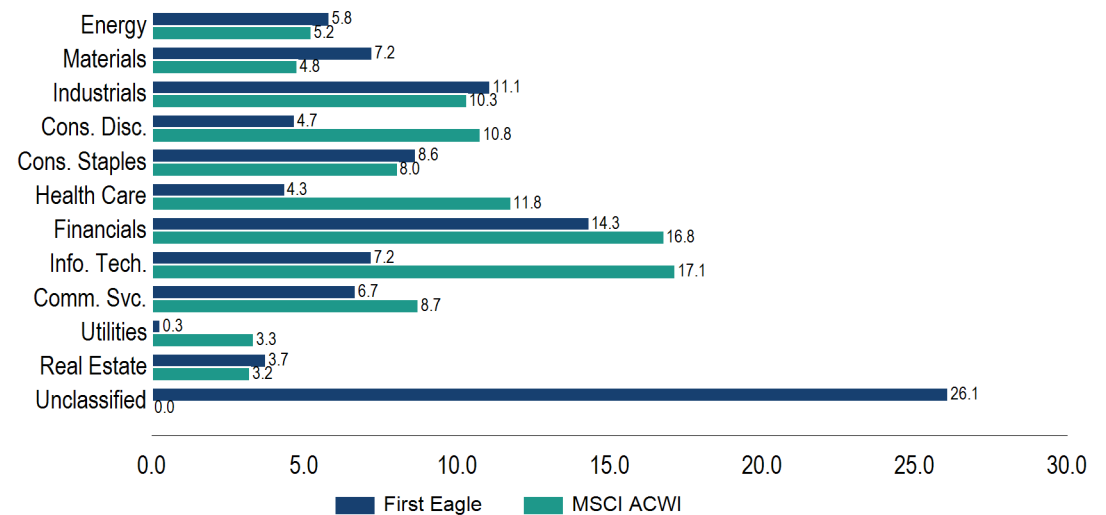
Characteristics

	Portfolio	MSCI ACWI
Number of Holdings	139	3,017
Weighted Avg. Market Cap. (\$B)	80.35	176.60
Median Market Cap. (\$B)	22.32	9.96
Price To Earnings	17.41	19.43
Price To Book	2.37	3.08
Price To Sales	1.49	1.56
Return on Equity (%)	14.84	19.36
Yield (%)	2.27	2.36
Beta	0.68	1.00

Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	80.1%	87.9%
Emerging*	4.1%	12.1%
Top 10 Largest Countries		
United States	46.2%	55.7%
Cash	15.9%	0.0%
Japan	11.4%	7.2%
France	5.3%	3.3%
United Kingdom	5.1%	4.8%
Canada	3.5%	3.0%
Korea*	2.0%	1.4%
Switzerland	1.9%	2.7%
Singapore	1.5%	0.4%
Sweden	1.1%	0.8%
Total-Top 10 Largest Countries	93.8%	79.3%

Sector Allocation (%) vs MSCI ACWI



Top Contributors

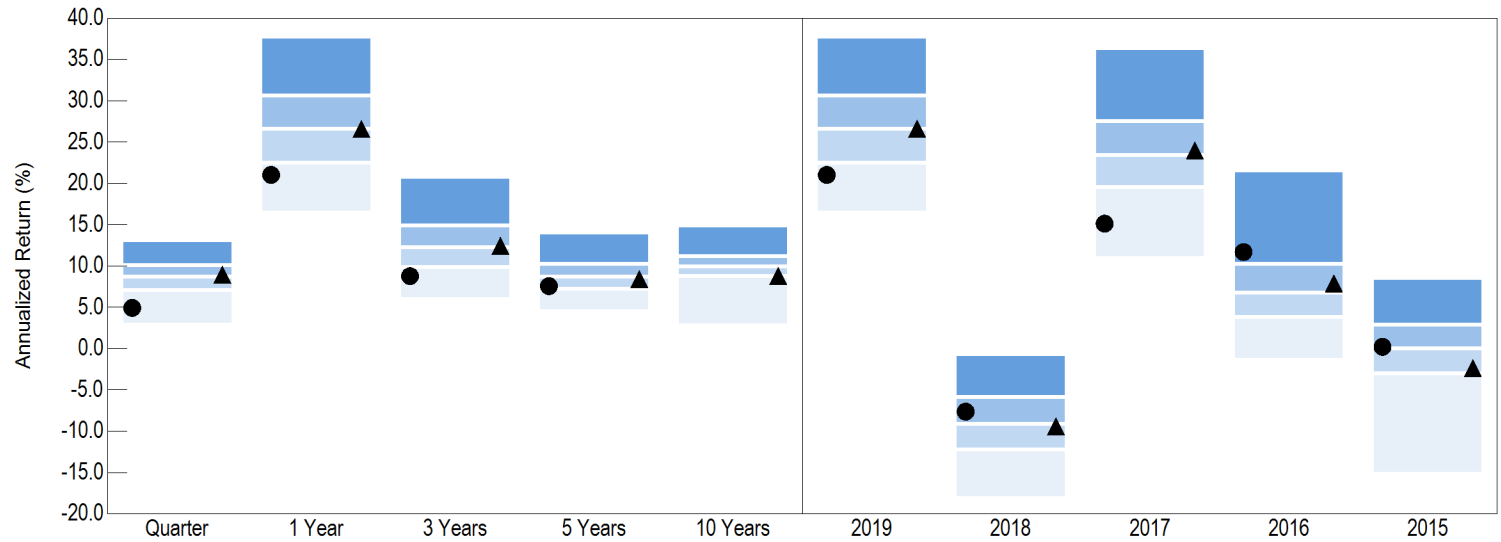
	Avg Wgt	Return	Contribution
BRITISH AMERICAN TOBACCO	0.48	19.44	0.09
SCHLUMBERGER	0.47	19.33	0.09
SPDR GOLD SHARES	3.03	2.90	0.09
KDDI	0.51	14.51	0.07
LLOYDS BANKING GROUP	0.25	24.15	0.06
PHILIP MORRIS INTL.	0.41	13.59	0.06
WEYERHAEUSER	0.52	10.29	0.05
BERKELEY GROUP HDG.(THE)	0.20	24.99	0.05
TIFFANY & CO	0.11	44.91	0.05
BANK OF NEW YORK MELLON	0.39	12.07	0.05

Bottom Contributors

	End Weight	Return	Contribution
DANONE	1.34	-5.85	-0.08
TERADATA	0.56	-13.65	-0.08
ORACLE	2.26	-3.30	-0.07
SOMPO HOLDINGS	1.24	-5.33	-0.07
TECHNIPFMC	0.61	-10.59	-0.06
CH ROBINSON WWD.	0.85	-7.15	-0.06
COLGATE-PALM.	1.01	-5.75	-0.06
KT & G	0.68	-8.04	-0.05
NEWCREST MINING	0.38	-9.27	-0.04
NUTRIEN (NYS)	1.08	-3.04	-0.03

Unclassified sector allocation includes cash allocations and Gold allocations (8.9% as of 12/31/2019).

First Eagle vs. eV All Global Equity Gross Universe

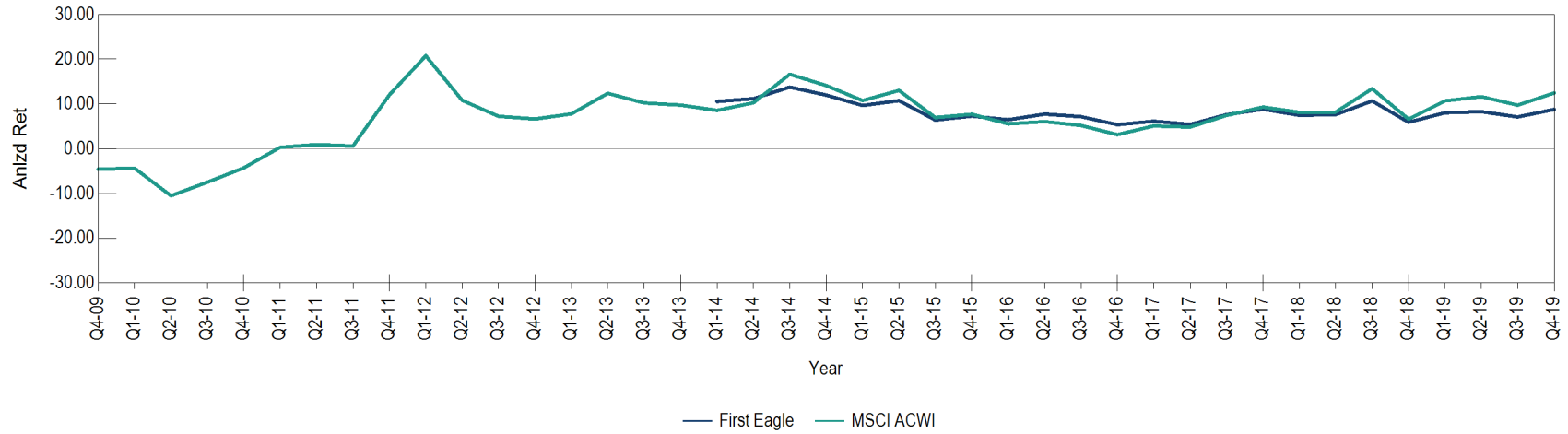


	Quarter	1 Year	3 Years	5 Years	10 Years	2019	2018	2017	2016	2015
5th Percentile	13.1	37.7	20.7	14.0	14.8	37.7	-0.7	36.3	21.5	8.5
25th Percentile	10.2	30.7	14.9	10.3	11.2	30.7	-5.8	27.6	10.3	3.0
Median	8.7	26.6	12.3	8.8	10.0	26.6	-9.1	23.5	6.8	0.1
75th Percentile	7.1	22.5	9.9	7.3	8.8	22.5	-12.2	19.6	3.9	-2.9
95th Percentile	2.9	16.5	6.0	4.6	2.9	16.5	-18.1	11.0	-1.4	-15.1
# of Portfolios	957	957	898	787	497	957	920	880	842	692
● First Eagle	4.9 (89)	21.0 (82)	8.8 (85)	7.6 (71)	-- (--)	21.0 (82)	-7.6 (38)	15.1 (89)	11.7 (19)	0.2 (49)
▲ MSCI ACWI	9.0 (46)	26.6 (51)	12.4 (49)	8.4 (57)	8.8 (78)	26.6 (51)	-9.4 (53)	24.0 (47)	7.9 (42)	-2.4 (73)

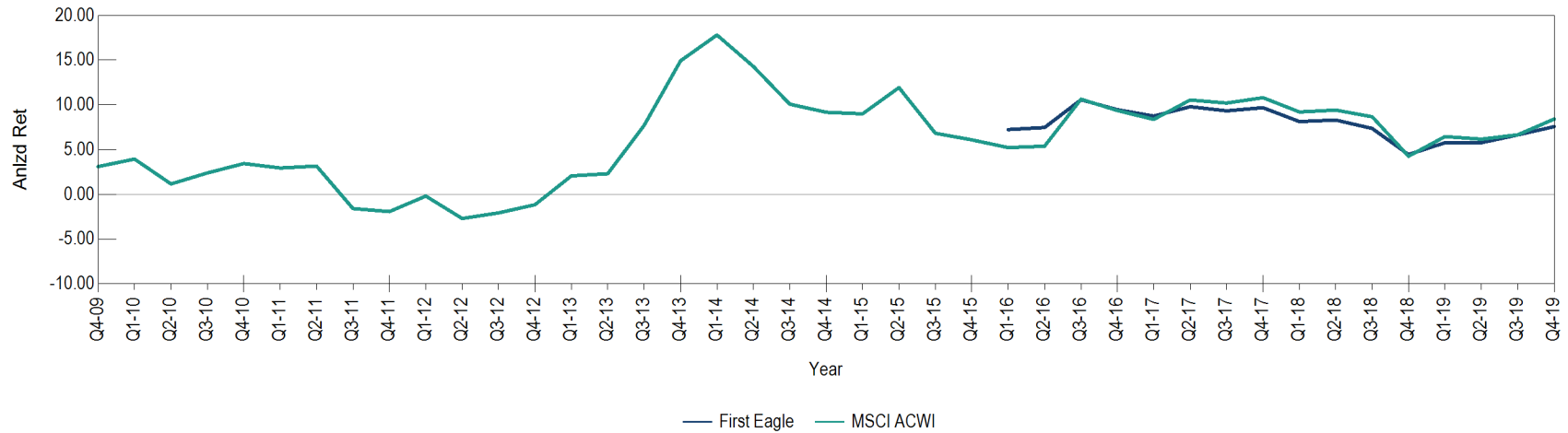
First Eagle
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees)

Period Ending: December 31, 2019

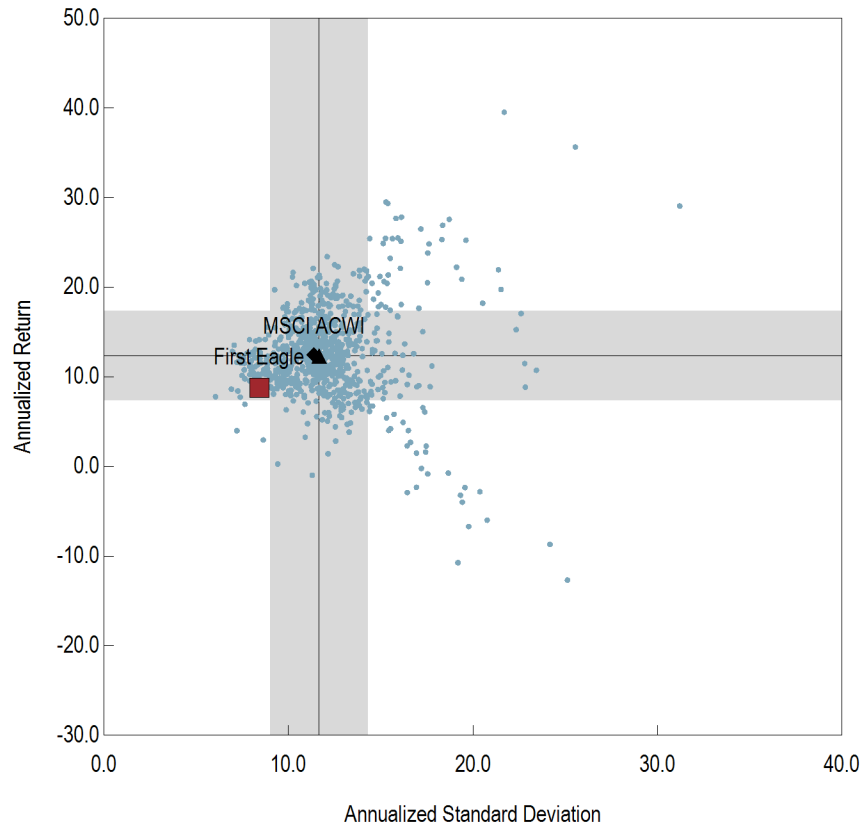
Rolling 3 Year Annualized Return (%)



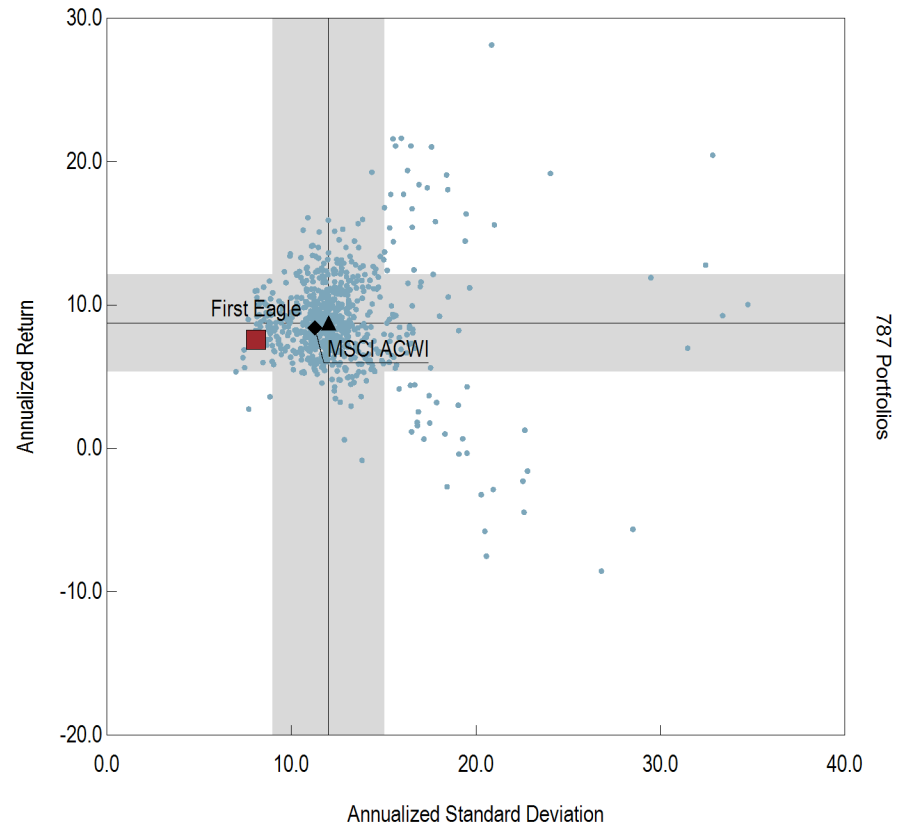
Rolling 5 Year Annualized Return (%)



3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
First Eagle	8.8%	8.4%	0.8
MSCI ACWI	12.4%	11.4%	0.9
eV All Global Equity Gross Median	12.3%	11.7%	1.0

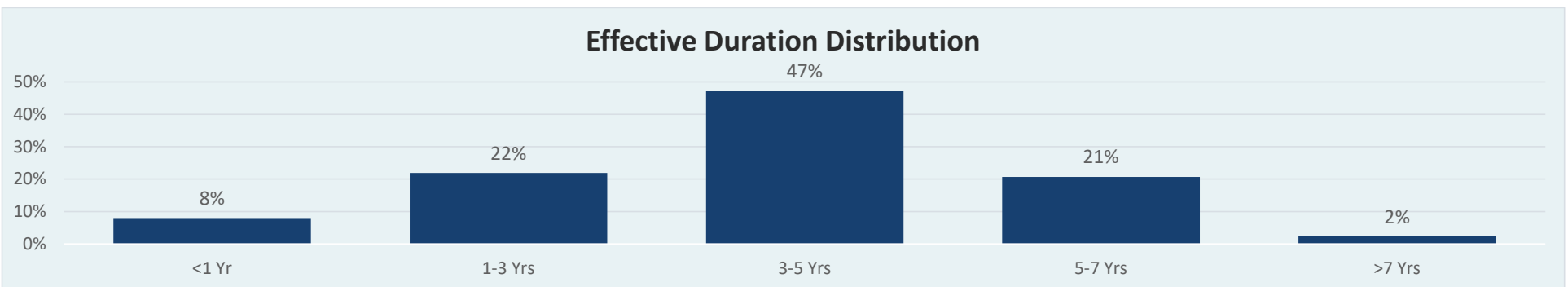
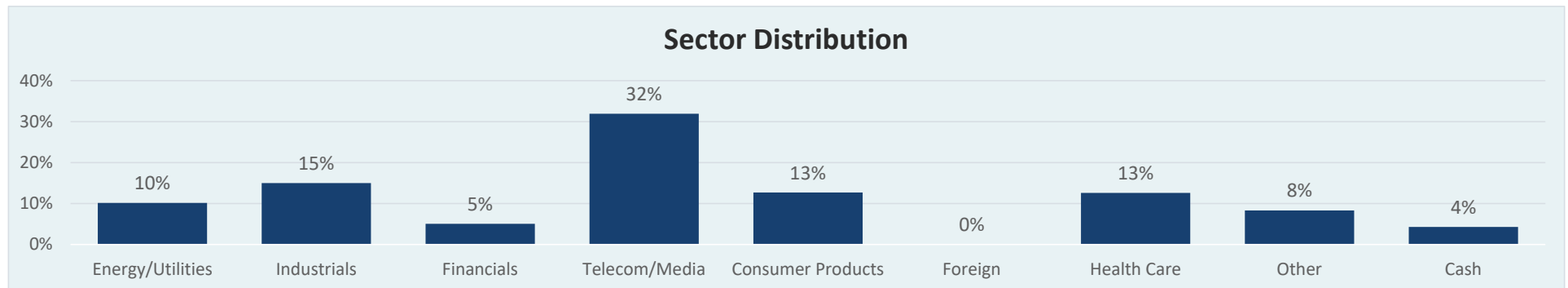
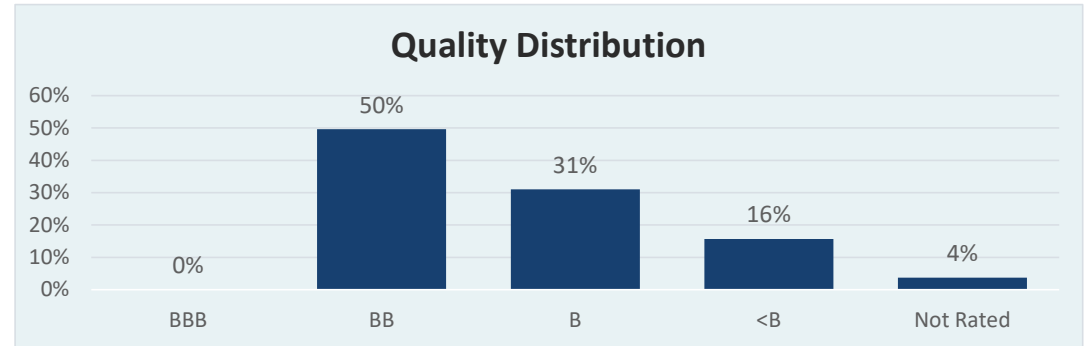
5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
First Eagle	7.6%	8.6%	0.8
MSCI ACWI	8.4%	11.8%	0.6
eV All Global Equity Gross Median	8.8%	12.0%	0.7

High Yield Managers

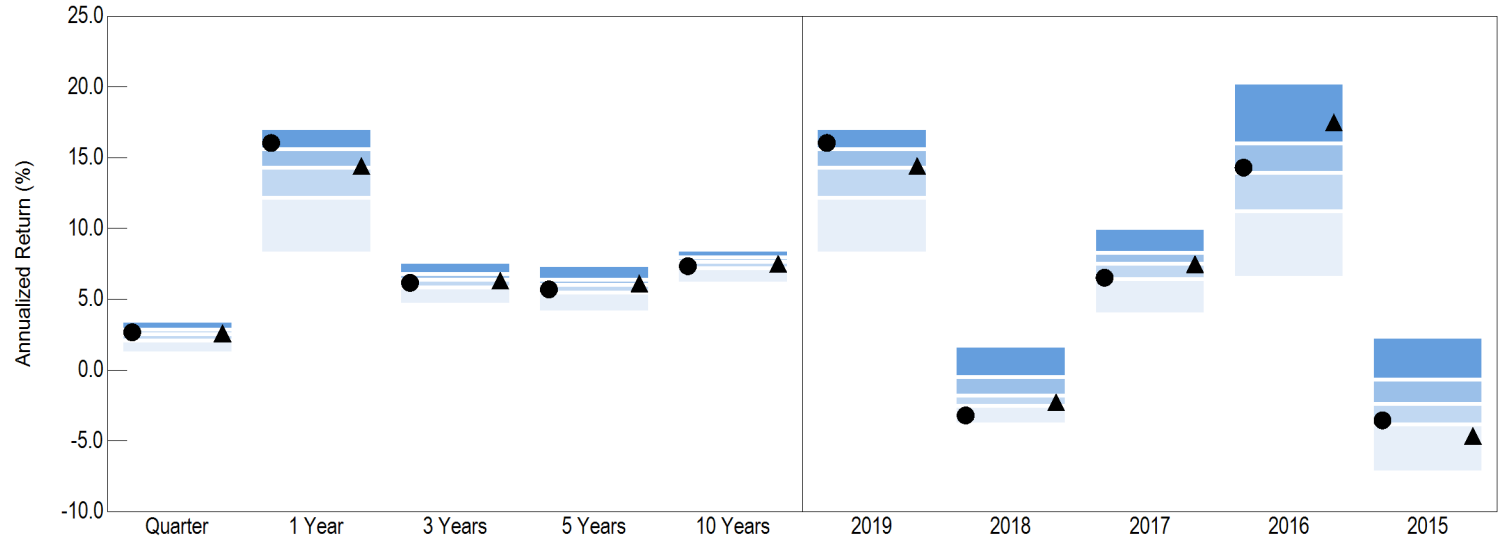
Domestic high yield fixed income portfolio with a focus on security selection. Primary personnel include Douglas Forsyth, Justin Kass, William Stickney, and Michael Yee.

	Allianz	ICE BofAML HY Master II
Effective Duration	3.20	3.30
Yield to Maturity	5.30	6.00
Average Quality	B1	B1
Average Coupon	6.4%	6.3%



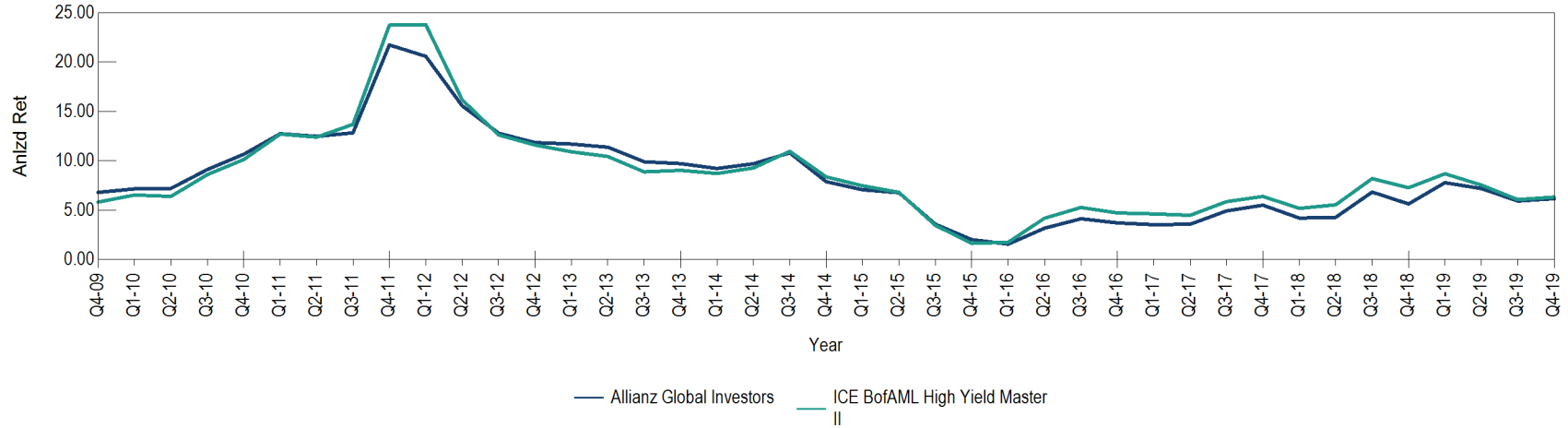
Quality distribution excludes cash.

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

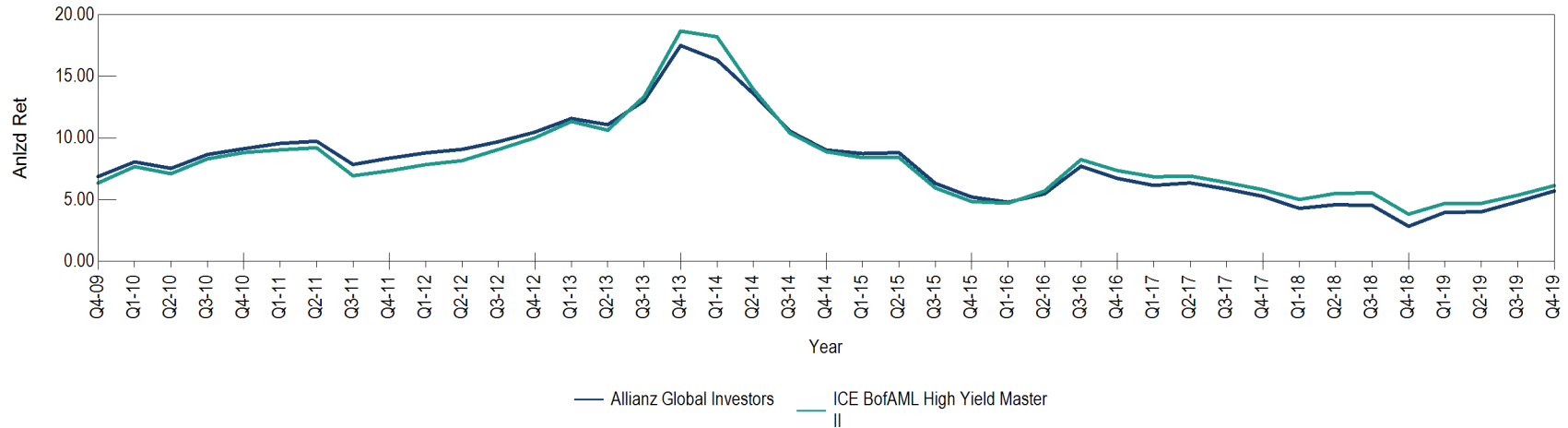


	Return (Rank)									
	Quarter	1 Year	3 Years	5 Years	10 Years	2019	2018	2017	2016	2015
5th Percentile	3.5	17.1	7.6	7.4	8.5	17.1	1.7	10.0	20.3	2.3
25th Percentile	2.9	15.6	6.8	6.4	8.0	15.6	-0.5	8.3	16.0	-0.7
Median	2.6	14.3	6.4	6.1	7.7	14.3	-1.8	7.5	14.0	-2.4
75th Percentile	2.1	12.2	5.8	5.5	7.2	12.2	-2.5	6.5	11.3	-3.8
95th Percentile	1.2	8.3	4.6	4.1	6.2	8.3	-3.8	4.0	6.6	-7.2
# of Portfolios	203	203	192	180	124	203	210	198	183	155
● Allianz Global Investors	2.7 (37)	16.0 (15)	6.2 (66)	5.7 (68)	7.3 (70)	16.0 (15)	-3.2 (88)	6.5 (74)	14.3 (47)	-3.5 (68)
▲ ICE BofAML High Yield Master II	2.6 (45)	14.4 (48)	6.3 (56)	6.1 (43)	7.5 (58)	14.4 (48)	-2.3 (69)	7.5 (53)	17.5 (14)	-4.6 (83)

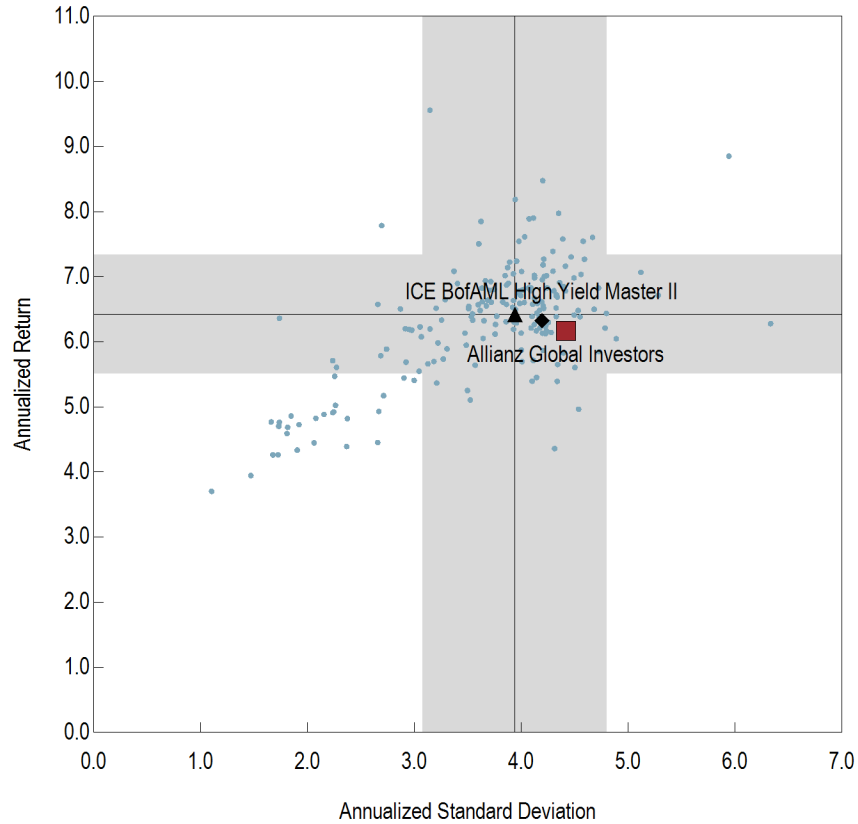
Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)

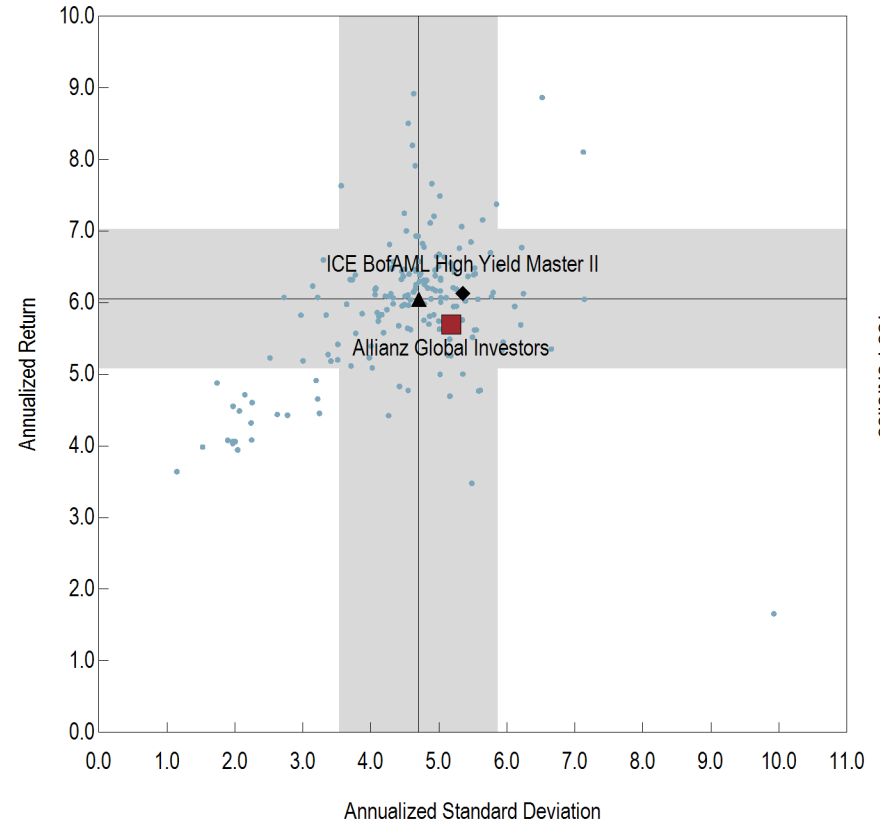


3 Years



192 Portfolios

5 Years



180 Portfolios

3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Allianz Global Investors	6.2%	4.4%	1.0
ICE BofAML High Yield Master II	6.3%	4.2%	1.1
eV US High Yield Fixed Inc Gross Median	6.4%	3.9%	1.3

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Allianz Global Investors	5.7%	5.2%	0.9
ICE BofAML High Yield Master II	6.1%	5.4%	0.9
eV US High Yield Fixed Inc Gross Median	6.1%	4.7%	1.1

Real Estate Managers

Adelante Manager Portfolio Overview

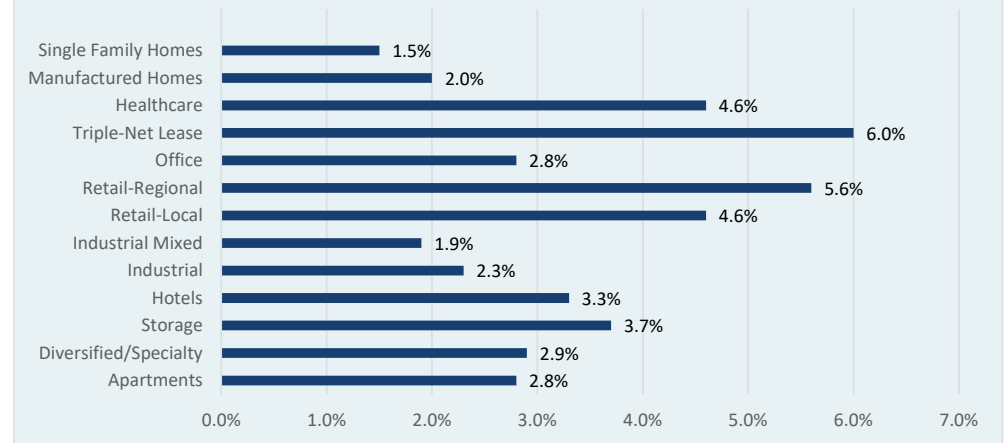
Period Ending: December 31, 2019

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

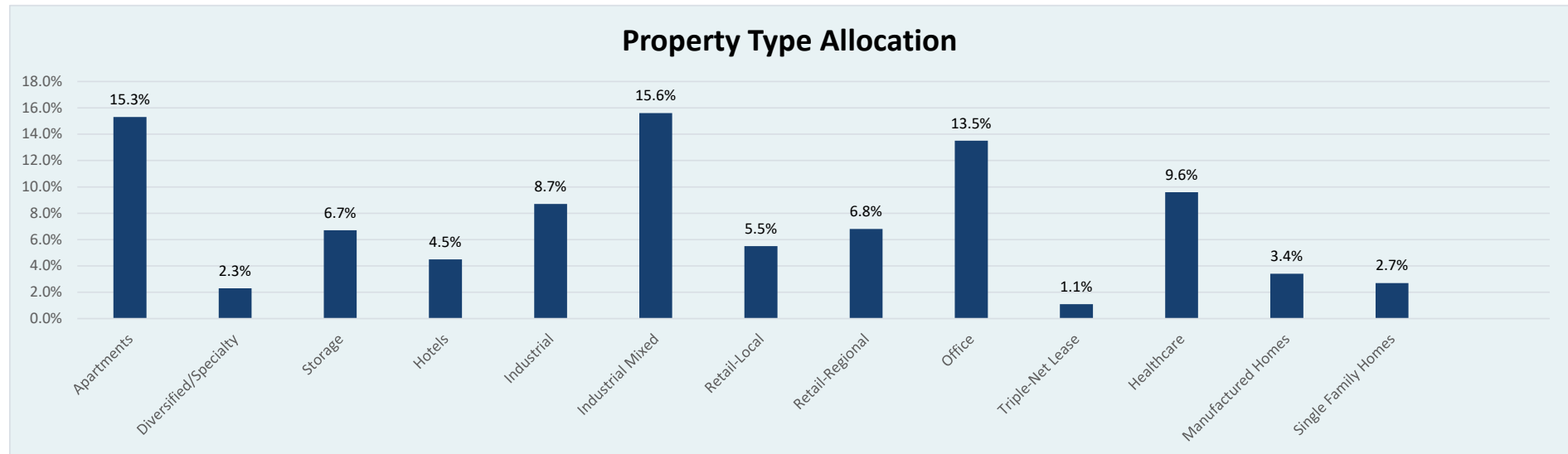
Top Five Holdings

Company	Property Type	Allocation
ProLogis Inc.	Industrial	7.2%
Simon Property Group, Inc.	Regional Retail	6.8%
Equinix Inc	Industrial Mixed	6.4%
Equity Residential	Apartments	5.4%
HCP Inc.	Healthcare	5.0%

Dividend Yield by Property Type



Property Type Allocation

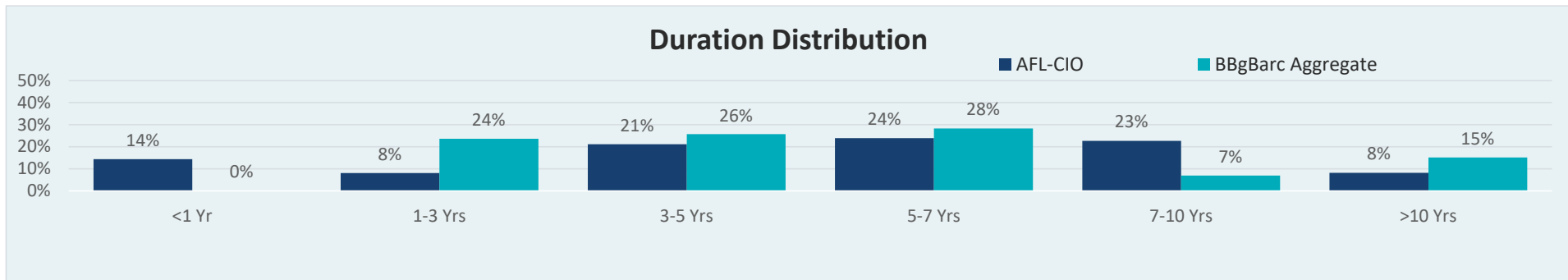
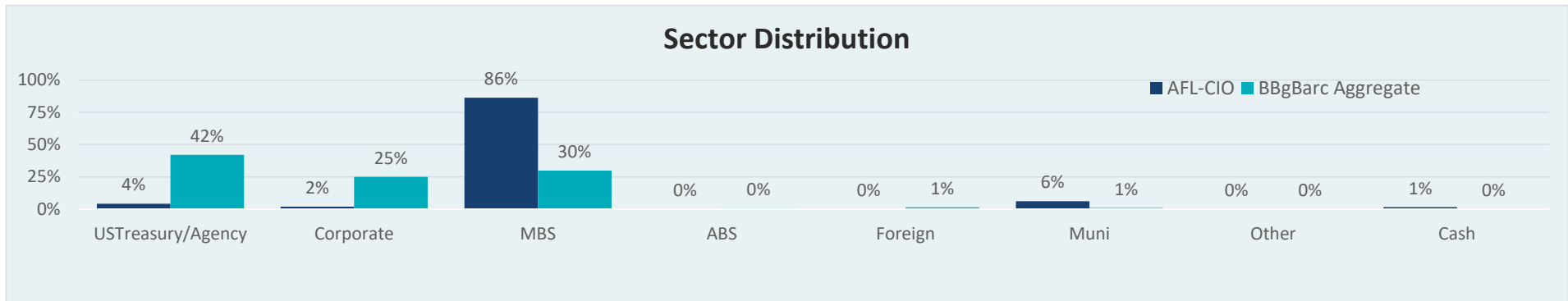
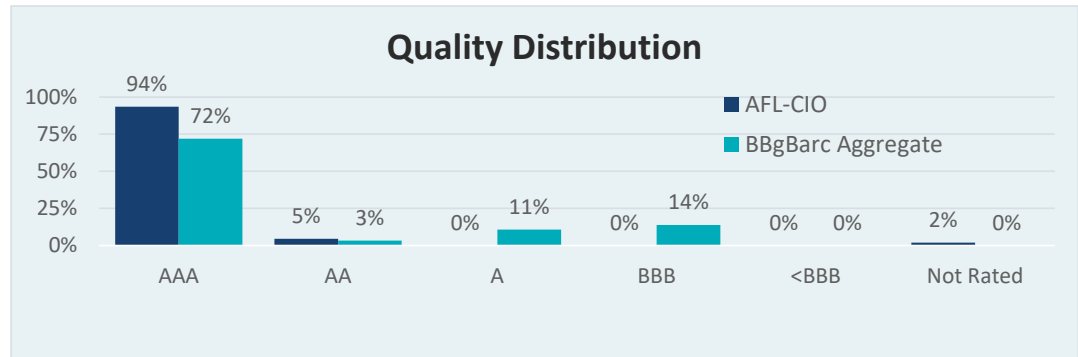


4.2% is allocated to Cash and Cash Equivalents.

Diversifying Fixed Income Managers

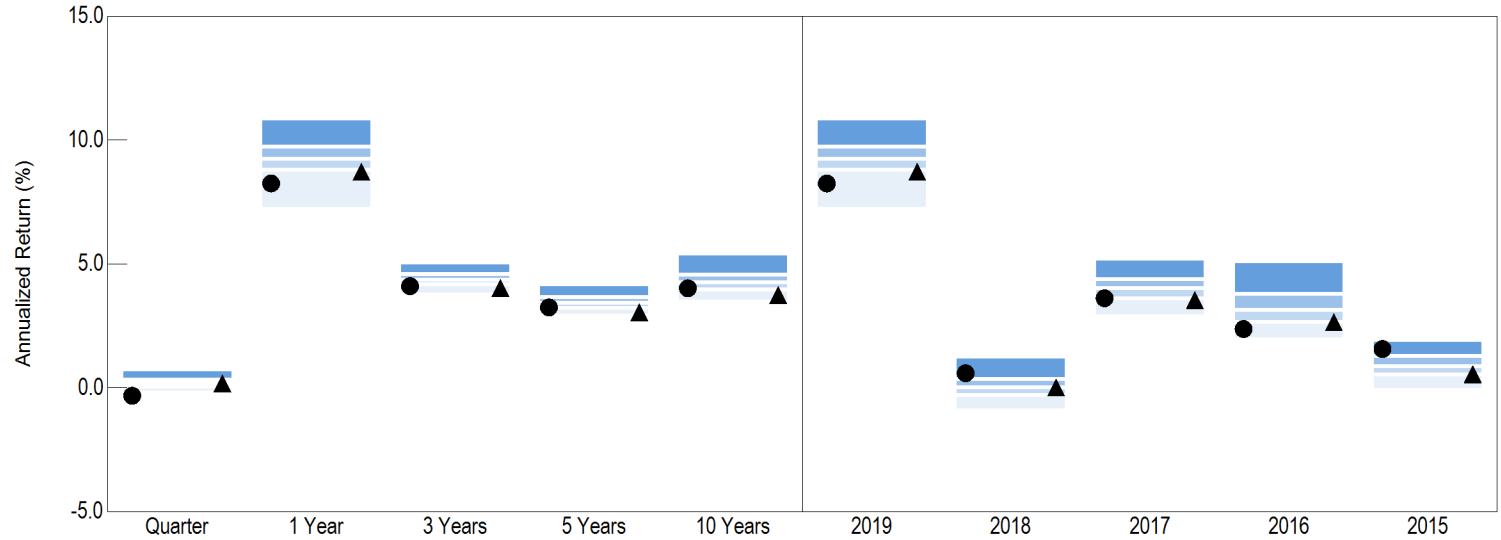
Domestic core fixed income portfolio with an exclusive focus on mortgage-related securities. Primary personnel include Stephen Coyle and Chang Su.

	AFL-CIO	BBgBarc Aggregate
Effective Duration	5.69	5.87
Yield to Maturity	3.10	2.32
Average Quality	AAA	AA/AA+
Average Coupon	3.2%	3.2%



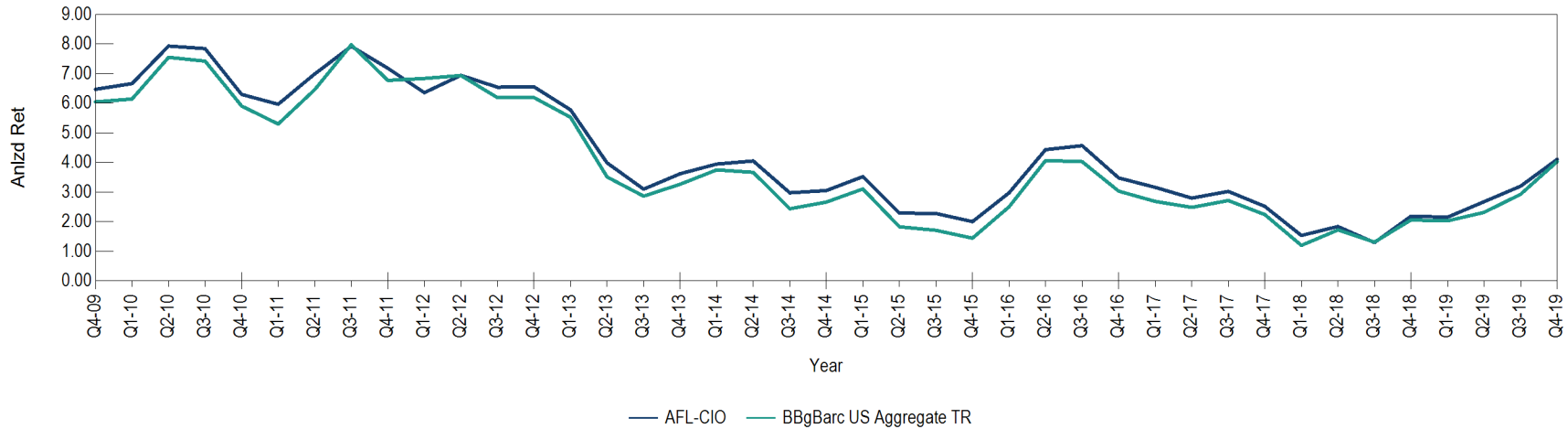
Duration and Quality distributions exclude cash.

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

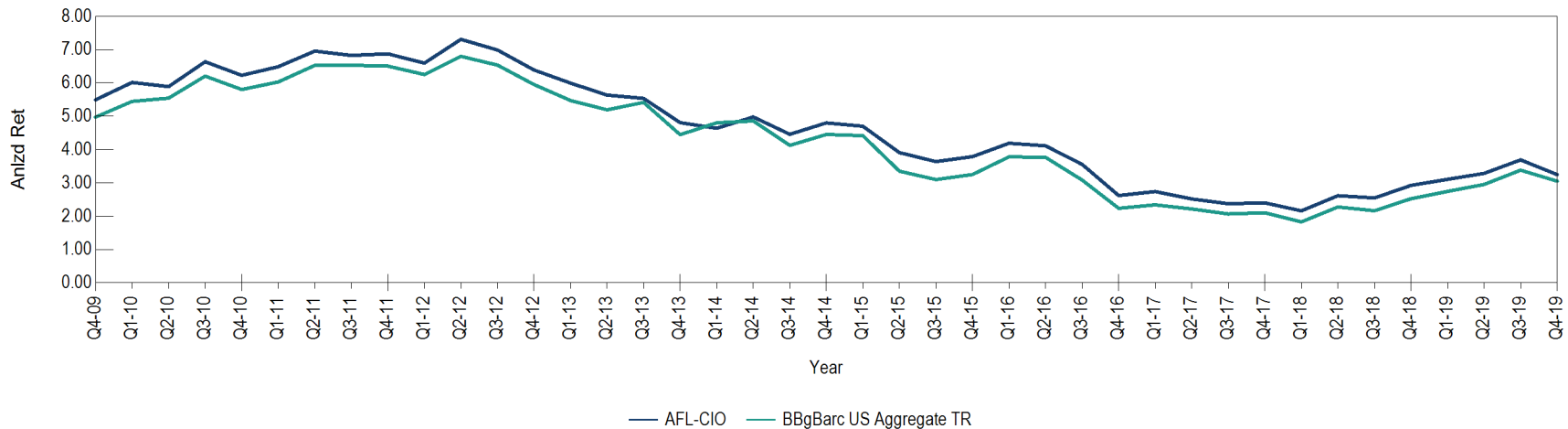


	Return (Rank)									
	Quarter	1 Year	3 Years	5 Years	10 Years	2019	2018	2017	2016	2015
5th Percentile	0.7	10.9	5.1	4.2	5.4	10.9	1.2	5.2	5.1	1.9
25th Percentile	0.3	9.8	4.6	3.7	4.6	9.8	0.4	4.4	3.8	1.3
Median	0.2	9.2	4.4	3.4	4.3	9.2	0.0	4.0	3.2	0.9
75th Percentile	0.1	8.8	4.2	3.2	4.0	8.8	-0.3	3.6	2.7	0.5
95th Percentile	-0.2	7.2	3.8	2.9	3.5	7.2	-0.9	2.9	2.0	-0.1
# of Portfolios	216	216	214	210	197	216	240	233	223	196
● AFL-CIO	-0.3 (98)	8.2 (90)	4.1 (81)	3.2 (74)	4.0 (74)	8.2 (90)	0.6 (16)	3.6 (76)	2.4 (87)	1.6 (15)
▲ BBgBarc US Aggregate TR	0.2 (58)	8.7 (78)	4.0 (85)	3.0 (90)	3.7 (91)	8.7 (78)	0.0 (54)	3.5 (79)	2.6 (77)	0.6 (75)

Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)

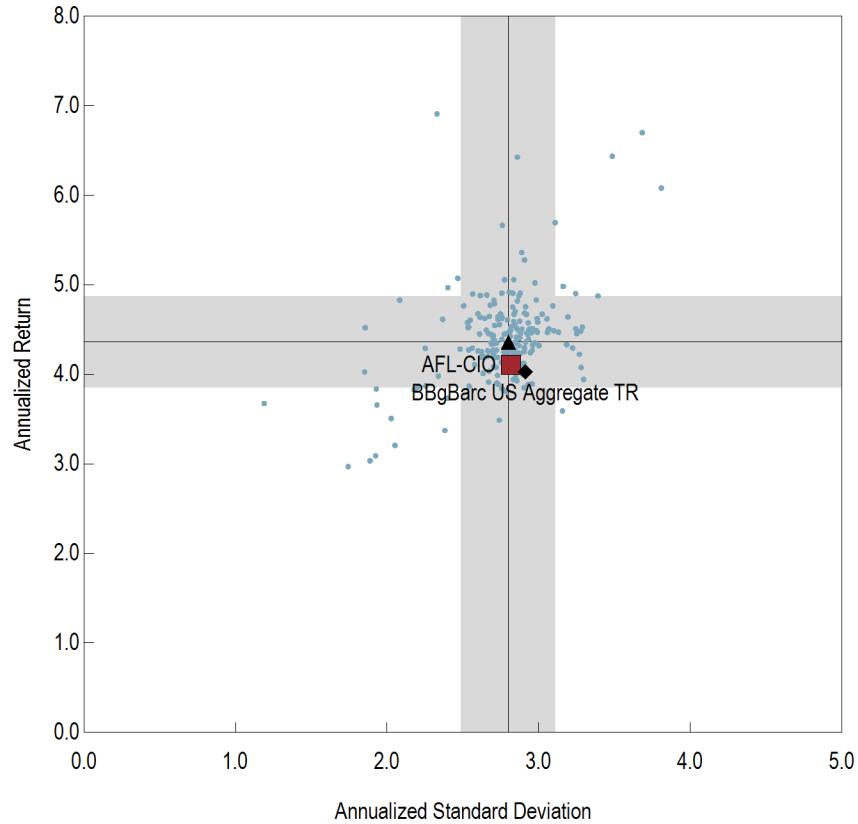


AFL-CIO

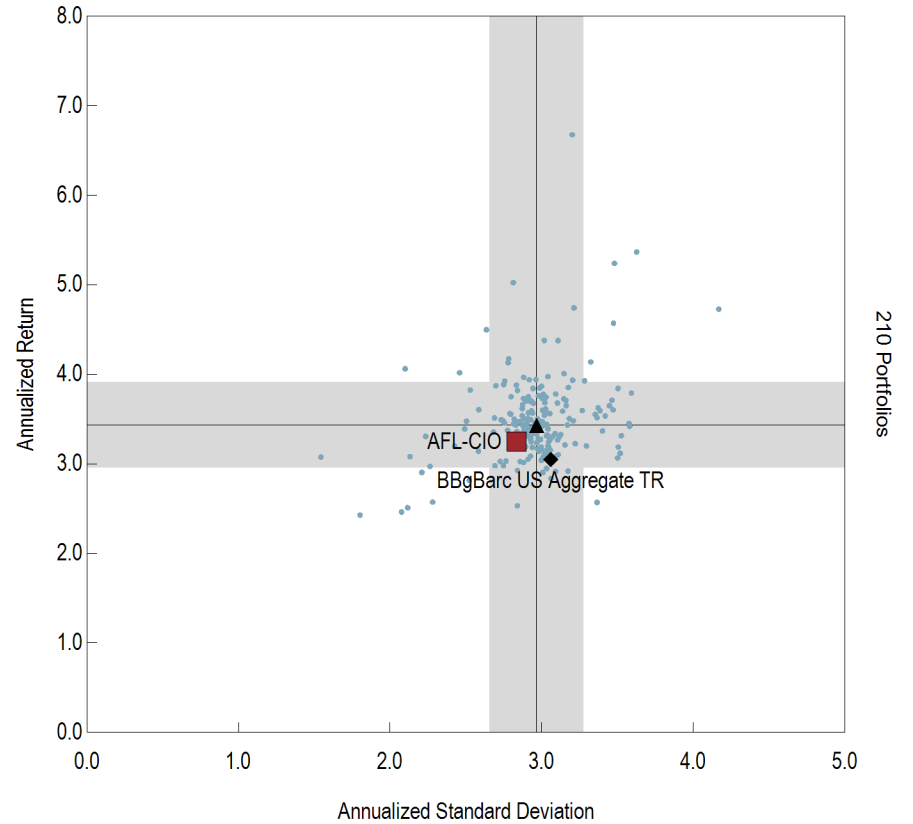
Risk vs. Return 3 & 5 Year (Gross of Fees)

Period Ending: December 31, 2019

3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
AFL-CIO	4.1%	2.8%	0.9
BBgBarc US Aggregate TR	4.0%	2.9%	0.8
eV US Core Fixed Inc Gross Median	4.4%	2.8%	1.0

5 Years

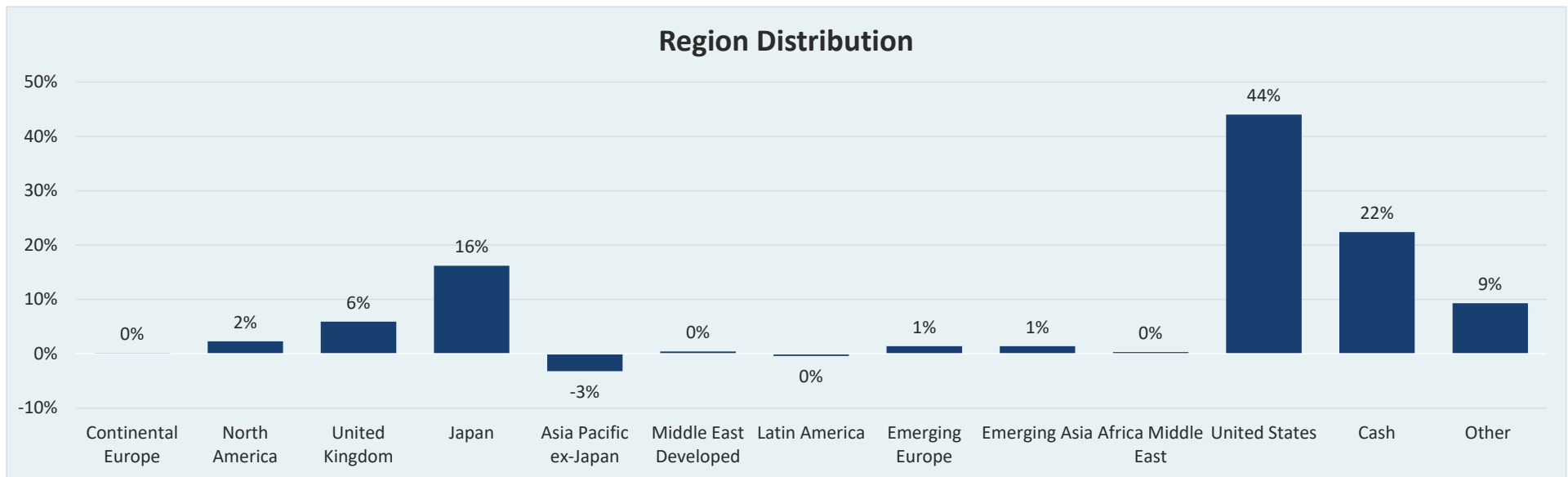
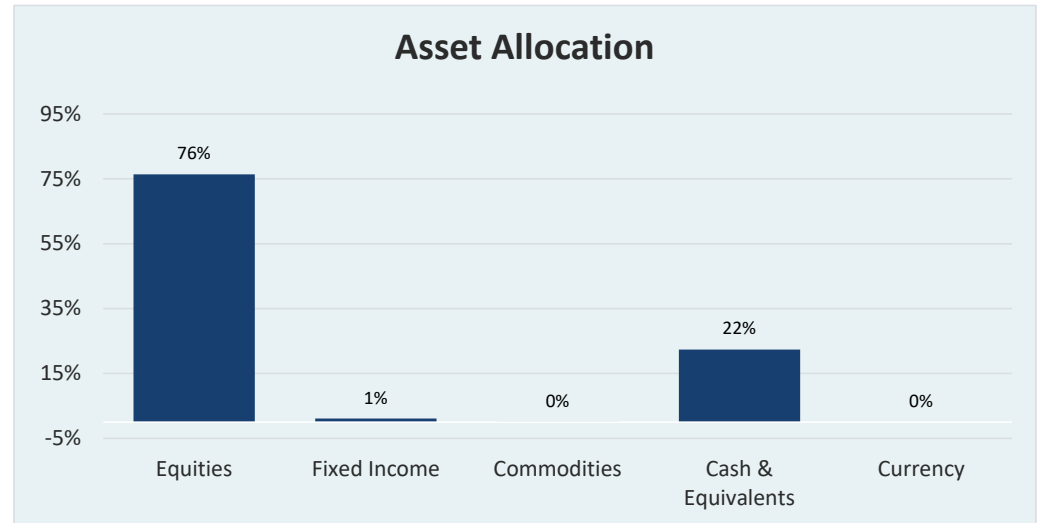
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
AFL-CIO	3.2%	2.8%	0.8
BBgBarc US Aggregate TR	3.0%	3.1%	0.7
eV US Core Fixed Inc Gross Median	3.4%	3.0%	0.8

Wellington Total Return Manager Portfolio Overview

Period Ending: December 31, 2019

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	915
Number of Commodity Holdings	112
Effective Duration (Years)	5.60



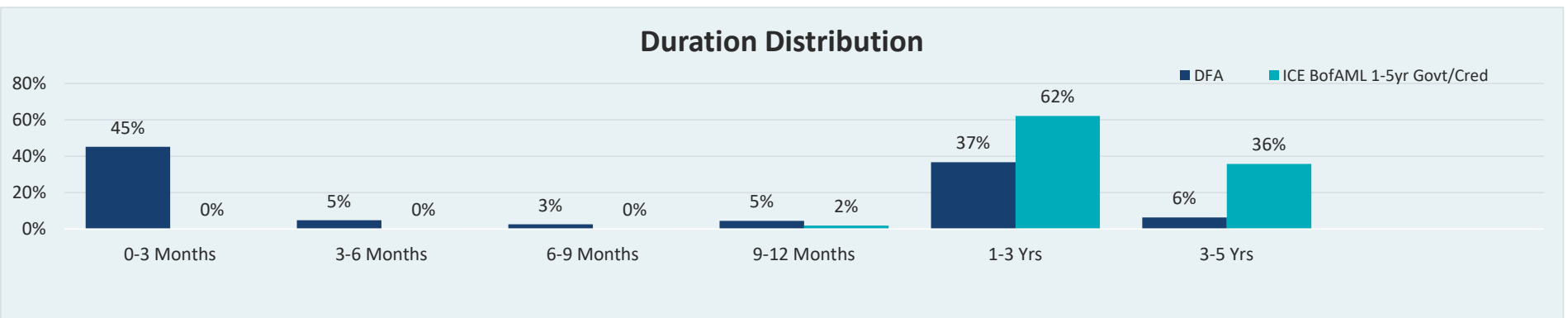
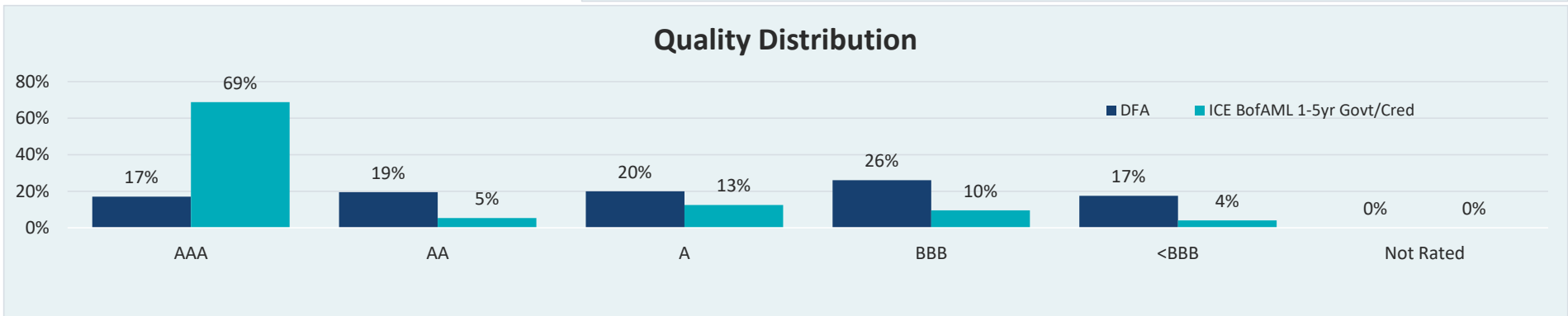
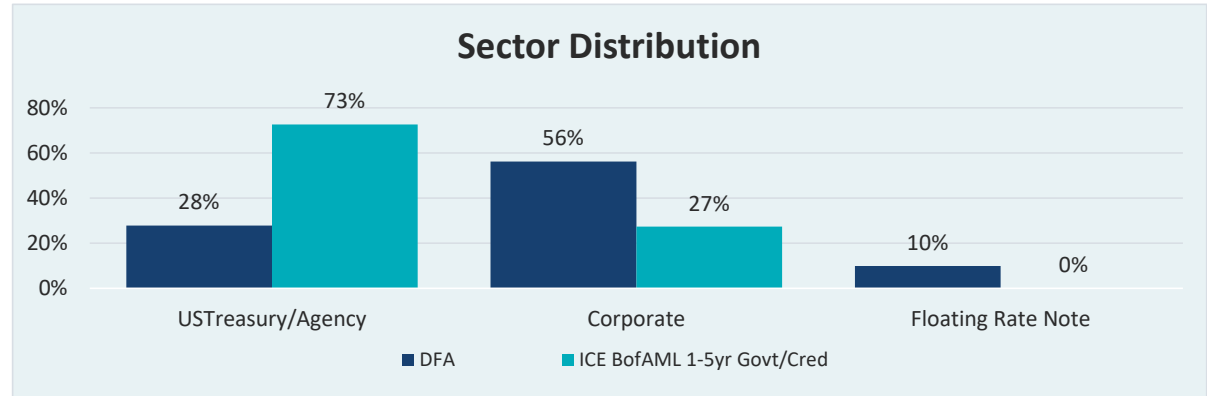
Liquidity Managers

DFA Short Credit
 Manager Portfolio Overview

Period Ending: December 31, 2019

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	1.06	2.60
Yield to Maturity	2.10	1.83
Average Quality	A+	AA+
Average Coupon	2.43%	2.60%

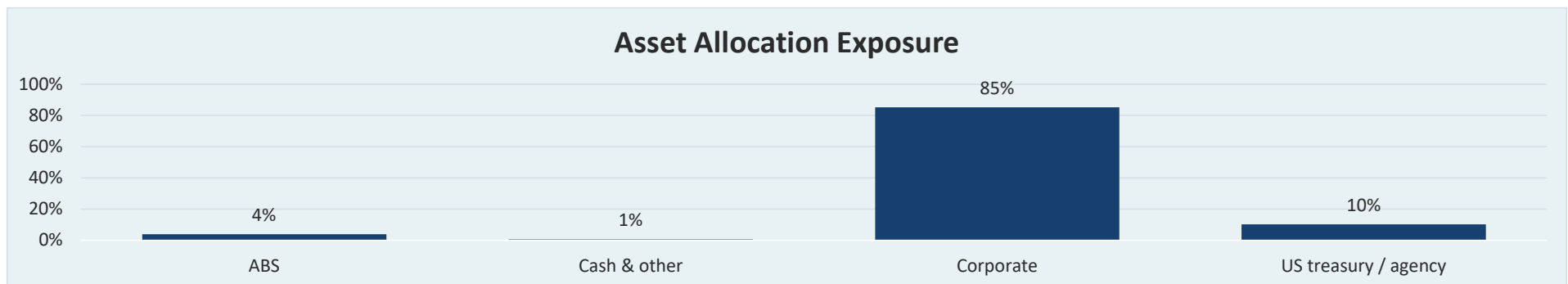
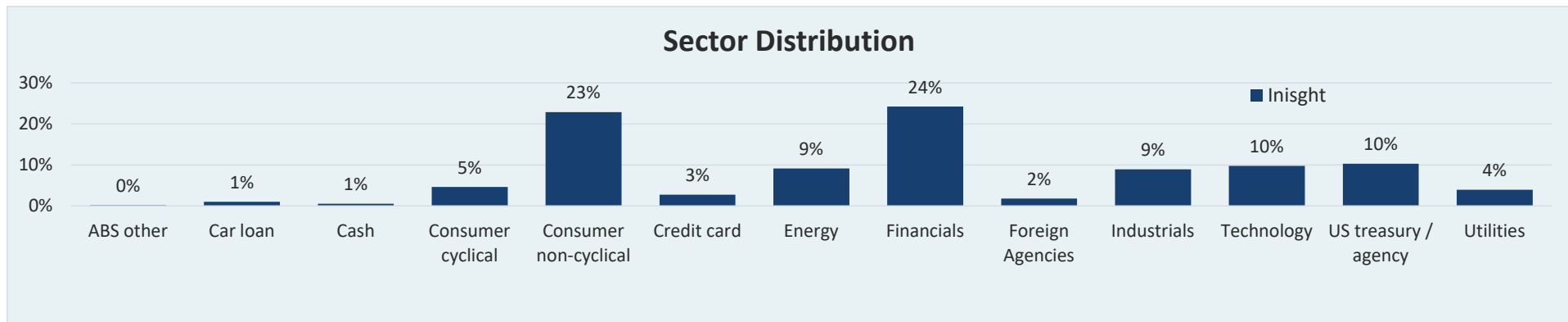
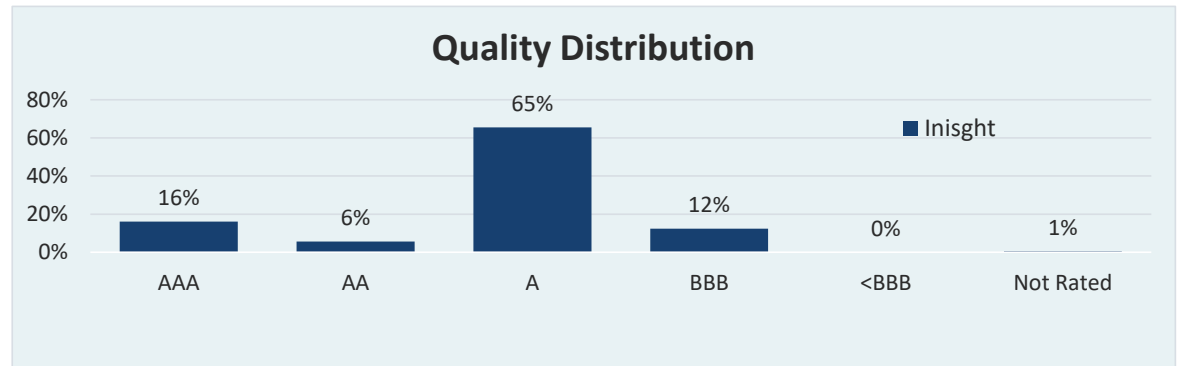


Insight Short Duration Manager Portfolio Overview

Period Ending: December 31, 2019

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	1.89
Yield to Maturity	2.00	1.96
Average Quality	A+	AAA
Average Coupon	2.63%	2.01%

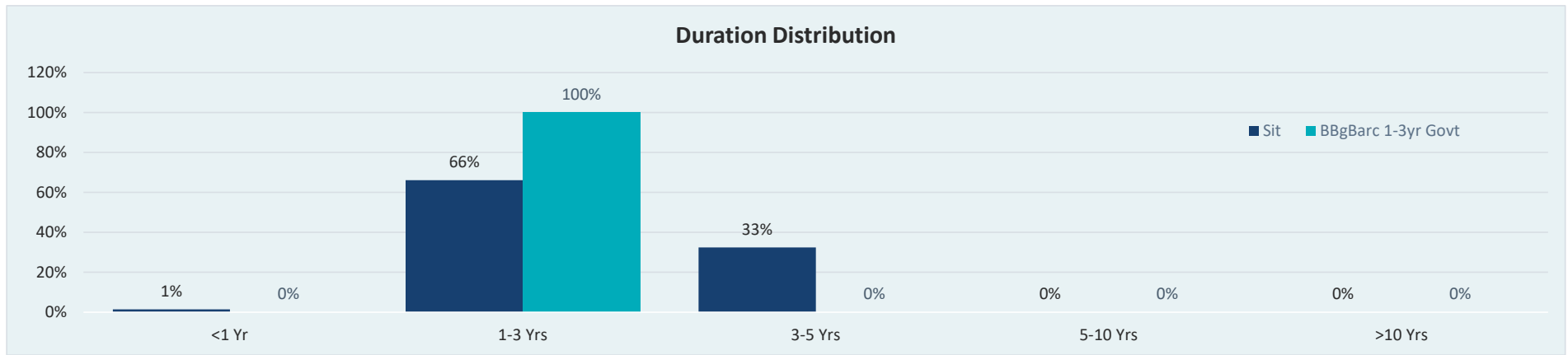
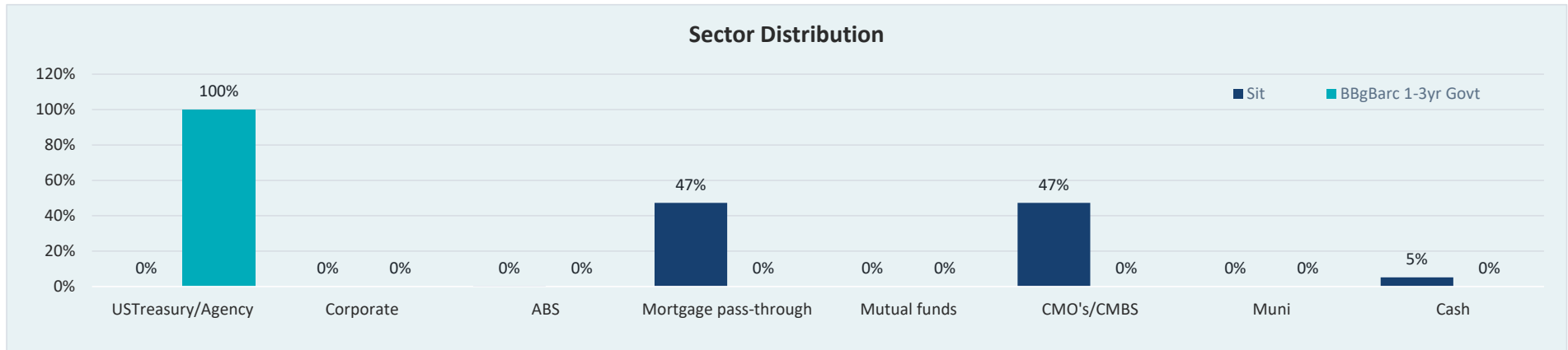
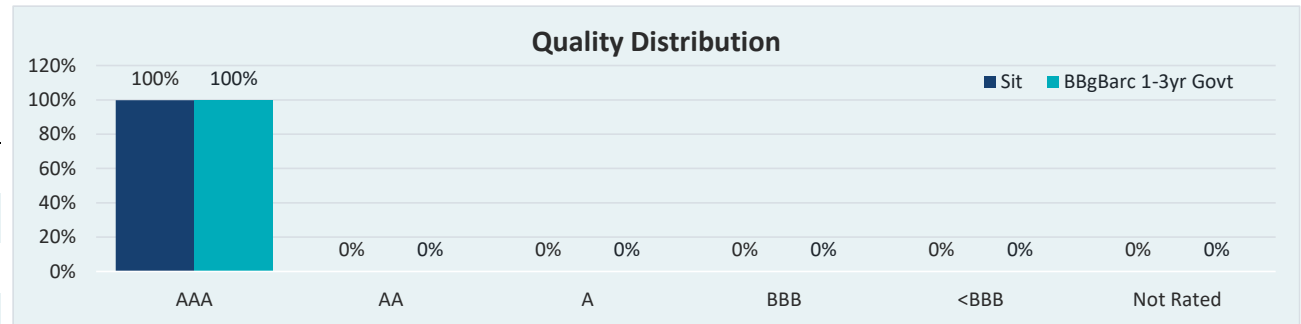


Sit Short Duration Manager Portfolio Overview

Period Ending: December 31, 2019

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	1.89
Yield to Maturity	2.60	1.96
Average Quality	AAA	AAA
Average Coupon	6.30%	2.01%



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.

Policy & Custom Index Composition

Policy Index (7/1/2019 - present)	10% Russell 3000, 18% MSCI ACWI ex-US (Gross), 11% MSCI ACWI (Net), 1% Wilshire REIT, 1.6% NCREIF Property Index, 6.4% NCREIF ODCE Index, 2% CPI + 4%, 11% S&P 500 +4% (Lagged), 5% ICE BofAML High Yield Master II +2%, 2% ICE BofAML High Yield Master II, 24% BBgBarc 1-3 Yr Gov/Credit, 3.5% BBgBarc US Aggregate, 2% BBgBarc Global Aggregate, 2.5% HFRI EH Equity Market Neutral.
Policy Index (7/1/2018 - 6/30/2019)	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 (7/1/2019 - present)	14.7% Russell 3000, 26.4% MSCI ACWI ex-US (Gross), 16.2% MSCI ACWI (Net), 1.5% Wilshire REIT, 2.4% NCREIF Property Index, 9.4% NCREIF ODCE Index, 16.2% S&P 500 +4% (Lagged), 7.4% ICE BofAML High Yield Master II +2%, 2.9% ICE BofAML High Yield Master II, 2.9% BBgBarc Global Bond
Custom Growth Benchmark (7/1/2018 - 6/30/2019)	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.

Manager Line Up					
Manager	Inception Date	Data Source	Manager	Inception Date	Data Source
BlackRock Russell 1000 Index	4/20/2017	BlackRock	Invesco Real Estate IV	6/30/2014	Invesco
Jackson Square Partners	5/1/2005	Northern Trust	Invesco Real Estate V	2/20/2019	Invesco
Boston Partners	6/1/1995	Northern Trust	Oaktree REOF V	12/31/2011	Oaktree
Emerald Advisors	4/7/2003	Northern Trust	Oaktree REOF VI	9/30/2013	Oaktree
Ceredex	11/6/2011	Northern Trust	Oaktree REOF VII	4/1/2015	Oaktree
Pyrford	4/25/2014	State Street	Siguler Guff DREOF	1/25/2012	Siguler Guff
William Blair	10/29/2010	William Blair	Siguler Guff DREOF II	8/31/2013	Siguler Guff
PIMCO RAE Emerging Markets	2/28/2017	State Street	Siguler Guff DREOF II Co-Inv	1/27/2016	Siguler Guff
TT Emerging Markets	7/27/2017	TT	Paulson Real Estate Fund II	11/10/2013	Paulson
Artisan Partners	10/1/2012	SEI Trust	AE Industrial Partners Fund II	4/8/2019	StepStone Group
First Eagle	1/18/2011	Northern Trust	Adams Street Partners	3/18/1996	StepStone Group
Allianz Global Investors	4/25/2000	Northern Trust	Adams Street Partners II	1/16/2009	StepStone Group
Adelante	9/30/2001	Northern Trust	Adams Street Partners Venture	4/28/2017	StepStone Group
AQR Global Risk Premium - EL	1/18/2019	AQR	Adams Street Partners - BFP	1/18/1996	StepStone Group
Panagora Risk Parity Multi Asset	3/15/2019	Panagora	Adams Street Partners - Fund 5	9/21/2012	StepStone Group
AFL-CIO	6/30/1991	AFL-CIO	Aether Real Assets IV	3/16/2016	StepStone Group
Wellington Real Total Return	2/26/2013	Northern Trust	Aether Real Assets III	11/27/2013	StepStone Group
Parametric Defensive Equity	7/23/2018	Northern Trust	Aether Real Assets III Surplus	11/30/2013	StepStone Group
Sit Short Duration	11/2/2016	Northern Trust	Bay Area Equity Fund	6/14/2004	StepStone Group
DFA Short Credit	11/21/2016	Northern Trust	Bay Area Equity Fund II	12/7/2009	StepStone Group
Insight Short Duration	11/18/2016	Northern Trust	Commonfund	6/28/2013	StepStone Group
Parametric Overlay	3/29/2017	Northern Trust	EIF US Power Fund II	8/16/2005	StepStone Group
Cash	-	Northern Trust	EIF US Power Fund III	5/30/2007	StepStone Group
Angelo Gordon Energy Credit Opp	9/24/2015	StepStone Group	EIF US Power Fund IV	11/28/2011	StepStone Group
StepStone CC Opportunities Fund	2/1/2018	StepStone Group	EIF US Power Fund V	11/28/2016	StepStone Group
Torchlight II	9/30/2006	StepStone Group	Genstar Capital Partners IX, L.P.	2/21/2019	StepStone Group
Torchlight IV	7/1/2012	StepStone Group	Oaktree PIF 2009	2/28/2010	StepStone Group
Torchlight V	7/1/2012	StepStone Group	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
DLJ RECP III	6/23/2005	DLJ	Pathway 6	5/24/2011	StepStone Group
DLJ RECP IV	2/11/2008	DLJ	Pathway 7	2/7/2013	StepStone Group
DLJ RECP V	7/1/2014	DLJ	Pathway 8	11/23/2015	StepStone Group
DLJ RECP VI	3/19/2019	DLJ	Pathway	11/9/1998	StepStone Group
LaSalle Income & Growth VI	7/16/2013	LaSalle	Pathway 2008	12/26/2008	StepStone Group
LaSalle Income & Growth VII	2/28/2017	LaSalle	Siguler Guff CCCERA Opps	6/3/2014	StepStone Group
Hearthstone II	6/17/1998	Hearthstone	Siguler Guff Secondary Opps	11/30/2016	StepStone Group
Long Wharf Fund IV	7/3/2013	Long Wharf	Siris Partners IV	3/15/2019	StepStone Group
Long Wharf Fund V	9/30/2016	Long Wharf	TPG Healthcare Partners, L.P.	6/28/2019	StepStone Group
Invesco Real Estate II	11/26/2007	Invesco	Trident VIII, L.P.	5/24/2019	StepStone Group
Invesco Real Estate III	6/30/2013	Invesco	Wastewater Opp. Fund	12/8/2015	StepStone Group

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: $\text{Portfolio Return} - [\text{Risk-free Rate} + \text{Portfolio Beta} \times (\text{Market Return} - \text{Risk-free Rate})]$.

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: $\text{Portfolio Excess Return} / \text{Portfolio Standard Deviation}$.

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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